

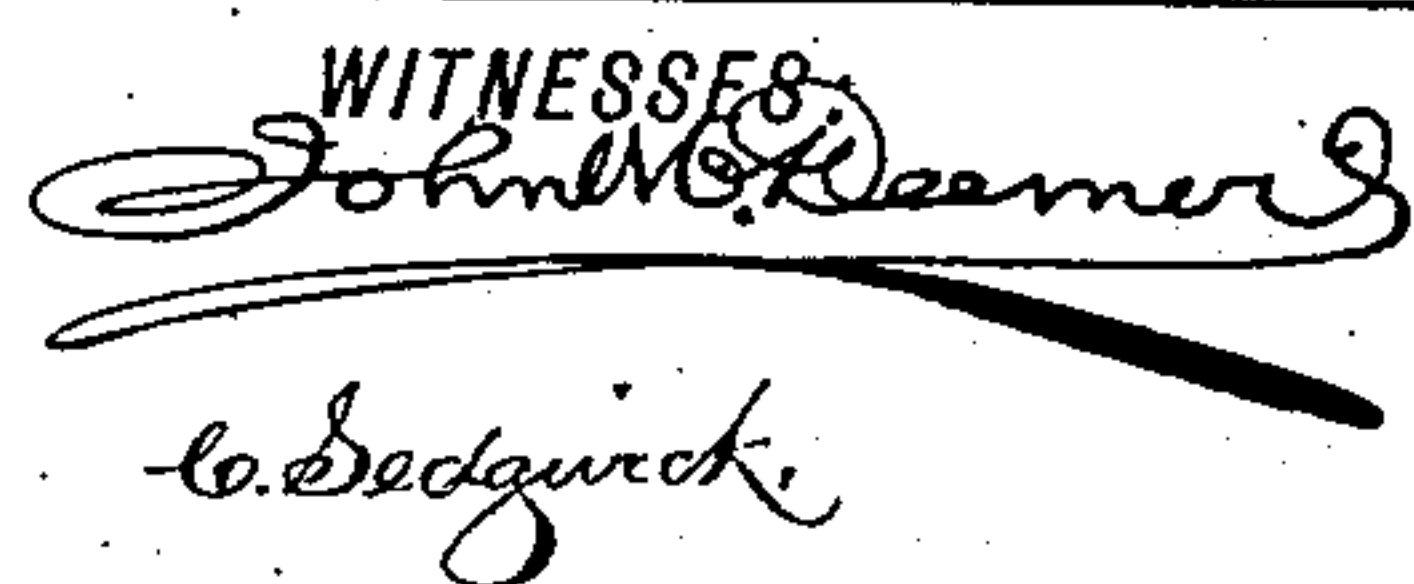
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H. CUTLER.

### GRAIN WEIGHING SCALE.

No. 393,888.

Patented Dec. 4, 1888.



**INVENTOR,**

H. Cutler

**BY**

Mum & Co

ATTORNEY.

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(No Model.)

3 Sheets—Sheet 2.

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Fig. 2.

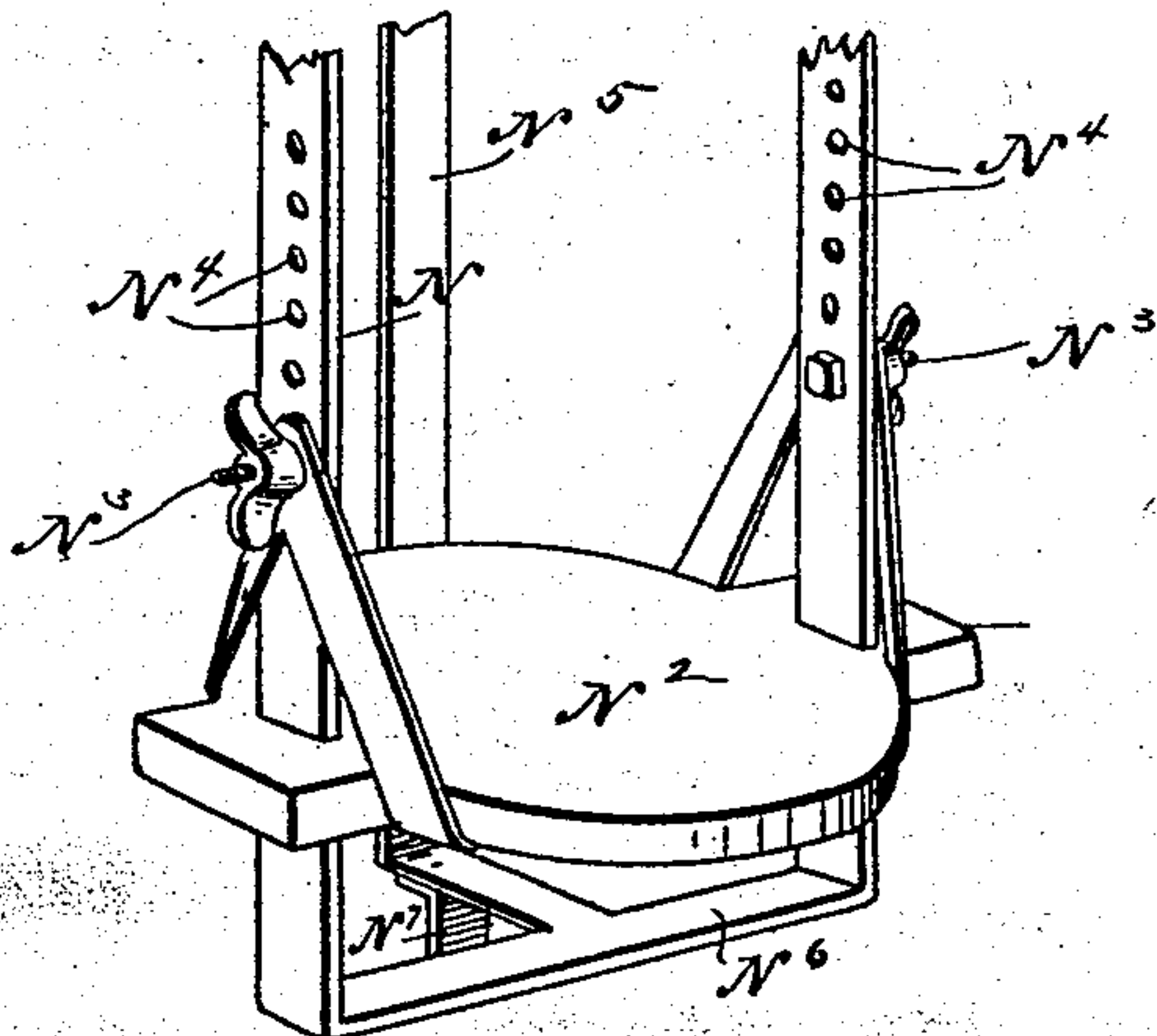


Fig. 3.

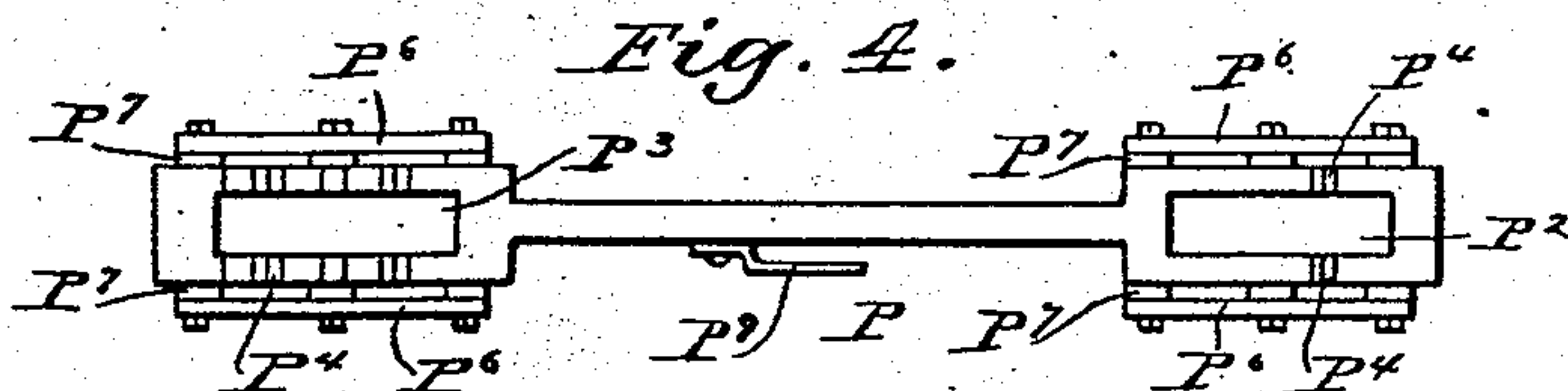
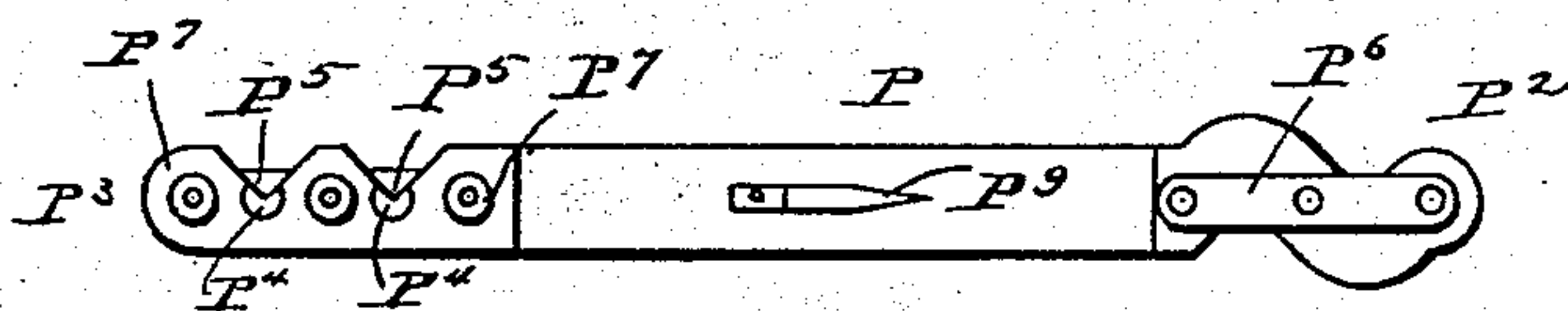
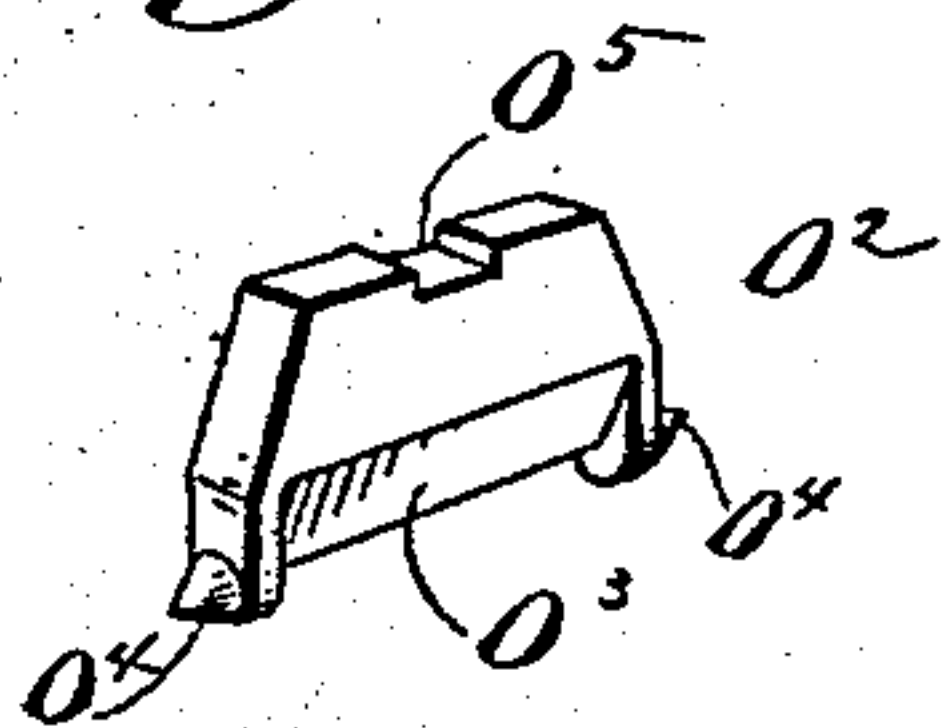


Fig. 5.



WITNESSES:  
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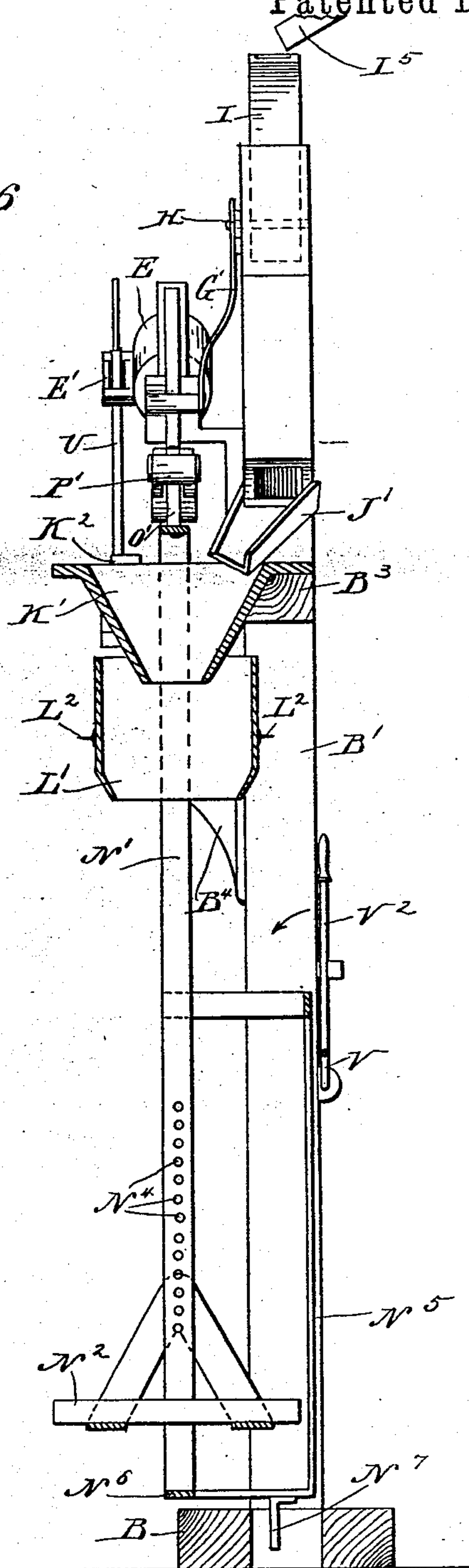
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Fig. 6



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# UNITED STATES PATENT OFFICE.

HENRY CUTLER, OF NORTH WILBRAHAM, MASSACHUSETTS, ASSIGNOR TO  
HENRY WILLIS CUTLER, OF SAME PLACE.

## GRAIN-WEIGHING SCALE.

SPECIFICATION forming part of Letters Patent No. 393,888, dated December 4, 1888.

Application filed April 23, 1888. Serial No. 271,595. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY CUTLER, of North Wilbraham, in the county of Hampden and State of Massachusetts, have invented a new and Improved Automatic Grain-Weighing Scale, of which the following is a full, clear, and exact description.

The invention relates to weighing-scales such as are shown and described in Patent No. 375,267, granted to me December 20, 1887.

The object of the invention is to provide a new and improved scale for weighing grain which is simple and durable in construction, not liable to get out of order, and is automatic in operation, delivering the weighed grain to the bags.

The invention consists of certain parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improvement with parts in section. Fig. 2 is an enlarged perspective view of the lower part of the bag-support. Fig. 3 is an enlarged side elevation of one of the scale-beams. Fig. 4 is a plan view of the same. Fig. 5 is an enlarged perspective view of the knife-bearing, and Fig. 6 is a sectional side elevation of the improvement on the line  $x x$  of Fig. 1.

The improved weighing-scale A is provided with a base, B, in the middle of which is erected a standard, B', carrying a bracket, B<sup>2</sup>, extending equally on both sides of the standard B' and carrying in its middle a bearing, C, on which is mounted to turn an oscillating lever, D, carrying at its upper end a cylinder, E, extending equally on both sides of the said oscillating lever D. The ends of the cylinder E are adapted to rest alternately on the stops F and F', secured on the bracket B<sup>2</sup>, and in the said cylinder travels a ball similar to the one described in the patent above referred to. The ends of the cylinder E are also adapted to strike alternately against the arms G and G', pivoted at their lower ends to the bracket

B<sup>2</sup>, and at their other ends pivotally connected to the horizontal bar H, mounted to slide in suitable bearings formed on the front of the standard B'. The arms G and G' may be rigidly secured to the bar H in order to move the latter when struck by the respective end of the cylinder E. The bar H is provided in its middle with the lugs H', between which is held a pin, I', secured to the oscillating hopper I, fulcrumed at I<sup>2</sup> to the upper end of the standard B'. The pin I' passes through the segmental slot I<sup>3</sup>, formed in the front of the standard B'. The hopper I is provided with a transverse partition, I<sup>4</sup>, thus forming two compartments adapted to connect, respectively, with the upper ends of the chutes J and J', extending downward in opposite directions and opening into the cone-shaped hoppers K and K', secured by suitable flanges to the longitudinal beam B<sup>3</sup>, secured to the standard B' and supported at its ends by posts B<sup>5</sup>, resting on the base B. A delivery-chute, I<sup>5</sup>, is held above the upper end of the hopper I and discharges alternately into the two compartments of the hopper I, according to the position of the latter, and the respective compartment connects with its chute J or J', so that all clogging is prevented.

The hoppers K and K' open into the cylinders L and L', respectively, each provided on its outside with pins L<sup>2</sup>, on which the mouths of the bags are secured, the bags fitting around the cylinders L or L', respectively. The cylinders L and L' are supported on the frames N and N', respectively, connected at their upper ends by links O and O', respectively, with the scale-beams P and P', respectively, fulcrumed on the links Q and Q', respectively, pivoted at the outer ends of the bracket B<sup>2</sup>. The scale-beams P and P' are also connected by the links R and R' with the slotted links R<sup>2</sup> and R<sup>3</sup>, respectively, pivotally connected with the poises S and S', respectively, adapted to rest in their lowermost positions on the bracket B<sup>4</sup>, secured to the standard B'.

The links R<sup>2</sup> and R<sup>3</sup> are slotted, so that the links R and R' move freely in the same until the scale-beam P or P', respectively, is in nearly a horizontal position, after which the



links R and R' lift the links R<sup>2</sup> and R<sup>3</sup> and the poises S and S', respectively, as hereinafter more fully described.

The scale-beams P and P' are also connected with the oscillating lever D by links T and T', the levers D' and D<sup>2</sup>, and the arms D<sup>3</sup> and D<sup>4</sup> in the same manner as described in the patent above referred to. The links T and T' take the place of the S-shaped hooks. On the lever D is pivoted a pointer, U, which extends upward and passes through a slot in the guide-arm E', secured to the cylinder E. In the slot of the guide-arm E' are held adjustably the set-screws E<sup>2</sup> and E<sup>3</sup>, so that the movement of the pointer U in the said slot of the guide-arm E' can be increased or diminished. This pointer serves as a balancing-poise, and it is allowed by the screws E<sup>2</sup> and E<sup>3</sup> to go out farther from the center in order to increase or diminish the load to be weighed.

The bearing-points of the scale-beams P and P' are made in the following manner, and as fully illustrated in Figs. 3, 4, and 5: Each scale-beam P or P' is provided at its ends with the slotted heads P<sup>2</sup> and P<sup>3</sup>, of which the head P<sup>2</sup> is provided with two bearing-points—one on its under side and one on top—to accommodate the links Q and O or Q' and O', respectively, and on the other head, P<sup>3</sup>, are formed two bearing-points on its top edge to accommodate the links R T or R' T'. Each bearing-point is made by two pins, P<sup>4</sup>, inserted in corresponding slots in the sides of the heads P<sup>2</sup> and P<sup>3</sup>, and a V-shaped groove, P<sup>5</sup>, is filed into each of the said pins P<sup>4</sup>. Thus when the V-shaped groove is worn out by constant use of the scale the respective pin P<sup>4</sup> can be removed from the head of the beam P or P' and replaced by a new one. In each V-shaped groove P<sup>5</sup> of each bearing fits the knife-edge O<sup>3</sup> of a block, O<sup>2</sup>, held by the respective links O O', Q Q', R R', and T T'. Said links are fitted over a slot, O<sup>5</sup>, in the said block O<sup>2</sup>, and at each end of the knife-edge O<sup>3</sup>, and in line with the same, is formed a pivot, O<sup>4</sup>, bearing against longitudinal bars P<sup>6</sup>, secured to projecting lugs P<sup>7</sup> on the said heads P<sup>2</sup> and P<sup>3</sup> by set-screws or other suitable means, thus holding the blocks O<sup>2</sup> and their connecting-links in place. Thus the links secured to the blocks O<sup>2</sup> are prevented from moving on account of being held in the slots O<sup>5</sup>, and the blocks O<sup>2</sup> are prevented from moving endwise by the pivots O<sup>4</sup>, resting against the longitudinal strips P<sup>6</sup>. In the middle of each scale-beam P or P' is secured a pointer, P<sup>9</sup>, pointing on the outside of a marking-bar, P<sup>8</sup>, secured to the bracket B<sup>2</sup> and serving to indicate the correct weight when the pointer reaches a corresponding mark or line on the bar P<sup>8</sup>.

Each bag-frame N or N' is provided with a bottom, N<sup>2</sup>, on which rests the bottom of the bag, and the said bottom N<sup>2</sup> is held vertically adjustable on the frames N and N' by means of thumb-screws N<sup>3</sup>, passing through one of

the apertures N<sup>4</sup>, formed in the sides of the frames N and N', respectively, as is plainly shown in Fig. 2. Thus the bottom N<sup>2</sup> is made adjustable, so as to accommodate bags of different lengths. Each bag-frame N or N' is also provided in its lower part with a guard, N<sup>5</sup>, to prevent the bag from falling rearward when being filled. The said guard is connected at its lower end with the connecting-bar N<sup>6</sup> of the frame N or N', and is also provided with a lug, N<sup>7</sup>, adapted to engage the rear end of the base B, as shown in Fig. 6. A crank-arm, V, is adapted to operate against the rear of the said guard N<sup>5</sup>, so that the bag-frame N or N' will swing forward and be held in place while the filled bag is being replaced by an empty one. The bag-frame N or N', respectively, is then pressed with its upper end against the lugs K<sup>2</sup> of the hoppers K or K' and the lug N<sup>7</sup> is firmly pressed against the base B, so as to prevent the bag-frame from moving. The crank-arm V is secured on a shaft, V', mounted to turn in suitable bearings on the posts B<sup>3</sup> and the standard B'. A lever, V<sup>2</sup>, is secured on the said shaft V' and serves to turn said shaft so as to engage its crank-arm V with the respective bag-frame N or N' or disengage it from the same.

The operation is as follows: When the machine is in the position shown in Fig. 1, the oscillating hopper I discharges into the spout J', so that the grain passing down the latter falls into the cone-shaped hopper K', and from the latter passes into the cylinder L', around which hangs the bag to be filled, so that the grain falls from the said cylinder L' directly into the bag, resting with its bottom on the bottom N<sup>2</sup> of the frame N'. When the grain falls into the cone-shaped hopper K', its fall is broken and the grain revolves on account of the shape of the said hopper K' before it enters the cylinder L'. When the desired amount of grain has accumulated in the bag, the bag-frame N' swings downward, so that the link O', acting on the outer end of the head P<sup>2</sup> of the scale-beam P', causes the said head P<sup>2</sup> to swing downward, the fulcrum being the link Q'. The other head, P<sup>3</sup>, of the scale-beam P' swings upward and acts by the link T' on the lever D<sup>2</sup> and the arm D<sup>4</sup> of the oscillating lever D, so that the latter is caused to swing to the other side. The link T' then hangs free, and the link R' now engages the upper end of the slotted link R<sup>3</sup> and the poise S' is lifted to prove the accuracy of the automatic weight of the load on the frame N'. The movement of the lever D causes the cylinder E to swing to the other side, so that the left-hand end of the cylinder E is thrown in contact with the arm G and causes the latter to swing to the left, so that the bar H is moved similarly and acts by its lugs H' on the pin I', so that the hopper I is shifted, and its lower end now opens into the spout J. The cylinder E then rests with its left end on the stop F. The grain passing



into the hopper I passes down the spout J into the cone-shaped hopper K and into the bag suspended from the cylinder L of the frame N. The same operation as above described is repeated. The filled bag on the frame N' is now removed and replaced by an empty one, whereby the poise S' again causes the scale-beam P' to assume the position shown in Fig. 1 as soon as the filled bag is removed. The swinging motion of the pointer U, connected with the oscillating lever D, is changed according to the weight of the bags by adjusting the thumb-screws E<sup>2</sup> and E<sup>3</sup> so that the movement of the said arm is increased or diminished, and consequently more or less power is required for the scale-beams P and P' to change the position of the oscillating lever D by the links T and T' engaging the levers D' and D<sup>2</sup> and the latter the arms D<sup>3</sup> and D<sup>4</sup> of the said oscillating lever.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a weighing-scale, the combination of an oscillating lever carrying a cylinder at its upper end, weighing-beams loosely connected to the said lever, bag-frames supported on the beams, a pivoted grain-hopper, pivoted arms against which the ends of the cylinder strike, and a sliding bar to the ends of which the said arms are attached and by which the hopper is shifted, substantially as herein shown and described.

2. In a weighing-scale, the combination of an oscillating lever carrying a cylinder, weighing-beams connected to the said lever, bag-frames supported on the beams, fixed hoppers opening into the bag-frames, a pivoted grain-hopper, chutes leading from the pivoted hopper to the fixed hopper, pivoted arms against which the ends of the cylinder on the oscillating lever strike, a sliding bar to the ends of which the said arms are attached, and a connection between the sliding bar and pivoted hopper for moving the latter from the former, substantially as herein shown and described.

3. In a weighing-scale, the combination, with an oscillating lever carrying a cylinder, of weighing-beams connected by links with the said lever, bag-frames supported on the said weighing-beams and provided with a cylinder on which the mouths of the bags are fastened, fixed cone-shaped hoppers opening into the said cylinders, a pivoted grain-hopper provided with a central partition to form two compartments connecting with chutes leading to the said cone-shaped hoppers, the said grain-hopper being operated from the said oscillating lever, substantially as shown and described.

4. In a weighing-scale, the combination, with a pivoted grain-hopper, of a pin projecting from the said hopper, a bar adapted to slide longitudinally and connected with the said pin, arms connected with the ends of the

said bar, an oscillating lever operating on the said arms, and chutes extending in opposite directions and with which the lower end of the said grain-hopper connects alternately, substantially as shown and described.

5. In a weighing-scale, the combination, with a scale-beam provided with two slotted heads each having two sets of pins provided with V-shaped recesses, of blocks each having a knife-edge and fitting onto the V-shaped recesses of one set of pins, and links supporting the said blocks, substantially as shown and described.

6. In a weighing-scale, the combination, with a scale-beam having two slotted heads and pins secured to the said heads, and each having a V-shaped recess, of blocks each having a knife-edge fitting on the said V-shaped recesses of the said pins, pivots formed on the ends of the knife-edge of each block and in line with the knife-edge, said pivots bearing against longitudinal bars secured to lugs on the scale-beam, causing the connecting-links to hang in the middle of slot through which they pass, thus preventing friction upon its sides, and links supporting the said blocks and fitting into a recess on the middle of the said block, the said links passing through the slots of the heads of the scale-beams, substantially as shown and described.

7. In a weighing-scale, the combination, with a scale-beam having two slotted heads and pins secured to the said heads and each having a V-shaped recess, of blocks each having a knife-edge fitting on the said V-shaped recesses of the said pins, and also provided with pivots at each end and in line with the said knife-edge, links supporting the said blocks and fitting into a recess on the middle of the said block, the said links passing through the middle of the said block, and the said links passing through the slots of the heads of the scale-beams, and plates secured to the faces of the heads of the said scale-beams to form a bearing for the pivots of the said blocks, substantially as shown and described.

8. In a weighing-scale, the combination, with a weighing-beam, of a bag-frame supported on one end of the said beam, a link held on the other end of the said beam, a slotted link engaged by the said first-named link, and a poise secured on the said slotted link, substantially as shown and described.

9. In a weighing-scale, a weighing-beam, an oscillating lever connected with the one end of the said weighing-beam, and a bag-frame held on the other end of the said weighing-beam, in combination with a link held on the said weighing-beam next to the said oscillating lever, and a poise resting on a fixed bracket and having a slotted link engaged by the said first-named link, substantially as shown and described.

10. In a weighing-scale, the combination, with scale-beams, of bag-frames supported on the said scale-beams, a cylinder held in the



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middle of each of the said bag-frames and  
supporting the mouth of the bag to be filled,  
a bottom held to slide vertically on each bag-  
frame, screws for securing the said bottom in  
5 place on the bag-frame, a crank-arm operating  
on each of the said bag-frames, a shaft carry-  
ing the said crank-arm, and a lever for turn-

ing the said shaft so that the said bag-frames  
are locked in position to remove the filled bags,  
substantially as shown and described.

HENRY CUTLER.

Witnesses:

HENRY A. LOOMIS,  
ALBERT BOEDEKER.