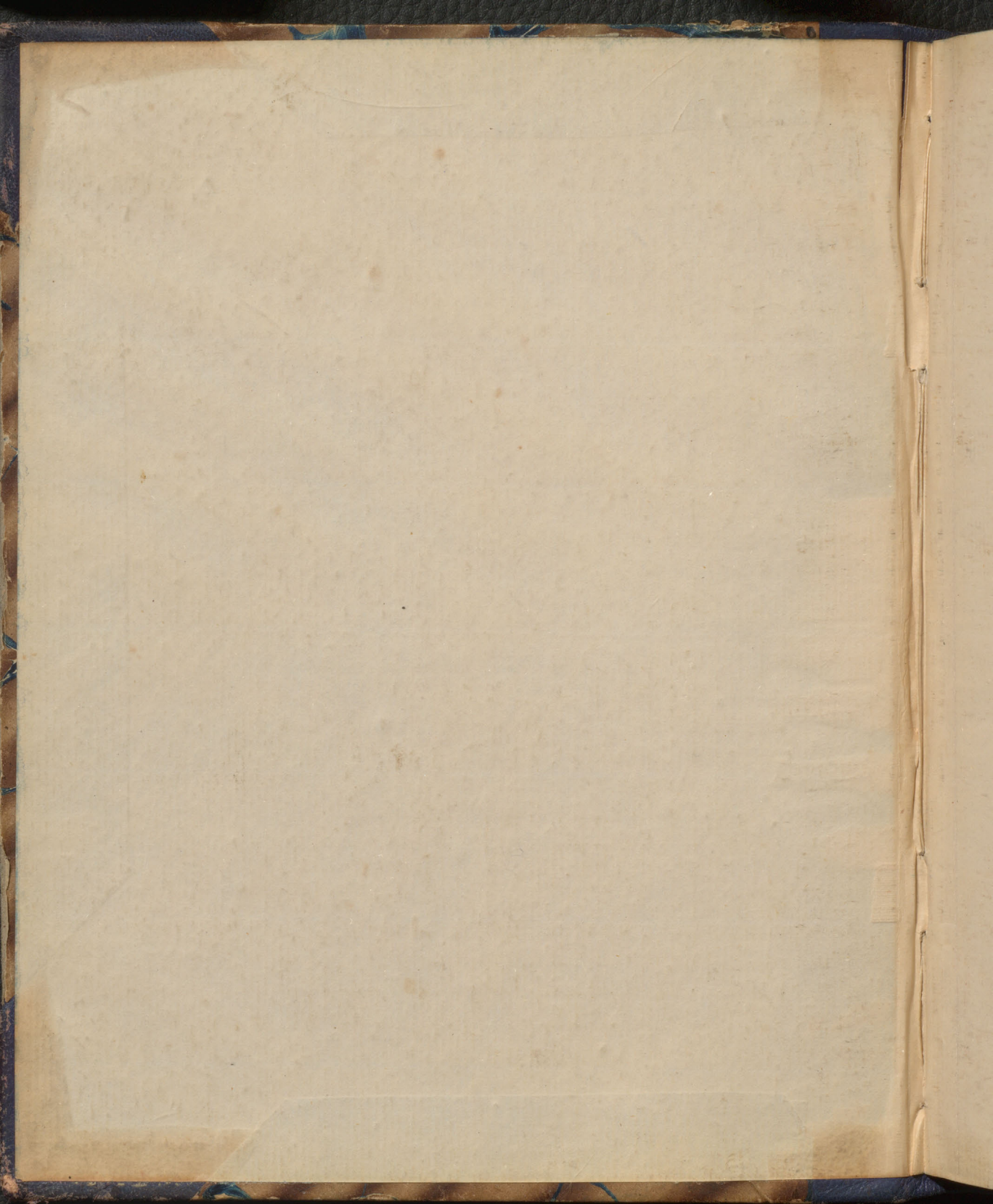
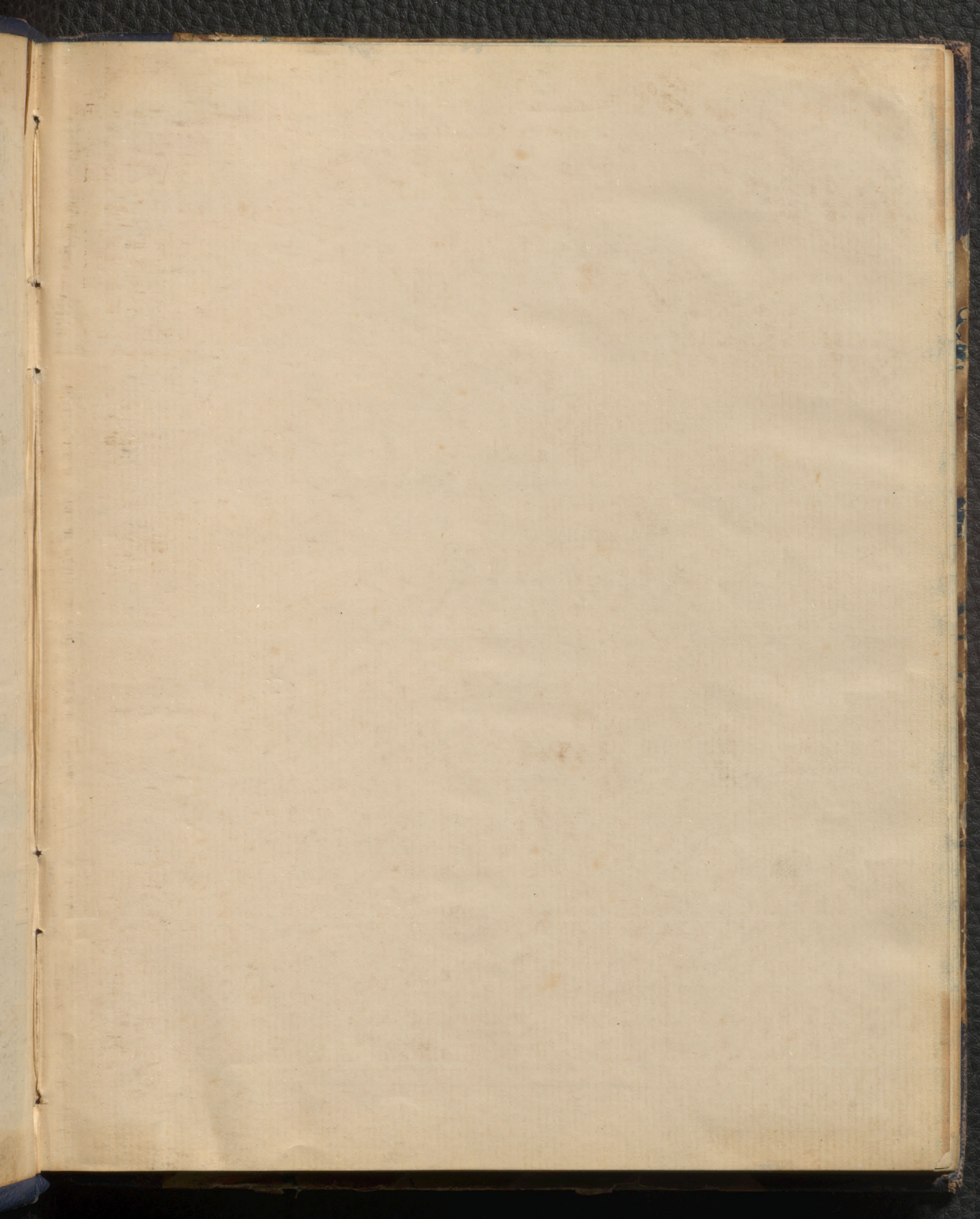


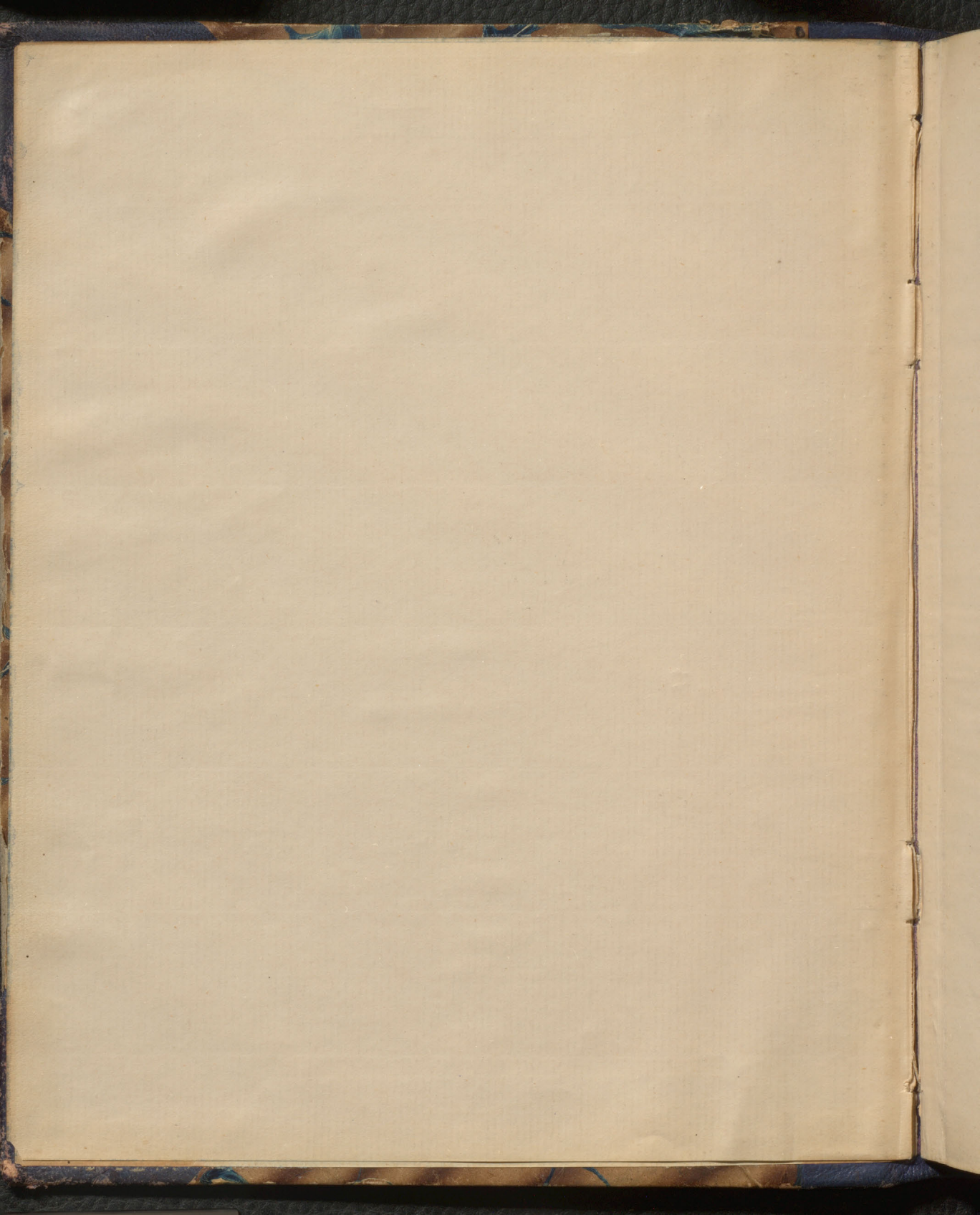
1873

B. N. A. B. Co.

1873







II

Private Diary
G. M. Dawson
H. M. N. A. B. C.

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Expedition from Defferin to Lake of Woods.

Friday June 29. /73 Got all packing up finished & sent the two carts off shortly after 9. A.M. Waited myself for the arrival of the mail, but the messenger to the office returned & reported no mail till afternoon. Decided not to wait longer & started off on my white mare at 11.15. Had some trouble at first from white insect net which had been forgotten by carts & which I tried to carry on but was finally forced to abandon the stick as the affair frightened the horse so much.

Came up with the carts a few miles past Marais River crossing. Dismounted & walked the rest of the way (about 6 miles) for the sake of collecting plants. Camped on the bank of the Red River about 4.30 having made about 16 miles. Dunt enough for the first day.

The weather very fine & sufficient breeze to keep the mosquitoes from being troublesome during the march.

Country all the way beautiful dry prairie covered with luxuriant grass, though rather thin for good hay. Passed a good many houses belonging to half breeds on the way, both on the Marais, & Red River. Passed some Indians with a train of oxen & carts on the way to Garry. After camping went to a half breed house near & got a quantity of duck & some culture from the very Civil woman. Took a walk round the vicinity of camp but found nothing new. "International" passed down at 9 P.M. Temperature of Red R water at sunset 73°. Temp of air 18" above prairie at sunset 65°. Temp of air 3' above River at sunset 65°. Copiers dew falling.

Party consists in addition to self of Duckworth, Spearman, & Paul Kidd Teamsters. Two Red R carts & my own horse.

Camp 2. June 28. 73 - Started about 7. Crossed several coulees & got to Scratching R. about 9.30. At the store there found Capt Cameron & party encamped & just preparing to start for Dufferin. Party consisted in addition to the Capt. of Mrs C. Mrs Harwood & several children. Have been about a week away, crossed Pembina Mt. gone N to Boyne Settlement, now returning by Scratching R. & Red R. Stayed about an hour to speak to Capt C. got several letters of introduction &c from him. Off again till 1 o'clock when stopped, lunched & rested till 3.30. Found several unions in good order on River bank, & some new plants. Went on to El Loues which is 12 m. N of Scratching R. Went with Mr L. to see salt-spring on River bank, but water too high. Told of some "black mineral" found in river bank which used as "black lead" for stove. Place where found now covered & worn in house. Party said to be 28 miles from here. Made 4 or 5 miles when the axle of Paul's Cart which had been showing signs of weakness some time, began to give out altogether & the wheels of cart to spread out below. Fortunately just at right moment came alongside an Indian driving a train of Carts & with plenty spare axles. Got one for \$1.00 & rode ahead to find a place to camp. Got Carts carefully over to river bank & camped about 8 P.M. got the cart unloaded, old axle taken off & new nearly fitted before dark, put Shaganapee to soak for wearing. Picked plants & went to bed. Mosquitoes very bad. The country all the way presents the same character. Prairie level as the sea & almost absolutely bare of trees save for

the fringe along Red R, most of that on the further bank.
The river winds very much, & one is constantly making
for a distant tree, clad point across some great bend.
Scratching R. is improperly so called. This Indians name
being a mis-translation of the La R. au gratis, meaning
Burr R. A small bur-bearing plant became abundant
immediately after crossing it. It is crossed by a long
& high wooden bridge not descending below the prairie
level. Prairie in many patches must be *Sewamy* in
spring. These places covered now with luxuriant hay-grass.
Began to notice boulders of various sizes soon after starting
today. The land is said to be higher about here, & the R.
cutting lies in a deeper valley.

Grasshoppers very abundant in patches, every here & there,
from $\frac{1}{2}$ " to $\frac{3}{4}$ " long, but just young & unable to fly. Told
that they are migrating south, but had not a chance of
satisfying myself on this point.

Some of the plans of various great department more ingenious
than convenient. Found sugar in lower end of a large bag.
A piece of twine tied round above it - & the upper part of
the bag filled with oatmeal & then likewise tied!

Camp 3. St. Boniface Got aile on cart early & were all
prepared for start by 5:30 when my white mare left unattended
a moment, ran away & was only caught by Paul after a
long chase on one of the other horses. Got off about 7.
Traveled on over country as before, & of the usual prairie character to
Stinking R. A R.C. Church here with pretty sounding bell, & quite a
little village houses. Stopped for dinner at the N end of bridge.
Saw half-breeds returning from church. A very noisy assemblage
The men in peculiar filthy Sunday clothes & no occasion. The women in
bright-coloured dresses, & shawls often worn blanket-wire.

all shades of colour, more remarkable for beauty
most seemed about as dark as the "Indians" of the
Lower St. Lawrence &c.

Grasshoppers very abundant in places. Crops seemed much
infested with a large podded *Stelepsis* species.

The Country becomes much more thickly wooded &
also slightly undulating even before crossing Stinking R.,
mountains these characters to Garry. Groves of white
barked & aspen poplar, small oak & elm, cherries, roses,
hazel bushes &c.

Rode on in front when near Garry, crossed the floating
bridge & waited a long time for the carts which I wanted to get
over to St. Boniface. Duckworth & Spearman at last appeared
to say that the axle of the same cart was again broken.

Went back & returned with whole cart. Crossed with it
to St. Boniface & camped behind the bishop's place & by the
Little River. Unloaded the cart & sent it back to bring other
carts load along.

The Red River between Garry & St. Boniface is crossed by a
slow & cope, or in a small ferry boat.

Banks of R. have several feet black soil, then stratified whitish
mud or clay much like that seen at Waukegan. No clean section.

Camp 4. Prairie Grove. Got arrangements made for new
axle. Intended crossing cart to Winnipeg for the axle, but
found so strong wind that saw not running. Had to make
arrangements for axle at St. Boniface from the bishop's people.
Crossed to Winnipeg with Duckworth. Got alcohol bottles
for insects. Linn & F for cooking.

Called on Mr. Clark who seemed to have no definite information
as to the reported Swiss coal. Saw Mr. Jones. Mr. W. J. Jones
appears to Capt. Cameron's request gave me letter to

H.B. officials to E. The H.B. Company now only give things from store when paid for, unless money deposited & you can write letter of credit for them.

Saw Dr. Sherelt, B.S. but not St. Gov. Morris.

Returned to St. Boniface after dining at Davis Hotel.

Had some trouble about bread but at last got 20 lbs from the Sister in Charge at the R.C. Kitchen. Told Spearman to take bread & start off carts. I went to find Buchanan & get note to officials on Dawson Rd. Rode to office but did not find him. Crossed ferry to Winnipeg & at last found him at H.B. store. Got a letter, viz. setting a cart. Crossed again to St. Boniface & rode out E. Soon after passing St. B. the road becomes swampy, & continues to run on in a district of swamps for several miles. Some of the swamps very wet & the road not passable & being fascined & built up above their level.

At 7 or 8 miles from River ground becomes dry & very good.

Told that it is a sort of ridge with swampy lay land both N. & S. Quite a little settlement on the ridge. The emigrants came in last fall & mostly from Canada. Told that settlement - called prairie grove.

Was just beginning to think that must have lost road, or that carts must have gone & some other when I arrived at the camp which some 12 miles E. of R. Very tired. Pressey plants. To Bed.

Winnipeg, a flourishing little town said to have 2,000 inhabitants but this probably rather high. Situated on point at junction Red & Assiniboine Rivers. "The fort" a collection of wooden buildings irregularly grouped & surrounded by a stone wall with round stone towers at the corners, stands just on the bank of the Assiniboine. The greater part of the town lies about half a mile N. It is laid out in lots & streets & speculation in land is active on account of the presumed

increase of value after the building of the C.P.R..

The grasshoppers this year are very bad in some parts of the province, especially around & N. of Winnipeg. The eggs were laid last year of farmers, aware of this sowed no wheat in many districts. Now young grasshoppers swarm & even wheat crops have been sown siffer badly.

Our Camp a few hundred yards from an indian encampment. The indians gambling & playing games to the sound of a drum & their peculiar yelling & grunting indulged in on these occasions.

Camp 5 got off about 7 o'clock & followed on to E. 15 place where road branched, a new trail through the grass leaving the old road to the left. Here found a split stick with a paper on which written "This is the write road". Had been told of this place as the Lynning Fa great marsh which is almost impassible at times.

Rode on ahead & picked out most solid ground for horses & swagons. Found considerable difficulty as even when going on unbroken sod the horses often plunging in mud up to knees, & cart wheels sinking. Found an old



woman & boy with two carts stuck fast but by taking the horses out & lightening the loads were managing to get them out.

Went on about 10 or 12 miles west of the time following a ridge of good fertile land apparently of some breadth with a good deal of small timber.

Stopped for lunch at a place where the road comes out on a small creek with muddy banks & a pretty

Rapid Current. Observed a great many black spots floating down on water. On examination they turned out to be put-water shells floating with foot expanded on surface. *Limnaea stagnalis*, *Physa*, & another *Limnaea*. Noticed them for about 2 hours altogether & they showed no sign of coming to an end. Hundreds must pass down in an hour; & just an extensive migration be the result of several days.

The swampy region is from 5 to 8 miles wide. Not all swamp, but alternations of swamp with compacting firm ground. Hoopner pupbrudating.

Got to Pt. DuChene Station & asked for the person in charge. Found that it was Gus Graham who I had seen at Thunder Bay, but he was not at home at the time. Say miss? Graham whom I recognized as having seen talking to Ashe at Pt. Landing. Showed her the letter asking her in charge to assist me & explained that teamsters might need a meal or night's lodging when they return.

Told 3 men at station that mosquitoes & boll-dog or horse-flies very bad on the road. Teams said to be only able to travel at night, & several animals killed on the way by them.

Went on about two miles E of Pt. duChene station & camped on the site of the old station house. Before anything could be done had to light smudges all round. Found a good many new plants. Wrote diary & pressed plants till bed time.

The open prairie country comes to an end about $1\frac{1}{2}$ mile E of Pt. DuChene station. The land practically was, becomes gradually sandy & supports a thick growth of timber among which some firs.

July 2. Wed. Got off just before 7 oc having
delayed some time (though up early) on account of
rain. Road heavy & muddy. Passed for several
miles over dry wooded land which though much
covered with boulders might do very well in places
for farming. Next came through 4 or 5 miles swamps
very wet & covered with long grass & equisetum.
Road then began to rise again & become very sandy.
Saw fewer boulders about here. Soil very poor & light
for most part. Saw some Banksian pine.

After getting on sandy ground the mosquitoes
horse-flies began to be very troublesome & teased
the horses much. I could hardly get mine to go along
when occupied the whole time sweeping them off
with a bush. Horse kept running sideways into
bushes, & altogether showed great signs of distress.
When got as far as Broken Head River Station
the horses were each surrounded by an immense
swarm of flies, just like a nest of disturbed
bees. Patches as large as a plate on horses sides
so covered with flies that could not see the hair,
& when swept off they constantly renewed themselves.
Kidd swept off at one time a large double handful
of flies. Got the horses out of finding it absolutely
impossible to go further while the flies out.

Went up to the Station house. Stowed Mr Buchanans
order of 4 horses into stable. The house surrounded
by a swarm of horse-flies & the occupants, an old
man called the doctor & his wife only opening the door
a ~~short~~ small way to look out.

Told that travel only attempted now by night on
the road, & that there were some near White

Mouth river as they were returning left from the
Angle. Brought up pressing boards & plants to
home. Packed plants & wrote up journal.
Duckworth & Spearman left about 4 o'clock to walk on
at leisure to White Mouth R. Station (16 m).

Got things packed & carts ready to start by about 7.30
but lost about an hour looking for the bridle of
my mare. Found at last in stable. It was nearly
dark when we got off. Thunderstorm passing along
to S. but no rain at Broken Head & atmosphere
very close & sultry. Mosquitoes in myriads. In many
places in swamps, so thick that can only compare
them to snow flakes striking the face in a storm. Not
very little protection. Horses suffer much. Road very
heavy, on through open grassy swamps. Larvae
swamps & over ridges of boulders of gravel, some of the
former of large size. Fireflies very numerous.
Passed a lot of soldiers camped on the roadside
& tents surrounded by sentries. About 2 miles past
this Kidds Cart suddenly broke its axle in a rut & could
go no further. Decided to leave him there & go on with
Paul to station which we supposed only about a mile
distant. Pauls horse nearly used up. Got on slowly over
bad & wet roads tormented by myriads of mosquitoes for
several miles. Began to think might have passed
the station. About a mile further on than I thought it
could possibly be, at last found it. Daylight now quite
bright. Found door & roused up station man. Duckworth
& Spearman. Got cart unloaded, & put in my white mare
to draw it back. She would not pull & so finally had to
put in the tired horse & send her back. Glad at last to
get blankets unwound mosquito curtain out & lie down on

Kitchen floor.

Noticed for first time today the Banksian fern very abundant. Also the Pteris, Lichum, & many other "Tertiary" plants.

The country from where started in the morning continues to rise in ill defined steps between which very often swamps. Soil sandy & gravelly, & becomes less gravelly to E. Ridges with boulders every now & then.

The Broken Head River is a small stream more a brook than anything else. The water pretty clear & very good & cool. Told by Mr. Arriester who understands several Indian languages that the name a mistranslation of an Indian one meaning really Bald Head River & referring to the vultures which were common on its lower part near S. Wampsey. In the same way White-Mounts R. might really be White-bird-Liail river. Some white tailed bird, perhaps the eagle, having given it the name.

Birds Creek

Thursday July 3. Camp 4. Slept rather late to make up for last night. Found the people of the station (man wife & one child from Canada) very obliging. Took another nap after breakfast. Sent Kidd off to repair his Cart. Got a feed of oats for horses. Took a walk about of about 3 miles along the road & got just a number green plants. Most of them old friends & such as found on N Shore St-Lawrence.

The vegetation here probably on account of the hot sandy nature of the ground seems in advance of that of the prairie. Strawberries now ripe.

Shown a very neat garden of about 2 acres on the Right bank of the river. One cleared up this Spring & things put in rather late, but now progressing at a surprisingly rapid rate. Indian corn & potatoes over a foot high. Melons

Cucumbers, radishes, turneps, parsnips beets & Corn
7/2

The station at White Mouth R consists of two small cottages built end to end, a kitchen built out, a stable & yard for horses. The river crossed by a very neat bridge about 50 yds long.

Got things packed up & nearly ready to start before dark. Walked on with Duckworth intending that carts should catch up after a few miles. The carts however delayed, & I walked on on without hearing anything of them. Heavy rain & thunder began about 9 & I went on for several hours. The mosquitoes very bad all the time & darkness so great that hardly possible to keep the road. Road very bad & sandy & muddy. After a time clouds cleared away & moon came out forming a very perfect lunar rainbow.

Began to see that carts would not catch up & so made up mind to walk on to next station. Arrived there at early dawn about $\frac{1}{2}$ hour before horse, very tired, & after having walked 16 miles in 5 hours without any halt. Found about 70 emigrants in the station filling up every inch of floor. Mr Scott ^{the station man} asleep in the kitchen & very cross & gruff. Went outside & built a large fire to get dry. Carts came up in about half an hour. Got carts up & went to bed now in broad daylight.

Camp 8. July 4. Got up late this morning. As soon as drunk a gentleman called Erway or on his way by Dawson road & Gary came in. Waiting for baggage which left behind & also very much done up & sick with having walked from the Angle yesterday & drunk stagnant water on the way. Asked him to breakfast

and gave him some medicine, as he suffered very severely from pain. Reading & resting. Had dinner late & then packed up & got off in cool of evening. Saw very many comfortable & settled before starting, & stopping rather less. Got to point - 12 miles E. of Birch Creek station & camped just at dark in a forest of tall Banksian pines.

The road all the way through swamp though now often following a gravel ridge for a while. Saw several specimens of Lamentum rock. The last mile or a half of the road across a very wet muskeg & constructed of crushed small logs pegged down on 4 longitudinal string poles. Noticed a burnt wood of Banksian pine being replaced by a young growth of the same tree, contrary to the usual supposition of rotation. The young trees about 8 ft. high.

July 5. Saturday. Left Camp this morning about 6. O'c & tramped on most of the time through swamps, woods. Saw a few white pines though the prevailing timber Banksian pine & common firs & spruce. The swamps have to a great extent lost their grassy character since crossing the watershed (which must lie about 10 miles E. of Birch Creek) & are peaty & with sphagnum bedum etc. Saw a good many new flowers. Most of them old Lamentum or Eastern forms between which & some of the Western forms the watershed seems to form a barrier though not very definite.

Stopped for dinner at one of the old Shanties, were during the construction of the road through the woods of which now serve as very convenient supplies of dry

Went for fire making. The bull-dogs got pretty bad after
noon, but managed to get on & arrived in advance of the
Carts at N.W. Angle Station about 10^o. Found Mr
G.R. ~~Adams~~ ? the agent in charge & Mr East of the
Boundary Commission who very patiently was dealing with
him. Walked down to the landing place where Mr E.
Camped, & camped beside him there. East moves portage
Camp here Southward on Monday. Can hardly get off at
same time, but made some preparatory inquiries about
Canoes & Indians through Mr Arnold the Hudson Bay
Officer in charge here who was kindly helped me in the matter.
My men taken on to mess & with Mr East for present.
Introduced to other members of his party.

July 6. Slept late & awake up for sleep lost on way.
Breakfasted on delicious Golden's from the Cape. Reading.
Afternoon pursued plants collected yesterday & changed paper
labelled & entered all those collected on the way.

With a number of Indians Camped near here. Several
Came to tent door & looked in while I was occupied
with plants. He could not make it out at all.

Most of the Indians here do not speak any language
but their own so are rather hard to hold communication
with. The gambling drum has been going nearly all
day, & continues late at night down at their camp.

They play a very simple game, changing a button or from
hand to hand under a blanket & guessing. In the way
they often loose all they possess. Besides the continual
drumming they keep up a chorus of grunting or yelling
in a low excited tone.

An Indian child's grave a few ^{yards} ~~feet~~ from my tent.
built up of boards & roofed with calico. At first I

took it for a day kennel as it was such that
slope had a little door in front. Some heavy logs of
wood are piled around & a pole erected in front to
hang any objects on. Just inside the door a playing
card has been laid. The ground for several feet around
cleared of bushes & grass & a little circular trench
surrounds the whole. The relatives bring little offerings
of berries &c & lay them near the door which they take
time to open every morning & close at night by putting
a piece of flat wood against it. Some of them
(mother & other children?) come up every evening &
sit round the grave a while.

July 7. Arranging about supplies &c. Looking
over groceries &c. Arranging for Canoes with Armit-
Reading &c. Afternoon went up N.W. Angle creek
with Armit & Alban shooting pycnos. Sport not
very good as flocks flying high & wild. This very troublesome
Saw young Mac Pherson & looked at an 18 ft canoe
he had which appeared to have good carrying capacity.
Had some difficulty in getting men. An old fellow
called Sha-shick-kis? & the pelican came demanding
to see me yesterday & at Mr Armit's advice I secured
myself, he being an opinionous & troublesome man.
He is not exactly a chief but has influence with the
Indians being "a talker" & now uses his influence
to prevent men going with me. Had several
Indians up during the day to speak about engaging
but all seemed reluctant to come to the point.
It is rather difficult to get proper men, as most of
them can only speak their own language, & others only

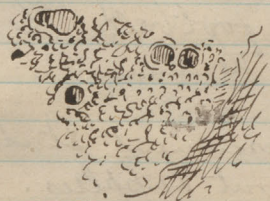
Know certain parts of the lake. Saw a man called Albert in Mac Pherson's employ who will sail very well if I can get him.

Saw the Squaws playing a peculiar game called Bollics this evening. Two small stones or other small heavy articles tied in bags & connected by a string about 2 ft long, are thrown about with sticks. The game appears to be to get them through between goals, much as in football. The whole to the indispensable sound of the drum.

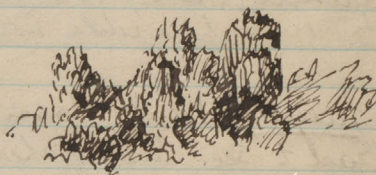
July 8. Went down to Government Station with Earl to see Mr Adshad about supplies. Making various arrangements about men, canoes & collecting plants.

Afternoon saw young Mac Pherson & told him to fit his large 18 ft canoe put in thorough repair this evening. Also about his man Albert who he says is willing to go with me. Engaged young Begg a half-breed who speaks both languages well. Got half-barrel & keg from Armit of H.B. & sent up to Joe. Store in canoe with Spearman & Begg. Walked up with Earl. Got 100 lbs pork, 100 lbs flour, 4 lbs tea, 2 gals milkcases sent down to camp. Adshad promised to send 100 lbs pork, 100 flour, 40 lbs beans to await my order at Hungry Hall at the mouth of Rainey R. Also gave me a letter to Mr. Louis Couture in charge there. Paddled back to camp with Earl. Evening went out in canoe collecting water plants & shells. Found Spongylla growing on an old submerged log. Forming greenish crusts $\frac{1}{2}$ " to 1" deep

Surfaces generally nearly flat with here & there large crater like oracles $\frac{1}{4}$ to $\frac{1}{2}$ inch diameters. Some parts however rising in tuft like masses, the surface rising in tuft like elevations between the large apertures. (Put specimen in alcohol & a portion to dry). The large whitest apps but slightly projecting



ordinary surface



Appearance of poppleary masses.

Strawberries here now quite ripe & Indian women picking every day. They also bring in a sort of blueberry much like the ordinary in colour & bloom but oval in shape, & of somewhat different flavour. Told that hemlock had been here a short time ago.

Also that one had been shot at Garry.

The Epilobium just coming into full bloom. The common red berried elder a common bush here though not seen this spring elsewhere.

The landing place, near which we are camped is about $1\frac{1}{2}$ or 2 miles E of the Station constituting terminus of road to Garry. The country about here mostly dry & well raised above the water level. The soil composed of very fine yellowish white sand with but little vegetable matter. Not land of first rate quality for farming but ought to raise potatoes & such, & other crops if manured & properly attended to.

The common large bullrush abundant here & seen

also in several places on road down from Garry.

July 9. Camp McKays Island. Morning getting things packed up & arranging for start. Left all luggage not absolutely necessary behind. Saw Mr. P. Person about Cause. While speaking to Mr. P. 6 or 7 Indians came marching into his house & sat down in a row along the wall on the floor, one of them rumbling having previously shaken hands all round. They said nothing while I talked with Mr. P. but when I was about to leave pretending that I did not know they wanted to see me, the spokesman who had previously shaken hands asked Mr. P. to interpret for them. Mr. P. said he would not as it was none of his business & he knew they wanted to bother me. Indians said would come up & see me at Camp. Told them they might do so. Mr. P. said he believed they thought I came to find out & claim mines & that they did not want it done, especially before the treaty now under discussion at St. Francis was concluded.

About half an hour after the Indians appeared at Camp sat down & having brought a man to interpret entered into their argument. They wanted to know by whose authority I came & what I came for & where I was going to. Tried to make them understand that I was merely exploring round like the other parties & looking at what to be seen in the country. They did not appear to be satisfied & said it was all very well to look about on "the road" but not in new places. Mr. Smith of the H.B. got several of the leaders up to his place & gave them a piece of his mind in pretty forcible language & tried to explain

that I was not claiming anything. Said he believed it was only a dodge to get some pork or flour out of me; & pushed off by giving them a few plugs of tobacco. This treatment embroiled affairs up & the Indians came back to say that if the explanations had been given at first all would have been right &c. &c. Got from Armitte some wax for canoe repairing & some pounds of pemmican for a stand by. Paid him for canoe &c. Left with him clothes approx 8^l in excess of weight. Also press of plants collected on way down from Sufferin.

Albert McPhersons Indian who is coming with me spoke about maintenance of his wife &c. during his absence, asked M^cP. to advance sufficient for purpose as they might require it. To be deducted from Albert's pay. Gave M^cP. receipt for canoe as he was unable to state exact price till his father returns. Got off small about 3.45. Found Canoes pretty heavily laden but managed to get along. My canoe (the smaller) leaked pretty badly not having been used before. Came down about 7 or 8 miles to M^cKays Island where camped. The island a rounded granite rock separated from the N side of N.W. Angle inlet by a great reedy swamp.

Made slight examination of island pressed plants &c. & to bed.

Island has round edges some clens & a few oaks, on the rock bank some pine & a few white pine. Found the common polypodium for first time. Many Austral bushes about 4 or 5 feet high some of them with berries much inflated with

a fungus which seems to cause the fruit to increase to about double normal size, & then to come out over its surface pretty symmetrically in cup shaped protruding heads about as large as the head of a pin & full of bright yellow spores.

Temperature of water at dusk 68° .

Found also a wild onion.

July 10. Got away from Mc Kay's lod at 8 o'clock. Crossed to S side of inlet & continued skirting along shore. Stopped once for about $\frac{1}{2}$ hour on a small queer island to stretch legs & bail canoe. Passed an encampment of 8 wigwams about 6 miles down from Mc Kay's lod. Wanted to go right past without giving Indians time to get up a talk. Calling from the shore however to stop, & were much relieved when found that only 8 was come out to sell fish. Dried white fish, & fresh gold-eyes. Gave them a little pork & sent them off satisfied.

Shortly after passing this place canoe began to leak badly. Landed on N. E. corner of peninsula. Unloaded canoes, had leeches removed. Point of granite beautiful & smoothed in places. Many wild strawberries ripe. Got off again & skirted along to S. Wind getting up & the larger canoe having touched a rock & become leaky, were glad to find a sheltered place & beach the canoes. Got canoes repaired. Wind bound several hours & did not get away till nearly 5. Examined rocks (granite) of coast. Got a few plants etc.

The sandy shore strewn with dead limnes of a kind new to me. They are very short & wide, shells strong, & of really limnes they have been cut down to represent the bottom of sea coast. They also resemble that genus in habitat. Growing along the rocky edges & creeping on the rock, & in pools on it - just as the Littorina is accustomed to do.

Before arriving at S.E. corner of peninsula (mentioned
above we saw the chief of the Southern part of Lake
A faces all ornaments with designs in yellow, green & blue.
& two sons, with him in canoe. I insisted on talking
to him & giving a little piece of pork.

Got off again about quarter to 6. I proceeded south
just after starting saw Capt East & men coming
along in a large boat & three canoes. I started along
by cooking for coals, but found none, the shore low
with pretty heavy timber but apparently swampy at
least where near the water. - All camped together at the
Point.

Lake surprisingly shallow & shelves very gradual.
The surface of lake when calm completely full of green
weed. Very small almost like *Cladococcus* & probably
either a diatom or low may called alga. Albert
says Indians call it - A-wau.

Told Albert that the Indians eat the root of the
large root in spring. They call the plant Kis-a-Kum-
a-musk.

Dried plants ~~to~~ to bed.

Nit-ta-unga sand.

Assin stone

Kay-sid moon

An-e-mous dog

Nema. sturgeon.

July 11. 73. Wind bound all day. During morning
strong S.E. breeze, then in a very heavy rain. Afternoon cleared
off but continued to blow. A heavy sea rolling in & breaking
against rocks on shore just as though on the sea-coast.

Early this morning were engaged in moving up East's
stow, & the canoes & boat as danger of their being
carried away. Morning writing up notes & making
entries on map. Reading. Afternoon walked a few miles
up & down stow, examined geology & collected a few plants.
Pressed plants.

Water of lake dark & muddy from the stow
Men amusing themselves by trying to imitate the indian
mode of gambling, much to the amusement of an indian
who has staid with us since yesterday. He managed to win a
hat from one of the men.

July 12. Saturday P.M. Wind with occasional thunder storms
continued all day. Scurp on shore heavy & cannot get off.
Collected a few shells & land shells. Reading of
East began his line this afternoon. The line to run due W.
till it cuts the meridional part of the boundary line, & for
the purpose of exploring the country. Line laid out by
Arquuth compass. Men go ahead cutting bush & trees as
they advance & placing picket after picket in line get along
quite fast. Men showing wonderful skill with the axe.
Last night just after turning in very heavy thunder storm &
wind. Had to get up & drive tent - peeps us afraid of tent
blowing away. The top of a tree quite near the tent blown off
& fell with a crash.
Thought a most lovely stormy sunset, & double rainbow.

July 13. Sunday on getting up found that a Mr Harris
& party of two assistants & one indian had just arrived
from N.W. Angle going to Red R with the intention of
crossing the Muskog portage gaining the Rossian R &
descending to the Red R near Pembina. This being

exactly the return route I have planned to take after completing the L of Woods exploration. Harris & party are examining the capabilities of the land as timber producing. Being Sunday postponed starting, though the day fine & calm till afternoon intending to then go about 10 m to Driftwood Pt. one of Dr. Bysby's limestone exposures, & be ready for early work there tomorrow. Delay however proved bad. Just after dinner a breeze very suddenly sprung up from S.E. & lake at once became too rough for canoes. Wrote letter to P. to send L. Harris to Plumbina. Took a walk down East's new Cut line & collected a few plants. Shot a Hawk that was making a peculiar cry on a tree near my tent, but spoilt him too badly for preservation of anything but the head. Reading. Pursuing plants. Spreading insects. Gentle Rain commenced about 9 P.M. Harris got off between 5 & 6 o' went toward Driftwood Pt.

The timber about here pretty good, much buck up good growth, cedar, spruce, & a little elm.

Monday July 14. 73. Got early breakfast, packed up, & off by 7.30. Weather fine & calm. Passed close along shore keeping lookout for expected limestone exposures. At about 1 m S of Camp at point marked (11) saw last exposure of granite the shore then low & swampy with *Tameras* spars the whole day's journey. From (11) to Driftwood point Swamp with tall thin *Tameras* on which the lake evidently encroaching as the shore the whole way, consists of a tangled mass of fallen obliterated *Tameras*. At Driftwood point a long sandy spit covered with driftwood, otherwise very appropriately named. Stopped at this

point to search for limestone exposure but unsuccessfully.
The lake pretty rough before making driftwood point &
fears that might again be windbound but calmed away
again.

At driftwood point almost directly opposite Garden or
Cornfield Island. The island lies low on the water & looks
futile. Distant about $2\frac{1}{2}$ m. Should have visited it but
had hardly time & the lake also too rough for safety in so long
a traverse. Told that formerly one of the great camping
or residing places of the Muskogees or Sycampries. They had
considerable cultivated land. Since the making of the
Red R. Road, almost abandoned. Cultivation given up.
The Indians finding it easier to get flour pack \approx at
the N.W. Angle of

From driftwood Pt to a small river mouth, a inlet marked
on the map the County bordering on the lake as far as can
be seen a vast level swamp, peaty looking when cut into by
the water, & covered with grass, bushes, & small dead, & grey
towers. A most desolate looking view.

Landed at the inlet to stretch. Found many *Unio*, *Anodonta*,
some *Unio* & pleurotes. One of men also caught a very good
young pike with trolling spoon.

After leaving inlet water became pretty rough & had some difficulty
in getting along. Got as far as the most easterly point
to N. of Muskogee bay. Here found Harris partly resting. As the
waves on the bar off the point were too strong, landed, waited
about $\frac{3}{4}$ hour & collected shells along beach. Got off about 5
but found one of canoes leaking badly. Went about $\frac{1}{2}$ mile
& camped on dry sandy beach. Packed shells, pressed
a new plant (*Oxybaphus nictagineus*) Wrote up diary &
& to bed. Harris camped alongside.

Temperature of lake 71° .

From the little inlet to tonight's camp the shore is bordered with small sand hills & ridges, behind this great open grassy muskeg.

Asked Albert & Big names of several animals & Asusko-ess the thin mussel or Andson. Name means the Rat shell.

Nin-ess the thick fresh water mussel or Uuis.

Essien-Suc Small spiral shells such as Limnaea.

Shag-ese Crayfish.

Them-en-gua Butterfly.

Man-e-chous ordinary fly.

Tuesday July 15 Morning rough & wet with strong Easterly wind. The water pretty calm in front of camp, but could hear the waves roaring on the other side of point, & breaking on the bar. Cleared up about 7:30 but wind continued. Thought might creep round bay to Reed R & so got off at 8:30. Got a mile or half or two miles when the water began to be dangerously rough. Kept within the belt of reeds & between it & the shore, but waves came through almost breaking. Shore a swamp with no landing. Decided to turn back & went about 2 miles to dry sandy beach which lay between bay & great grassy muskeg, & on which poles of an old Indian camp.

Day very hot & no good shade. Very tedious waiting. Collected a few shells. Reed a little. Made sketch. About 3 P.M. walked along shore to Harris' Camp & to Point to see state of lake. Harris wants to make traverse to Buffalo Pt. & dare not yet start. Returned to Canoes. Got packed & off by 4:30 intending to get to Reed R if possible. Got on about 4 miles when

water exposed to full sweep of lake began to be very rough. Decided that too much so to venture further, turned inshore & landed, though not before having shipped a little water from one or two waves. Found ourselves on a narrow sandy shore with breakers rolling in on one side & a dead tamarac swamp on the other, vapour with bushes etc. Had tea & waited for wind to abate. Decided to camp on small point about $\frac{1}{2}$ mile further E. Albert & Beeg took canoes round one of the other.

Examined collection of boulders on point, a good many of limestone, & some clay on shore. Looks not unlike boulder clay.

Finished pitching tents about 9, lit- Cange for to drive away mosquitoes & went to sleep lulled & warning of waves on the shore.

Exchanged some pork for gold-eyes with a Squaw before breaking camp this morning.

Talked to an Indian (through Beeg) who lives on the R called the War Road R on the maps. He says the river is called in Indian Ka-pa-kenang meaning the "out of the way" or "little frequented R" & that there is no way of portaging from it across to Red R. Another R, which he says is quite a small one, flows into Southern part of same bay. This is called the Kak-e-gue-ne-gue-Kak, or "high grey bush R" (marked on S. J. Dawson's maps)

The Red R in Indian called Muskegen-omisken-mew-sepe or "Muskeg portage R".

Says there is a small R running into N part of Muskeg bay called the Ka-na-mecose-kow-sepe or "bear point R".

This R. must be very small. The R marked Beaver R.

on Dawson's map, I noticed in yesterday's diary, he tells
me is not a flowing R at all, but a sort of creek.
The Indian name of Garden Island is Ket-e-quan-
e-minis? or simply "plantation Island".

Wednesday July 16. Wind bound all day. Morning
opened rough & wet. Wind strong & in same
direction as yesterday, nearly E. Much heavy rain
& thunder during forenoon & nearly everything wet
even through tent. Afternoon dry. Wind now & then
abated a little but before long came on again as
strong as ever. Moderated about 6 P.M. Too late to
start.

Early morning arranged specimens & read a little.
Afternoon tried to get along shore toward the Red R.,
which by the map & bearing of point ought to be quite
close. Shore for about half a mile fearfully tangled
mass of fallen tamarac & driftwood. Greatest
difficulty in getting along climbing & crawling.
Behind, an impassible tamarac swamp. Shore then
wet & soft sand. Got with much trouble about
a mile from camp but saw no sign of R. Saw
some pretty recent bear tracks on sand ridge.
Evening sketching &c.

Got a few shells & buttons. Altogether a most unpleasant
& provoking day, but mosquitoes fortunately not very
bad & plenty of driftwood for fuel.

Thursday July 17 Morning opened wild & stormy with heavy sea on shore. No chance apparently of getting away. Collected a few land shells & getting very tired of this little gravel point bounded by swamp behind & shore impassible from driftwood on either hand.

Weather began to moderate about 12. Got things packed & off by 2.45. Continued along shore to Reed R which about 27 miles & must be roughly laid down on maps. R quite small & opens in a swamp. Poles of Indian Camp on S bank. Continued to S following the shore & looking carefully for Drayton's limestone. Saw nothing but boulders of this & other rocks which occurred abundantly at a small point about 1 m. Sey river.

When as far as N corner of small bay marked (14) appearance of storm & wind getting up. Landed on a little spot of sand on border of swamp just inside bay. Spread tents over canoes & waited till rain over. After leaving the wind & sea continually increased. Ran behind small islands for shelter. Found there though bearing small tamarac & a thick growth of underbrush to be more than knee deep in water. Ran across to S shore of bay & coasted along till waves became dangerously high. Ran canoes into edge of swamp, & were quite at a loss to know what to do next. Daylight on the wave & no sign of being able to get to any camping ground. Wind increasing & occasional flurries of rain. Thought we should have to pass right in canoes without pole. Tried to pole canoes on through swamps toward Buffalo Point, very slow. Finally got out into water & hauled & pushed canoes for about 2 hours through water & grass sometimes knee sometimes waist deep. Got at last to a small sandy ridge

about $\frac{1}{2}$ m from Pt. Portage staff & canoe
up to highest part of it when a few willow bushes,
& which was only 2 or 3 feet above water level. Got a
fire & warm & dry at it. Tea. Tent up & bed about
72. Breakers thundering on one side of spit &
great swamp behind. Waves washed right over the
low parts of spit into the swamp, & if the storm
had been a little more severe should have had to
load canoes & drift back into swamp till morning.

Friday July 18 Weather bound all day. Strong wind on
shore & heavy surf rolling in. Collected a few insects,
read. Catalogued plants, wrote up notes, changed
plant papers &c. Calmed down a good deal about
dark. Hope to make early start tomorrow.

Saturday July 19. Got all packed up, breakfast, staff & b.
The wind freshening up about N. N. W. Managed however
to get round point & into sheltered water before too bad.
Passed along the front of Buffalo point, a promontory.
The whole of which is high & supports a good growth
of poplar & birch. The shore stream with many
boulders, as common opposite all the higher parts of
shore. Saw a Kingfisher & large woodpecker, but did not
unsuccessfully shooting them. Just inside the point
an Indian with wife & child came out to meet us.
Wanted to trade two gold-eyes for a little flour as he
said his daughter was sick. Could not get at the
flour but gave him a liberal allowance of biscuit.
Passed along edge of great grassy swamp. Higher
promontory at (B) with clem &c. Stopped there a
few minutes to stretch. Stopped for dinner just

N of mouth of Red R. Storm of rain & wind put off
sea & stopped us some time. Many Indians on S
side of River. They have some houses & also bowed cattle
for which they cut hay. They observed us passing &
the chief previously met with the second day out from the
Bayle of N put off with his squaw. We pretended not to
notice but the old fellow chased us & fired off his gun
several times to attract notice. Obedied to stop. Got a little
tobacco spoke ready as always in the end finish with
baying. Water pretty rough but he came alongside & holding
to canoe stooped hands all round. Held some conversation
with him through beg. He asked that should go to his camp
that he might receive properly. Told him that in haste to get
to Hungry Hall. He then gave quite a long oration the
substance of which something about his having got cheypaning
over part of lake from his Uncle. He then asked for present &
I gave him a small pipe & some tobacco. Seemed dissatisfied
& said we came from his great Mother & that he had
expected to get at least enough for one week for his people.
Told him that windbound long & that had not much
for ourselves. Got 3 small goldeyes from him.
Got on again along edge of great muskeg with no
landing. Storm coming up. Tried to get on to some solid
ground to land. Obedied at last to haul up into swamp
among reeds, cover stuff with tents & sit down in canoes
till over. Very heavy rain & wind for about 1/2 hour.
Had to wait some time longer till sea calmed / storm
abated slightly. Ran the canoes out through heavy
breakers & continued on with some difficulty for a time. Landed
for tea. Calmed down toward evening. Got off again &
went about 3 miles. Camped on sandy beach with
hundreds of mosquitoes.

Called I-aw-i-mush
1 or sailing across

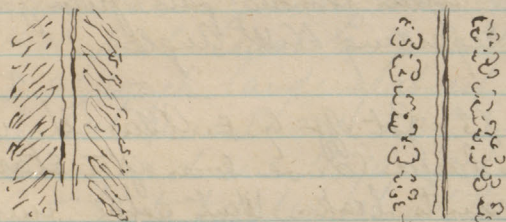
Sunday July 20. Off @ 7.30. Beautiful weather.
Got round point (10) which showed solid rock. (Gneiss)
Saw a small island, very white, & apparently not far off.
Thought might be of limestone & so went out to it.
Turned out to be about 2 mi. from land. A small
greenstone rock whetened by bird excrement. Many nests
of Crow & ~~all~~ Duck a very large black bird with red pouch
at mouth. The parent birds at once deserted their
broods. The nests built of coarse mud & the whole
place insufferably fishy to the smell. Some young ones
quite large, but none able to fly. Many addled eggs
of bluey-white colour. Curious that broods of all sizes
in same nest, & numbers varying from 4 or 5 to 1.
Many large gulls also flying over island.

Made traverse to Point marked (18) which frock with
fine dense growing on it. Stopped for dinner.
Had a bath. Collected a quantity of the green algae which
floats on the water of the Lake when calm. It has been
present more or less everywhere. Some places quite
colouring the water & gattering under the action of the
ripple into curd-like clots. Appears to be of 2 kinds
one lay stepped the other more or less completely round.
Indians consider its appearance a sign of fine weather
call it a-wun.

Coasted along beside higher land clad with good woods
of Poplar, Cedar, Spruce, etc to river marked on maps
where camped on a sand ridge. Tried fishing with no
luck. Preserved plants. Wrote up diary. Got specimens
catalogued etc.

At Calup a very fine sandy beach. Washed quite smooth
some way up & yesterday's storm. Observed tracks

of many kinds of birds on it. Curious to notice how between them scarcely a yard of the shore left unsearched, for food. Saw some small tracks which appeared very strange & like those sometimes seen fossil. Noticed that generally became visible just above the wet sand then went straight up slope of bank till arrived at some log, or firm gravel. Tracks then lost. Found at last the dry shell of a dragon fly larva at the end of one, which explained all & soon enabled me to find several more. (Larvae numbered W 103). Track resembles figure, & would of course be same in soft mud under water.



In harder sand.

Asked Albert (Indian name Me-go-vis or quill) if he knew any of the stars & what the Indians called them. Did not know much about it but said one group seen in winter called Kan-sa-ko-tack meaning something hung together. The Pleiades called A-tse-gemung the "fishers stars". Another group seen in winter called Ma-Kush-Kish. "Bears nose" seemed to know no more but there & the Warming Star or Wa-pa-na-mung.

Rainbow. Kis-sua-aps meaning "Seven line"
 Bittern Mush-ka-ussel.
 Willow. Wau-a-we-Kup.

Gold-eye (fish) We-pe-che

Small black gull. Ma-Kata-Ki-ash-Kunce

Small white gull with long red & black bill. Ou-chi-as-Kunce
or the "warren gull".

Pike Ka-won-ge "Long fish"

White fish. a-tick-Kameg "deer fish"

Pickereel O-Kah "the rough"

Ke-Koim fish in general.

Albert says the "company" of Indians cultivate at Rat Potage grow Barley, Wheat, potatoes, & also Indian corn. All of which ripen without fail from frost.
Begg says same regarding N.W. Angle.

Monday, July 21. 73. - Got off by 8 A.M. The wind strong but off shore. The larger canoe soon after starting ran on a boulder & began to leak. Went ashore, unloaded & after sucking all the various cracks some time, Albert & Begg found the leak & succeeded in getting it up.

The coast tree clad, but low for the first 5 miles, then began to coast along the great sandy spit at the mouth of Rainy R. Wind blowing so strong out of R that found it would be useless to try to weather the point. Came ashore on the sand spit (which though quite narrow is high sand ridge with sandhills covered with small trees & bushes) intending if storm abated to portage things over & creep along main shore to Rainy R. mouth. Storm continued all day & thus windbound after having made only about 7 miles, I got more than 6 mi from Hungry Hall.

Reading - Walking & passing time is but could all day.
About dark having given up hope for the day camped on the shore.

It seems desirable that the quality of the Roman or Red grass, so common in washes all over this region of country, should be ascertained with regard to the paper manufacture. If suitable would inaugurate a new & very important branch of industry here.

July 22. 73. Morning fine & calm. Got off 5 45
& paddled portaged canoes & stuff over the sand point. Paddled slowly along inside toward Rainy R. Current in the R. rather strong. The first house is on the Canadian side & is that of the half-breed pilot of the trip. Several houses of traders on the American shore. About 2 miles up R. Hungry Hall past. Consists of 2 ruinous looking log shanties & a rough landing about 20' long for trips. Mi' Cutere in charge & only white man here. A good many Indians encamped. Arrived about 10. Got tents pitched behind the "fall". Found that Supplies had not arrived as Adshad had promised. Had no pork to spare here but can get plenty flour & have enough pork & pemican to carry us through. Got 50 lbs flour. The Rainy R. a splendid broad stream with good land bearing poplar, birch, Banksian pine &c. on each side at least on this lower portion & told that the same for some distance up.

Just before dinner a number of Indians came & sat down behind campfire & wanted to speak to me. The old chief having first shaken hands, holding his blanket with the left hand & using his right to assist his oratory made a speech which was translated to me Sentance & Sentance & Begg. Said first

that the men I saw were cornallors who managed
affairs of the lake. That lake & region all belonged to them
that they had held a council & that I would hear what
they had to say. That country was theirs, that God
made it & that they did not want it surveyed.
That they did not intend to stop me, but wished it
represented to those who sent me. They then said
his nephews would speak, sat down. Nephew got up
shook hands & said much as before, adding finally
that whenever they spoke to gentlemen they expected to get
something & that they wanted pork, flour, tea. Thus
coming to the gist of the demonstration.

Said through Begg that we had come a long way
were often windbound & had not much more than
enough for ourselves to go back with. Then gave them
a peck of flour. They seemed contented & after a time
one of one went away, leaving the flour till nearly the
last in an indifferent sort of manner to show that
it was no particular object to them.

Took a walk in the woods, found several new plants
amongst others Botrychium & ophioglossum.

Raspberries just beginning to ripen. Amelanchier berries
about same stage. Hazel nuts formed & kernels just
beginning to swell.

The medicinal plant care here which ripens well.
Old chief came again, sat down in tent & asked for
some medicine through Begg. He wanted a purgative.
Gave him a few pills. Asked how many a dose, how
many for a child. He wanted some pain killer but I
had none. He asked me where I came from &

various other questions. Said that since this road opened, & traps ran on R they could catch no fish that the puff-puff-puff - of the trap frightened them away, also that grease thrown in the river frightened them off. That all the fish they got now were caught not in the R but in the lake far out. Told him I thought the fish would soon become accustomed to the traps & not mind them. He wanted me to tell the people in authority to forbid throwing grease barrels or in the river. He said they were very badly off last winter, that as long as the company here would always buy something, but last winter nothing.

Albert asked leave to go & see his adopted father who lived on the other side of the river. The "father" had according to custom adopted another son when his own had died. Albert spent day there & came back in evening with his father's family to borrow a dollar to give to them as they were very poor, not having sold canoes made. Gave the crowd remains of our supper. Couture's baby sick from diarrhoea. Gave it a small dose of chlorodyne. Preserving plants. Writing home A & a note to Parker.

Wednesday July 23. 73 Got off by 5:45 & paddled down the river. Weather beautifully calm. Albert asked permission to stop a minute to say good bye to his adopted father, who has two wives an old & a young one & several children. As got out to mouth of lake found huge freshening up & long gentle swell coming in off lake, from yesterday's storm. Went N along the

inside of "Sable island" of Dr Bishop's map. The island though marked as one on the maps, appears to have been broken through by the waves & now consists of 4 or 5 long narrow, though high islands, connected by shallow sand-bars along which a canoe may be poled, & which break the force of the waves. The main store within low & red swamp.

Stopped for dinner at port point before Windy pt. Temperature 76° F.

Weather cloudy downy fine. Got on to Windy pt which consists of sand & low Banksian pines growing on it. Weather quite fine so decided to make traverse to island (3 1/2 mi) at once. Got over quickly well.

Went 4 or 5 miles up W coast of island & camped in a beautiful little bay with a couple of small rocky inlets in front.

Got a new species of *Unio*, valves very long. Epidermis black.

Went out fishing in canoe but with no luck. Duckworth caught a large pike & throwing out toll from shore. Set the net.

Such a number of fishes of all kinds have been found dead along the lake shores. Cannot tell cause of mortality. Windrows of dead day-fishes lie along the shore in places.

Loon manag

me-nun the blueberry.

ota-c-me-nun, the strawberry, means "heart berry"

stami-c-nick raspberry means "red berry"

Thursday July 24 Got off before 8. Net brought in but no fish taken. Sailed up along E. coast of island. Some Indians on a small island wanted to sell blueberries & called out to that effect, but could not stop.

Made traverse of about 1 mi to west large island & began going up to W. shore. Halted for dinner after having come a few miles on a little rocky point with woods behind. Dinner just cooked & about 12 o'clock when a great storm came on. Got things in canoes covered with the tents put on wacantishes & prepared to wait it out. Storm continued a long time much & heavy thunder & rain also hail. Rain continued till past 3 P.M. & at least 2" of water fell. Eat dinner while pelting rain with bread wet & plate half full of water.

Decided to camp though place not very good. Got tents up & things unloaded from canoes. Found much wet sugar, oat meal &c. - quite wet. My plant-papers & note or less wet. Left some trouble for wet wood matches got a roaring fire of Bensonsian pipe lights & various things to dry. Reading "wee-wee for wee-wee" Fishing, Watkin, pressing plants &c. Got a small red bellied snake today. A large Garter snake full of young killed.

Friday July 25. Off by 6.30. Paddled several miles up E. side of island, which becomes higher & more barren & rocky as followed to the N. Soon got within a mile or so of its N. end when sea & wind began to roll in so heavily from N.N.W. that could go no further. Got things out on the

rocks to dry, of which they were much in need.
Saw all ready to depart. occasional obscant wet or
All this from yesterday's very heavy storm. Also got all
blankets spread out, they having been wet ever since.
Waited all day for abatement of wind. Found a few
new plants. The island covered with large delicious
blueberries, also raspberries, wild gooseberries, amelanchier,
wild cherries & all now ripe. Albert says Indians
camp on these islands at present - to gather berries which
are dried for winter use spread out on grass on a frame
of sticks over a small fire.

Got off again about 5-30. Crossed over to E but storm
coming up, were obliged to land. Cooled pepper. Wind taking
eyes abated went on for about 3 miles & then found a
very good dry camp. Indians had been camped at
the same place before. I had left the frame of a sweating
bath. This they use when overtired or

Some sticks are pushed into the ground & bent together
above like a small cage. Over this back-bark & blankets
are spread. One large ^{flat} stone under the framework serves
to support 5 or 6 wood round ones. There are heated
& while the Indian squats ^{with} them water is poured on.
Change plenty paper & lay out dry it.

Saturday July 28th Off at 6-30. Coasted up the W shore the
island toward the mainland to N. Both islands &
mainland higher & more strongly rocky than any seen
as yet. Coasted along shore taking observations.

The other canoe went ahead to get dinner cooked but
we passed it in mistake & landed to wait on a
small island. Found guns or. At last they appeared

but a good deal of time was lost.
On the little island an abandoned indian corn
field belonging to some indian.
Green weed very thick on the water.

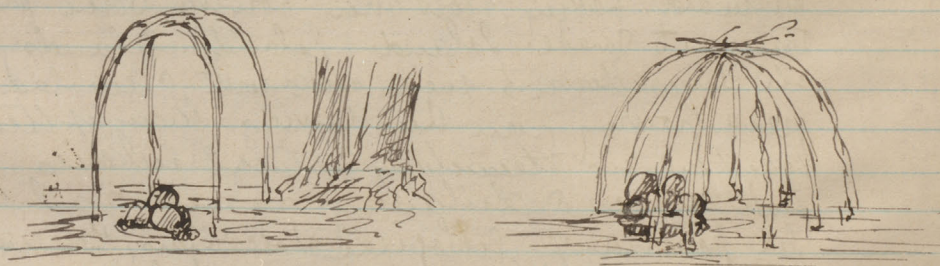
The ground Crawling. Se-gua-cu reminin also
called Pa-gua-sep-un-reminin
The green & spotted frog. Wach-coq-ce. means the
Tree frog. Rose-o-muck-ke.
frog resting on chicks
Ball frog of Pago-muck-ke.

Sunday July 28th. Got off about 7. & coasted round
the S end of island till came to S.W. point. Here found
Lay wind & tremendous sea breaking in against the
rocky cliffs. Landed on point & coasted for chance of
calm. Need. Sketched & got things out of Canoes &
covered up as it looked like rain. After dinner about
2 o'clock decided to try round other end of island. Found
many islands & managed to creep along by stones to
Westward having now other however some pretty rough
traverses to make. Islands. Islands. Islands from
all sizes down to mere rocks with a few blades of
grass growing from their crevices. Many of them
beautiful in themselves, natural rockeries.
Took courses & distances as well as I could to
fix position of geological observations, the weather
quite faulty about this part of the lake.
Got out mainland at Peninsula Pt. where had
formerly landed 2nd day out from angle. Passed the
Indian camp where now 10 wigwags, & near which

was a number of Eskimo boys on a rock amusing themselves & swimming. Crossed bay to W. of Puninak & had a pretty rough time from the high S wind. Passed a number of Indians in canoes coming down from the angle, apparently in holiday dress.

Stopped for camp at Beckette Island. So called from the Indian word meaning starvation, or hunger, which applied from the circumstance that while they laid up here for winter 2 years ago, the Indians were constantly coming about with this one word in their mouths.

Bees caught too small pipe with the troll off the rocks. Fortunate that managed to get along so well today in spite of weather, as supplies beginning to run short & if we had been windbound two or three days longer would not have had much left. The pelican bought from H.B. Cox at Angle has proved very useful, being easy to keep & carry, good either cooked or raw & a more substantial & staying food than salt pork, which is another name for salt fat.



Indian sweating booths.

Monday July 28. 73. Just as packing things in
canoes preparatory to starting canoe with Mr
Sybil & 2 men came round the point. Sybil on his
way to Garry about provisions. Left camp 7.20
Called at several rock exposures on way up inlet.
All granite. Temp of water 9 A.M. 73°.

Measured the height of the two old watermarks which
have been seeing all round the lake, found one
11" above present level, the other, apparently the
oldest, below which, no lichens grow, 3' 8".

Got in to old camping place 10.30.

Got camp up 55. Found a letter & several
papers waiting for me. Made arrangements
for supplies & got 100 lbs flour, 50 lbs pork, 20 lbs
beans, 13 lbs sugar, 4 bottles pickles from Mr
Adshed at the government store, for which I gave
him receipt.

Looking over geological notes, changing plant paper &
Told that Mr Keest's West line nearly altogether through
fearful swamps, Larmerac & cedar mostly & ~~fluctuating~~
with moss on rocky bottom.

Wrote P. intending to send to Garry with Sybil.

Found no instructions from Capt Cameron nor any
intimation of the time when he may be expected here.

Paid off Albert & Bees for the 20 days trip.

Found \$200 sent to Capt Cameron, by Buchanan
at St Boniface. Gave Mr Adshed receipt for
letter containing it.

Most of the Indians are now away from the
angle being scattered over the various rocky islands
gathering berries & drying them for winter use.

Tuesday Jul 29. Morning trying to plot out geological observations on the map. A matter of some difficulty - as it seems to be very incorrect about the N.W. part of the lake.

Afternoon reading & went with Septil in the canoe to visit the Angle Monument. Collected a few water plants, & pressed them in the evening. Changed papers of plants.

Have noticed now for more than a month an occasional mosquito affected by a parasitic growth, apparently fungoid & showing as a small yellow stalked protuberance issuing from near the base of the proboscis, & not so long as it. Should say perhaps 1 in 100 affected in this way. It does not seem to interfere with their activity - unfortunately.

Troubled all last night / half starved Indian dogs prowling round tent. They succeeded in getting out the pemican bag beneath the curtain & were proceeding to carry it away when I rushed out & stopped them. Night very cold. Some of the dogs even got into the tent. Took a couple of shots at them as they ran away, but without effect.

Will soon have all back work finished & shall then wait here very impatiently if Capt Cameron does not make his appearance or send any information. Very likely he has written but the mails very irregular & infrequent on this road.

Wednesday July 30. 73 Morning writing up zoological notes. Reading. Afternoon reading, in a boat with R. T. T. came in from Rain R today with some migrants. Told that now that food in good order takes about 10 days from Thunder Bay to here. This will make about 13 days the length of trip from Thunder Bay to Garry. Three terns came in from Garry but most unfortunately without any mail whatever.

Thursday July 31. 73 Changing paper in plant presses. Reading etc. Mail came in from Winnipeg with some letters, papers but no news from Capt Cameron.

Friday Aug 1. Morning started after breakfast with Duckworth & paddled up inlet to the N.W. Angle monument. It consists at present of a triangular scaffolding of rough poles & posts for placing instrument. This monument is not exactly at the N.W. point but opposite it a few yards away. The actual point being in the centre of the Swampsy creek or inlet. Found several strange water plants. Arranged shells & labelled them. Reading etc.
Day broken & stormy with cold blustery wind. Found a clump of *Epilobium angustifolium* with pure white blossoms, & apparently a perfect albino the red pigment cells of stem & berry

also absent. Could detect no difference of form except that the green leaves seemed more tapering.

Found a plant of "Wild finger" but our Stowing leaves & consequently did not press it.

Our Adshedd in charge of Government Station gave me some new potatoes from a patch planted & been about June 10. They are hard & well formed, & some about 2 inches diameter.

It seems a question whether crops ^{would} ripen as well & as certainly at some distance inland in this region as immediately round the lake. The heating up of so large a body of shoal water (the Stump pays (see obs. on temp) must tend to prolong the summer & counteract night & early autumn frosts. This may be one reason, among others why nearly all the Indian cultivation has been & is carried on on the islands.

Saturday, Aug 2. 73 Morning collecting land Snails of which got quite a number near camp under Walnut & Cotton logs. Reading.

Afternoon for an entomological tour a few miles up the Road - got several butterflies but nothing particularly rare & a few plants. Reading *Nature* etc. The albin *Epilobium* does not appear to be rare as have seen several more plants yet.

Saw an indigo fly put the canoes in thorough repair, repair them, & seen in bark patches wherever

Necessary.

The wasps ^{are} not quite so troublesome now but black-flies beginning to replace them.

The Bee. A-moo

The Deer. A-tic.

The Moose. Tyoose.

The Bear. Mush-gua.

Sunday Aug 3. Changed paper gill plants & small arranged those which are quite dry. The Indians often come & look in at the tent door during this operation, which they class apparently among those which "no fellow can understand".
Reedlingos collected a few plants, found a creeping polyzoon or hydrozoon growing on floating chips & logs among the reeds opposite here. Much spongy now to be seen & all full of the so called seeds.

Fay came in this morning with boats in tow about 3 A.M. Had 29 campants who started for Garry about 8 A.M. This party have been from 13 to 15 days on the way from Thunder Bay to here.

Those who have occupied the longest time having "missed their connections right through".

Had decided to start tomorrow morning for Rat Portage but learning that Mr Seest had been towed over from Hump Hall left down the Bay about 12 miles, & that he would probably be here tomorrow, decided to wait & learn his plans, & hear whether he has any

intimation of time when Capt. Cameron may
be expected. Beeg has just returned from cutting hay
about has been sick. I gave him some medicine but
found afterwards he had taken "indian medicine".
Advised him to try mine, which he did last night.
Old Pow-wasser the chief of these parts was up
here today talking to Adshhead about wood which he has
chopped for the use of the try. He is a tall well made
man with rather a soft & pleasing face, but today
disfigured by painting. Half his forehead red, the other
half blue, & blue lines & shakings on his nose
cheeks &c.

Indians & especially the Squaws keep haunting the
camp for the sake of getting something to eat.
Asking for Cocouche (pork) Conshidan (flour) & Nubish
or tea. Ka-win seems to constitute a great part of
the indian language being a sort of general reputation
apparently of meaning various. No, not any,
not enough, not with connotation on the a less a
sarcastic sound. W means something equivalent to
"Not-for Joe".

Monday Aug 4. Morning reading &c.
Afternoon out shooting with us Adshhead but
with no great luck.
Two Sappers, the photographer & assistant arrived
today from Dufferin with apparatus &c in
two Red R. Carts. News from them of Cameron
in Garry.
About 8 P.M. East party arrived in large

boat. Camped in old place beside us.
Several humming-birds have been reported as having
been seen round here within last day or two.

Tu. Aug 5. Lowering & Sultry all day. Reading
85 though weather very oppressive.

A few minutes after 5 P.M. a very violent thunder-
storm began & lasted for about $\frac{3}{4}$ hour. Strong
wind & very heavy rain. One flash fell very near
camp & thunder almost simultaneous with it.
Was standing at tent door holding wet tent in
hand, & felt return stroke pass from fingers to
tent very distinctly.

Just before the storm Capt Cameron arrived in a
light carriage with but one servant. He puts up
at Armit's having no camp.

Wednesday Aug 6 Went round to angle inlet with
Capt. C. & some of the men on the large boat.
Visited the reference monument. Found the lower logs
lying in water of an with or two deep whereas but
a day or two ago they stood on a dry knoll.

Visited the angle observatory monument & examined
the locality. The "monument" consists of a square based
scappling of rough poles nailed together & tapering
upward to a point. There is a platform with level
for instrument about 20 feet from the ground &
say half way up the monument. It stands not
far from the southern end of a narrow point
of dry ground which stretches southward & has a

branch of the inlet on each side, that on the W. side soon ending, while that on the East runs up some way & branches & constitutes one of the portage routes to Stool Lake.

The old reference monument is stated to have been placed on the recent firm ground to the actual angle, but taking the angle as determined last year, the point last described is very much nearer than the place where the monument is said to have stood, & is drier & a far better camping place.

It therefore becomes of interest to determine if any chance the point mentioned can have been founded in recent years. The point near the Observatory monument is covered with a rapid young growth of poplars, willows. Many especially of the willow bushes, have been killed by fire, & through the brush in all directions lie the remains of a former larger growth of poplar, the trees composing which have been uprooted by the wind or partly burned. Got poplar logs cut into & counted rings of growth in largest within say 20 yds of monument. Wood not always sound enough to see every ring, but have taken care to be as accurate as possible & that any error may be in the direction of reducing the age.

Found 4 trees. 36 years (about) 31 years. 32 yrs.
So - 33 years. Another very large & rotten poplar lying about 4 chains N of the monument, gave at least 48 annual rings at 27 feet above the level. 1866
All the above logs more or less rotten & hurried

& many with fungus growing from them.
Must have lain at least 14 years from their
appearance.

These observations show that the ~~point~~ ^{point of firm ground} was there
when the boundary was formerly determined, &
that it must, in all probability, have been missed
in the search for a camping place.

Returned in afternoon under sail.

Went out shooting with Capt Cameron, got through
wet in a swamp & then nearly lost in intense
thick woods & barbed wire fence of the most confused
description. Got at last out the meridian line &
came back to camp. Shot 1 duck & one pigeon.
Capt C. One partridge.

Evening Captain C. dined at camp, & afterwards
stayed a long time discussing various matters.

Thursday, Aug. 7-73. Started for angle with Deekwalt
in a canoe. Superintendent operations & photographers
who with men to help have been camped up at
the Observatory monument since last night.

Worried until dark. Cleared up in afternoon &
went out to work about 2. & nearly finished the
series of plates constituting the panorama from the
platform of the monument.

Got some good pipe from an Indian who had
just come across from Shoal Lake.

Many changed plant papers. Weather very damp, &
often almost impossible to get plants dried without
future change, also of colour, or moulding.

Aug. 8.

Started early with Duckworth for monument to see photography finished. Then got best view to complete panorama & a picture of the monument itself. Then got boat down to reverence monument, ran for ashore in the weeds, steadied with oars & paddles drawn in & got a photo of this monument & surroundings. Went with Duckworth about half a mile back in woods to find rock exposure. Turned out to be gneiss with strike N. 70° E.

Got back by dinner. Afternoon making various preparations for leaving. Getting provisions etc.

The woman who owns the child's grave near the camp (already mentioned) still keeps hanging about it - occasionally opening & shutting the door of the little shed-like arrangement - or it - pushing in berries & flowers etc. Today observed her cooking some large pieces of sturgeon near the grave & quite away from her usual cooking place. The cook tried to get her to sell some fish for pak or fletar but she resisted the most tempting offers & would not. Shortly after observed a crowd of Indians collecting, who sat down in a group near the front of the grave to the number of about 20 & proceeded to have a grand feast on the fish, together with tea etc. They sat for a time. The service was during this time no dance to be seen. In fact no women were about - even the children did not loiter around the place. The ceremony constituted some sort of feast for the dead. Saw an Indian woman at one of the camps engaged in making one of the headwork scarfs or

Sashes. The beads are not sewn on, but regularly woven together with fine threads, & form very regular patterns, sometimes very pretty. She sat in a squatting position with an oblong cedar frame laid up in front. From end to end of the frame a number of fine threads were stretched parallel, & forming two plates separated out the width of the end pieces of the frame. The beads are picked up on a needle & worked in 9 threads sewn at right angles to the length of the frame just as in weaving. The beads used are the common small glass ones, but the methods of stringing them probably date from the old times of true wapsum belts.



This evening the Indians again collected to have a great talk with me, old Pow-wasoin, the chief of this district, the chief of Red Postage, one from Rainy R. & several "Speakers" & their men present. The usual questions as, "Wanted to know what I was doing, where going or" very much afraid that I should take away anything of value to the Indians, or in fact that I should see the country at all before the treaty was made. One spoke after another, all much in the same strain. I tried to explain to them as well as could. brought out two specimens of Greys & showed them that what I took of no value. They looked at specimens all over & passed them from one to another weighing them in their hands as if to ascertain the presence of any metal. Tried all sorts of arguments with them, they always sticking to the same thing & going back again & again on the same questions as to what doing, where going or. old "Rainy R." finally began to say that I must not go, that I should have asked them & that they forbade me going or. asked him what he could do if I went in spite of him, this seemed rather a puzzle for him. Finally a thunder storm coming on the Indians said they would finish talking in the morning & after they had consulted among themselves. Also asked for "something" or. I told them that if they would speak reasonably in the morning would hear them again but if pretended to forbid me going would have nothing more to say.

I told them amongst other things that I had

had an indian with me before, & went
to take one again if they did not make objections,
& that Sabely he might see what I did & took, & if
I found anything valuable would be able to tell
them.
As it is the time wasted ^{has} prevented me making
arrangements for forenoon start tomorrow

Aug. 9. 73. Got word of arrangements made for
departure.

Indians collected around again to finish their
talk. At first only a few, but told them that I
wanted all to be present that were last night, that
they might all know what disease was arrived
at & not plead ignorance, as before.

They began, (Pow-wassin speaking for the rest) much
in the same strain as yesterday, saying that
they wanted to know what I came here for, where
going to. That they saw all the plants & stones &c
but wanted to know if I did not look for
something below ground that they did not see,
also that I picked up things & carried them away
& that they belonged to the Indians. That all this
country belonged to the Indians &c.

Told them that I had no means of digging up the
ground any way than they had, that I did not
come to take things away, or I would have brought
a big boat, & especially that I did not claim anything
or dispute that the country belonged to them.
Told them that I wanted to go to Rat Portage to
see whether anything there had changed the level of the

Cake. Asked those present if the level of the water had changed. Pow-hassin said that Coy-
Ago (but as I understood within memory) the inlet
now here was just about dry, & that the Monument
had been on firmer ground, but for many years
the water had been continually gaining & sinking. He
finally said with a smile that he did not know
why but perhaps there were too many of them
now & the land was sinking down under them.
Also that thought portages were less now than
formerly. He asked me if I knew the reason of
this change. Told him that that was just what I
wanted to find out. He said that I had books &
knew everything from the beginning of the world &
should know that. I told him that where I lived the
water came from a different place, & that it might
rain more here without effecting it there. &c.
I asked when the water mark now seen on the
stones about 3 feet above present-level was made.
One indian said he was 100 or at any rate 80 years
old & did not remember the water being there, &
that at any rate it must have been there only for
one summer.

Finally & after much trouble got the talk closed
amicably, gave them a bag of flour with which
they seemed not very well satisfied. They picked
out a man to go with me & as he is I am told
a good canoe man I engaged him.

The indians are very much grieved at present
that any advantage had taken of them before the treaty
to be made this autumn is completed. They seem

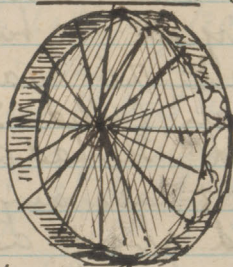
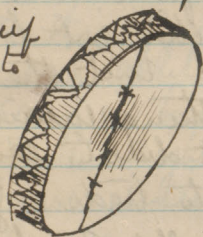
to think that I am spying out the lake & that some advantage will result to the whites in the treaty. The people here say they must be very kind to the Indians now, but that when the treaty is once made they will "put on the screw"

Got most of packing up or done but - decided to put off start till morning. Went up angle with Armit to see a rock exposure on the W. side discovered by him.

Graham of Dawson Road dined in Camp this eve.

Wrote notes to Ward, Cameron, & Horne. P.

Brought lead mounted pipe from Sac-a-tue or "coming in sight over a hill. The chief from Red Post: to Lac Sal.



Indian drum. Front - back -

Aug 10. Got all preparations for start completed. Arranged that Duckworth shall go with my Star East Hoover baggage to Defferin by Dawson road. Saw Mr Graham about pay for meals at stations. Gave Duckworth a note to Ward for \$10 for incidental expenses.

Got away before 11 though not without having Pow-wassin down wanting some tea & asking questions again. Told him I would give nothing more, nor answer any questions as our talk was finished yesterday. Stopped for dinner nearly opposite Buckety Island.

Temperature fair in shade at Noon 85°
In Sun 115°
of water 75°

Went on again 1.45 & in canoe till 5.30 though
not getting along fast on account of heat &c.
Met a very old indian from Rat-portage, coming
down the lake with his squaw, in a canoe. His head
surrounded, a great shock of grey hair, & himself
perfectly naked with the exception of his waist-cloth.
He came along side with one single word
Bucketa. Then produced a good large parcel to
trade. Gave him some flour for it. He had besides
some sturgeon roe but it did not look tempting.
Before meeting this man had met the mother of
my indian, called something meaning "a hole in
the ground". She had a great deal to say & seemed
sorry not to have anything to trade. Gave us
all she had about a cup full of Amelanchier berries.
Gave her a handful of tea with which she seemed
much pleased. It seemed to gratify the indian
also as he began soon after to say that the chiefs had
told him not to let me take any stores &c but that
he did not mean to mind what they had said,
but that I must not let them know.

Saw a Kingfisher & a fish-eagle today; also a large tortoise, & found
a shell of one (like a snapping turtle) 15 inches long.

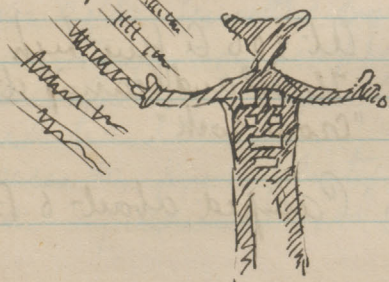
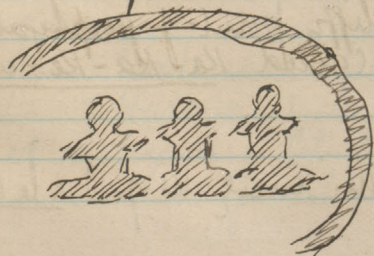
Accp
Got away from camp by half past six.

Weather calm & very pleasant. Islands innumerable
my indian (John Taylor & baptised name) says that even in
school tale of 91 islands, but here no indian knows how many.

At (93) on the map is a very bold rocky point, well rounded & down shaped when seen end on, with cliffs composed of flat mica schist to the S.E. The whole ~~mountain~~ of which this is a part is called Me-tic-a-pe-tic-Ka-sut-winnayum, a place where the stick stands at the portage. The portage is one (not shown on the map) leading into the deep bay to W. (See sketch)

The high point itself, (93) is known on account of having old figures painted on it. These very indistinct pointed out. One of the flat rock surfaces has been whitened, probably naturally by percolation of some calcareous matter, or from water-bird droppings. On this figures have been painted in red. They are nearly obliterated & John says were there just the same, in his deceased father's time.

To the right may be distinguished three sitting figures, indicated by a stroke which map represent a wigwag. To the right is the figure of a man with horns or head ornaments projecting, hands spread out & body curiously barred. The legs are not defined being nearly obliterated. To one side of this figure are several slanting strokes, now very faint & whether connected with it or not I cannot tell. I have copied what remains as well as possible.



Our enquiry found that the Indians consider these figures to be made by a people called Ma-gua-se-wak, or "wild Indians" who are said to exist still. To be much afraid of white people. To travel out at night. They are thought to live in houses in the rock High dome shaped rocks being spoken of, (as in this case) as their houses. The pictures that Suppose shows the door, which is supposed to be under water.

Begg says he has seen one of them, & know others who have also. That their faces are hairy & they have very short noses. That they speak Indian & some other language, as well which cannot be understood. Some say they sail in canoes hollowed from stone. Begg says he knew a young fellow, a great medicine man from White fish bay who used to meet them regularly & get all his medicines from them. That he & others have heard them speaking to him, & that they have loud & peculiar voices. This man also told Begg that he often went into their houses & that they were guarded at the entrances by a snake & a tiger or lion, or something of that kind. Begg says he does not believe all that but he is sure the people exist.
T. S.

The Indian showed me also two small dome shaped rock islands just W of Isla de la Crose which are Ma-gua-se-wak islands being inhabited by these people.

At 106 A fine high cliffy point of porphyritic diorite the island bearing it called Ka-ka-Ke-wanber or "Crow rock".

Camped about 6 P.M. near W of I. de la Crose.

Air at noon 78°
Temp. in Sun 110°.
Temp of open water 78°!

Found a sucker infested by a sort of leach & floating nearly dead on the water. Have observed many fish in this condition, or dead on the shore but have not before noticed the leaches which no doubt the cause.

Ich - Ken - dan I know
Ka - win - ich - Ken - dese I don't know.
Punge little.
Kiin snow.
Ta - gip green slimy throat weed in water.
Ke - Kek - Kunc Lauck.

Aug 12. Got away from Camp about 7.30
Took a course called in Indian Pa - ga - ta - wa - minis.
Kept near main shore all along though } going
across } the islands a little distance is saved. Day
fine & calm but very warm. Arrived at Port
Portage before 11. The portage lies at the head of an
inlet which looks as though made for the purpose of
shortening the distance across the neck of land to the
Winnipeg R. The portage is easy & short falling of course
on the N side. The path over rocks smoothed by the
feet of many a voyager, though now comparatively
deserted. Examined rocks of Portage & very distinct
junction of Huronian & Laurentian there seen.
Stayed for dinner. Blueberries very fine & plentiful, picked
a cup full. Was questioned by Indian about changes of

level at the portage. Found some wild rice
in flower just at the portage.

White pine is common either alone or mixed with
other timber in all this part of the Lake. It is for
the most part growing on rocks or wet-lands, but
would no doubt improve if followed into Sheltered
Valleys.

The Indian pointed out an island beside which a
war-party of Sioux were killed long ago. He said
when his father was just a young man. The Red
Portage Indians were going to the plains to fight the
Sioux, when the latter slipping past them in the Lake got
to the portage & murdered all the Squaws except three
who escaped. The Red Portage warriors returned &
meeting the Sioux suddenly coming round an island
fired on them & killed them all.

About a mile E along shore from the Portage, the
main outlet of the Lake lies. Took the canoe down
the Swift Current & ran into little Calum bay
just at head of rapids. Crossed by portage path &
look at rapids which exceedingly grand, from the great
volume of tumultuous slightly yellow tinged water.

The rapid is in two steps & no craft can shoot them.
A little farther E the second outlet of the Lake is situated,
& near it the Hudson bay port consisting of a few
houses on a hillside & surrounded by a stockade.

Went over & saw falls which exceedingly grand, the river
being narrowed in to about 30' & then plunging in
great volume into a seething mass of foam. High
cliff of rock to W & high rocky bank to E.

Tried to make a rough sketch but very unsatisfactory. The

water cannot be represented with any fidelity
& the rocks are crested with ledges of gay colour
& moss which cannot be translated.

Saw two small dead pine sticks growing below
the old high water (3' 6") level (one 2 feet & the
other 18" below) got them cut & rings of growth
counted & way of finding out how long ago the
great flood.

Got a line from Mr Lawrence & lead for a linker
for sounding the lake in a few places on the way
back. Got also a fine turtle shell, a turtle shell &
all, skinned & skinned, & a tortoise shell.

Mr Lawrence is very kind & does all in his power
for me, as indeed all the H.B. officials met with
have done.

In garden attached to fort - Fine potatoes, also
carrots, turnips, beans, peas, &c - growing.
Indian corn ripens but soil does not suit.
Potatoes succeed best.

All supplies for the post here till last year
came via York Factory.

Ma-mu-min wild rice

Wabou-cases wild grey mouse.

Aug 13 Left the Post by 6 1/8 & turned S & E to
go to the Angle of the other shore of the lake. Soon entered a
narrow passage where a very strong current quite like a
rapid runs between a low island & the mainland.
Observed also a strong current running N along the
W shore before reaching Red Portage yesterday, & today

miles S of the outflow of the river. The water no doubt converging from all parts of the lake, strikes the mainland shores to W or N & being heaped up against them & impact forms these currents.

Sounded in the narrow passage mentioned & found 14 fathoms of water.

Other soundings in channels & open places on way to Lacrosse Isd. 10 fms. 8 fms. 7 fms with bottom of soft fine tenacious green mud.

Indians perished out the bay where the Indians formerly played the game on Lacrosse Isd. Few seem to have a level place running inland. Long ago 8 Indians were killed there in a drunken quarrel.

Indian was this afternoon explaining the habit of his people of retiring & brooding alone for a time once during life. He says it is not restricted to any age in particular, but generally young men. The retire to solitary island, or wood & "dream" as he expressed it.

They do not eat or drink during this time of probation.

Long ago he says they used to pass sometimes 7 or 10 days thus. Now generally only 1 or 2 days. They are enabled to fast by sucking a stone in the mouth, but those who fast very long generally die soon. As far as could make out the object of the dreaming is to discover whether they are the medicine men or not, or whether great speakers, or great gamblers, or ^{whether} any other desirable faculty is in them to be prominent.

About 2 P.M. Heavy rain storm covered things & waited. Showers continued at intervals, wind blowing up. Decided to camp, & did so about 3.30.

Indian does not want to go far round the
E shore of Lake as he says the Indians told him not to
go to Bat Portage & back & he is afraid. Says when
an Indian does not obey the Chief men they cut up
all his things for him, & take his money. Time
wearing on I feel inclined to make pretty straight-
course for the Angle myself, which is fortunate.

Amalauchear berry 'Sha-sha-go-minnum' or
"chewing berry"

Aug 14 left at 4:30. Breakfast, packed up, & got away
early. Clouds threatening all the morning, & just
as dinner finished at 12:20 rain came down.

Made a good days journey nevertheless, though
showers continued during the afternoon got on.

Went lead rather nearer the W shore of Lake than I had
intended, but Sand Carp islands blocked the way I
wished to go.

Camped about 5:30 in a continued rain, pitching
the tent in a wood among wet bushes & rotten leaves.

An Indian out with his Squaw & little child
Sturgeon spearing followed us to camp, & watched
the tent up. Traded some flour with him for dried
sturgeon, & gave him some supper.

The water of the Lake today in places perfectly filled
with the shall green weed.

Made several soundings during course & got green-gray
slimy mud in every instance. No great depths.

8:30 Wind rose suddenly & now blowing hard &
raining.

Labelled specimens or but too wet to do plotting on
map.

Air at Noon 76° .

Water 73° .

Ke-wa-tie-annug the north star.

Togua-e-minan the choke-cherry. Means the
broken berry referring to the custom of the Indians,
who break this fruit stones & all on a rock &
then eat it in a sort of mush.

Mag-a-re-che-ta. Stop here

Nick-Kan in front.

Kan-ang behind.

Aug 15 Awakened about 5:30 by noise of talking, &
found three Indians, no doubt attracted by the
good report of our guest of last night, jabbering
away to John. One of them had some fresh
starfish for which he got some pork.

Blowing hard from N. or N.W. & so made but
a poor days journey. Often windboarded long
at a point & then skimming across to the lee of
another island among short-curling waves
which splashed into the canoe & made things
uncomfortable generally. Just at dinner time
a shower of rain. Other showers with squalls of
wind passing along all the afternoon.

John let himself this afternoon & was at fault
as to which way to take among the islands. Went up

a small hill on one of them & soon saw low
Thomp Cay.

Supper at a small island where woodboard. Got
off about 6 P.M. intending to camp at old Camp of
July 26, as I wished to tie together my two observation
lines there. Arrived toward dusk & found the place in
possession of a lot of Indians. Turned & came
back about 3 miles to the island where we had
supper. Camped in the dark.

This part of
Cale called
Ka-tim-ek
meaning deep
water.

Air at noon 72°
water " " 72°

Got John to tell me the names of some of the stars
& point them out.

O-tke-geung fisher star = 7 chief stars of Ursa Major
Mak-kush-kish bears nose = 3 " " " Cygnus.

Ma-tole-sun sweating star = 7 stars of Corona
borealis. Perhaps so called from the dove like
form of the sweating-places used by the Indians.

Na-wa-e-mangua man going after loons =
three stars of Aquila.

Wa-wa-ou-me-kina the wavy road = the
milky way.

Aug 16 Morning opened cold wet & windy. Got away
from camp by 6:30. Alternately making rough traverses
from pt to point & island to island, & waiting on shore
for showers or fust to pass. Pass a large Indian

Camp (Huyweus) but as the weather was rough & cold they did not put off to interview us. Found considerable difficulty in keeping anything like a covered log of course. John of course tried to follow all shore & creep round the ends of islands. This rendered it impossible to see far ahead, & indeed much of the time we were sailing more in segments of circles than in straight lines. The wind & waves also made much difference in rate according to their direction.

Got to N Shore of Angle Inlet about 1 m E of E end of large island on which Indian houses. Having thus tied up the line of observations made straight up Angle. Dined at Mc Kay's Island. Shortly after leaving heard the tug coming up, & soon observed that she was followed by the large new side wheel steamer, which has been about 3 years building at St. Francis. She is not yet completed as to Cabin & deck house arrangements. Found Gads at the Angle waiting for baggage & to go South to explore a river on the meridian line.

Great excitement at the "Angle" on the arrival of the steamer.

Washouk - wanish. The snow berry. means something like "blue below" probably refers to the leaves.

Was - usk - cumish. *Spiza*. "musk rat weed".

A - mic - co - mish. Everlasting. "Beaver weed".

Tin - sip - se - musch *Epilobium*. "Water hen weed".

A-mo-mechewin Gold weed. "What bees eat"
Ke-Kounde-Katchegiu-ki-na-ke. *Lysimichia*. "It grows
like a little kettle."
O-kin Rose.
Mus-Kush-Sewin Grass. They have also names for
different kinds of grass, such as "fur-grass" "bone grass"
"flat grass".
Ag-e-mak ash leaved maple.
Man-a-sat-e Balsam poplar
A-sate Aspen poplar.
Wig-was-a-tic Birch "Birch stick"
Mo-teg-o-mis oak.
Shin-gup white pine.
Kish-Kantuk Baulsuan pine.
A-neep Black Spruce.
She-she-go-wamiok Red Spruce.
Kin-a-tic Elm
Musquega-a-tic. Tamarac. "Swamp stick"
A-sa-Kamik moss.
Pe-ma-tic. Virginia creeper "Twisted stick"
mik-tic a stick
Ka-ka-Kewandic Juniper used as a medicine

Aug 17 Making various little arrangements for
leaving tomorrow. Plotting some of work on maps,
& writing up Notes. Reading. Mail came in
today but nothing for me.
Heard from Armit that some infectious disease had
broken out among the Indians on the lake. Went to
see the Indian who had brought in the report, & recognized

him as the man with whom had traded Sturgeon
a few days ago. Found that the disease was at their
camp, & only about half a mile from the place where
we had camped. A woman had been taken sick some
9 days ago & died. The Indians thinking the disease
infectious had burned her body. Since then her three
children have taken it & as disabled, have broken
out over their faces & legs with a water rash.
Indians think it small-pox but perhaps it may
only be measles which is a very fatal disease among
them.

Made arrangements with Mrs. Bay for canoe.
Heard that they leaving by 7 A.M. & am to get a tow
down if ready in time.

Aug 18. Got final arrangements made, & packed up
& got off with canoe & stuff in boat in tow of tug
before 8 A.M. Morning rather rough with southerly
wind & showers. Left geological specimens &
the skinned turtle with Selis who promises to pack them
& send them up the Dawson road. Got to Indian camp
at Flag Island where the tug stopped to wood. Got things
into canoe which seemed altogether overloaded &
much so that I at first considered turning back.
Got round to E. pt. of Flag Island where found a
heavy sea rolling in. Stopped. Had dinner &
got the canoe packed as well as possible. Left
behind a wooden box, pail, & spade which were
much improvement.

Weather calmed after 12 o'clock. Paddled down along
shore. Stopped a few minutes at East old camp.
Stopped for supper at the opening called

Beaver R on the rap. Went on again as the
weather fine & paddled on long after dark. Got at-
last to old camping place just inside the Reed R
bay. Air at Noon 74°. Water lake 69°.

Aug 19, Up 5 o'clock. Breakfast & then struggled
across the bay & into Reed R among very large &
rough waves & strong wind. Got into river just
in time. Stopped a few minutes to rest, & then began
ascent. The lower part of the river is both wide &
deep & the shores altogether swampy & muddy. The current
not swift. Further up the river becomes narrower
& still deep, but quite swift, & very tortuous. Giving
us hard work to paddle up. The banks generally
a few feet higher than the water & bearing Balsam
& aspen poplar, & some Tamarac. Saw a few oaks.
Most of the large wood is dead however, the fire
having swept all through this year. Saw some
wild rice at mouth of R & growing along banks,
coming up from 3 or 4 feet below water. Some in
flower & some with grain forming. Saw some young
eagles. A flock of grey geese & many ducks which
included rose out of the river or swamps constantly &
made me repeat my gun.

River in the upper part often less than 10 feet wide
& with many ferns & dead trees which gave much
trouble. Saw several old indian camps, & found
Harris & Co's Camp with a blazed tree & pencil
inscription stating that he camped there July 16, a full
a month ago. Added my own name & date.

Found a good & dry place & camped before 6 P.M.
Pressed a few plants, wrote up diary & wood-bled.

No rock sections or boulders seen.

Air at Noon 75°. Water of Reed R. 66°.

Aug 20 Made a pretty early start & saddled on up
the river, the current becoming stronger & stronger
& as the stream also very tortuous some difficulty in
getting along. Soon become very narrow also, the banks
fell & the stream ran through grassy swamps & was
often lost for a time among reeds & grass. The poplar
timber here changes to Lamerac. Many ducks fly up
in front.

I had anticipated some probable difficulty in finding
the beginning of the portage, but where the stream very
narrow it became evident that canoes had been
dragged through, & finally found a well marked
track through the reeds. This soon became too shallow
to paddle the canoe in, & so knowing that portage
had commenced all got out & began hauling canoe
along. Spearman & Begg attached ropes to the thwarts
of the canoe & hauled by the shoulder. The bottom
at first hard with a regular rut worn by canoes &
a stream of water like a brook running in it.
This soon became so shallow that had to lighten the
canoe & portage some of the stuff a few hundred
yards. Water then began to get deeper & bottom of
swamp softer. The path is in most places well
marked & must have been long used as where
bushes & small Lamerac cover the rest of the
swamps they are absent along a strip forming
the path. It does not take a compass course
across the muskeg but winds too & for a little
evidently following the best route.
Plunged on through the swamps with water
sometimes knee, sometimes waist deep till about

one o'clock. The path passing along grassy Swamp
& patches of *Tamerac* (small) which seemed
as a very general thing to run further NW &
SE. The swamp after passing the hard bottomed
part at the edge became very bad quaking
under the tread, in some places swollen up
with gas beneath the sod & forming little islands
which sunk when trod upon giving forth
streams of Sulphuretted hydrogen. In other
parts for a few steps at a time no bottom
could be found & we had to cling to the canoe
till dragged over among black & brownish
swamp muck of decayed vegetable matter.
Scared up occasional ducks & bittern but
otherwise no life, except fish which numerous
in some parts of swamp & seemed to be
small pike.

Stopped to cook dinner on a small tussock
of grass with some dry *Tamerac* sticks, &
stood knee deep in water during the
operation.

After dinner found two or three spots less
inundated than the rest on which remains
of indian camps.

The swamp covered with *Sarcocolla* now
going to seed, *parnassia* & a small &
delicate blue flower like a *lobelia*?
Got at last out of *Tamerac* islands into
a great expanse of grassy swamp, the
main woods to W looked very far off &
 began to feel tired. Pushed on taking longer
rests & shorter periods of work. Found a

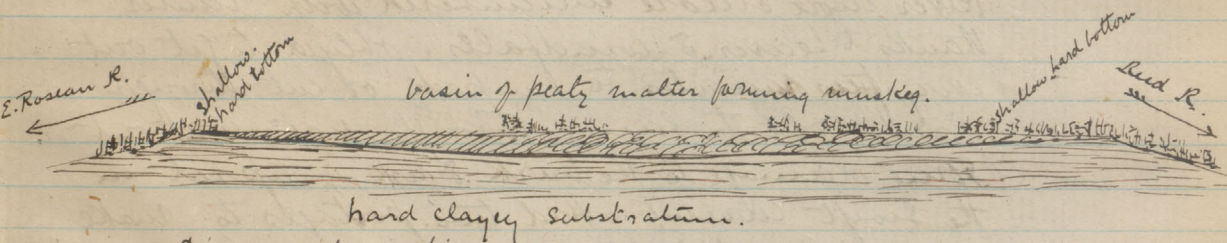
scrap of paper wrapped in birch bark & stuck in the fork of a stick which had been left by Harris's party last month. It bore their names (3 & 1 Indian) & date. Below was written tough going. God save the Queen. After going a little further found the current changed & all the Swamp water tending slowly westward. Somewhat encouraged pushed on & at & just about dusk heard sound of falling water, & soon found ourselves in a rapid little brook running steeply down for about 100 yds & disappearing among bushes. This the beginning of the Roseau R. Canoe would not go at first light but soon able to get in. Getting dark & anxious to find a camp. The stream tortuous & running round & round & now & then through a clump of bushes. Oblivious at last to camp in a rather miserable place among poplars where the ground quite sopping. Got some supper cooked & lay down to sleep in open there being no time nor place for the tent. Slept soundly after being in water from 10 A.M. to 9 P.M.

Air at noon 77°

Water of muskeg near centre 76° . Water in Swamp however varied much in temperature. Warm at surface in open but cooler in Larnierac or cover. Also much cooler when foot went far down & some places felt quite cold as of Springs

rising from below.

The Swamp has all the character of a lake & seems to be held in by a hard clayey ridge at each side. It must always have been shallow however & is now filled up with vegetable matter. Some of this vegetable material seems capable of being used as peat if properly treated & dried & it might improve in quality after passing below the surface. There is little true peat mass but there seems no way in which the vegetable matter of the central parts could have been contaminated with sediment.



The portage is stated at 8 miles but seemed to me probably nearer 10. The general course of the portage track after leaving Reed R. is S.W. or W.S.W.

Aug 21. Slept rather late on account of yesterday's fatigues but off by 8 P.M. The river very tortuous & narrow & at the same time rapid. Curves now often plunging into bushes in a very unpleasant manner. After a short distance

the banks become less swampy & are clad with
timber, poplar & elm predominating. The river
now began to be much encumbered with trees
forming jams. Most of the wood cut by beavers
Saw much beaver work & many of their paths
& footprints. Came to some beaver houses
evidently inhabited & then to a recently constru-
cted dam formed of trees logs & branches laid
together, the leaves on many of which still quite
fresh; & sand & mud piled up on the upper
side. Had to get out on the dam & after some
work in the water & with the axe; & considerable
trouble managed to make a way for the canoe.
River more and more encumbered with timber
thanks to beaver & windfalls. obliged to get out
every few minutes to unpack or cut through
jams, & get the canoe through not without
some damage to the bark & risk of upsid in
the swift current. Had two portages to make
over impassible blocks of 50 or 100 yds long.
Canoe jam forgotten at dinner stop. Drying-pan
lost at one of portages.
After getting down the river for 8 or 10 miles a stream
nearly as large as the main one flows in from
the N & probably rises in swamps near White
mouth Lake. Below this the stream is
comparatively free from obstruction, flows rapidly
& follows a very tortuous course between high
banks with little timber.
On leaving the mouth of the R flows through Lamerac

Swamps for some distance, then poplar becomes
the prevailing tree, then fine elms & tall poplar
mixed with negundo. Where the river becomes
grassy, the banks appear to be clayey & good
soil covered with a beautiful & luxuriant
(See section 7) growth of wild asters & long grass & bushes
bank tangled with Convolvulus, wild tops ectinos-
cystis. Many high bush cranberries. The land
may be wet away from the river but appears
high & is certainly very fertile along the river banks.
Found a good camp among elm trees but the
mosquitoes rather troublesome. Saw some
bones of deer & bear hung on trees by the river
side. An indian custom.

(In the muskeg ^{yesterday} found several bunches of grass
tied up into a knot with bushes, probably
marks agreed upon beforehand by Indians
travelling, & serving to indicate not only
their passage but about the time when they
passed. Similar to the indian marks
seen at Rat Portage where on the rocks near the
water several bunches of branches laid each
with a large stone to keep it in place. An
indian passing lays a bunch in a place agreed
upon. His friend following can tell if he has passed
& by the condition of the foliage about how long ago
it was.)

Air at noon 66°.
Water of E. Roseau 64°.

Aug 22. Off about 7.30 Found little timber obstruction, the river becoming wider & somewhat straighter & very beautiful in appearance. Fine trees along the banks, mostly elms, but some oak & negundo (or sugar stick). In many places it seemed like floating down along an avenue of elms with trees dipping in the water from the banks.

For some time before reaching Roseau Lake however the wooded & high ground only forms a belt along the sides of the river. & the country behind is grassy swamps. Passed a considerable stream flowing in from the S.E. Very many ducks & wild pigeons.

Roseau Lake is a shallow expanse of open water in the midst of a great region of reedy swamps. The Roseau R runs in at the S.E. side of the lake & out again at the S.W. only about 2 miles distant. Had a little difficulty in finding the exit as it only appeared as a channel through reed swamps. Sighted the Indian wigwams however which we knew to be there. Found several families of Indians, well clad & housed & apparently well off. Saw also some half-breed lumberers? The first human beings seen since leaving the Angle. Got a pan duck & some more canoe furs for a little pork & flour.

Indian told us that would take 5 days going down to Pembina, that tonight would enter a great bare swamp in which no

wood for cooking & Indians carried some for that purpose in Canoe.

Stopped after a few miles to cook duck & thoroughly re-queen the canoe which very leaky.

For about 10 miles by the windings of the river below Roseau & the banks are clad with small poplar & oak. Then willow bushes only to be seen. Took in a supply of wood & entered the great grassy swamp which extends as far as the eye can reach, & through which the river twists & winds in an extraordinary manner. Swamp becomes worse & worse as go Westward & for long spaces no landing possible. Found a mud bank covered with long grass & weeds about 6 or 8 feet wide between the River & a stagnant pond in the swamp. Cooked supper & as the sky very dark & threatening decided not to go on in the night. No place to pitch tent so made a heap of the stuff covered it with one of the tents. Aft grass for bed, laid down blankets & went to sleep with heads under the canoe.

The river literally covered with ducks in places. very tame. Swamp peopled with myriads of ducks which flew up before us in flocks of 10^o 20^o, 50^o & hundreds. Saw also many water hens, & large hawks preying upon the ducks, also some eagles & Cranes.

Aug 22. Air about Noon 73°

Water of Roseau after leaving the lake 67°.

Aug 23. 73. Wakened before daylight by rain.
Spread the remaining tent over the canoe
& tried to make some shelter but with poor
success. Blankets soon wet through.
Up by 5:30. Had a little wood remaining
so boiled kettle & made some tea for
breakfast. Ate breakfast consisting of stewed
dried apples & bread in pouring rain.
Very cold wet & exceedingly windy so much
so that unsafe to launch canoe.

Waited several hours lying under the canoe
shivering. Seemed clearing off a little so
got away & paddled through as heavy
rain & wind as I have seen. River
provokingly crooked & sometimes paddling
up against the storm, sometimes drifting
before it, sometimes creeping along under
shelter of the reeds.

Got across the Great Roseau Swamp by 2:30
to a place where wood enough & a reasonably
dry camping ground. Made a huge fire,
changed clothes & tried to get things dry.
Weather improved & the wind quite fine
though unsettled looking.

Found a large granite boulder in the river near
the camp, the first yet seen.
Ducks innumerable.

Current of river in must be small, now
begin to be swifter again.

Aug 24. Beautiful morning shortly after leaving camp came to a small island in the river, clad with trees & soon after to the boundary line. First saw Sgt Green's white transit line post. Marked name & date on it. Then came to the regular boundary line cutting of Pt D'Orme Depot used last winter now deserted & dismal looking. The banks of the stream now clad with elm poplar &c with great grassy hay & dump behind. A few miles past the line the river becomes quite rapid & the shore high & dry.

(See section)

Climbed the bank & after the country through which we had been passing the dry warm flowery prairie looked perfectly enchanting. The soil appears very good though not so deep as on the low level prairie about Red R.

In landing for dinner punched hole in canoe with a snag & had to patch it up with a piece of flour bag & gum.

Many small rapids in river with large boulders in the current, but able to run all but one which very shallow & fierce with broken water, made portage about 100 yds.

Camped at 6. Tried fishing with no luck
Pressed plants.

Bank high. (see section^(A))

Air about noon 68°

Water of river 64°

Aug 25. All day in rapids some of which we were able to run, but most being shallow & encumbered with boulders & stones & curving sharply round corners so that it was impossible to tell what was below, were too dangerous for this. Working therefore in water all day letting the canoe down along the edge by bushes or walking beside it holding back & carrying it round points & rocks. Once or twice nearly came round broadside to the water but happily got through safely. Canoe scraped & bumped all over on the rocks. Saw a fine red deer on the bank. Cranes, some Muskrat, a musk bittern, ducks, prairie chickens, pigeons, etc.

Camped late & did not put up tent. The river running much below the prairie level & often with high bluffs or cliffs of hard sand & clay. Prairie above beautiful soil appears fertile though not very heavy. Many groves of poplar, etc. River banks thickly wooded.

Air at 1 P.M. 66°
Water of river 65°

Spearman says on this route would need an "iron canoe" with a pump in it & two or three ruggers to work it.

Aug 26. All day again in rapids & hoping that each night be the last. The river almost a continuous rapid. In the afternoon portaged

the bluffs & canoe over a neck of land to avoid several rapids. Found an indian house & a patch of cultivated land with fine corn growing on it. Told that were just at end of rapids & near old St. Paul Road & edge of higher prairie level. Went on a few miles & camped near the old road & just at an erection of logs apparently meant to catch drift timber & stretching across the river.

Banks of River like those seen yesterday, but higher, the bluffs rising at the highest about 60' above the water level.

Air at noon 76°
Water of River 68° .

Aug 27 Got off about 7 A.M. Passed a few more rapids & then found the river Calumet though with a strong current & exceedingly tortuous & often shallow. Bottom at first of gravel & sand derived from the ridge then of fine mud like that of Red R. The river soon became deep & the water losing its clear amber tint assumed a muddy appearance like the Red R water. Banks of the heavily timbered with oak, elm, sycamores, & a fringe of willows along the water. During afternoon expecting to reach Red R round very hard & the stream always

hiding again. Saw an indian Camped
by the river side who told us we could not
get to the Red R this evening. Camped
about 5.30 having made a hard days run
with little advance. Climbed a tree &
saw the Red R line of timber 4 or 5 miles
West.

Saw today many Muskrats, Hawks,
more than a dozen large owls (Virginia form)
flying in pairs. A few bittern, & some
bear tracks on the bank.

The vegetation on the upper & lower prairie
levels seems much about the same stage &
decidedly in advance of the Lake of Woods
region.

Tent blown down in thunderstorm in night.
Aug 28. Made a moderately early start & had
only got a few miles when Beeg saw two deer
on the left bank drinking. Told him to
paddle up gently & I would try a shot with
my revolver. Got within about 40 yds.
when one sprang up the bank, the other hesitating
a moment I took a steady aim with both hands
& fired. The animal dropped at once, being
as it afterwards turned out paralyzed from
having its back broken by the bullet in front of
the loins. Fired again at it as the canoe
floated down, not being sure whether it might
not get away. Spearman jumped ashore to
cut its throat. Found it a nearly full

grouse young deer just changing its fawn's coat. Put it in the canoe covered it with the tent & went on. Paddled hard & got to Red R by 11 o'clock. Had dinner & then paddled up Red R against stream & wind. Got to Dufferin about 5 o'clock.

Found only Haerkiner & Allman here, headquarters being moved to Turtle Mountain. Found letters & papers from home.

Duckworth who has been here some days enjoyed skinning birds.

Air above surface of River filled with small white ephemera with black eyes, & grey feet. Air at noon. 76°

Water of Red R. 69° .

Aug 29. Reading papers & did a little work wrapping some of Lake of Woods work. Want to get all finished & ready for start west early next week.

The distance from the N.W. Angle to Dufferin in a straight line is about 120 miles, but by the way travelled & counting for the windings of the river must be at least 300 miles.

Aug 30. Writing up notes & results & putting specimens in order all day. Took a short walk. Made section of soil in excavation for cellar just made.

Aug 31 Writing up notes part of day. Dined with
Almon. Steamer Dakota passed toward Garry
Sent Beeg off by her paying his wages to date &
giving him notes to Capt of Steamer & to Buchanan
& \$5 for incidental expenses at Wumpsey to be
accounted for to her East.

Box of Geological specimens Arrived safely from
Angle by up Steamer. Waiting home.

Sept. 1. 73. Putting specimens in order & clearing
up for start. Writing up notes &c.

Went out to lake in afternoon & procured samples
of Korean grass nearly 10' in height.

Collected samples of Prairie soil from various depths.

Told that when grasshoppers appeared here this summer
they did so from the North, settled one night or so,
but the wind blowing southwards all flew off very soon
& did little damage. It appears these insects have a
strong instinct of direction as they take advantage
one of the winds which blow toward the quarter to
which they are migrating & remain on the ground
during the prevalence of adverse winds.

They are said sometimes to breed in the N & migrate
Southward & sometimes to disperse the opposite.
Their breeding place this summer was N of Wumpsey
on the Red R. & they emigrated to Minnesota.

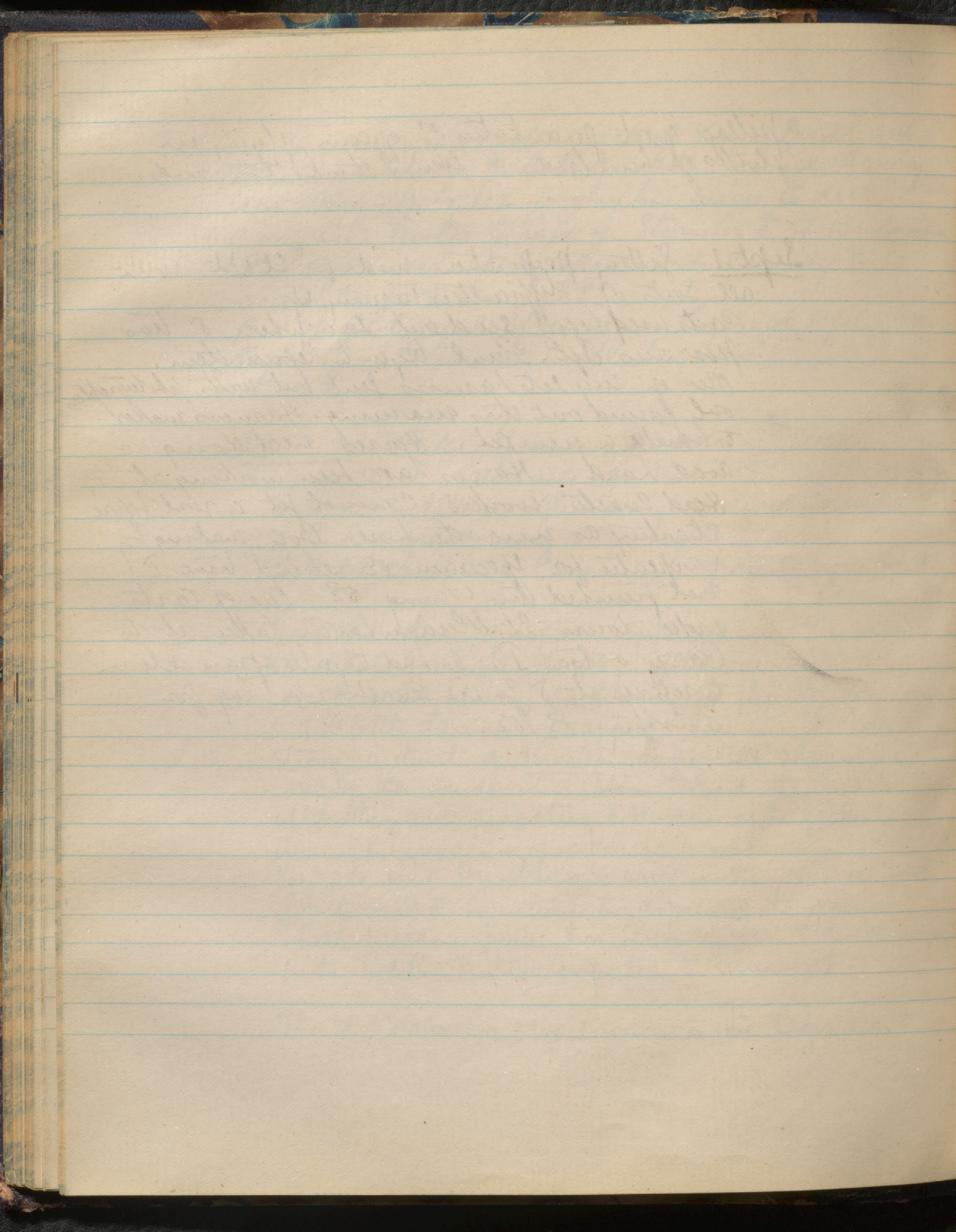
The blackbirds are also enemies to the crops here &

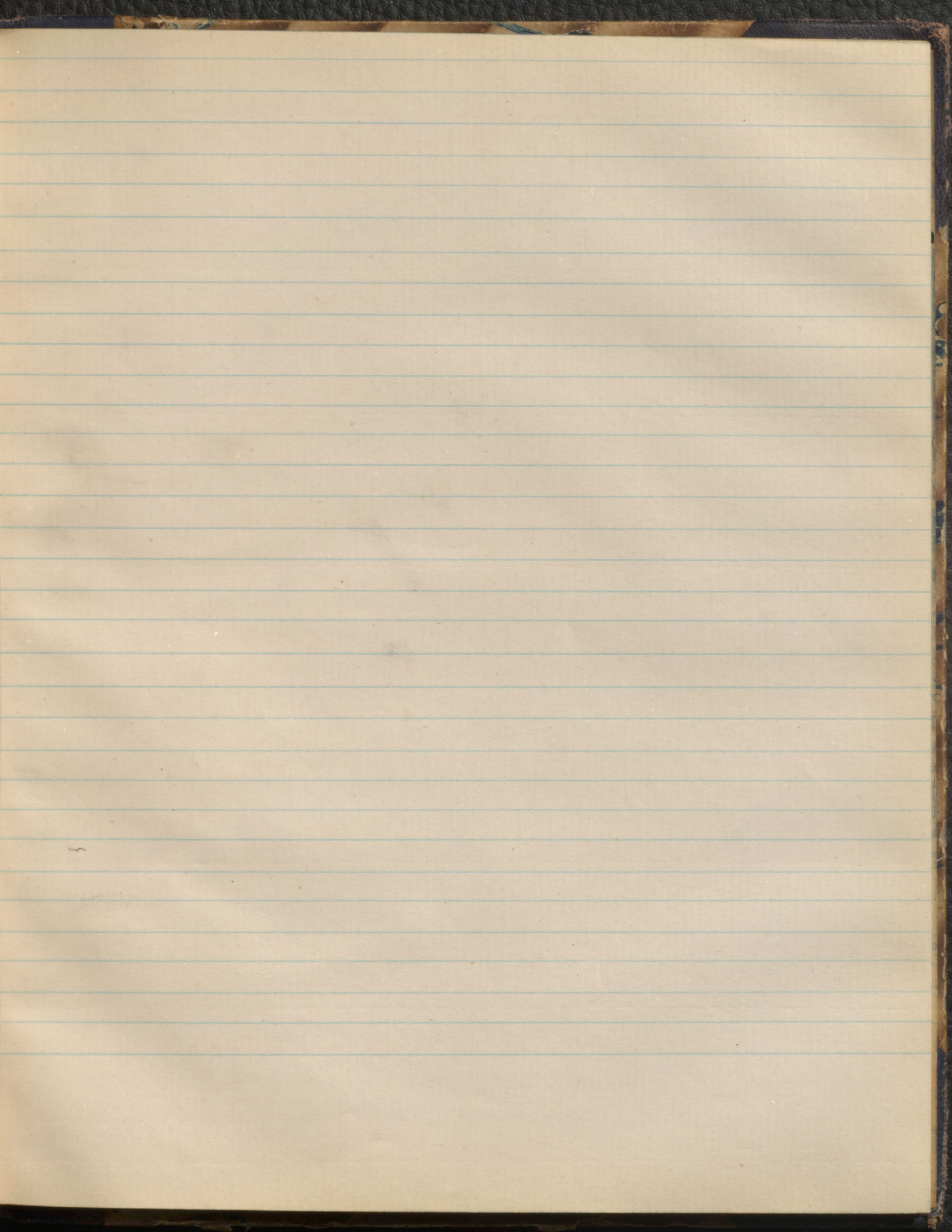
pellets great quantities of grain, flying in
flocks of hundreds & when I think thousands.

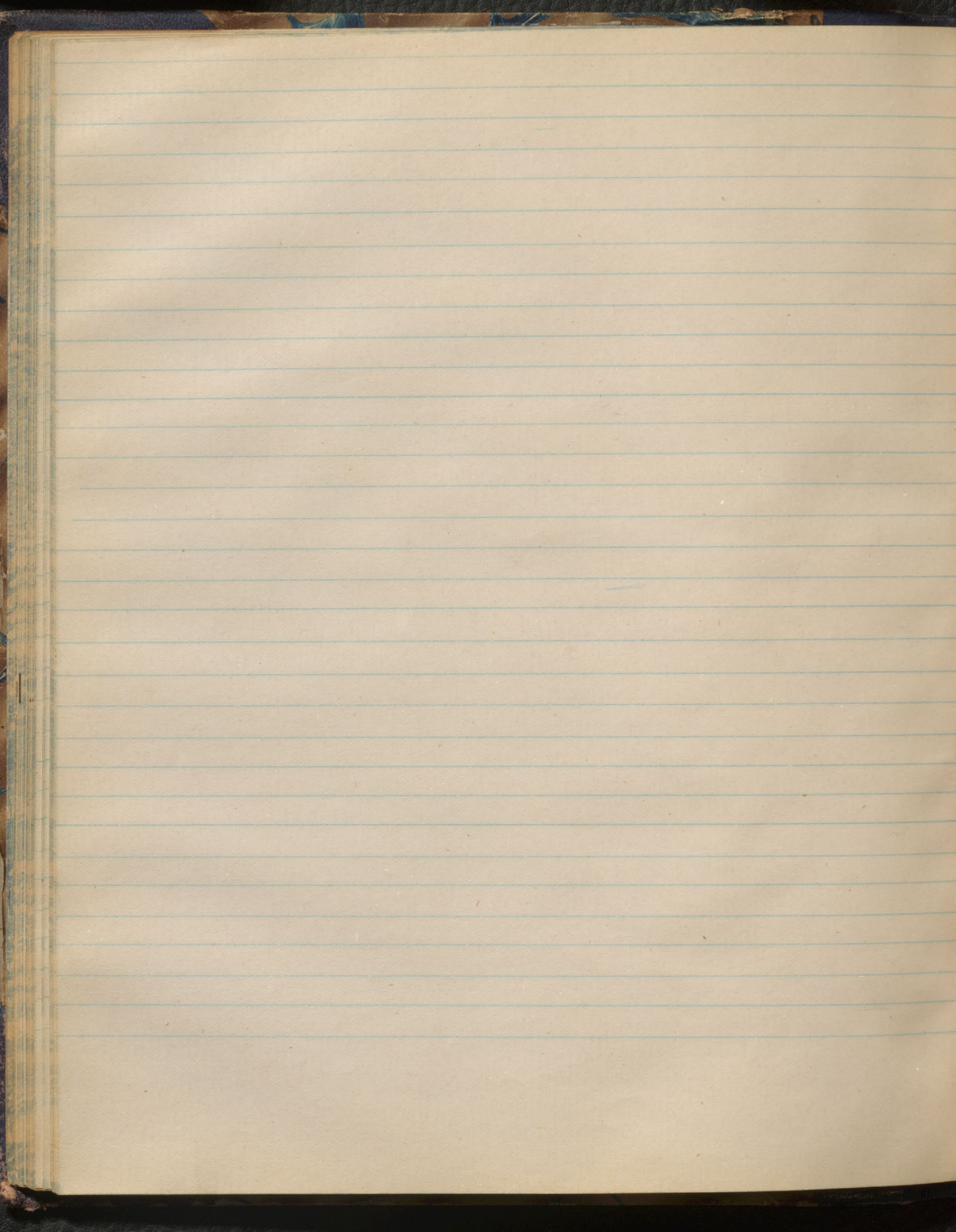
Sept. 1. Getting preparations made for start with
all sorts of difficulties turning up.

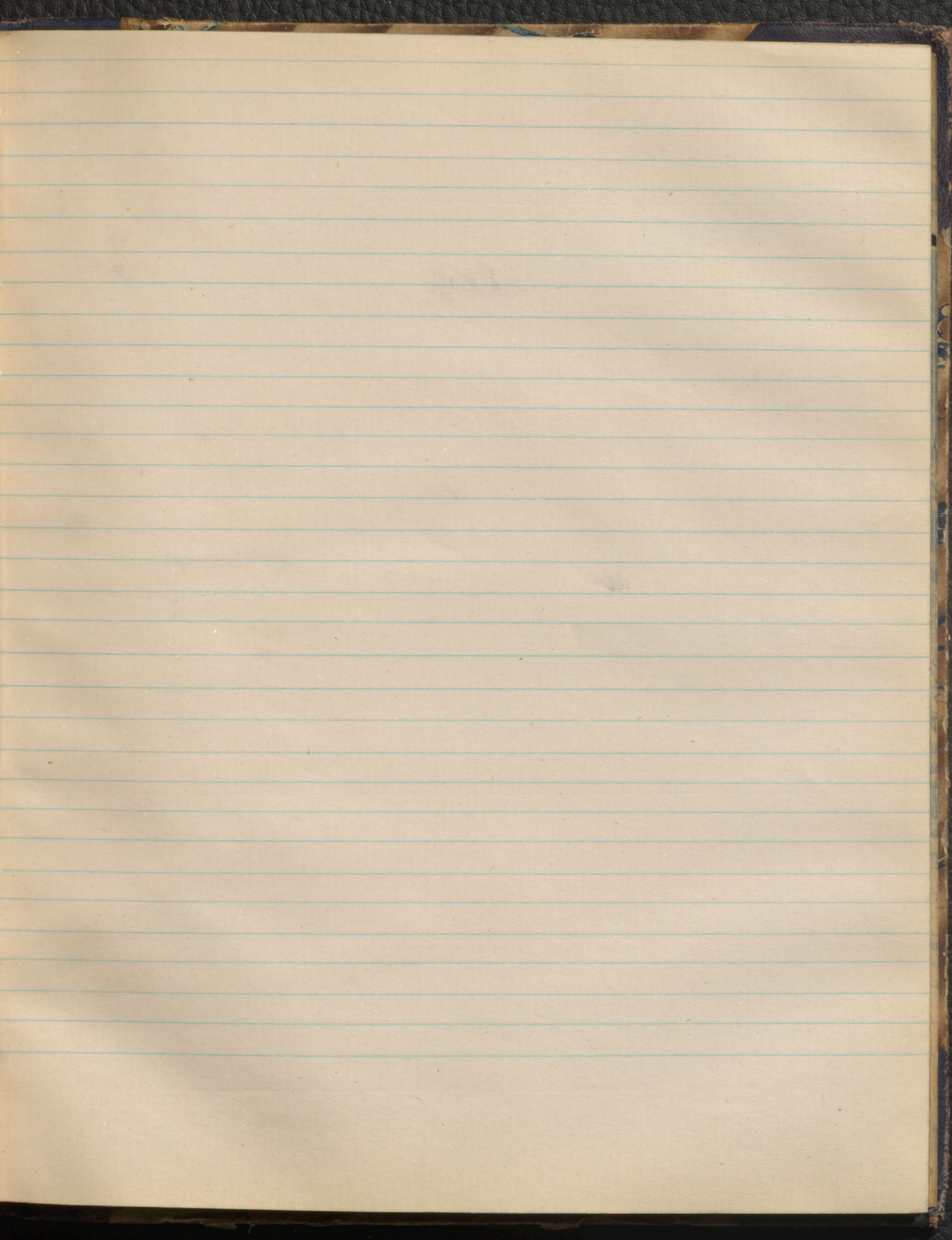
Carts used before send out somewhere & two
poor ones left. Paul trying to Repair them.

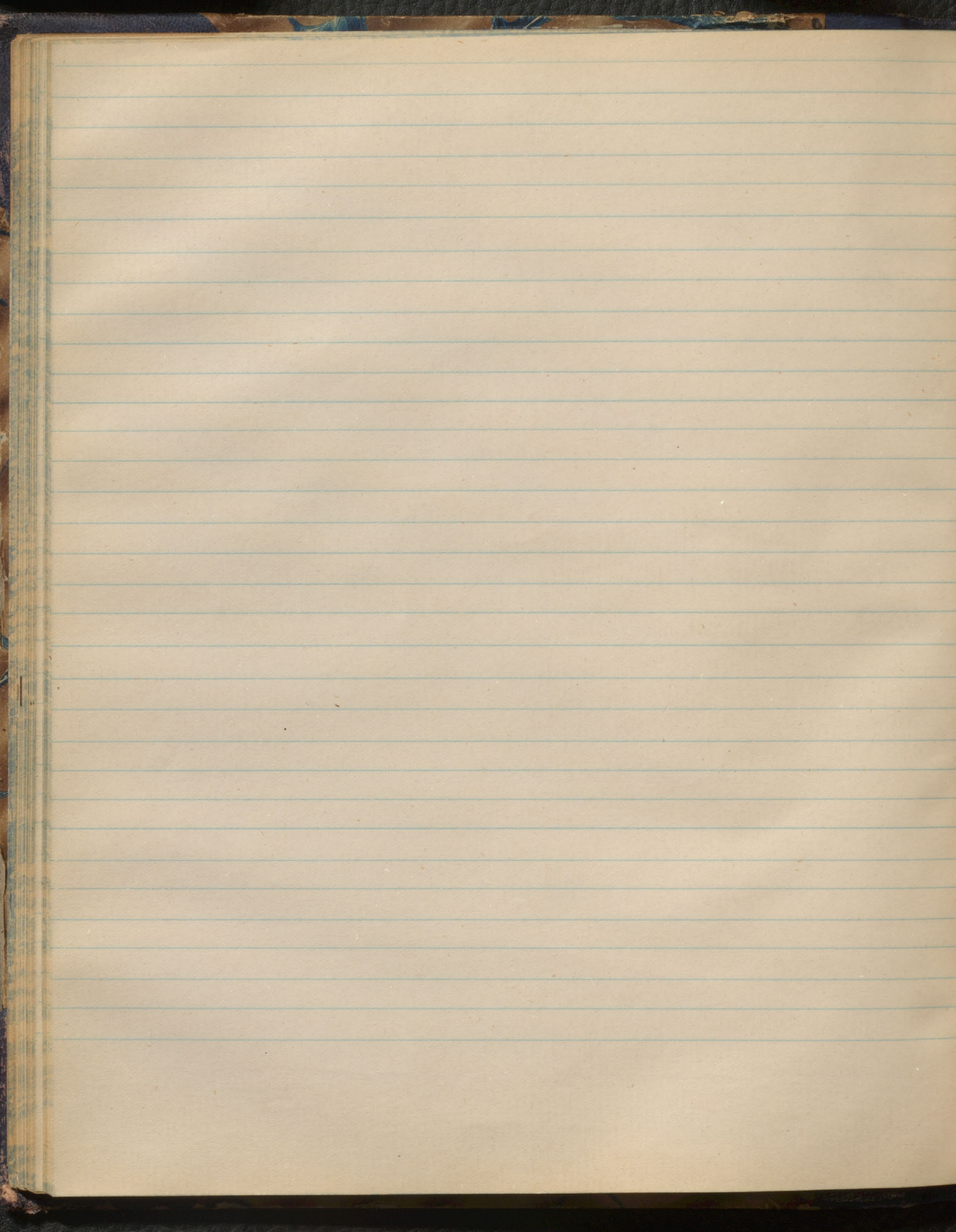
One of my sets harness sent out with photographs
only found out this morning. Harness maker
to make a new set. Horses need stong as
road hard. Horses have been working at
Head Quarter work & cannot get a rest before
starting as none other here. Box making by
Carpenter for specimens or behind time &
not finished this evening or One of carts
broke down. Stableman having taken it to
Carry oats. Paul had to put spare axle in
to repair it & go in search of a log for
another or or .

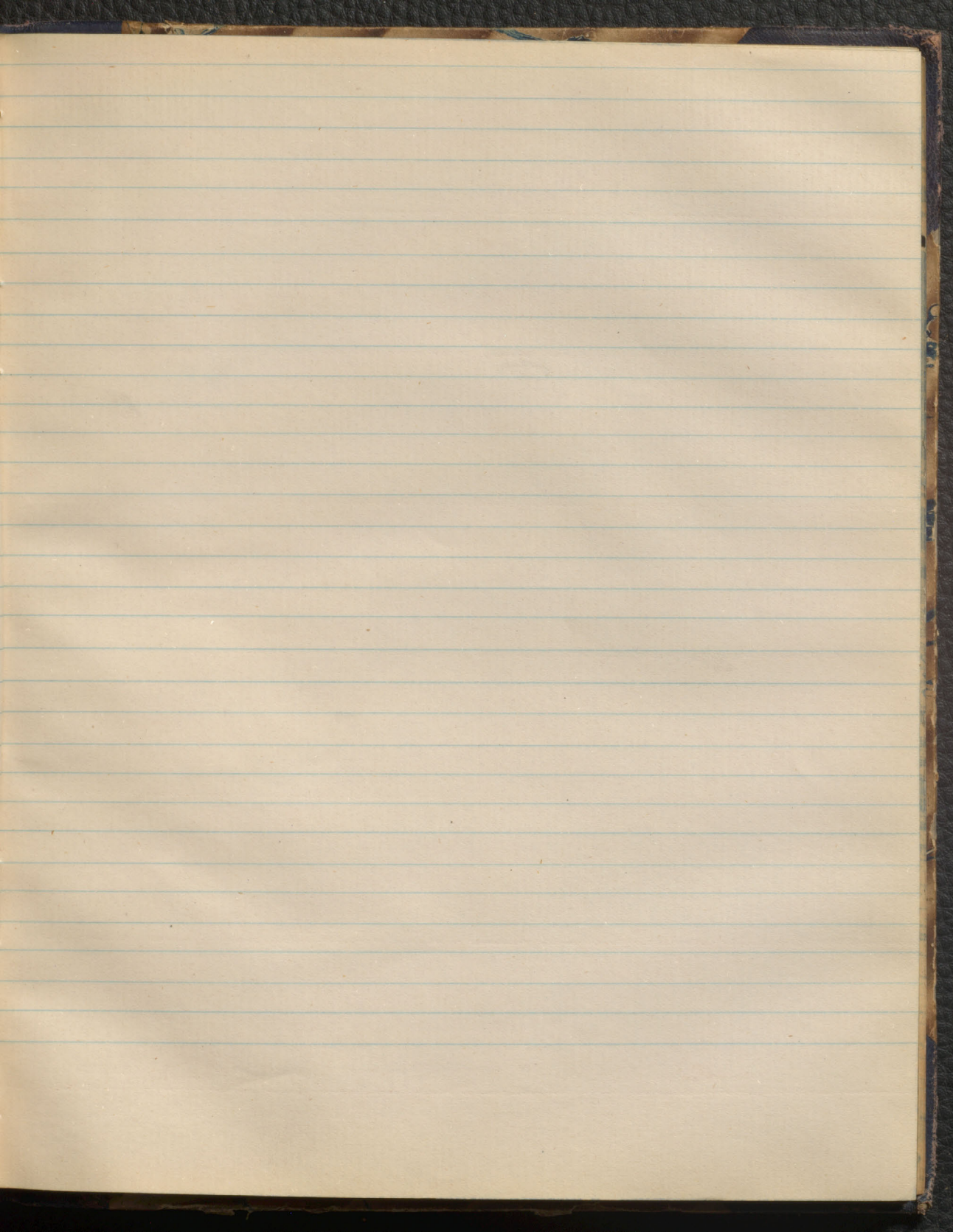


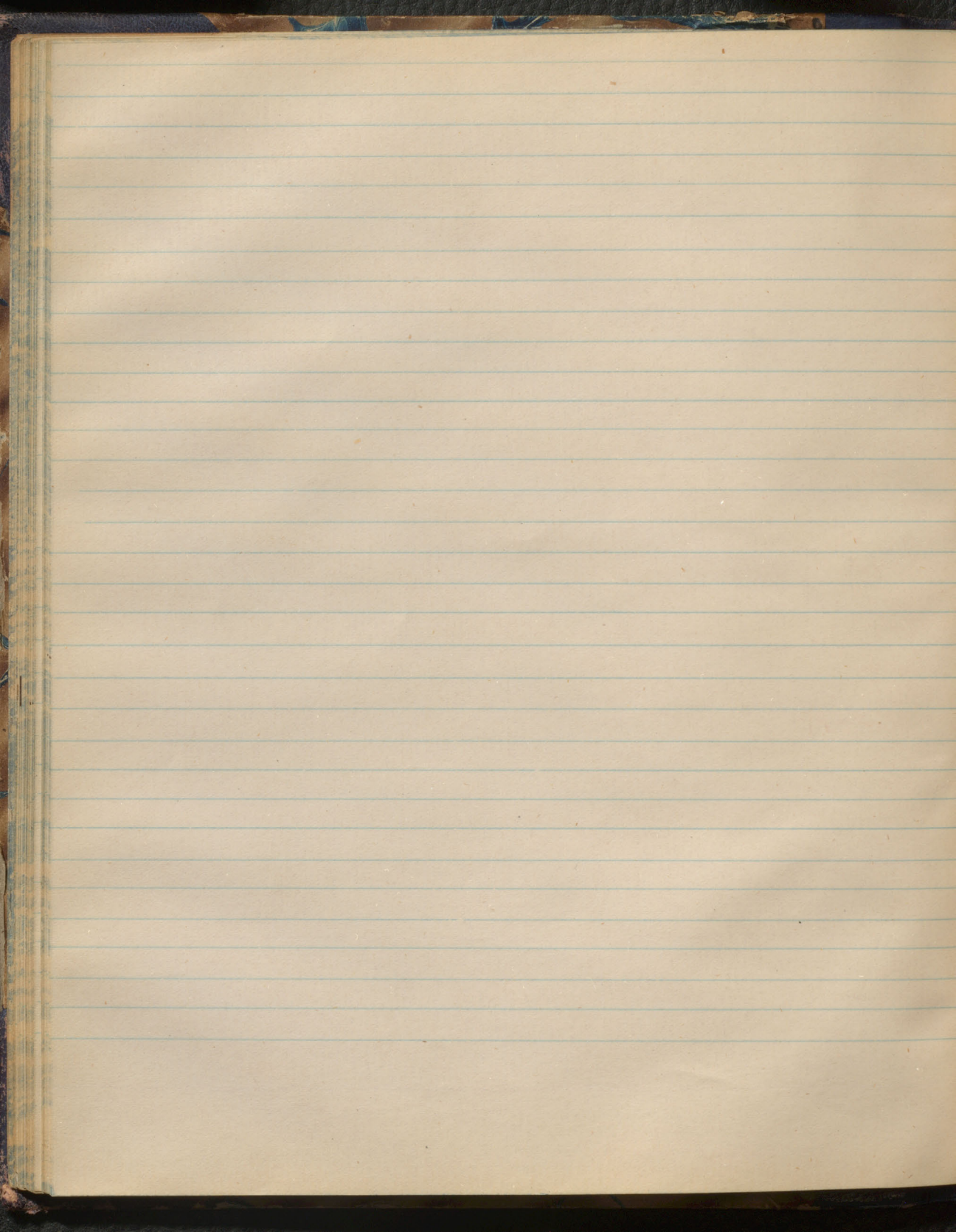


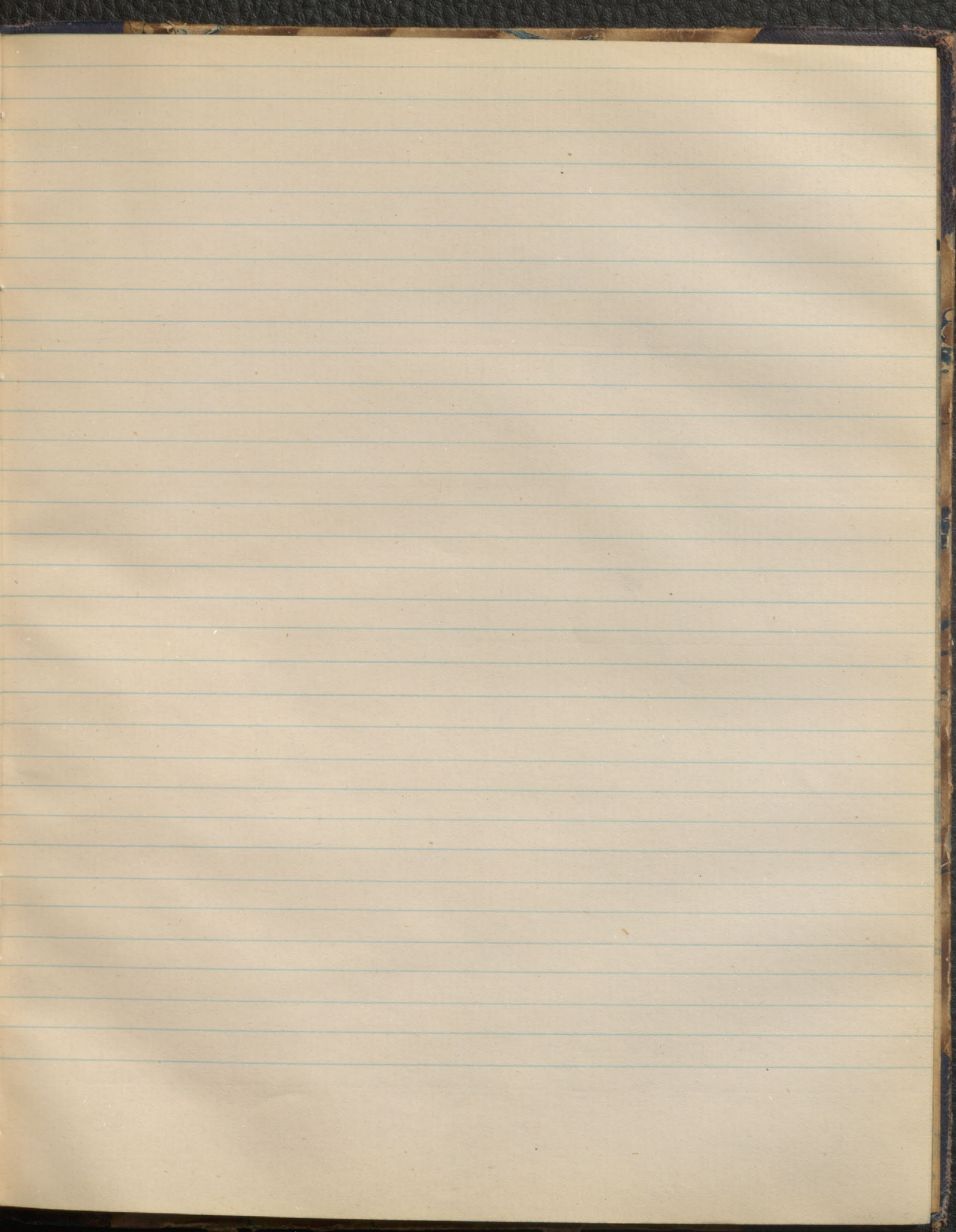


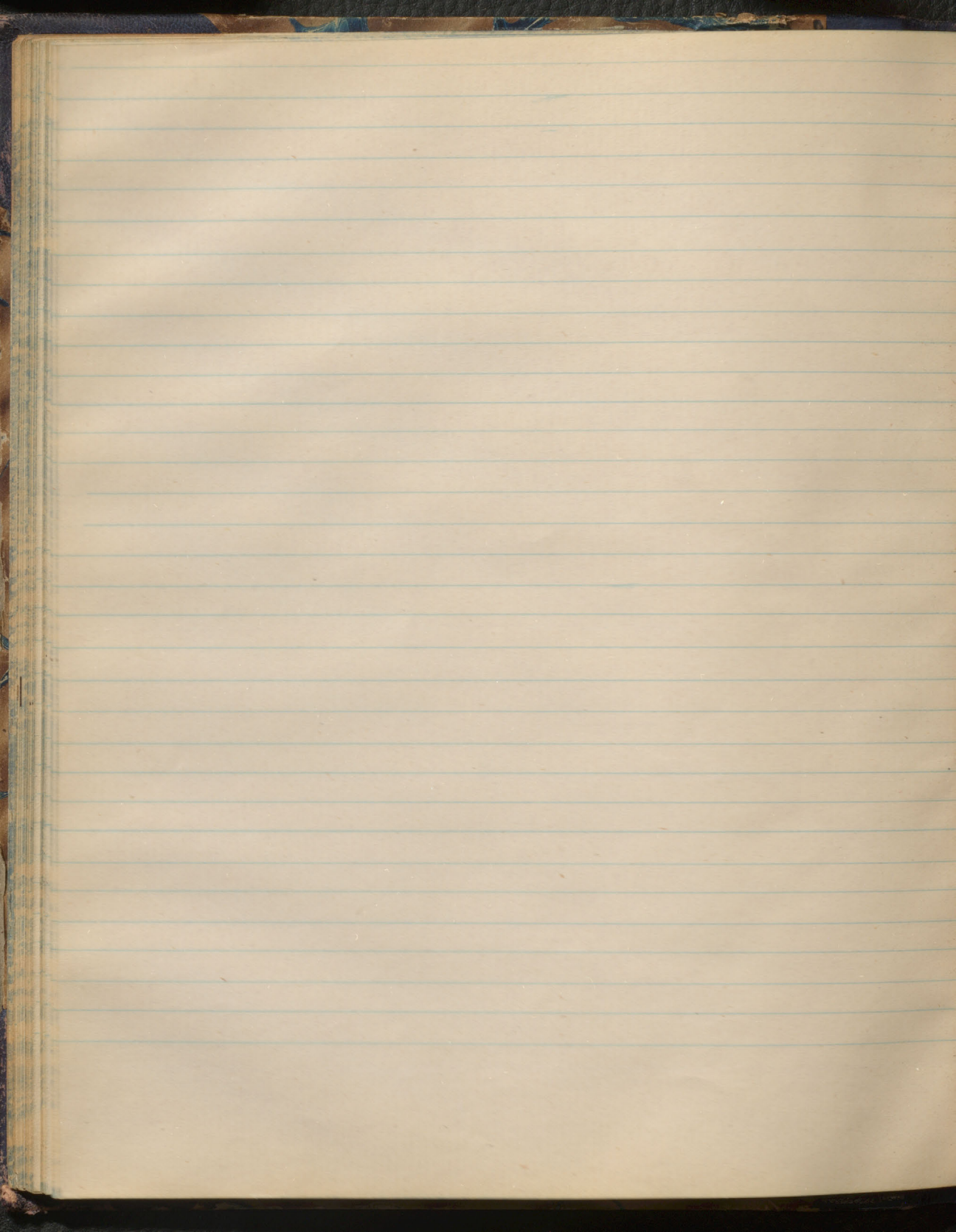


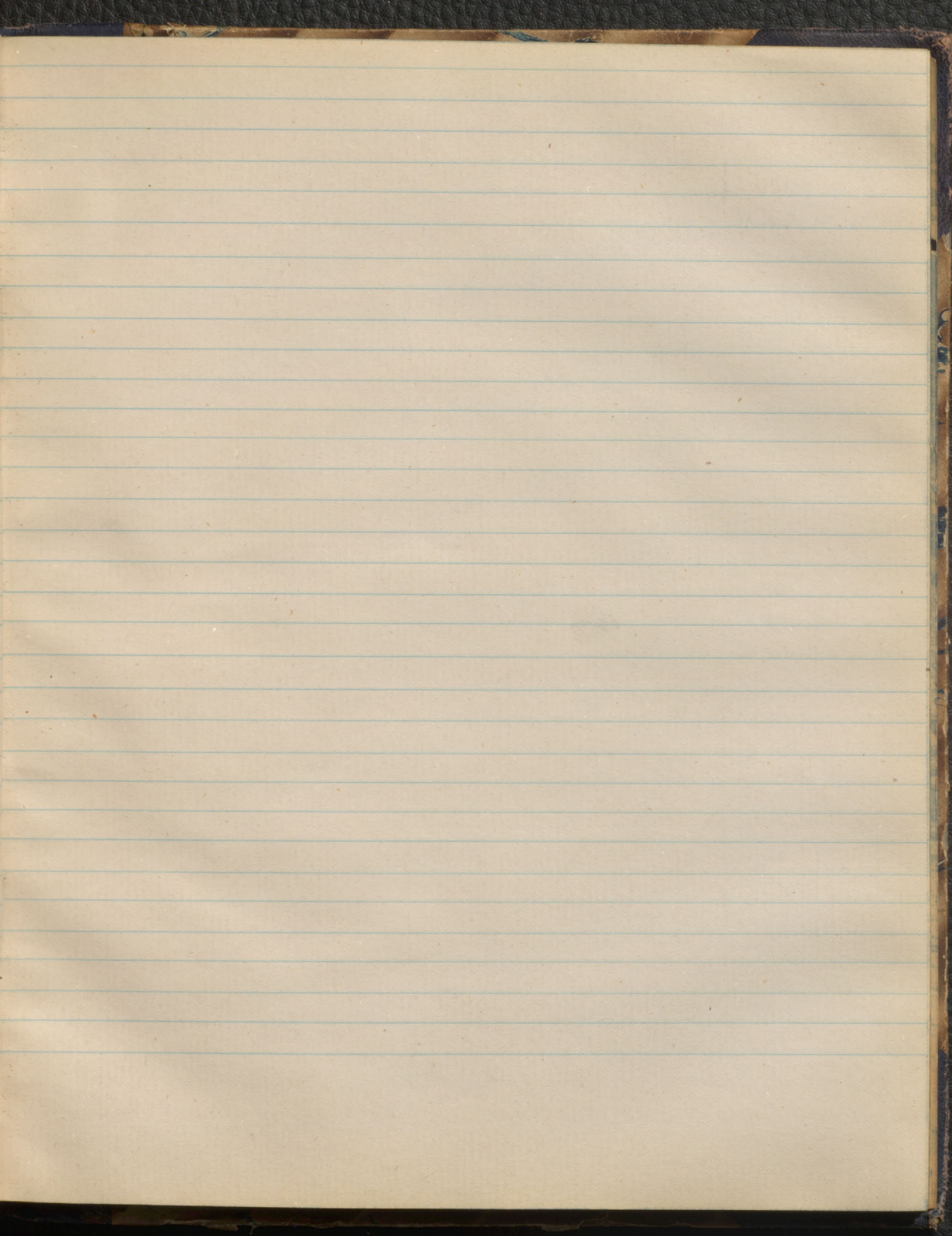


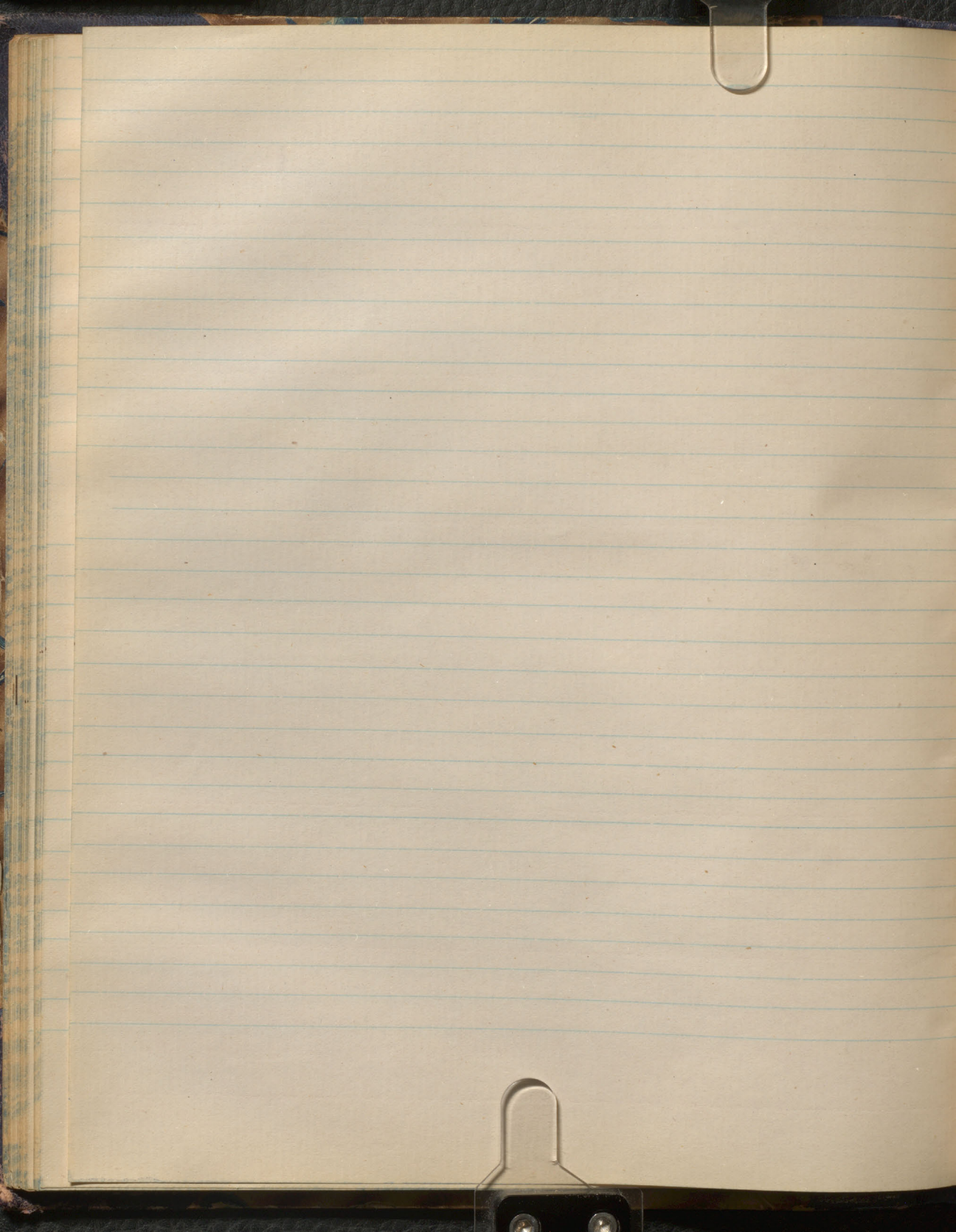


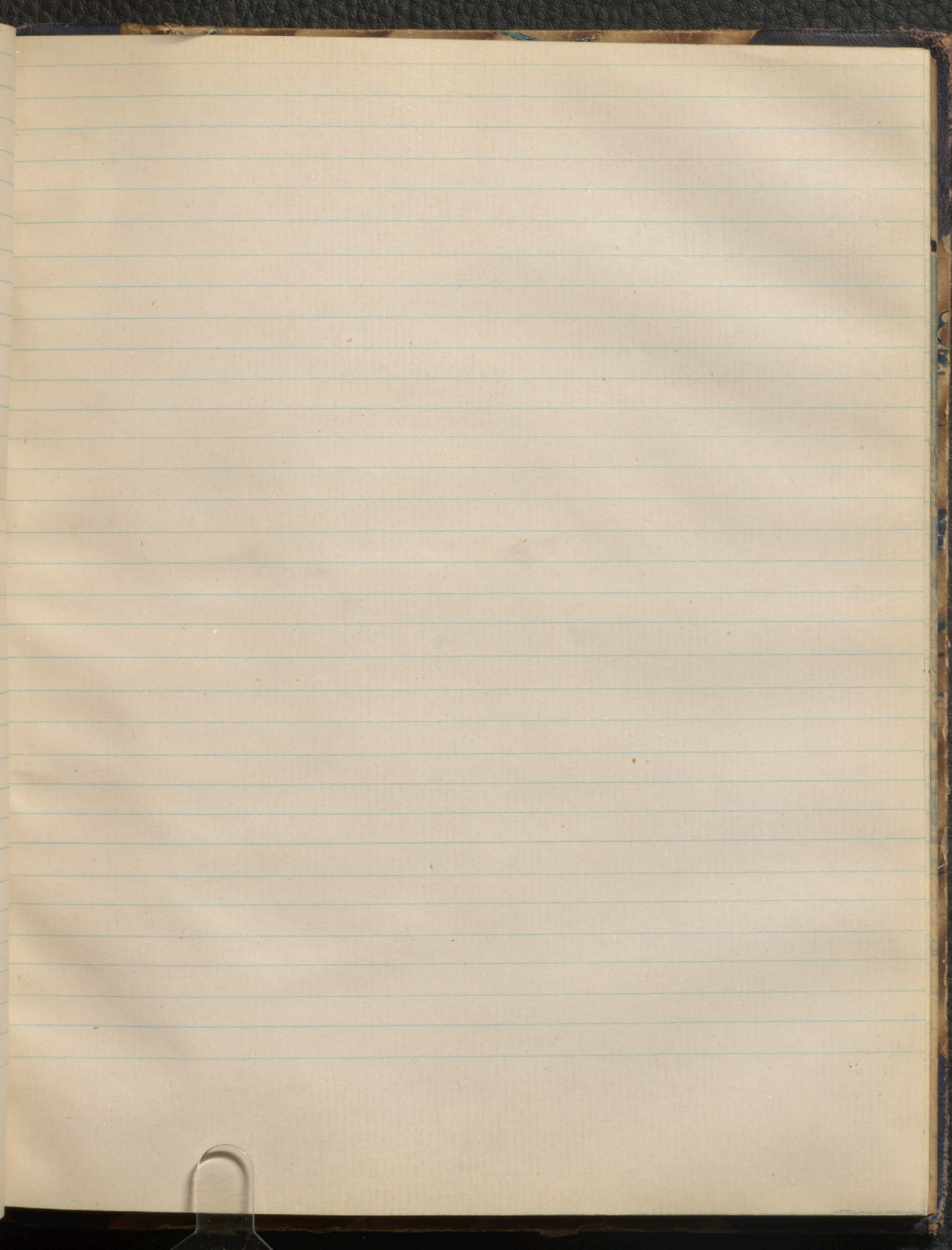


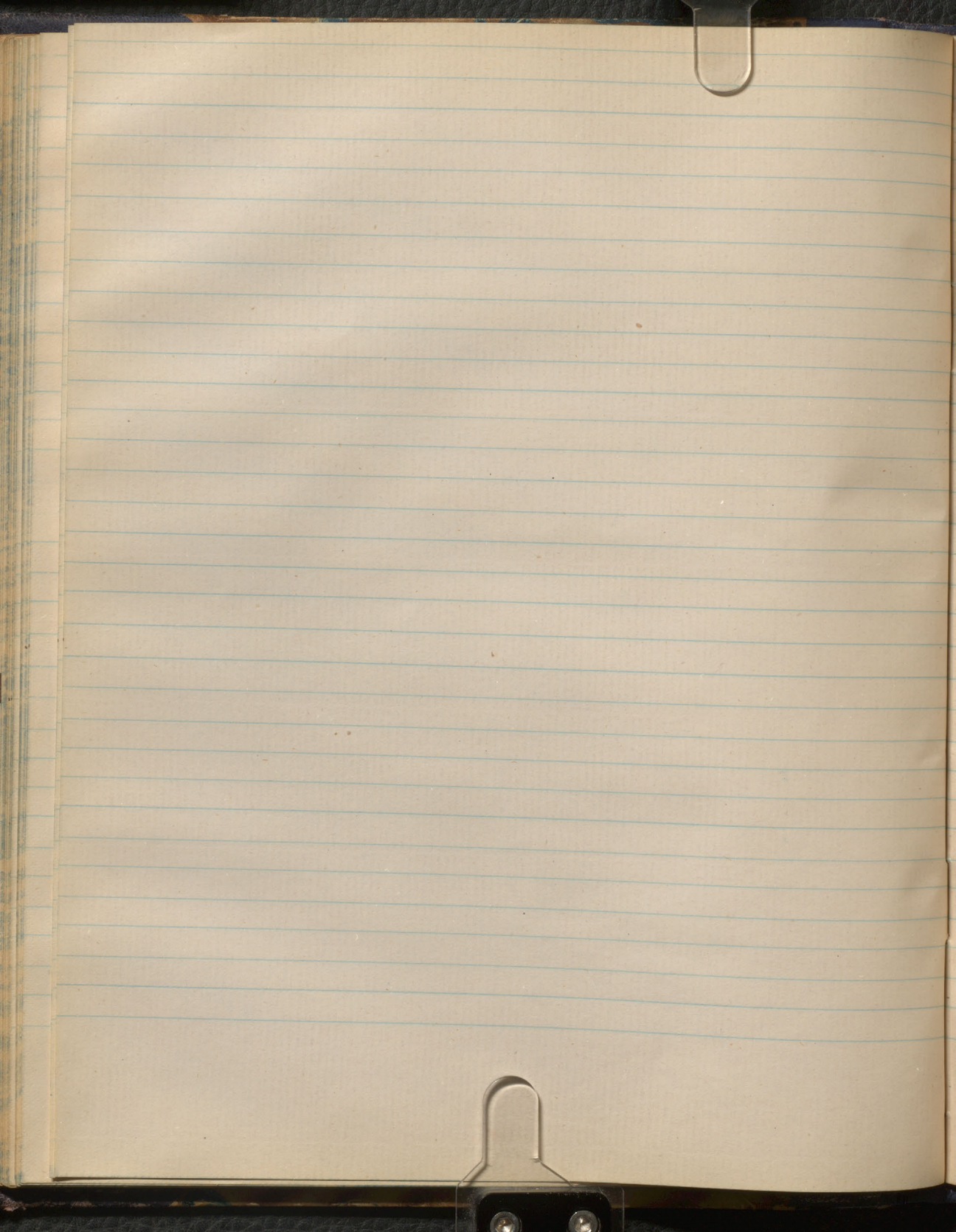


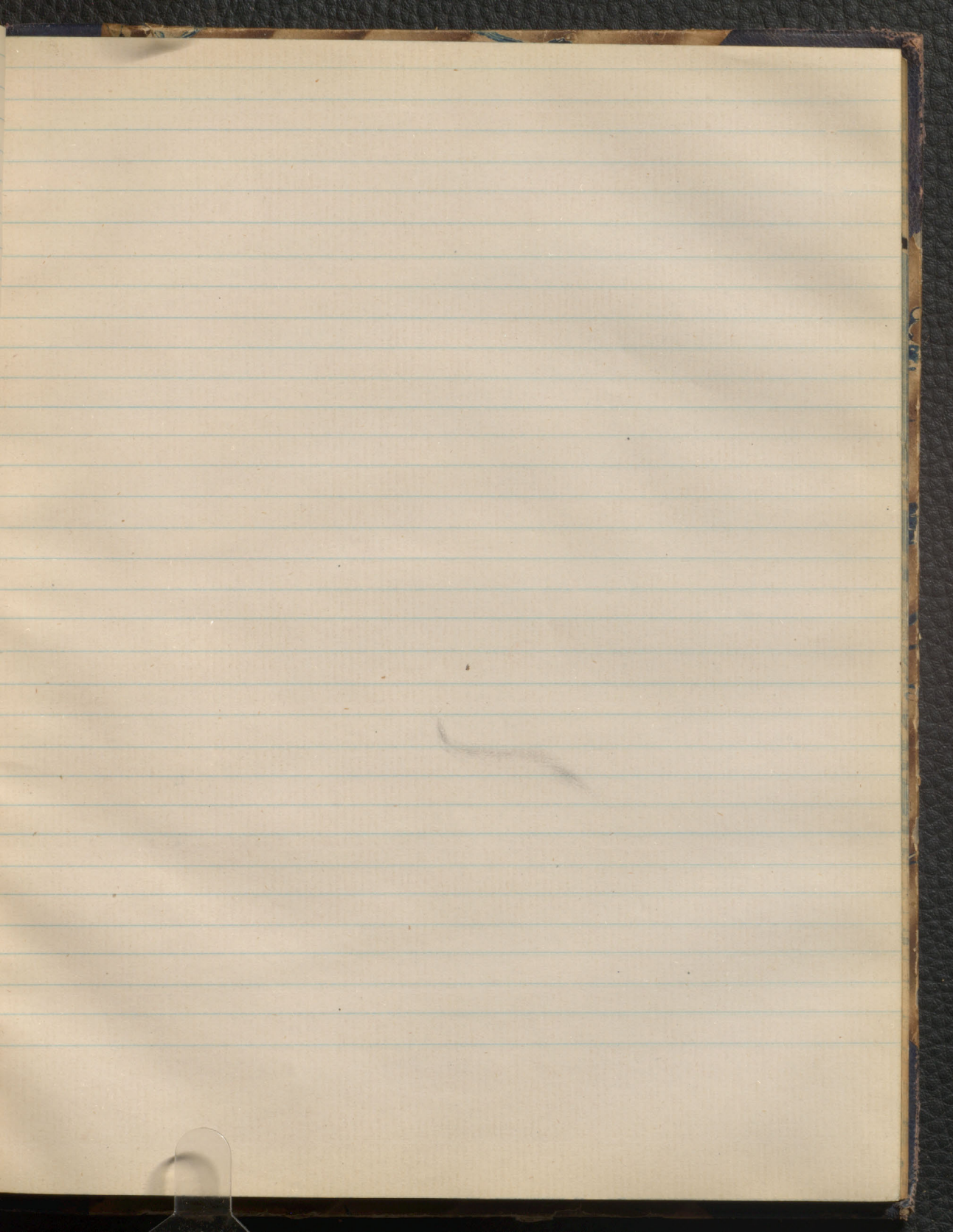


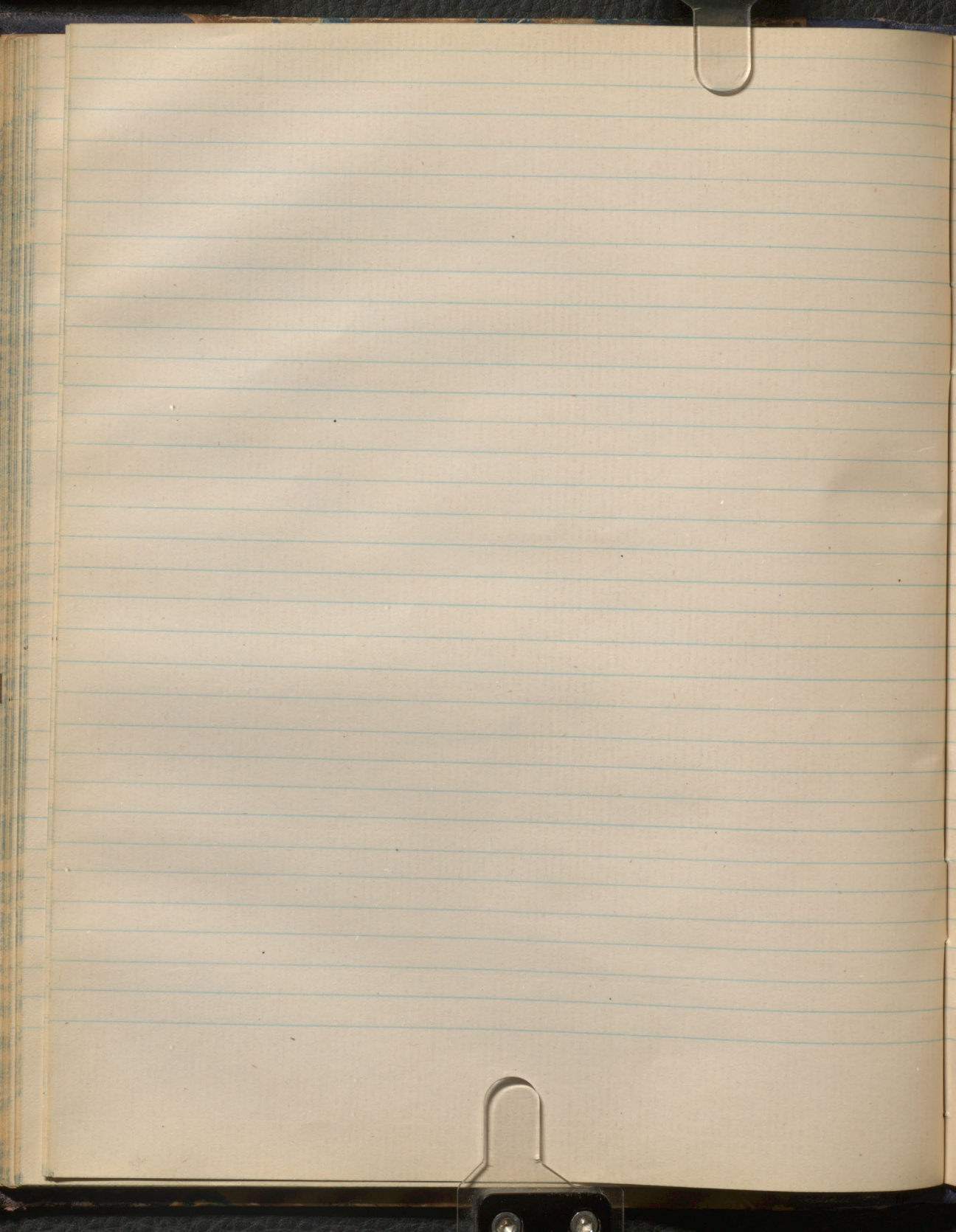


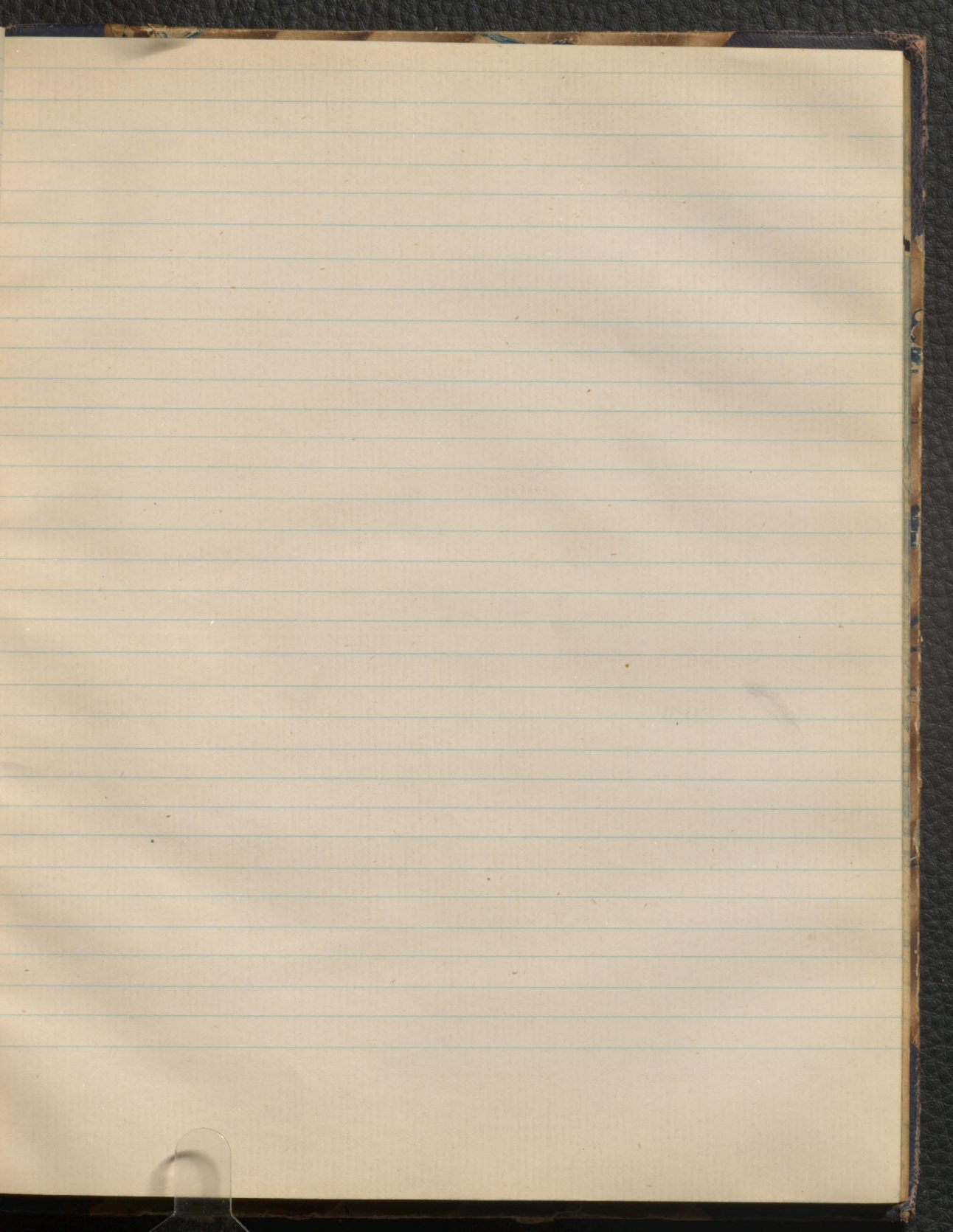


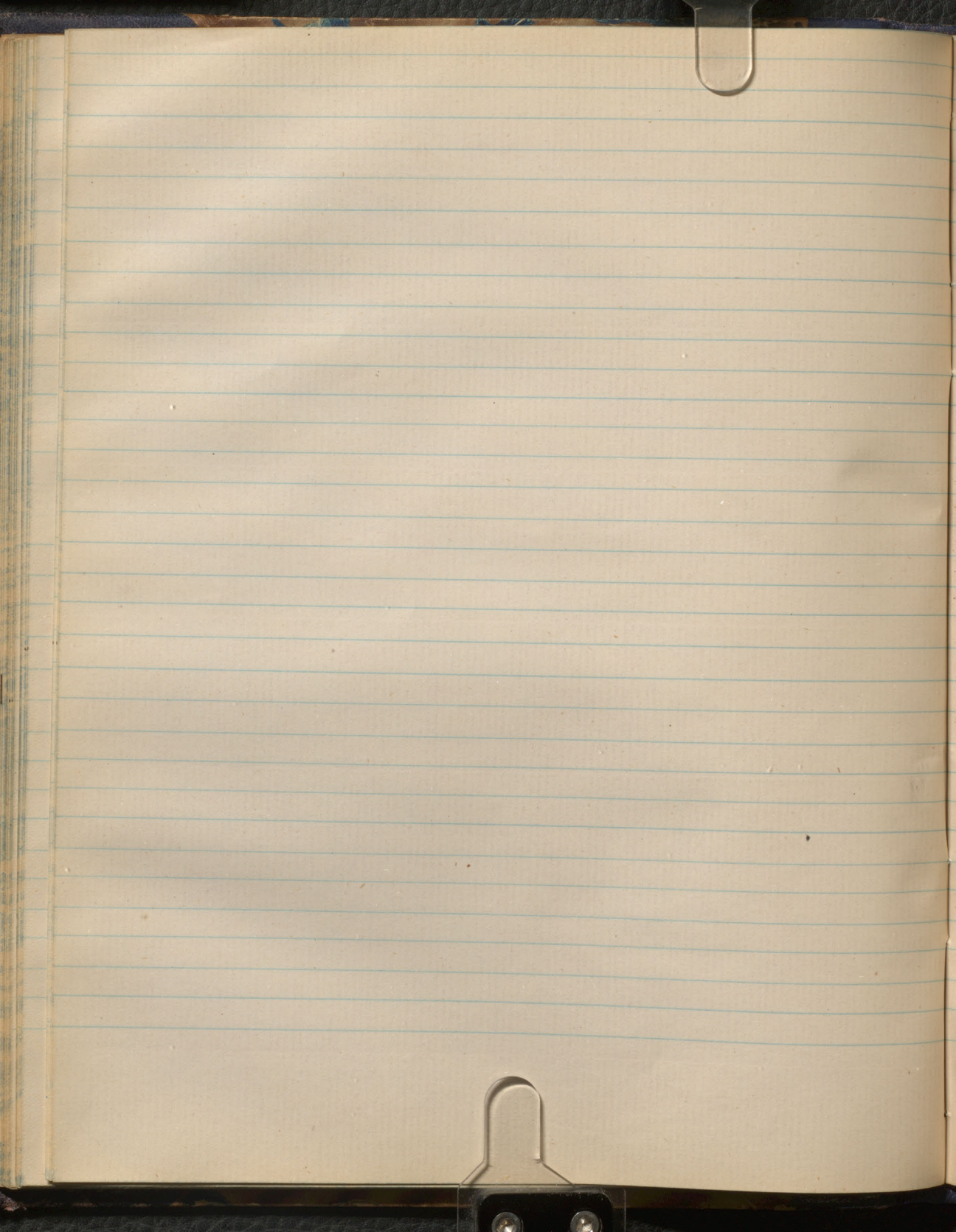


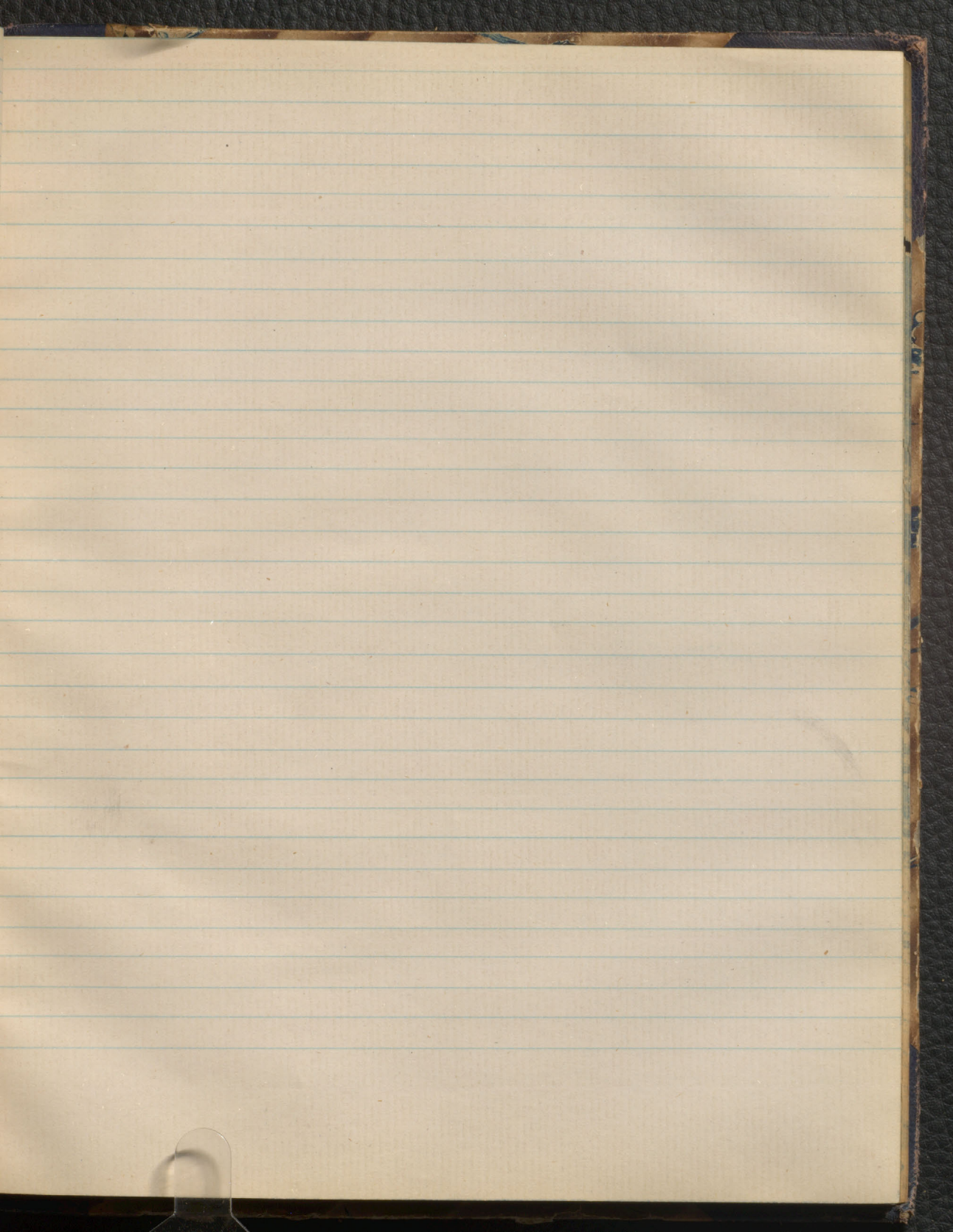


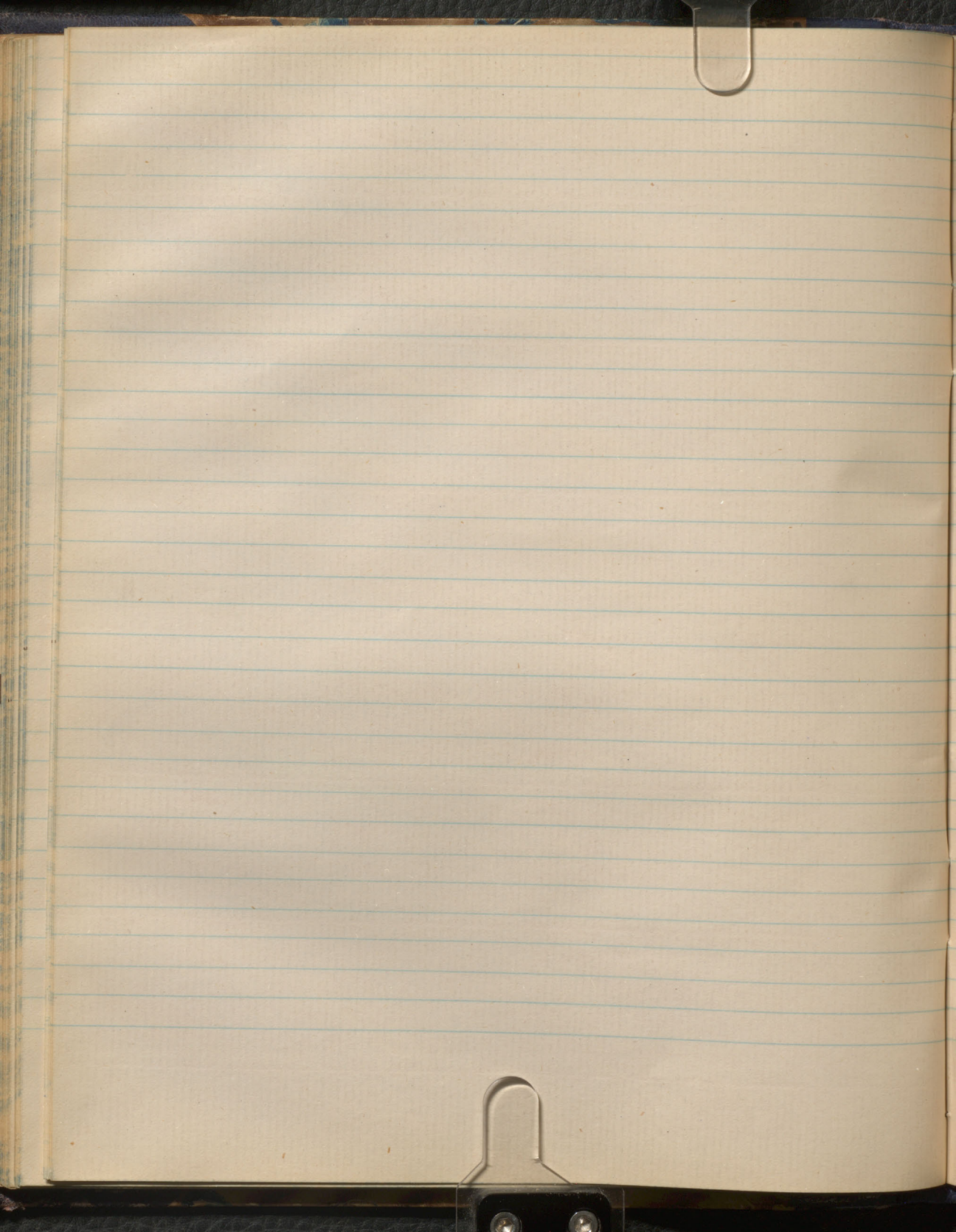


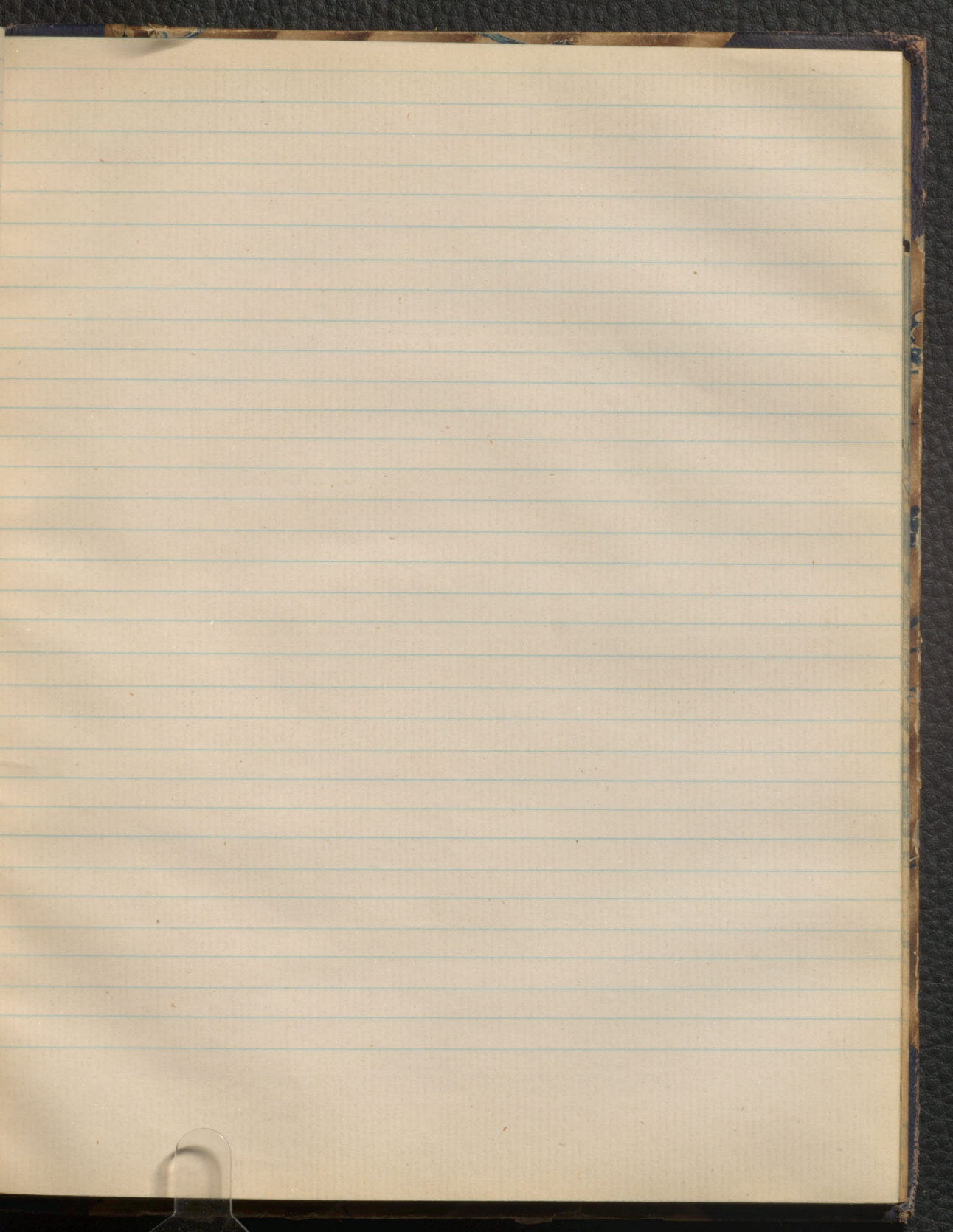


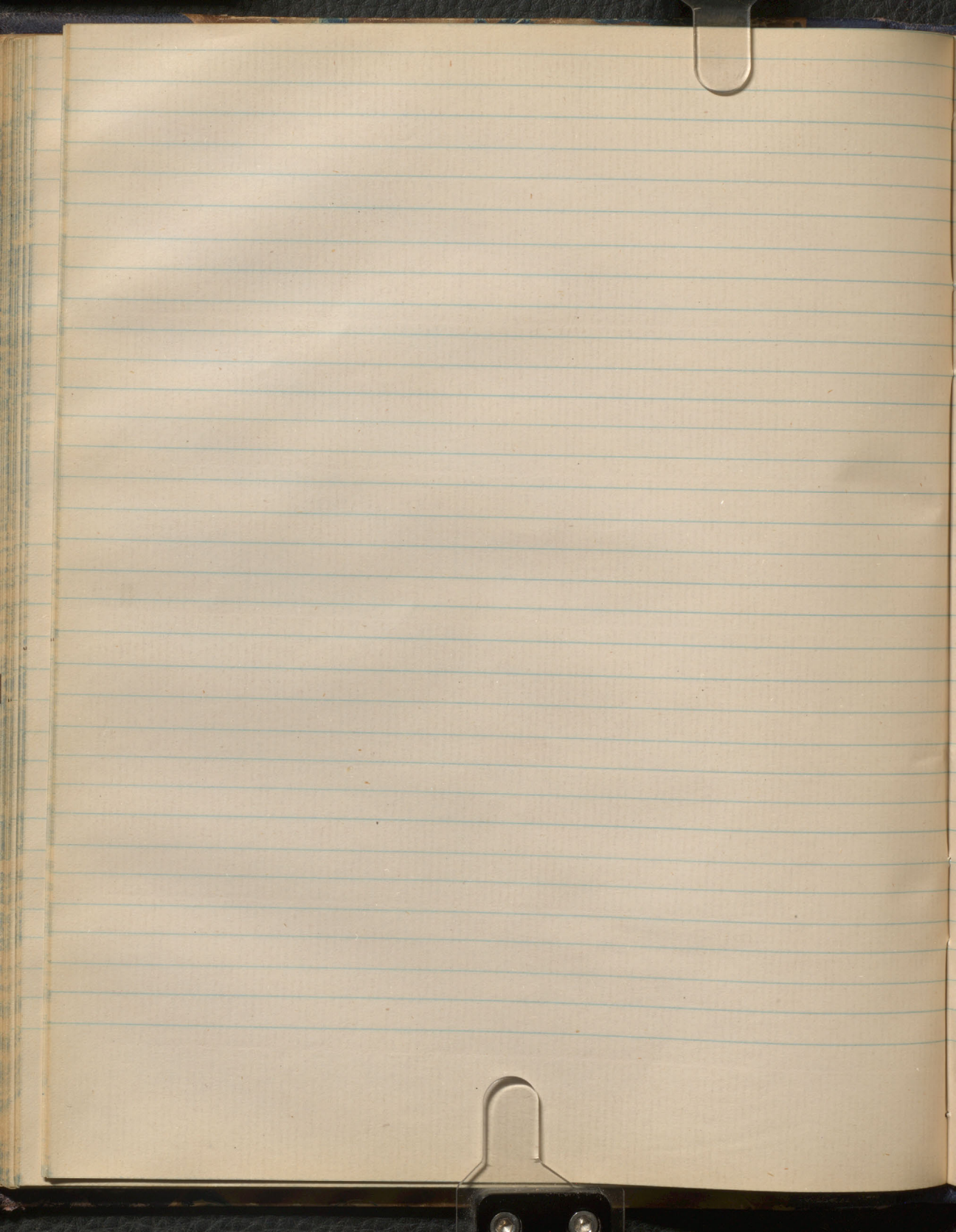


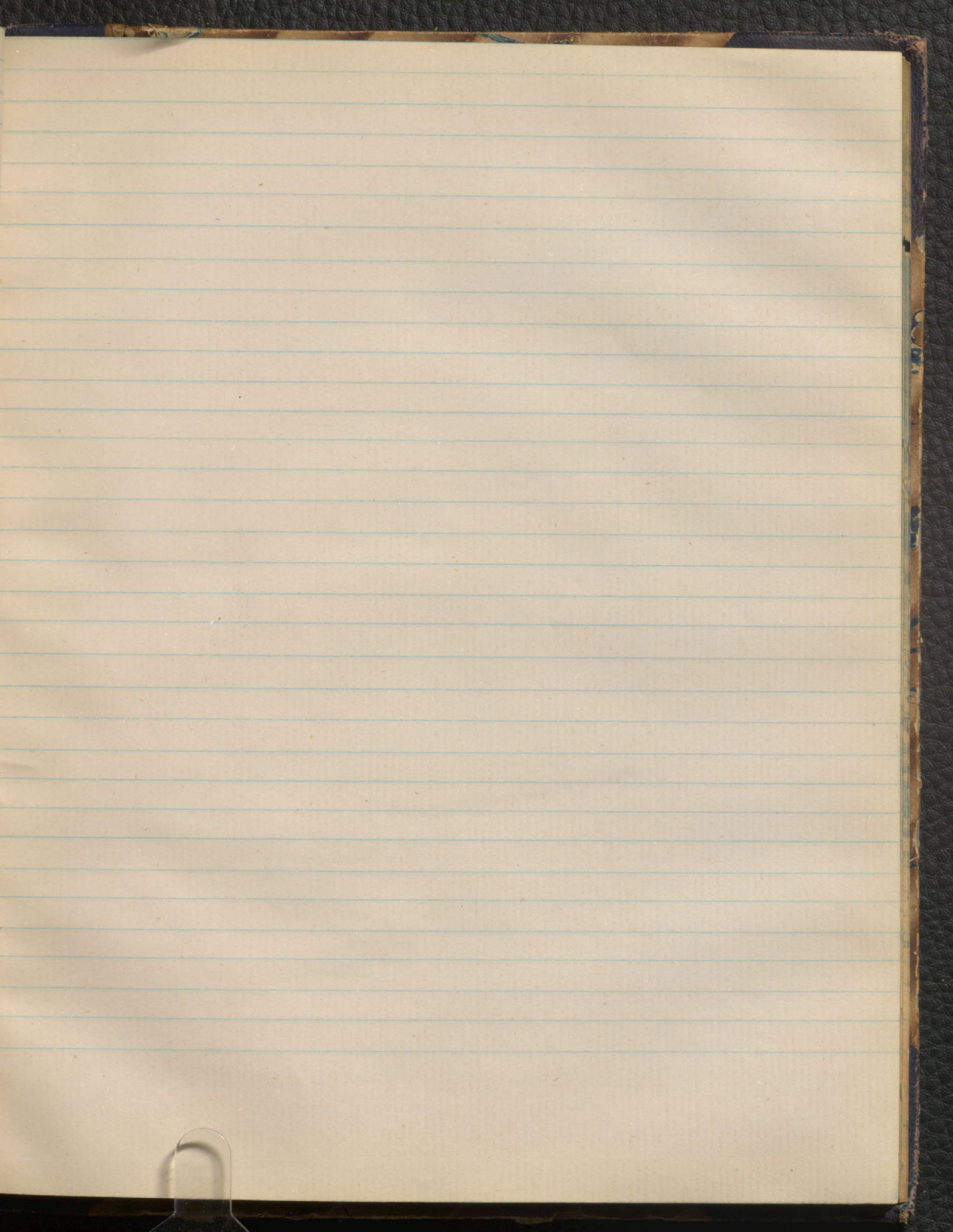


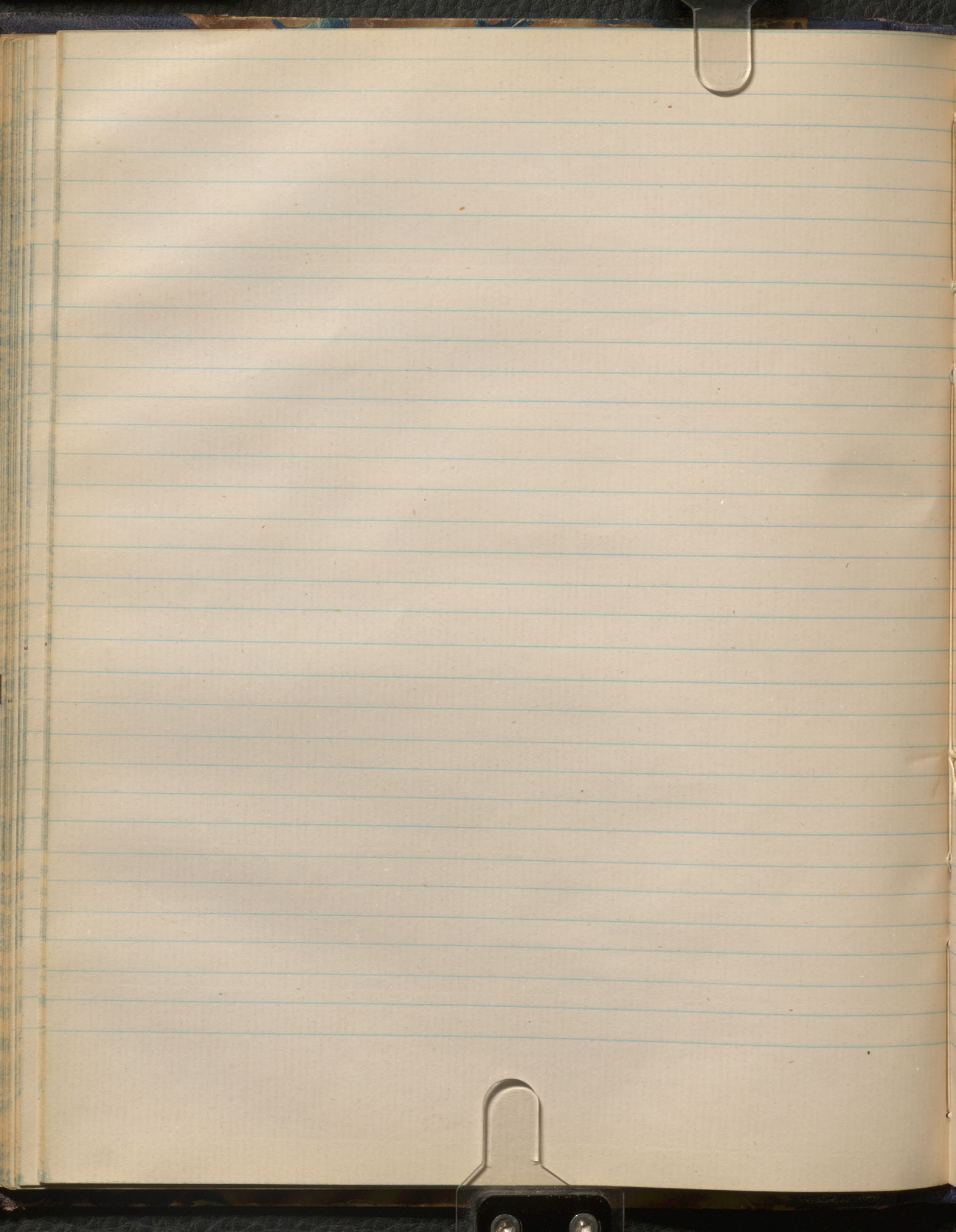


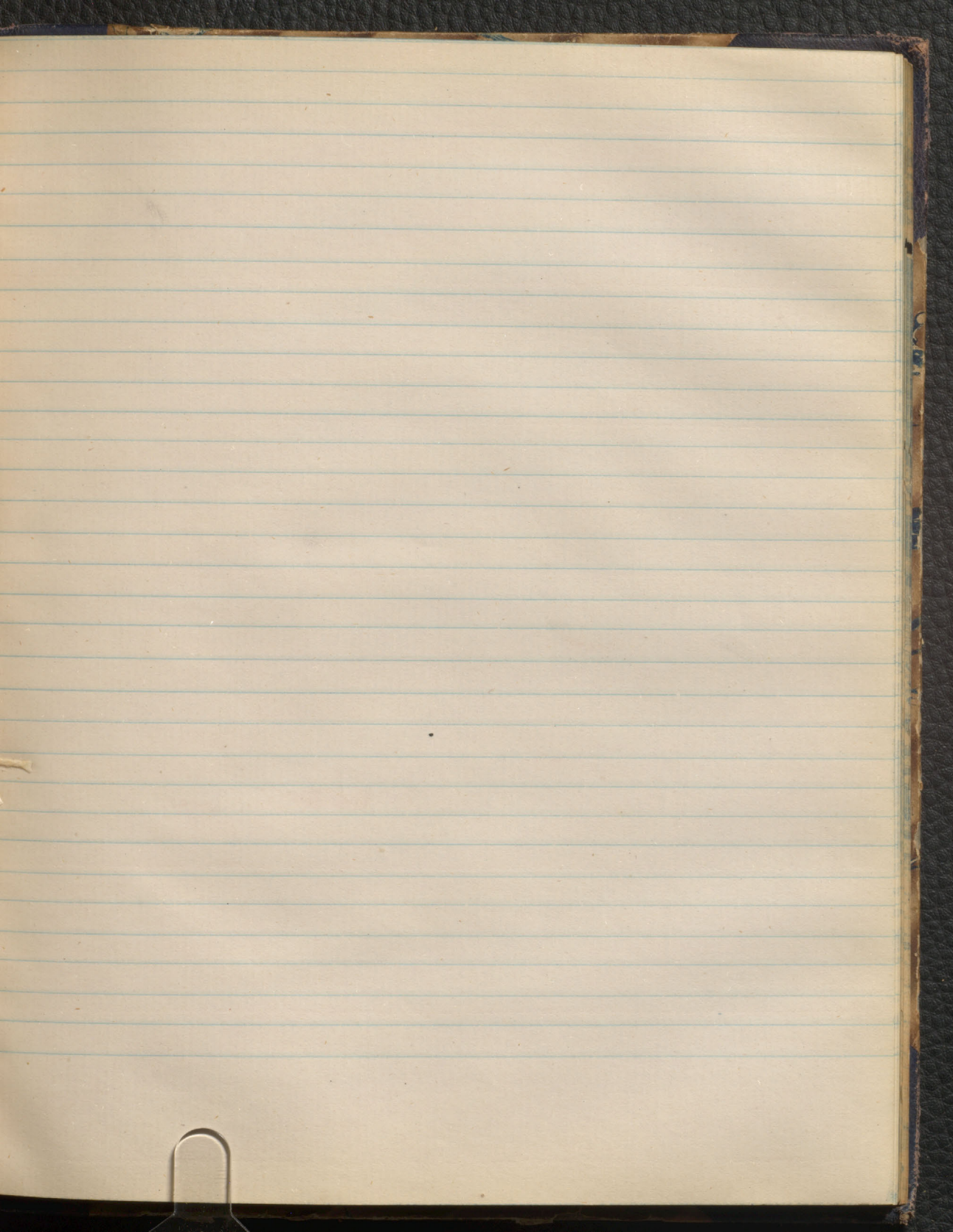


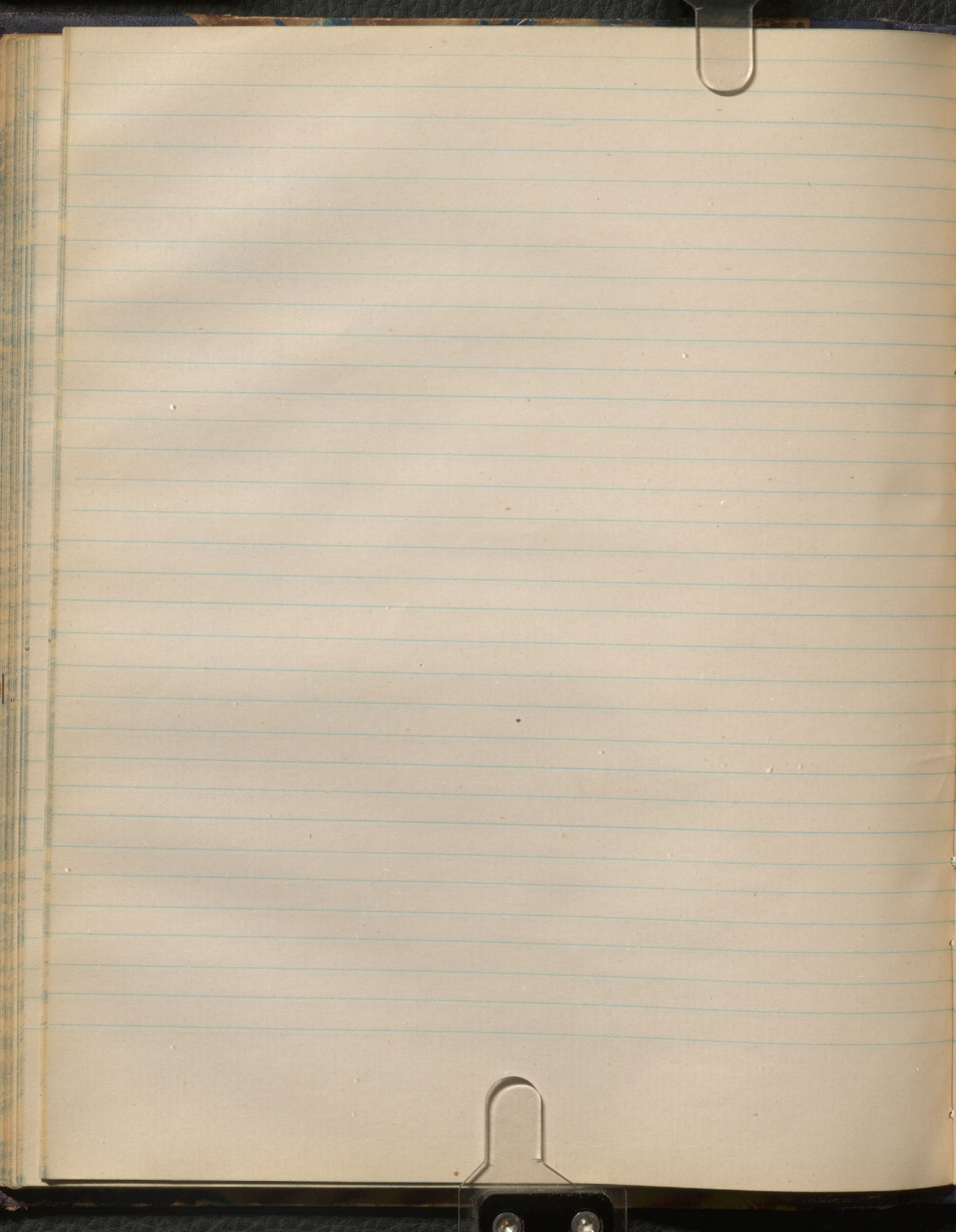


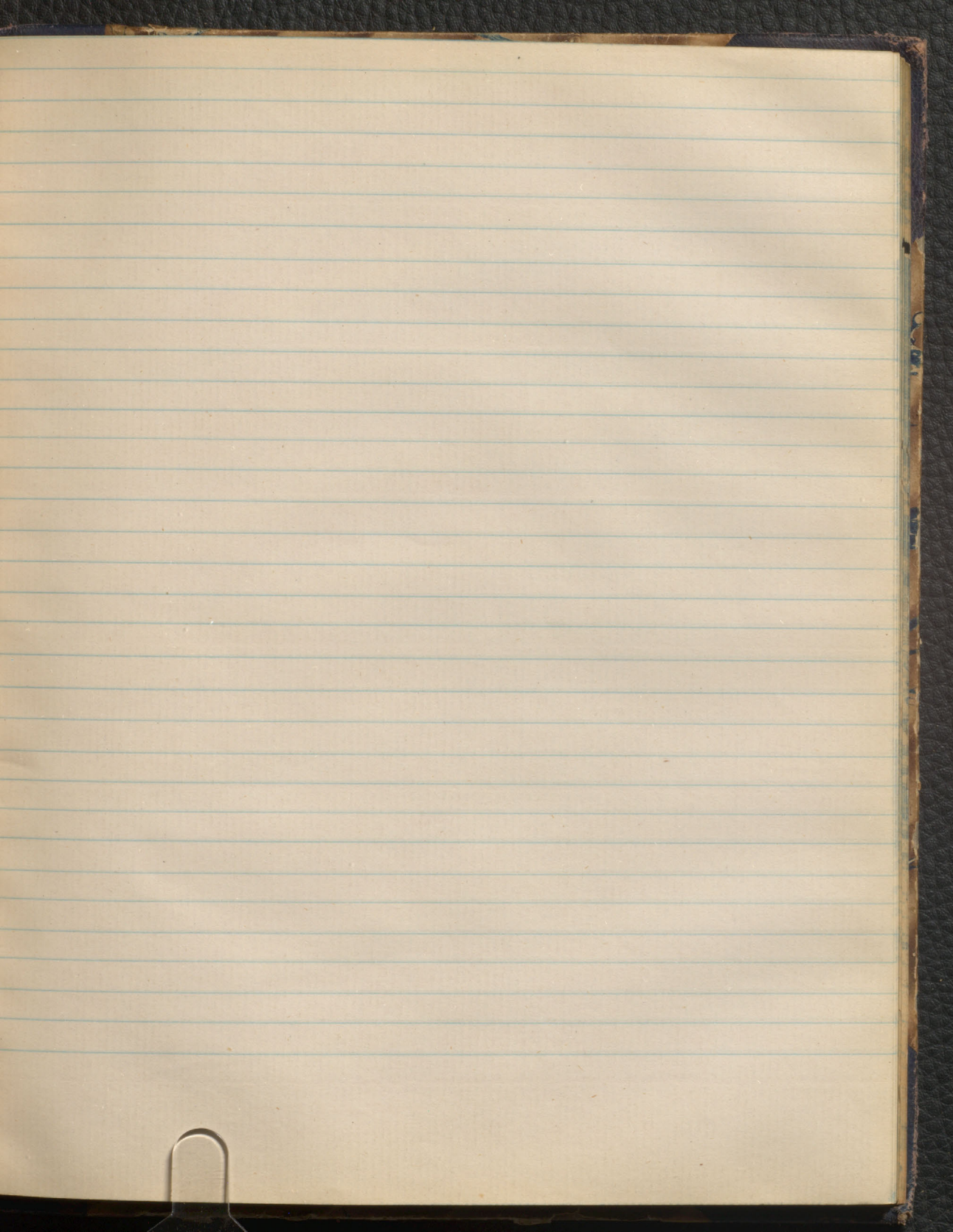


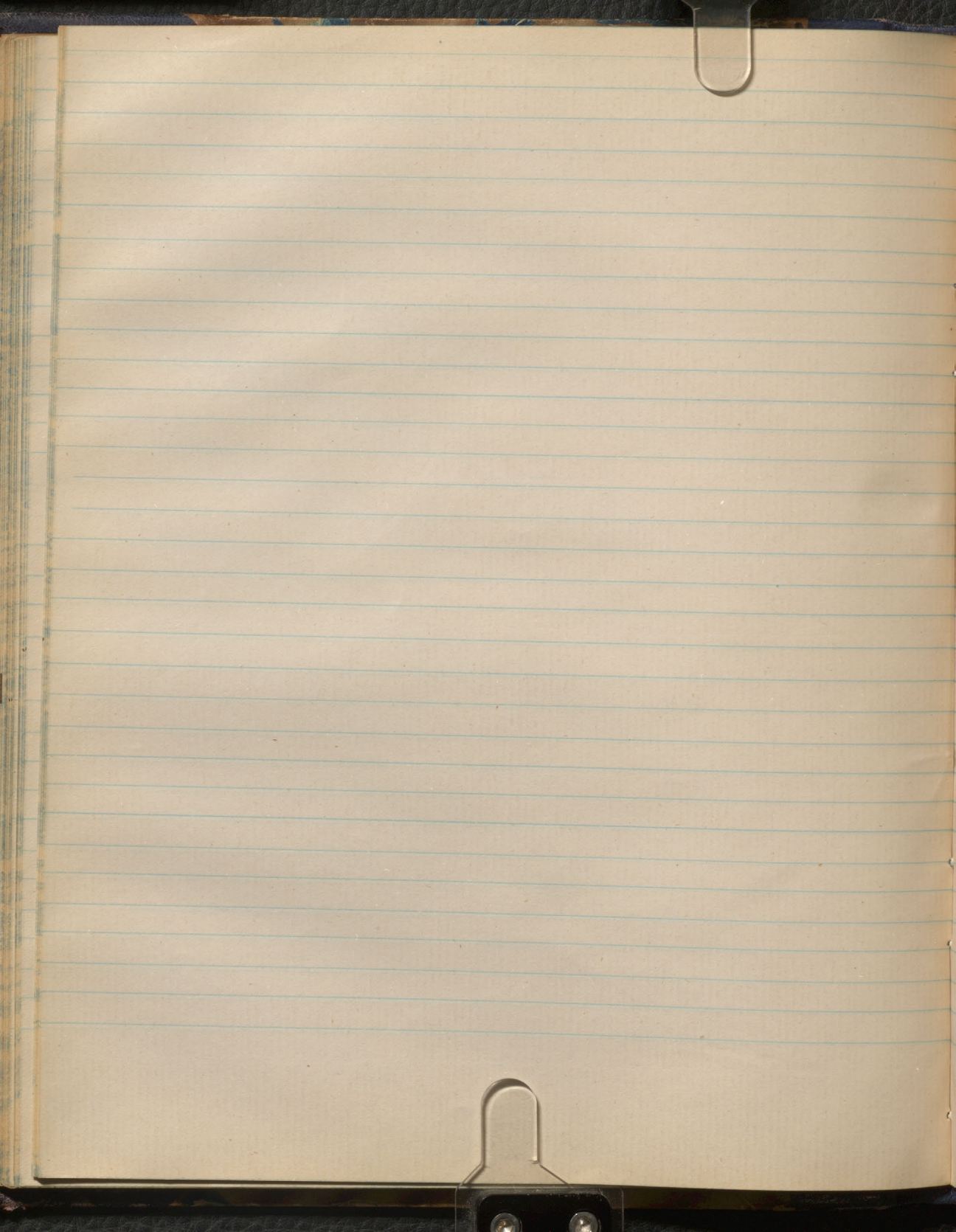


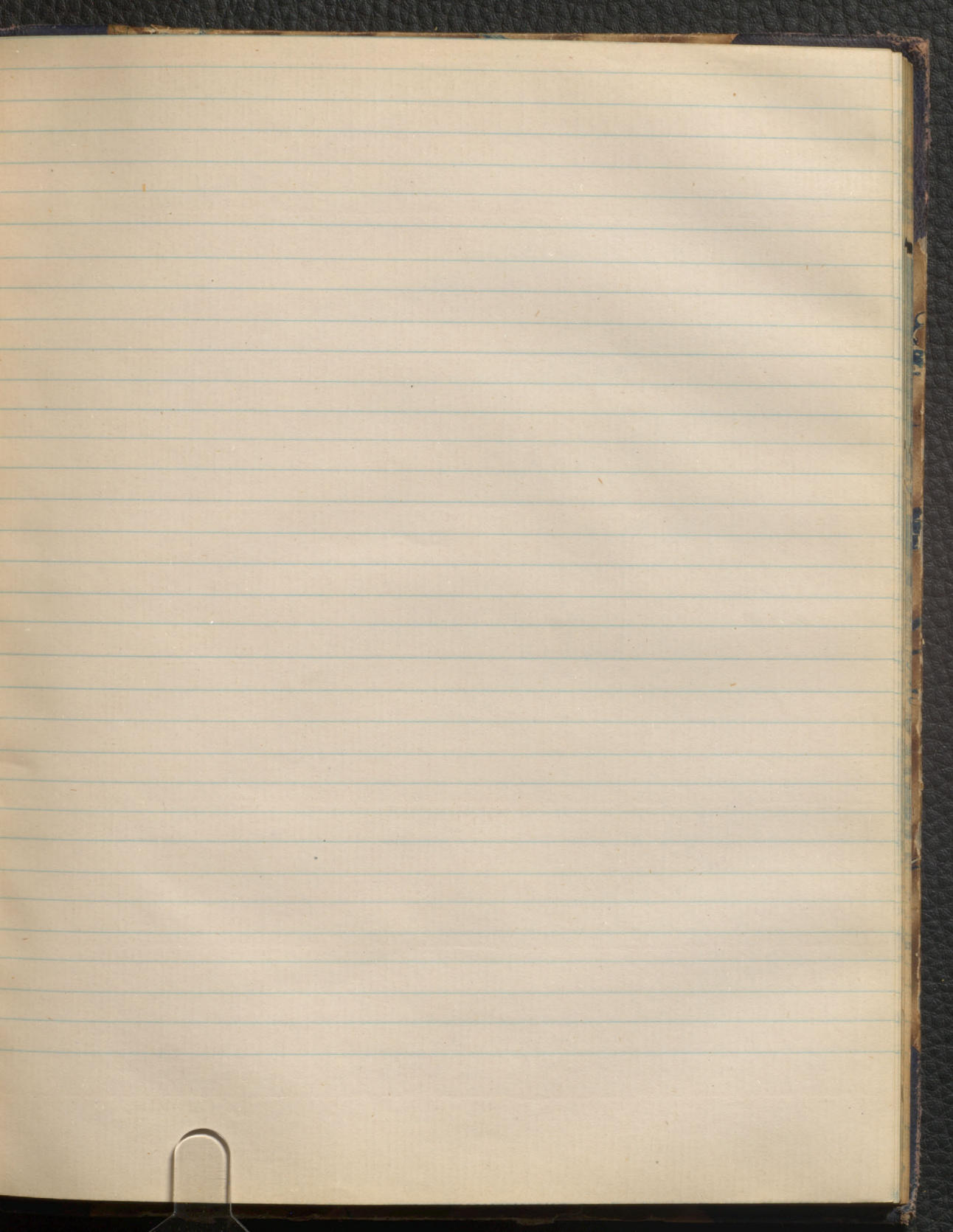


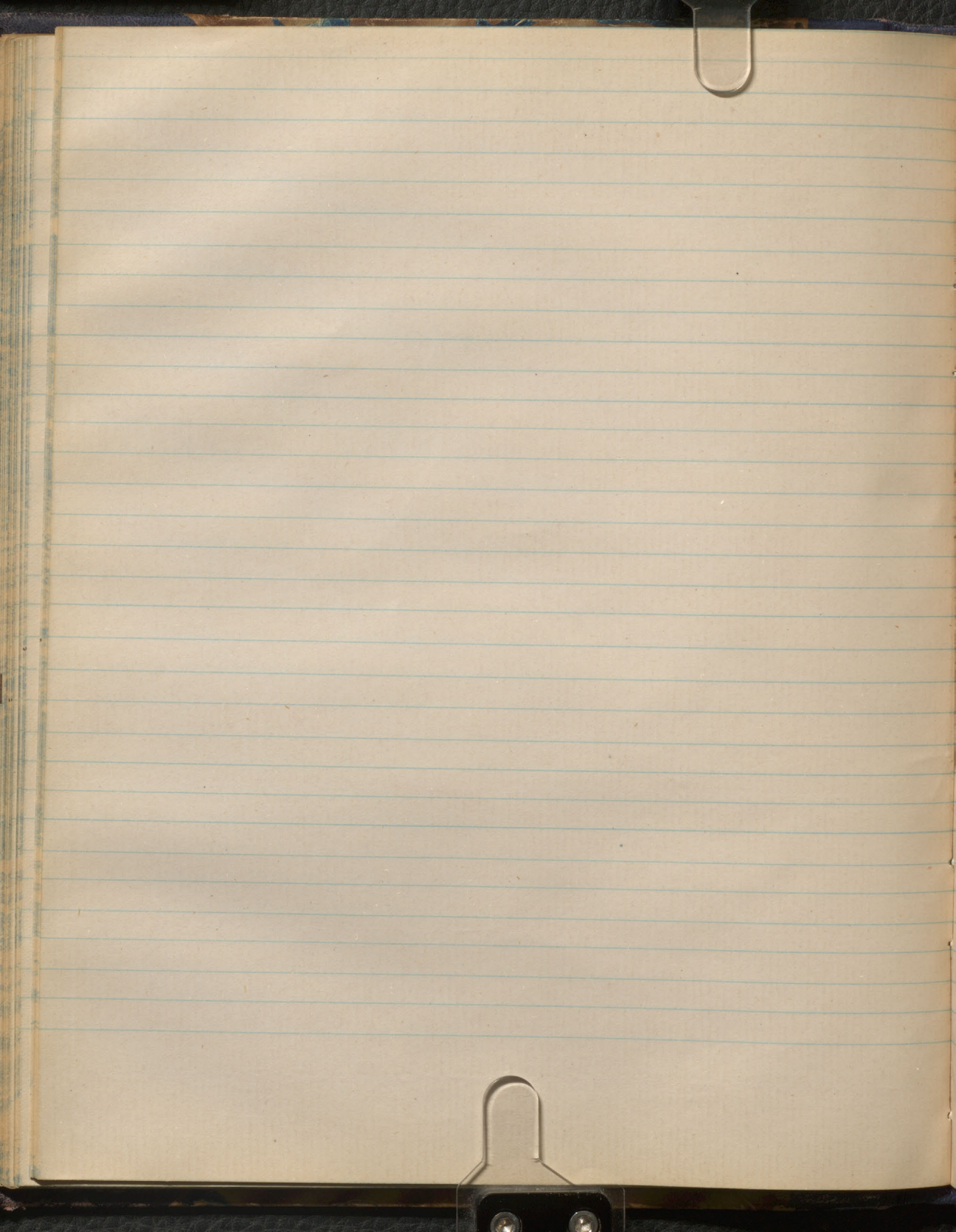


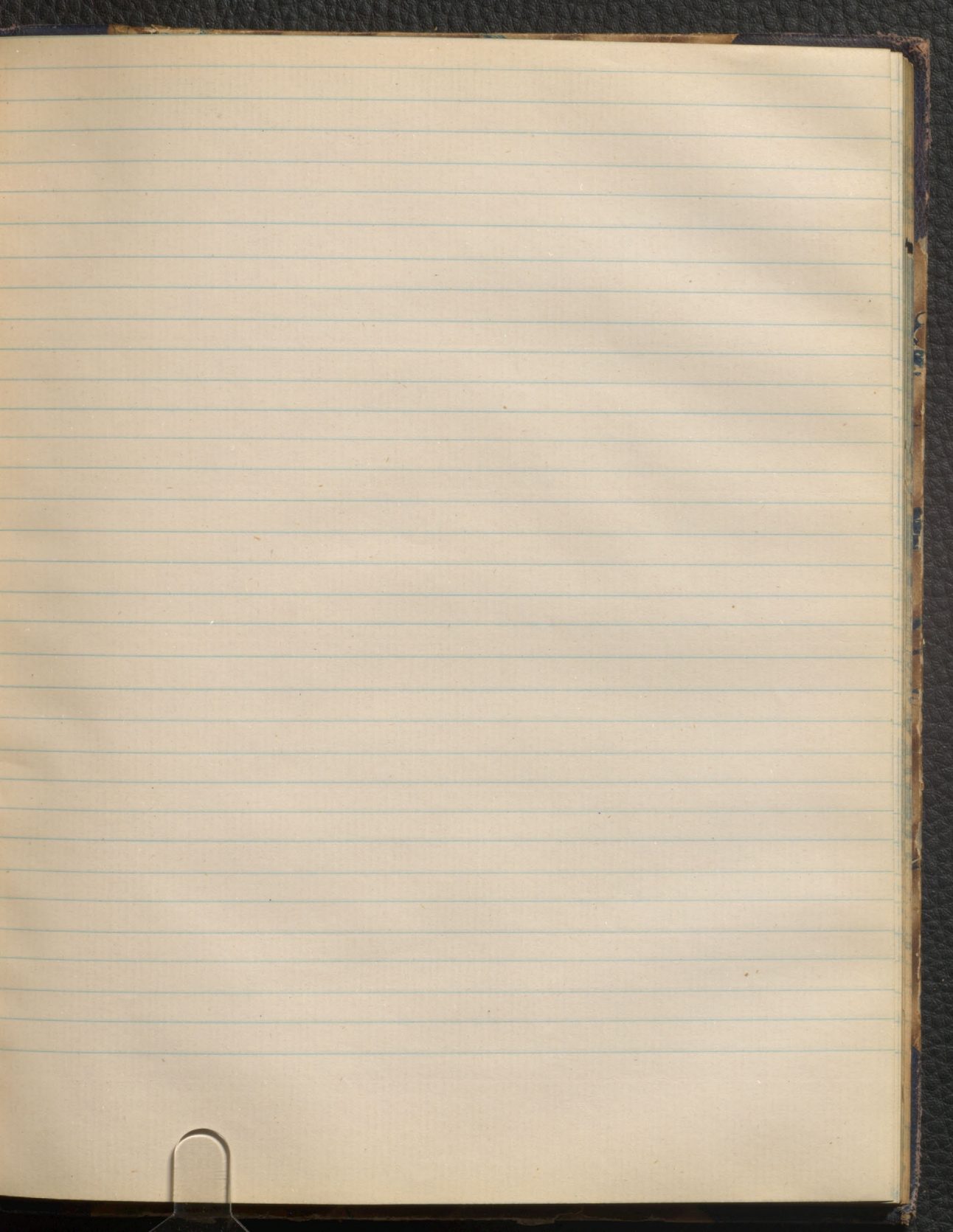


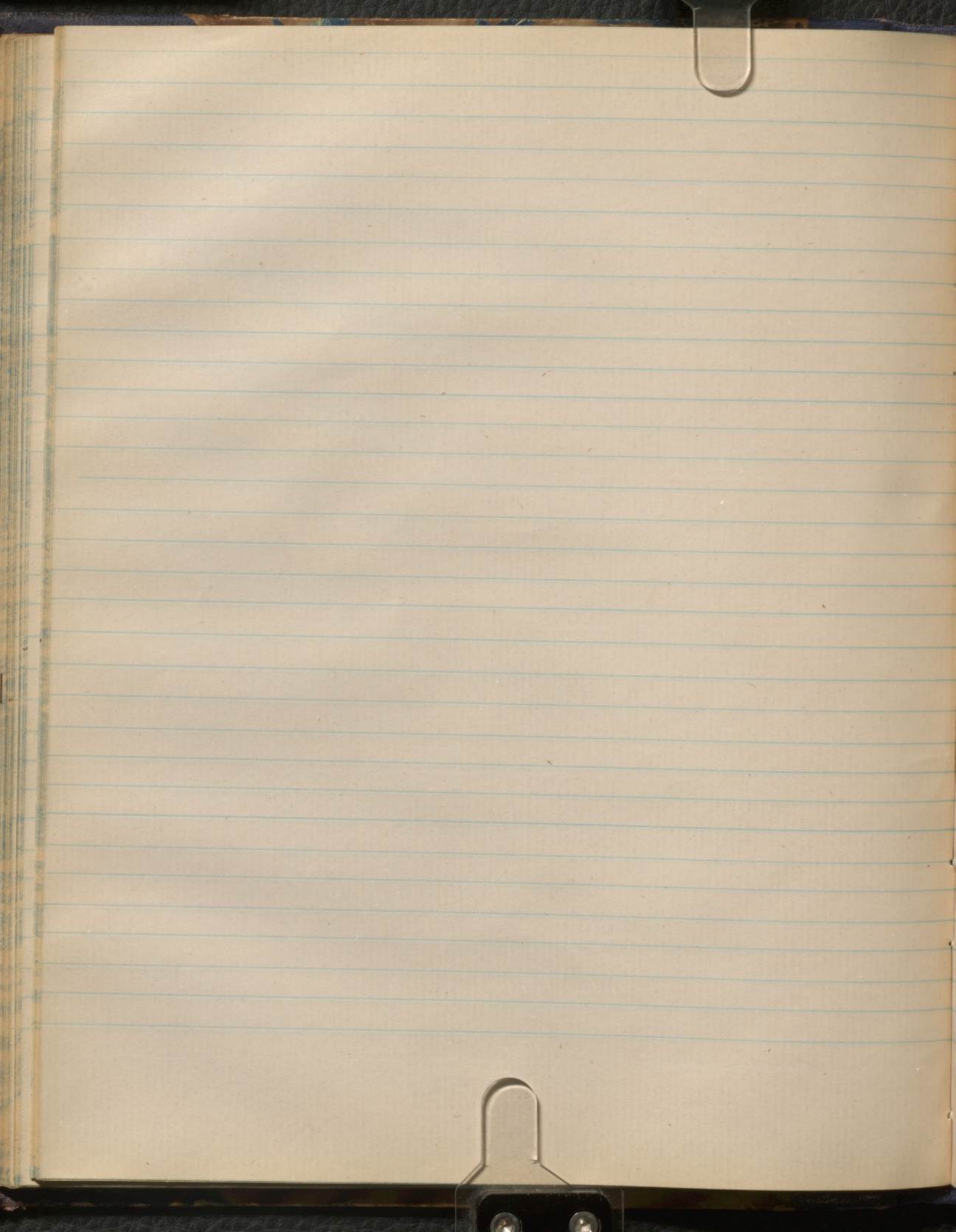


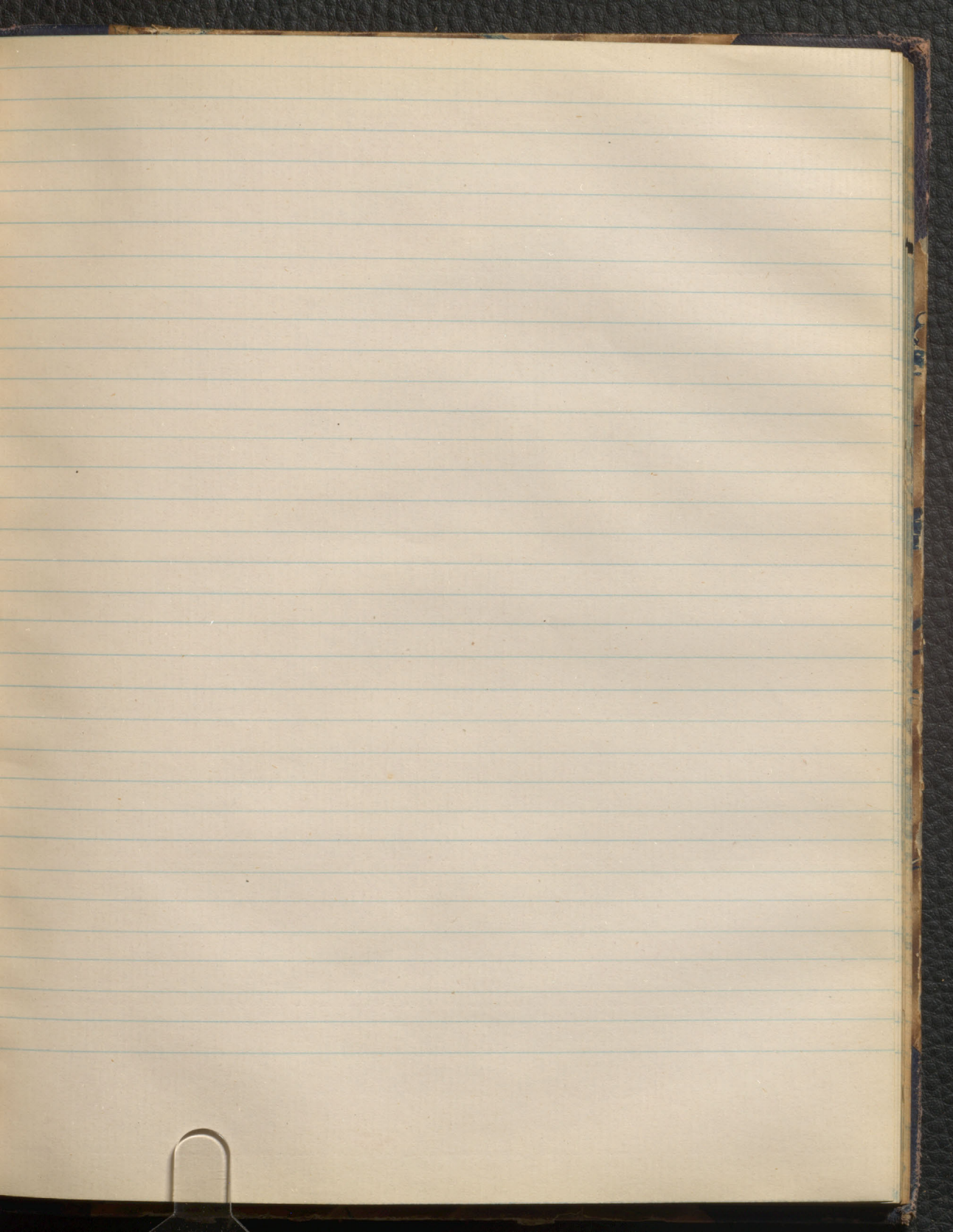


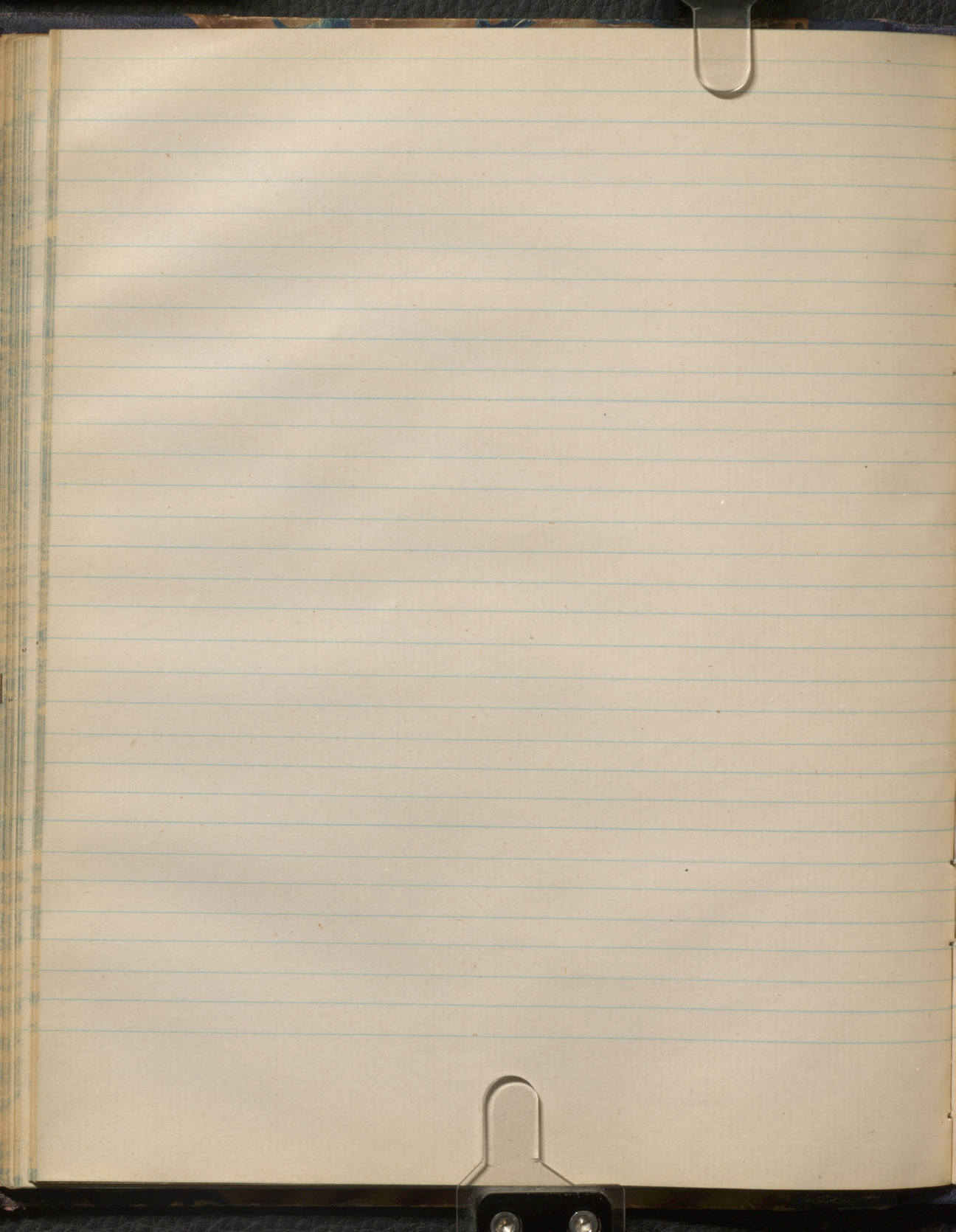


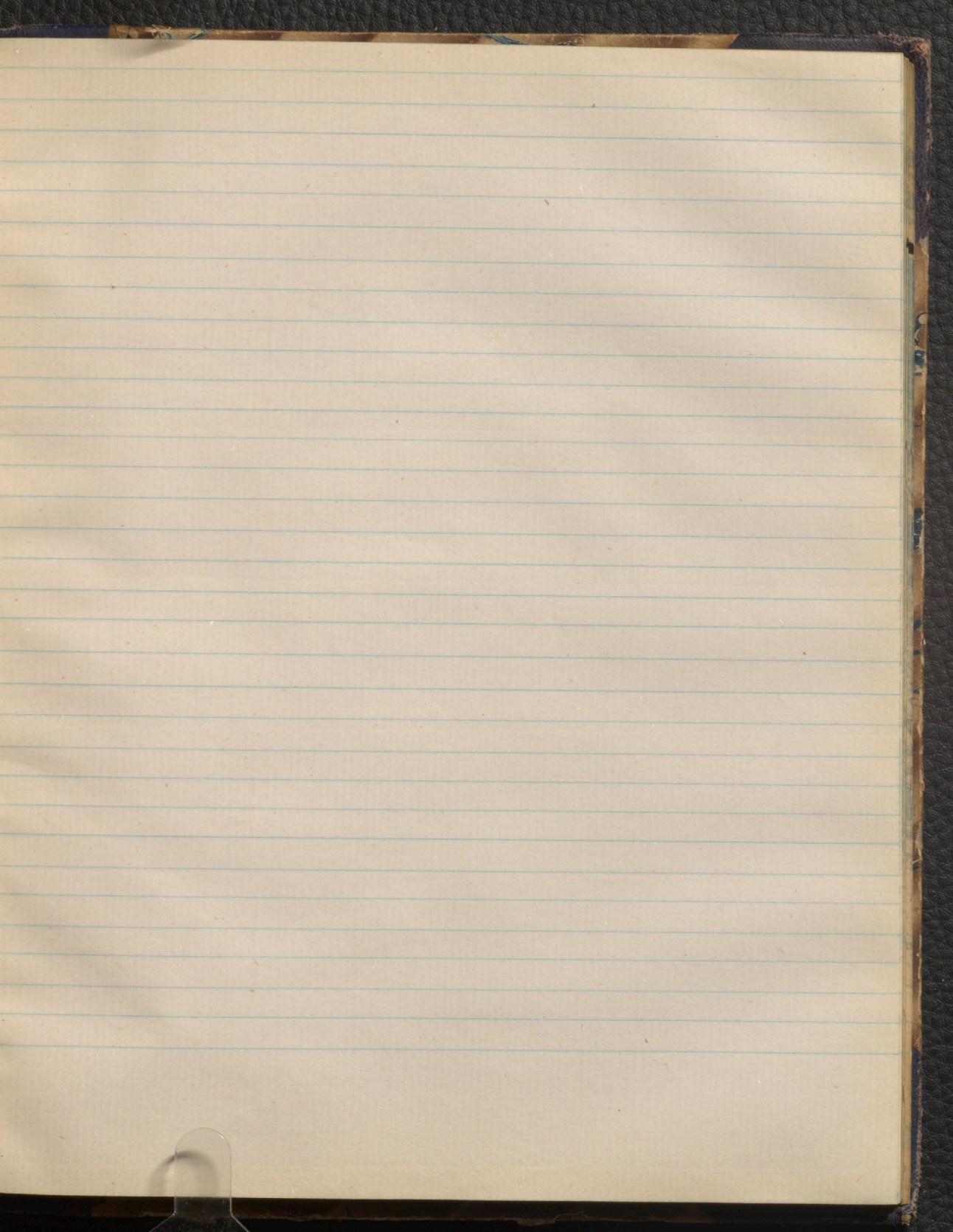


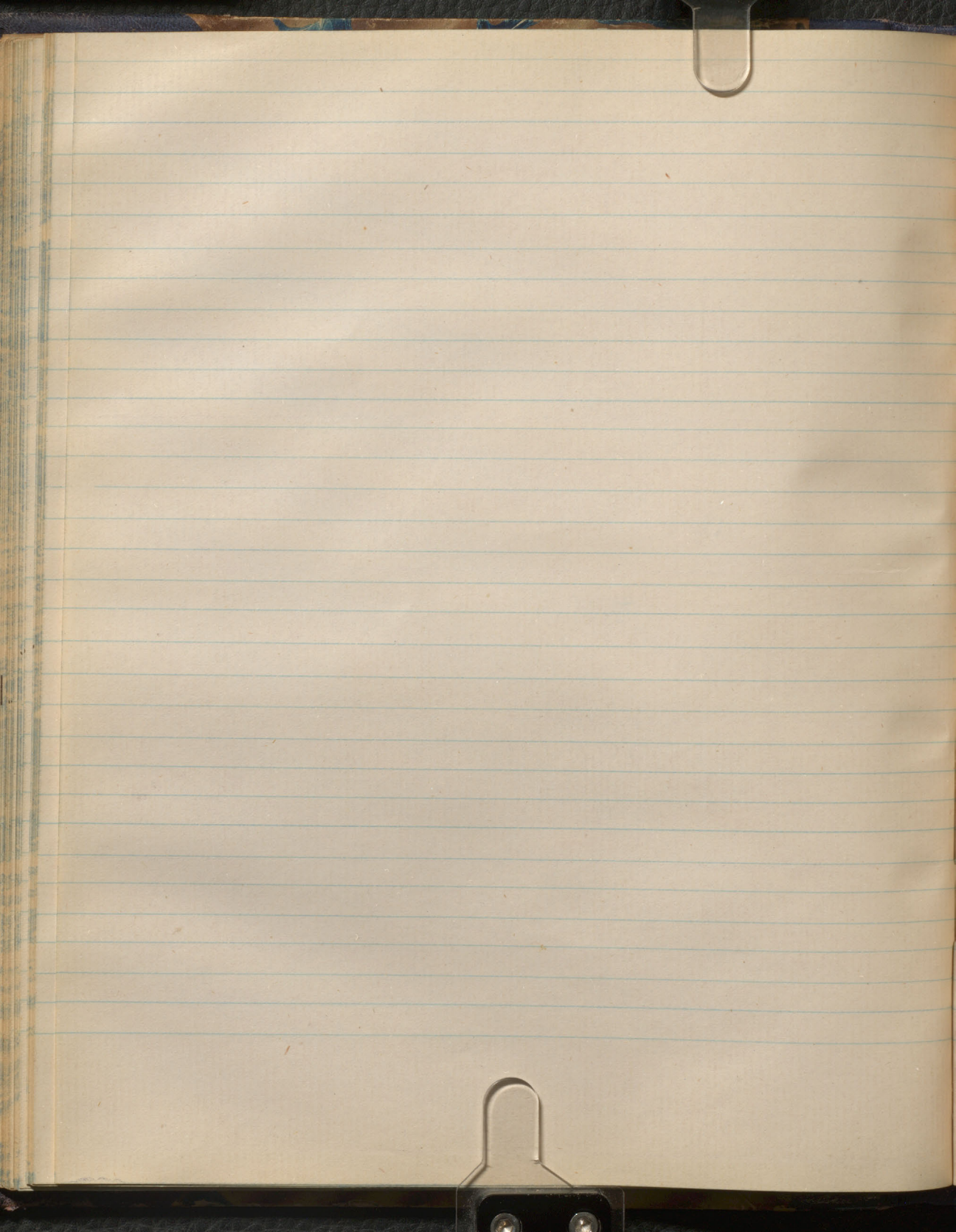


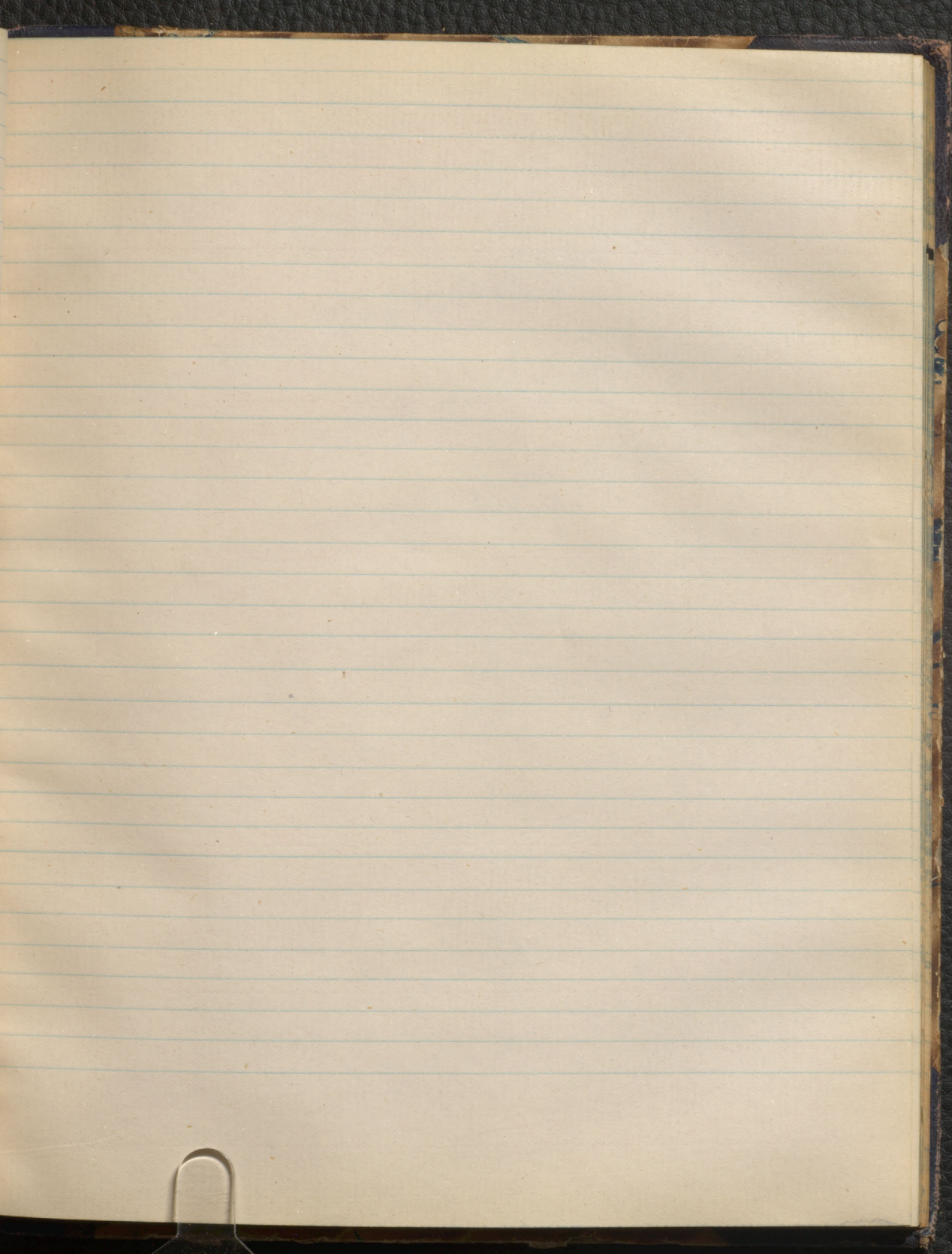


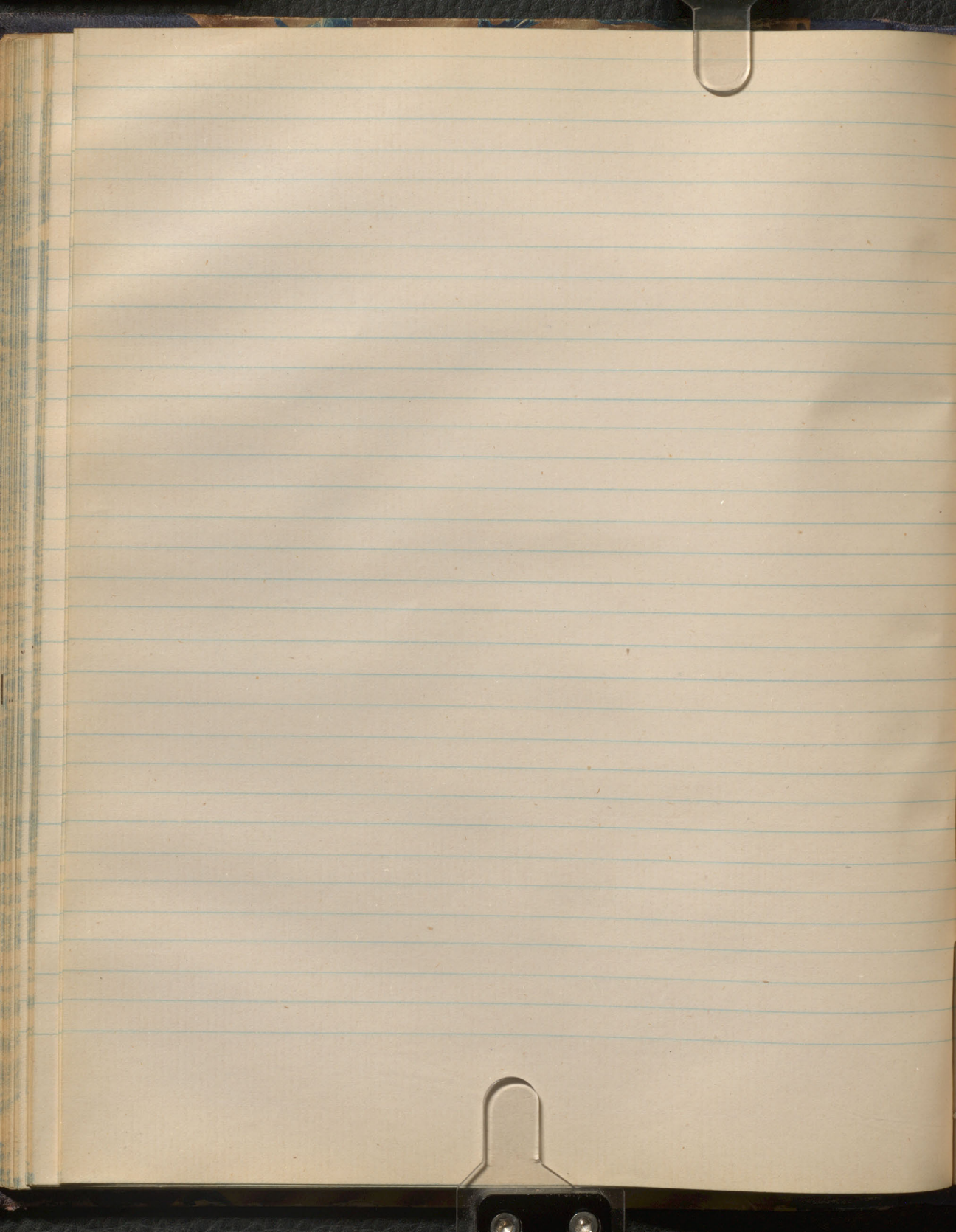


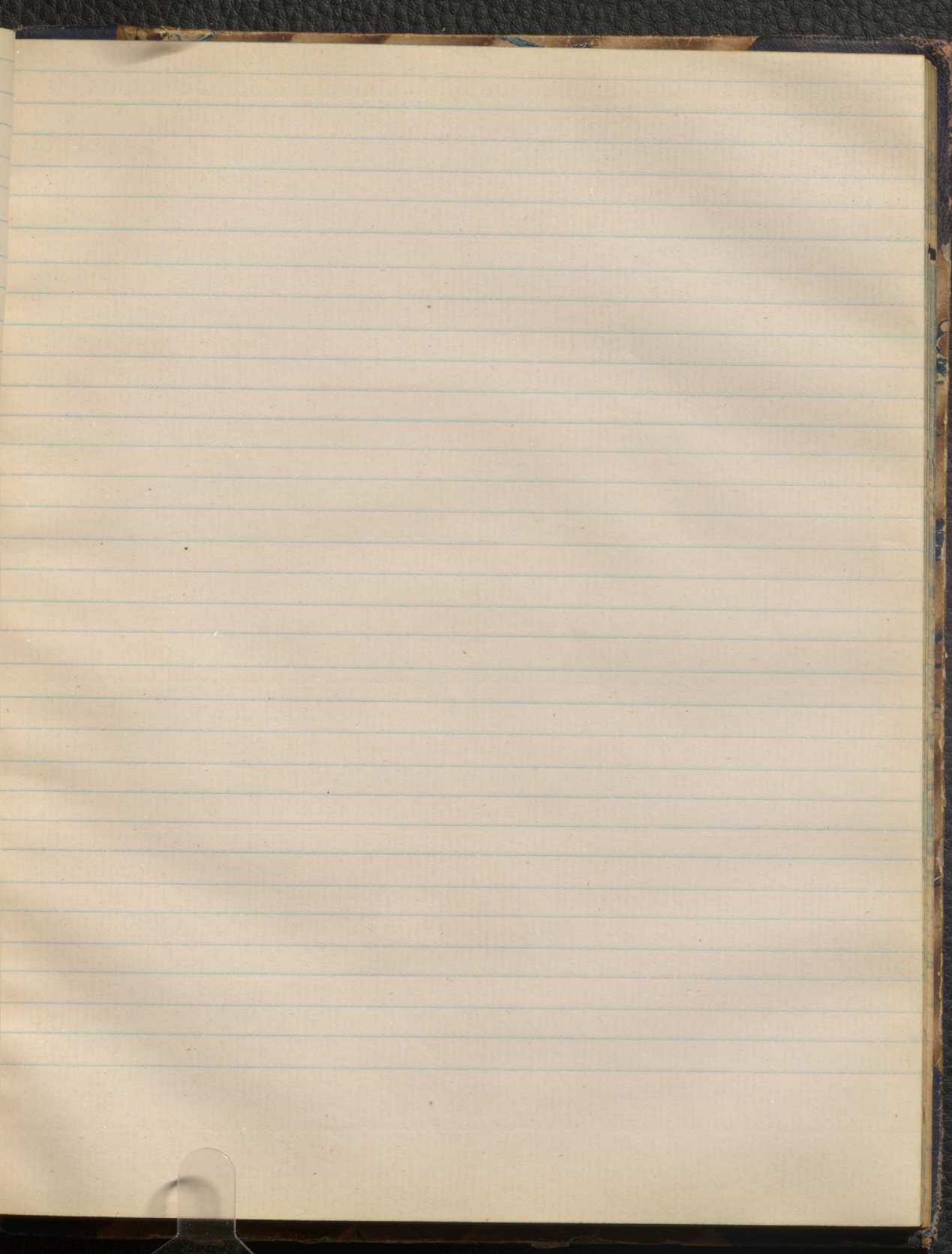


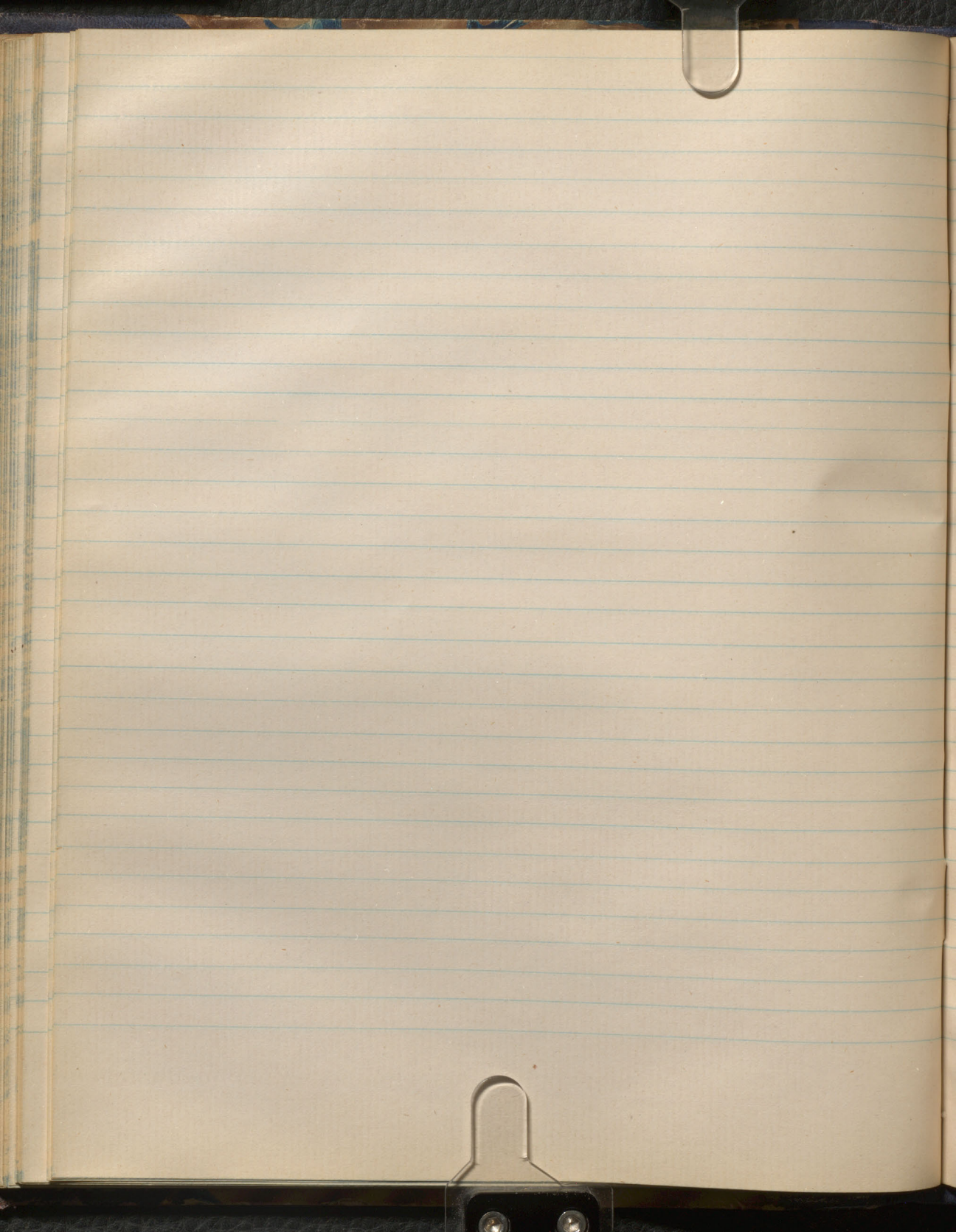


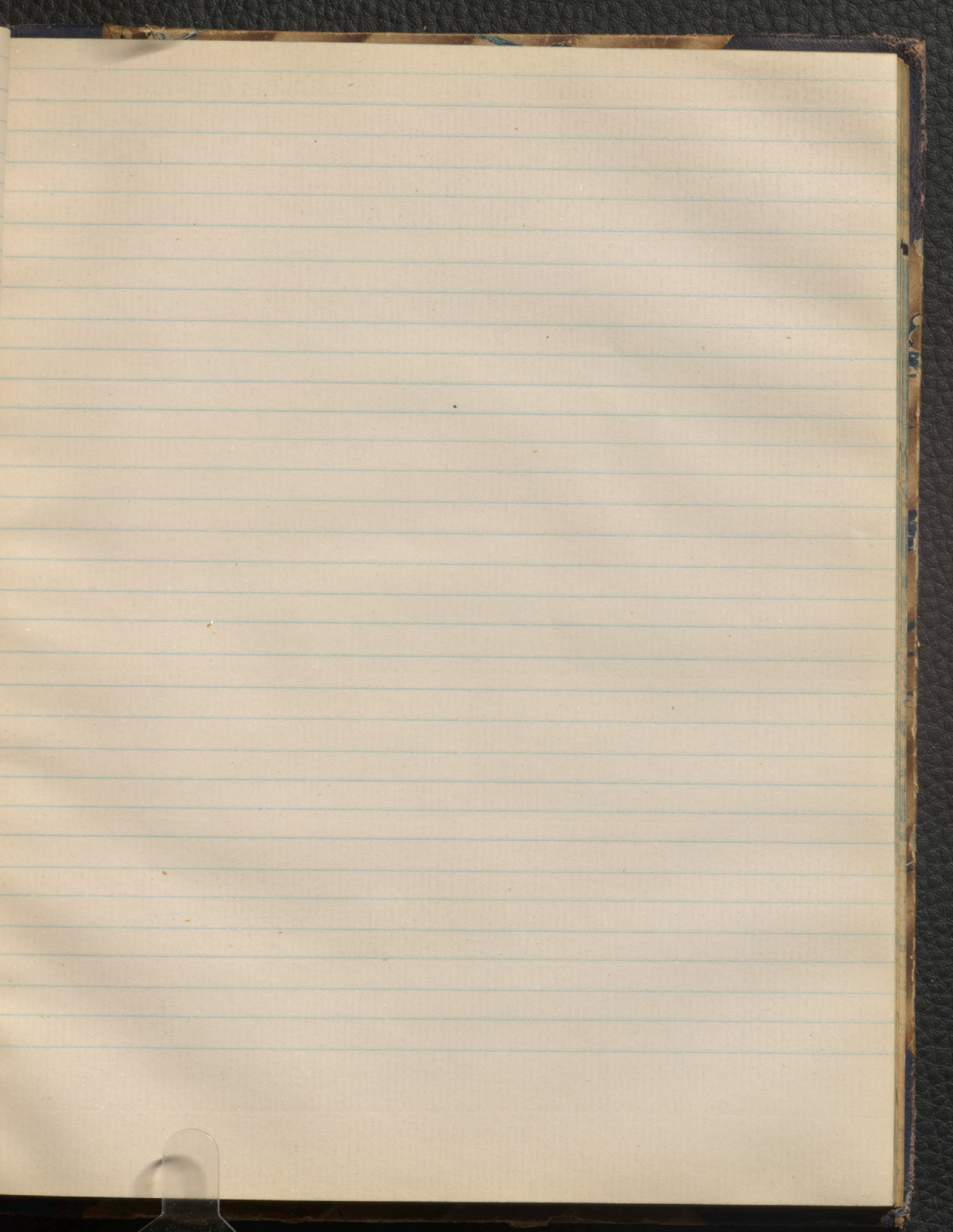


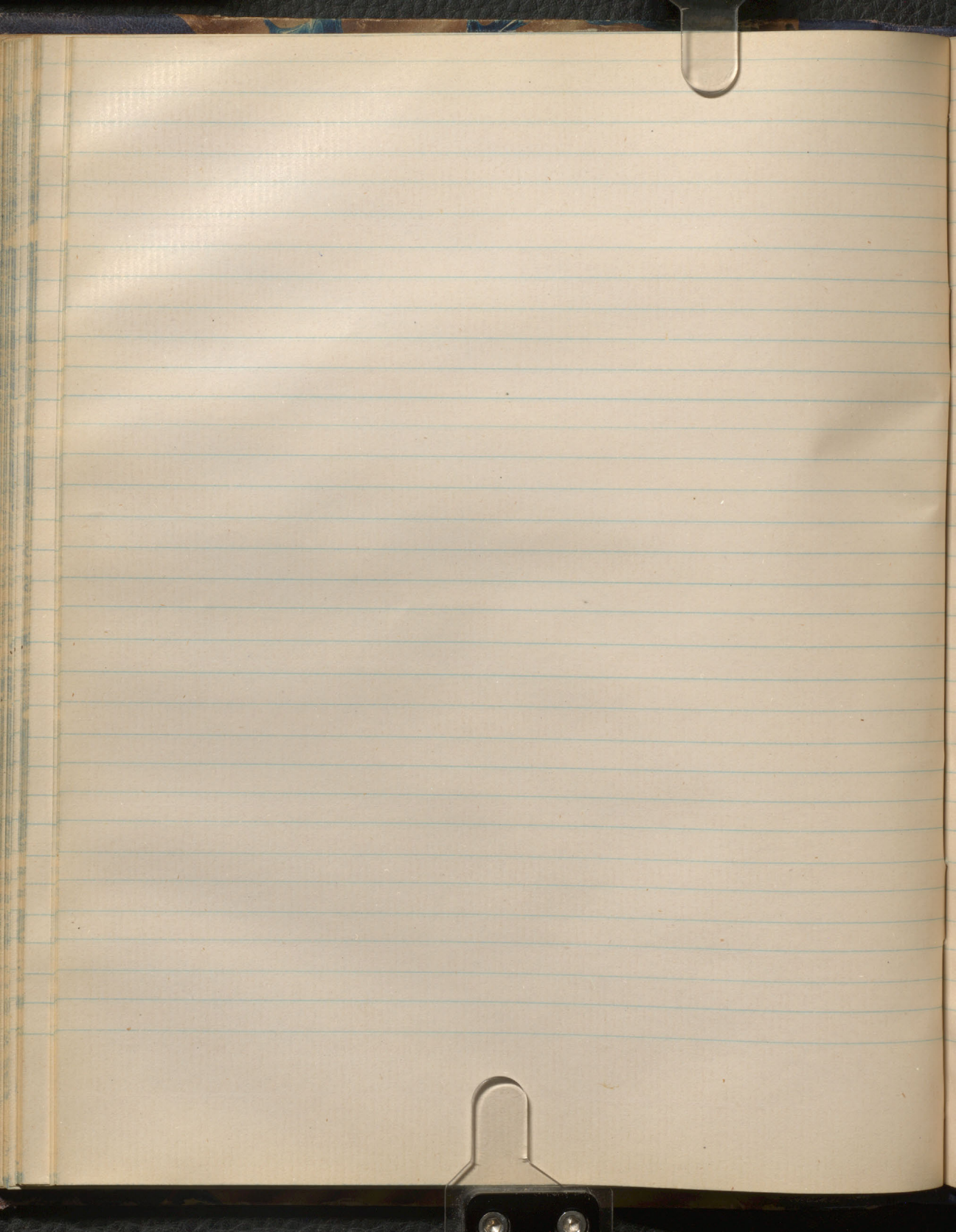


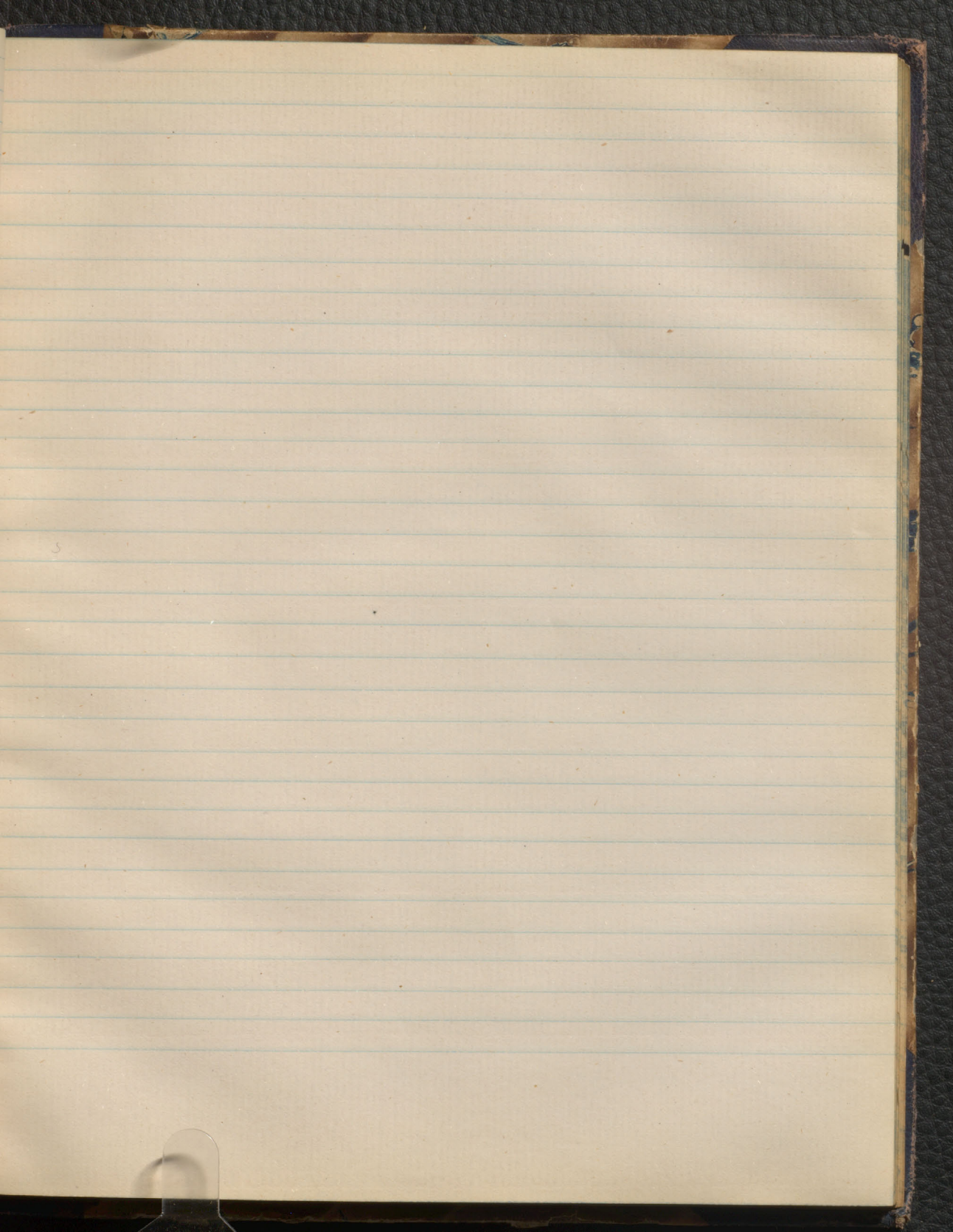


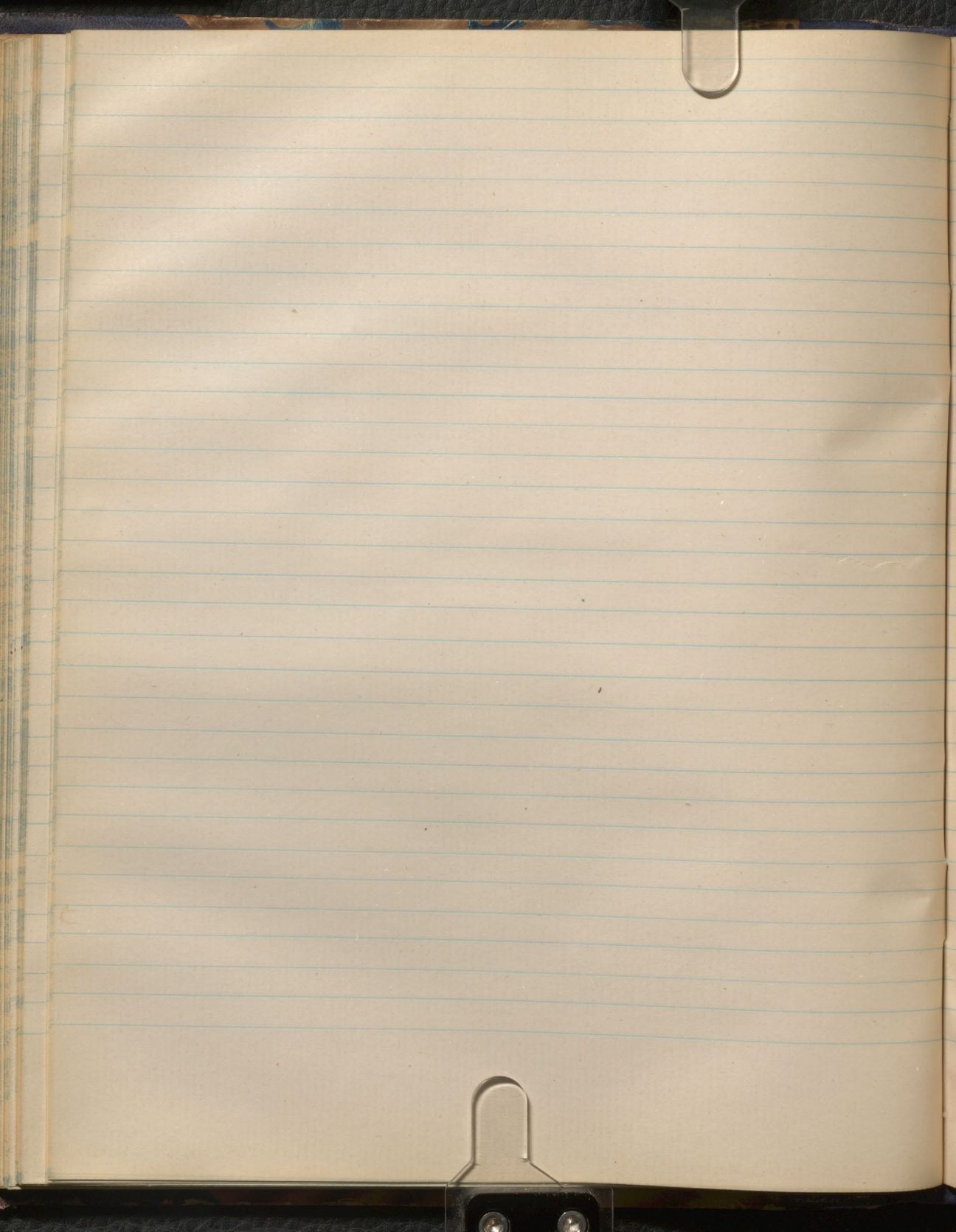


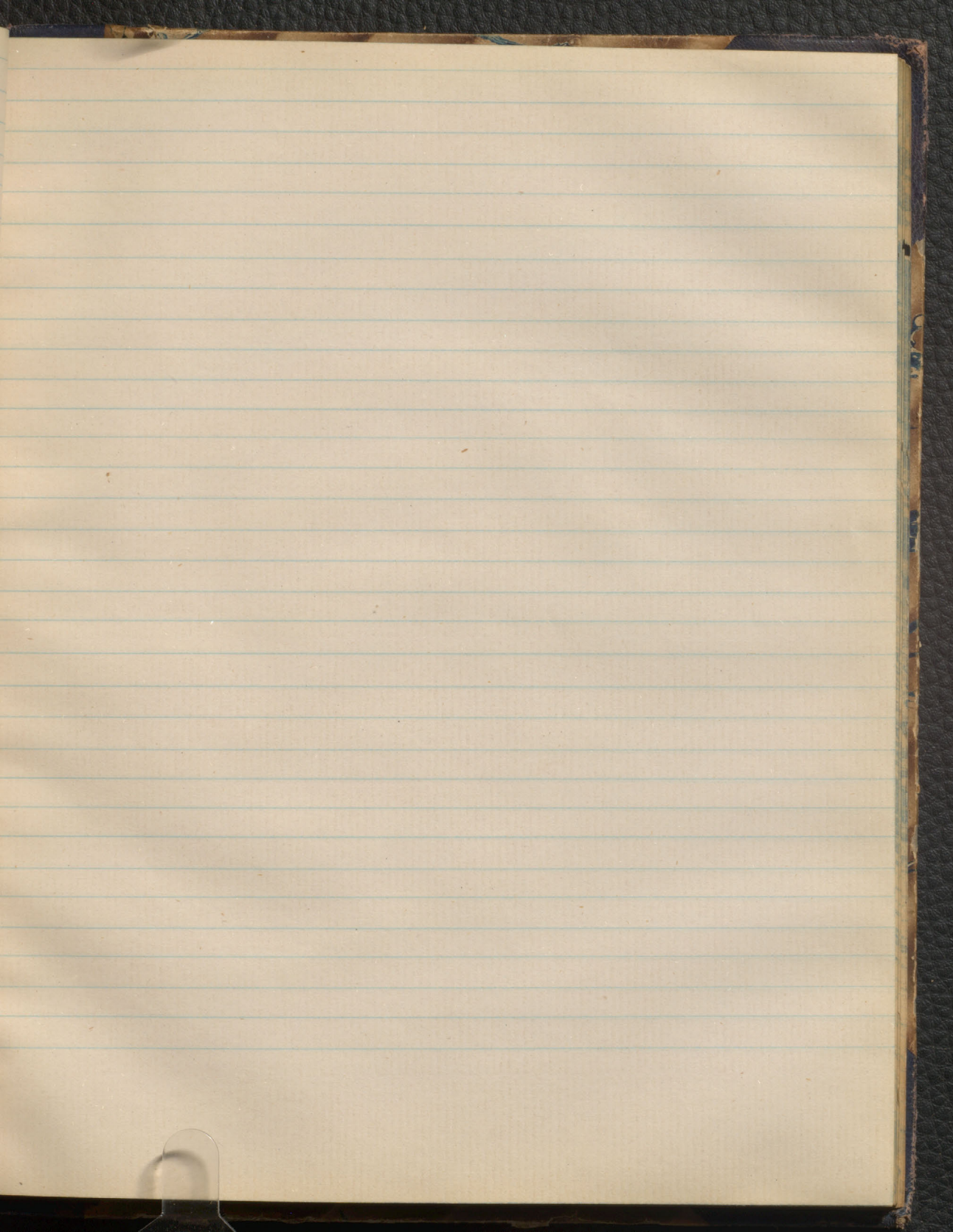


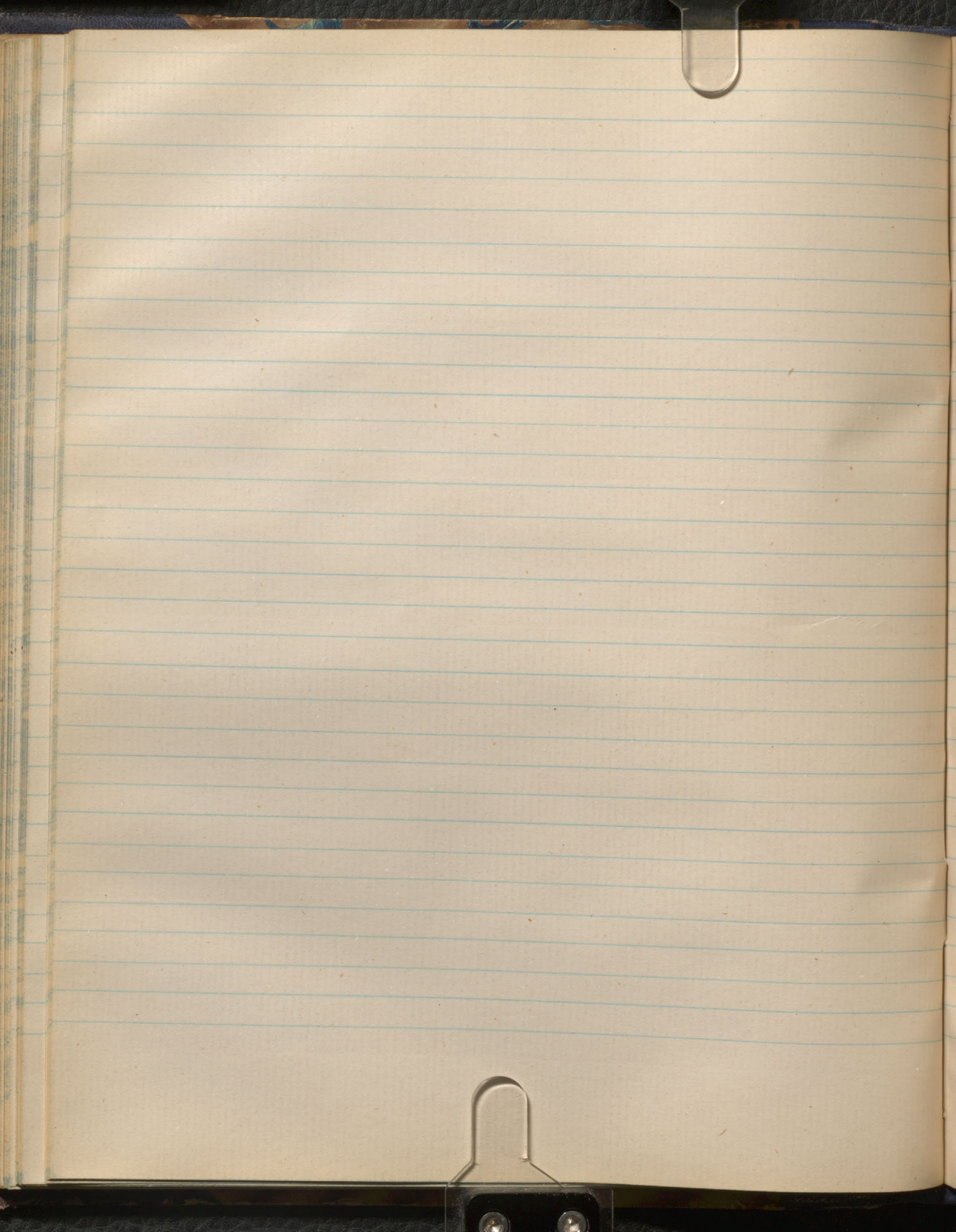


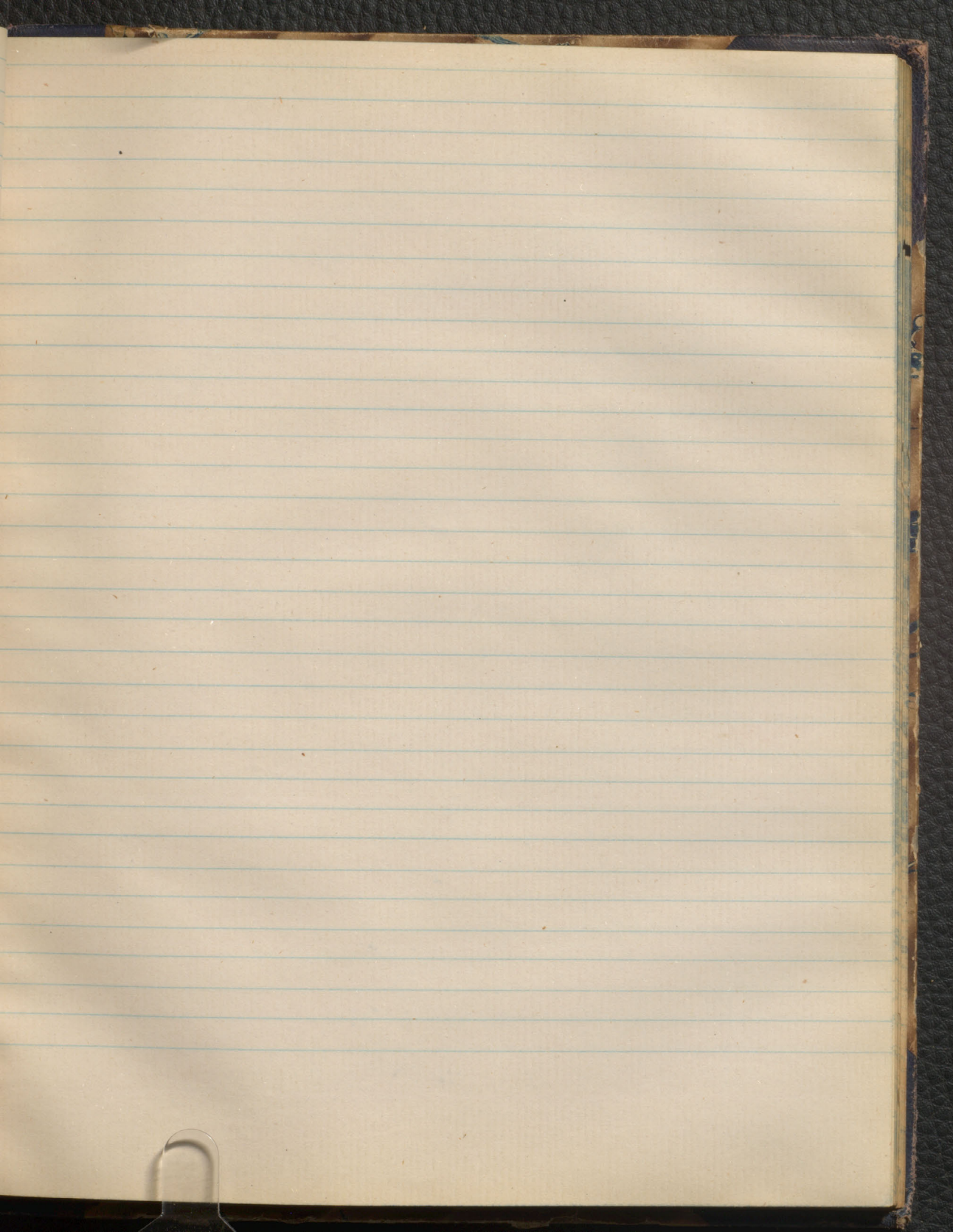


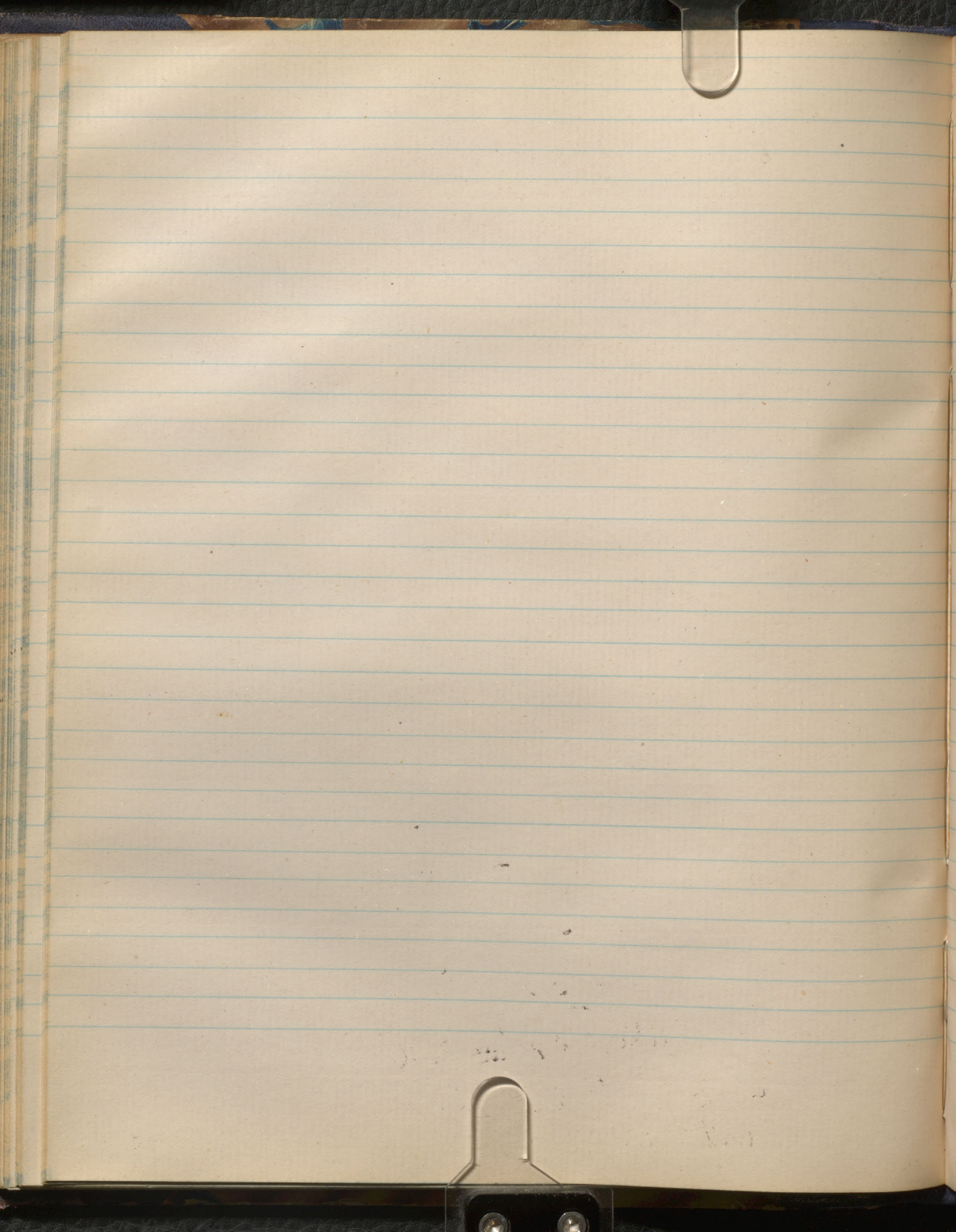


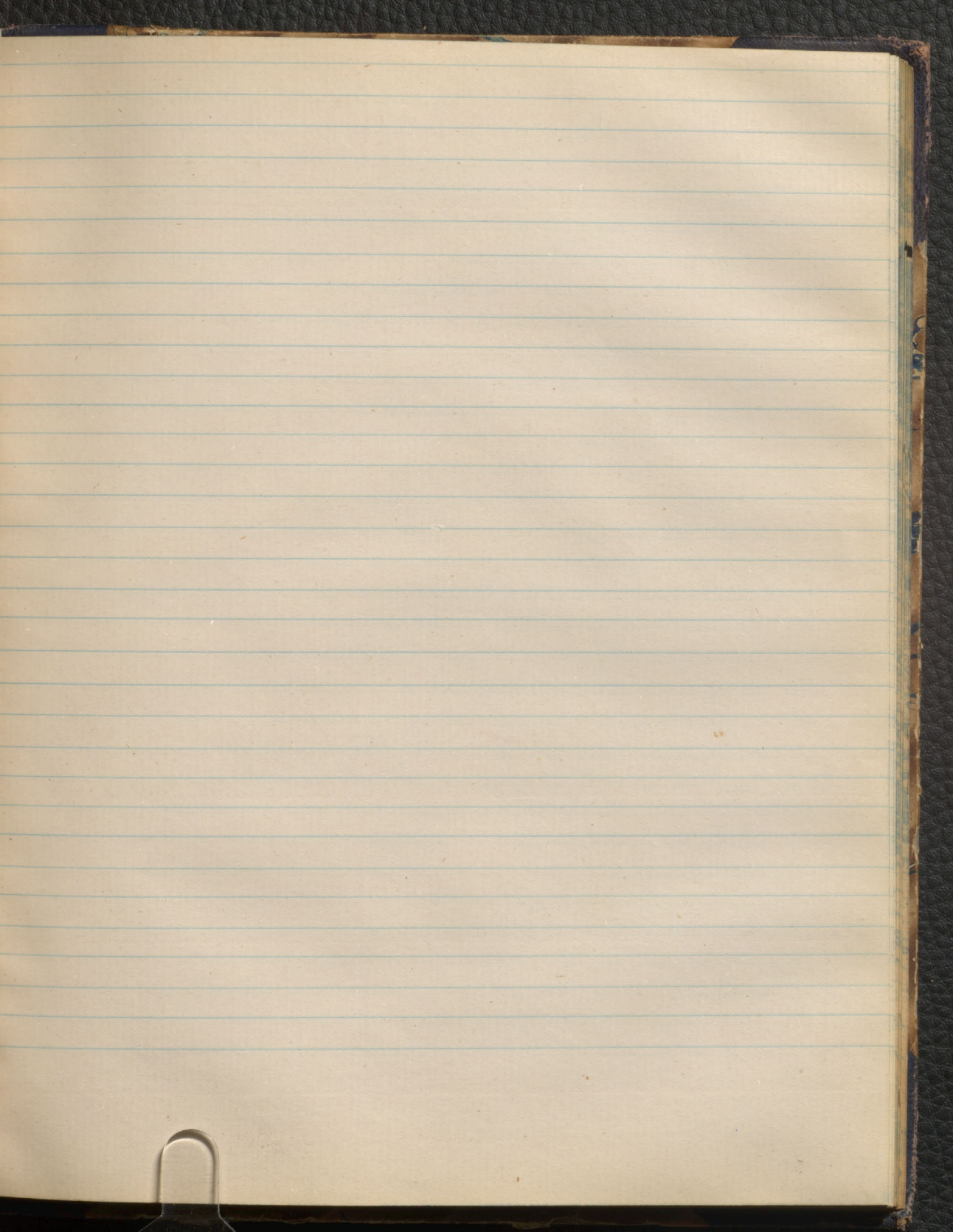


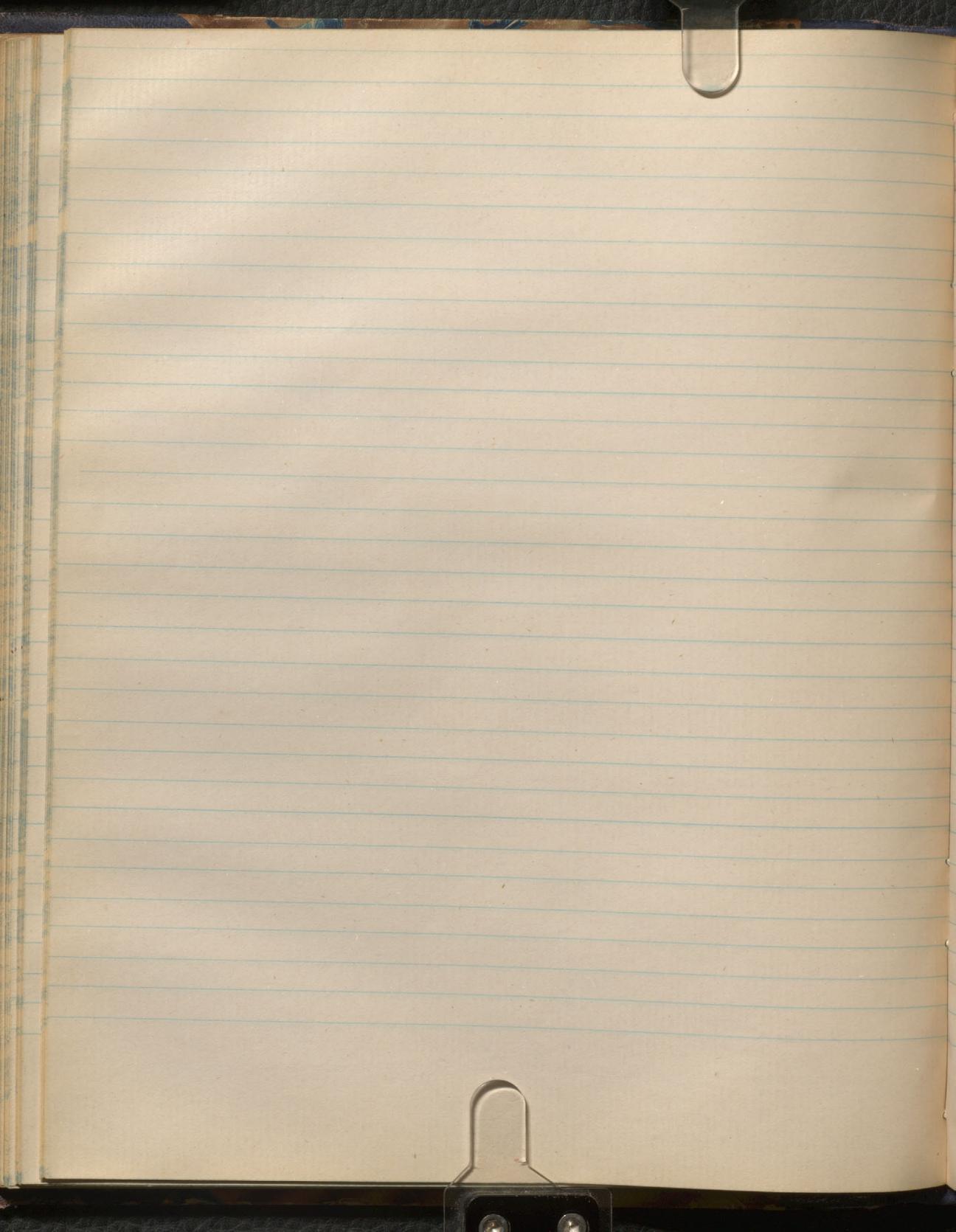


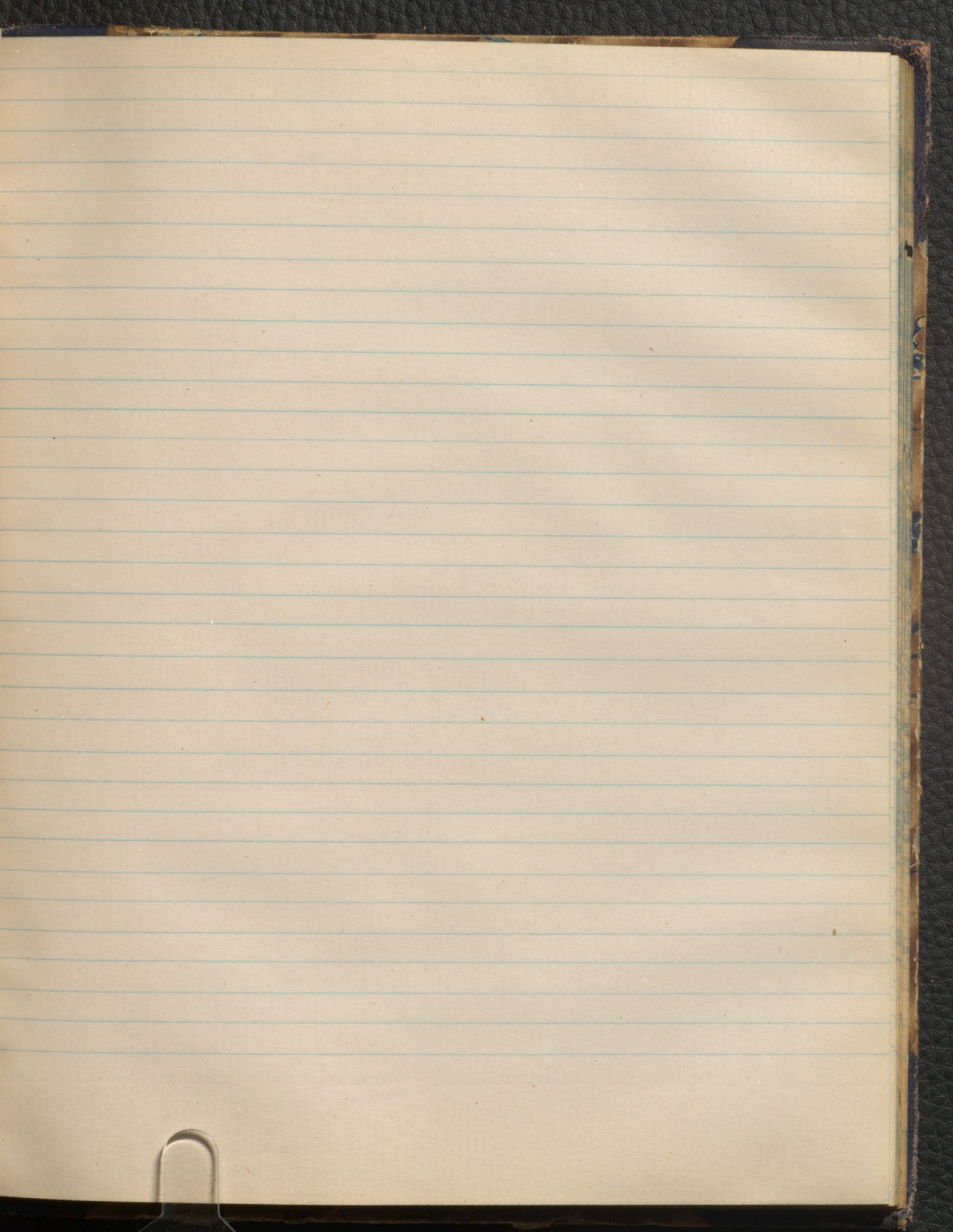


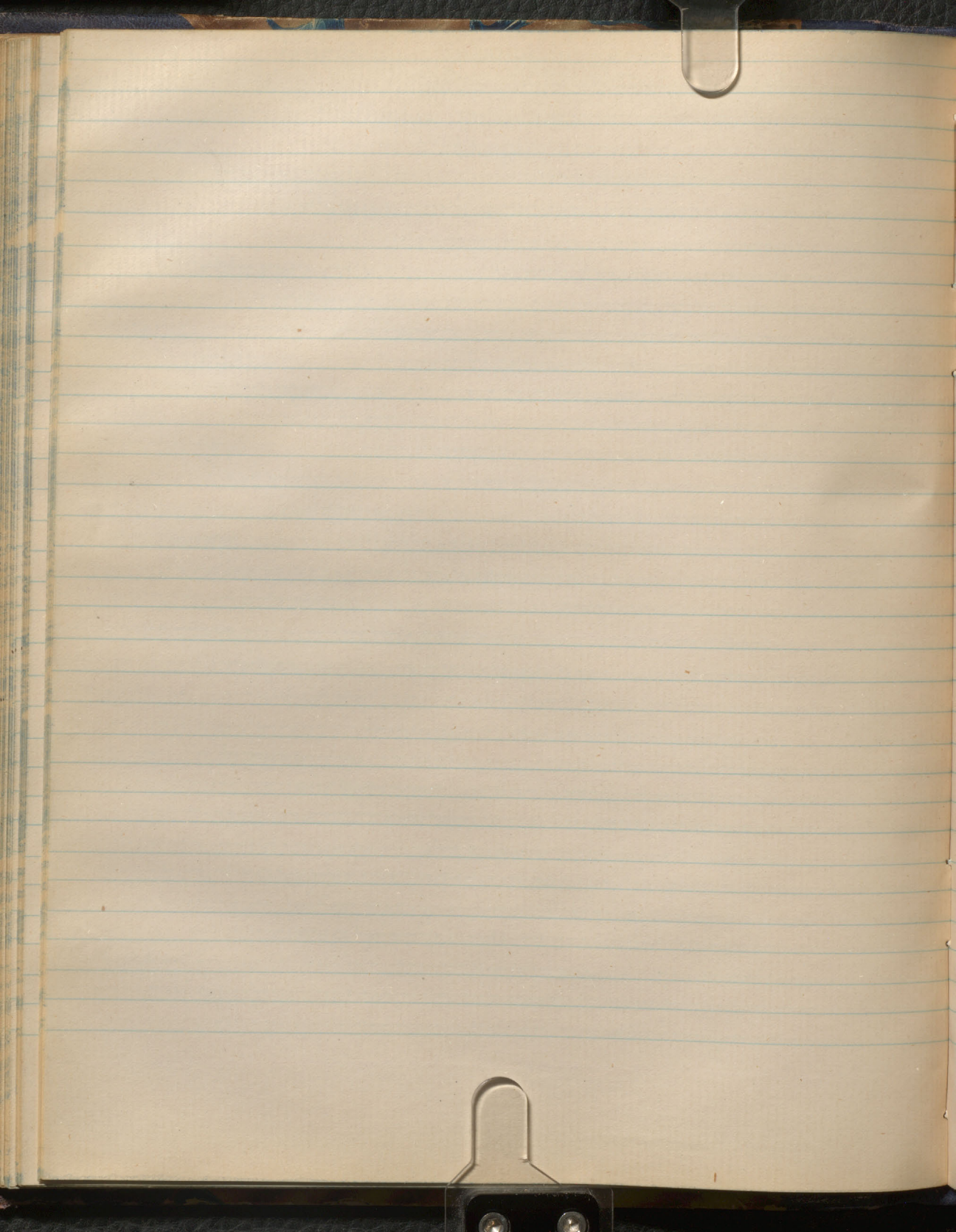


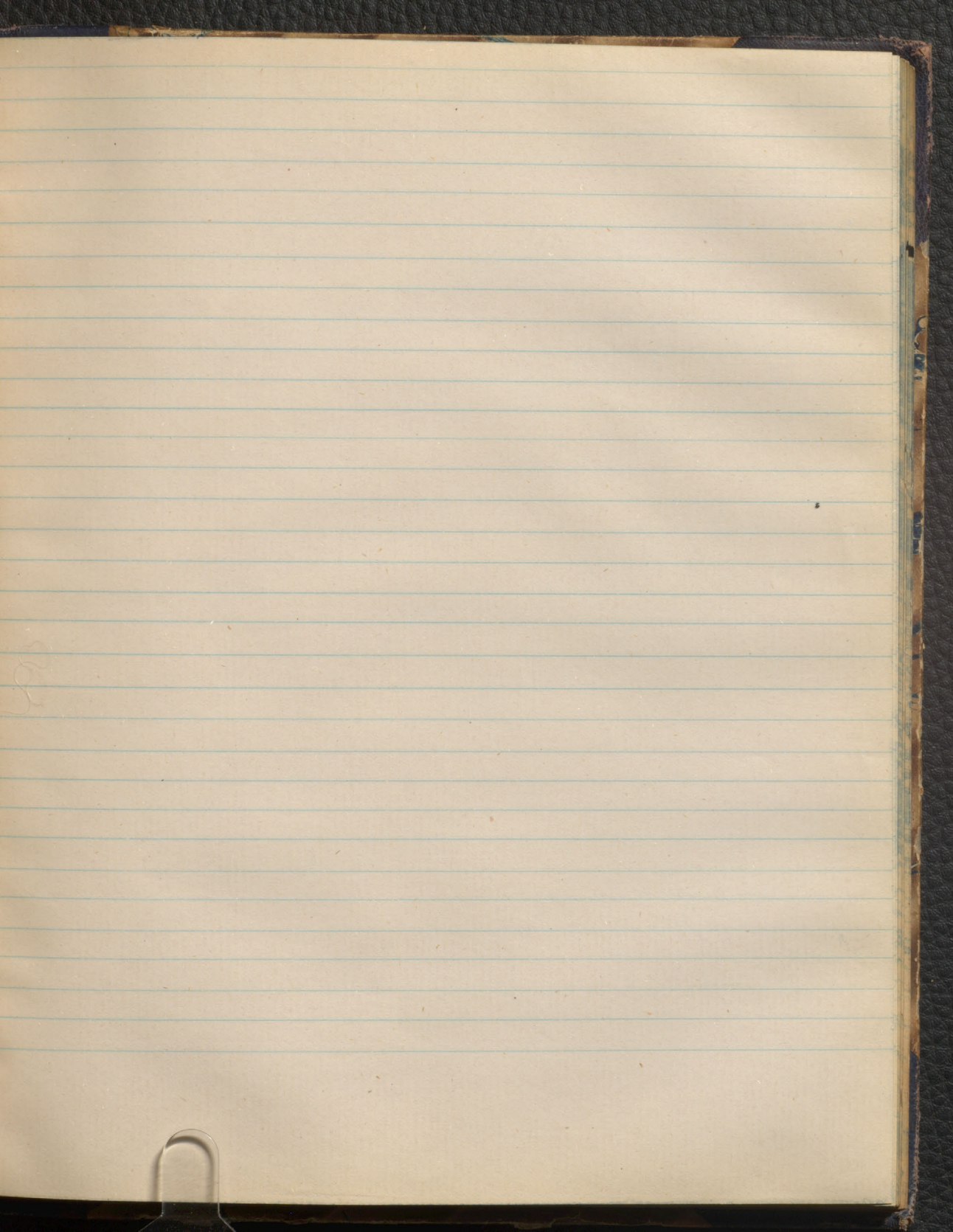


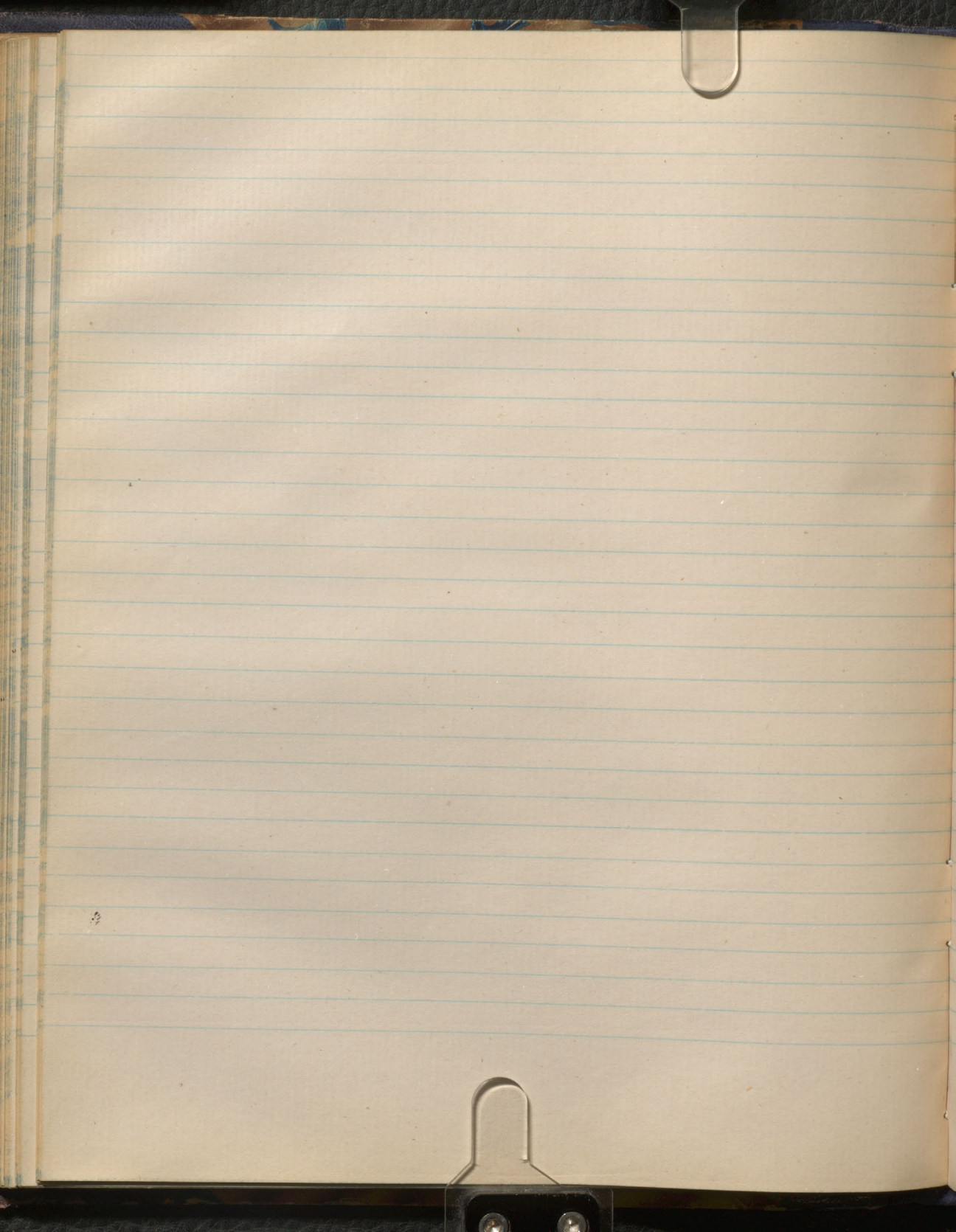


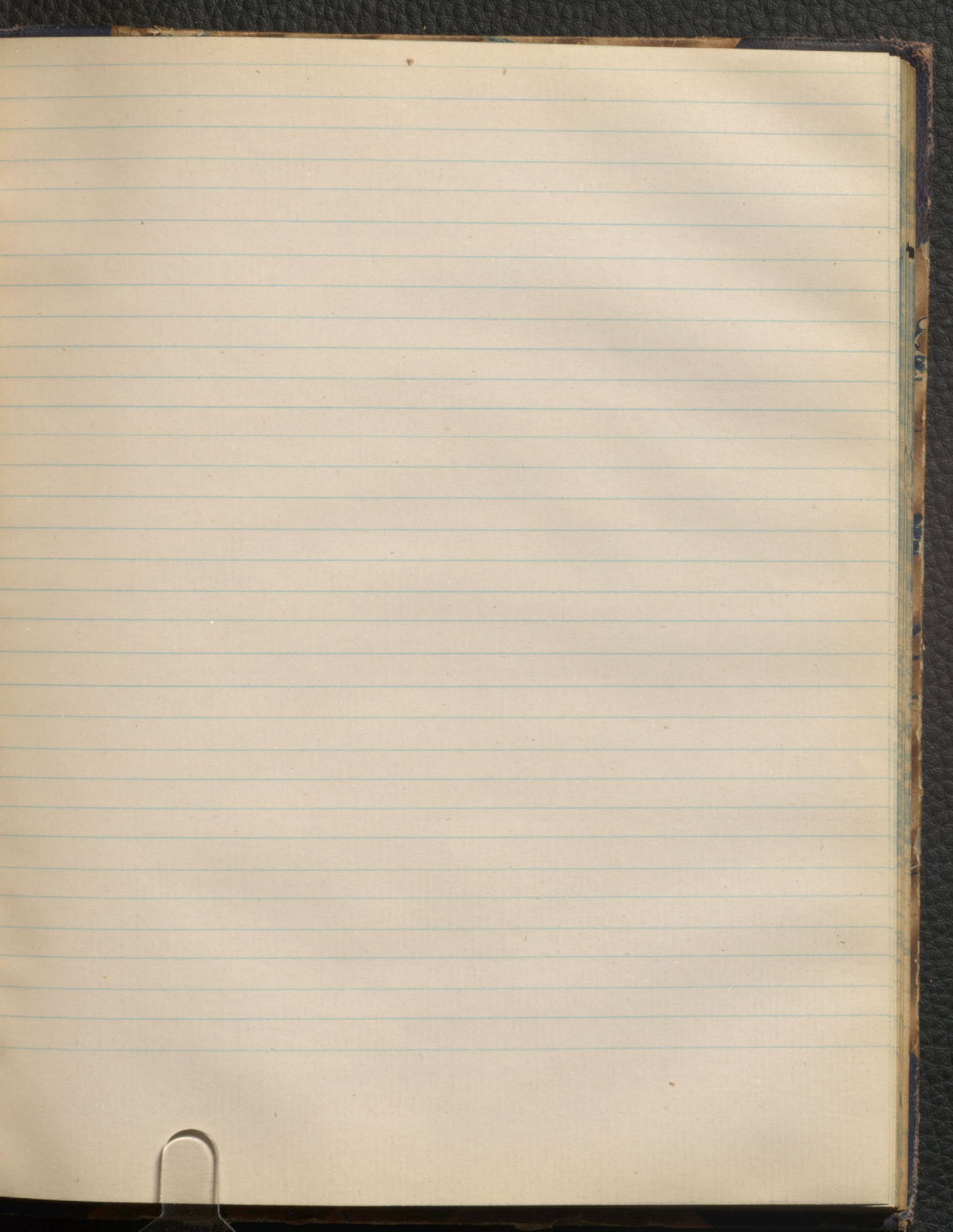


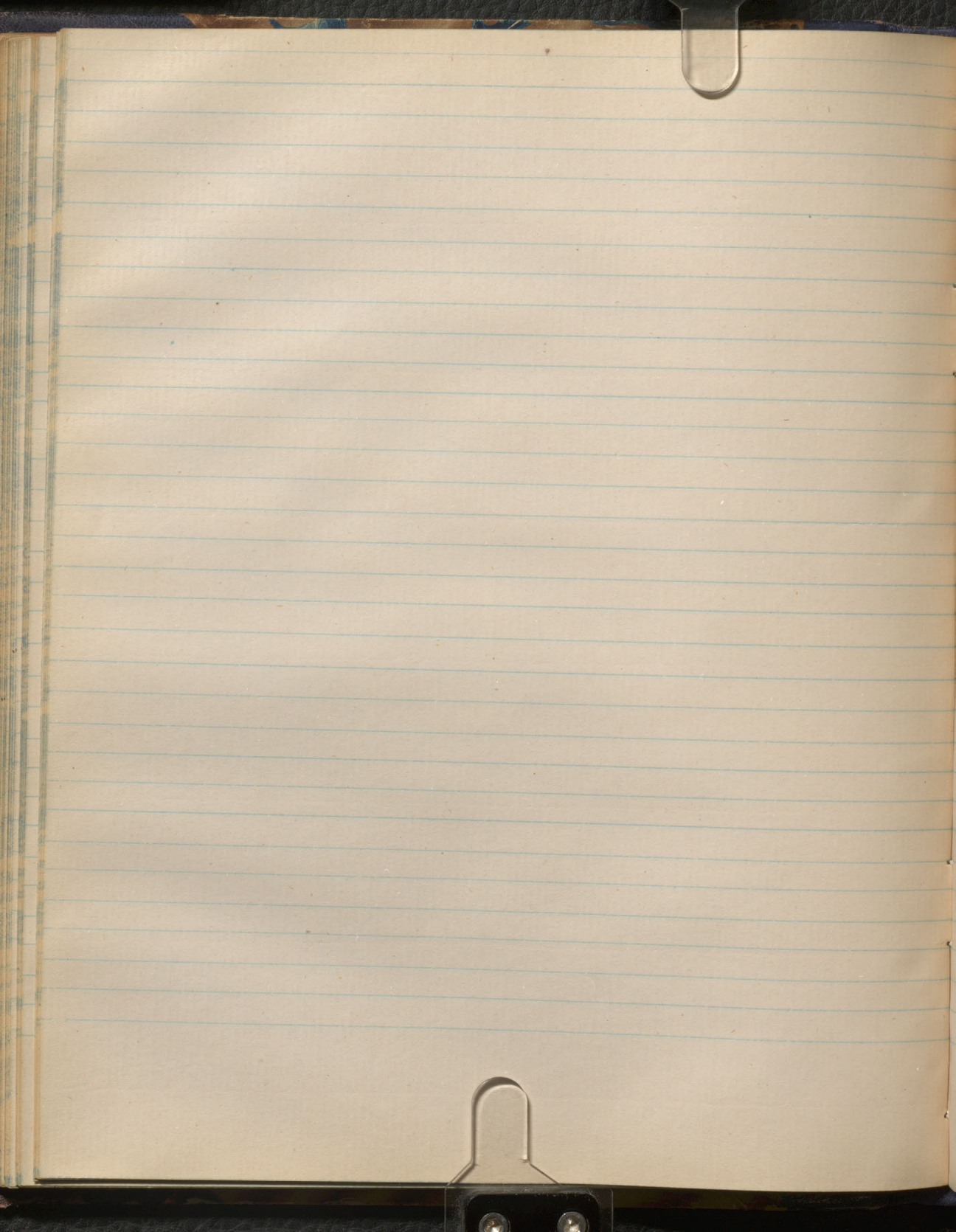


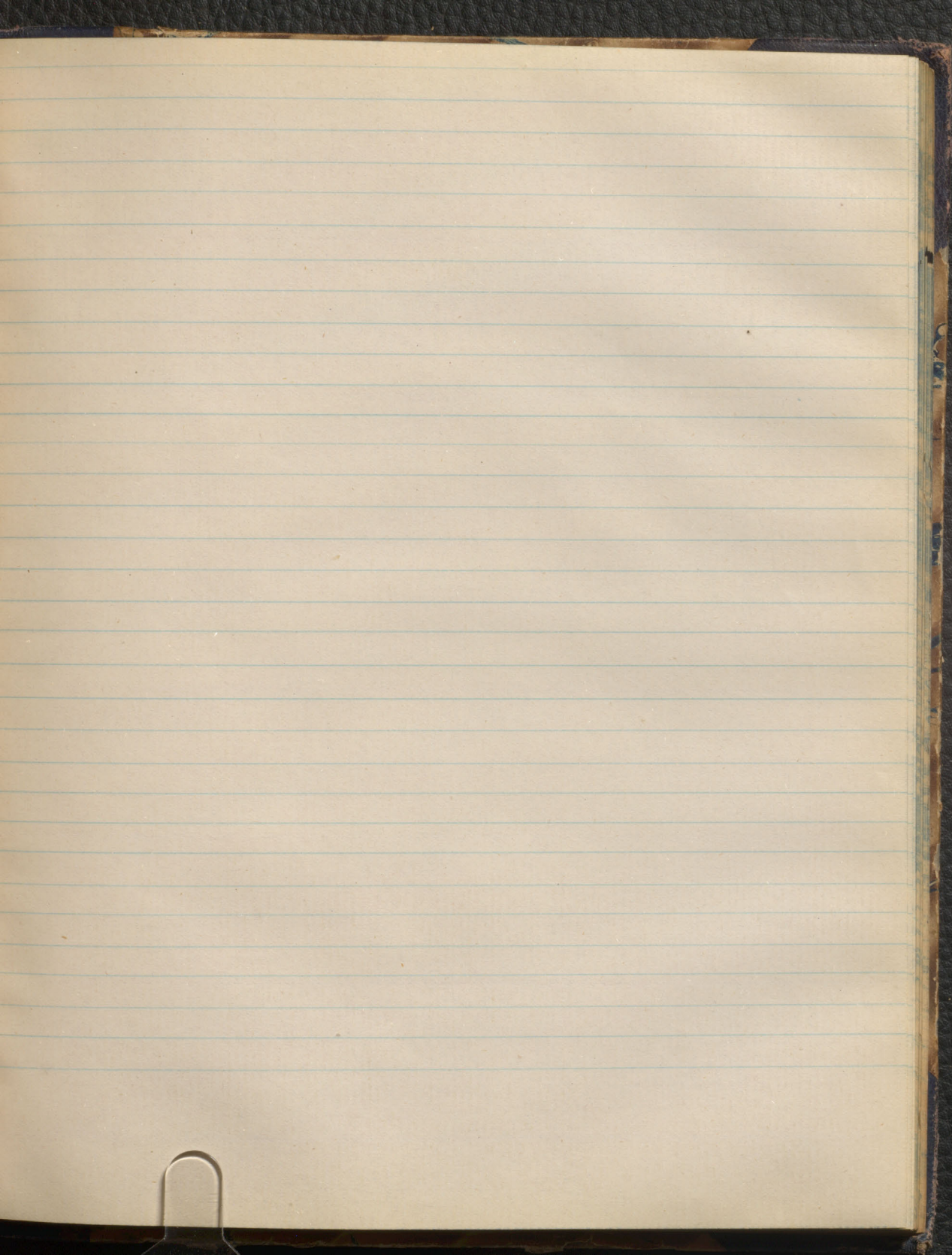


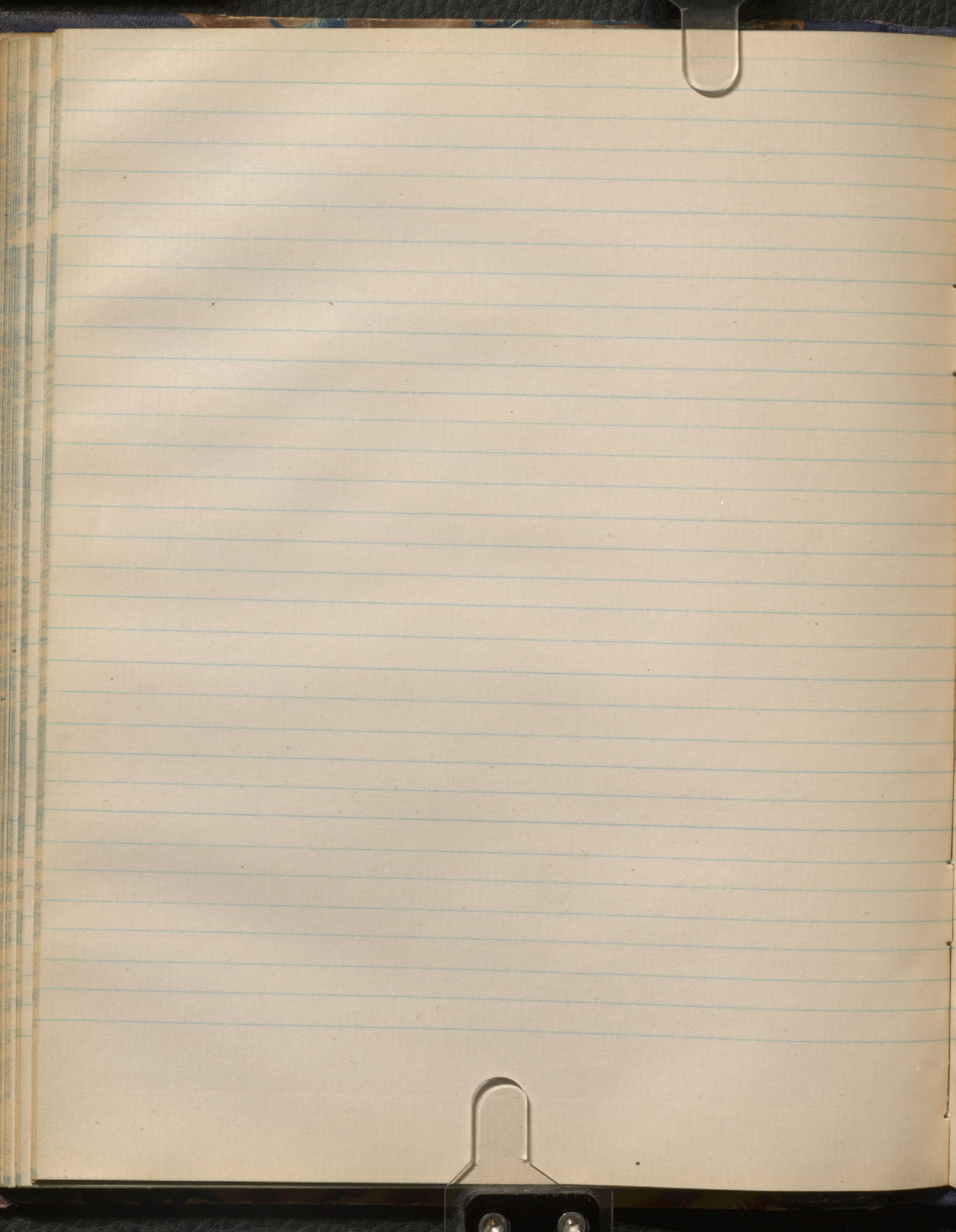


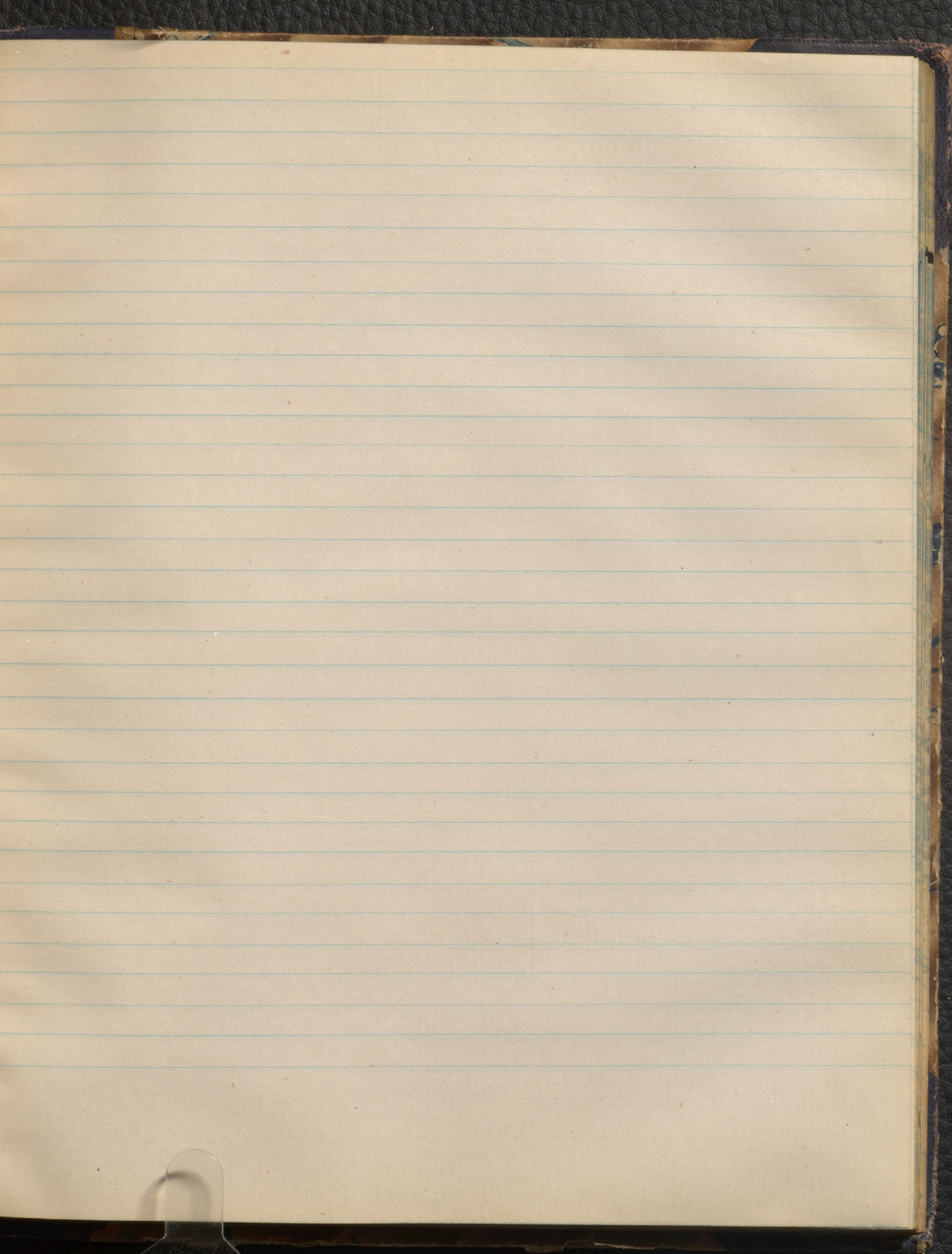


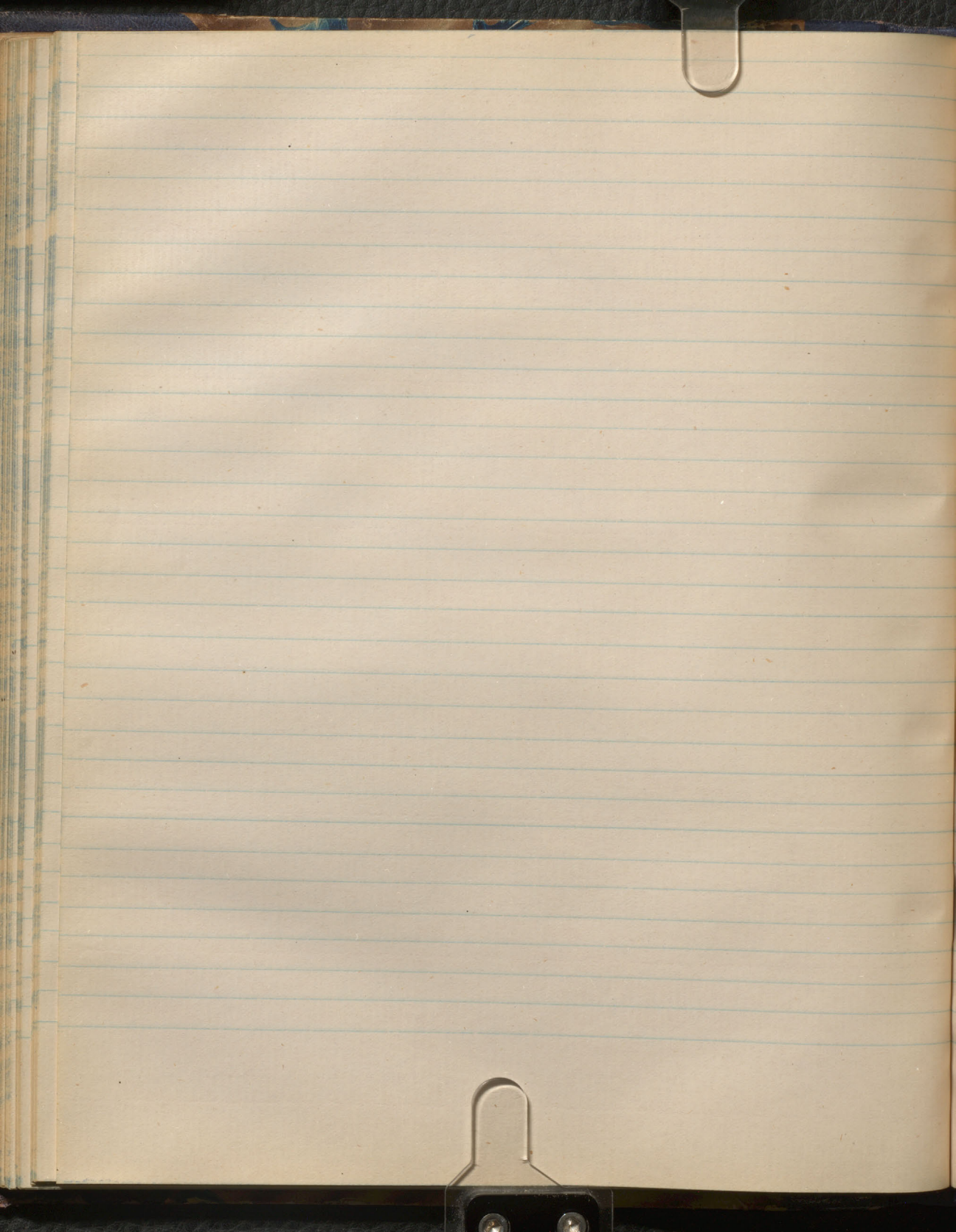


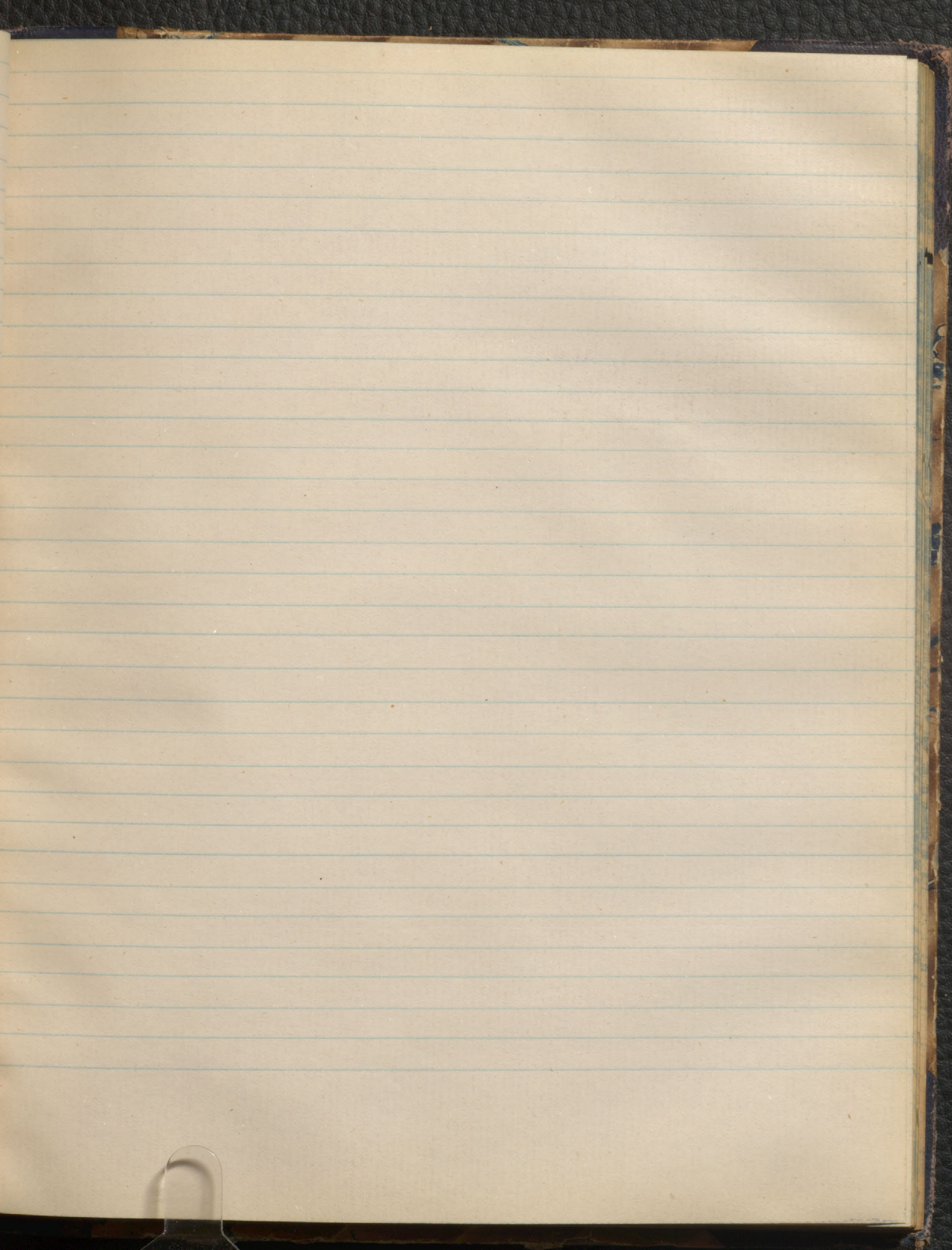


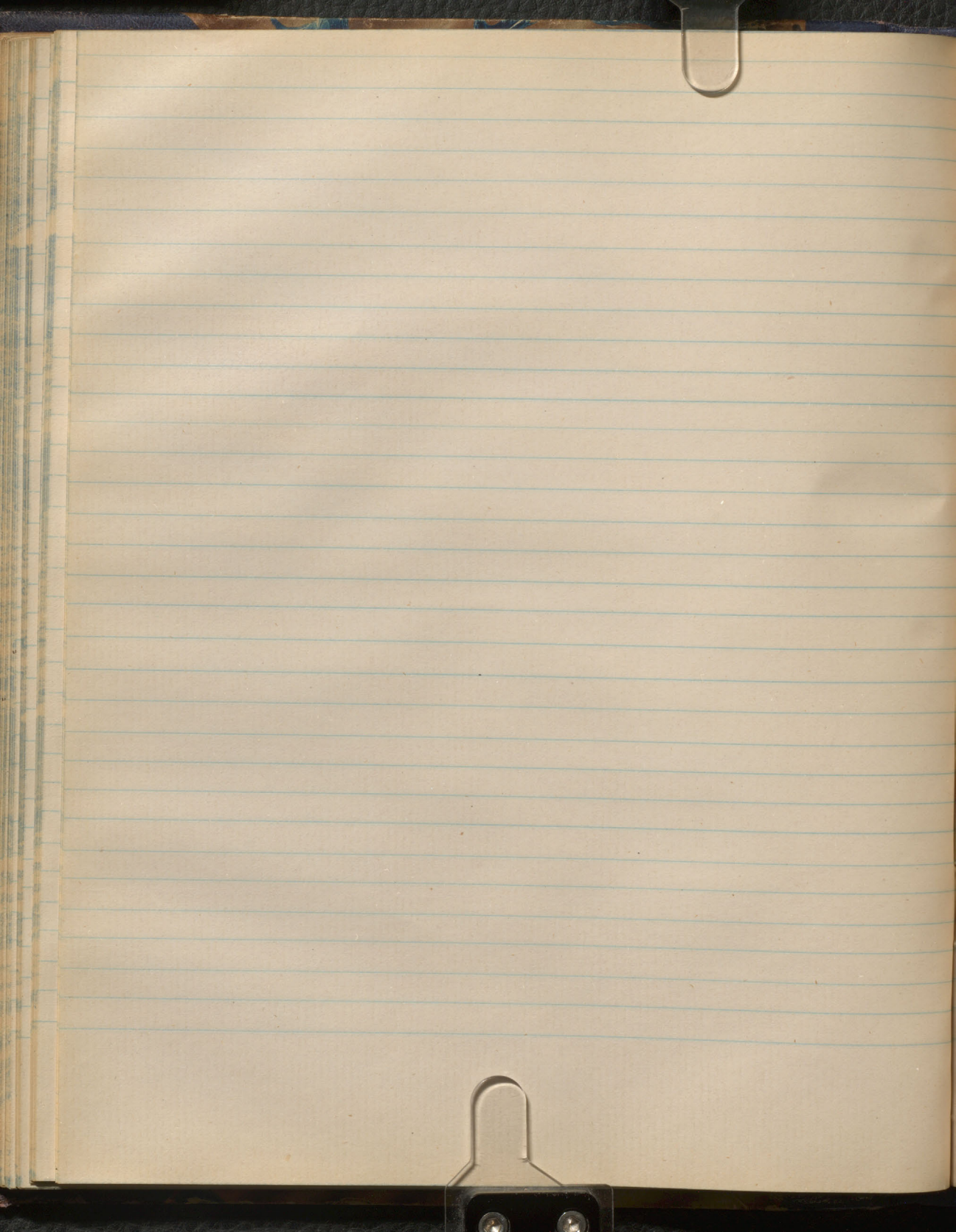


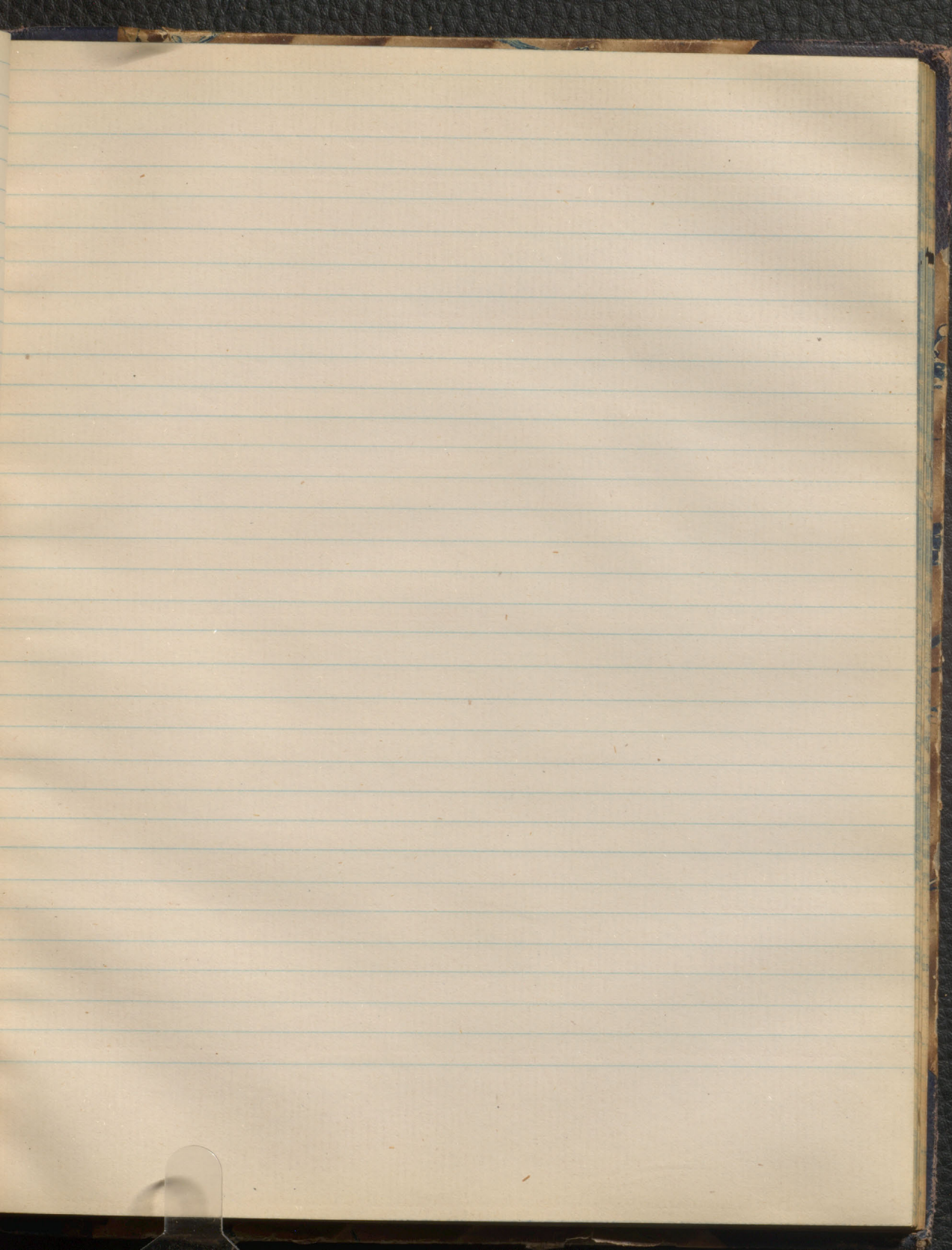


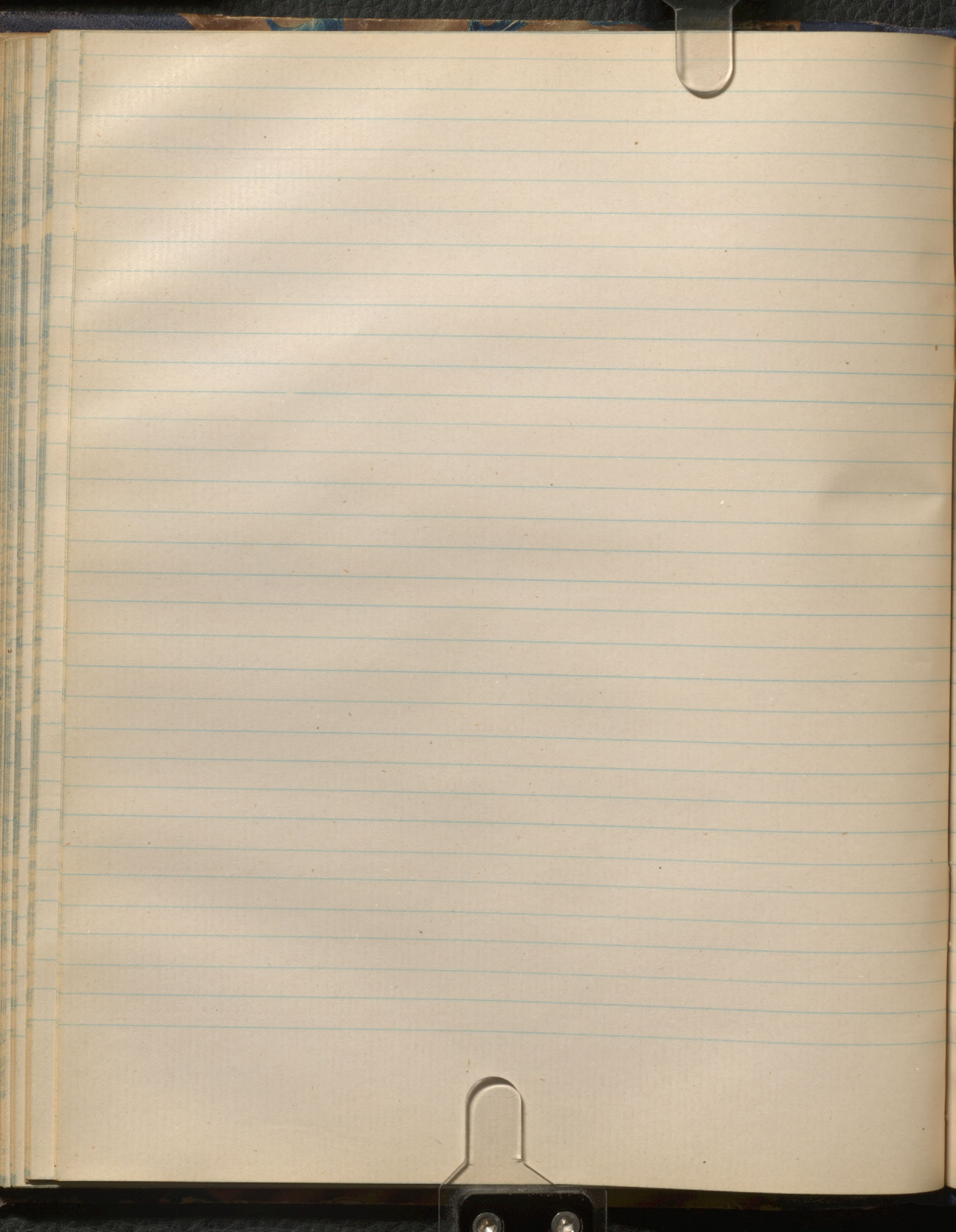


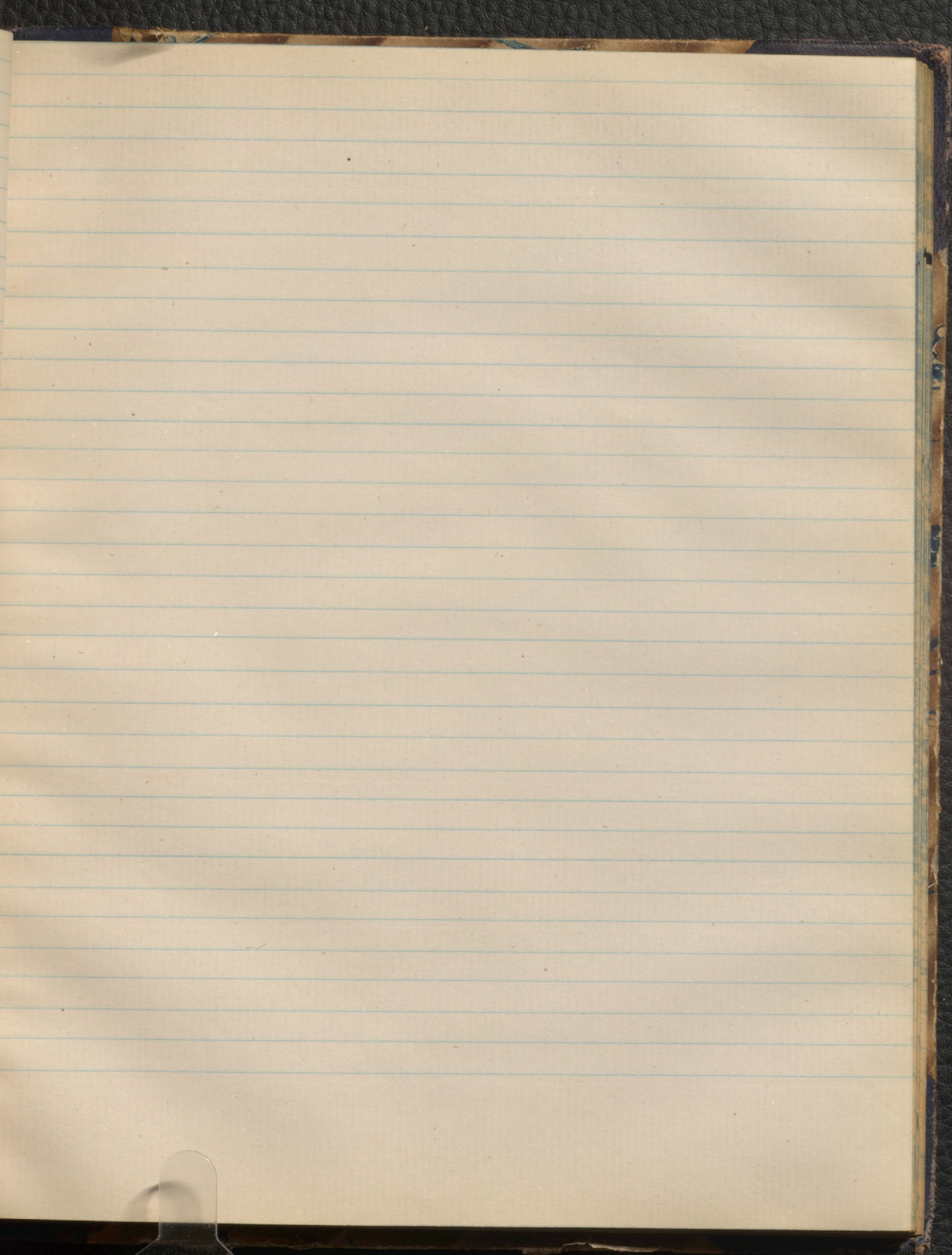


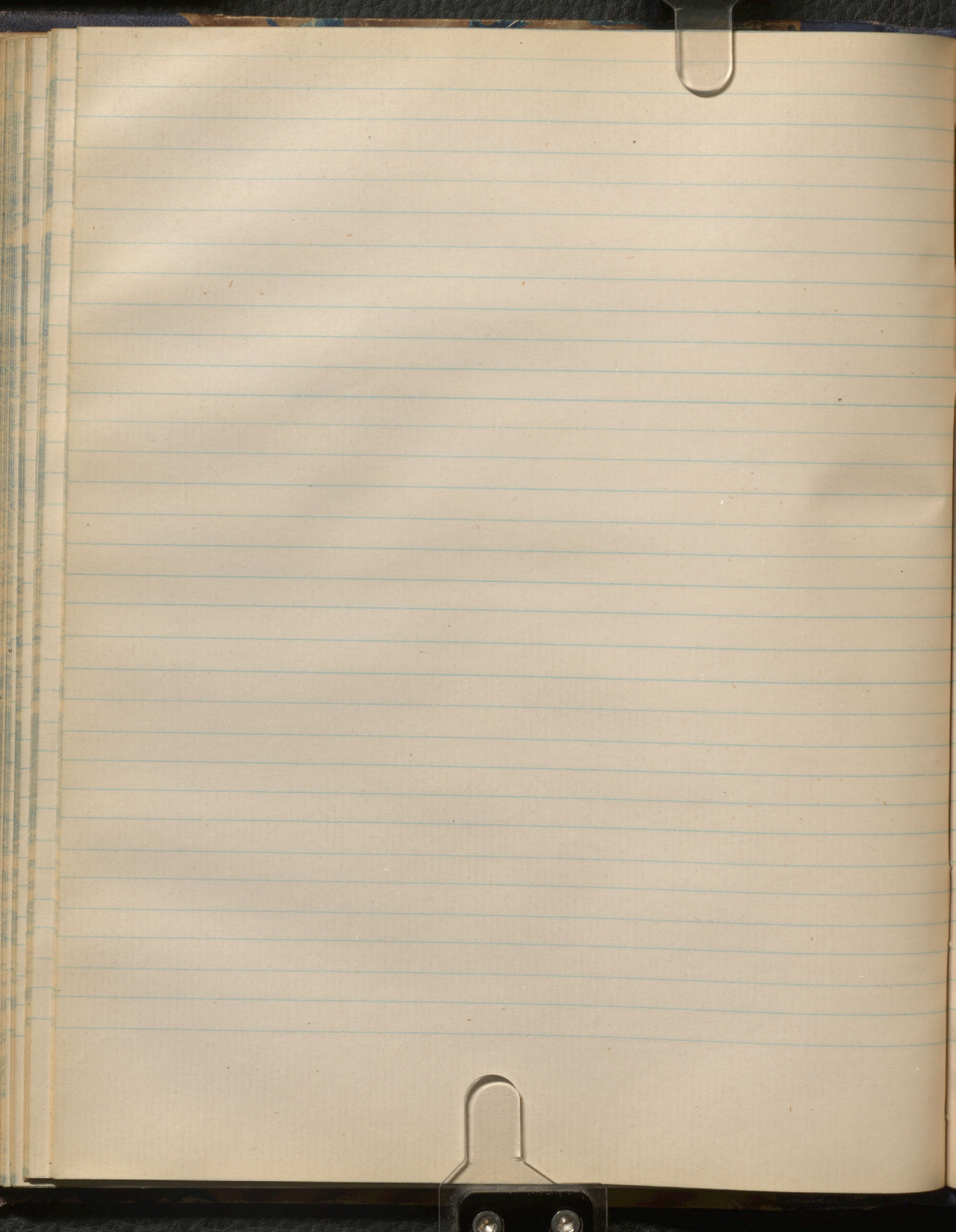


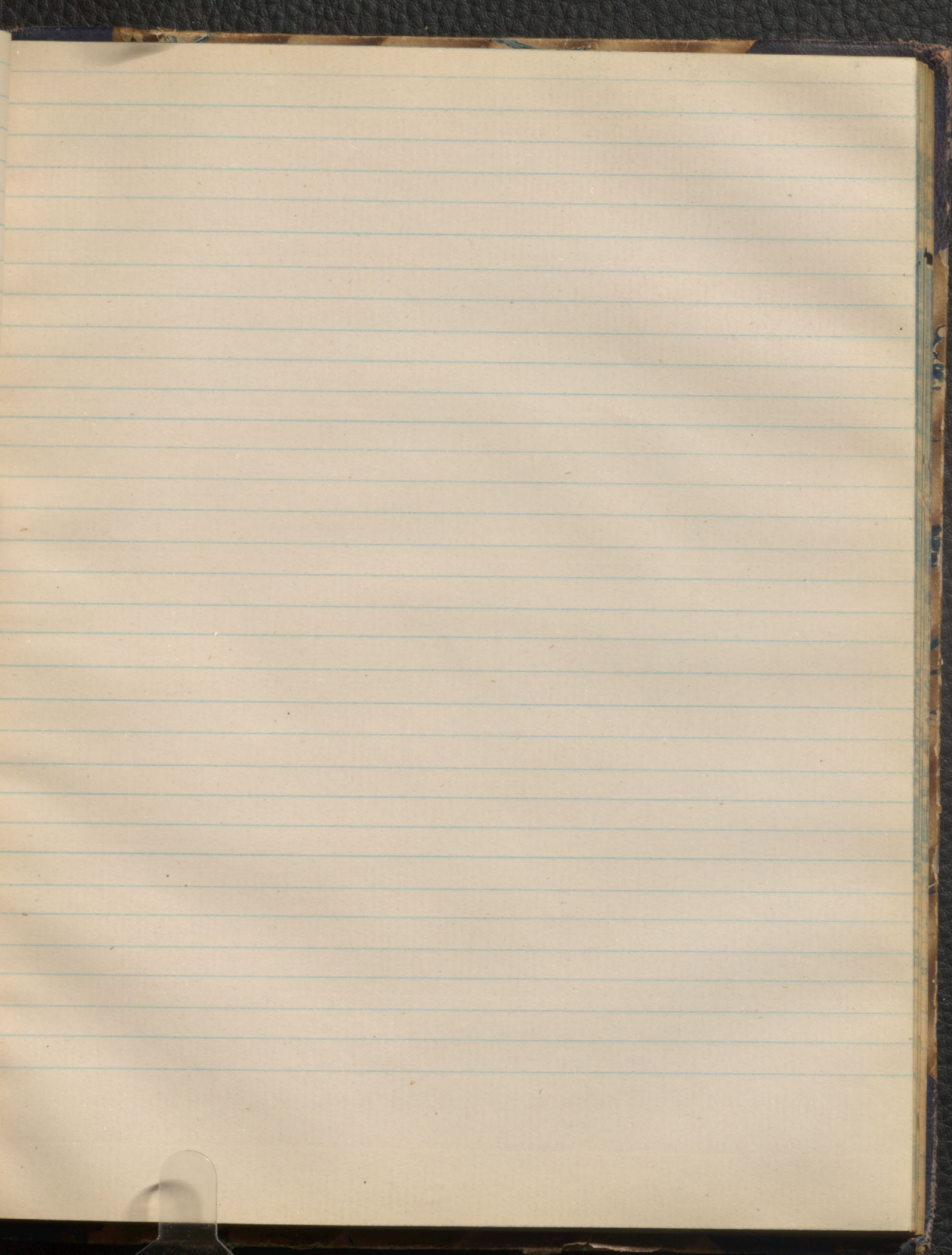


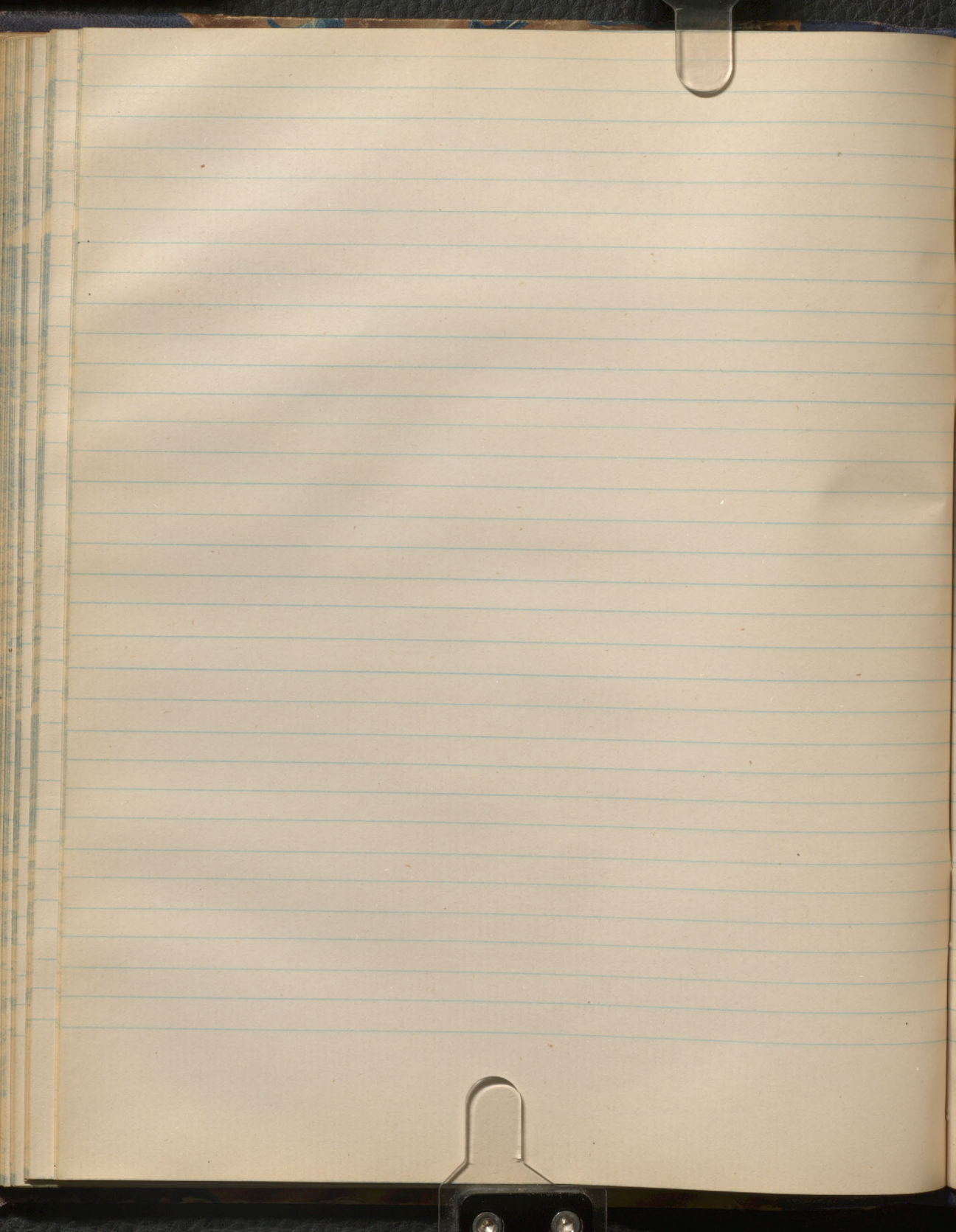


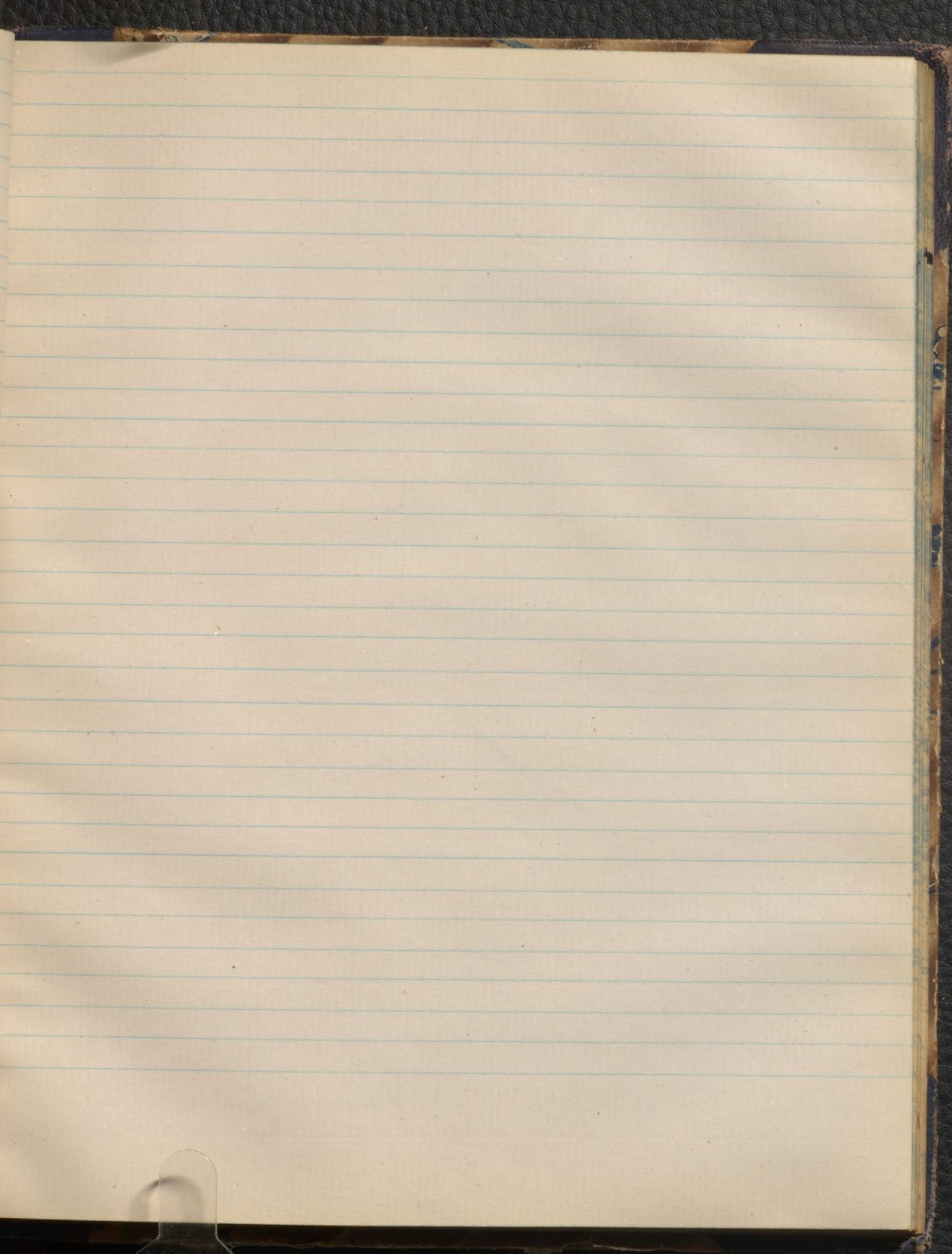


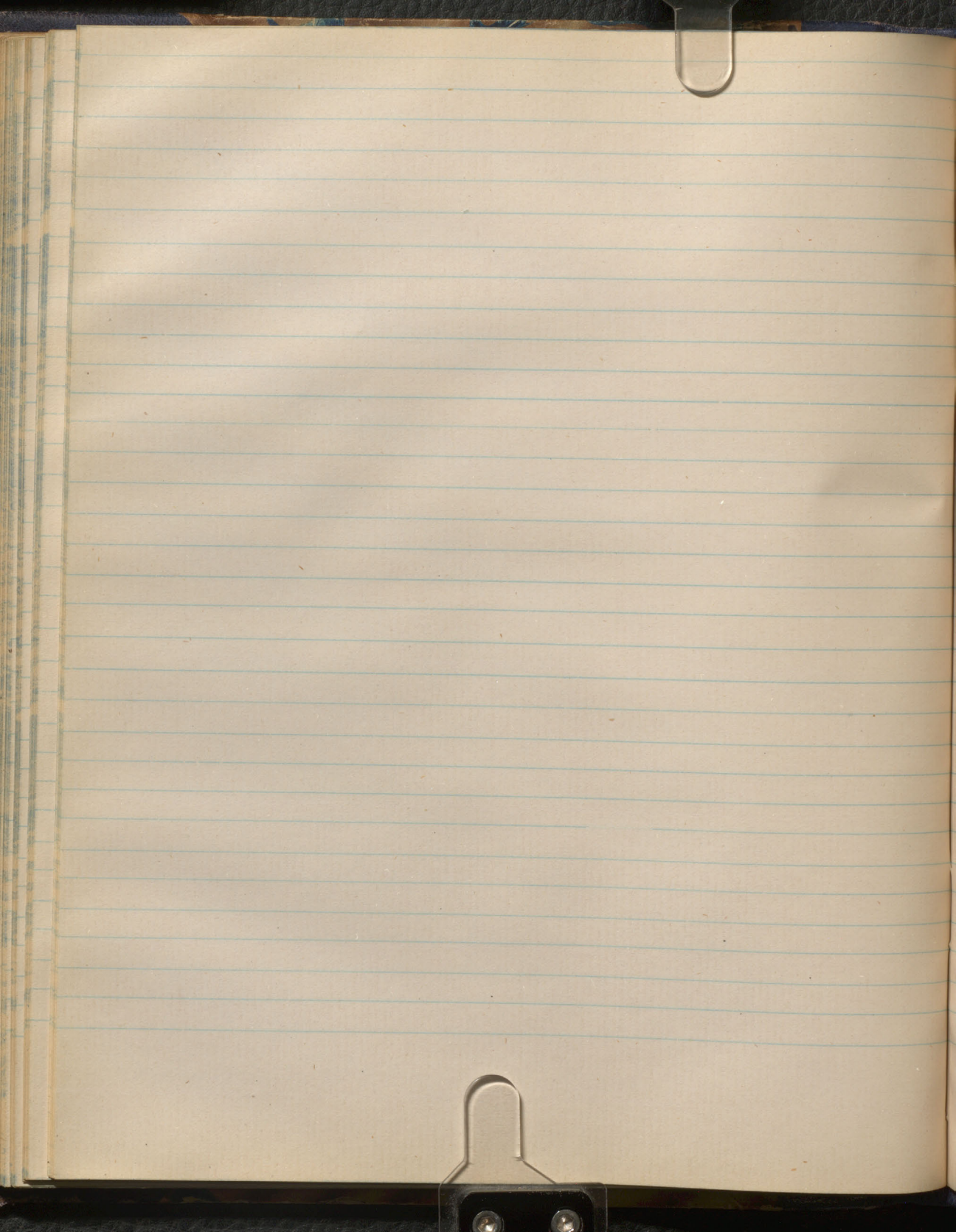


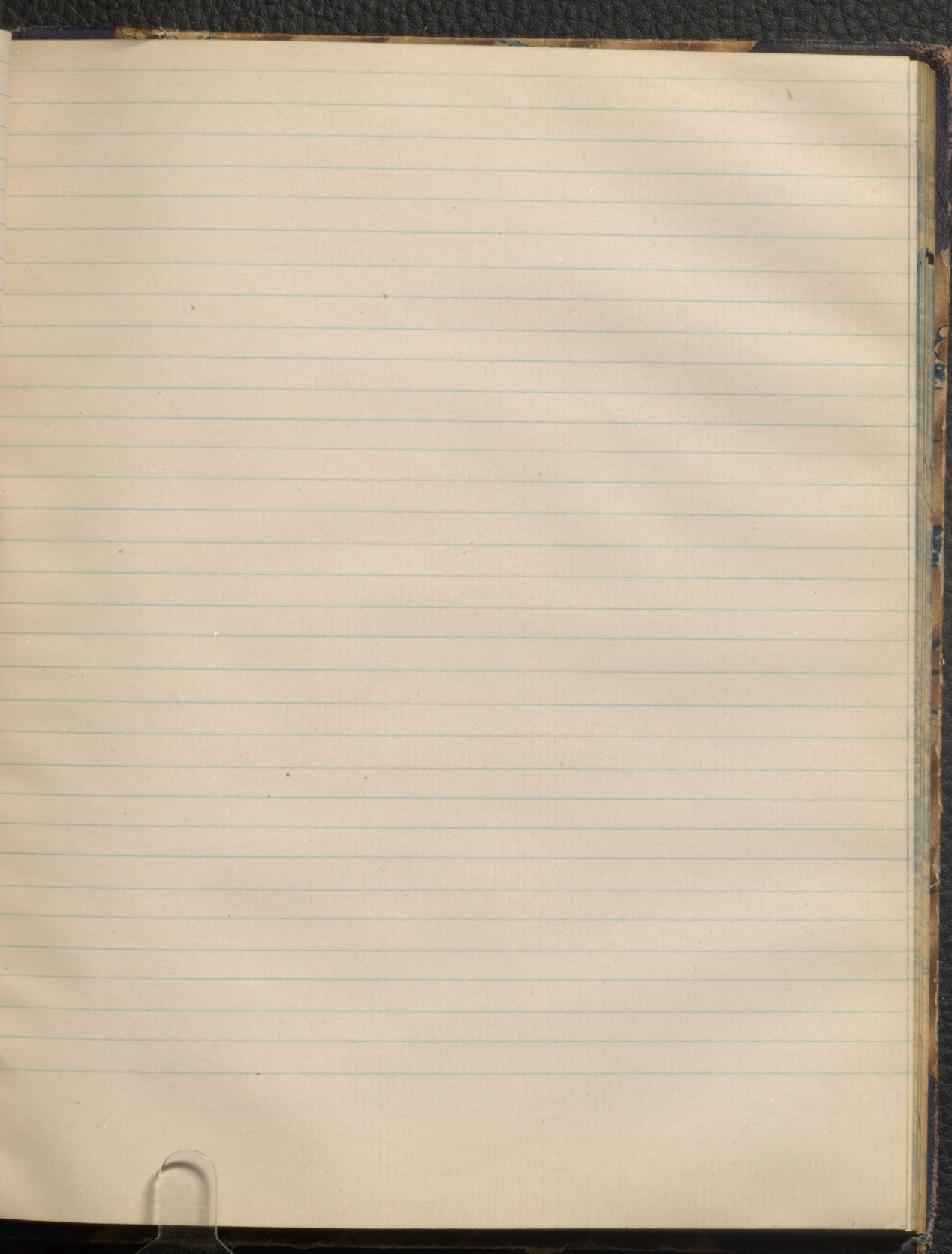


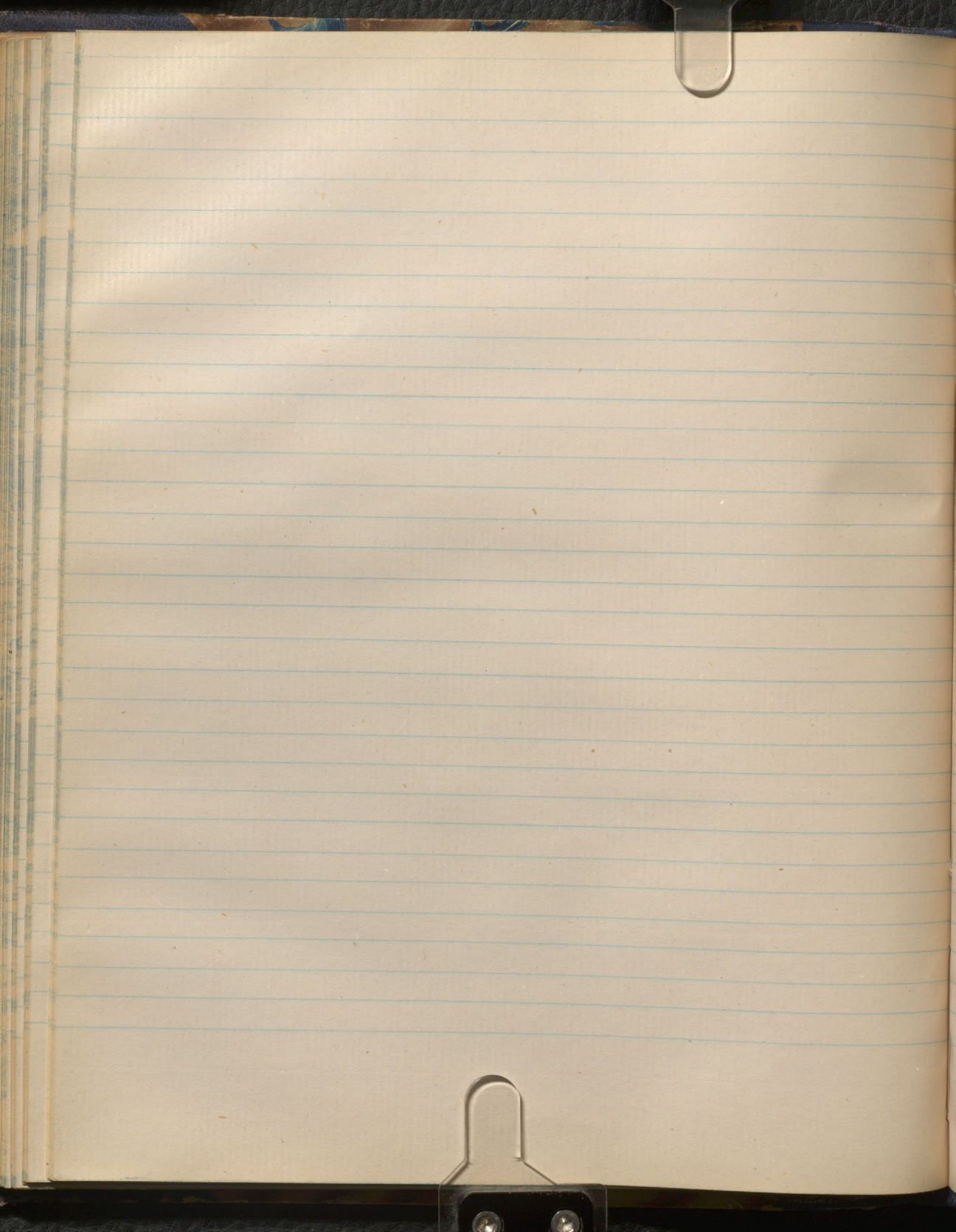


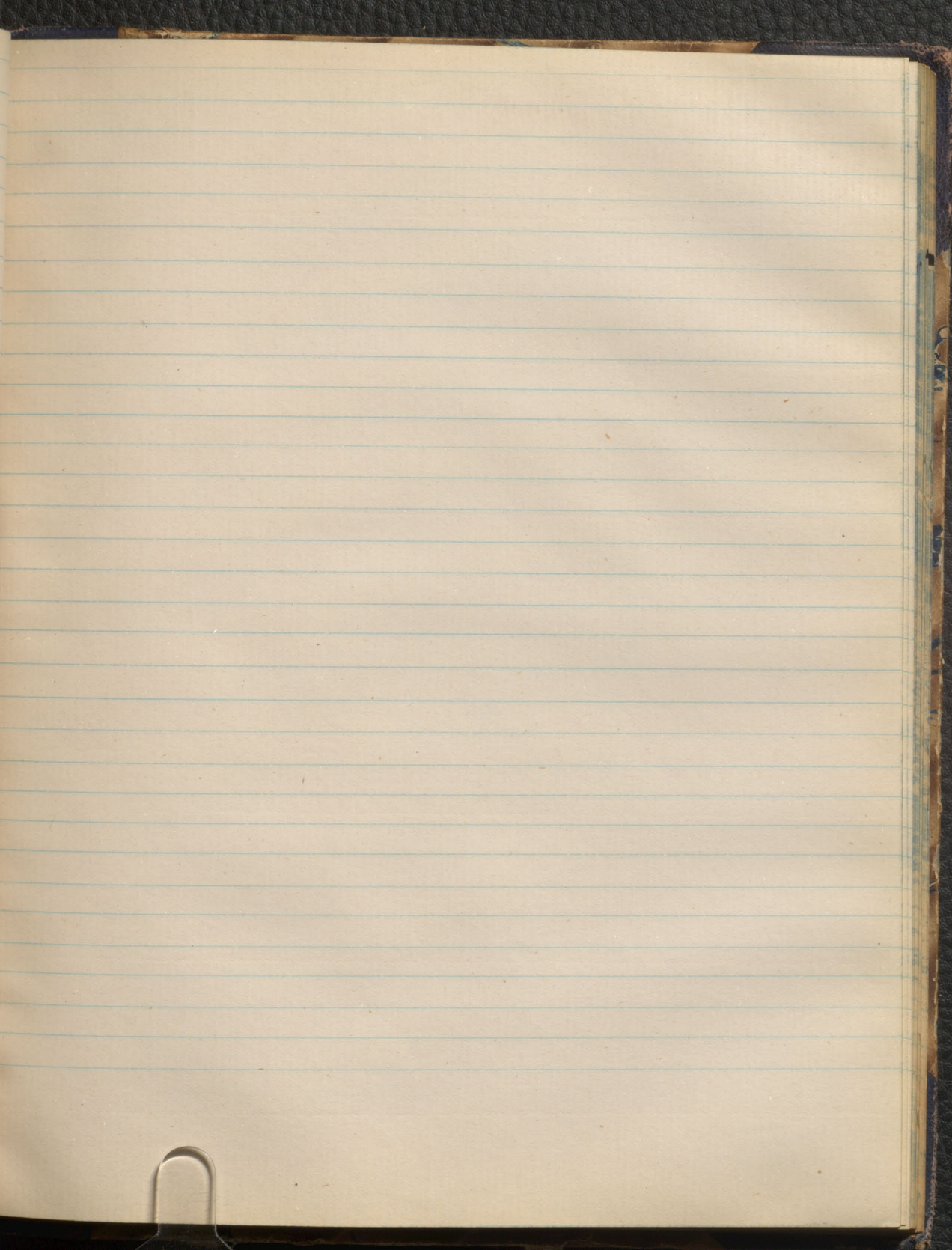


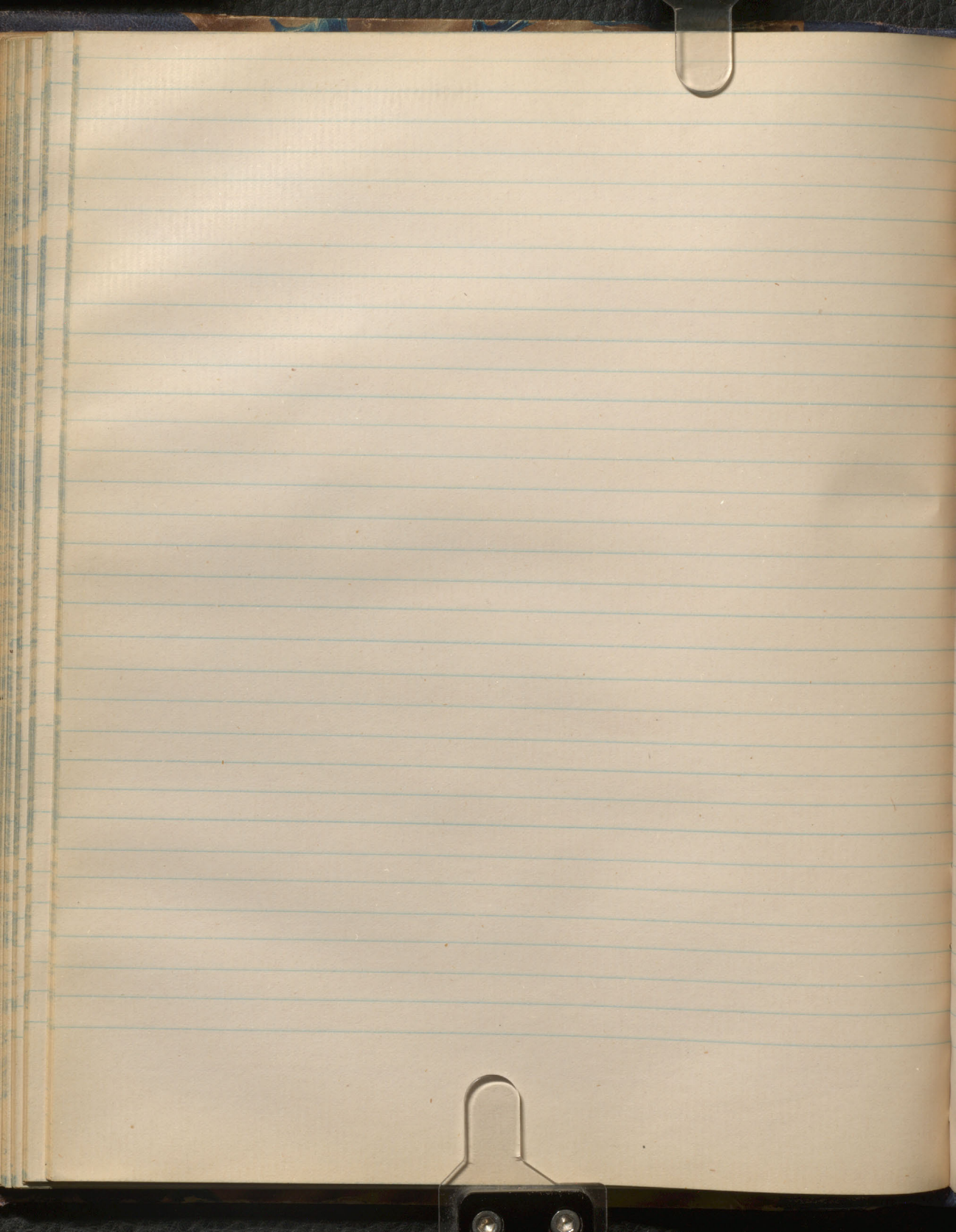


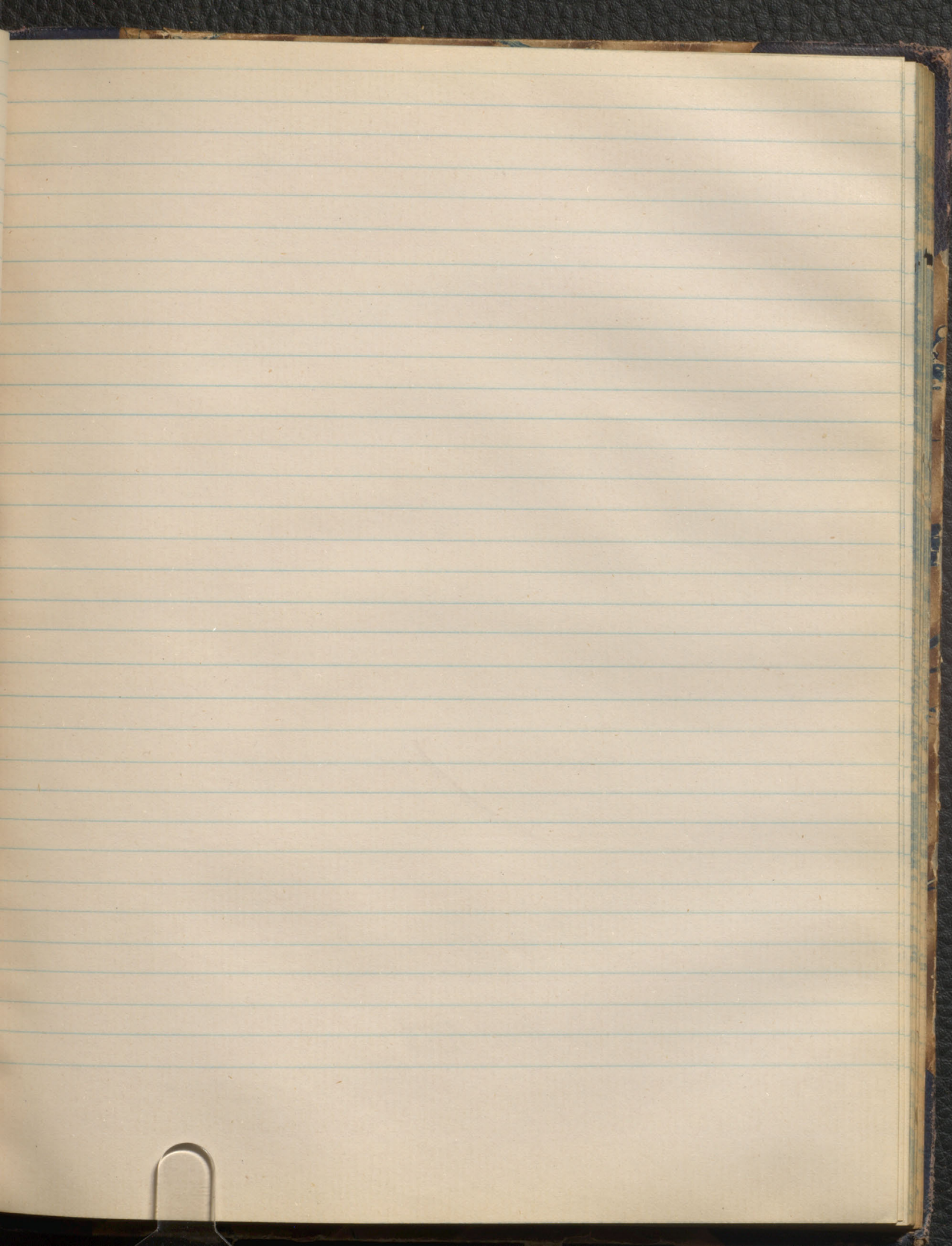


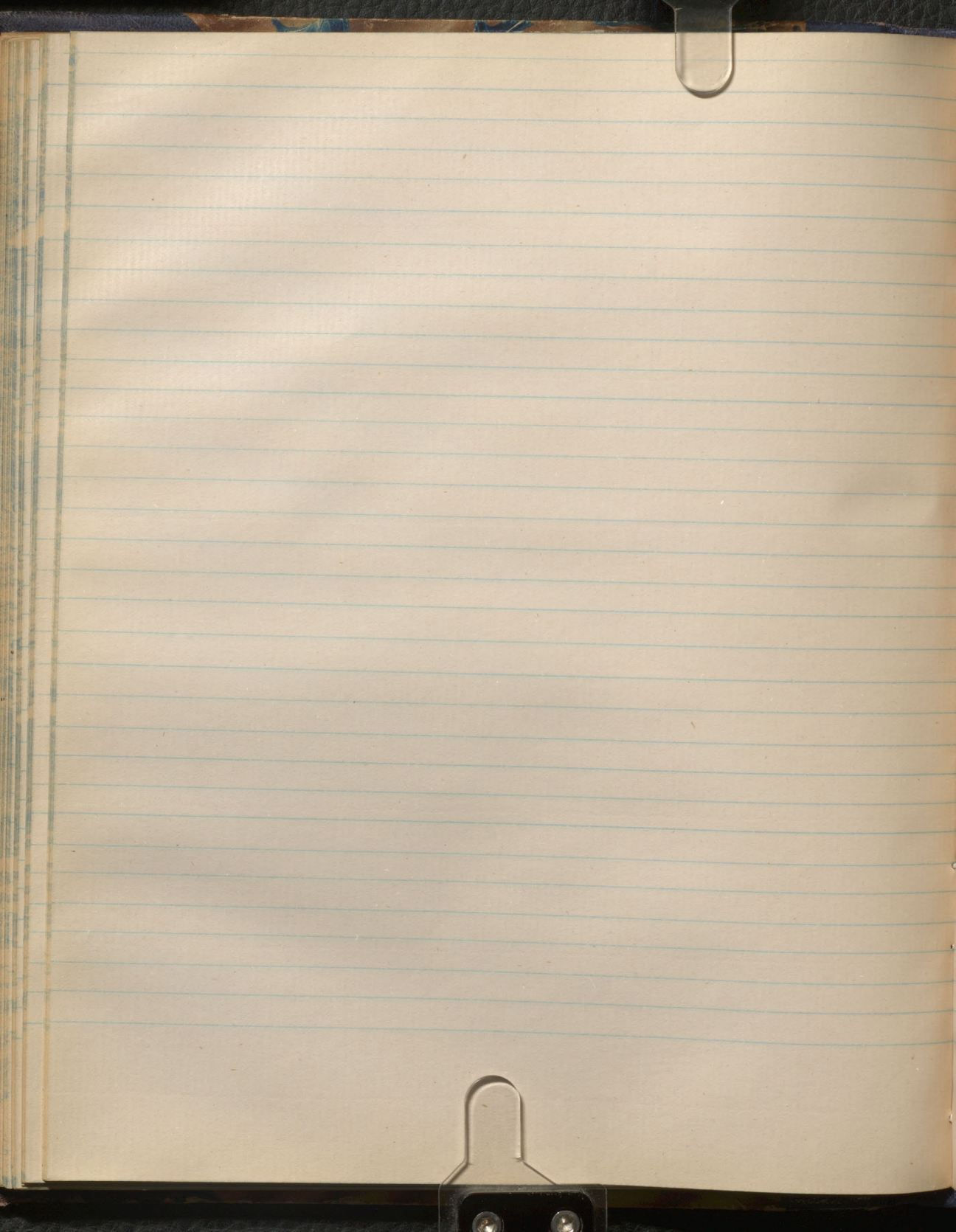


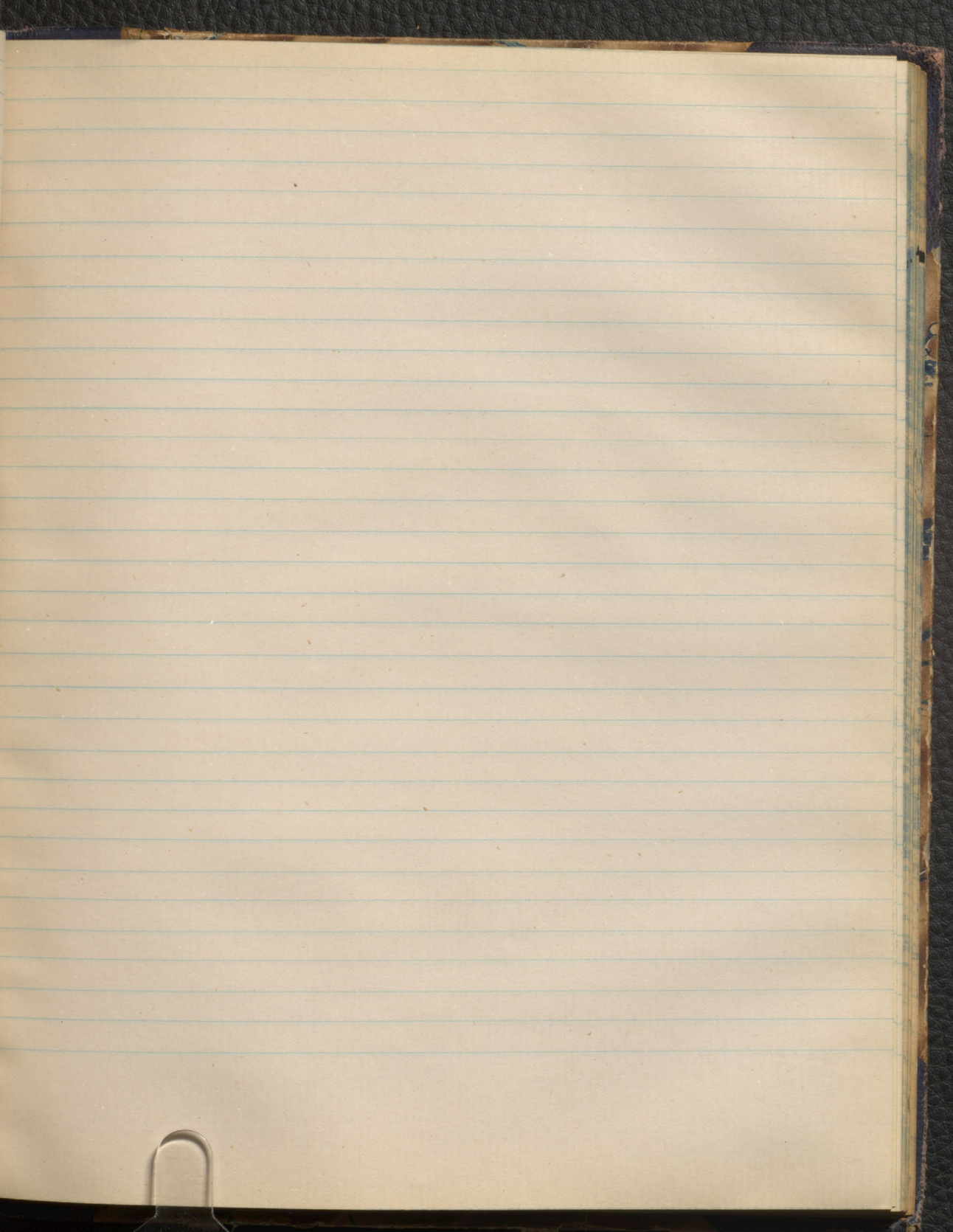


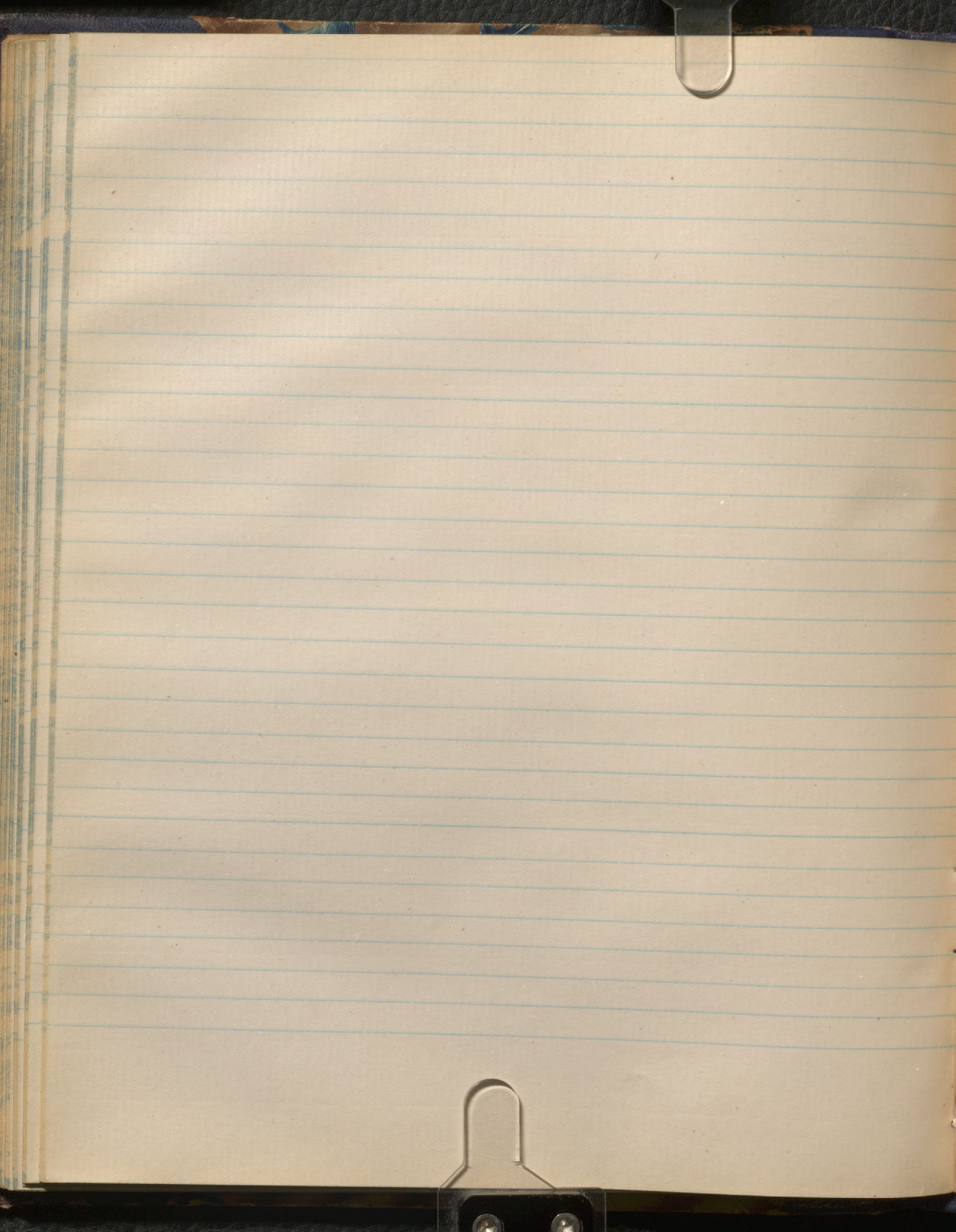


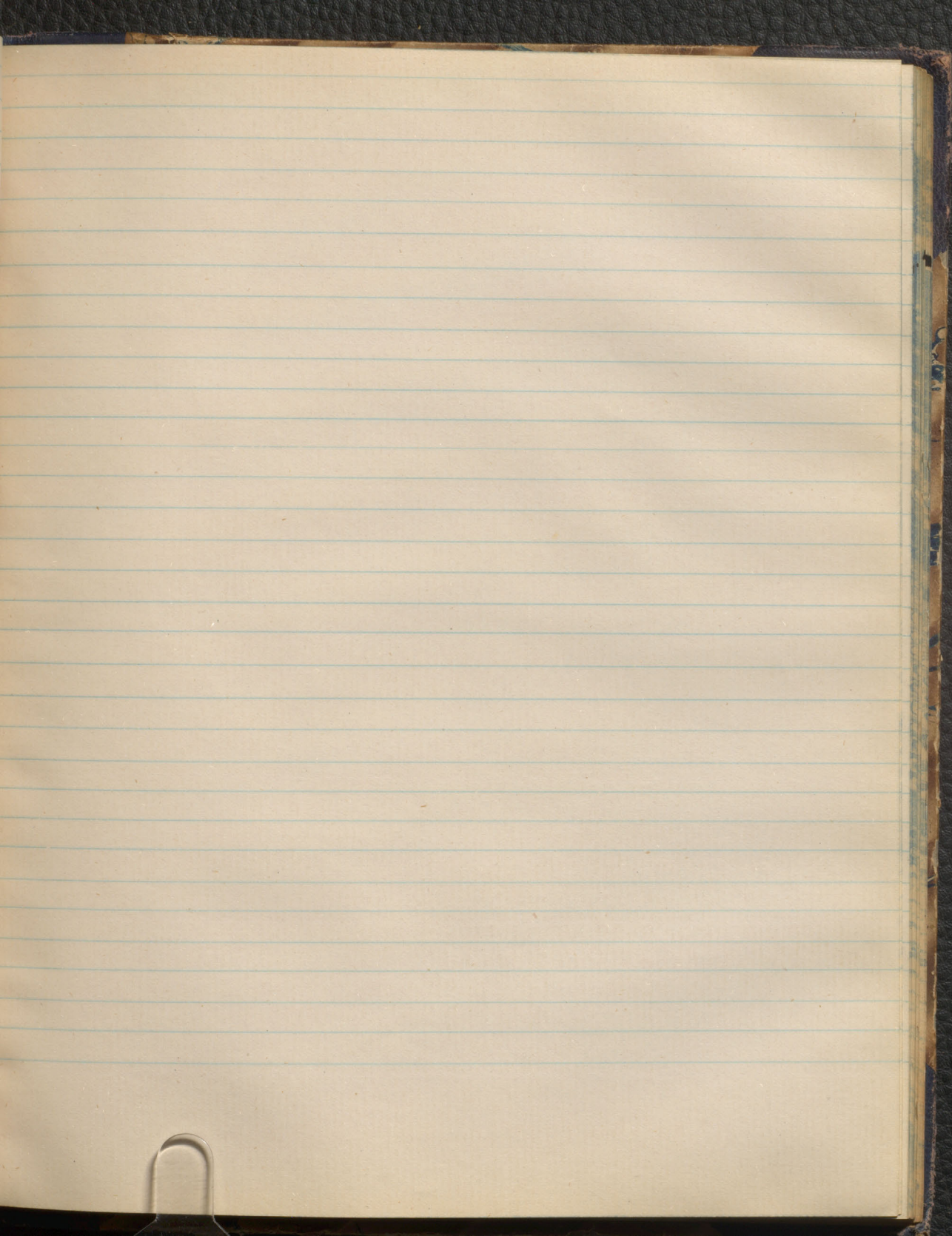


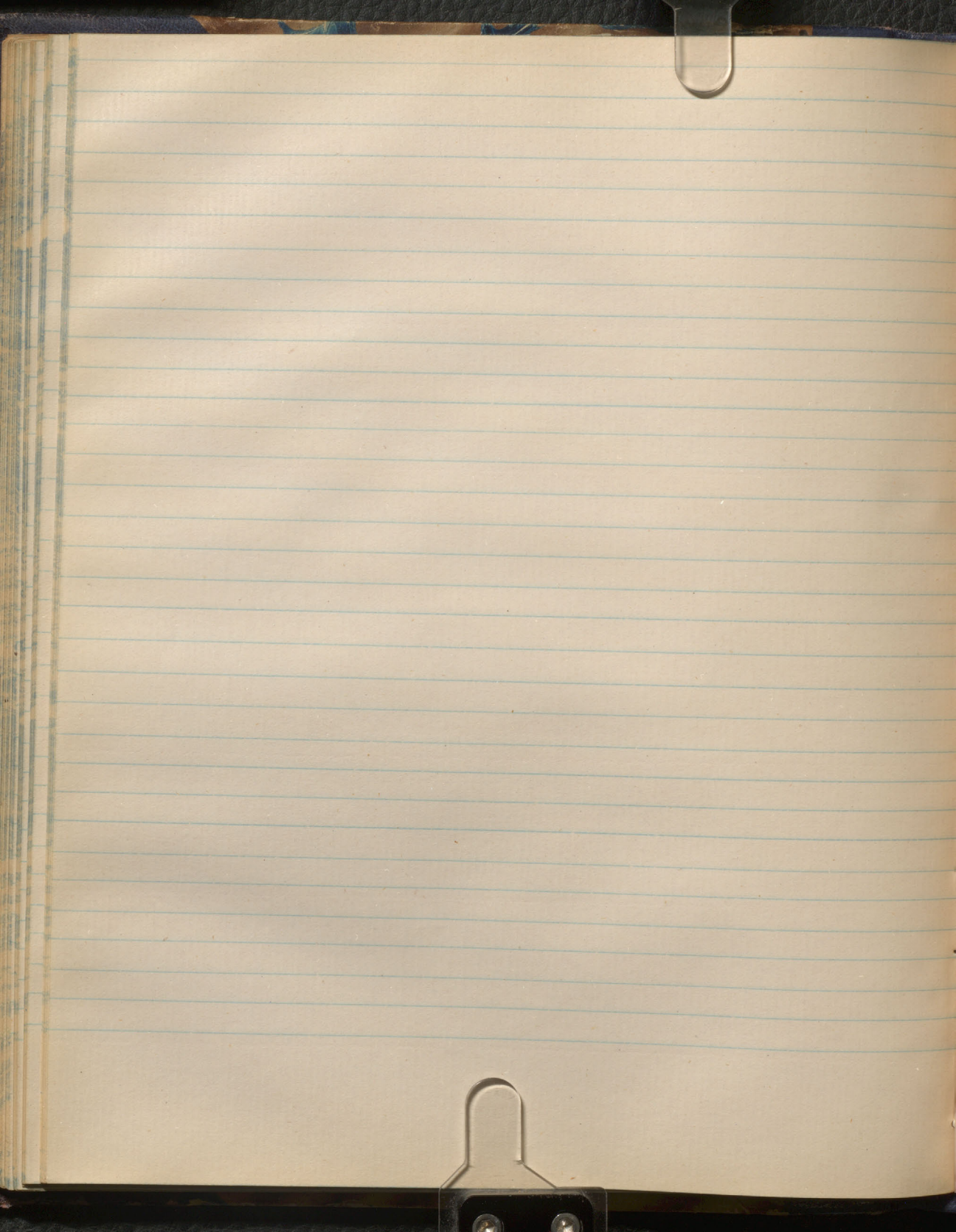


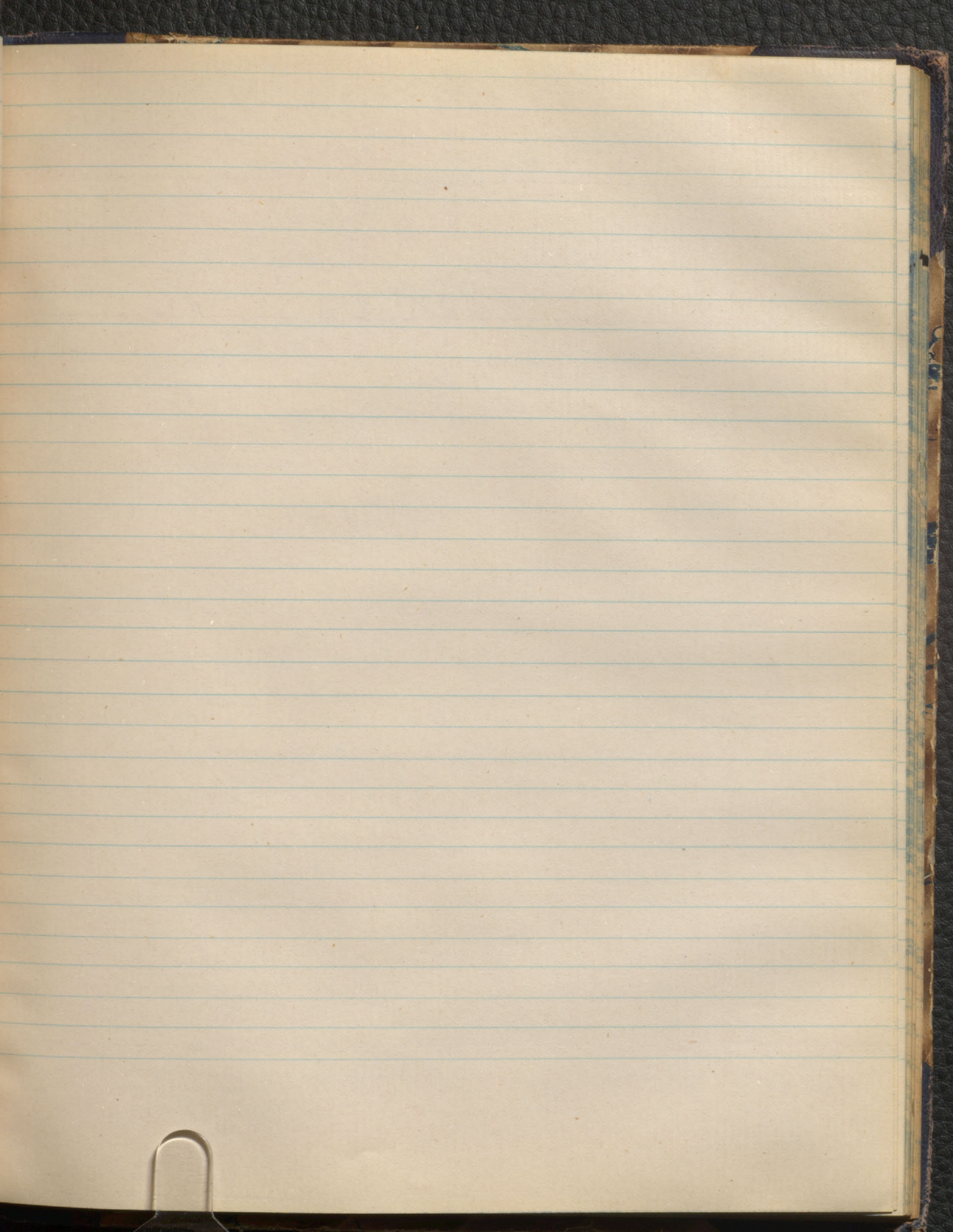


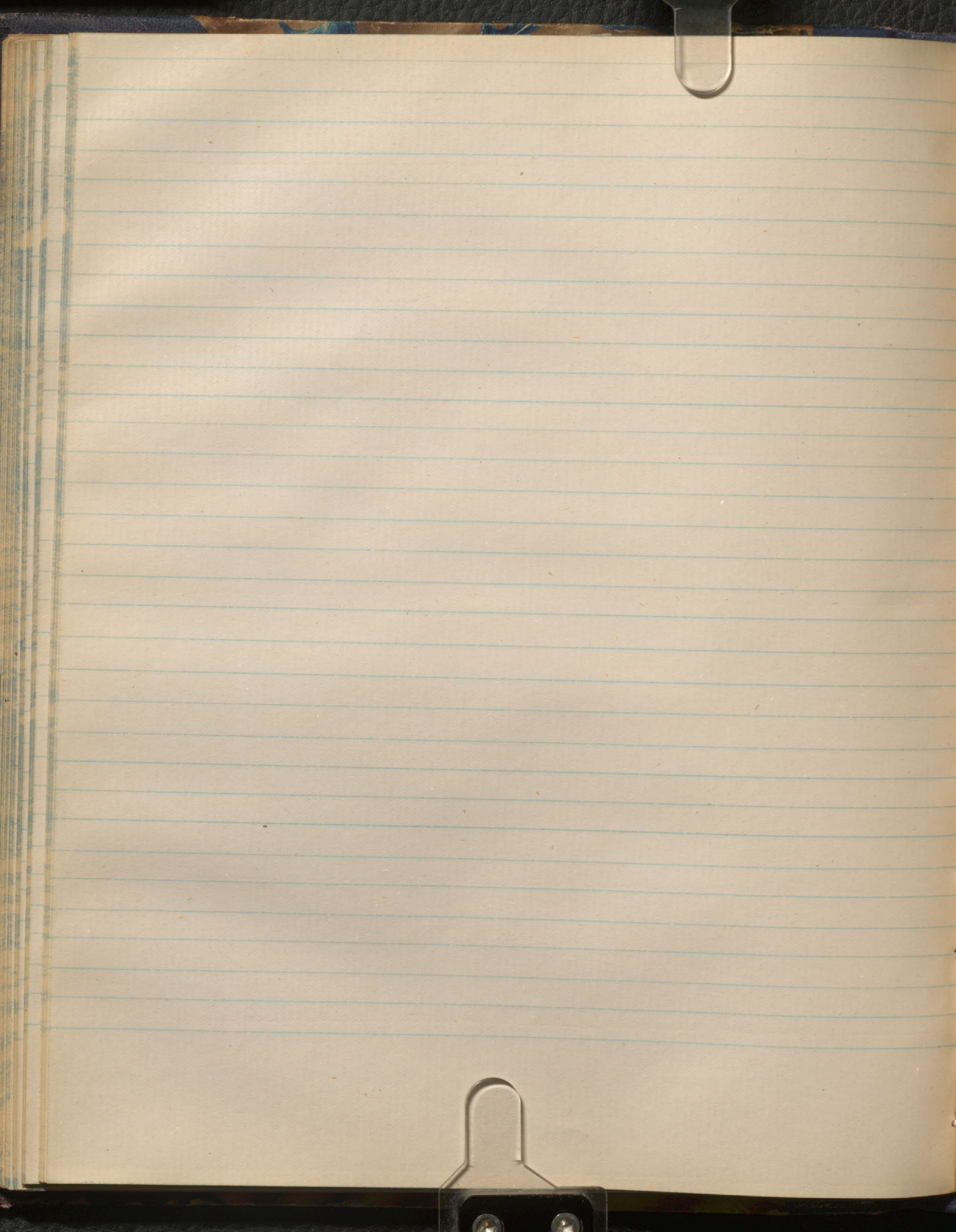


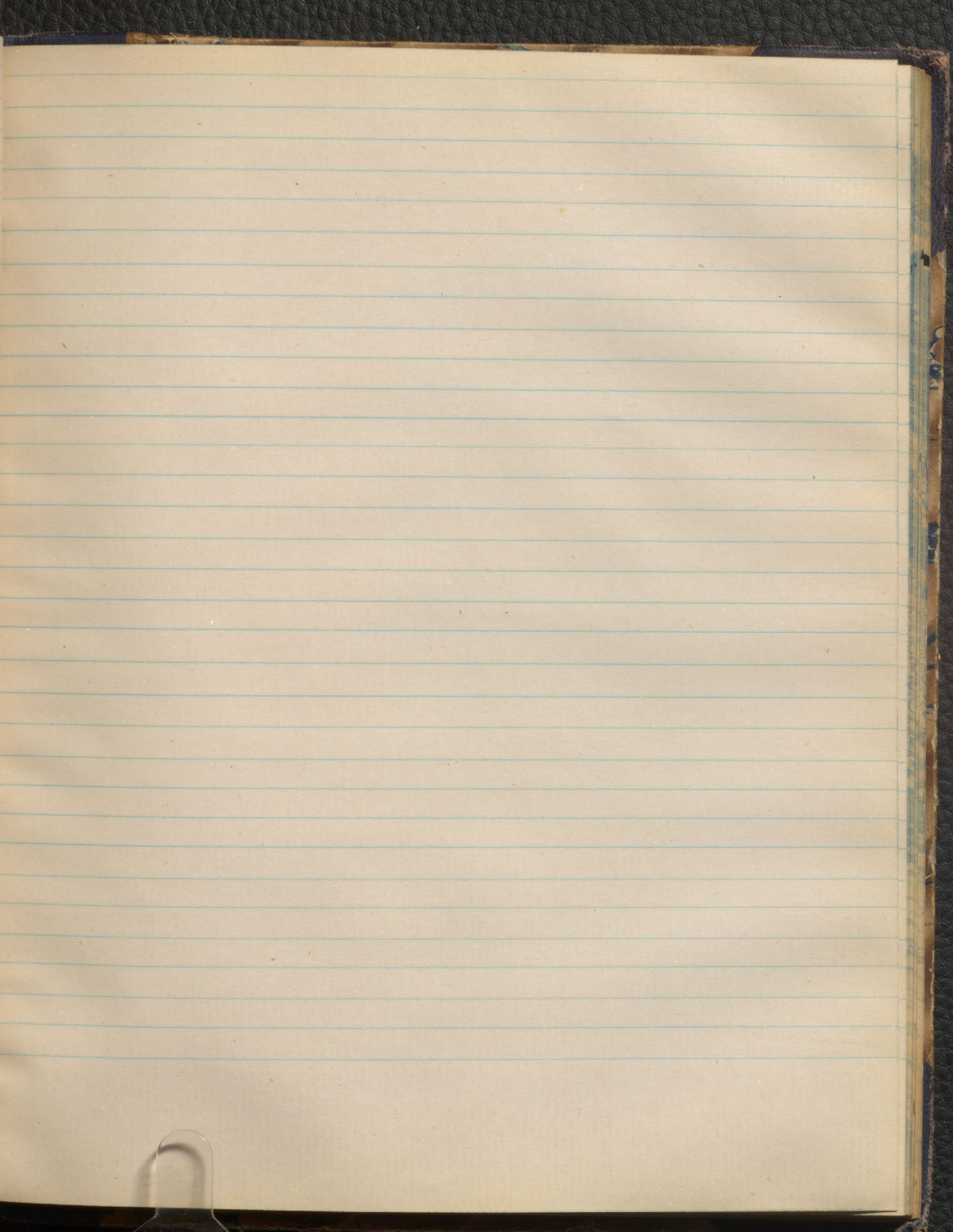


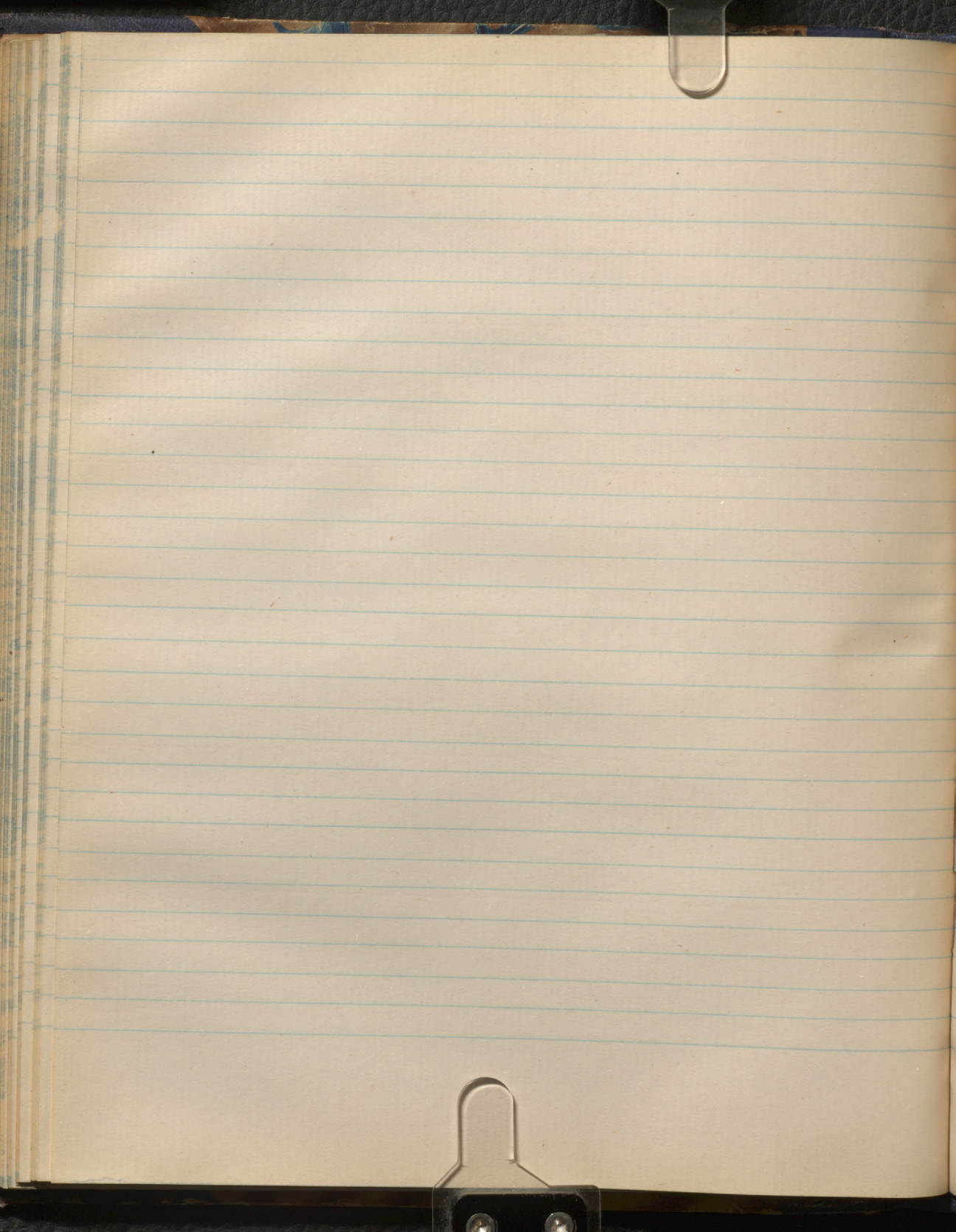


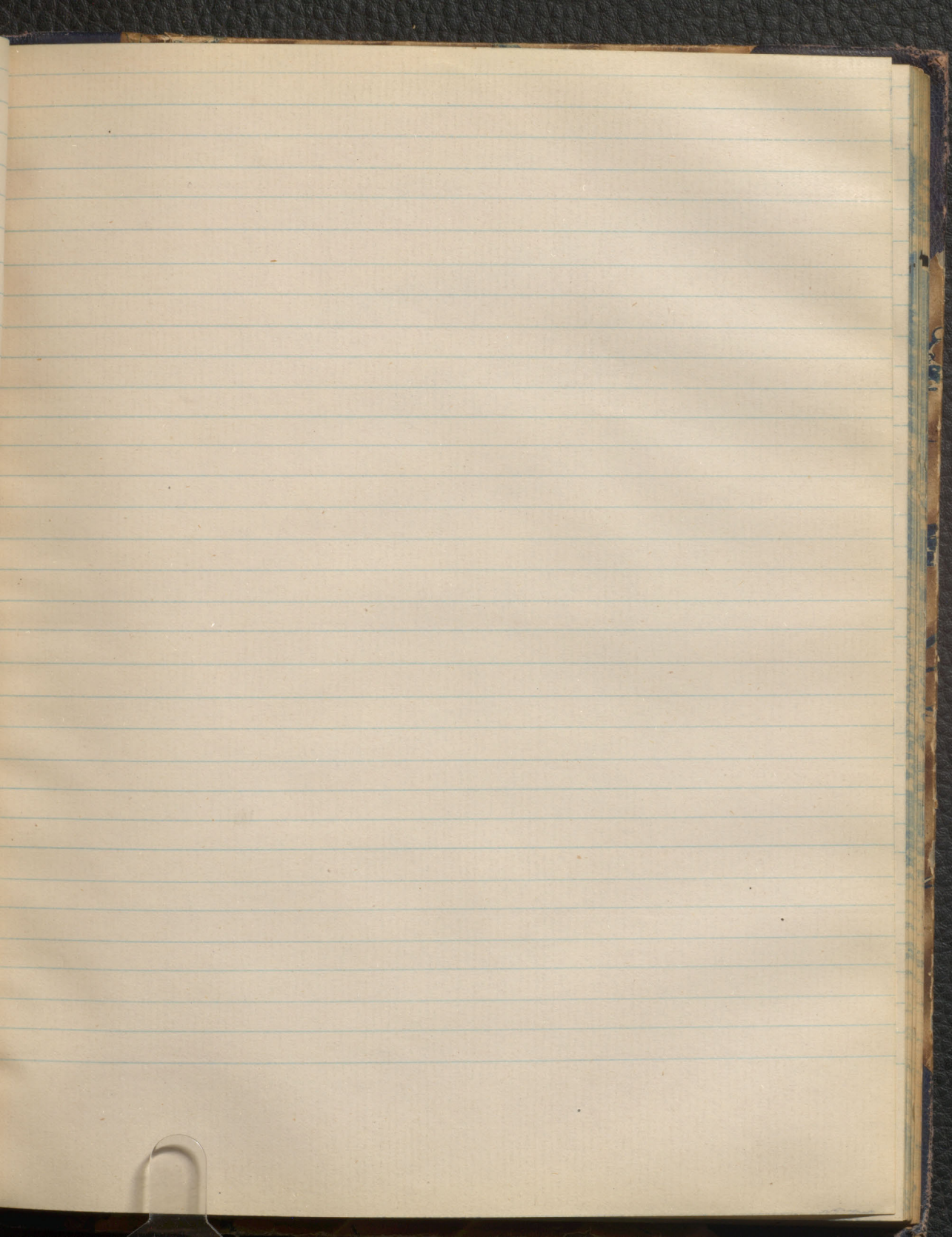


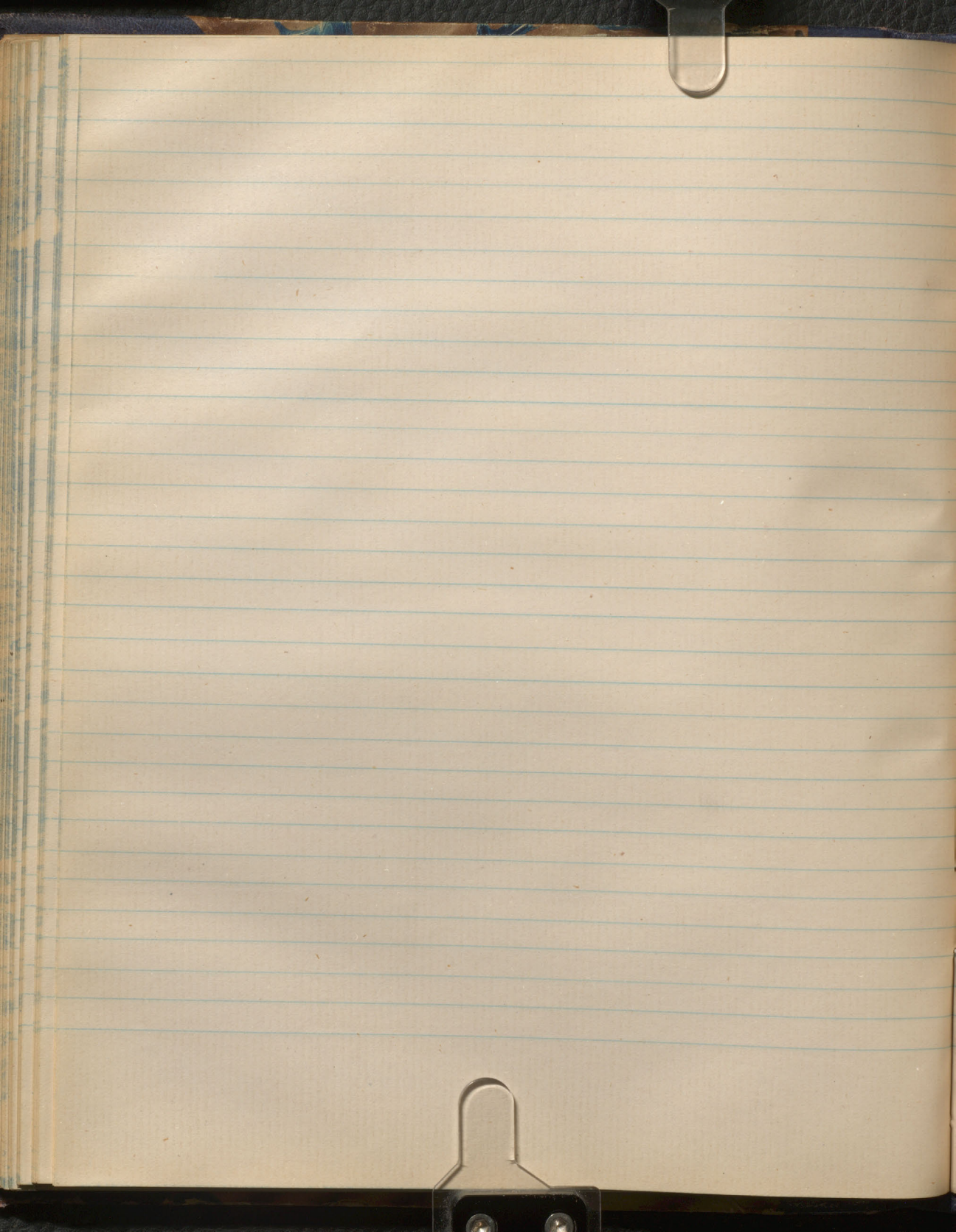


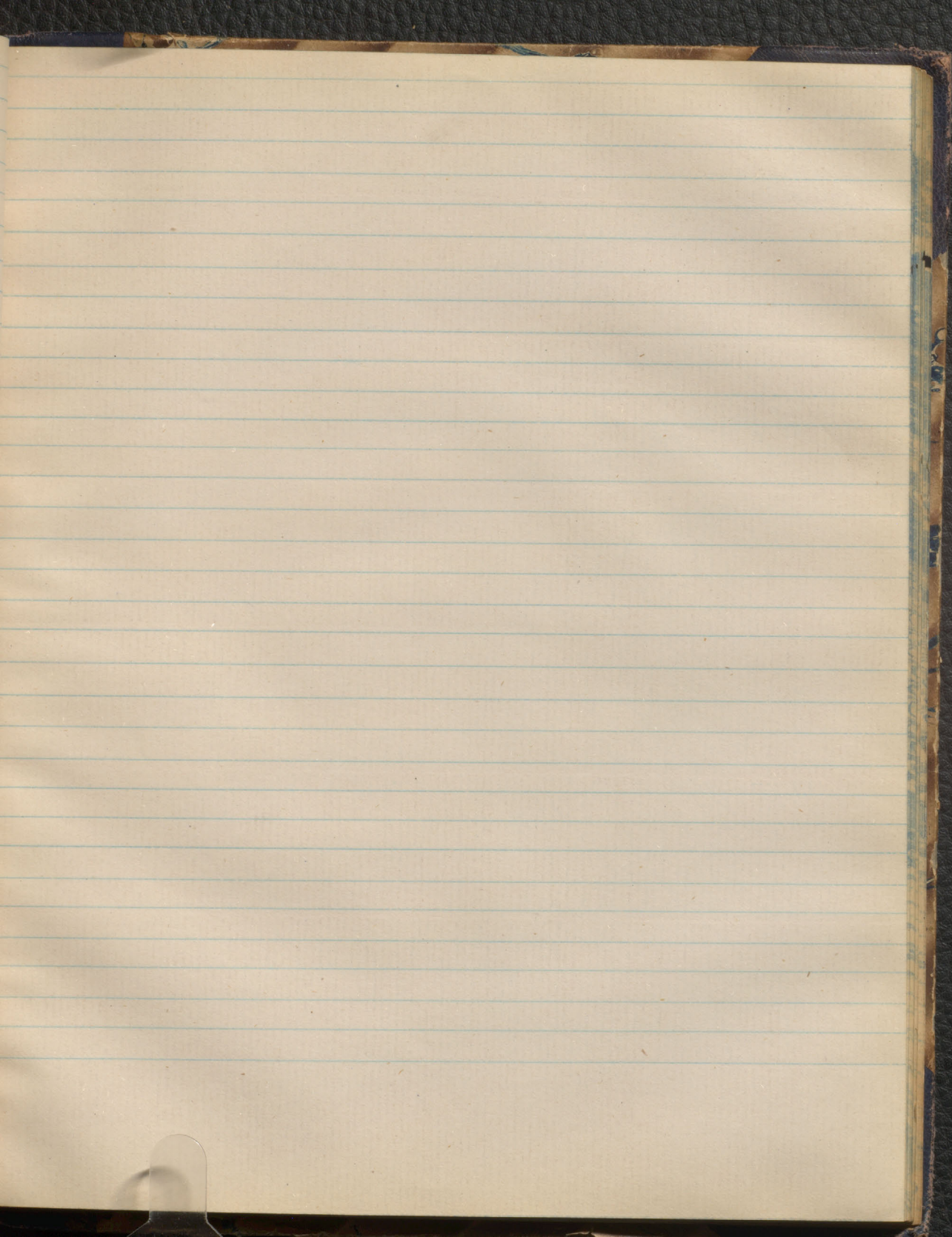


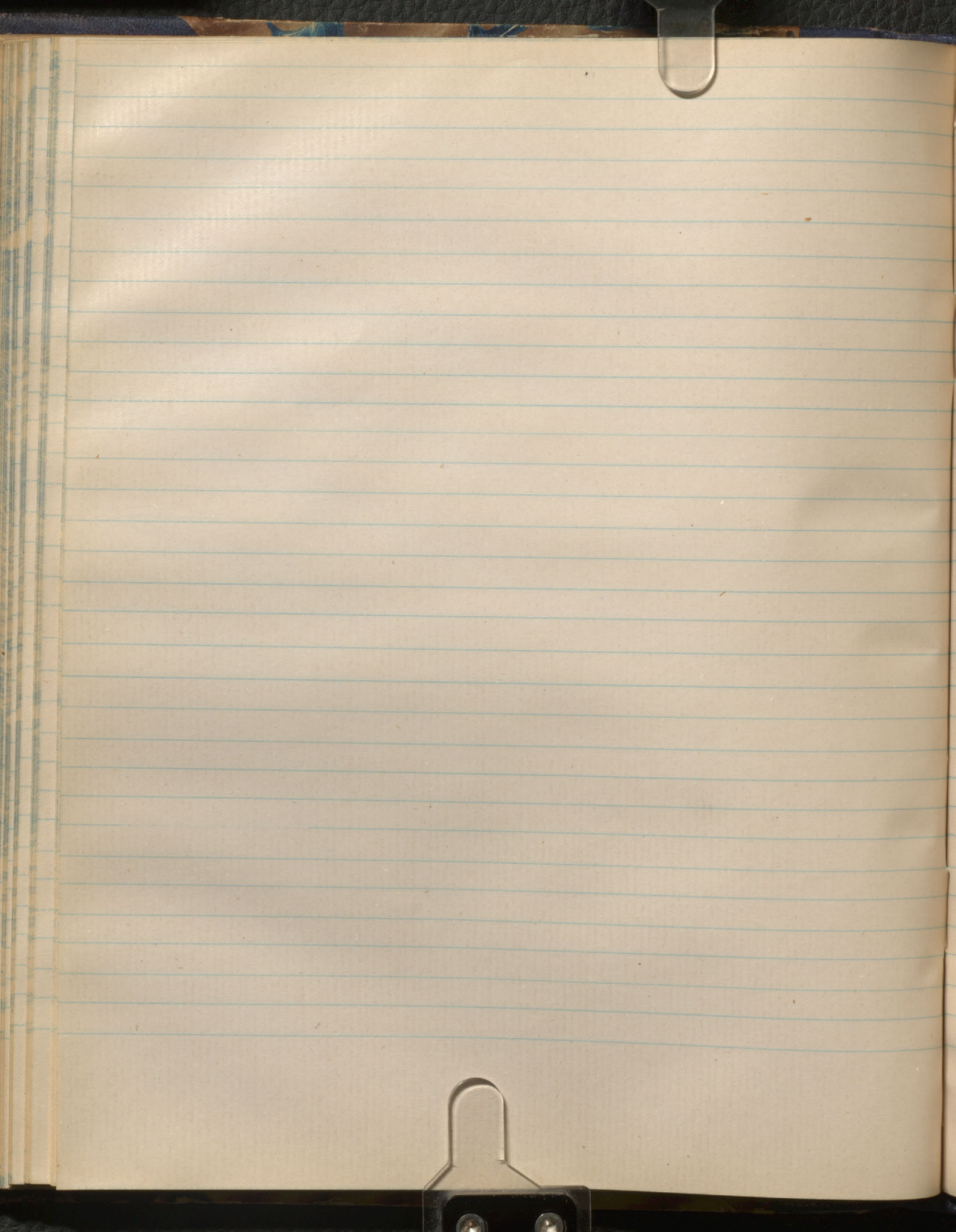


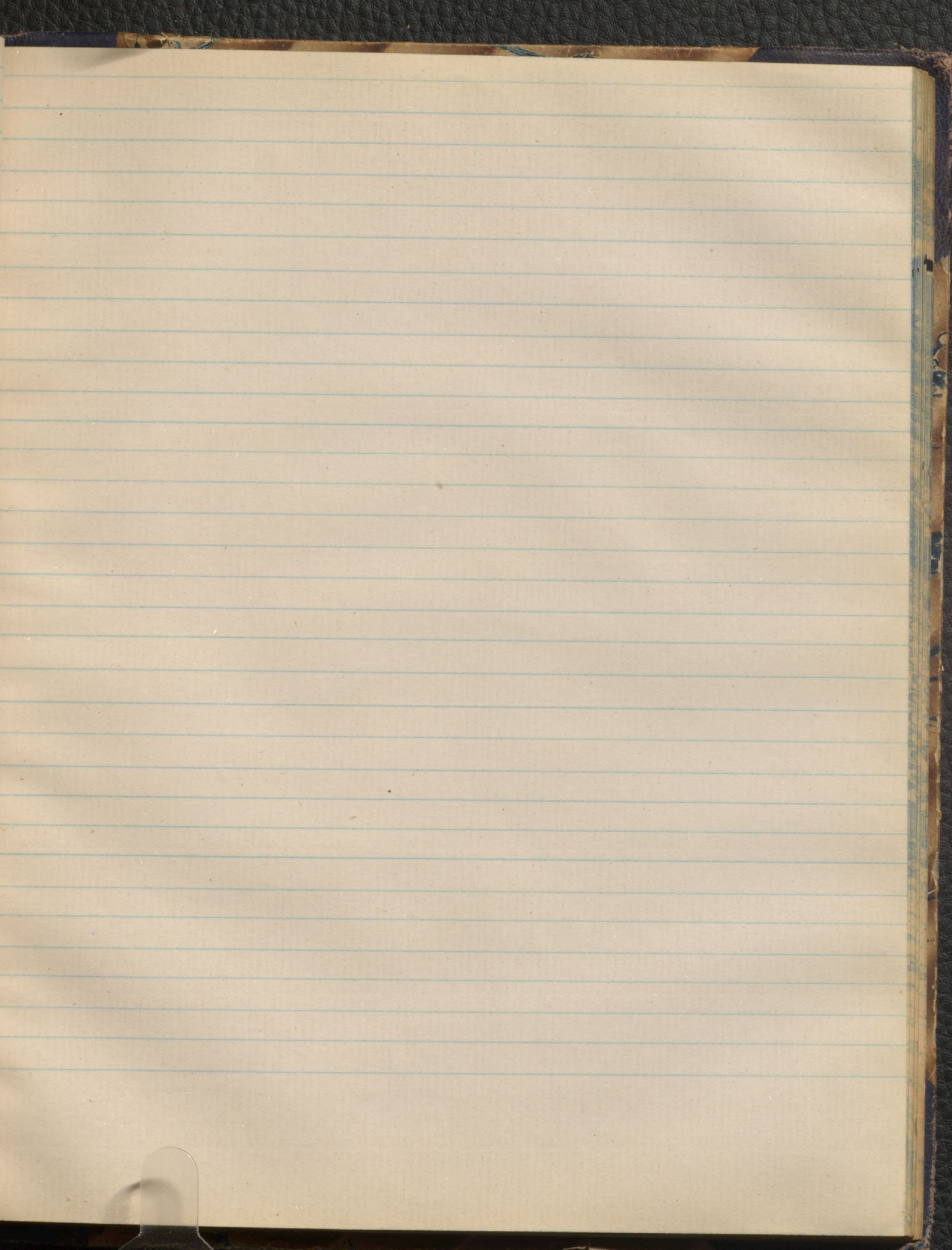


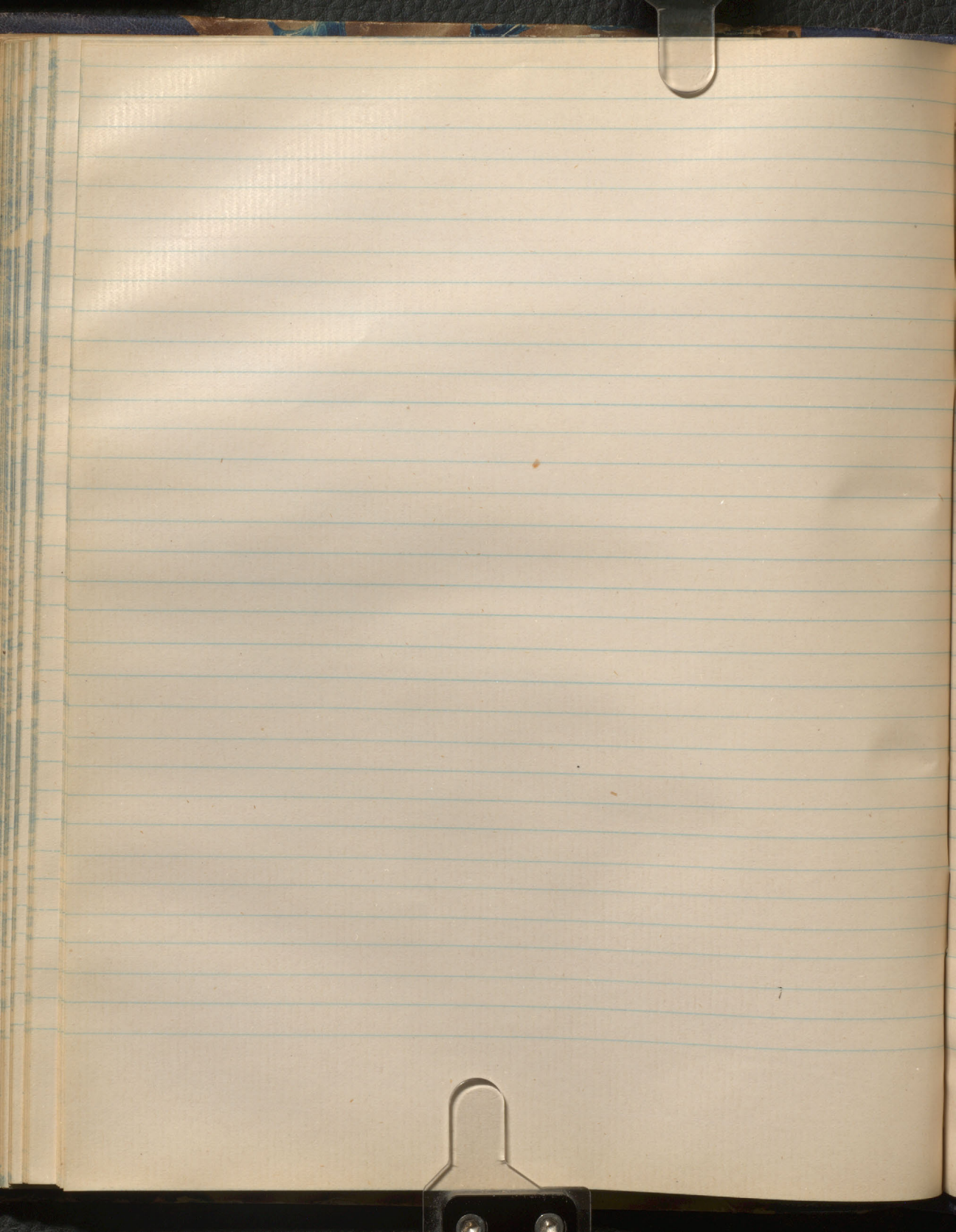


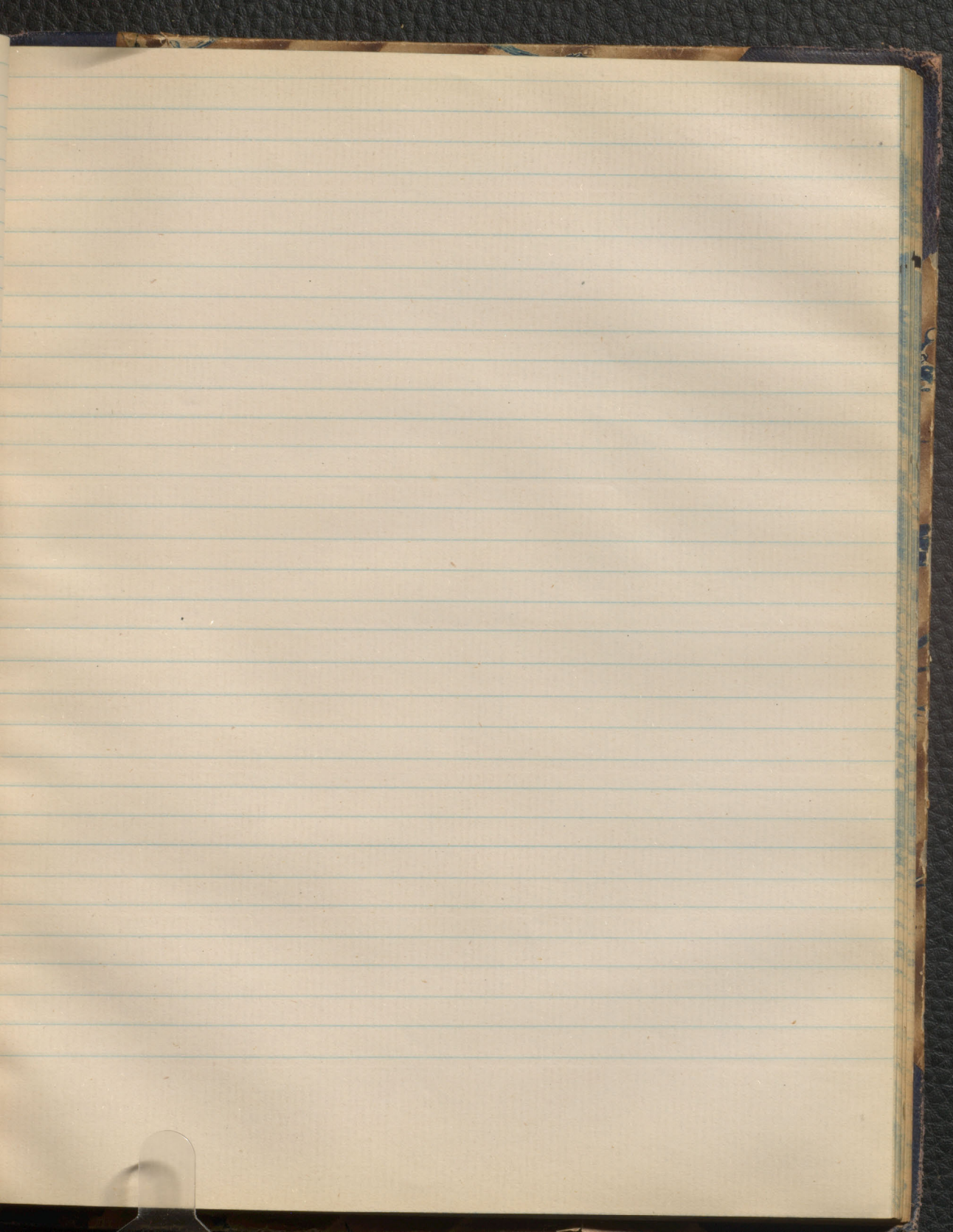


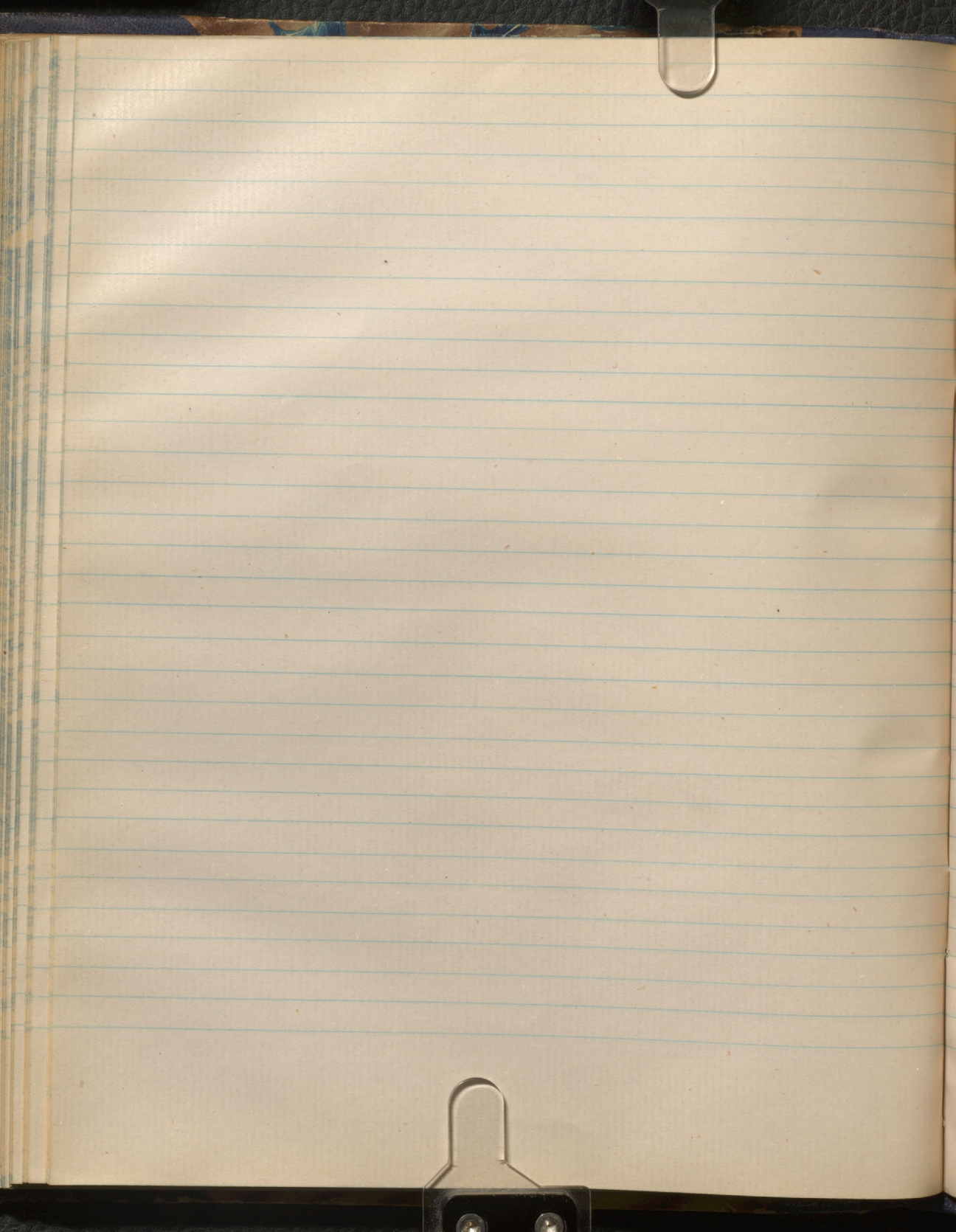


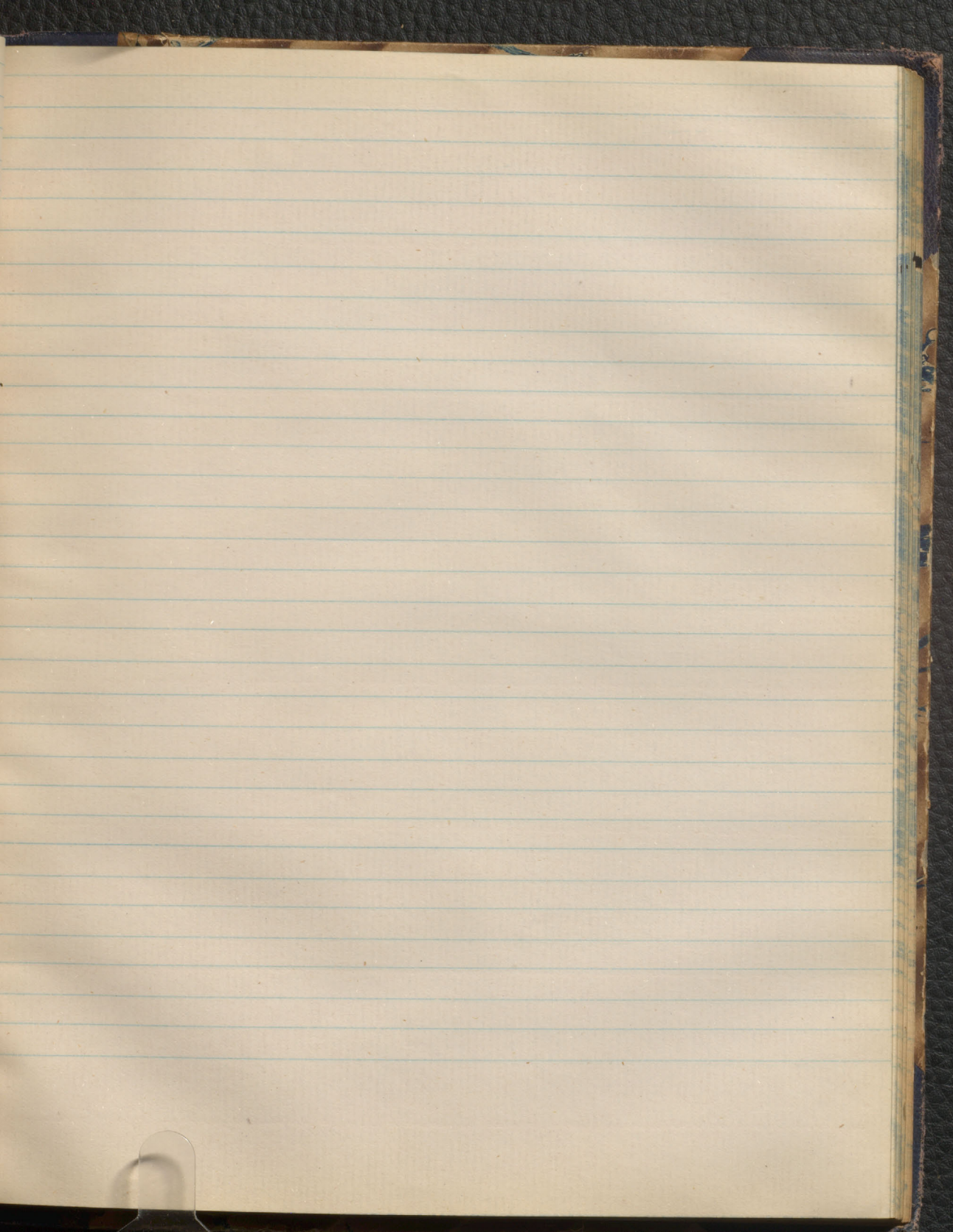


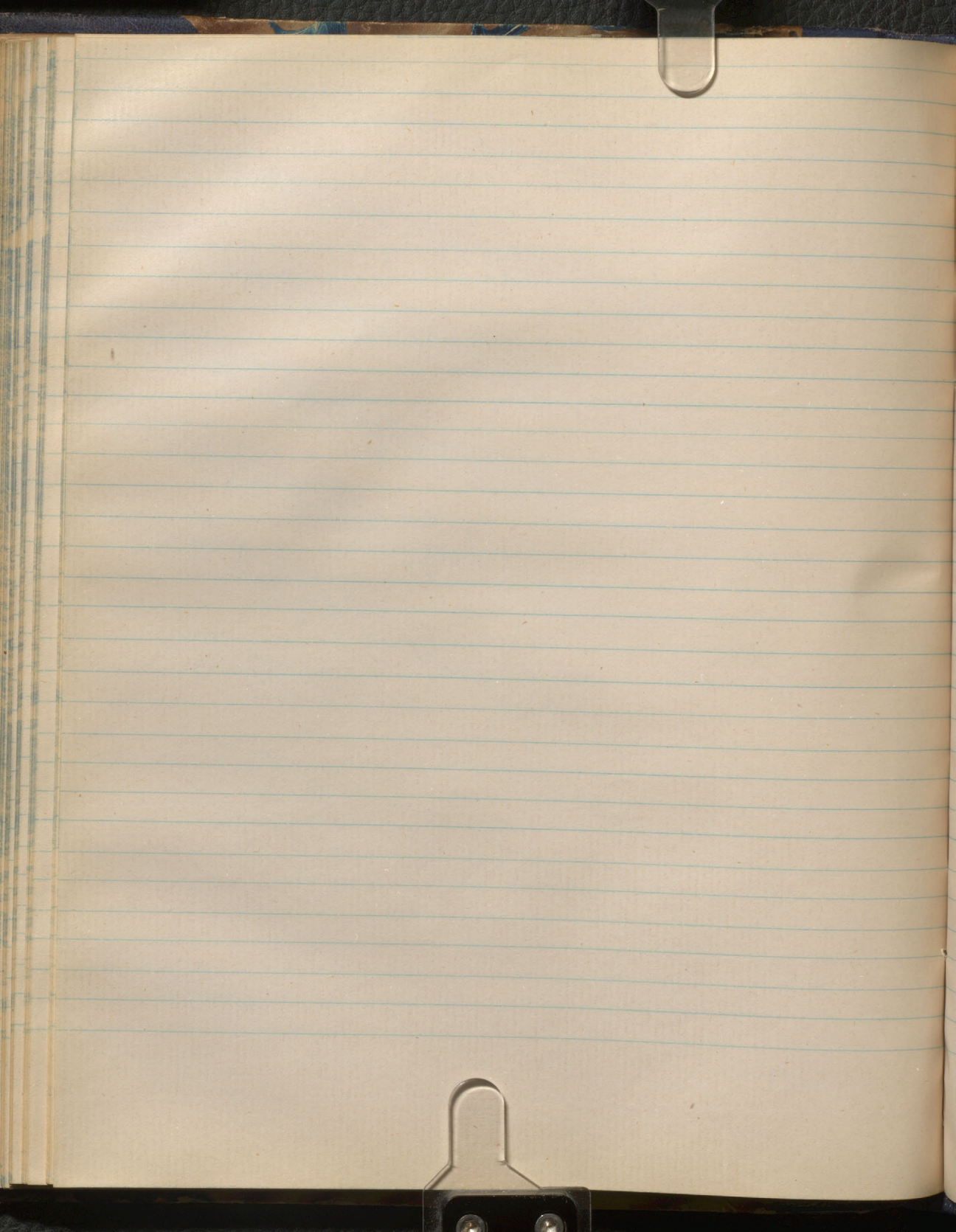


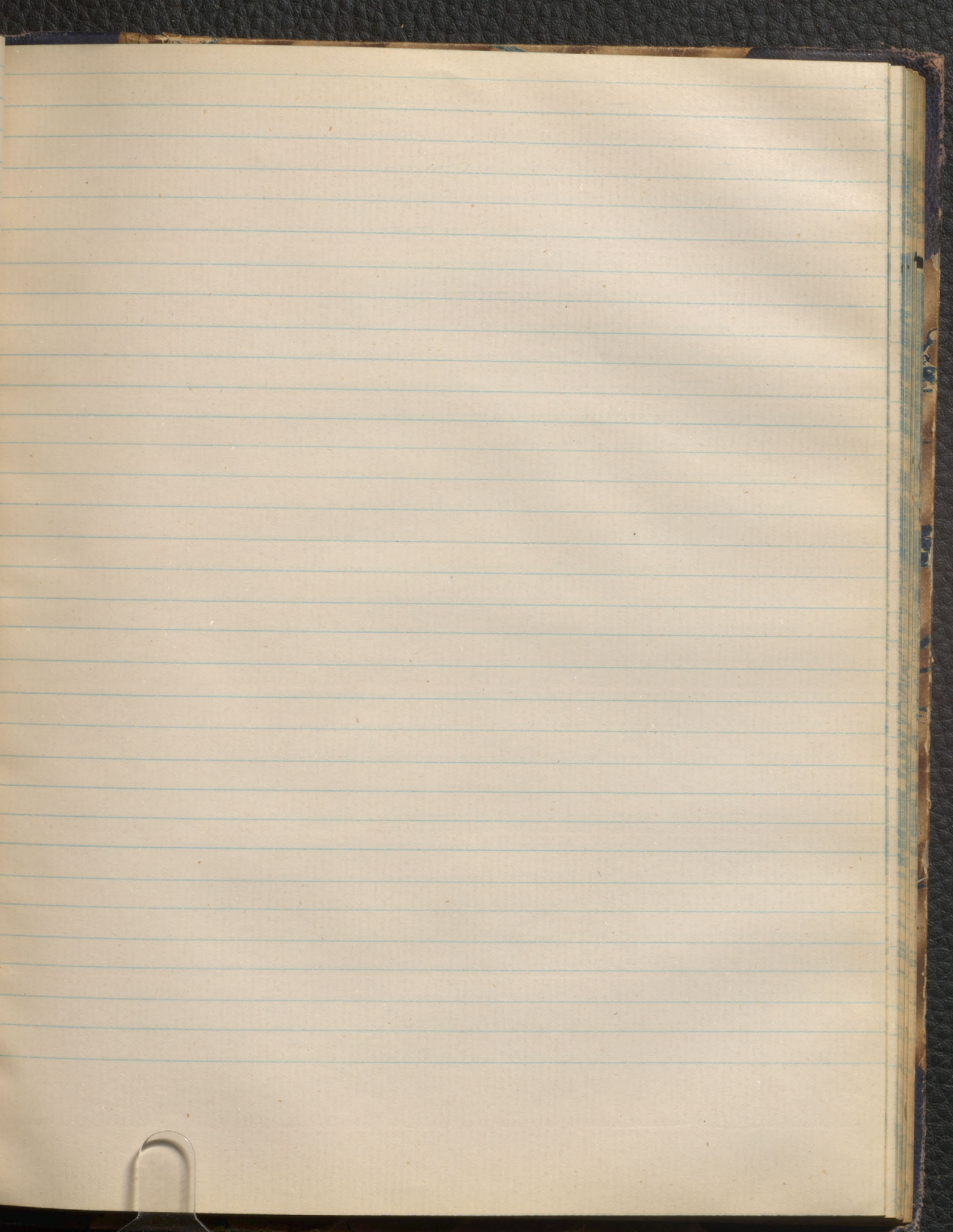


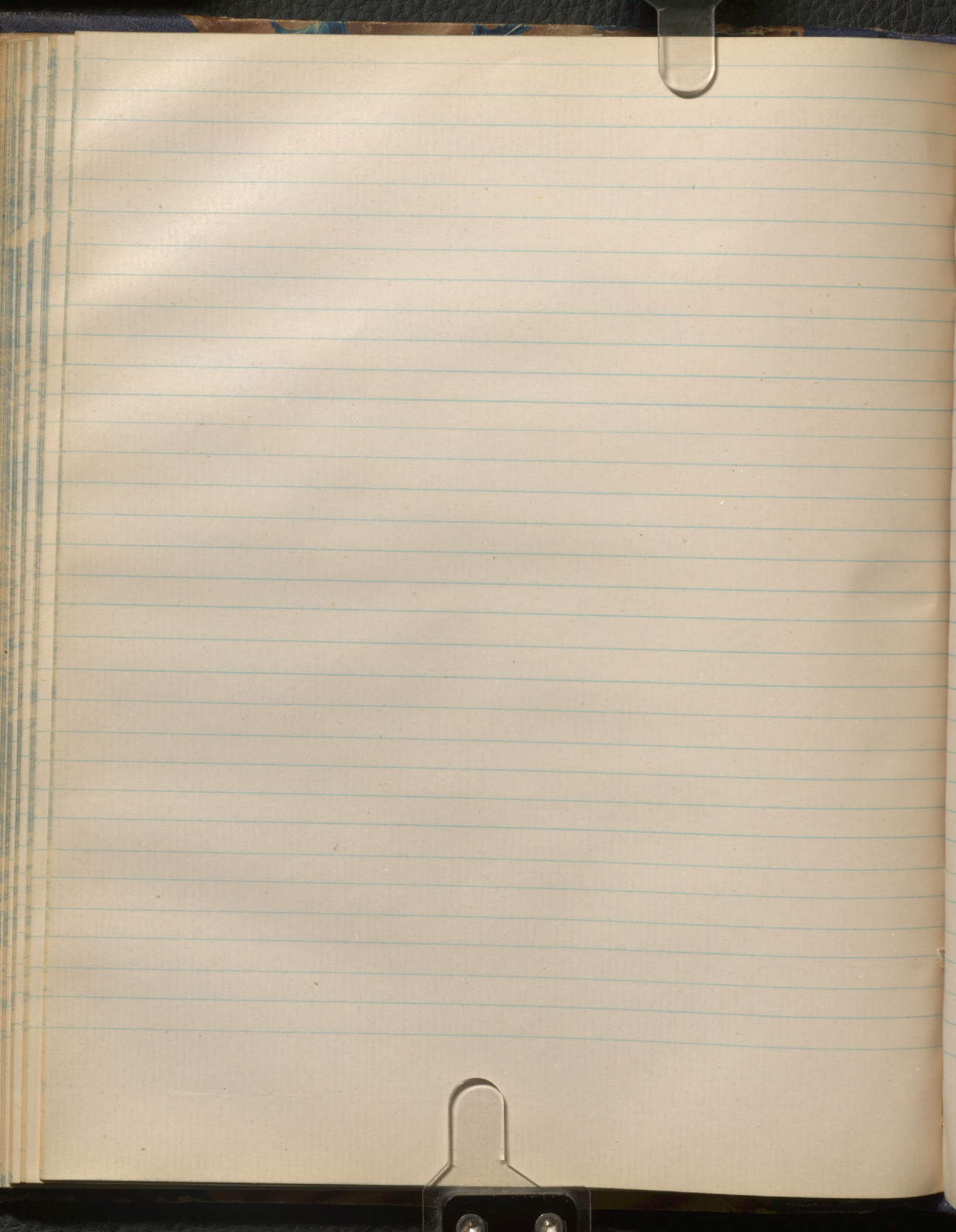


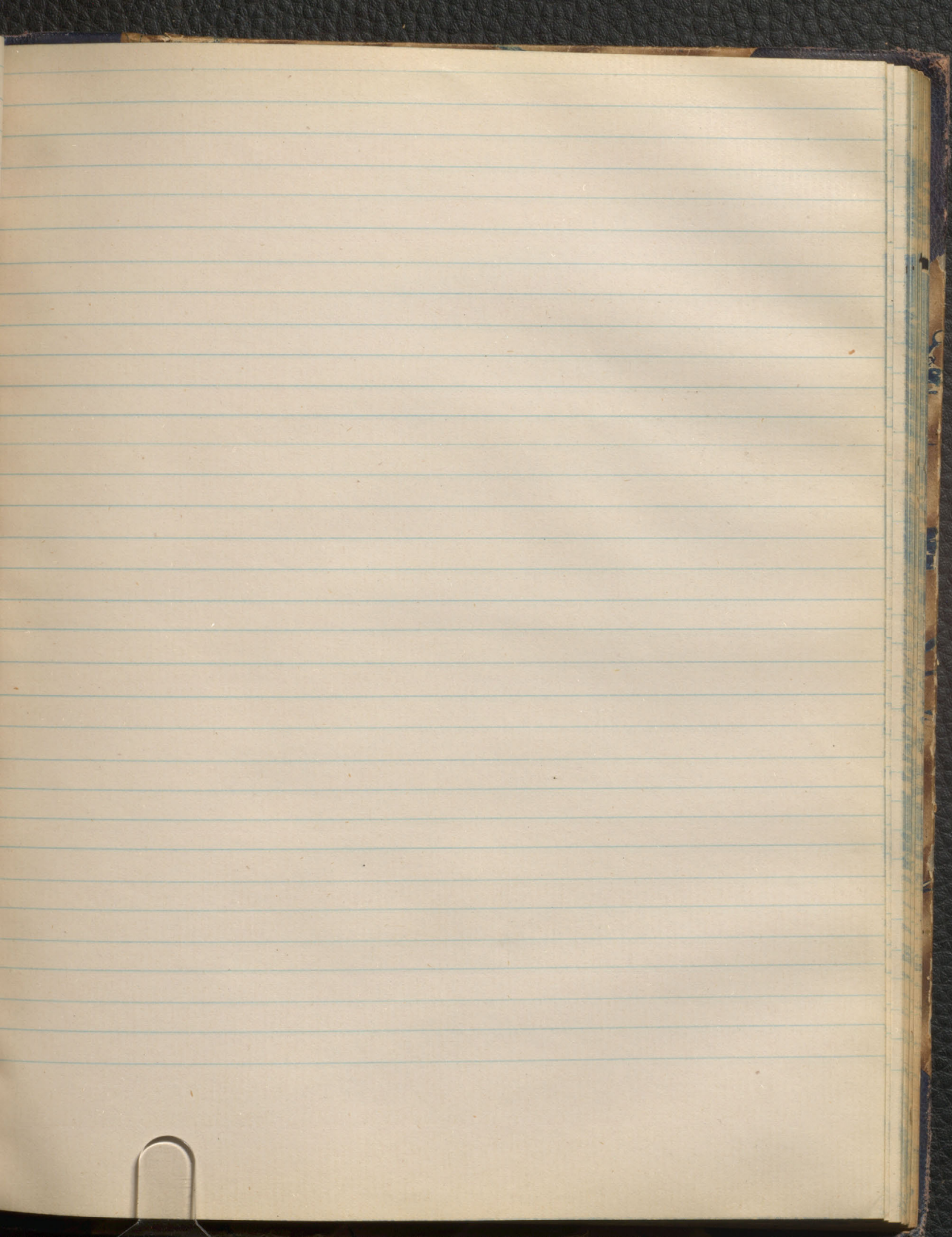


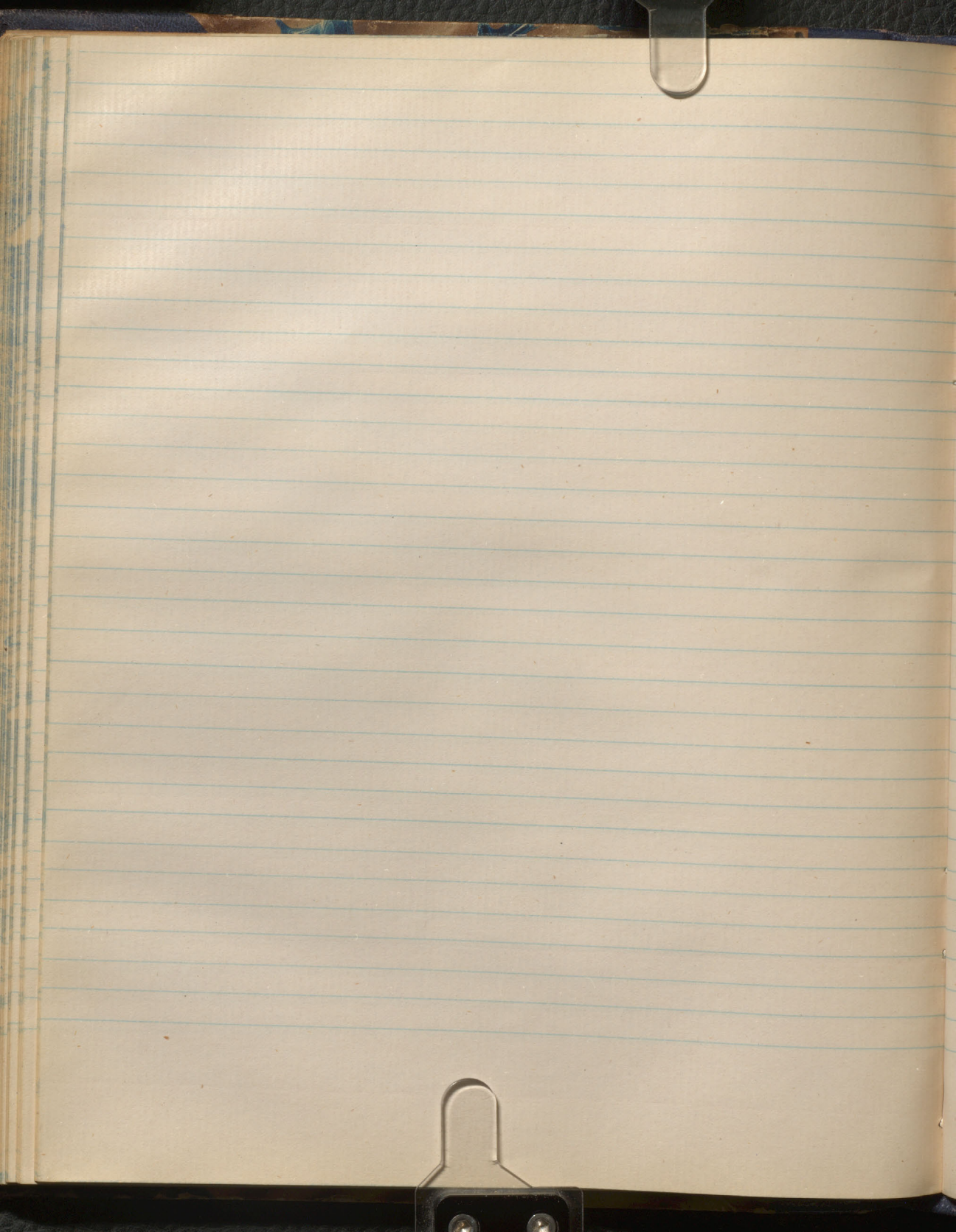


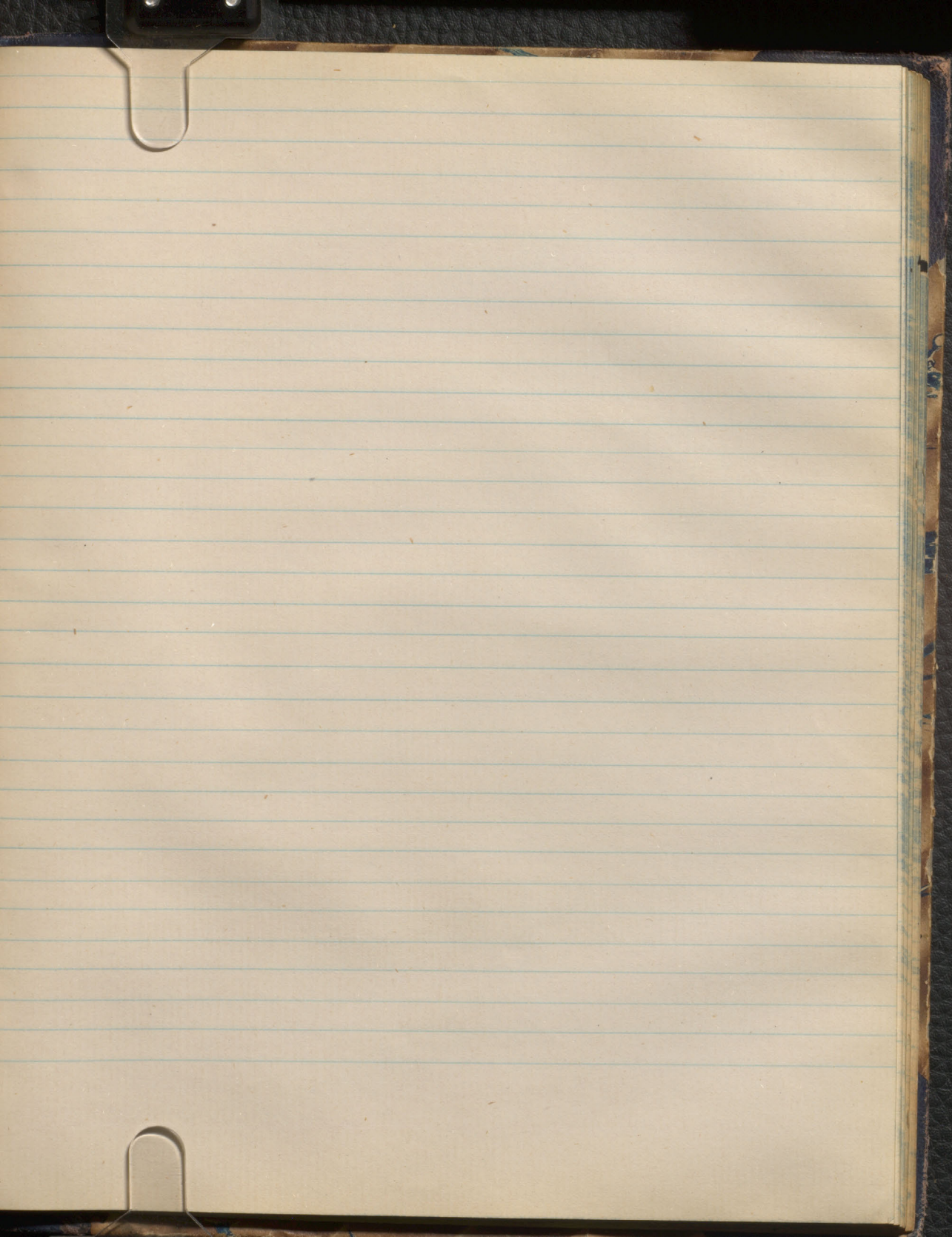


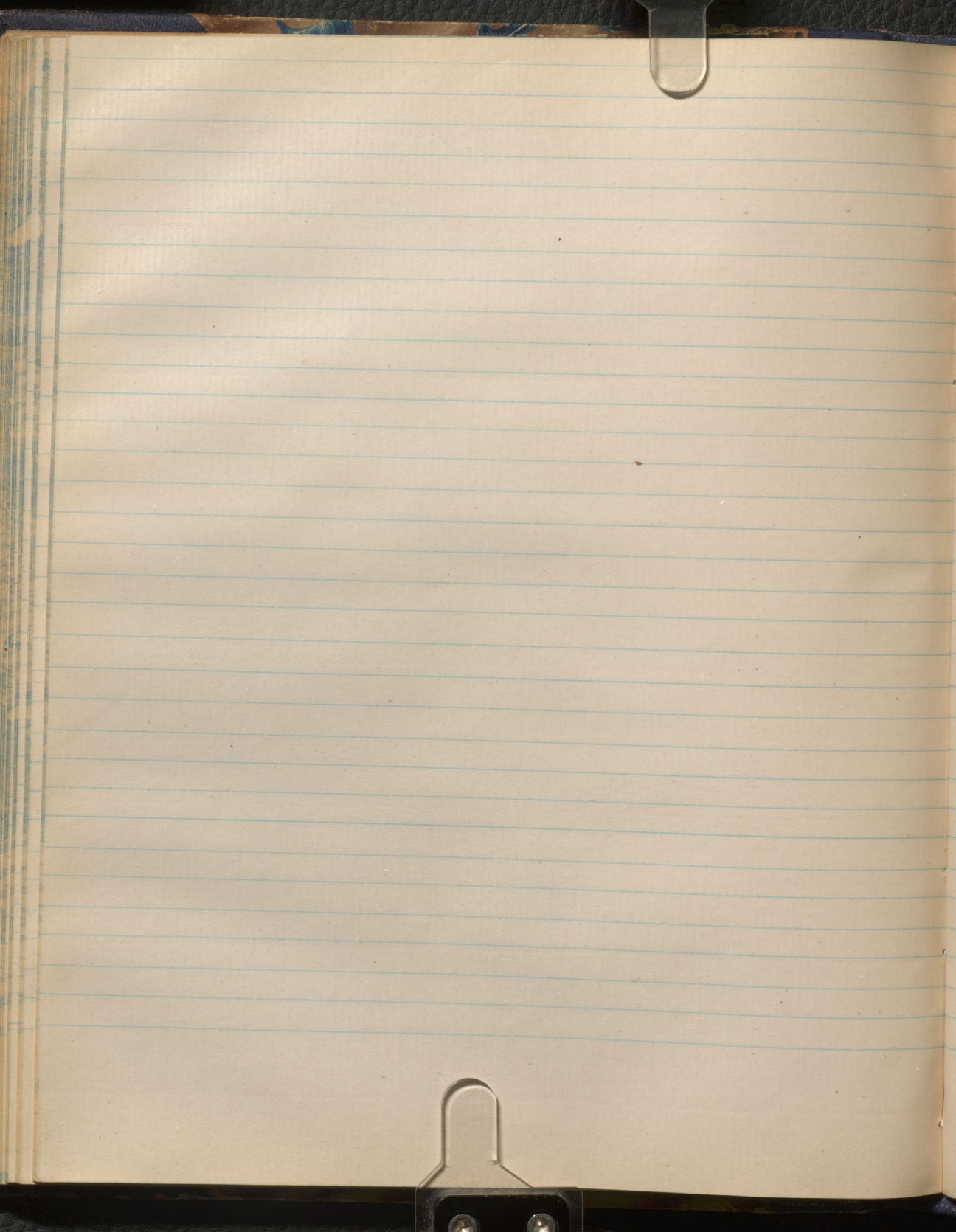


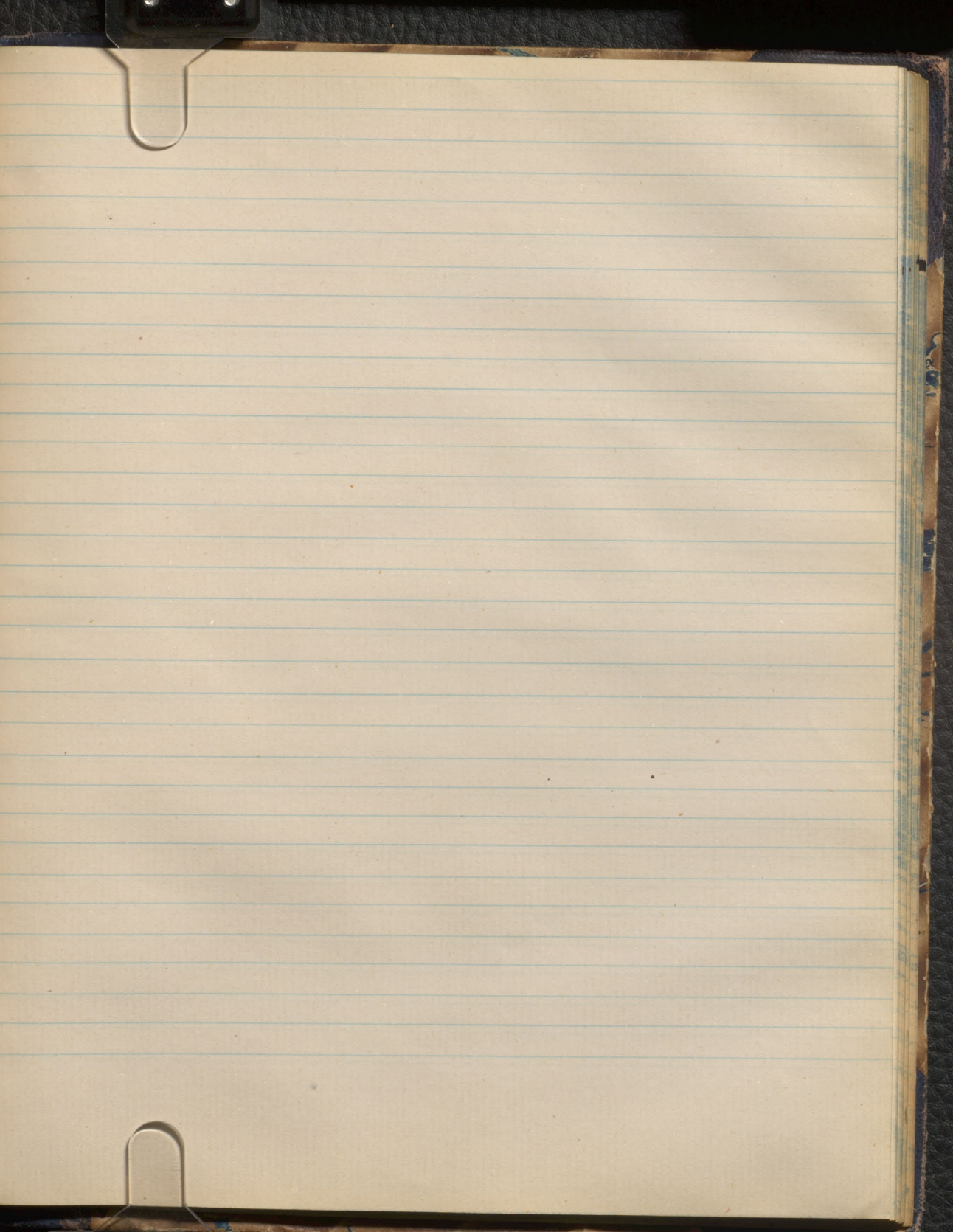


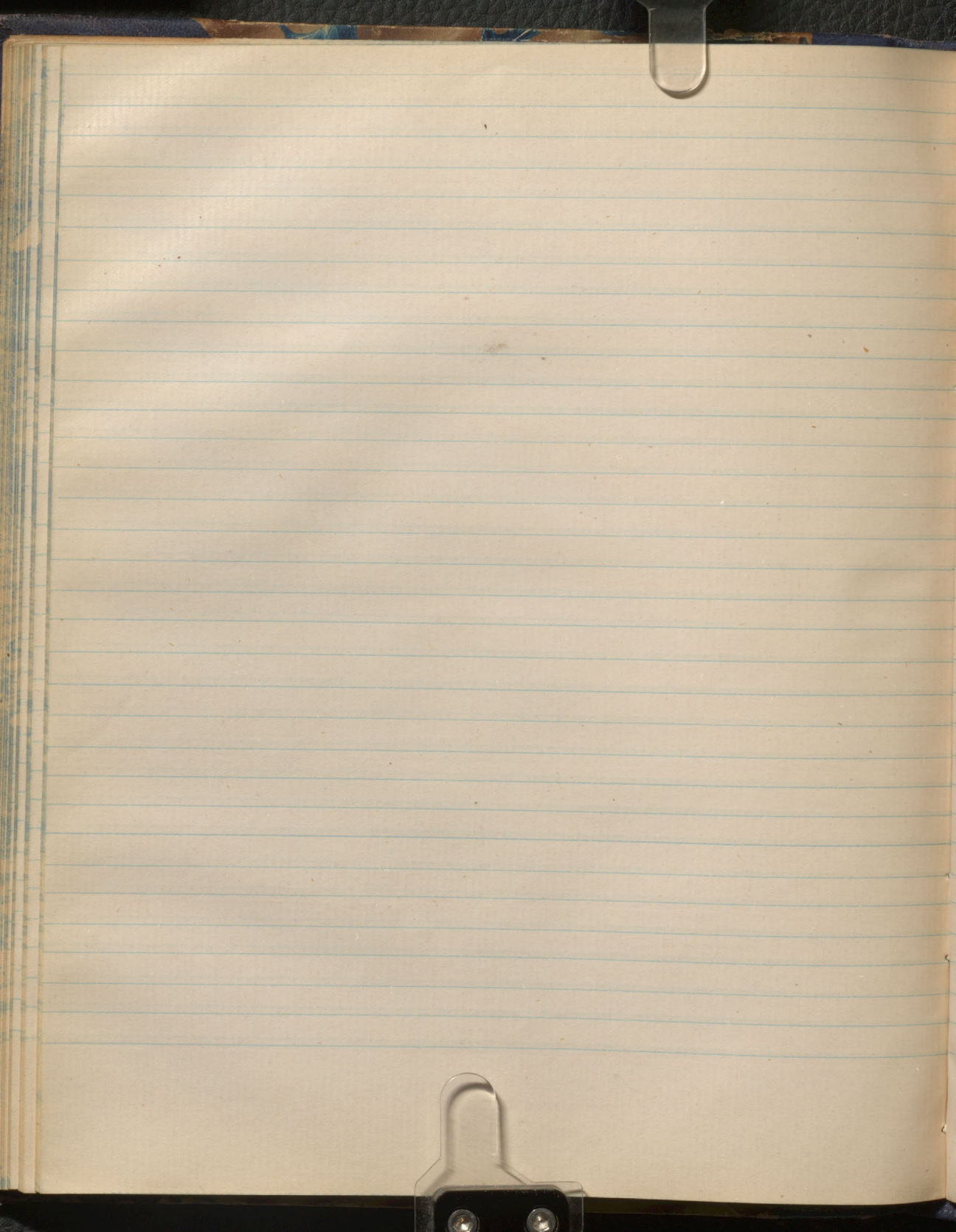


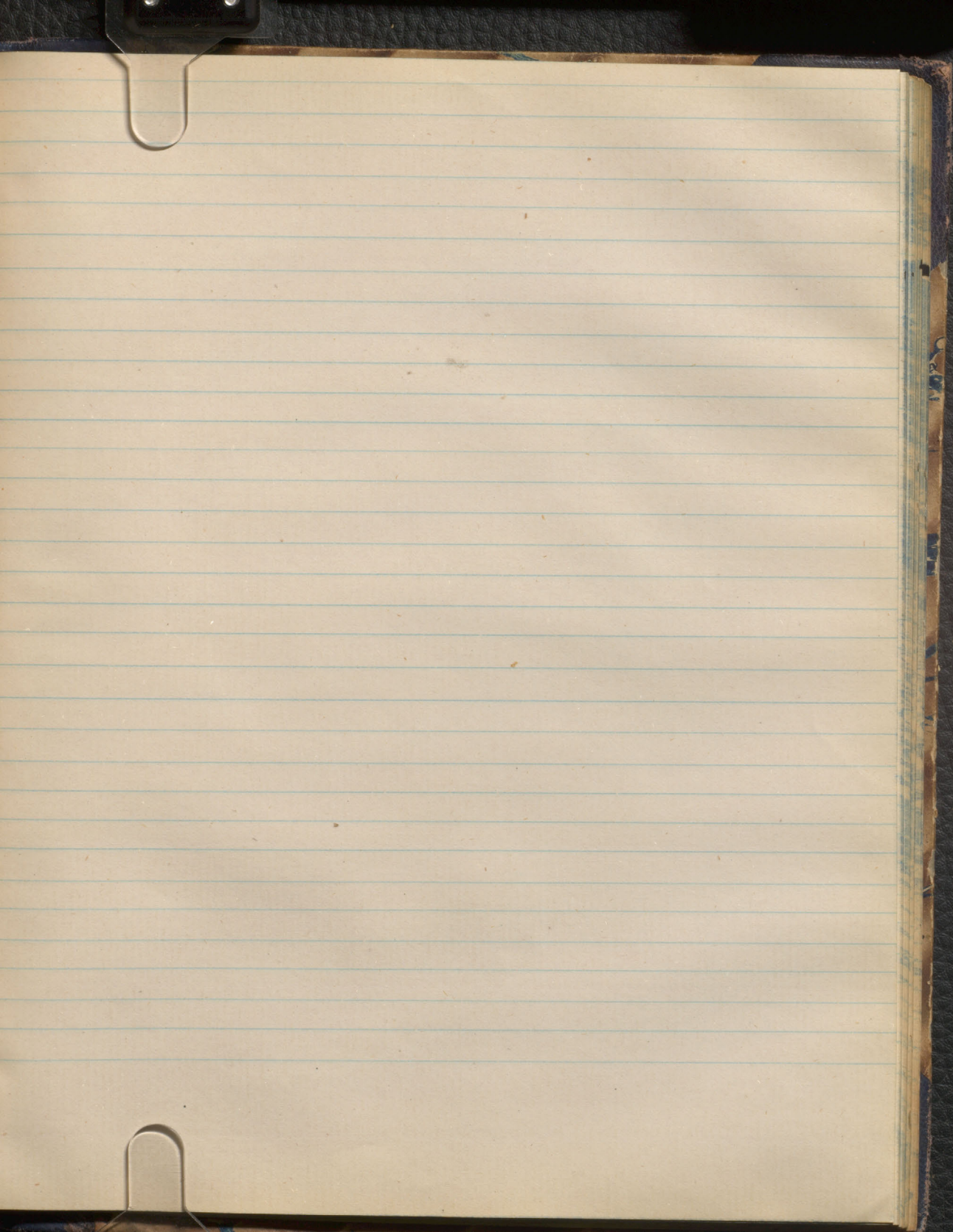


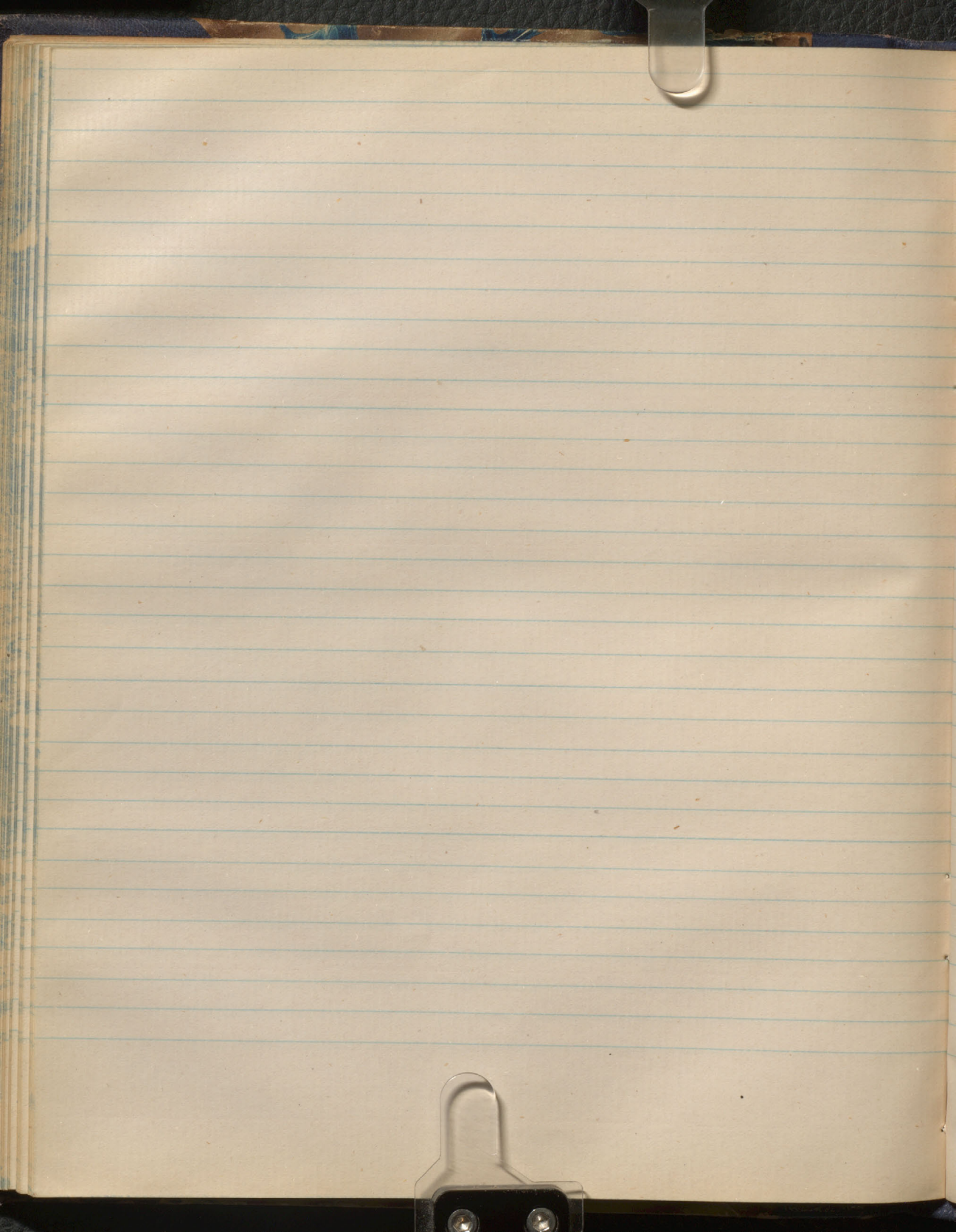


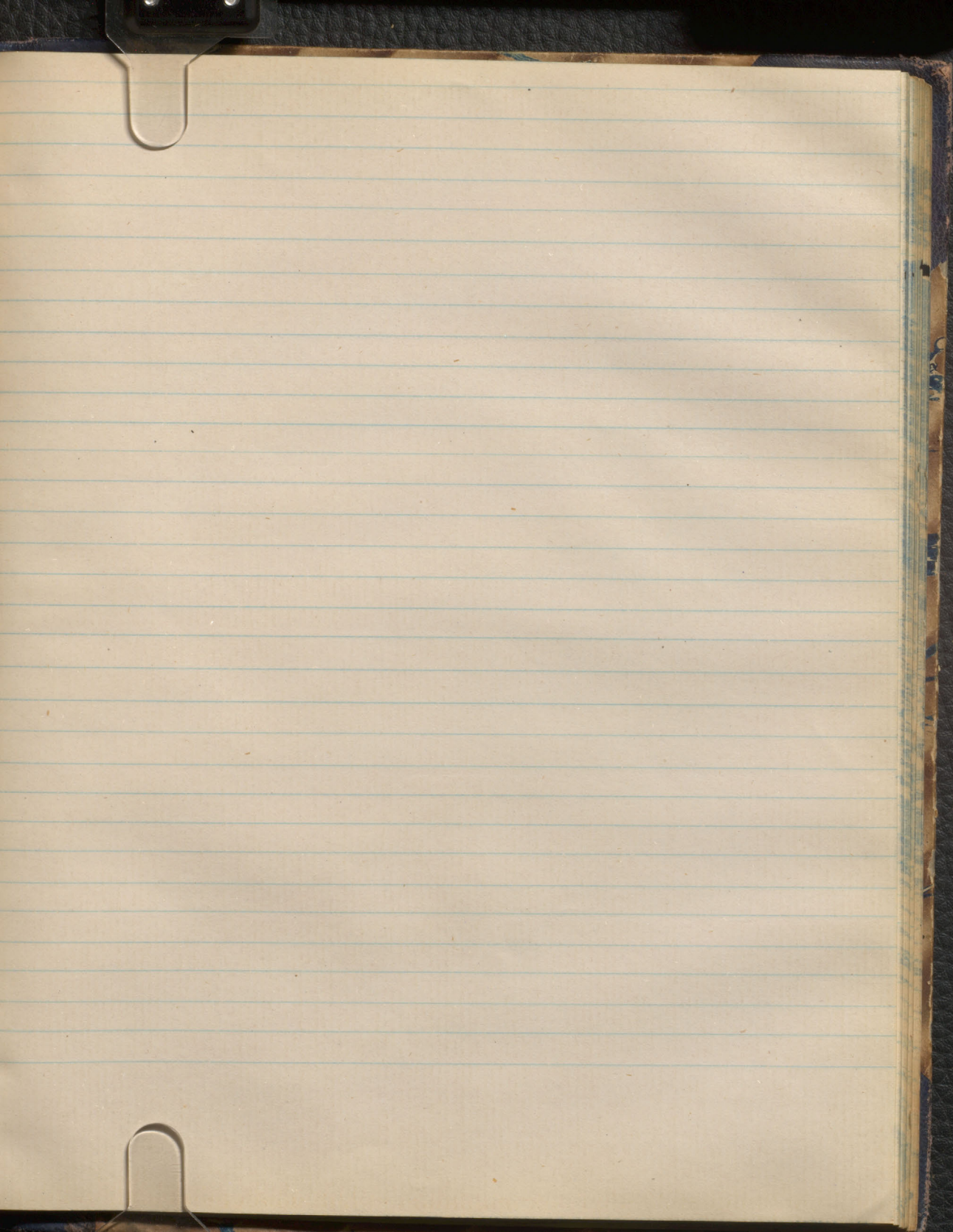


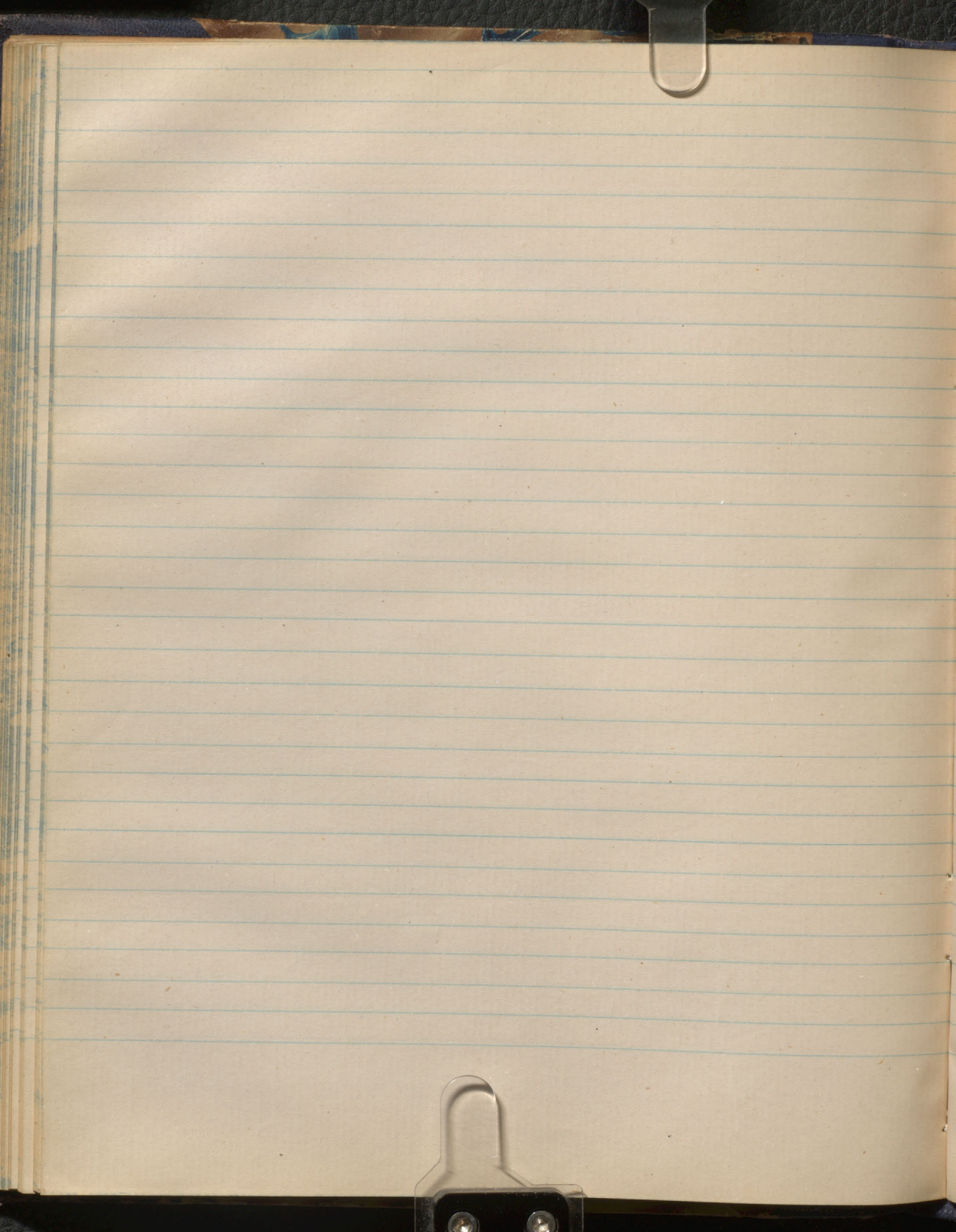


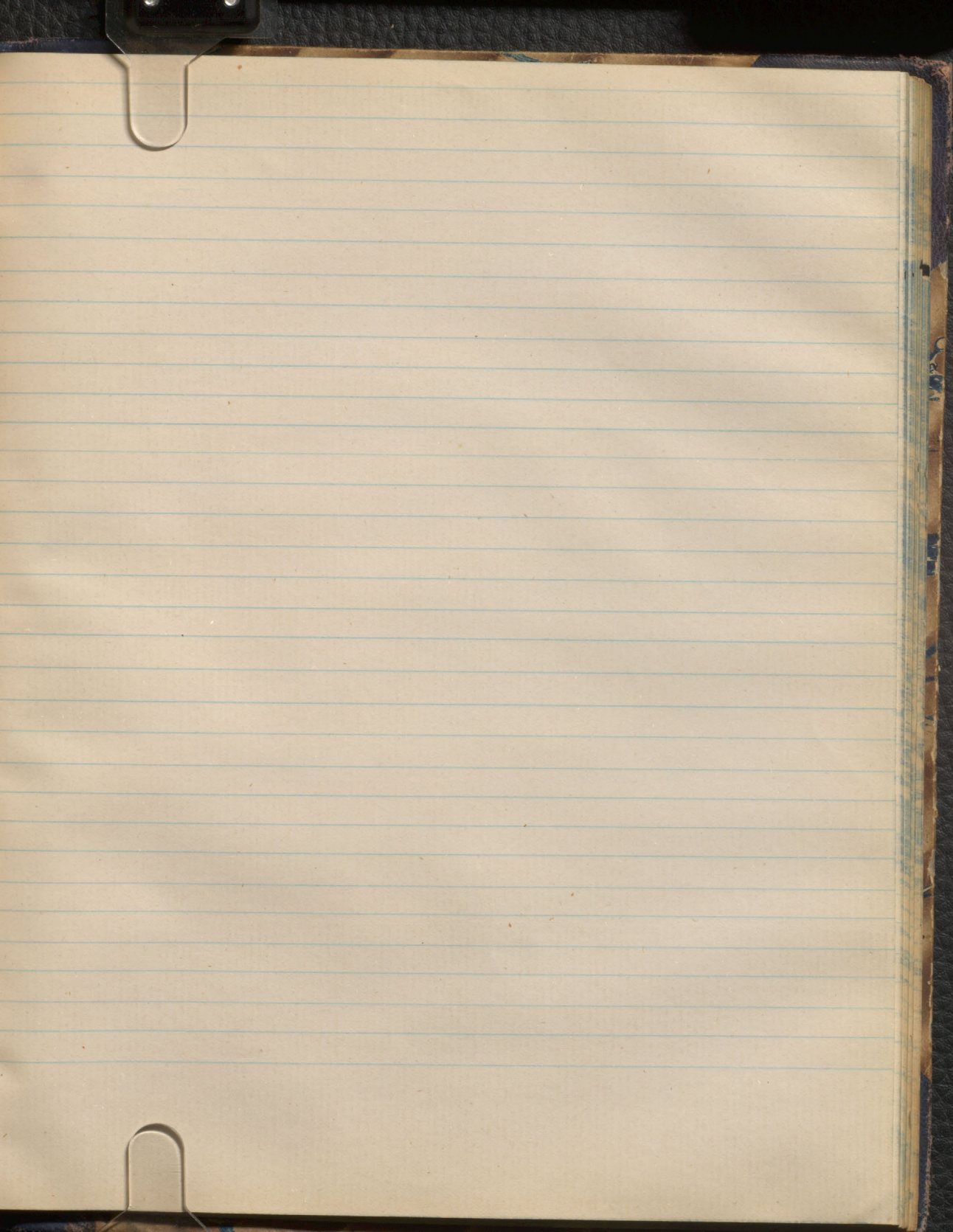


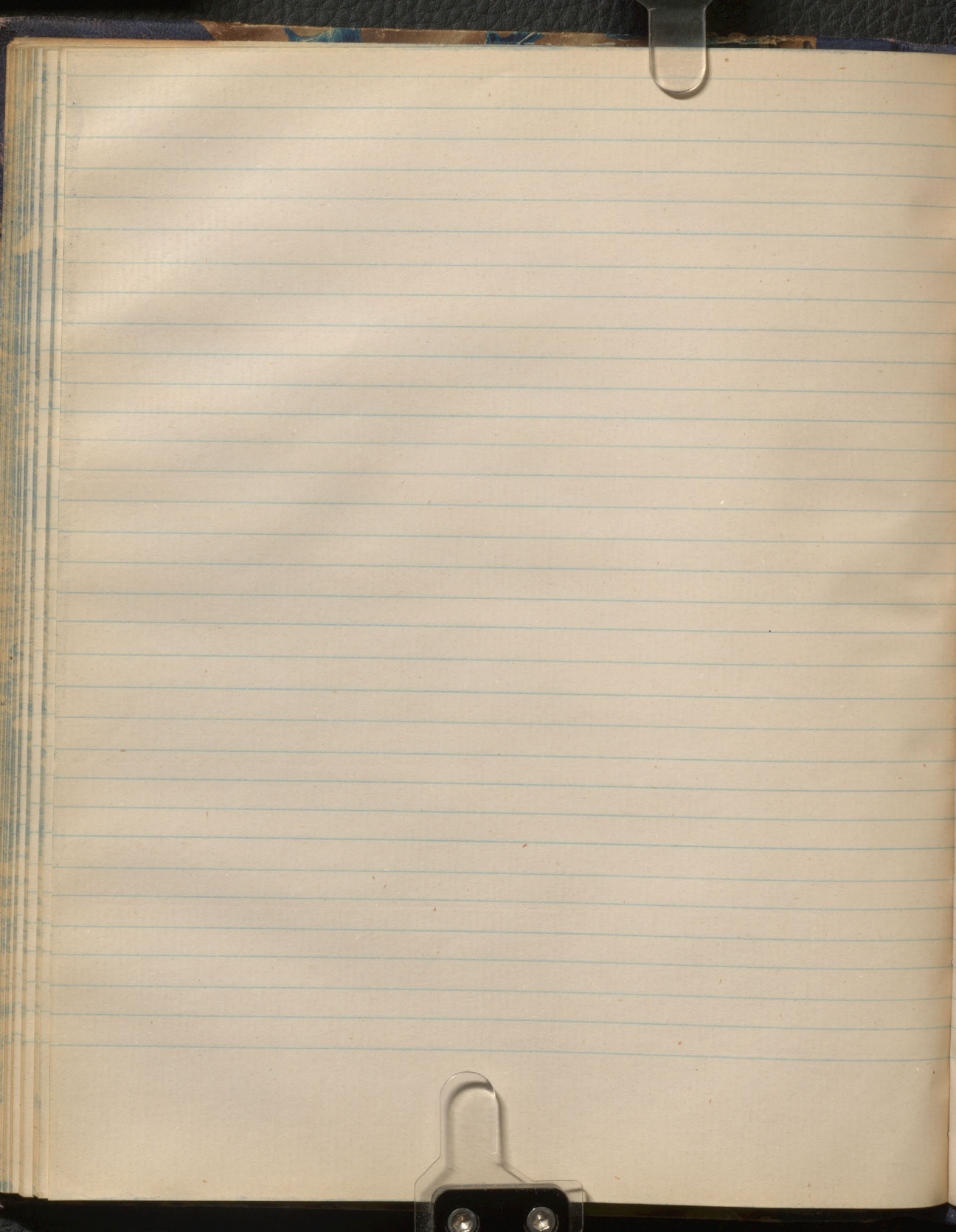


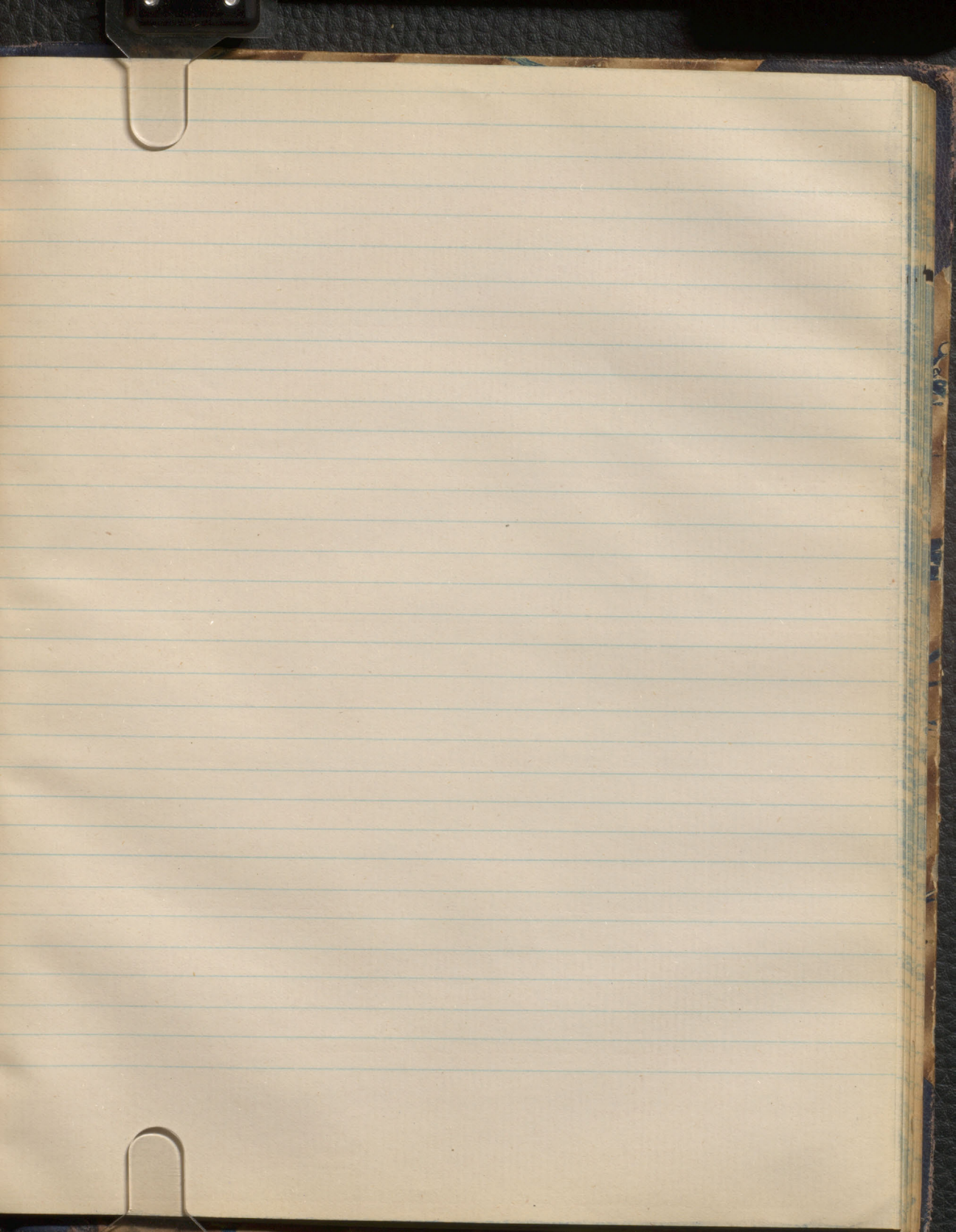


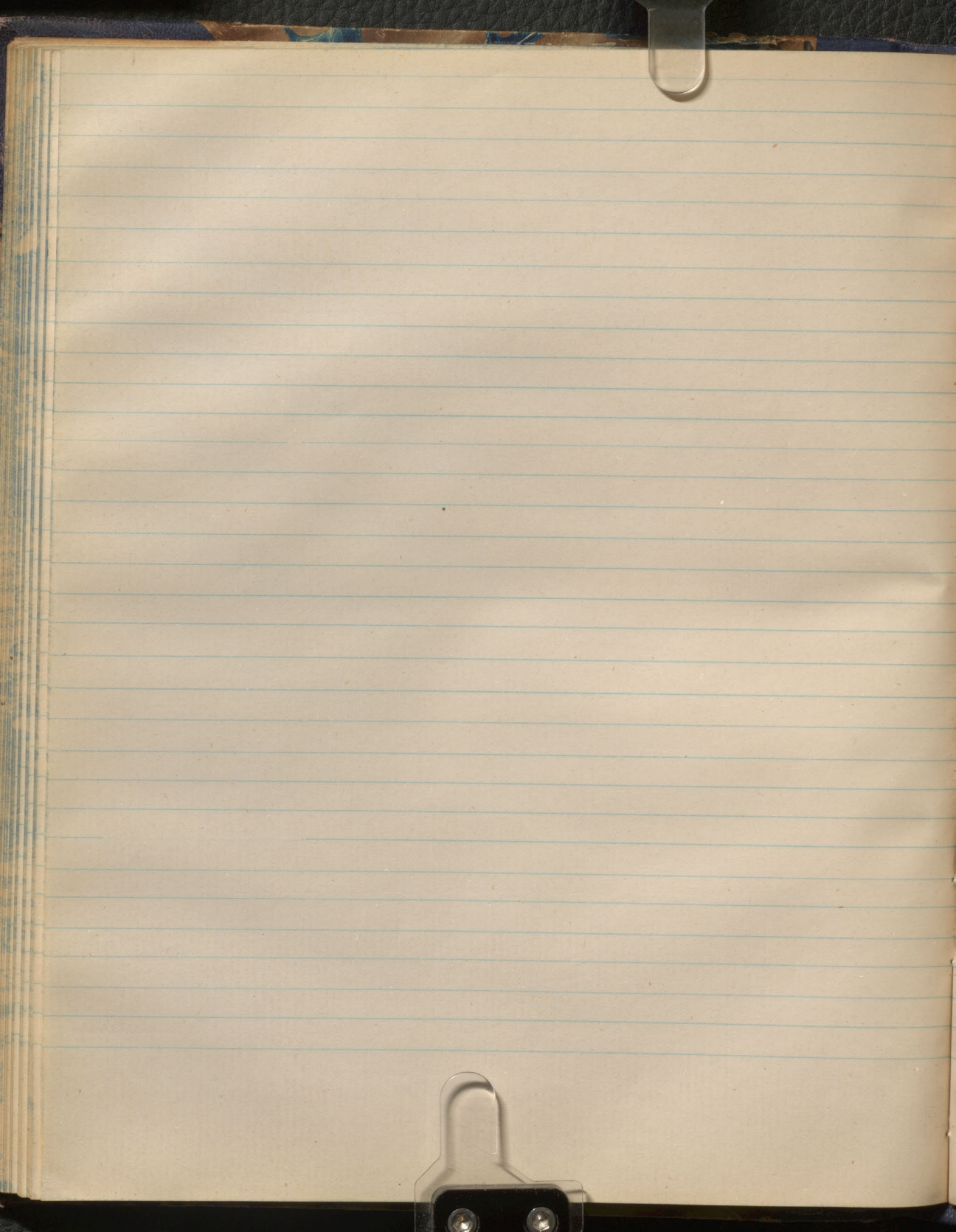


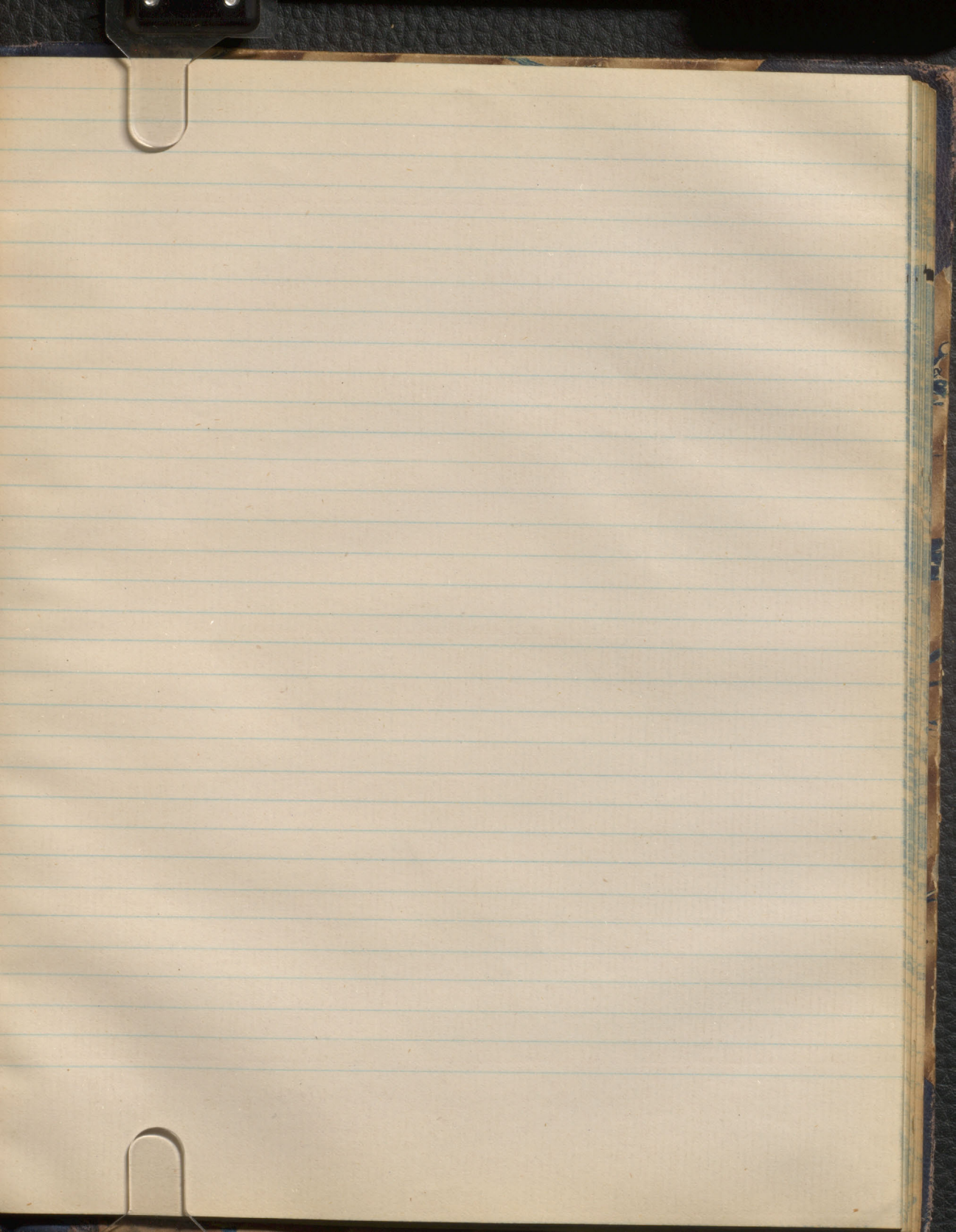


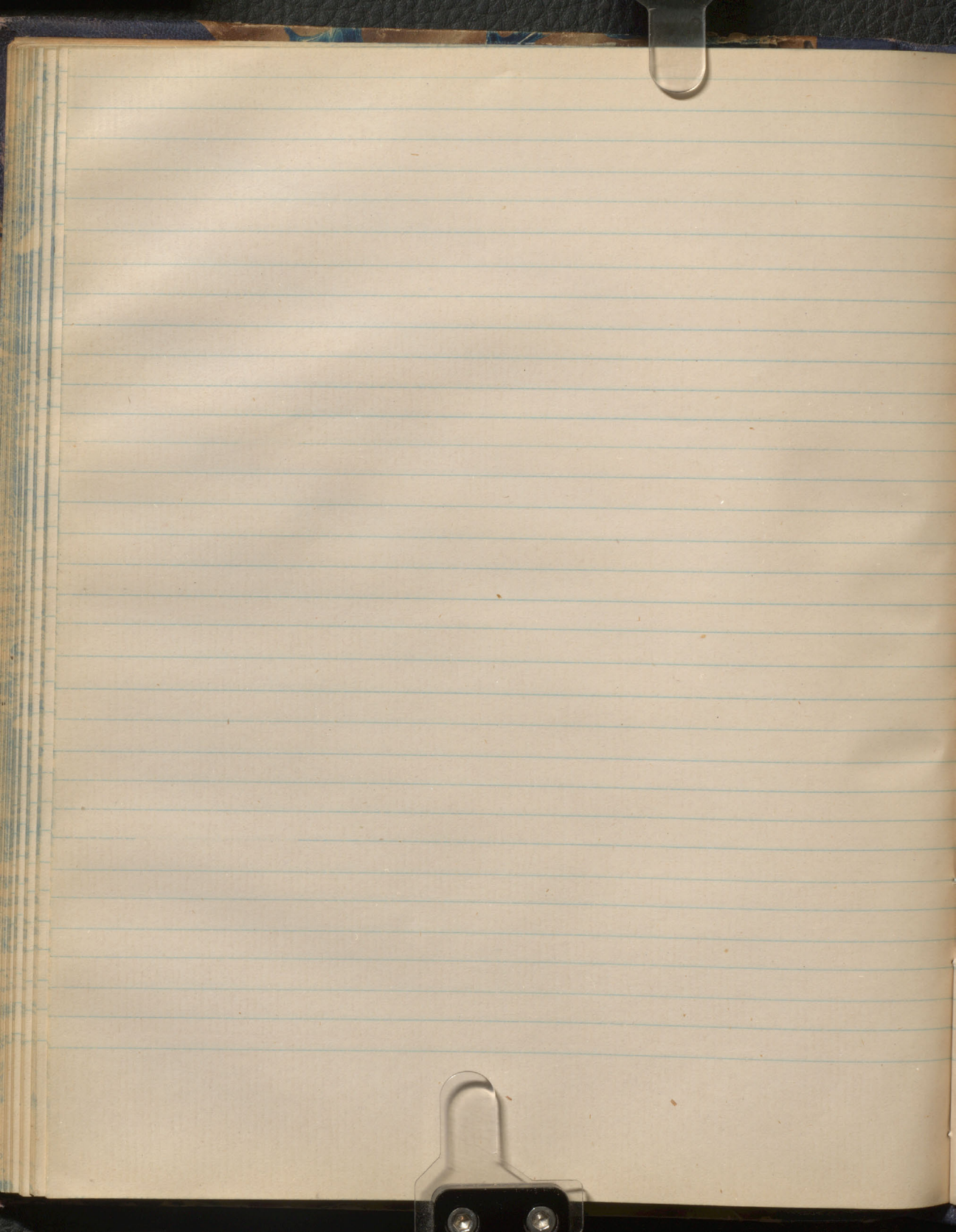


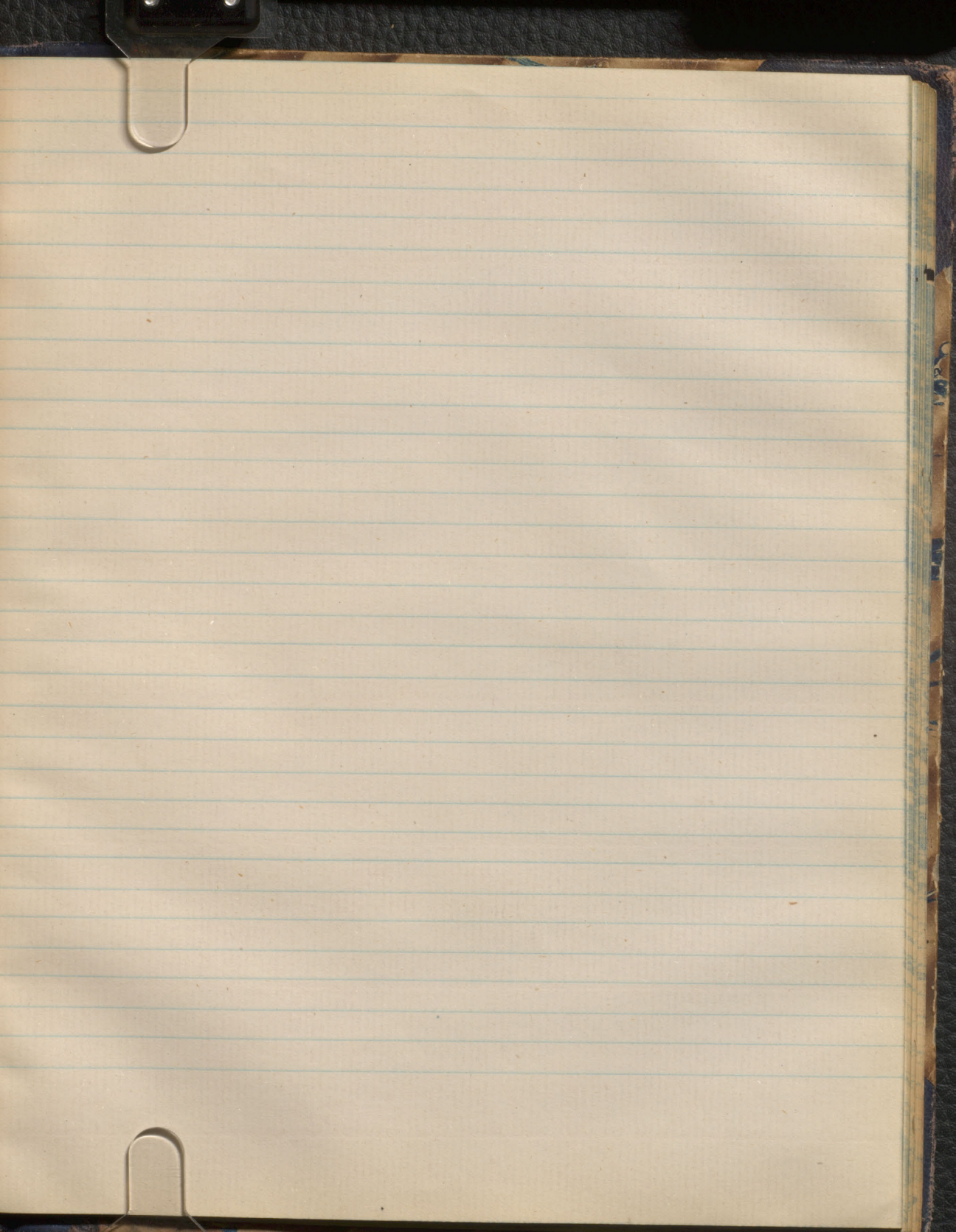


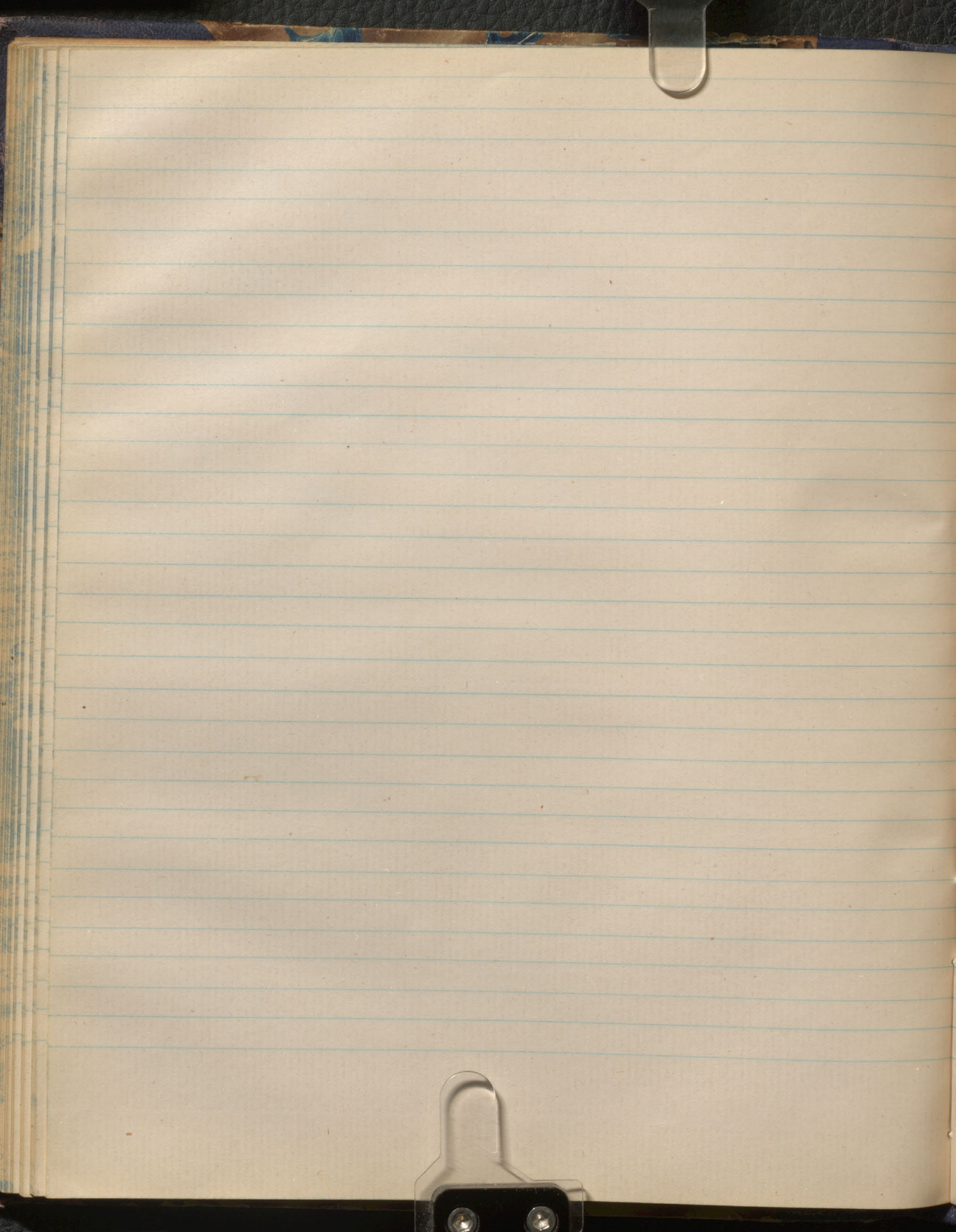


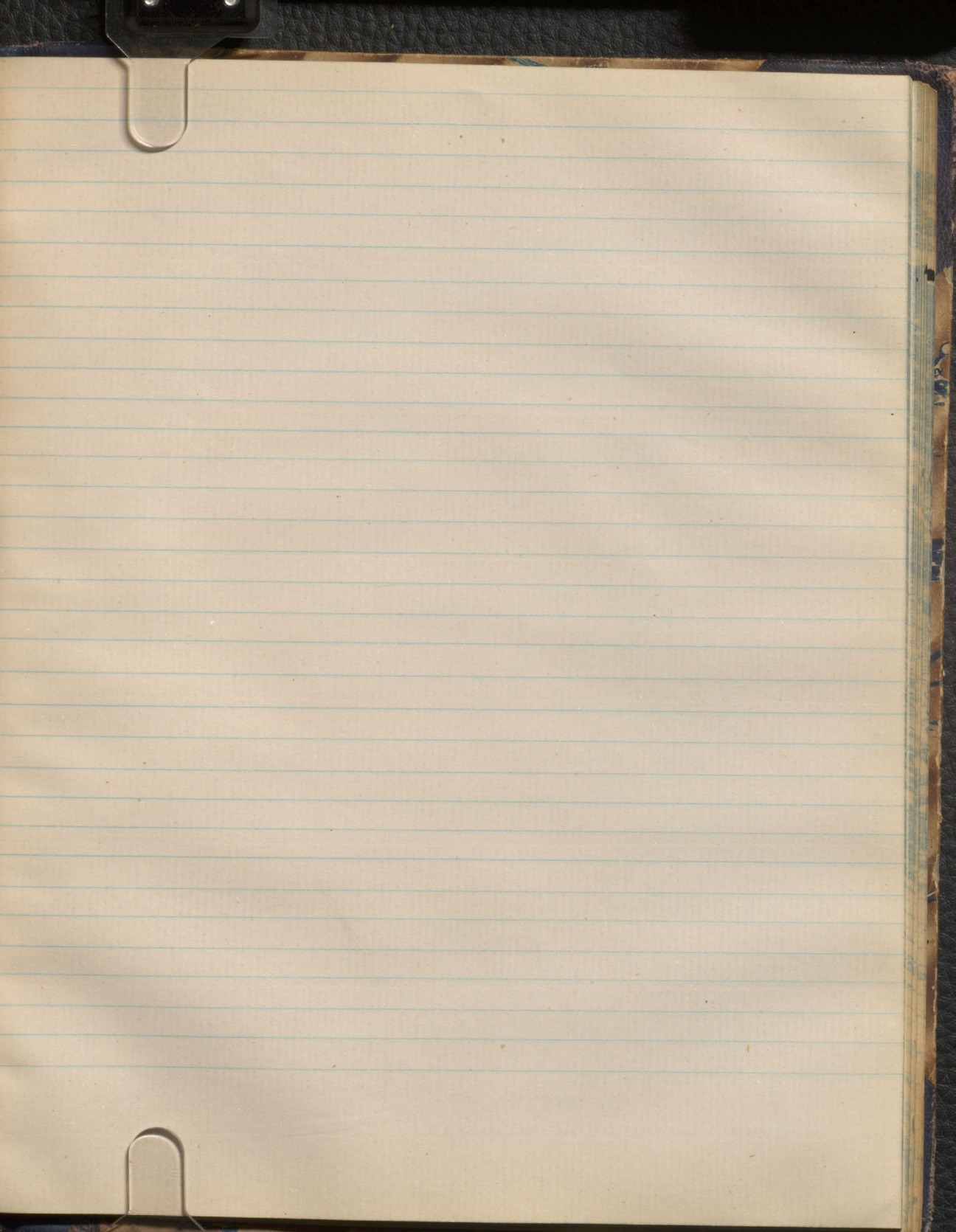


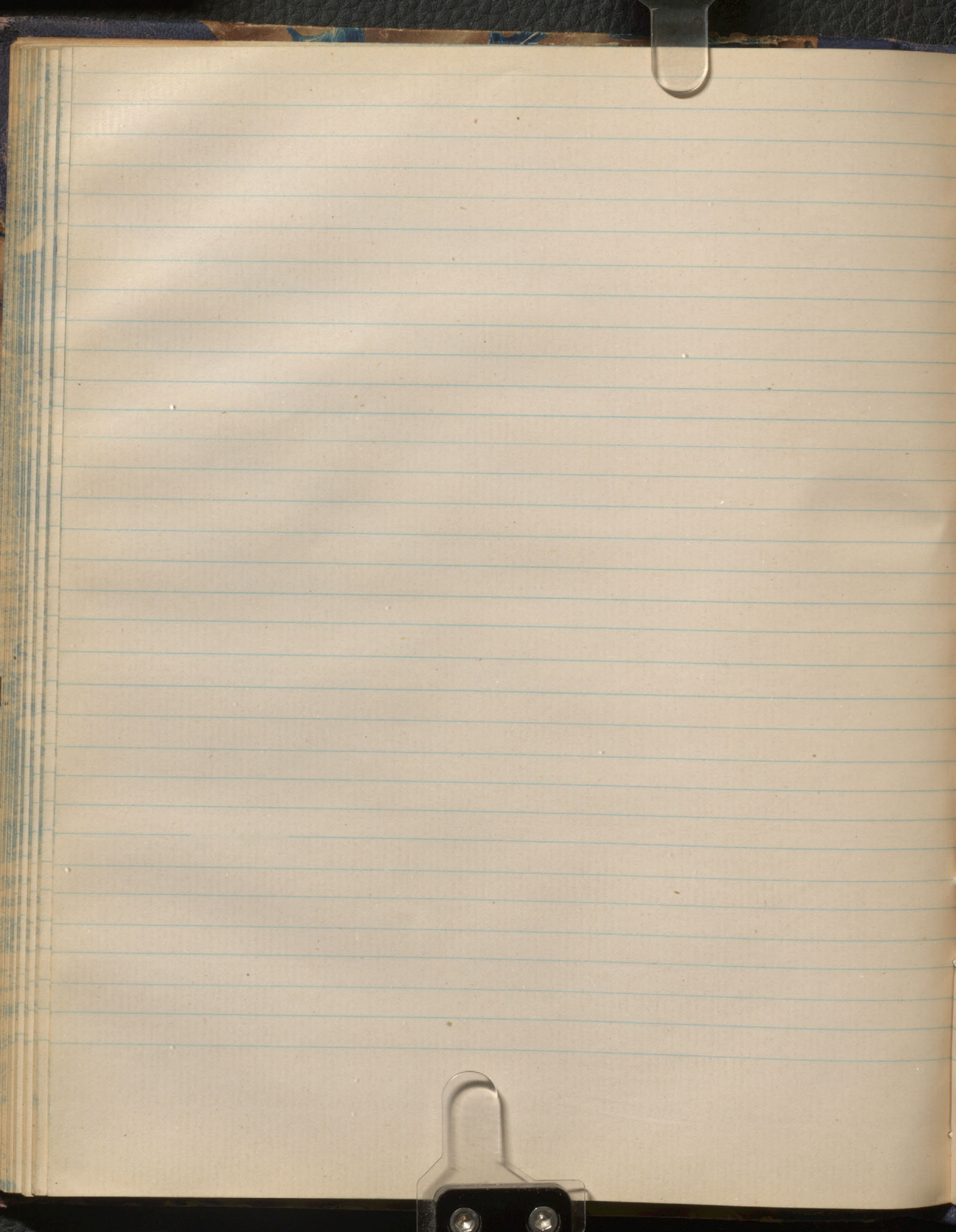


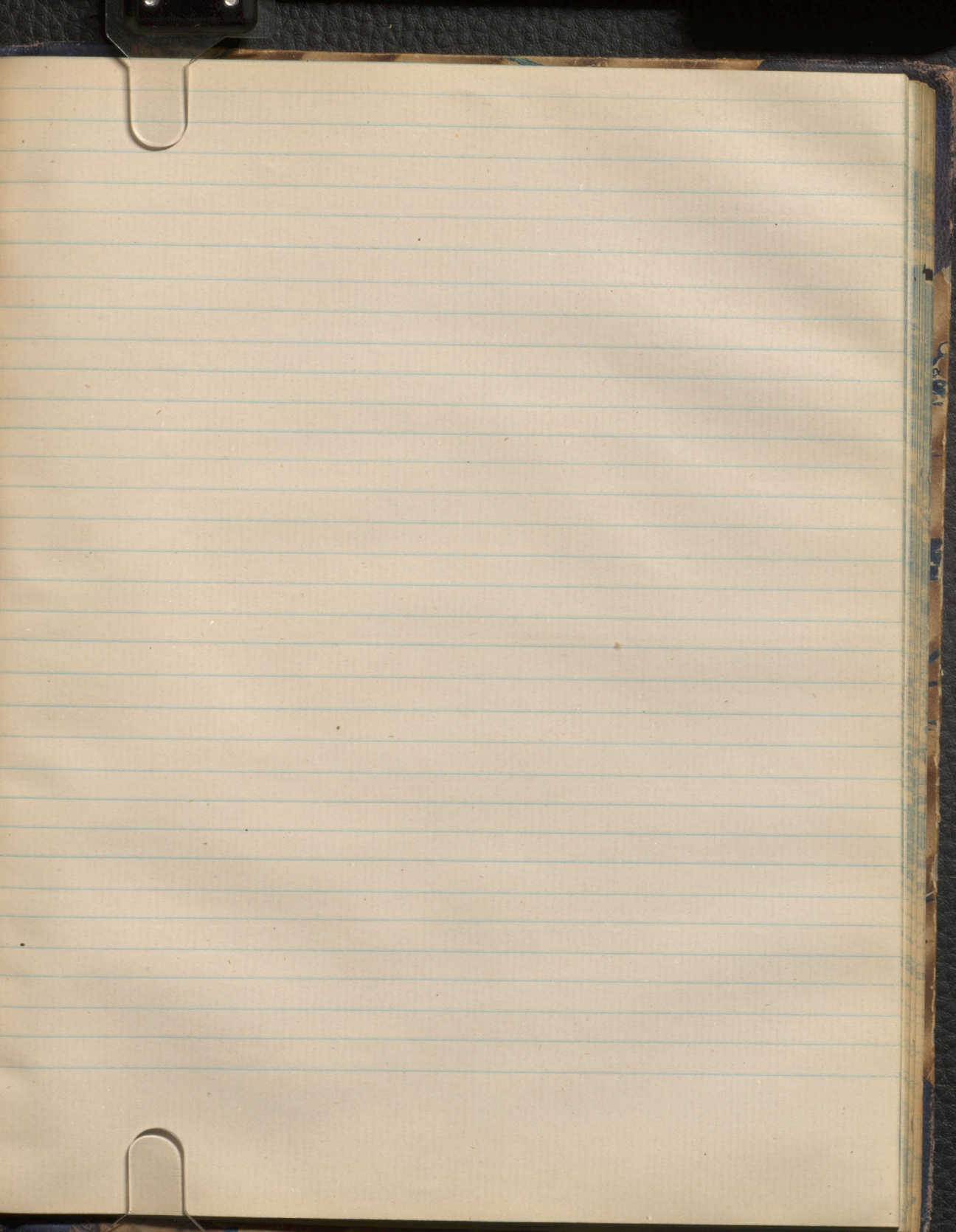


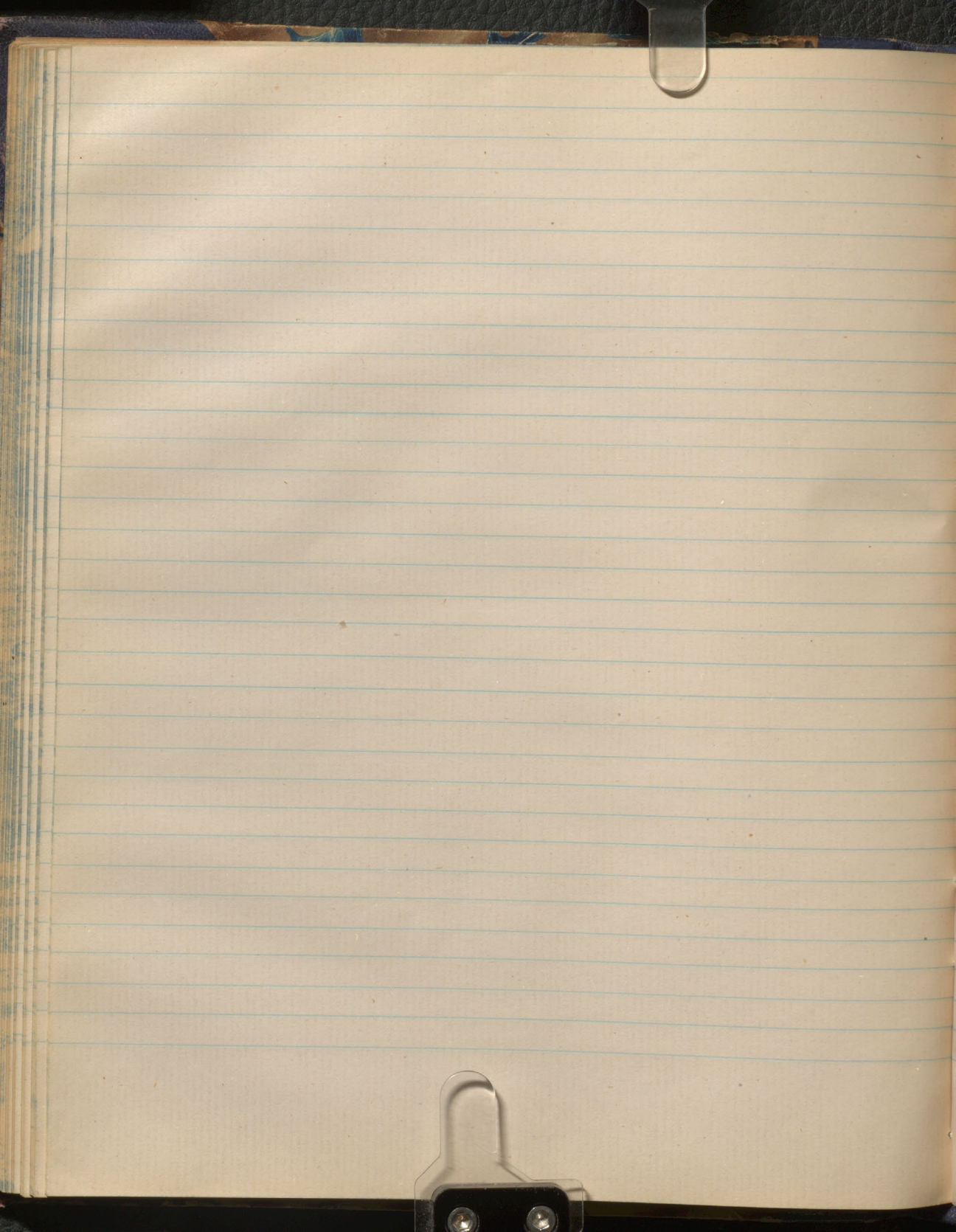


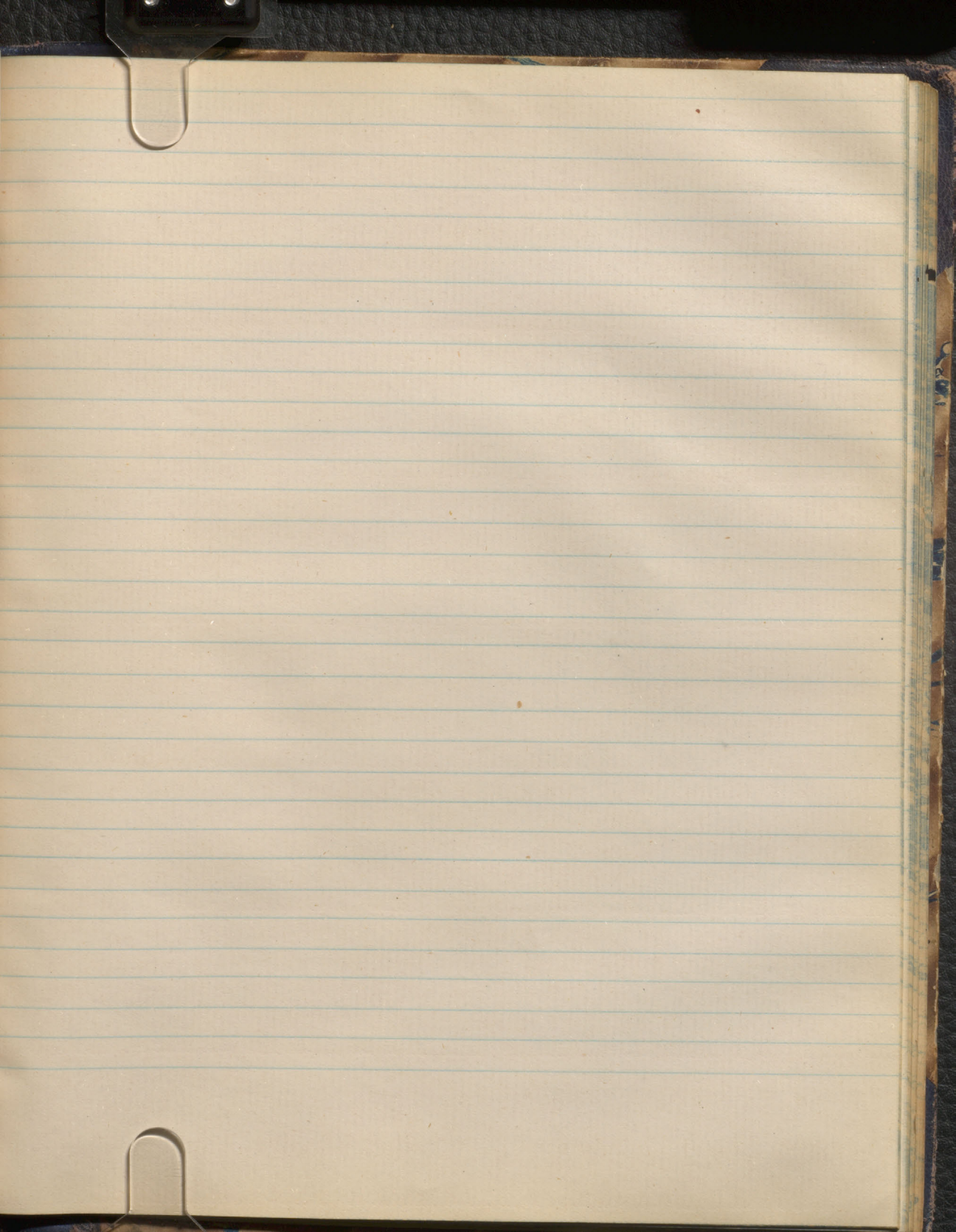


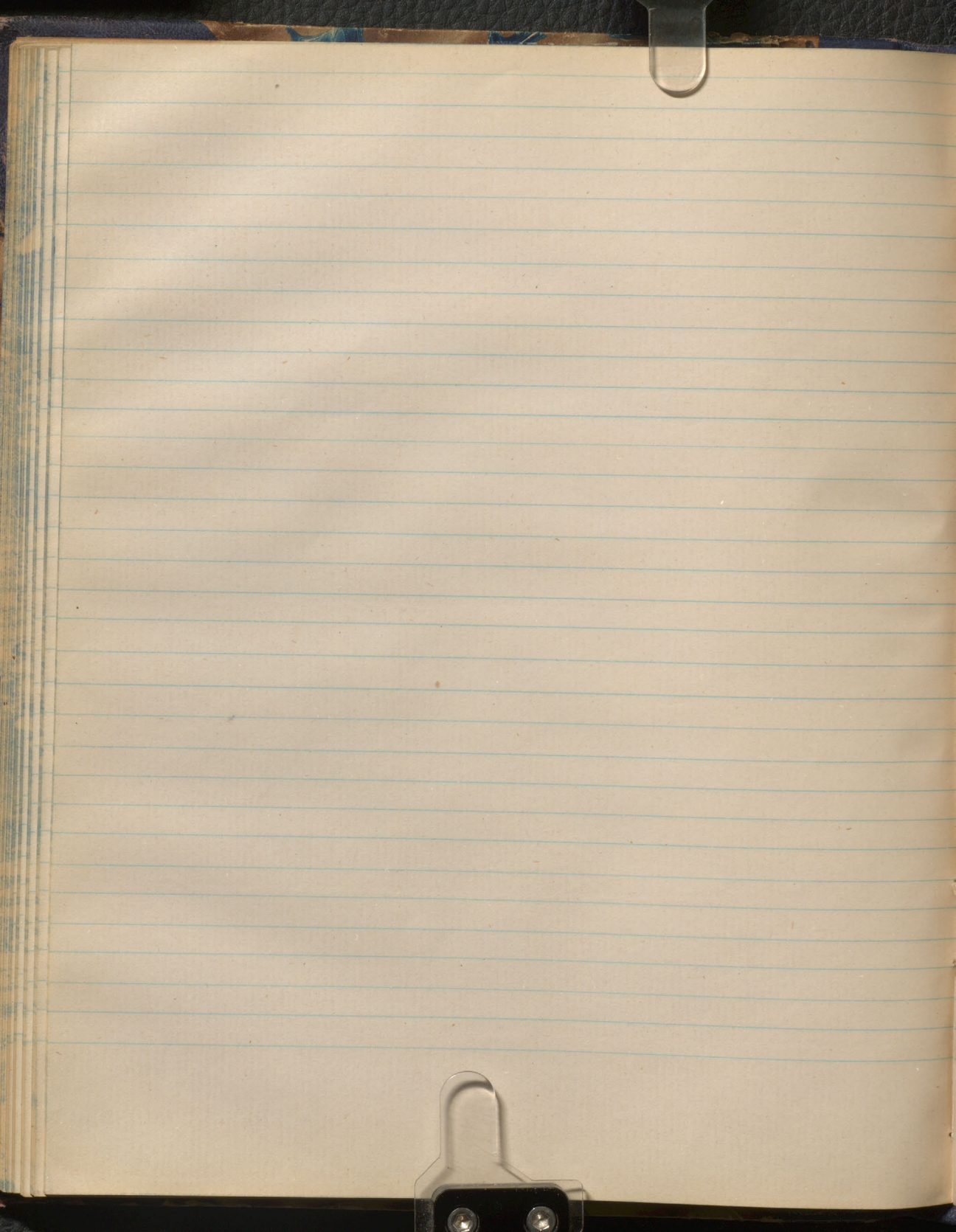


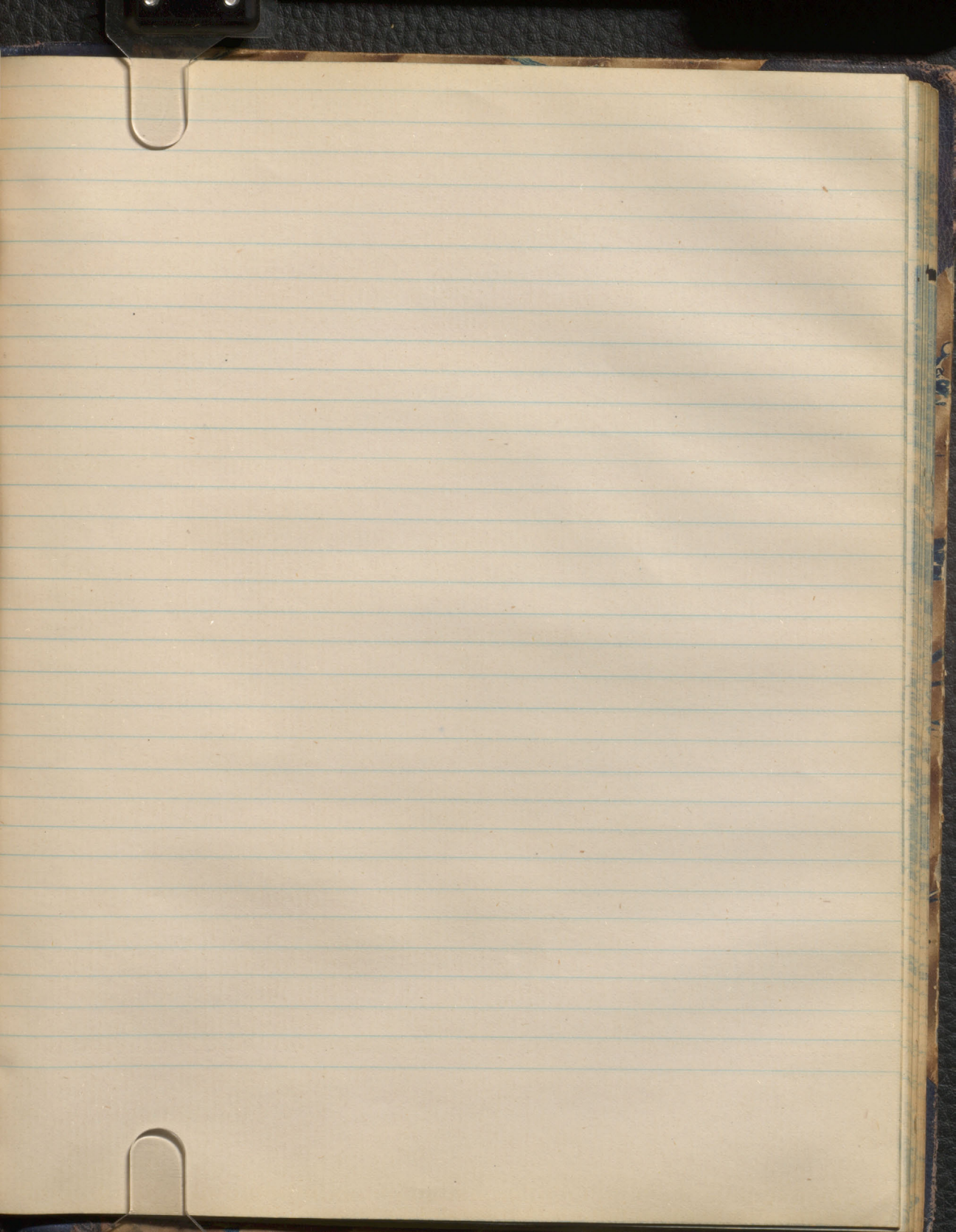


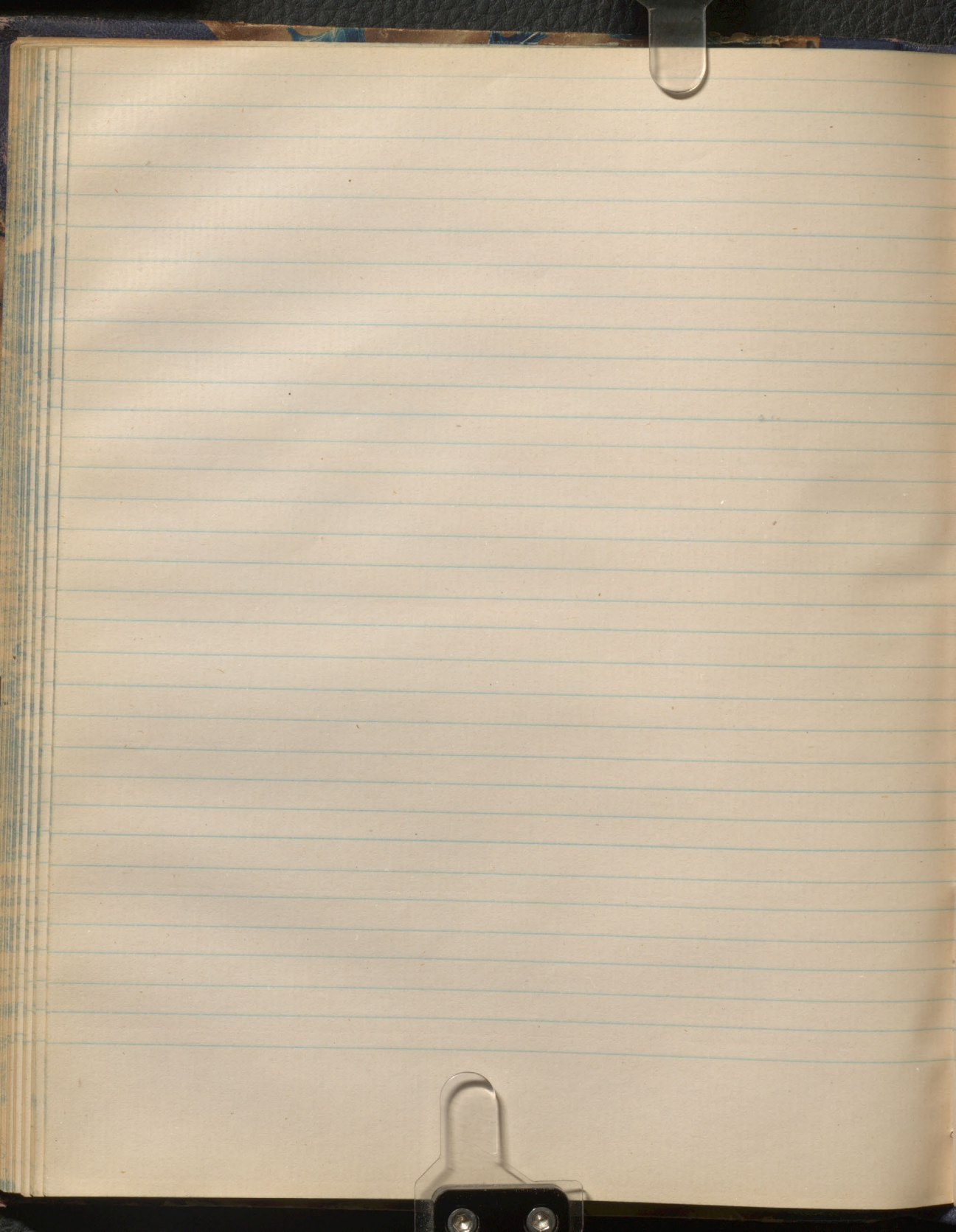


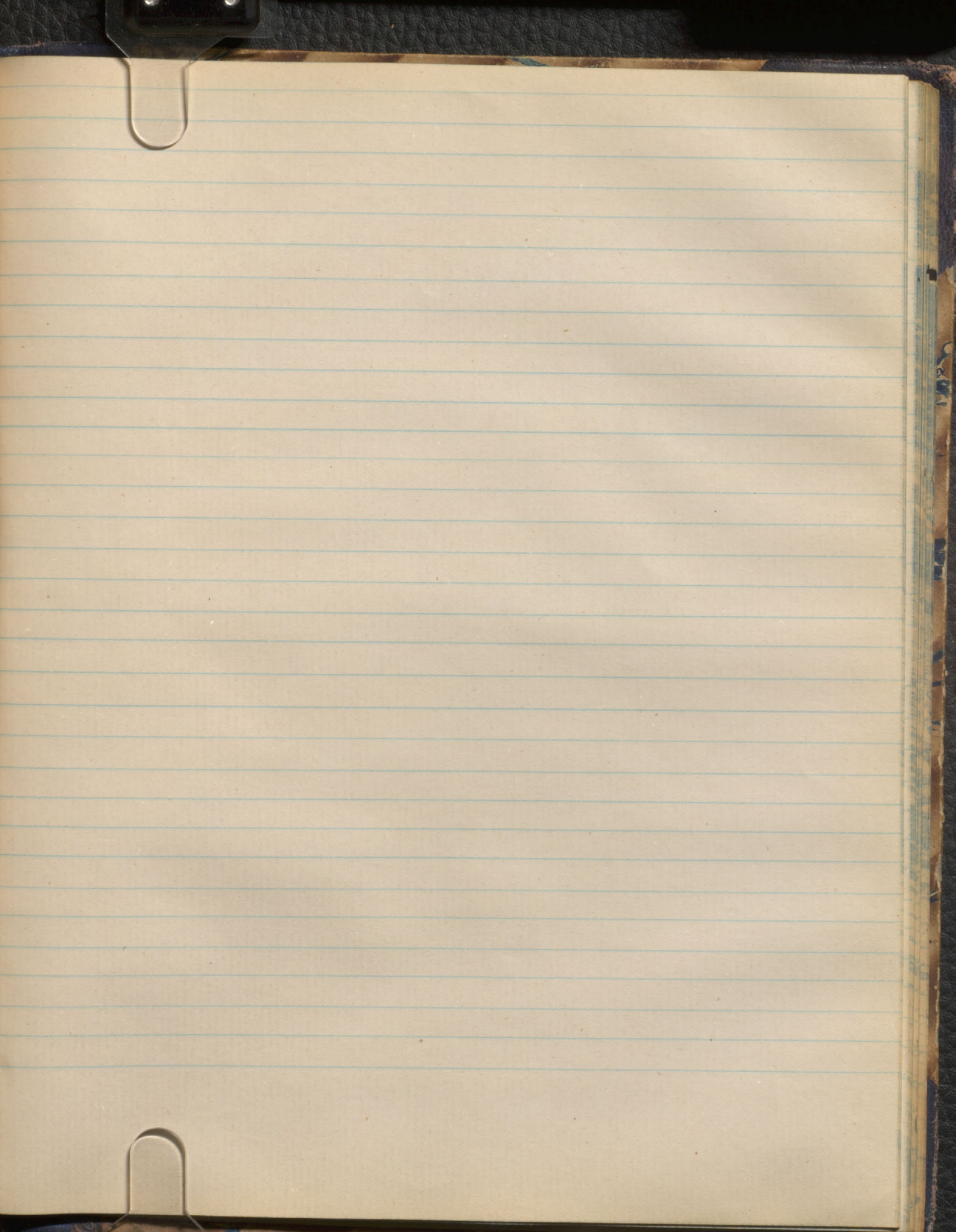


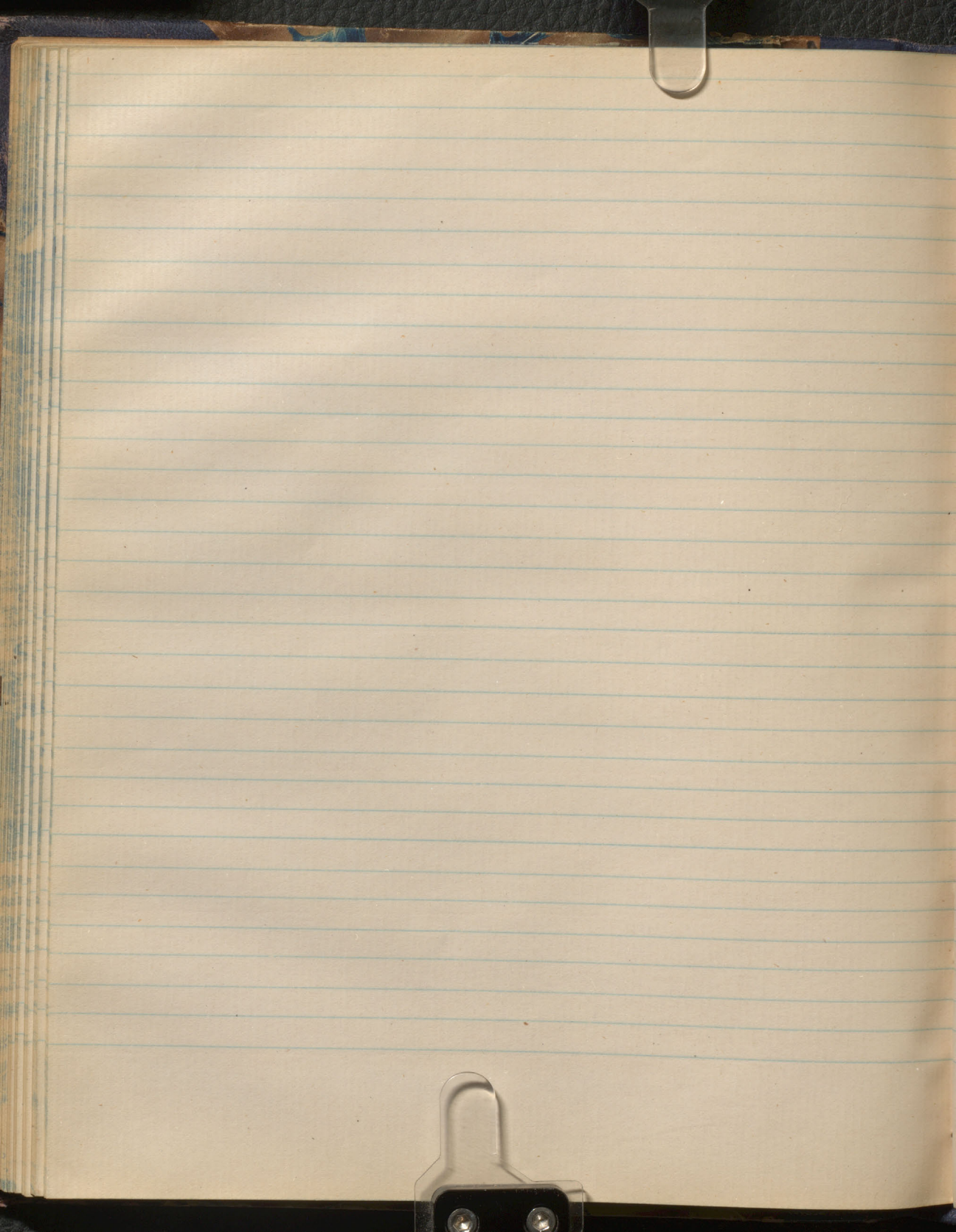


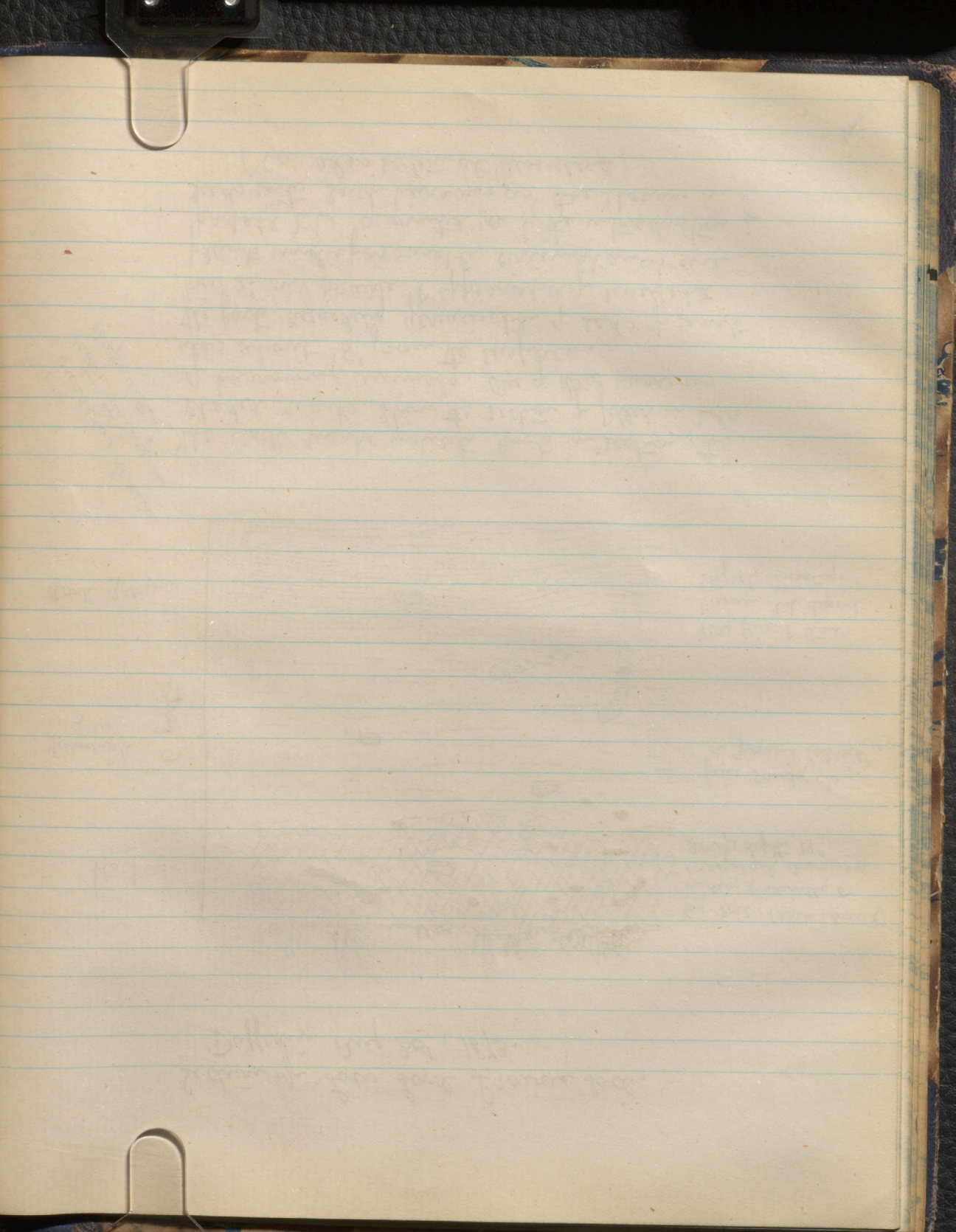




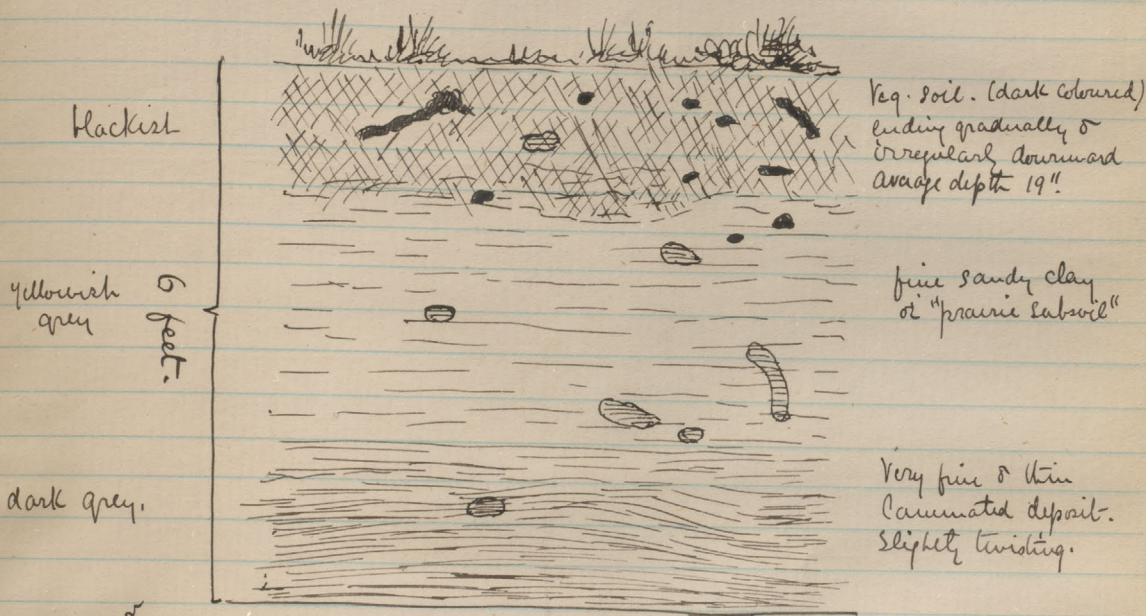








Section of Low Level Prairie Soil.
Dufferin Aug 30th. 1873.



burrows drawn
rather too large in
proportion.

The black marks indicate roots in section, the shaded marks show the sections of filled in holes of burrowing animals. One of these burrows was about 5' from the surface.

The facts regarding germination of seeds of forest trees & on prairie & appearance of unselfed plants under favourable circumstances are probably to be accounted for by the introduction of seeds into such burrows as those shown.

(See also section at Hoarehead)

The first thing I noticed when I stepped
out of the car was the smell of
fresh air. It was a relief after
being stuck in traffic for hours.

I walked towards the building
and saw a sign that said
"Welcome to the City". I
felt a sense of accomplishment.

The people here were friendly
and helpful. They showed me
around and gave me a tour of
the city. I was in luck.

I had a great time and
enjoyed every minute of it.
I will definitely be back
soon. It was a great experience.

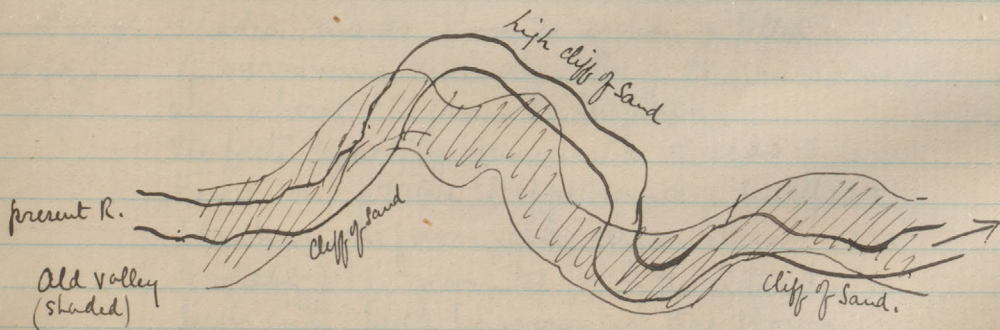
I was very happy to see
the city and the people.
I had a great time and
enjoyed every minute of it.
I will definitely be back
soon. It was a great experience.

Thank you for the tour.

The ^{lower} prairie deposits seen from sections seen near the edge of the ridge to overlap the alluvial gravels & which lie above the sand deposits.



The present river bed of the Roseau on the higher level prairie seems to partly follow, & partly cut across the bends of an old river valley at a higher level, & which the river must have occupied before cutting down to its present level, & probably when a lake state filled the Red R. Valley. Whenever the present river entirely leaves the valley of the old a bluff is formed.



Diagrammatic plan.

Many sections similar to those of which examples given, seen on the Rocean. They generally agree closely & are often nearly identical.

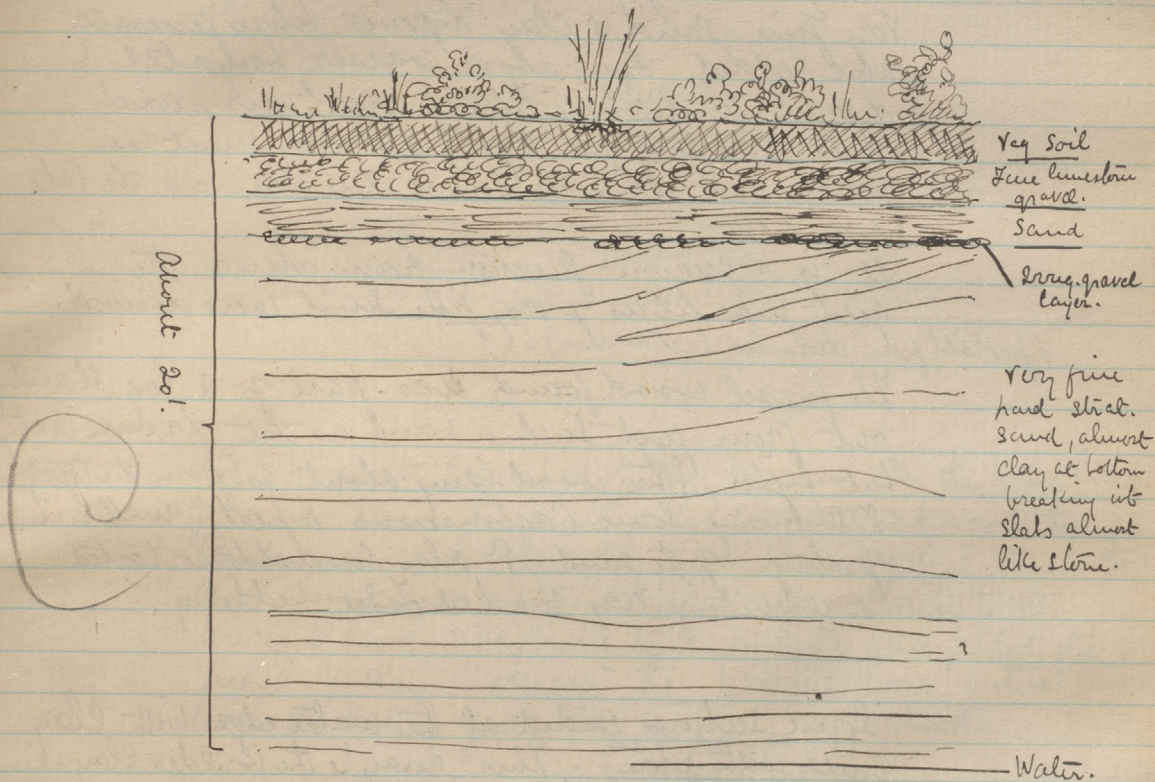
Very fine sand, & clay deposits below generally fine bedded. Lying above coarser horizontal deposits indicating littoral conditions, which, as the prairie slopes slightly Westward, must have passed over it in the same direction as the lake receded.

It is a curious question, from whence the great quantities of very fine sand were derived. (probably from denuded Cretaceous).

The fossil wood found was part of a log standing out from just such a bank as that drawn last, but higher, (the wood being about 30' from the top) & showing some carbonaceous & peaty matter in partings of the sand, & also some white distorted or exhibiting very marked false bedding.

Some sections ended at the water edge with clay filled with stones. This may be the boulder clay proper. It seems to have been the source of most of the stones & boulders now cumbering the river.

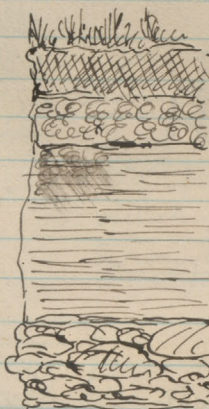
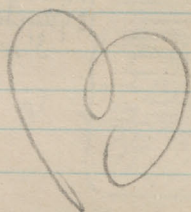
Section about C on map, & further down than last.



Section shows evident unconformity among the alluvial formations. The lower part of very fine & hard greyish sand, or "prairie subsoil" clay. The cliff perpendicular as if of stone, & the water edge stream with square slab-like pieces of the deposit. This lower portion false bedded. The upper or littoral? series lies on the smoothed off surface of the old sandbanks below.

22

Section a few miles further down than
last & where the river has cut somewhat
lower into the prairie.



Very soil. 1'
Small gravel mostly lime. 1'

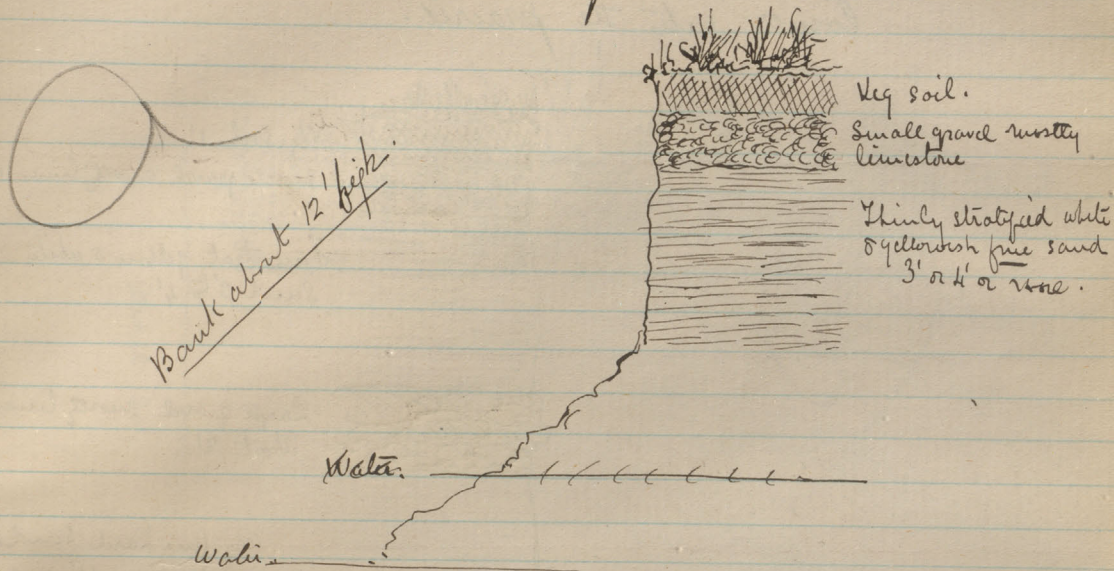
Fine strat yellow & white
Sand 3' to 4'.

Larger gravel mostly limestone
about 2'.

Very fine hard sand or
sandy clay 10' or more.

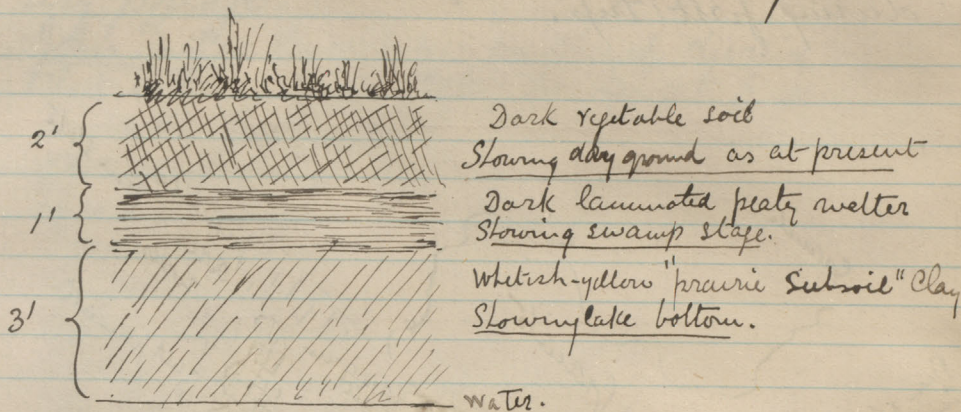
Water.

Section on N bank Roseau R about place
marked B. on map.



The conditions on this lower prairie level seem quite different from last. A period of somewhat tranquil deposit closed by littoral conditions, or by a period of more powerful currents. Seem here to be dealing with a larger & deeper lake, probably that of the Red R. valley. This lake also however contracting.

Section on E bank of East Roseau River
about the place marked A on maps.



This region would then seem to have been at
one time covered by an extension of Roseau L &
slowly drained, perhaps by cutting down of river
channel.

Sketch map of Flag Isd. I. Stowing
patches of highly altered green slate rocks, not noticed
during first trip.



Additional with regard to change of Lake level affecting Skot-a-wa-winnajumb or the dry portage.

John Taylor the indian employed during trip to Rat Portage, says: that for about 5 years, or since the "high water" Canoes can always pass over without portaging.

This was confirmed by another indian present though he was not sure about the exact number of years.

John likewise on questioning tells me that the portage path is of soil, a clay like that forming the bottom of the Lake, & that a current runs up & down the channel across which the portage lies, according to the direction of the wind.

It seems therefore quite possible that this may offer no good proof of change of level but that the portage had been merely washed away.

The part of the Lake about (66) & (66½) is known by the Indians as Katim-ek or the "deep water". They know the depth of the lake on account of sinking Sturgeon along the bottom.

N.B. Some of rocks called gneiss of gneissic for want of better term, on trip from Hungry Hall toward the Angle, & near the latter place, are probably "granite conglomerate," & highly altered by the granitic mass, & similar to those seen on the northern side of the outburst.

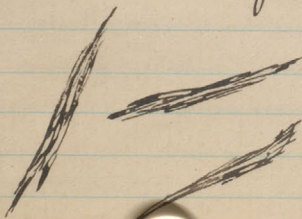
Pipestone used by the Indians is generally a hard blackish argillaceous rock obtained in the vicinity of White Fish Bay. Somewhat

They also obtain & use true soapstone of good quality & grey colour of which I have seen a piece in possession of Mr. Lawrence at Rat. Cat. This also seems to come from White Fish Bay, & though I met with none so good I have seen rocks closely approximating in character. A red pipe-stone rarely seen among these Indians is obtained from Lake Superior.

The green weed filling the water & which Albert (Vol-gomis) called A-wun a word also signifying fog, begins to appear early in summer & goes on increasing till late in autumn.

The common form is shaped thus, & each fascicle seems to be composed of a number of filamentous ~~strands~~^{strips} laid nearly parallel, & is somewhat irregular in shape

x by 4



Lat 49° 19' to 49° 20', must have been
entirely blocked up, & heaped up toward the
South so as to form a ^{low} watershed which on
emergence caused the Rainy R. to turn Northward
& pour into the Clear Water part of the Lake.
This part of the lake must have constituted
an archipelago during submergence & cannot
have received much detritus, but retained
nearly the original depths of the valleys.
Its waters drawn back from the S were forced
to flow back over the previously existing notches
in the ridge at Rat Portage, & down the
Winnipeg R. The latter not showing the characters
of a true river, but being merely a succession
of pools in hard glaciated Laurentian Rocks
from one to another of which the water falls.

The subsequent great spread of the Lake
Southward, forming that part known as Lake
of the Sandhills, must have arisen in great
part by the action of the waves, part of the
sediment being washed back into the deeper
parts of the lake, & a portion passing away
down the Winnipeg.

The Lake of the Sandhills is a great shallow
expanse & its enlargement by wave action
is even now going on rapidly as elsewhere
mentioned.

The general contour of the country round Lake of Woods & its position with regard to the watershed & axis of Laurentian upheaval would seem to render it probable that the direction of drainage has not always been the same as at present.

The Laurentian & other rocks seem to sink very low (with regard to their general level) toward the South, & it appears even probable that if the present clay & sand deposits were removed the Lake would drain away in that direction. But it is remembered that the watershed toward Roseau & other rivers is quite close to the Lake & very low & that no solid rock whatever is to be seen on the borders of the Lake, or elsewhere toward the S.W. region where the country is a vast swamp. Also that sections on the E. Roseau Cut considerably deeper than the level of Lake of Woods & show nothing but sand & clay.

The age of the deposits of sand & clay must be elsewhere considered, but supposing their absence a river would probably run southward from the region about Rat Portage, & following the course of depressions weathered in the softer rocks continue its course southward along the Western shore of the Lake & debouche somewhere in the S.W. part into affluents of the Mississippi or Red Rivers.

Rainy R. would form a branch of this stream.

On the subsidence giving rise to the sand deposits the open water region southward from about

Critical excess of Lake
no doubt. Laurentian
basin among harder
Laurentian rocks.

Thin laminated schists such as those met with in many parts of the Lake offer little resistance to weathering & the shore in places where they constitute the rock is consequently much sheltered & rugged. The same rocks would however offer very much greater resistance to mechanical attrition as for instance by ice. An ice shaped country therefore should show little difference in level in districts formed of thin schists, or clay or nearly; & those where hard rock constitutes the country. A weather shaped country should have the hard compact rocks forming hills.

The uniformity in level of districts thus differently constituted in the Lake of Woods would seem to show that that country had not been long subjected to subarctic weathering before the glacial period, or else that the glaciation had been very extensive & has succeeded in planing down the original contour.

General notes.

A very strong current is perceptible several miles away both along the Northern & Western shores & tending towards the outlet at Rat Portage. This current when between an island & the mainland is quite river-like. It is probably the cause of the great depth observed in one or two soundings W of Rat Portage.

The rock called "Greenstone Conglomerate" is really more like a breccia, the matrix & fragments of which are both coloured with hornblende or epidote or both minerals combined. The main constituent of the rock would appear to be the Quartz.
The rock more nearly resembles the "Volcanic breccia" rocks of Cumberland than any I know & very probably have the same origin. Many of the rocks hereabout might be called Altered ash for want of a better name.

About 134, 135, 136 &c noticed many collections of boulders on the S.W. sides of points. Most of the boulders are "greenstone conglomerate" but many are Laurentian. No Algonquin.

(177) Gneissic in appearance. Rough & spotty looks much like highly altered "greenstone Conglomerate" Underlain by granite not far off, perhaps forming an outlying dyke.

D N 20° W \angle 45°.

(178) Spotty gneissic looking but evidently an altered conglomerate. Red felspar veins. A dark hornblende dyke nearly E.W.

D N 5° W \angle 35°.

(179) Rusty Quartzite with dips about \angle 55° Northward. Strike N 76° E.

(180) Mainland on N shore of Angle inlet
Hard grey Quartzite, twisting D N 35° W
 \angle 80°

The rocks going Northward from the granite show a great similarity to those seen coming Southward toward the granite & appear to indicate a great breadth of much altered Quartzites, gneiss rocks & conglomerates.

? If possible unconformity exists between the hard & soft Series.

(171) Blackish gneissic looking diorite. Apparently connected with the dioritic & syenitic rocks formerly mentioned.
D. S 30° W.

(172) Schisty greenstone or hard green altered.
D. N 25° W \angle 45°
Island to Right of syenite or granite.

Sound 5½ f. mud.

Sound 10 f. mud.

(173) Grey syenitic greenstone.

(174) Same red syenitic diorite changing to true granite.

(175) Same red granite.

(176) Hard compact Quartz-hornblende rock gneissic-looking. ? if Laurentian or highly altered rock plate apt. Many granite dykes & Quartz-felspar veins newer than & intersecting them.
D. N 32° W \angle 60°.

The rocks which for some distance back have been becoming more & more highly altered in some places almost resemble Laurentian. The alteration evidently due to the proximity of the great intrusive mass now arrived at. The great alteration of the rocks for some distance would appear to indicate that the course followed was nearly parallel with the general run of the intrusive mass & this from observations of its course further to the S.E. seems to be the case.

(168). Red intrusive coarse grained ^{granite} syenite with several systems of irregular felspar & quartz-felspar dykes.

(169) Same syenite. Gra. S 36° W.

The rock showing perfect felspar crystals in a base of black hornblende the latter sometimes predominating & giving the rock a dark colour. In some places included masses of altered rock may be seen.

Islands to left now opposite & for some way ahead of same red syenite.

(170) Red granitic looking syenite with felspar & quartz felspar veins. Rock may be called syenitic diorite?

The grey gneiss dyke running N 30° E.

Sound 67. mud.

(161) Close grey schisty? ~~Hard~~ micaceous
D S 30° E L 45°
sta. S 32° W.

(162) "Greenstone" or Quartzite "conglomerate"
Grey. Sta N 60° E D high, say 60° to S.

Much altered, in places almost gneissic
looking.

(163) Same rocks.

(164) Hard micaceous quartzite. Apparently
a light metamorphosed conglomerate.
sta. S 33° W.

(165). Hard conglomerate of quartzite Sta N 79° E.

(166). Hard gneissic looking Sta N 80° E.

(167) ^{soft weather} Hard? grey sandstone with irregular veins
of intrusive quartzite containing scales of
Molybdenite (or graphite). D S 37° E L 63.

(156) Hard green altered & spotty beds, Lewisburg.
Approx strike $N 57^{\circ} E$
Dip. $S 33^{\circ} W$.

Sound $9 \frac{1}{2}$ F mud
" $10 \frac{1}{2}$ F "

(157) "Greenstone Conglomerate" rough, but with
smaller fragments than usual.

Islands ahead again becoming lower.

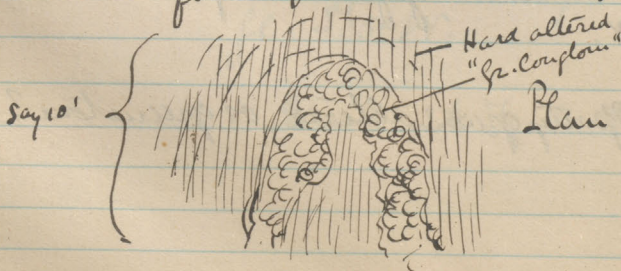
(158) "Greenstone conglomerate"

(159) Hard spotty altered, or greenstone

The rocks here or for some way back are very
strongly ice marked & shaped.

(160) "Greenstone conglomerate" & hard green altered
twisting. Str about $N 43^{\circ} W$.
Dip. $S 30^{\circ} W$.

Almost the appearance of the nose of a compressed
fold syndinal or anticlinal.



The "Conglomerate" rough
on the inner side as
though that the upper &
retaining its appearance
since the breccia formed.

(150). Hard, fine spotted, Calcareous or Chloritic.
Stk N 80° E.
Dip. S 38° W.

Sound 5 1/2 F. mud.

(151) Hard green altered slaty Stk E.W. Vert.

Sound 4 F. mud.

(152). Soft dark green Chloritic with a
thin quartzitic material, or porphyritic Quartz
(close) following the strike but ^{cuticular & irregular}
Stk N 77° E Dip to S
Dip. S 48° W.

(153) Hard green-grey altered rock. Stk N 65° E
Dip. Ligh to S.

The islands which became lower after leaving
Ka-kakawabee here begin to become high again.

(154). Hard green altered with a granite dyke
running N 63° E. ? if following strike.
Dip. S 45° W.

(155) Rough spotted green altered or greenstone?

(143) Rough green chloritic

(144) Near Ka-Ka-Ke-water pt. Flinty greenstone with Syenitic diorite, almost granitic, & intrusion holding included masses of much altered flinty slate. Red feldspar veinlets in the diorite.

(145) Pt. Similar rock to last.

The islands about here are considerably higher than those further N.

(146) Hard altered rock, or greenstone, with same intrusive rock.

(147) High cliff of hard green altered, or diorite with large & small granitic veins in all directions. Apparently the edge of the syenitic-outburst further West.

(148) Hard & Spotty greenstone conglomerate
Str N 72° E on edge
pl. S 35° W.

Sound. $3\frac{1}{2}$ f. mud.

- (138) Island. Very thin bedded wavy white & reddish chloritic or talcose schist, strike E.W.
A few paces further S.W. Rougher greenish schist. Spotty & weathering rough, like cleaved altered ash. Str N 75° E!
Dip. S 40° W.

- (139) W. pt. of Isd. Thin fine bedded greenish chloritic schist with lenticular masses of quartz & brown spar. Str N 77° E. on edge.
Dip. S 38° W.

Found here on the shore a boulder of compact dolomite with every appearance of having come from a bed 8' 2" 6" long. Quite like the dolomites of Quebec group in E. Townships & may come from beds of same character.

Sound 9 F. mud

- (140) Whitish thin bedded talcose or chloritic.
Str N 82° W.

Sound 7 1/2 F mud

- (141) Hard whitish talcose D S 50° E?
Dip. S 27° W.

- (142) Rusty chloritic. Str N 87° E with high dip to S.

Sound 10 F. mud

(132) Lacrosse Isd. Whitish chloritic or talcose schist. Shattered along the shore.

(133) "Greenstone conglomerate" or breccia
Str. about $N 78^{\circ} E$
Dip. $S 40^{\circ} W$.

(134) Same schisty rock & "Greenstone breccia"

(135) "Greenstone breccia" Str. about $N 46^{\circ} E$.
Dip. $S 27^{\circ} E$.

(136) Here & for some distance N along the shore, soft very thin laminated whitish & greenish talcose or chloritic schist. (massive)
Str. Good . $N 58^{\circ} E$ with dip about 88° N.W. ward.

(137) S. pt. of Lacrosse Isd. The extreme point for say at least 100 feet is formed of greenstone brought up by a fault, or intrusive as a dyke. Probably the latter as the diorite where in contact with the slate to the N is green & compact, but where at a little distance from the junction, is found not so dark in colour & porphyritic. The junction is vertical, & its course $S 25^{\circ} E$.

- (125) Greenstone Conglomeratic in places.
 (126) Green chloritic schist Str E.W. on edge.
 127 Similar rocks.

Point on island. hard green altered.
 Sounding in channel $1\frac{1}{2}$ f. mud.

" a little further on 7 f. mud.

Just before (128) Saw section of a vein running
 conformably with strike of strata, on an island
 to the right evidently by the colour of weathering
 containing some copper. Too rough to land.

- (128) Thin laminated green chloritic.
 Str $N85^{\circ}E$.

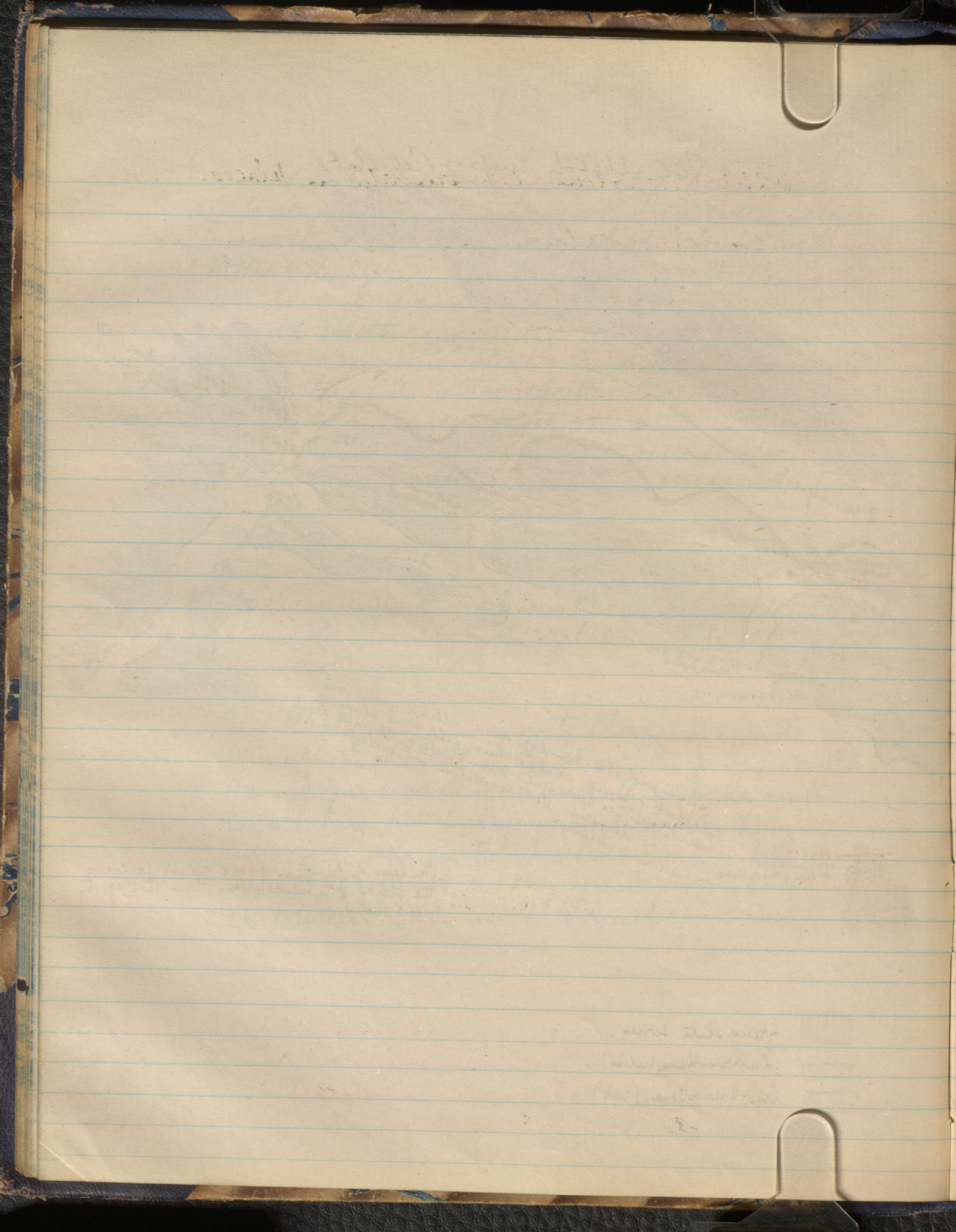
Sound $4\frac{1}{2}$ f. mud.

- (129) Hard green altered with epidote & quartzose
 segregations.
 glaciation $S35^{\circ}W$.

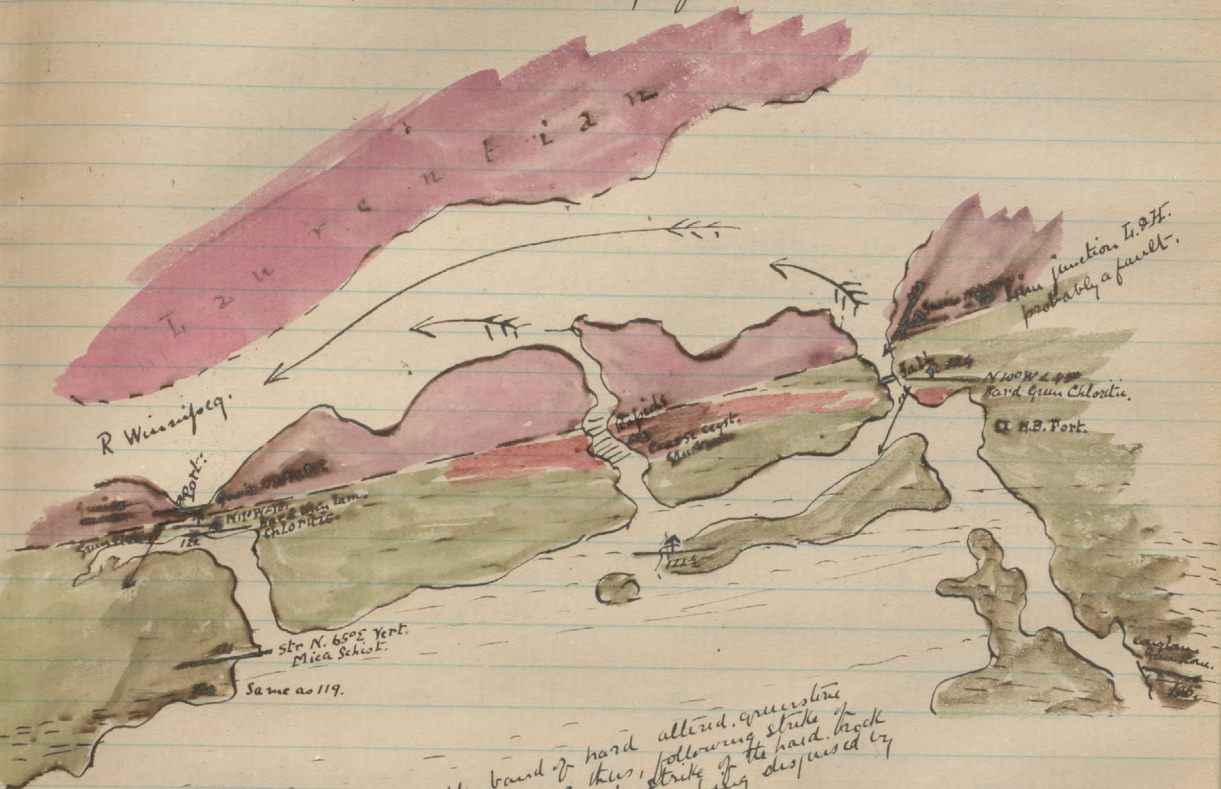
- (130) Hard green altered Str? $N35^{\circ}E$.

Sound 8 f. mud.

- (131) Hard whitish schisty & greenstone conglomerate.
 Str about $N48^{\circ}E$ Vert. Many parallel crack
 lines having a course of $N80^{\circ}E$
 glaciation $S, 35^{\circ}W$.



Field Sketch map of Port. Port.



Seems probable band of hard alluv. greenstone runs across this, following strike of rocks to N. The apparent E.W. strike of the hard rock may be cleavage, the true attitude being disguised by metamorphism.

The line of junction more nearly follows the strike of the Laurentians, than that of the green slates.

- Green slate series.
- Laurentian (green)
- Cryst. Greenstone. (int)

to Macpherson that it must have been dead
at least 10 years. The other looked in rather better
preservation, but I have now little doubt both were
killed by the high water 13 years ago. Mac says they
would not die at once from flooding but
would wither away & die the next Summer.
One of these pine sticks grew 18" below the old
water line, the other 2 feet. One showed 20
rings of annual growth, the other 25 & thus
proved that for at least that period before their
death there had been no such excessively high
water in the lake.
(I must disagree of logs)

The persistence of watermark for at least 13 years
shows the slow growth of pines by which alone
it is distinguished.

The deepening of one or both channels of the
Wumpsey to the level of the base of the falls, or the
opening of a new deep channel through the neck
constituting Rat Potage proper would drain an
immense area in the Southern part of Lake &
turn to dry land a very great area which is
at present Savannah Turkey.

Last few years, that for at any rate 3 years there has been no rice worth counting, on account of the height of water. He attributes it to change of rainfall. The lake is lowest in winter & gradually fills up during summer & till late on in Autumn.

I asked if he knew the time when the water had reached the high water mark now seen all round the lake, & which I had measured here last month 3' 6" & found at Rat Portage to be 3' 4 1/2" above present level. Says he remembered it to be this high once. That when he first came to lake the mark old looking & moss grown. That 13 years ago the water touched the line again. Began rising in May & continued till October. Since then the mark remained distinct though the water never since so high. The summer he says was a very wet one, "Every cloud turned into a thunder storm" at this time he says water flowed over Rat portage proper, & also crossed the Ridge at two other places. One W & one E of the Portage. This must have relieved the lake & prevented a still higher rise of the water.

Several Indians with whom I have spoken differ from Macpherson in so far that they say none of them can remember when the water reached this old line. I believe Macpherson however to be certainly correct.

His testimony curiously confirmed by examination of two pines found by me growing below the old high water line at Rat Portage.

There were two small trees & both dead. With regard to one of them I had estimated, before speaking

Sides though high are not so Clifty as those at the fall. The water passes from the Lake by a succession of foaming rapids down which no Canoes or boats are ever run. The rock here as far as seen intrusive greenstone...

The third break in the ridge is at Rat Portage proper & is perhaps a mile further West. One passes down a river like channel which gradually turns to the West for about 1/2 mile. The landing is then at a low rocky bank, & the portage path about 100 yds long leads to the Winnipeg R. No water now flows ~~over~~ ^{through} this gap in the ridge, but as the height of the lowest line across the portage cannot exceed the level of the Lake by more than 6 feet, there is every probability that at some time the Lake may have found exit here also. Indeed I could find no complete rocky barrier, & if the earth & boulders were removed a little water might even now pass over between the rocky knolls. My Indian (John Taylor) says the Indians say water flowed over once at the "high water" of many years ago.

about

The blocking up of this channel however with the Lake at its present level could not much effect the water line.

^{of the N. W. angle}
Macpherson who has known this Lake for many years & who was long stationed at Rat Portage in the H. B. Coy's Service, tells me that the water this Summer is higher than last at the same time, that it has been higher than usual for the

obliquely across the edge of dark chloritic slates inclined at a high angle. The channel at first wide & bay-like rapidly narrows & for about 200 yds becomes quite a gorge, the rocks to the E. (on which the portage path lies) rising on a steep slope, those on the west side forming a craggy cliff. At the fall itself the river cannot be more than 30 to 50 feet across. The height of the fall must be about 15 to 20 feet (See leveling) but the volume of water contracted into the narrow space is so great that it cannot fall in a sheet but is thrown forward in a great spout into the deep rocky pool below. Not far below the fall the water passes over the junction of the Laurentian rocks with those of later date & then passes on into a great lake-like expansion of the Winnipeg R. The rocks on both sides of the fall are highly glaciated & the fall does not appear to have been at work long enough to alter the original contour much. The direction of glaciation as well as that of the rocks of both formations crosses the gap through which the river comes at the falls obliquely. The gap must therefore be due to some break in the rock masses & not either to a soft place in the rocks, or to glaciation. It must also be of pre-glacial age.

The next break in the ridge is about 1 mile further west, & through this a greater quantity of water probably goes than by the gap at the falls proper. This opening is much wider, & the rocks at the

(122) Island of mouth of Western branch of
the Winnipeg Chlortit schist D N 170 W \angle 75°
Houllondie

(123) At the rapids of Western branch of R.
Coarse Crystalline dark-coloured greenstone
having all appearance of an intrusive mass.
Perhaps intrusive between the L. H. at this
part of the ? Fault.

(124) Falls on the Eastern branch of the
Winnipeg. Green Chlortit slate D N 105 W \angle 45°
Just below the fall green again suddenly makes
its appearance D N 180 W \angle 78°.
The line of junction of the formations must
therefore run about E. N. E. or along the ridge
which separates the lake from the river. The
letter for some distance running nearly parallel
with the shore of the lake & about 1 m or less
from it.

The junction must then have been a hard place
& was perhaps assisted in resting by the intrusive
greenstone mass, which again appears less than $\frac{1}{2}$
mile S of the fall.

Glaciation at the fall S 130 W. On the Winnipeg
side S 160 W.

Across the high rocky ridge which separates the lake
from the Winnipeg the fall constitutes the first
break to the Eastward, the river here flows somewhat

Followed a little further West the gneiss ~~dips~~
strikes $N 72^{\circ} E$, the chloritic schist just across
the line $N 73^{\circ} E$.

The gneiss is much altered, red in colour, & forms
a very marked contrast with the Huronian?
rocks to S.

Glaciation. $S 25^{\circ} W$ on the top of ridge. ✓

The conformity in strike & attitude of these two
formations is very remarkable. If they are brought
together, merely by sharp folding, the Huronian
must be unconformable on the Laurentian, & the
latter must have been much altered before
this disturbance, as the latter does not show
any exceptional alteration even quite close to the
gneiss. If this is the state of affairs the dip
must be here reversed & the Laurentian folded
over to some extent on the newer rocks.

The line may however very probably be a fault
with downthrow to the S.E. & in this case the
completion of Laurentian alteration may have
been taking place during the deposit & metamorphism
of the Huronian? This ~~however~~ also seems probable
as I have seen no signs of gneiss or granite
debris even in the conglomerates of more
recent age. If in typical Huronian gneiss
& granite fragments are found(?) may not
their absence here in another way, show that
the dark rocks of this region are really newer
than Huronian, & perhaps formed by disintegration
of the latter rocks?

(118) Rough green chloritic. st. N 80° E
Pl. S. 20° W.

(119) Hard green-blue altered rock, or schist
Greenstone St. E. Vert.

(120) Same as last.

(121) Hard micaceous schist st. N. 65° E on
Edge.

From 121 to 122 the rocks appear to
take a high Northernly dip.

(122) Rat-Portage. Hard thin-laminated
dark greenish chloritic schist. st. N 75° E on
edge.

The Northern side of the neck of land forming
Rat-Portage proper, is composed of Gneiss, the
side toward the Lake, of chloritic Haronian? rocks
on crossing by the portage path, which may be
100 yds long, about half way the gneiss is
suddenly met with & the junction of the two
formations is so close & perfect that one may
actually lay the hand on the line of separation.
Traced the separating line for near than 100 yds
& found its course to be S 67° W, or nearly that
of the strike of both series of rocks.
At the junction the slate dips N 17° W \angle 78°
A few yards across the strike the Laurentian
gneiss is found to dip. N 30° W \angle 89°

The schists chloritic or talcose as may prove to be the case often much resemble the gabbro group schists of the E. Townships. It seems a question of similarity of composition & degree of alteration may constitute an argument in favour of similar age. May not some of the more compact & problematical rocks here be such as would be classed "serpentinis" in the Townships?

Aug 12, 73.

- (110) Whitish & greenish thin silvery schists.
- (112). Green chloritic rather hard schist with small veins of brown spar, running parallel to strike. St. $N 38^{\circ} E$.
glaciation. $S 22^{\circ} W$.
- (113). "Greenstone conglomerate" or rather a breccia the fragments mostly of quartzite of all shapes & imbedded in a greenish chloritic base.
 $D_N 17^{\circ} W$ at high angle.
- (114). Close grey schisty. St. $N 53^{\circ} E$ (about)
glac. $S 17^{\circ} W$.
- (115) Same schist - rocks vertical
- (116) Rough green chloritic schist St. $N 67^{\circ} W$.
gl. $S 15^{\circ} W$.
- 117 Similar rocks showing high dips to N. ward

(107) Soft thin greenish-grey chloritic schist
str. N. 88° E. on edge. ^{tatone} (Spe)
pla. S 32° W.

(108) mica schist with greenish-white feldspar
str. N. 85° W. Vert. (Spe)
glaciator S 30° W.

(109) Rough green slaty chloritic N. 50° E. \angle 55°
pla. S 40° W.

Some rocks seen in two places between 109 & 110.

(110) Same roughish green chloritic schist weathering
crumpled into holes. Str. N. 43° E. vertical or with
very high dip Westward.

The islands & main shore of Lake seem to reach a
sort of maximum of height somewhere about
Ka-Ka-Ke-wahc; & to fall away again to level of
shore to S, or ferry Nward.

No limestone boulders whatever observed since leaving
the angle. The boulders are mostly Laurentian
granite & gneiss but many of greenish & "granitic
conglomerate" & g.

(99) Greenish-white flinty quartzite forming high hills. S230E at 2550 & vertical.
Looks as though good bone stone, but too much shattered. (Specimen)

(100) Coarse felspathic rock, or ^{unpaired phenite} syenitic greenstone of grey colour. Hard & with many small cubical crystals of Iron Pyrites? (Specimen)
Gla S53W.

(101) Close grey flinty altered rock Str N.75°E.
Gla. S.40°W. (Spe)

(102) Greenish slaty with same strike.

(103) Very thin & fine bedded greenish grey ribbed chloritic slate N5°W \angle 80°.

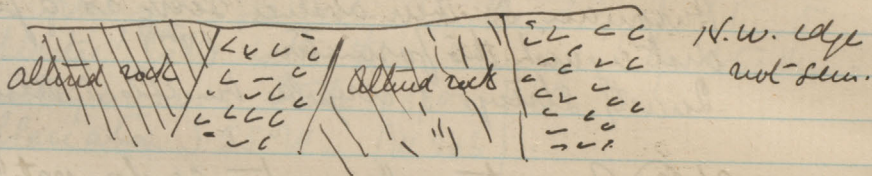
(104) ^{chloritic} ~~the same~~ & whitish felspar spotted schistose rock like that seen in one place yesterday, & resembling schist - gneiss? (Spe)
Gla S35°W.

(105) Grey. Same as last - Str N.65°E. near vert -
Gla S42°W.

(106) High cliffy island called Ka-Ka-Ke-we-bee. Syenitic diorite? with small cubical crystals of quartz the same with that seen at 100 with the exception of colour. (Spe)

of which seems from a distance to be composed of reddish granitic rocks. Perhaps an extension of those to be mentioned next.

- (94) Close grey altered rock N. 42° W. 70. Twisting & abutting on a mass of granite forming a dyke nearly following the strike. This is succeeded by another mass of schist rock & then a layer ^{mass} of granite seeming to be a dyke but further edge not seen.



Passing from ~~93~~ (93) toward (95) Greenstone
Conglomerate seen.

At (95) Same rocks coarse nearly following strike.

(96) Thin grey-green soft ^{labeled} chloritic schist lying
very straight & even. Str N 58° E Vert.
Pl. S 39° W. (Specimen)

(97) Green altered slaty Str N 55° E. Vert.
Pl. S. 42° W.

(98) Greenstone.

predominating & constituting a lowland quartzite.

Seems to be a well marked synclinal between (83) & (87) ss. The rocks passed over appear to be Huronian, or at any rate of same age as those formerly referred to that formation S & E of this region. Remark the total absence of red feldspar-quartz veins among these black schists ss. These veins are very common among the gneisses & granites of undoubted Laurentian age & perhaps may antedate Huronian & their absence serve as a guide to distinguish this formation. (??)

Quartz string & irregular bunches of veins common.

At (90) Greenstone or "greenstone conglomerate" Strike about N100° E. Dipping. Glaciation S 27° W.

Aug 11.

At (91) Soft greenish chloritic slate. St N 70° E. Vert. (See specimen) Glaciation S 40° W.

(92) Thin laminated mica schist. Silvery on faces. D. S 58° E \angle 70°.

(93) Same rock as (92), on edge, forming a high fine point. To the W a deep bay the bottom

(83). Same greyish blackish schists in same
attitude. Many islands to E & S all seem
constituted of similar rocks & no light coloured
pieces or granites to be seen.

The rock is slaty & breaks into comparatively thin
layers giving a ragged appearance to the coast very different
from the smooth sloping rocks of typical Laurentian.
The hills inland are also lower, more gently rounded
& even where have been burned over are dead completely
with green.

(84) - Greenish & blackish hornblende, epidote, &
chloritic ^{spotted} rocks with thin 'raneying' epidote veins -
cutting across. Strike N 67° E. Vert.
Glaciation S 35° W. (W 203).

(85) Soft grey ~~massive~~ hornblende schist, thin bedded
but in places full of compact grey lenticular
nodules? (W 204) S 25° W. Nearly vertical.

(86) a peninsula or island, appearing to be
formed of a small boss of intrusive granite.

(87) Greenish spotted rock of same character as above
S 23° E \angle 60°.

(88) compact blackish hornblende rock much like
(80). (W 205)

(89) greyish hard rock like last but quartz fuchs
S 50° E \angle 70°

Aug 7

Saw Clay of quite similar character to that found in S. part of Lake, lying below sand in the deep ditch which is dug beside the Garry road near here. The clay yellowish & grey, somewhat hard & apparently mixed with fine sand. Lies in thin layers. (See former references to the Clays terraces). Could see no sign of fossils of any kind.

Aug 8.

Visited a rock exposure in the woods about half a mile inland from the reference monument N.W. Angle, & near (78) on map. Low rounded masses of dark greenish rock. (See W. 200) Apparently nearly vertical & with strike. $N 70^{\circ} E$.

Aug 9. Saw an exposure of rock in the first rocky creek to the left after turning left N.W. Angle inlet near (79) on map. Compact grayish-black micaceous schist. Glaciated but direction not clear. Not much of rock seen. Two red quartz-felspar veins about 18" wide. Course $S 75^{\circ} E$.

Aug 10. At (80). Fine grained compact black hornblende rock (Greenstone?) (See W 201) Looks almost intrusive. Glaciation very perfect. $S 39^{\circ} W$

At (81). Spotty grey schist - apparently not Laurentian. $N 58^{\circ} W \angle 50^{\circ}$

(82) Very peculiar greenish hornblende & epidote? rock (W 202) with apparently same attitude as last.

Having done so they would be of too small depth to reach the bottom S. of it & would act upon it very feebly if at all, especially as when they continued travelling S they would constantly get into deeper & deeper water, & probably also be loosing from liquefaction & heat.

Taking these circumstances into account it is hard to suppose that icebergs could have acted as powerful & ubiquitous as the markings & would indicate. The motive power proffered is open to all the difficulties of the Universal glacier theory. It seems that no linked theory will hold here but some one agent be the true cause of the whole of the phenomena.

Cause of Lake of Woods. Huronian belt.
General slope of rocks to S. Great quantity of debris to S. Character of S or N parts of Lake. Lake very probably dammed in Southern debris. Has apparently spread in great bays to S. from an original deep Northern nucleus. Is still spreading & becoming constantly shallower.

Notes on Glaciation Lake of Woods.

The rocks are everywhere rounded & polished by ice action. Those seen round the Southern part of the lake very low & rising little above the present water level. In all the S.-W. part so low that no rock seen in place at all. Going N among the islands the rocks & rocky hills continually increase in average height, till along the N. shore they become hills of some height; say for an average height 150 ft.

Taking the extreme length of lake at 50 mi (roughly) this would leave an average fall of some 3 feet per mile toward the South.

This does not seem sufficient to cause the flow of a glacier from the N.E. especially over a rough & hummocky bottom such as the rocks present.

Some propulsion from beyond becomes necessary, & as the watershed is nowhere very high (I believe) it seems difficult to understand whence it came.

The very remarkable constancy in direction almost precludes the supposition of numerous local glaciers.

If again icebergs be taken as the agents, even greater difficulties.

It becomes very difficult to account for the regularity of parallelism of the grooving & also for the fully polished rock surfaces. Icebergs must at least at times been moving in a direction resultant from wind as well as current & such movement ought to have given rise to numerous cross scratchings, instead of the few observed, all of which may have been caused by ice piling during break up of lake in spring.

From the direction of glaciation also the bergs must have come from the N.E. & have crossed the watershed.

in winter & spring, but have reason to believe from what told, that not more than 2" or so above its present height.

The growth of shrubs & of some size near the present water level would show that the water has not remained at its highest mark for any considerable time during the Summer months, for a good many years, & I believe it is also too high for the ordinary winter level.

Periods those connected with the position of the monument, there are several facts which seem to show a recent & somewhat persistent rise.

I was shown a bay about 20 miles E of the Angle in which the Indians were accustomed formerly to gather wild rice, but in which that plant does not now grow, the water having become too deep for it.

Also told of Albert that for about 8 years the Indians have had very little rice on account of the height of the waters.

Told also of a portage not far E. of the Angle bay which ~~was~~ is called Skot-a-cw-winnigan or the "dry portage", which formerly went off name, but which "since the waters were high" has been easily crossed by canoes paddling, & over which even half loaded boats can now pass.

not very reliable. different Indians have different stories. State different lengths of time &

Ucces island. This Terrace is probably also represented in the more tranquil central portion of the lake by the 10 foot high clay bank with small pebbles mentioned as existing between the large islands. The Clay of quite similar character seen in two or three parts of the S of the lake is also probably contemporaneous & originated when the lake had at least ^{15'} its present height.

The action of ice during this period is indicated by the size of some of the boulders unbedded in the clays, especially those occurring in clay round the Southern part of the lake far from any rock exposures. The ice required would probably however not require to be more than that due to the freezing of the lake itself under conditions of climate such as those which now obtain.

This terrace level would also probably include the flat area round the mouth of Rainy R. & that surrounding the N.W. Angle inlet ^{5'}.

Change of much more recent date is indicated by the existence of two water marks of great constancy in all parts of the lake, & exhibited on every rock & rocky island.

There were found on July 27. 73 to have the heights respectively of 3'6" & 11" above the present level

The first of these is very distinctly indicated as forming the limit of the growth of lichens on all the rocks. The latter is a less definite stain-mark on the rock itself.

I have not been able to ascertain the height of water

Considerations with regard to change of level of Lake of Woods.

Two circumstances might operate in causing change. Alteration of level or size of outflow, & alteration in Rainfall. That the latter does operate to a very considerable extent is manifest from the changes in level (as much as 2 or 3 ft. I am told) obtaining during different seasons, & at different periods of the same season, leaving out of regard changes due to ice blockage &c.

Changes of conditions of outflow would have to be examined for in the vicinity of Rat Portage, or at the exit of the Winnipeg R.

A third cause of quite temporary character, is the direction of force of the wind, which acting on a large surface of still water causes a considerable heaping up on a windward shore.

Besides the suppositions with regard to the placing of the N-W. Angle monument, & those bearing on the perfect preservation of glacial markings near the present water line, there are other indications of more or less recent changes of level in the lake.

In the sheltered channels & bays of the northern part of the lake a pretty well marked terrace spreads out from the foot of the higher rocky hills, in some places. It generally bears pretty good wood & is composed of rolled pebbles & small boulders. It has a height of say from 10 to 15 feet above the present level of the lake, though as a rule the edge is not perfectly defined & the level also rises gradually as it

(71) Spurs of islands ~~at that #~~ bearing N.N.W. & W.N.W. Laurentian.
A little further on from with Laurentian
rocks to N & dark? Huronian rocks to S
through a narrow passage

(72) N point of Large island. Green & dark
coloured altered rocks.

(73) Island. mica schist D. N 40° W \angle 60°.

(74) Small islands, or half submerged rounded
rocks of red granite.

(75) Buckete, or Bucket Island. High rounded
mass of red granite, connected to mainland by
a reef swamp. Many veins & segregated masses
of red feldspar & quartz. Course of several
of N 40° E.
glaciation well marked from shore to summit
S 35° W.

(76) Grey granite with much intrusive red
feldspar & quartz in veins & bunches.

76 granite of same nature & like that of
the Rays Id.

Running S. 40° E. Many quartz string in rock.
- glaciation. S 22° E.

(64). Grey gneiss cooking rock \perp N 80° W $\angle 60^{\circ}$

(65). Grey gneiss \perp N 13° W $\angle 45^{\circ}$

(66) Thin grey gneiss N 5° E $\angle 58^{\circ}$.

July 27

(66 $\frac{1}{2}$) Chlorite? slate of gneiss the latter
running in belts parallel to stratification but
possibly intrusive. N 12° E $\angle 60^{\circ}$

(67) dark schists. Same position.

(68) mica schist \perp N 10° W $\angle 45^{\circ}$.

A large island bearing about N 70° W of Granite or
gneiss - (Laurentian).

(69). Hard green altered rock in same attitude
as last.

(70). Net Island. Same green altered rock
N 12° W $\angle 45^{\circ}$.

(70 $\frac{1}{2}$) Pt. a little further on Quartzite of green altered rock
 \perp N 50° W $\angle 60^{\circ}$.

(57) Micaceous & hornblende schist. D. S 40° W
∠ 60°.

(58) Small island opposite a passage to the N.
Mica schist D. S 60° W ∠ 50°. Gneiss S 20° W.

(59) Island gneiss & schist. D. S 45° W ∠ 60°
G. S 20° W.

(60) Chloritic? slate, soft & dark brown-green.
Includes sheets apparently of grey gneiss
more or less lenticular, parallel to stratification
& probably? intrusive.

This seems the beginning of change of rocks from
Lamentation to Harbriem. However the similarity of
some of schists with hornblende mica, epidote,
previously seen with some of those seen afterwards
& the close resemblance of some rocks associated
with the chloritic? series to gneiss would render it
difficult to draw a precise line. More especially as
no marked unconformity was observed, & in fact
the two ^{series} rocks seemed to adhere in their position

∠ 560° W ∠ 45 Gne. S 25° W.

(61) Rocks vertical Quartzite, & greenstone.

(62) Quartzite D. N 10° E. Nearly vertical

(63) Soft grey micaceous rock & chloritic? slate
D. N 27° E ∠ 70°

A well marked vein of greenstone about 1' wide

(53) Micaceous or lamellar schist.

D. S 18° W \angle 50°

Glaciation S 34° W.

The rock at (53) is immediately succeeded by
Gneiss, in following the shore

(54) Gneiss, ^{Strike} nearly following line of shore.

(55) Small island Grey gneiss ^{Strike} \approx N 45° W ^D at
high angles to the southward \wedge
Glaciation S 25° W.

(56) Island of grey granatoid gneiss.

The islands about here are much sheltered &
in some places a pretty perfect terrace of gravel
& small boulders is preserved. It is especially
prominent on the S sides of islands, & rises
from 10' to 15' above present water level.

Nearly all the small islands show accumulations
of boulders on the S sides, & bare rocky shores to the
N. The same is true with regard to the shore of
the mainland, the N shore of the lake along which
passing being much encumbered with boulders.

(45) A small island was the main shore.
Hornblende schist. D. N 68° W $\angle 40^{\circ}$, δ including
red felspar veins more or less conformable to the
strike.

From (45) to (46) Same black hornblende schist
wherever seen

(46) Hornblende & epidote? schist D. S 65° W $\angle 45^{\circ}$.

At (47) Red granite with included gneissic
fragments. Glaciation S 30° W.

For about 4 miles the shore continues to be of
granite, then falls back & at (48) Epidote? or
Hornblende schist appears with D N $\angle 55^{\circ}$ & vertical.
Glaciation S 25° W ~~S 30° W~~

Between (48) & (49) the same rocks appear
standing on edge

At (49) a greenish hornblende schist on edge.
Strike not very well marked, but approximately
N 55° W. Glaciation S 40° W.

At (50) Hornblende schist on edge. Strike E. W.
gl. S 35° W.

(51) granite

(52) grey gneiss vertical Strike N 83° E.

From (37) to (38) the shore continues to be of granite.

At (38) the granite is very homogeneous & of red & greyish-red tints, & fine grain. It is traversed by felspar veins some of which were found to have a course of $N 20^{\circ} W$.

Glacial grooving $S 25^{\circ} W$. Very perfect. In many places the rock still retaining a perfect polish.

At (39) the first point visited ^{on the} ^{W. side of} the east large island to the N. Grey gneiss $D^{\wedge} N 37^{\circ} W \angle 30^{\circ}$. This grey gneiss continues for about a mile to the N & is then succeeded (at (40)) by pink fine grained granite with large included masses of unaltered gneiss.

(42) Greyish red, compact granite.

Immediately N of (42) grey granite the bays showing in some places a pretty good growth of Banksian & white pine.

At (43) red granite.

(44) red granite. Glaciation. $S 30^{\circ} W$. This is the furthest N point of the island, the whole island however appears to be wroughly laid down on the map, both as to form & dimensions, & the observations recorded are consequently only approximately in their right positions.

July 25. 73

at (33) Thin laminated grey gneiss $D. S 65^{\circ} W \angle 38^{\circ}$.
Intersected by the usual red felspar veins

(34) Grey granatoid gneiss constitutes the shore,
many felspar veins, some of large size. Approximate
E.W. course & with underlie to the N.

(35) Hornblende schist $D. S 39^{\circ} W \angle 55^{\circ}$
The glacial markings $S 13^{\circ} W$.

In passing from (35) to (36) cross in succession
Red granite, greyish red granite, thick bedded gneiss
veins of red felspar, quartz common.

(36). Thick bedded grey gneiss $D. S 68^{\circ} W$.
Traversed by some black hornblende veins with an
E.W. course.

From (36) to (37) the direction of dip gradually runs
round till at the latter place, where the rock is again
a thick bedded gneiss, the dip is $N 82^{\circ} W \angle 40^{\circ}$.
Immediately N of (37) the rock changes to red granite,
evidently of an intrusive character, as it encloses
fragments of clearly stratified gneiss. The island also
tends to be much higher & shows no good
soil or timber, consisting merely of rounded granite
rocks with small timber bushes.

At (28) Grey gneiss of quite similar character. A clay bank about 10' high forms the shore here for some distance. Clay very hard & compact about water level & where unacted on by frost. Grey in colour appears slightly stratified, holds some boulders & gravel, always constituents of latter limestone pebbles. Looked carefully for fossils without success.

At (29) Grey granatoid gneiss.

From (29) to the N end island shows no exposures rounded knolls appearing quite like grey gneiss before seen rise inland.

At (30) saw a good sized honeycomb weathering limestone boulder.

At (31). Finely laminated & ribbanded gneiss & mica schist. Some layers greenish apparently epidotic. Dip N 53° E \angle 68°.

At (32). Similar rock & same seen in places between (31) & (32). Dip S 60° W. \angle 35°. Glaciation S 50° W.

Nearly all the points along the shore of this island rocky. The bays between frequently swampy at the bottom but much good looking, tree clad land also. Toward the N end the land becomes quite low, covered with burned timber with rounded granite or gneiss knolls rising above the general level.

present
just at or above the water line, which has been
before mentioned is very striking in many places.
A few feet or yards above the line, the rock is generally
exfoliating in sheets & only here & there shows a
remaining glaciated patch. Just below the present
water line very frequently the rock appears shattered
& lying in blocks. It seems the most reasonable
explanation of this that the lake has within comparatively
recent times fallen considerably. The waves have
not yet had time to destroy the markings even in
exposed situations, but the lake being lower in
winter the frost & ice have succeeded in breaking up
the rock at the level at which they act most powerfully,
since the fall of the lake.

(the highest of?)
Albert says lake 1 or 2 feet lower all winter than
in summer, highest in the autumn. Lake this year
about usual level, though about 2 ft lower than last
summer

July 24. 73.

at Pt (26) Compact gneiss on S side, on N side forming
junction with granatoid gneiss of reddish grey colour.
Also red felspar veins.

The glacial grooves & striations beautifully preserved on the
hard gneiss & as fresh & polished as though the ice
had just left them. Direction glaciation $S 23^{\circ} W$.
Superimposed on this here & there coarse scratches $S 87^{\circ} W$.

Pt (27). Grey gneiss, or lam. Granite. Strike indeterminate.

At (23). Granatoid gneiss Strike $N 70^{\circ} W$
Glaciation at this place very well marked & has
been very heavy. $S 27^{\circ} W$.

No rock exposures in the bay between (23) & (24).
Much of the country swampy, especially toward
the N.W. side.

gl.
At (24). Grey charnoldic gneiss Strike $N 50^{\circ} W$.
Glacial striation $S 20^{\circ} W$ A little further on $S. 20^{\circ} W$.
Most of the boulders on the shore Laurentian of
usual character, saw however several limestone boulders
(Specimens collected). These weather out in a rather
peculiar manner into honeycombed masses. Saw
one reddish boulder of "limestone breccia".
Saw similar rock with same strike in one or
more places between (24) & (25)

At (25) Grey granatoid gneiss only here other showing
sufficient stratification to obtain strike which $N 65^{\circ} W$.
In several places about here great irregular dykes
several yards across of red orthoclase feldspar &
quartz. The crystallization very large, measured one
feldspar crystal (shown as beautifully cut & polished section
by glacial action) which 17" long. The feldspar crystals
have, as usual in granite, formed first. The quartz
which slightly milky, has filled great irregular pockets
among the feldspar crystals.

gl.
Glaciation $S 10^{\circ} W$. Superimposed on last - which
forms some rock masses, some E.W. striation.

The perfection of the glacial workings of polishing

July 23-73

Sable Island of Dr Bepler, lying along the shore N of the mouth of Rainy R. has apparently since the reef survey, was made broken up into 4 or 5 separate sand islands. They are high & consist of sand dunes covered with bushes. The various islands are connected by submerged bars only a few feet under water. Shore of mainland opposite the islands marshy & dry for a short distance inland, then a belt of woods.

At Point marked (19 $\frac{1}{2}$) saw first exposure of rock. Harublenite shist with many red felspar veins & epidote in the cracks. Strike N 85° W & dipping at a high angle to the South. glacial striae S. 12° W.

At (20) Green Harublenite shist fine & thinly stratified & standing on edge. Strike N 73° W. many felspar veins.

Among the travelled boulders occur some of limestone, thin weather out into peculiar honeycombed forms in a manner different from what limestone as yet seen.

At (21) Rock as at (20) in composition & also vertical. Str. N 76° W. glacial striae ~~N 76° W~~ S 30° W.

At (22) A small island off Windy Point. Green shist N 51° W with high dip to S. glacial striae S. 20° W.

The shore from (19) begins to improve, though damp in places carries a good growth of poplar, birch, & a few oaks & elms. Windy Pt itself is sandy & supports chiefly stunted Bentzian Pines.

The bank whenever exposed shows whitish yellow fine laminated clay in which unable to find any organic remains, but many pebbles, especially of limestone. Seems to resemble water that impregnated seen at (12) & there taken for boulder clay. Could see no boulders of large size imbedded in it, though plenty along shore. Seems rather to be lacustrine clay of former epoch. (Specimen marked W 109)

About 2 $\frac{1}{2}$ mi N.W. of River Swamp with grass & high sand ridge in front.

Magnetic iron sand sparingly occurs along shore in this part of lake.

July 21.

From R. W. of Rainy R. to West of Sand point about 4 $\frac{1}{2}$ miles. Coast low, wood clad with pretty good trees. Poplar, birch, spruce, cedar & with a few elm & oak on the points.

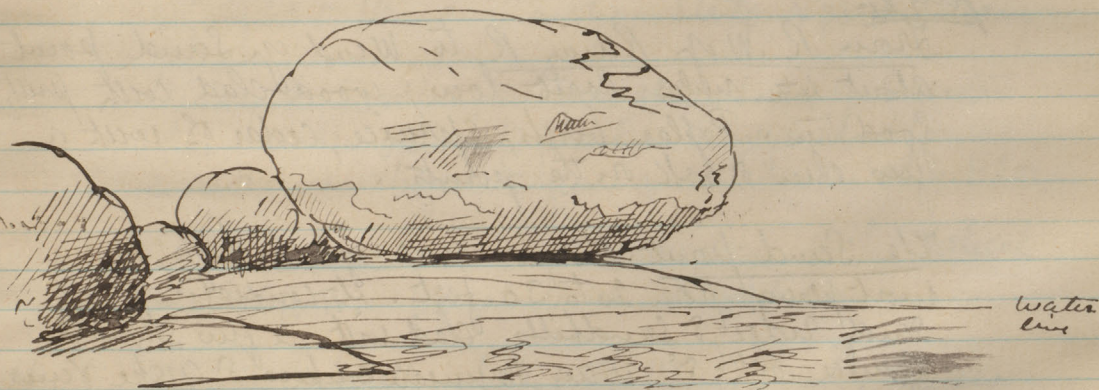
The Sand point though narrow is high, say in most places from 20 to 30 feet. It consists of high sand ridge & sandhills clad with a few stunted spruce, oak, & many Virginian creepers & grape vines growing over sand. Behind the point a great area of low grassy & marshy swamps.

Gravel & coarse sand of the sand point in great part of limestone.

At (17) Small moutain rock, so white from birds
excrement that thought might be limestone. Reels of greenstone
(specimen marked ~~map~~ glacial Striae S 25° W.

From Pt (16) to (18) nearly all swamp with sandhills in
front.

at (18) high ground with fine clens. Rock exposures
showing fine stratified greens & barulunde schist, much broken
up by small faults, stried. Shows general dip of
N 50° E to N 70° E. at angles of 50° & upwards.
May find blue pebbles lying on glaciated surface of points.
One special large of Red granite about 7' high by 11'
long.



At Pt (19). Finely laminated greens with general N-S.
strike.

From (18) to within about 2½ m from River shown on
map the land along shore is high & moderately dry with
good growth of poplar, cedar, spruce etc.

July 19.

East Shore of Baffalo Lacustrine, all high & dry ground supporting poplar & birch, which in many places burned. Steep banks at shore in places. Many boulders on shore & lying in shallow water far out. Mostly Laurentian but a good many of Limestone. Much small gravel of Limestone. Seems probable that both about same size when deposited but Limestone acted on by weather & frost has broken up rapidly & now is consequently to be found in the form of gravel.

From a little N of Lat 490. Shore becomes swampy & great reed swamps with sandhills at edge in some places stretches all away to Reed R. Trees very far back here. At (15) a higher rise, with swamps behind, many boulders & much limestone gravel. Good growth of poplar on point.

From Reed R to (16) an immense swamp of reeds, very wet in places, in fact often merely an extension of the lake. Belt of trees 1 m or more back.

At (16) a rocky point. First rock in place since near the East Camp. Greyish granite much broken by intrusive gneiss in irregular dykes. (Specimens marked W-104, 105.) Glaciation in several directions. At one place S 60° W.

Superposed on which, scratches S 25° W.

Another place showed scratches S. 20° E.

The most defined & that to which the long axes of elevations corresponded S 23° W. Superimposed on this at one place scratches S. 55° W.

General course of gneiss dykes appears to be from N 40° E to N 20° E.

proportion of the boulders appear ^{are} to be of limestone but noticed none very large.

This place (marked 13) evidently the locality meant by Bechy & his limestone exposures & all appearance must have been merely large boulders.

From 12 to Reed R all swamps, at first tamarac, then grass & low bushes backed by tamarac. Dry camping place on S bank Reed R. From Reed R to 13 more or less bush swamps. At 13 timber comes out to shore.

From 13 to small bay great very wet & soft grassy swamp no landing. The small bay marked on the map is much larger than the shown, & completely surrounded by impassible swamps with timber fringe (apparently tamarac) in the distance. Swamps of same character continues till about $\frac{1}{2}$ m from N.E. angle of Buffalo point where a small sandy ridge occurs & stretches to the point.

If the map original at all correct many of features of coast must have altered. From the rate at which the ~~sea~~ water seems to be encroaching at present this seems highly probable.

Swamps in vicinity of small bay (marked 14) in many cases peaty, soft & shaly. Many yards of soft swamp reach extent along the shore in places & render landing impossible. Gas bubbles occasionally rising from parts of the bottom of the bay.

hard & compact, or more or less concretionary, thin
cherty, & giving fire with hammer. Colour greyish drab,
cream colour to yellowish & reddish. Weathers pure white &
often into reniform hollows. Some weathered fragments show
minute circular pits. A few poorly preserved fossils.

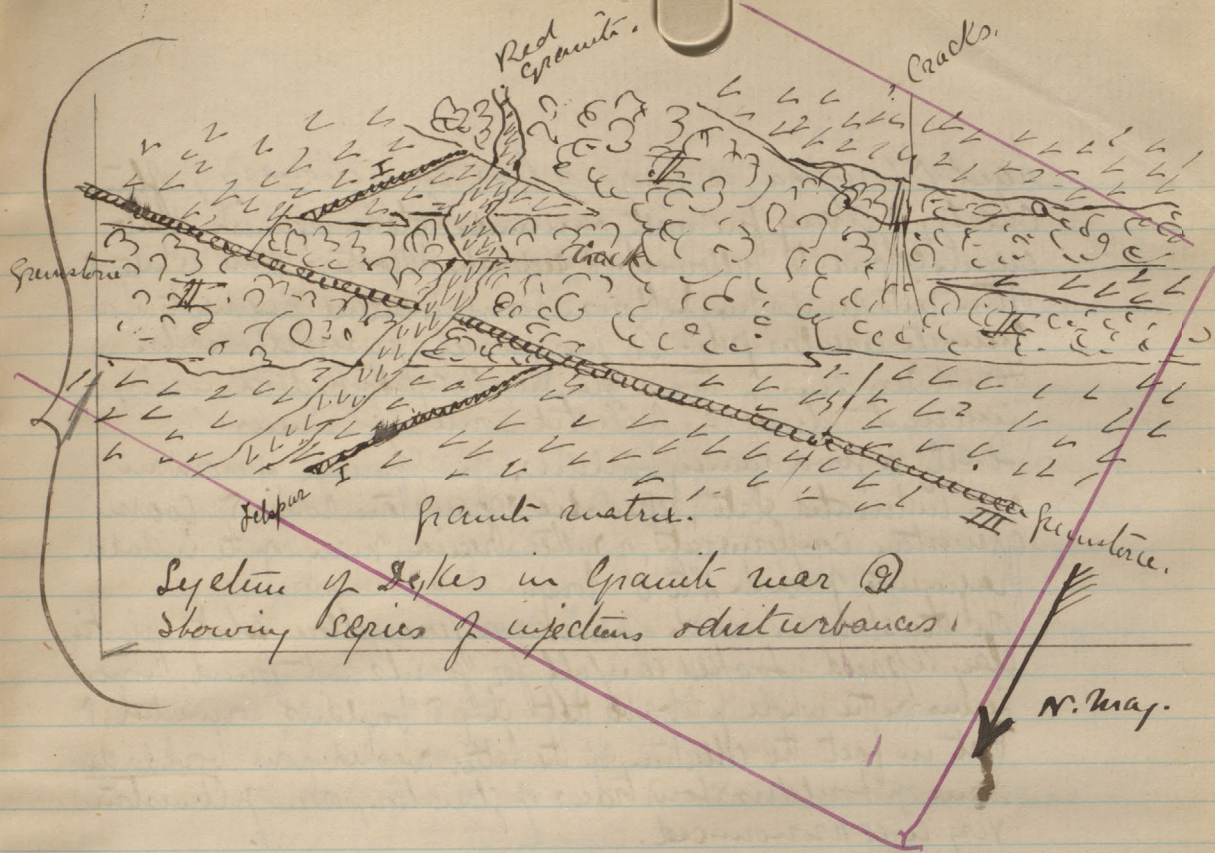
Found remains of two or three small cyathophylloid corals,
concurrent discs or collected some specimens.

Lastly a good many boulders of apparently Huronian
age indurated slate, epidotic schistose rock & coarse
greenstone conglomerate, or rather breccia, many of the included
fragments of which 4" to 6" long.

On the shore in wash of waves a fine yellow white plastic
clay exposed. Looked carefully for fossils but found none.
Seems on the whole probable that clay & boulders connected, &
that in fact the collection of the latter washed from boulder clay.
Some of boulders show traces of glaciation, are of limestone
very well pronounced.

? as to origin of all this limestone debris. May the S part of
Lake been scooped out of softer limestone - may Garden bed
or others N & E of this show limestone in place?

Another of Beaby's limestone exposures marked just
S. of Red R. Looked carefully for it. Shore low &
swampy till about 1 mi south of R. when a ridge
having apparently a nearly N. course, comes out on
shore. The ridge supports poplar & a few birch. The shore
at once becomes gravelly & with boulders lying on & far
out from it in shallow water, resembling
exactly the last place described. A considerable



The shore from second point in Muskege Bay for about 1 mi to West continues to show the usual sandy ridge. All the N.W. curve of the bay is flat to the water's edge, very swampy, & stretches as an open swamp, with winding ponds, several miles inland. Coming round toward Reed R the character of shore changes somewhat & the grass is replaced by a tamarac & cedar clad swamp. At point marked (12) about 20 to NW of Reed R, a point consisting almost entirely of boulders of granite, & in marked contrast to the shore in vicinity. Most of the boulders Laurentian consisting of granite, gneiss, mica schist, etc. & vary in size from 6 to 8' downward. Next in numerical importance limestone boulders none of these so large as some Laurentian. The stone

Last exposure of Laurentian at (10) on map. From that point to driftwood Pt. low flat tamarac swamps.

Just S of the latter Pt. expected from Best's map to find limestone exposure. Looked carefully & walked along most likely part of shore but without finding any limestone larger than gravel, & no rock of any kind in place. Much of the shore gravel is however of white limestone.

From driftwood Pt. to a small inlet or R. about 6 mi S. Swamp, peaty, with grass & small dead tamaracs. A good many large boulders of Laurentian rocks stand up out of water in the shallows far out from shore. Much of the shore gravel limestone.

From the small inlet to second point - within Munksg Bay, shore bordered by high sandy ridge with one or two small sandhills. The ridge quite narrow, & behind it great grassy swamps often apparently more than 1 mi across & bounded by low woods or bushes on the further side. At second point in Munksg Bay beach of small gravel of which about 1/2 limestone. Limestone pebbles very abundant in many places along shore.

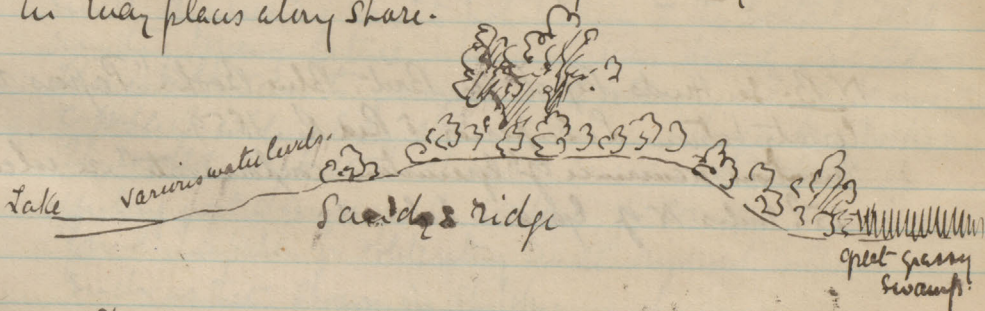
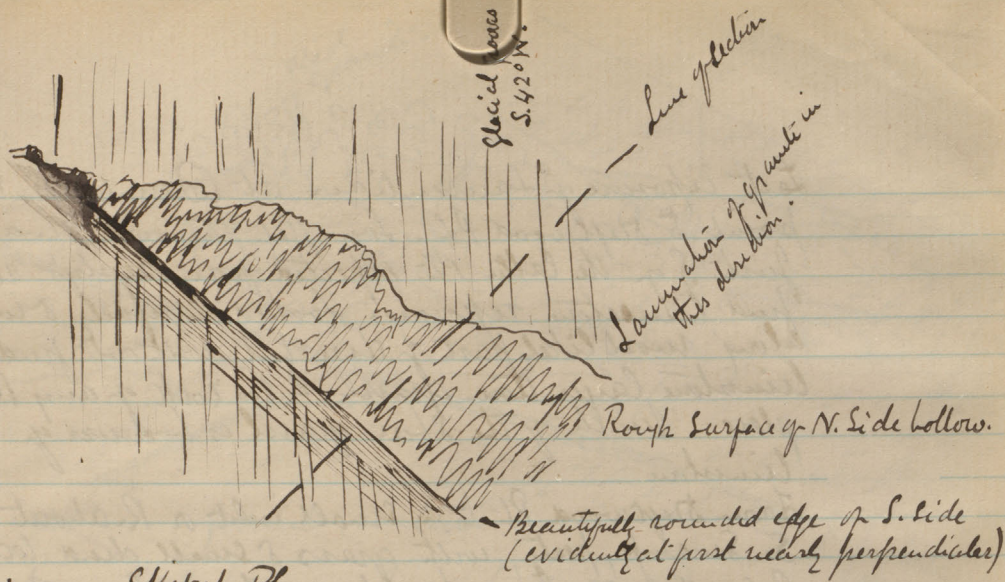


Diagram of Lake Shore.



Section along dotted line.

Got specimens of coarse greenstone with pyrites specks from two islands lying off here from $\frac{1}{2}$ m to 1 m about place marked $\text{\textcircled{A}}$ on map.

N.B. See Hinds Report in Brit. Blue Book. "Papers relating to territory between L. Superior & Red R. 1859. Mentions occurrence of "greenstone coniformate" on island 20 or 25? miles N of Garden Island.

Had opportunity of examining coast some way up & down from camp marked (9) during detention from wind. The rock would undoubtedly be called granite & is in places quite coarsely crystalline with large felspar crystals prominent, but the whole shows a sort of foliation & remains of stratification parallel to the direction of the strata are also in places to be seen. The general line of strike as thus shown varied in different places from a little N of E to nearly due (Chupas) E SW.
Glacial striae S. 42° W.

92

Observed a curious instance of glaciation. The surface of the granite had evidently been rough & fissured before glacial action began. A hollow in the rock had been beautifully rounded & bevelled away on the southern side while the northern side retained its original roughness. The lateral, (horizontal) force of the ice seems to have been vastly greater than the downward force. The ice not seeming readily capable of moulding itself to small depressions so as to polish them to the bottom, while everything offering lateral resistance was severely glaciated. This would seem to go against the hollowing out of basins capable of holding lakes, at any rate in homogeneous rocks. It would also seem absurd to consider ice capable of effecting great changes in the contour of country when it is found incapable of obliterating small original hollows such as that shown in sketch.

have resisted metamorphism, but evidently not so as in places they include fragments of granite quite like that of the country.

In the granite also small irregular veins & pockets of vit. quartz.

glacial striae S. 27° W.

The peninsula composed on the whole of granite pretty high & often rounded bare rocks. Small bays with clean sandy shores common on N. & especially on S. coast from the hog-backed shape of the granite masses due to glaciation, standing out in points.

S.W. coast of bay to S. of peninsula low but apparently for the most part not swampy, as it supports a pretty heavy growth of timber. Cedar, tamarac, poplar, birch & some elms. The shore swampy & reedy. The bay shallow far out from land. No exposures of rock.

At (8). Grey-red compact granite. Surface glaciated.

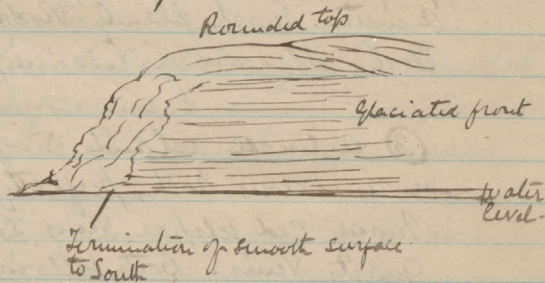
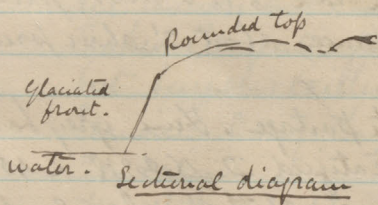
The preservation of glacial striae along the present water line in such perfection seems to indicate that the lake cannot have remained long fixed at its present level. Probably the barrier ~~land~~ of Red Portage has been cut down pretty fast, water supply less, or some other such cause.

⑤ N.E. point of peninsula. Strait to S. bearing $S. 15^{\circ} W.$ Fine grained compact reddish granite. Thoroughly ice smoothed. Striae very distinct near waters edge direction $S. 40^{\circ} W.$

Near point ⑥. A small island of black hornblende? rock. The mainland opposite the island also of the same character. Unable to land as the water rough.

A point of rock projecting beyond the rest & rising some 10 ft above the water, had its nearly perpendicular front beautifully glaciated & planed off flat. The top (chaise-shaped) not nearly so well glaciated, & the polishing of the side terminating abruptly to the S.

Evidently a place where a glacier coming from the N.E. was subject to strong lateral compression.



Young from ⑥ grey granite along the shore.

At ⑦ Compact greyish-green granite traversed by many veins & lenticular masses of compact greenish-grey fine grained siliceous granitic matter, or siliceous greenstone (specimens all). The runs in some places with green epidote spots & streaks. Veins have general course of N.E. & S.W. sometimes pretty straight & have appearance of being stratified beds which

No. 2 Kaup Island, about 7 miles below landing at N.W. Angle. A rounded & glaciated lump of greyish red granite about 100 yds long & surrounded by similar masses. Glacial striae perfectly preserved in places. Direction from $S 48^{\circ} W$, to $S 50^{\circ} W$.

The granite has scattered through it irregularly shaped masses of greyish, fine-grained apparently hornblende rock which is softer & weathers away into hollows where it occurs. Many veins from 1 ft wide & downward, of coarse grained reddish felspar with some feldspar. General course E. & W. & W. & E.

At point marked (2) on maps opposite Indian houses, & on S. shore of inlet. Strat. gneiss rock with reddish felspar veins. (Rock greyish) Dip about N.N.W. $\angle 25^{\circ}$ or 30° . A water mark plainly visible on rock 5' or 6' above present level. Also one of less importance about 2' above present.

(3) A small island N. of the portage. Fine grey hornblende or micaceous rock, perfectly stratified D. N. $20^{\circ} W$ $\angle 45^{\circ}$. Many red felspar veins some 2 or 3' thick, also small yellow quartz veins. Both follow pretty nearly the strike, but are evidently intrusive. Numerous crack lines showing on weathered surface of rock & running N. $10^{\circ} W$.

About place marked (4). E. end of portage bearing $S 1^{\circ} 22'$ E many small islands, dome shaped & glaciated. Some of black hornblende rock with large & numerous red felspar veins, others of red granites & greyish

About 12 miles E of Birch Creek another good series of exposures, gypsiferous, the continuation of which had a strike of N. 60° E. May crossing veins or dykes of red felspar.

The watershed must lie according to what I could see from the road, in the great swamp about 11 miles E of Birch Creek.

Many large Laurentian boulders seen in places aspear along.

About 14 m. E of Birch Creek an exposure of very perfectly stratified & thin banded gneiss rock with some greenish epidote or chlorite layers. Strike N. 50° E. Saw several other exposures at intervals all the way down on the way to the angle & think all the country from Birch Creek at any rate may be set down as L. Laurentian.

Looked Carefully for glacial scratches. Rocks rounded but surfaces so well weathered that no grooves remain. Only the general N.S. direction of masses remains.

The strike of bedding pretty general about N. E. Saw no exceptions to the rule.

The country from Birch Creek almost one vast swamp though here & there rocky or sandy ridges. Much of the land would not be swampy if cleared, but the soil very sandy & poor & little or no use for agricultural purposes. A considerable quantity of tall thin timber useful for road or home making.

The gravel even after crossing the watershed continues to a considerable extent of limestone.

Passed from Broken Head to White Mouth & night. Appeared a succession of swamps & sandy ridges with now & then a boulder covered tract. For about 2 miles E. of Broken Head very many boulders. Some very large.

Also about a mile W. of White Mouth quite a boulder covered region for about $3/4$ of a mile. The boulders most numerous granite & gneiss with red orthoquartzite & felspar. A few grey gneiss & a very few small limestone ones. Small gravel not very abundant, but mostly limestone.

White Mouth R. winds much where struck & road. A stream of 20 to 25 yds broad, rather shallow, & having a rapid current. The water of a brown tint. Some pretty good, though sandy land about the R.

(N.B. connect obs with bedding on Dawson R.)

From White Mouth R. to Birch Creek the lands seem to continue rising slowly, though more than half is swamps. The dry tracts are poor & sandy & support Banksian pine. Not so many boulders.

From Birch Creek to Camp 8 - 12 miles E. of that place almost a continuous overpass, though road sometimes follows sandy ridges in it for a time. Most of the road is covered, though generally covered with sand. Sand is the superficial material, in some places of a yellow ferruginous tint. Gravel in places though not very abundant, small & slate chiefly of limestone. Saw first exposure of solid rock about 3 miles E. of Birch Creek. Laurentian gneiss or granite of greyish red colour. Another exposure about a mile farther on & several smaller exposures. About 11 miles E. a very large surface bar. All the rock presents much the same character (is traversed) veins of red felspar. Surface quite smooth & martian but shows no grooves. Several bands of gneiss in ridges N. of & S. of.

The country after crossing Stinking R. assumes along the immediate bank of the river at any rate, quite an undulating aspect & is thickly wooded where not cultivated.

Going E. from St. Boniface. For the first few miles country dry & apparently good. Then pass through a succession of swamps, some of them almost lakes. These continue to about 9 mile point, when gain a ridge which goes on for some 12 or 14 miles for which Prairie prose settlement is situated. Then a great swampy tract 6 or 7 miles across, & then again dry Prairie at Point du Chêne & for about 2½ miles E. of it. Then begin ascent from prairie level just as at ridge 13 m. E. of Point. Soil changes to gravel & sand & many boulders visible. The larger boulders generally quartzite. A few limestone but not so many in proportion as at ridge before mentioned. Most of the gravel consists of limestone & many of the metamorphic boulders & pebbles are covered with a calcareous crust from having lain among it. The gravel in several places seem to be well stratified horizontally.

The limestone not exactly of same character as that found on 13. m. ridge, but more resembles that used for building at ferry. Saw no fossils, though had not much time to look for them.

After leaving the edge of the ridge, to Broken Head are continuous & interrupted & irregular steps. Swamps frequent & very wet. The dry soil in most places too sandy & thin for profitable farming.

7

Expedition from Dufferin to Lake of Woods.

June 28. 73 Several miles S. of Scratching R began to see boulders here & there, none of any great size. Some pieces granite etc., saw one of limestone. Altogether a collection quite like those seen on Ridge 13. m. East. Saw altogether about a dozen ~~per~~ during days march. From 2' to 3' by & downward. Too far from river & too large apparently to have come on ice even during greatest present floods. Must they have been dropped on the old lake bottom. They seem to be as abundant on the surface as anywhere, as did not see any in Coule's passed. They would have been more abundant in these excavations if specially belonging to lower layers.

Salt Spring At Lones 12 m. N. of Scratching R told of several salt springs on River bank. Water too high to see them. Told that about a gallon yielded 2 oz on experimental trial, of good salt.

Black Substance (bituminous?) found here also, in river bank. Some had used for stove & boot polish, but had none to show & could not get at place for depth of water.

Siliceous. From the lime I saw should not judge that it slaked well.

Examined the boulders for fossils, found a good many though not in a good state of preservation. Several brachiopod shells, one a Strophomena Another like pentamerous? σ . Also many large ostracods like Lepiditica. Two or three corals in poor preservation & a few discs of Lucrinal columns.

From the great quantity of limestone I should judge that that rock can not have travelled far from its bed & slope perhaps to recognize the same in the Roseau R, or between L of Woods & Red R.

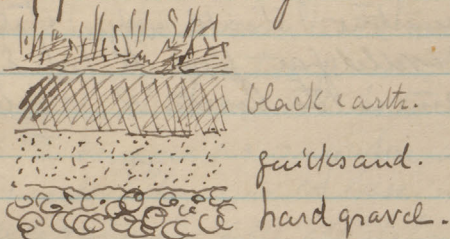
The Laurentian boulders consisted principally of gneiss grey or red, hornblende schist &c. (See specimens).

In digging a little well for water for camp found the structure of the soil to be as follows.

Black loamy swamp earth say 18"

Clean fine yellowish sand full of water say 18"

Gravel principally of limestone & stones crusted with lime by percolation of water.



The soil on the second prairie level seemed to be very fertile & partly on account of its dryness partly no doubt from its calcareous character many new plants appeared on it.

Had been induced to pay this place a visit by report that limestone existed & was burned for lime. Found the kilns which consisted of two circular holes in the front of a circle, & a pile of limestone boulders which are picked from the soil to be burned as no stone exists in situ.

The limestone weathers white, & both on the large & small scale seems inclined to wear out into a pitted surface. Freshly broken it varies in tint from cream coloured to light leather coloured. Compact but not crystalline with breaking with a rough fracture without much regard to bedding. In places the texture looser, & even with cavities in the stone. It does not weather brown like a dolomite & yet appears to be impure, & is probably

From the foot beginning of slope of ridge boulders become common, both of limestone & Laurentian rocks. The earth also thrown out from badger holes is gravelly & sandy & of quite a different character from the subsoil of the prairie. The boulders become specially abundant after gaining the summit of the plateau & some of them are very large. They lie as a rule in groups but many are sporadically distributed. The groups of boulders are not homogeneous in character but Laurentian & limestone boulders are often intermixed. The gravel & small stones are chiefly of limestone though some Laurentian matter is intermixed. The largest of the boulders seen were Laurentian & each of them occupied the center of a hollow in the ground, circular or nearly, & presenting quite an artificial appearance though doubtless due to some natural cause.

One boulder of granite or very coarse gneiss with much red felspar when measured was found to be 13' long 12½' wide & 5½' above the ground. It lay in a large hollow perhaps 30' across, & was very beautifully glaciated on the upper side. (See sketch in sketch book)



June 18. 19. 20 & 21. / 93

3.

Expedition from Defferin to So called "13 mile Camp" situated about that distance to E. along Lat 49°, & on the top of the first ridge, an edge of second prairie level.

The country perfectly flat from Red R to foot of ridge with the exception of Coules, & slight undulations which latter obtain specially in the swampy portion.

Prairie dry, & apparently extremely fertile from river to say 33,000' picket when it begins to assume a swampy character which continues & grows worse Eastward till the ground again becomes dry at the 51,000' picket.

The precise extent of swamp of course varies with the season, & the region is entirely overflowed in high floods such as that of this spring. As testimony of this found a good sized boat in grass in the swamp.

The swamp not continuous but consists of swales of wet ground & shallow pools, separated by dry ridges.

Both having their greatest extension N. & S. over the area of the swamp from $\frac{1}{3}$ to $\frac{1}{2}$ must be dry ridge. Found all this season almost impossible to take heavily laden cart along the line trail, but found easily passable ground by going 2 miles round to N. The marsh gets worse to S.

The first boulders (Laurantian) met with on the line about the 60,000' picket.

The ridge, which is really the edge of the second prairie level; from a distance appears to be well defined & is marked by groves of bushes &c. When approached however it is found to be loose in definiteness, & to rise very gradually & somewhat irregularly from the plain. Its edge is much indented & quite diffuse (See leveling to L of W. for height of ridge, & slope).

The ridge may be counted to begin about the 61,000' post

