

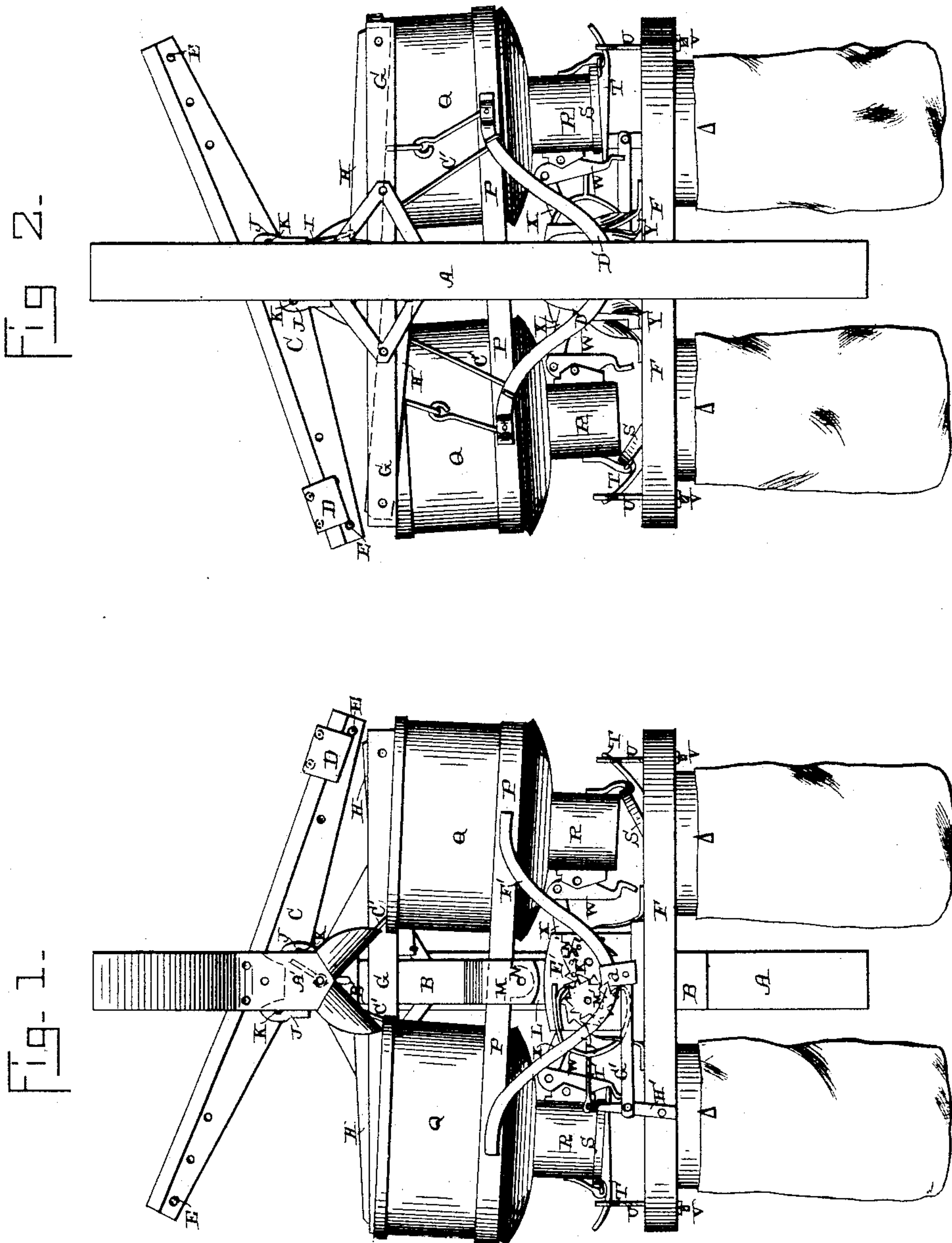
(Model.)

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H. H. BOENKER.
AUTOMATIC GRAIN WEIGHING MACHINE.

No. 401,118.

Patented Apr. 9, 1889.



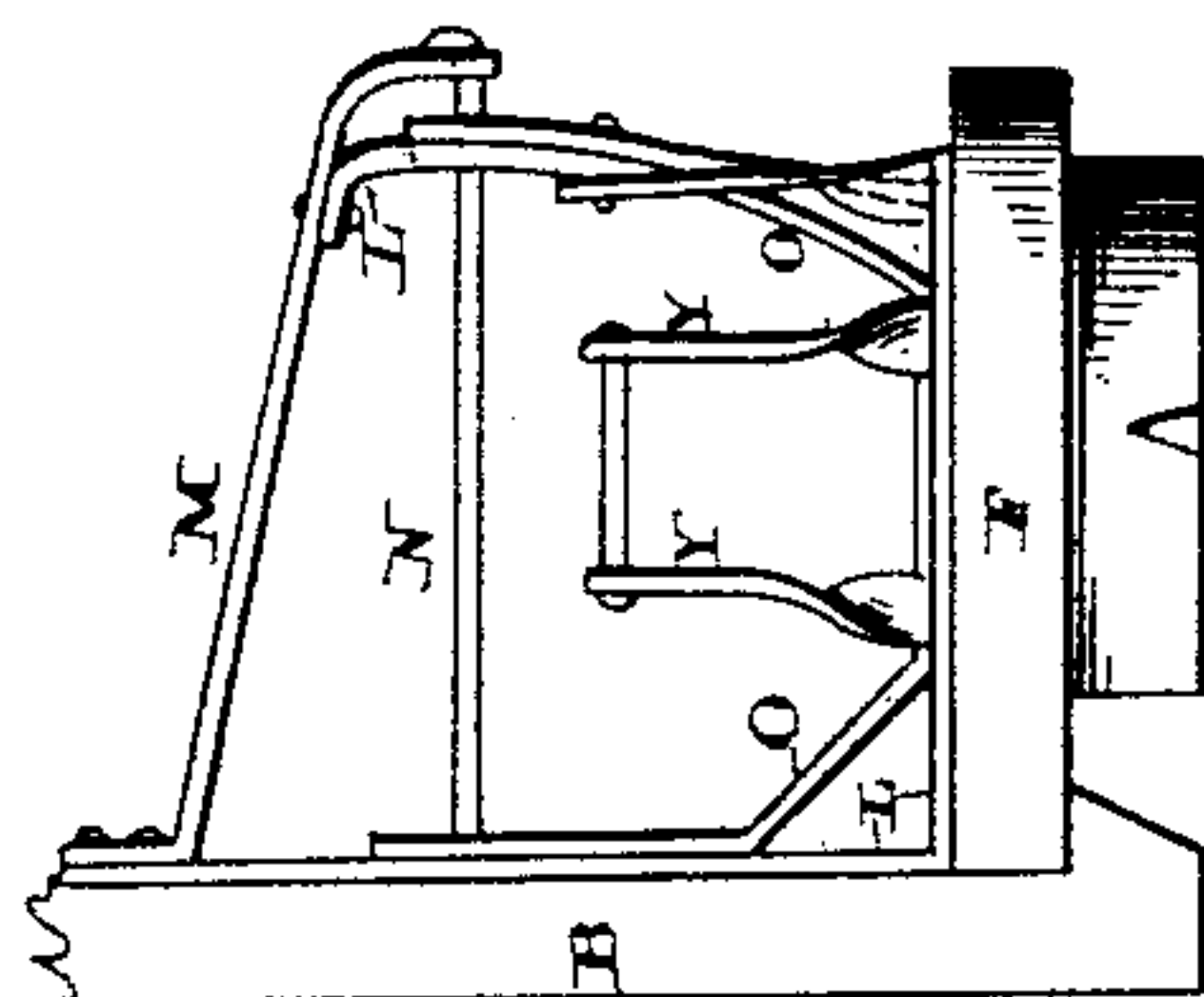
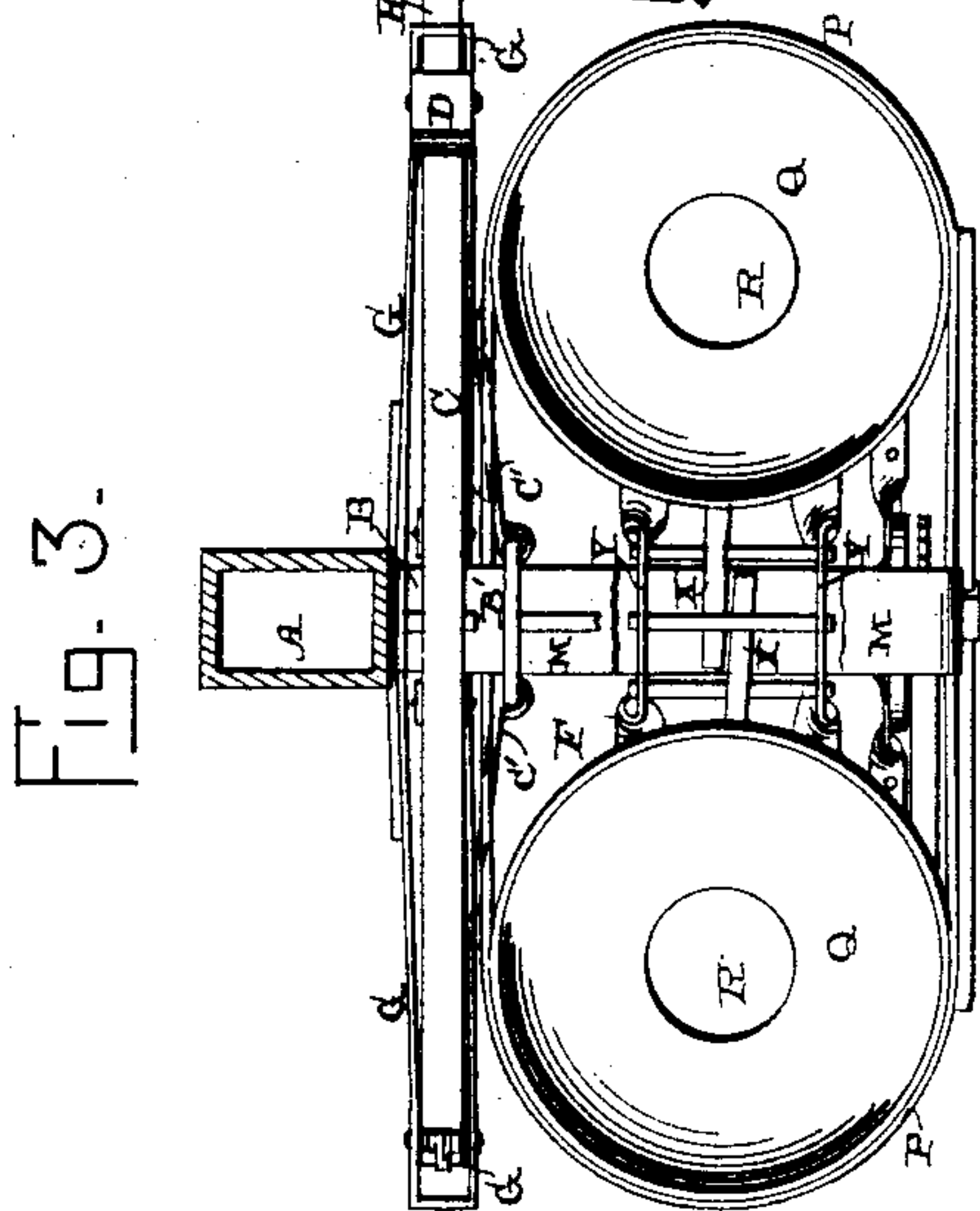
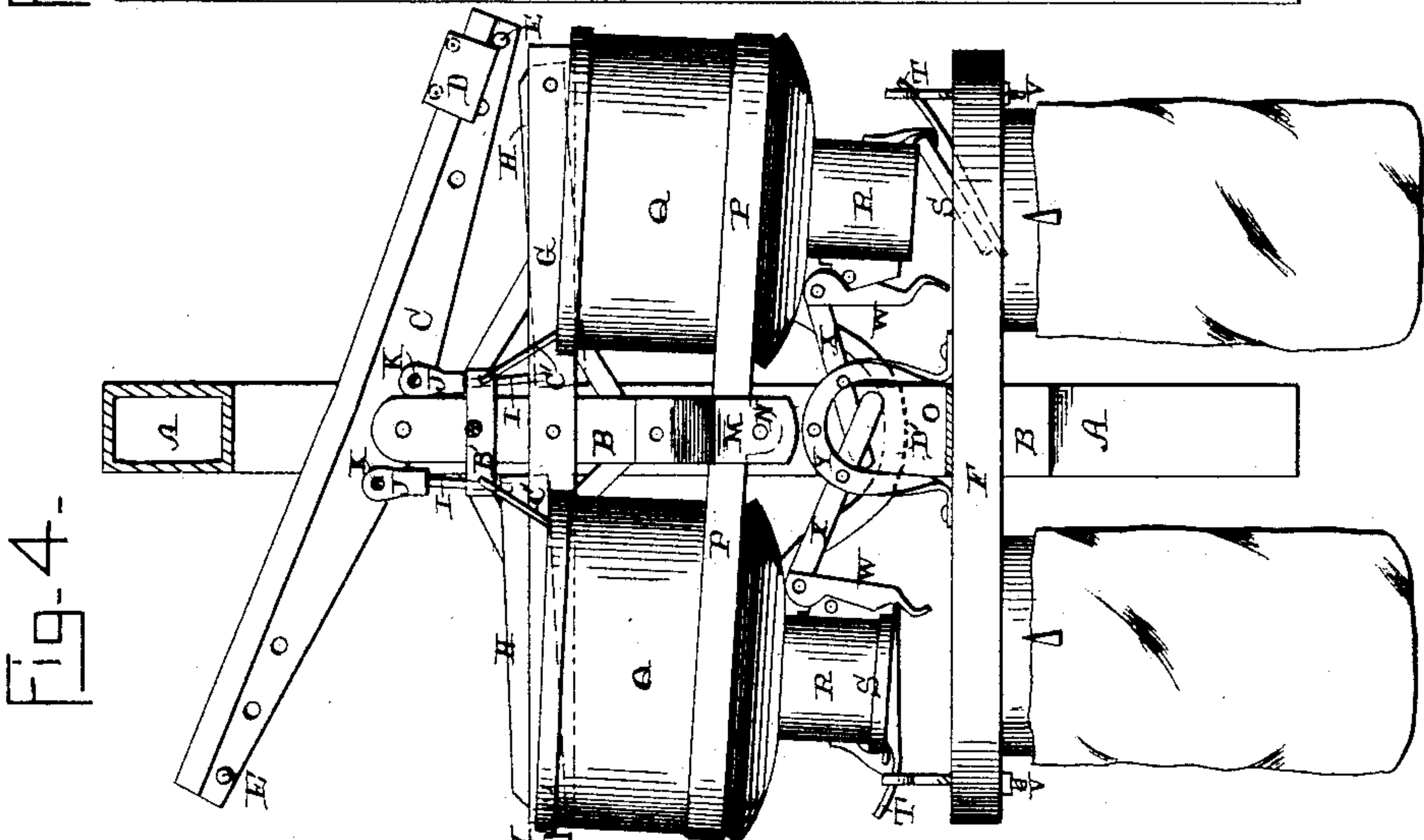
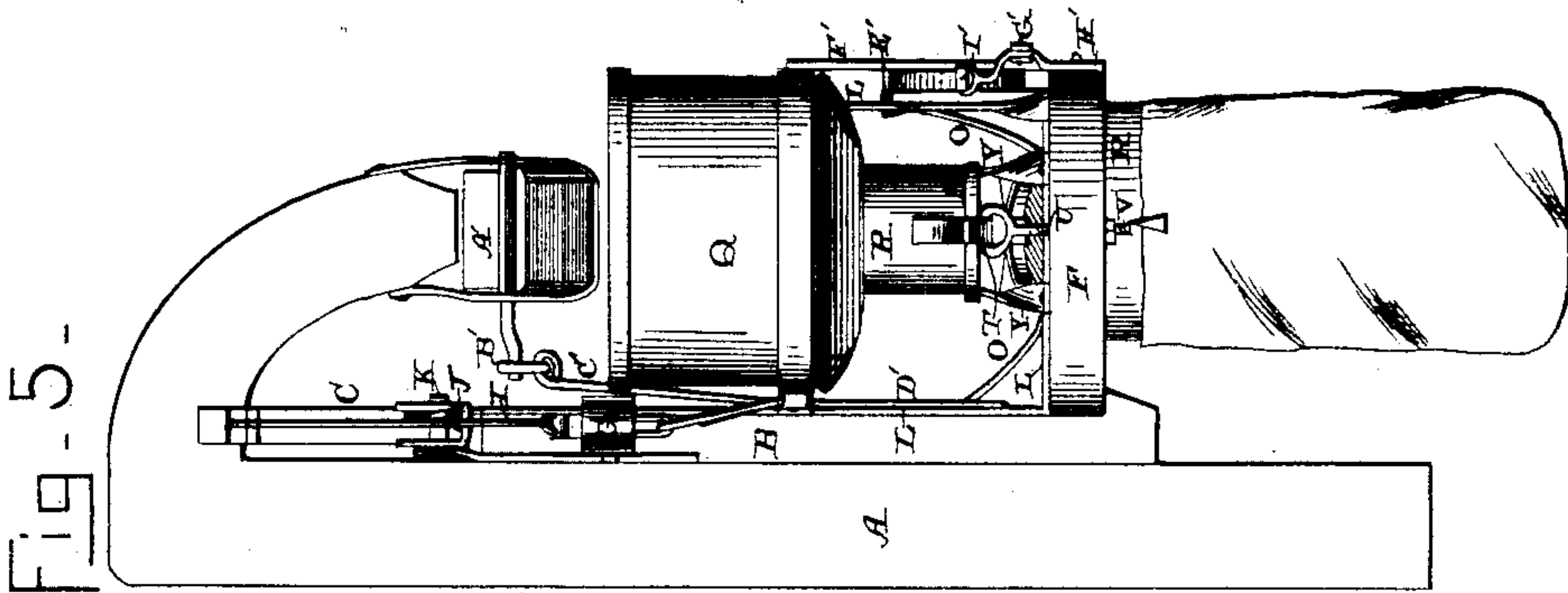
Witnesses:
Edmund P. Ellis,
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Inventor:
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per J. A. Lehmann,
att'y.

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UNITED STATES PATENT OFFICE.

HENRY HERMANN BOENKER, OF ST. CHARLES, MISSOURI.

AUTOMATIC GRAIN-WEIGHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 401,118, dated April 9, 1889.

Application filed September 19, 1888. Serial No. 285,770. (Model.)

To all whom it may concern:

Be it known that I, HENRY HERMANN BOENKER, of St. Charles, in the county of St. Charles and State of Missouri, have invented certain
5 new and useful Improvements in Automatic Weighing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had
10 to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in automatic weighing-machines; and it consists in the arrangement and combination of
15 devices, to be more fully described hereinafter, and pointed out in the claims.

The objects of my invention are to provide an automatic weigher which is especially
20 adapted to be attached directly to a thrashing-machine, and which is so constructed that the grain is elevated from the depositing-point of the thrasher to a suitable elevation into
25 hoppers arranged to weigh the grain and to dump it into bags placed upon the frame of the machine, whereby, when the grain is being bagged, it is only necessary to remove the filled bags and place in their stead empty
30 ones; to so construct the machine that a lever attached thereto is made to operate a register or recorder each time that a bag is filled; to provide a means whereby the grain can be
35 elevated into a bin or wagon when it is not desired to bag it, and to provide a tilting beam and an automatically-rolling weight, whereby the machine is made to weigh from opposite
sides alternately.

Figure 1 is a front elevation of a weighing-machine embodying my invention. Fig. 2 is
40 a rear elevation. Fig. 3 is a top plan view with the curved end of the elevator removed. Fig. 4 is a front elevation with the register and the curved end of the elevator removed. Fig. 5 is a side view. Fig. 6 is a detail end
45 view of the base F and the supporting-frames secured thereto.

A represents an elevator, which is attached to the side of a thrashing-machine in any
50 suitable manner. The lower end of this elevator is placed at the point where the grain is deposited from the thrasher, and has its upper end curved downward and outward

from the thrasher, as shown in Fig. 5. Secured to the front side of this elevator A is the vertical post B, to the upper end of which
55 is pivoted in suitable bearings the scale-beam C. Placed upon this beam is the weight D, which is provided with rollers or wheels, so that it will slide freely from one end to the other of the beam C by its own gravity when
60 the beam is tilted from a level. This beam is provided with a suitable number of perforations in which are placed the pins E, which form stops for the weight at each end of the
65 beam C, and by means of which the machine can be made to weigh any amount of grain desired by placing these pins nearer to or farther from the pivotal point of the scale-beam.

Extending outward from and secured to
70 the lower end of the vertical post B is the horizontal base-piece F, which is provided with an opening of suitable size at each end for the passage of the grain from the hoppers into the bags, secured below the openings in
75 any manner desired.

Fastened to the vertical support or post B near its upper end is the metallic or other suitable cross-support, G, and which extends outward therefrom on each side. I here show
80 this cross-support formed of a metallic band, which is doubled upon itself, as shown in Fig. 3, though it is evident that this construction can be varied. Pivoted between the two parts of this metallic cross-support G at their outer
85 ends are the two levers H. The inner ends of these levers H are connected to the scale-beam C near its pivotal point by means of the connecting-rods I and U-shaped pieces J, which rest upon the knife-edge bearings K,
90 extending outward from the side of the beam C. Extending upward from the horizontal base F at its center, near its front edge, is a suitable support, L, and connecting this support and the vertical post B is the brace M. This brace
95 M extends outward beyond the support L a suitable distance, and is bent downward, as shown in Figs. 1, 4, and 6, and which, with the support L, forms a bearing for the outer end of the horizontal shaft N, which has its
100 inner end bearing in an opening formed in the inner end of the U-shaped brace O. The outer end of this brace O is secured to the support L, and its center to the horizontal

base F. As here shown, the support L is formed of a flat piece of metal, which extends inward across the horizontal base and upward along the post B, forming a U-shaped frame.

5 P is an oblong frame, which has its center resting upon the shaft N, which forms a pivotal point for the frame. Securely attached in the frame P at each end are the hoppers Q, having their bottoms inclined downward and terminating in the pipes R, which guide the grain into the bags. The lower ends of the pipes R are closed by the doors S, which are hinged thereto at their outer sides.

15 Extending outward from the doors S are the arms T, to the outer ends of which are loosely connected the screw-rods U, which pass down through the base F, and are provided with nuts V, by means of which the rod is shortened at will to regulate the closing of the doors at any desired point. As the frame and hopper pass upward, the outer ends of the arms T are held by the rods, thus throwing their inner ends upward, closing the doors, and, vice versa, when the hoppers pass downward the doors are opened.

25 Pivoted to the pipes R are the vertical catches W, to the upper end of which are pivoted the levers X, which extend inward, and are pivoted in the U-shaped frame Y, which extends upward from the center of the base F. As the hoppers move downward, they move inward slightly, which brings the outer end of the levers X nearer the pipes R, and consequently pushing the upper ends of the catches W inward and their lower ends outward, thus releasing the doors and allowing the weight of the grain to open them. Pivoted in a depending frame secured to the upper end of the elevator A is the valve A', which is made to guide the grain first into one hopper and then the other by the tilting of the beam. Secured to the inner end of the shaft of this valve A', which extends inward through the depending frame that is secured to the upper end of the elevator a suitable distance, is the arm B', which extends at right angles thereto upon each side. Attached to this arm B' at each end are the connecting-rods C', which have their lower ends attached to the frame P at suitable points, and by means of the frame when it tilts operate the valve A', so as to guide the grain flowing from the elevator A into the empty hopper.

55 Extending downward from the back side of the frame P, (shown in Fig. 2,) and attached thereto at its upper ends, is the U-shaped guiding-frame D', which passes between the U-shaped brace O and the U-shaped support L, secured to the vertical post B and to the upper horizontal surface of the frame F, as shown in Fig. 5. The upper curved edge of the guiding-frame D' bears upon the under side of the brace and holds the frame P in its proper place.

65 Secured to the front edge of the base F at its center is the register E'. Extending downward below the pivotal point of the

frame P is the arm F', which is preferably, though not necessarily, U-shaped. Pivoted to the depending projection a, which is rigidly connected to this arm at its center, is the connecting-rod G', which extends outward therefrom; and has its opposite and outer end connected to the center of the vertical lever H'. This lever has its lower end pivoted to the base F, and extends upward a suitable distance, and has pivotally or loosely connected to its upper end the operating-rod I', which is bifurcated at its inner end and straddles the adjacent wheel of the register. The upper bifurcated end of this rod operates the wheel one notch when the lever H' is forced toward the register by the tilting of the frame F, while the lower end is bent in the form of a hook and pulls the wheel around one notch when the lever H' is pushed from the register by the tilting of the frame F in the opposite direction.

The register consists of the operating-wheel J', which registers the number of bushels from one to ten, and the wheel K', which registers one every time the wheel J' makes one revolution by means of the projection L' upon the wheel J', which engages one tooth of the wheel K' every revolution it makes, and thus is made to register the number of tens of bushels. Placed upon the same pivot as the operating-wheel J' is the small wheel M', which is turned one notch to every revolution made by the wheel K' by means of the lug or projection N', which engages the teeth of said wheel. The two wheels J' M' are separated one from the other, so that as one revolves it has no effect upon the other. The wheel J' counts ten every revolution, and as the wheel J' makes ten revolutions to every one made by the wheel K' this latter wheel revolves once for every hundred bushels weighed, and the wheel K', making ten revolutions to every one made by the wheel M', this wheel records the hundreds of bushels up to one thousand. Made in the wheel K' near the teeth are the openings O', which come directly over the numbers upon the wheel J', and thus expose them to the view of the operator. By this means the figures of the three wheels are brought together and in a direct line, as shown, so that the number of bushels weighed can be told at a glance.

The construction herein described enables grain to be weighed as it comes from the thrashing-machine, and to be deposited in bags, or it may be emptied into a wagon-bed or bin without any attention whatever on the part of the operator.

The two conveyers or elevators A and P' are of the ordinary endless-belt type, and are run by means of belts in the usual manner.

Having thus described my invention, I claim—

1. In an automatic weighing-machine, the combination of a suitable supporting-frame, a frame pivoted at its center to the supporting-frame, hoppers secured to its ends, a scale-

beam pivoted at its center, connecting-rods which connect the frame and the beam upon opposite sides of their centers, and a rolling or sliding weight placed upon the scale-beam, 5 whereby, when the beam is tilted by the weight of the grain in one of the hoppers, the weight will slide to that end of the beam, and vice versa when tilted by the grain in the opposite hopper, substantially as described.

2. The combination of the supporting-frame, the pivoted frame having a hopper at each end, a scale-beam pivoted at its center, a rolling or sliding weight placed thereon, two levers pivoted to the supporting-frame at their 15 outer ends, and their inner ends to the scale-beam at opposite sides of its center, and the pivoted frame connected to the centers of the levers at opposite sides of its center, all combined to operate in the manner substantially 20 as set forth.

3. The combination of the supporting-frame, the pivoted frame provided with hoppers at each end, the levers pivoted at their outer ends to the supporting-frame, connecting-rods 25 which connect the pivoted frame at opposite sides of its center to the levers, connecting-rods which connect the inner ends of the levers with the scale-beam upon opposite sides of its center, the scale-beam pivoted at its 30 center above the pivoted frame, and the sliding weight, the beam being provided with a device for limiting the movement of the weight, for the purpose specified.

4. The combination of the supporting-frame, 35 a frame pivoted at its center to the supporting-frame, hoppers secured to opposite ends of the pivoted frame, a pivoted scale-beam connected therewith, a weight placed thereon, doors pivoted to the outer edges of the lower

ends of the hoppers, outwardly - extending 40 arms secured to the doors, the horizontal base secured to the supporting-frame, and upwardly-extending connections secured to the base and engaging the outer ends of the arms that are secured to the doors, all combined to op- 45 erate in the manner substantially as described.

5. The combination of the scale-beam, a weight placed thereon, the pivoted frame connected to the beam, the hoppers having an 50 opening in their bottoms, the doors hinged thereto and having an arm connected to the base, vertical latches pivoted to the lower ends of the hoppers, levers pivoted at their outer ends to the upper ends of the latches and 55 their inner ends pivoted upon the base, whereby, when the beam is raised, the doors are closed and the latches made to engage therewith and lock them in a closed position, and which, when the beam is lowered by the 60 weight of the grain, allow the doors to open, substantially as described.

6. The combination of the scale-beam having a weight, the pivoted frame having an arm extending downward below its pivotal 65 point, the base, a vertical lever pivoted to the base at its lower end, and a bifurcated rod pivoted at its outer end to the upper end of the lever, the bifurcated ends of the rod engaging a wheel of the register, and the regis- 70 ter, whereby, when the frame is tilted, the register is operated, substantially as shown.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY HERMANN BOENKER.

Witnesses:

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LOUIS NOLLE.