(No Model.) 2 Sheets—Sheet 1.

C. WAIS.

AUTOMATIC GRAIN WEIGHER.

No. 249,126. Patented Nov. 1, 1881.

Fig. 3.

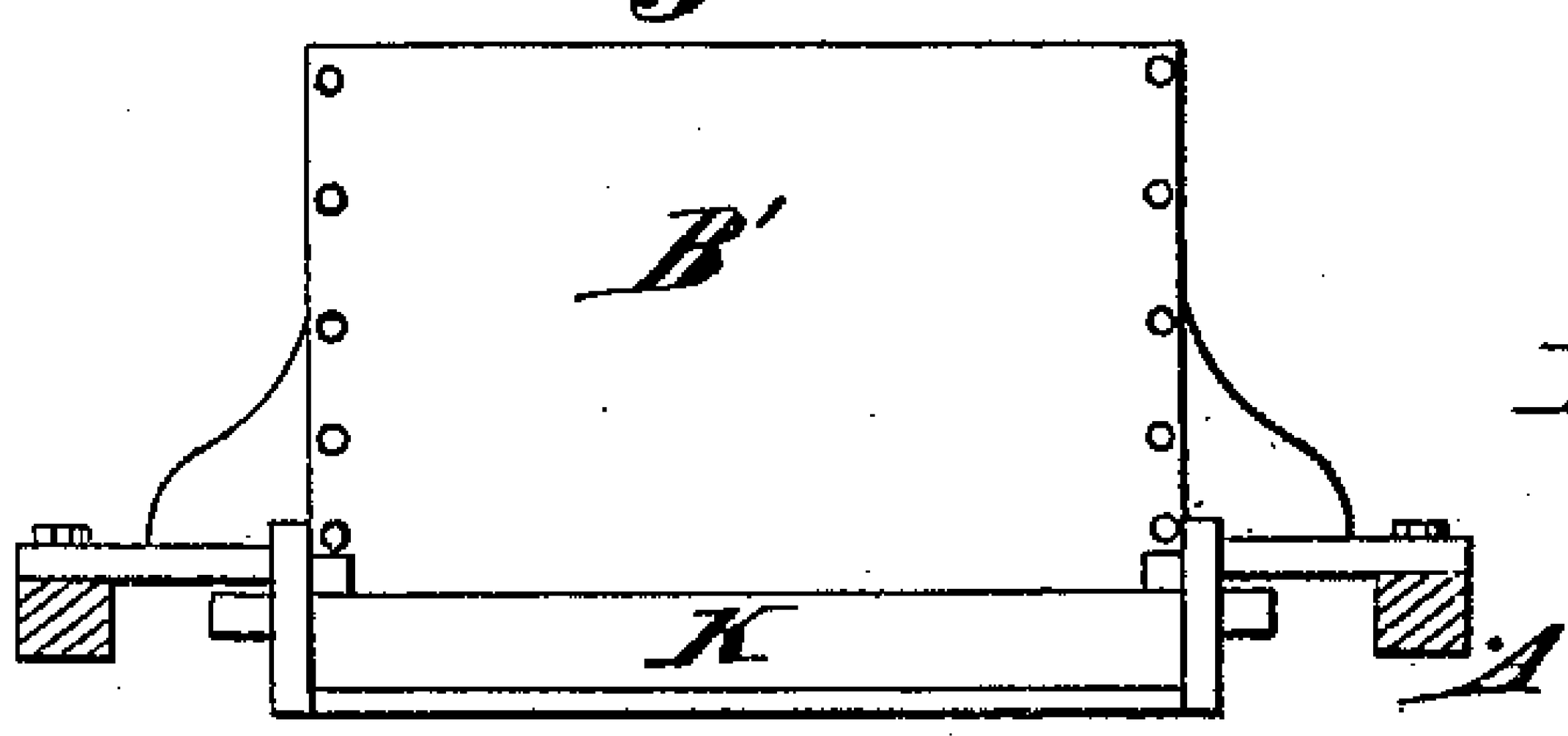


Fig. 1.

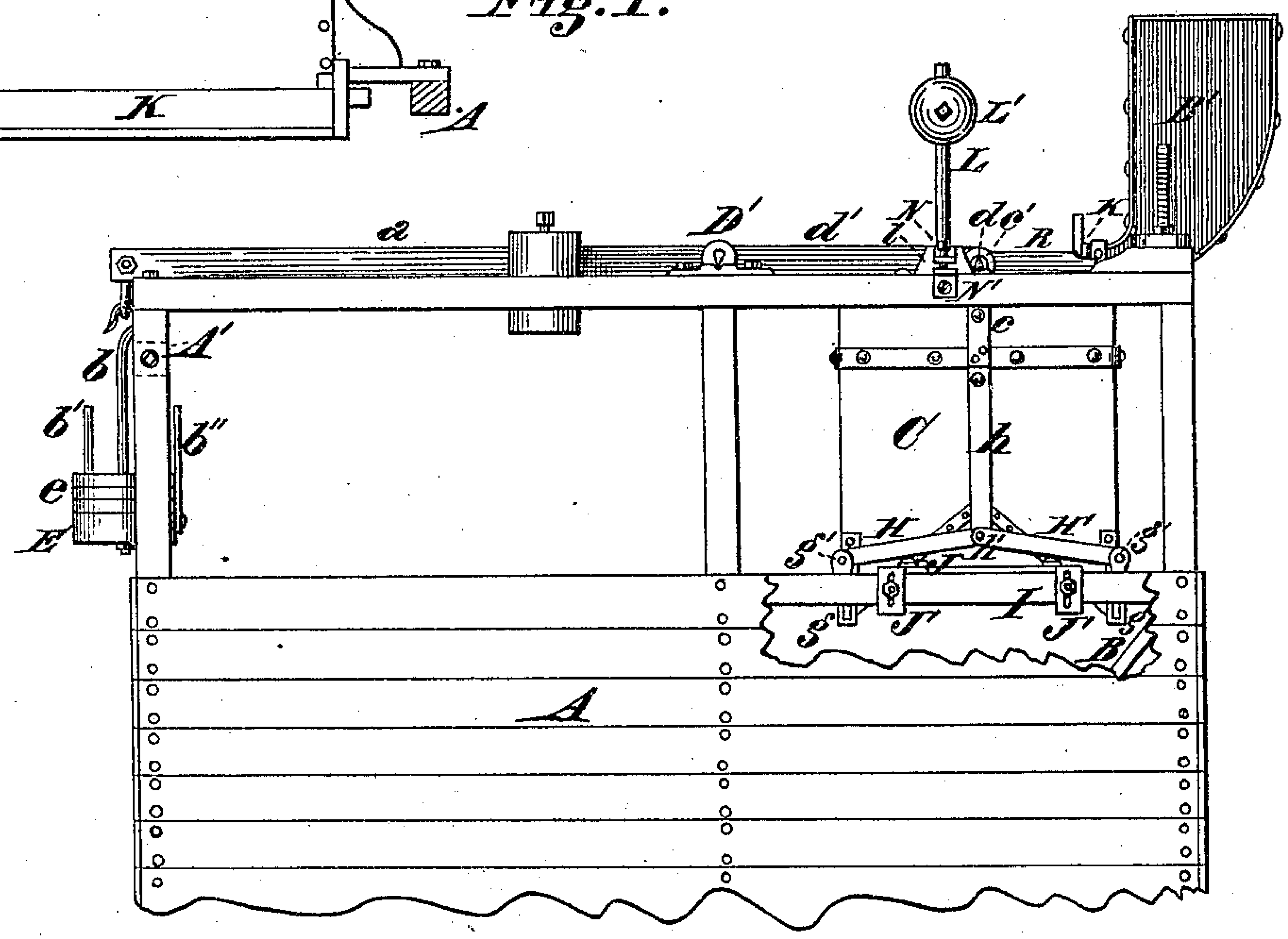


Fig. 2.

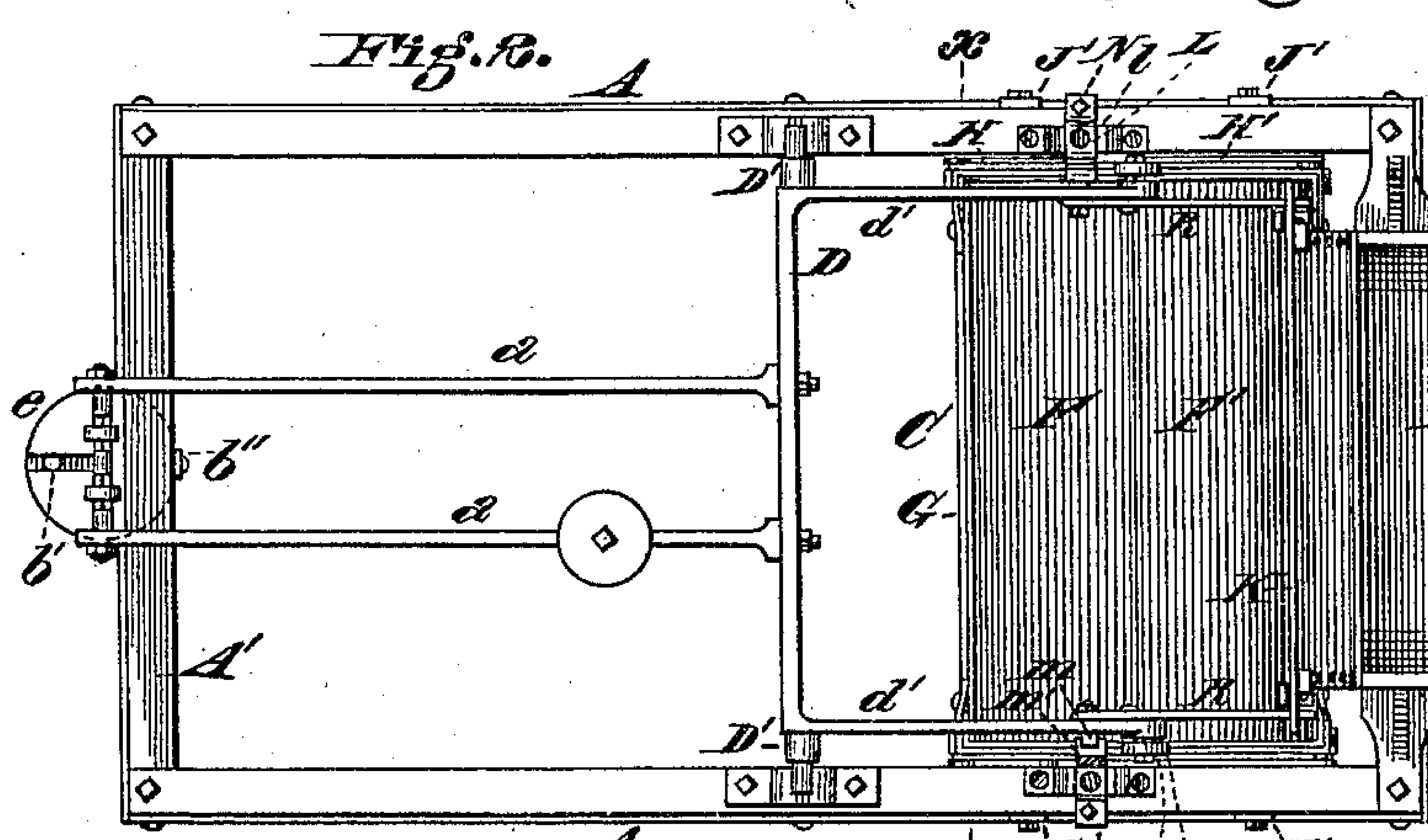


Fig. 4.

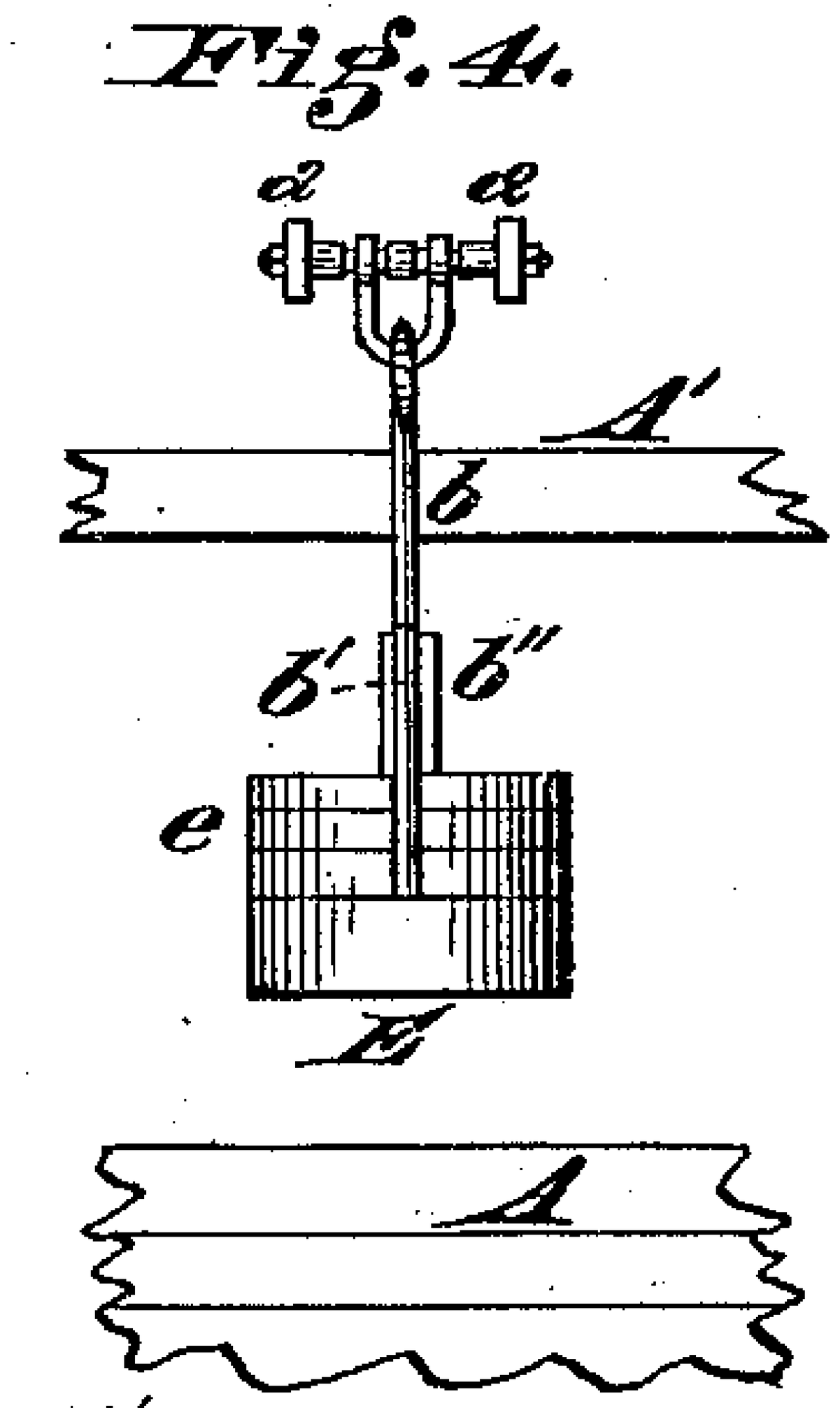
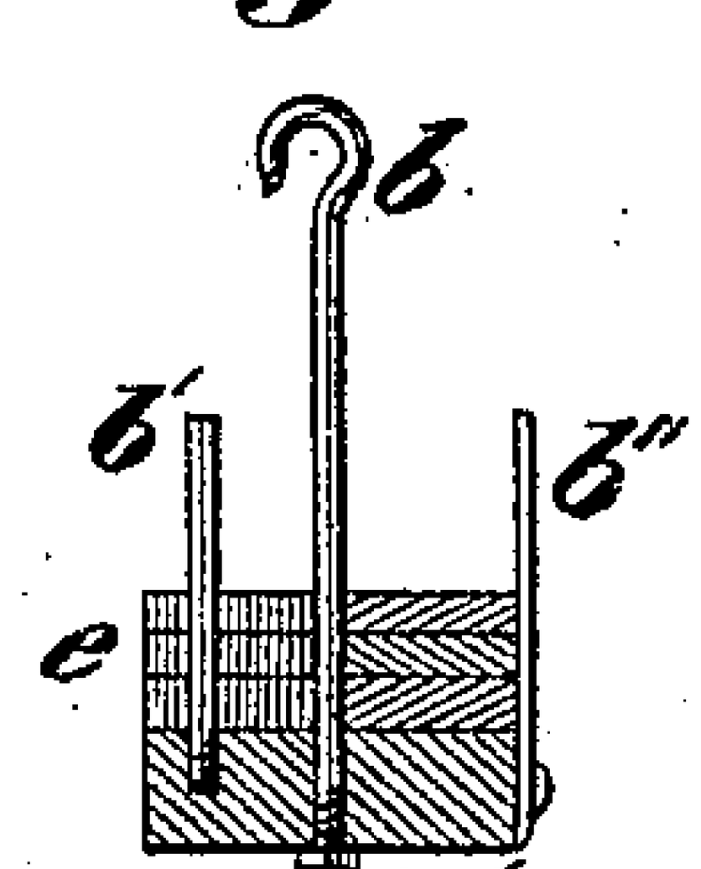


Fig. 5.



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(No Model.) 2 Sheets—Sheet 2.

C. WAIS.

AUTOMATIC GRAIN WEIGHER.

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Fig. 6.

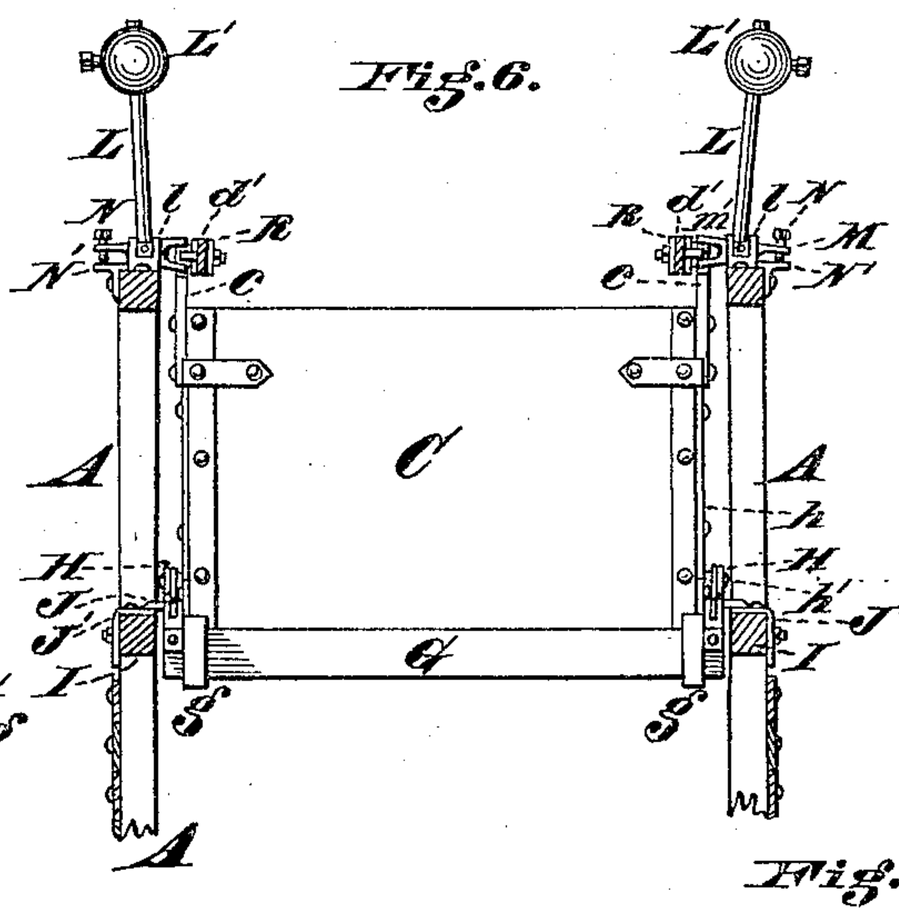


Fig. 11.

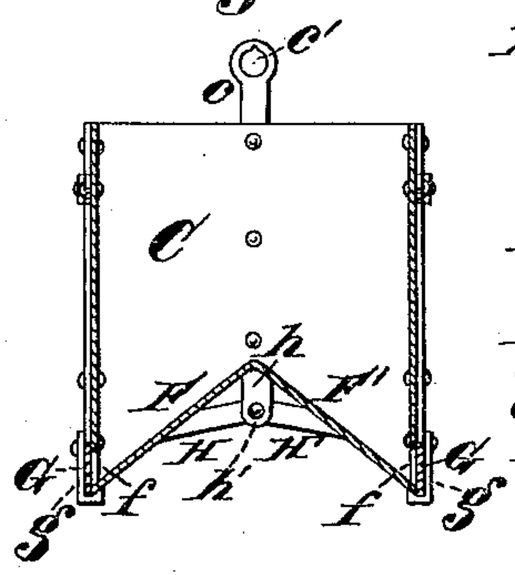


Fig. 7.

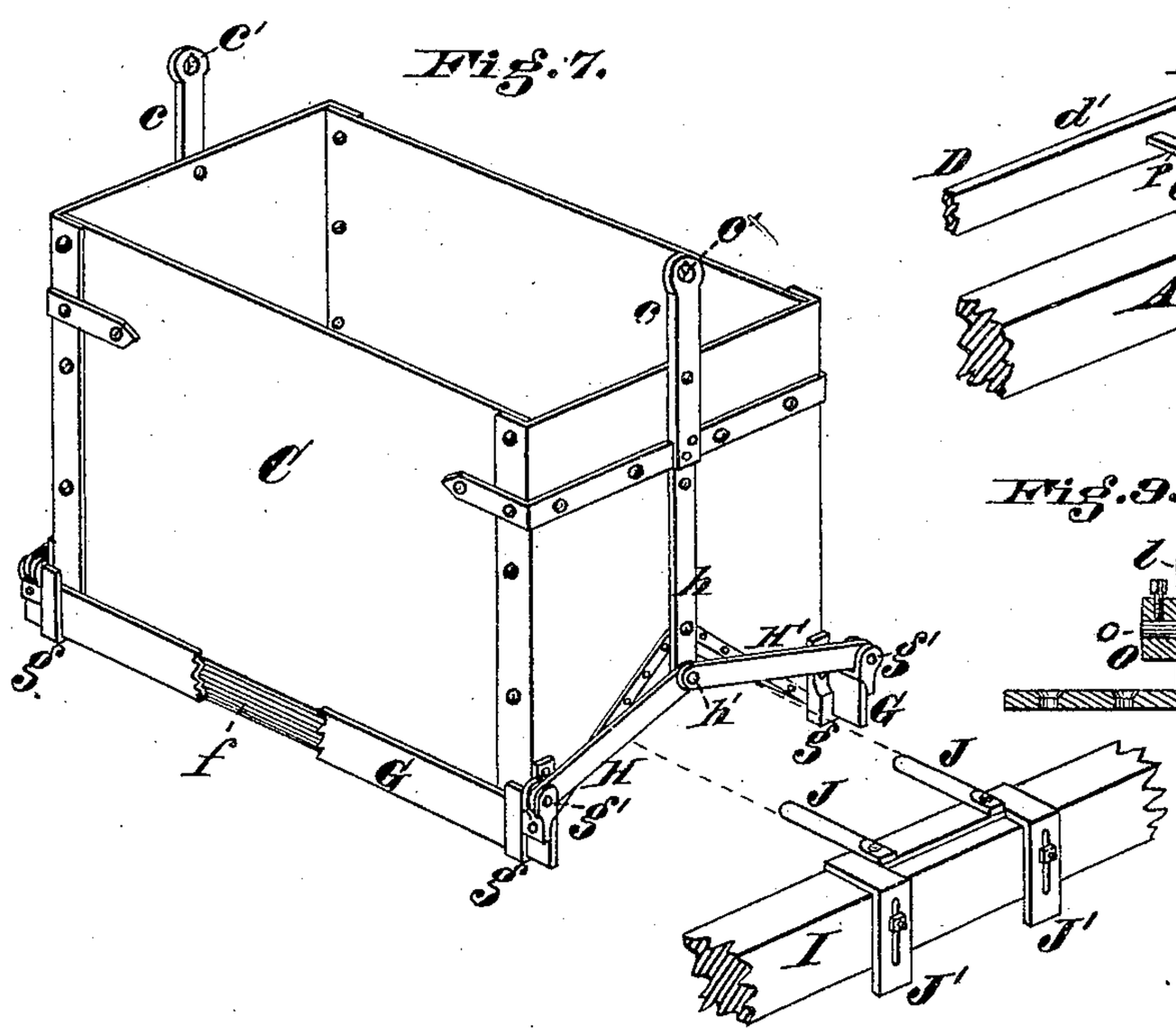


Fig. 8.

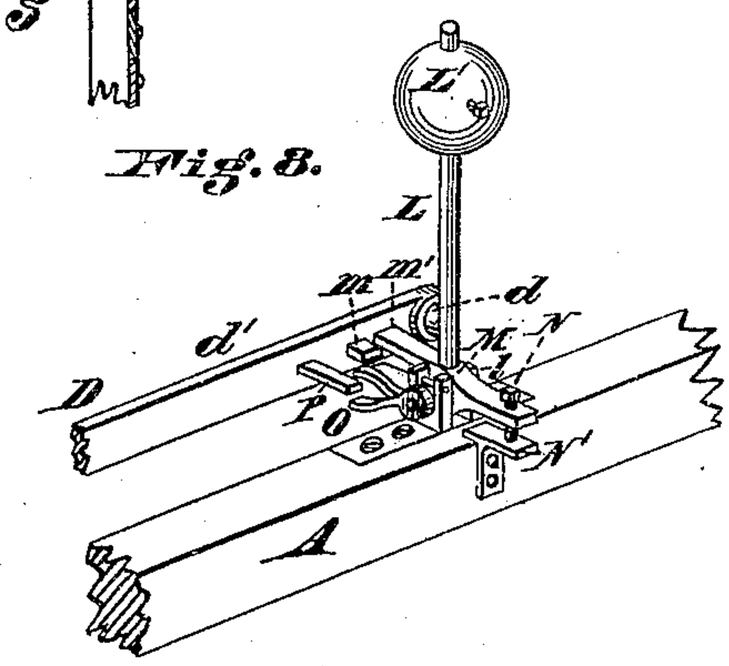


Fig. 9.

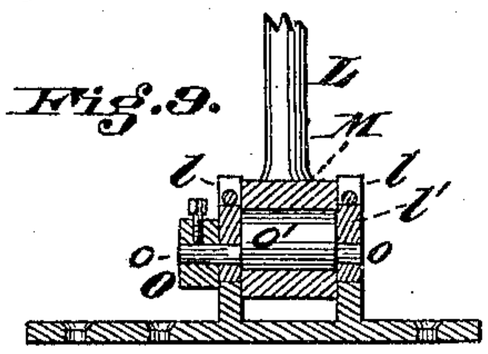
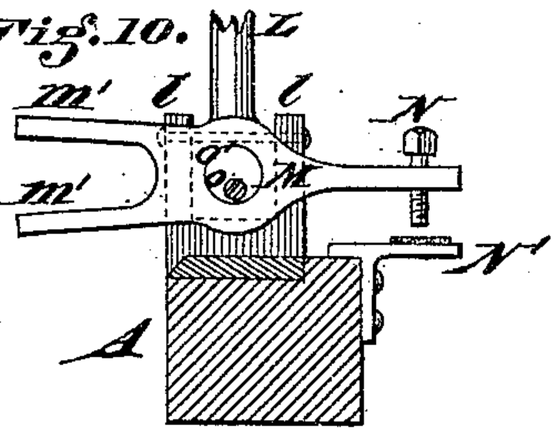


Fig. 10.



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Christian Wais
by Wood & Boyd
his Attorneys &c.

UNITED STATES PATENT OFFICE.

CHRISTIAN WAIS, OF NEWPORT, KENTUCKY, ASSIGNOR TO SIMPSON & GAULT, OF CINCINNATI, OHIO.

AUTOMATIC GRAIN-WEIGHER.

SPECIFICATION forming part of Letters Patent No. 249,126, dated November 1, 1881.

Application filed July 5, 1881. (No model.)

To all whom it may concern:

Be it known that I, CHRISTIAN WAIS, a citizen of the United States, and a resident of Newport, in the county of Campbell and State of Kentucky, have invented certain new and useful Improvements in Automatic Weighers for Grain and other Substances, of which the following is a specification.

My invention relates to an automatic grain weighing and measuring scale, which consists, first, in providing a single measure or weighing-bucket provided with a double hopper-bottom, each hopper having a discharge-opening with gates covering the same, which automatically open and close as the bucket rises and falls in the act of weighing.

A second feature of my invention consists in combining with the rising and falling gate which opens and closes the mouth of the feed-spout one or more supplemental weighted levers engaging with hereinafter-described tripping devices to assist in the operation of said gate.

Another feature of my invention consists in combining the supplemental weighted levers and hereinafter-described tripping devices with the gates for opening and closing the measuring device, so as to secure rapid and positive operation of the gates.

Other features of my invention consist in the method of constructing and combining with the foregoing features improved mechanism for operating the same, all of which will be specifically set forth in the description of the accompanying drawings.

In the accompanying drawings, Figure 1 is a longitudinal elevation, partly broken, of my improved weighing-machine. Fig. 2 is a plan view of the same. Fig. 3 is a front elevation of the feed-spout. Fig. 4 is a rear elevation of the balance-weights and the ends of the scale-beams, showing a broken section of the frame of the machine. Fig. 5 is a central section of the balance-weights, showing the arrangement of the devices for preventing displacement of weights while machine is in operation. Fig. 6 is a vertical sectional elevation on line *x x*, Fig. 2. Fig. 7 is a perspective view of the weighing-bucket, showing the device on the frame for tripping the discharge-gates in connection therewith. Fig. 8 is a perspective view of a broken section of the frame and one end of the forked scale-beam, showing in connection therewith one of the supplementary weighted levers. Fig. 9 is a longitudinal section of the frame, upon which one of the supplemental weighted levers is mounted, showing its eccentric bearings and the device secured on the crank-pin thereof for assisting in its operation, the lever being shown broken off. Fig. 10 is a transverse sectional elevation of Fig. 9. Fig. 11 is a central cross-section of the bucket.

A A′ represent the box and frame of the weighing-machine.

B represents the hopper or discharging-chute in which the grain is dumped from the measuring-bucket.

B′ represents the feed-spout.

C represents my improved measuring or weighing bucket.

c c represent ears or straps rigidly secured to the bucket C.

c′ c′ represent the knife-edge bearing-holes.

D represents the pivot-bar of a forked scale-beam. It is suspended on knife-bearings D′ D′.

d d represent the knife-points, on which the bucket C is suspended.

a a represent scale-beams attached to the pivot-bar D. One beam might be used, but I provide two beams to more perfectly utilize another feature of my improvement, which is the method of adjusting and using the balance-weights on the end of the beam. (Shown in Figs. 1, 2, 4, and 5.)

b represents the hook or weight rod, which engages in a loop at the ends of the beam *a*.

E represents a disk or balance-weight screwed to rod *b*, and *e e* represent additional weights placed upon rod *b* to assist in graduating the scale to any required quantity. In order to prevent these adjusting-weights from being displaced or thrown off on account of the shock due to rising and falling of the scale-beam, I provide stay-rods *b′ b″*, which project part

way up from the disk E to the hook of rod *b*. The ordinary slot is cut in the weights *e*, and it engages over the rods *b b'*. Rod *b''* prevents the weights frem slipping off laterally, and guide-rod *b'* prevents the weights from turning.

F F' represent the double-inclined bottom of bucket C.

f f represent slots or openings made in the outside walls of the bucket C and adjacent to the lower outer edges of the incline or hopper bottoms F F', through which openings the articles weighed are discharged in the act of dumping.

G G represent the gates which rise and fall in suitable slides or ways, *g g*, secured upon the outside or frame of bucket C. I prefer to operate these gates in the following manner: H H' represent links pivoted at one end to the gates G and at the other end to bracket-arms *h h*, which are rigidly attached to bucket C.

h' represents pivots or stud-pins, on which the links H H' hinge.

I represents a girder or beam, located adjacent to the bottom of bucket C when it occupies its highest position when the scale-beam is down.

J J represent tripping-arms, which may be secured to girder I. They project inwardly under the links H H'. As the bucket C descends the links H H' strike upon the tops of the arms J J, which arrest their downward movement, while the farther descent of the bucket C raises the gates G G by the swinging of the links H H' on the pivots *h'* and *g'*. The arms J J are shown attached to brackets J' J', which are slotted and attached to the girder I, so that the arms J can be adjusted vertically to regulate their contact with the links H H'.

R represents levers rigidly secured at one end to the forks *d'* and the other ends engaging with gate K of the feed-spout, so that the movement of the levers R up and down raises and closes the gate K, which slides in suitable ways across the opening in the lower end of feed-spout B'. In order to secure a rapid and positive operation of the gates G G, and of the gate K, which opens and closes the feed-chute, I provide supplemental weighted levers, engaging with tripping devices, which are operated by the rise and fall of the forks *d' d'* of the scale-beam bar D.

L represents a vertical weighted rod pivoted in boxes *l'*, adjustably secured in brackets *l*, mounted on the top of the frame A, by a puppet-lever, M.

m m represent lugs on the forks *d'*, between the puppets *m'* of the levers M. When the weights L' are inclined or thrown toward the bucket C, their weight is pressing down upon the lugs *m* on the forks *d'*, and when inclined outwardly they assist in raising the forks *d'*. The outward inclination of levers L is regulated by a screw, N, in the outer extension of lever M, and it rests on a projecting bracket, N', secured to the frame. To throw these levers L at the beginning of each motion I employ a tripping device. It consists in a forked puppet, O, pivoted to crank-pin *o*, eccentric to the gudgeon *o'* of the pivoted lever LM.

P represents a second lug, projecting from the forks *d'*, between the puppets O. A slight rising or falling movement of the lug P, engaging with the puppets O, rocks the weighted lever L, and applies or moves its weight upon the forks *d'*, at the beginning of each stroke or motion. This application of the supplemental weighted levers L L' is important, as it closes the feed-spout at the beginning of the descending movement of the bucket and opens the same near the end of the rising movement of the bucket, so that gate K is closed before gates G are opened, and the latter are closed before the gate K is raised to commence refilling the bucket.

It is not necessary to show the attachment of a register, as any of the well-known forms in use may be employed to indicate amount of grain weighed.

The general mode of operating the valves for closing the spout and opening and closing the discharging-orifices in the buckets is by the rise and fall of the bucket. The weight on the scale-beam is adjusted so that when the bucket is filled it will overbalance the weight on the scale-beam, the outer end of which will rise as the bucket C descends and operate the parts in the manner hereinbefore described.

I claim—

1. In an automatic grain-weigher, a single measure or weighing-bucket, provided with a double hopper-bottom, each hopper having a discharge-opening with gates which automatically open and close as the bucket rises and falls, substantially as herein set forth.

2. The combination of the rising-and-falling gate for opening and closing the mouth of the feed-spout R, with the levers engaging the said gates, the weighted rocking levers L L', having the puppet-levers M *m'*, the puppets O, and the stops upon the forks *d'*, said weighted levers being rocked by the puppets O, and serving to close the feed-spout gate at the beginning of the descending movement of the bucket, and also to open the same at the end of the rising movement of the bucket, substantially as described.

3. The combination, in an automatic grain-weigher, of the gates for opening and closing the discharge-openings of the measuring-buckets, with one or more weighted levers, L L', pivoted in brackets, the puppet-levers M *m'*, the puppets O, and the forks *d'*, provided with lugs for engaging the said puppets, said members being constructed and adapted for operation substantially as described.

4. In an automatic grain-weighing machine, the supplemental weighted levers L L', pivoted in brackets *l l'*, and having puppet-levers

M *m'*, stops N N', and puppets O, the whole arranged, constructed, and operating substantially as and for the purpose specified.

5. In an automatic grain-weighing machine, the balance-weight E, suspended from the beam or beams *a*, and provided with stay-rods *b' b''*, arranged, constructed, and operated substantially as and for the purpose specified.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHRISTIAN WAIS.

Witnesses:
JNO. E. JONES,
J. H. CHARLES SMITH.