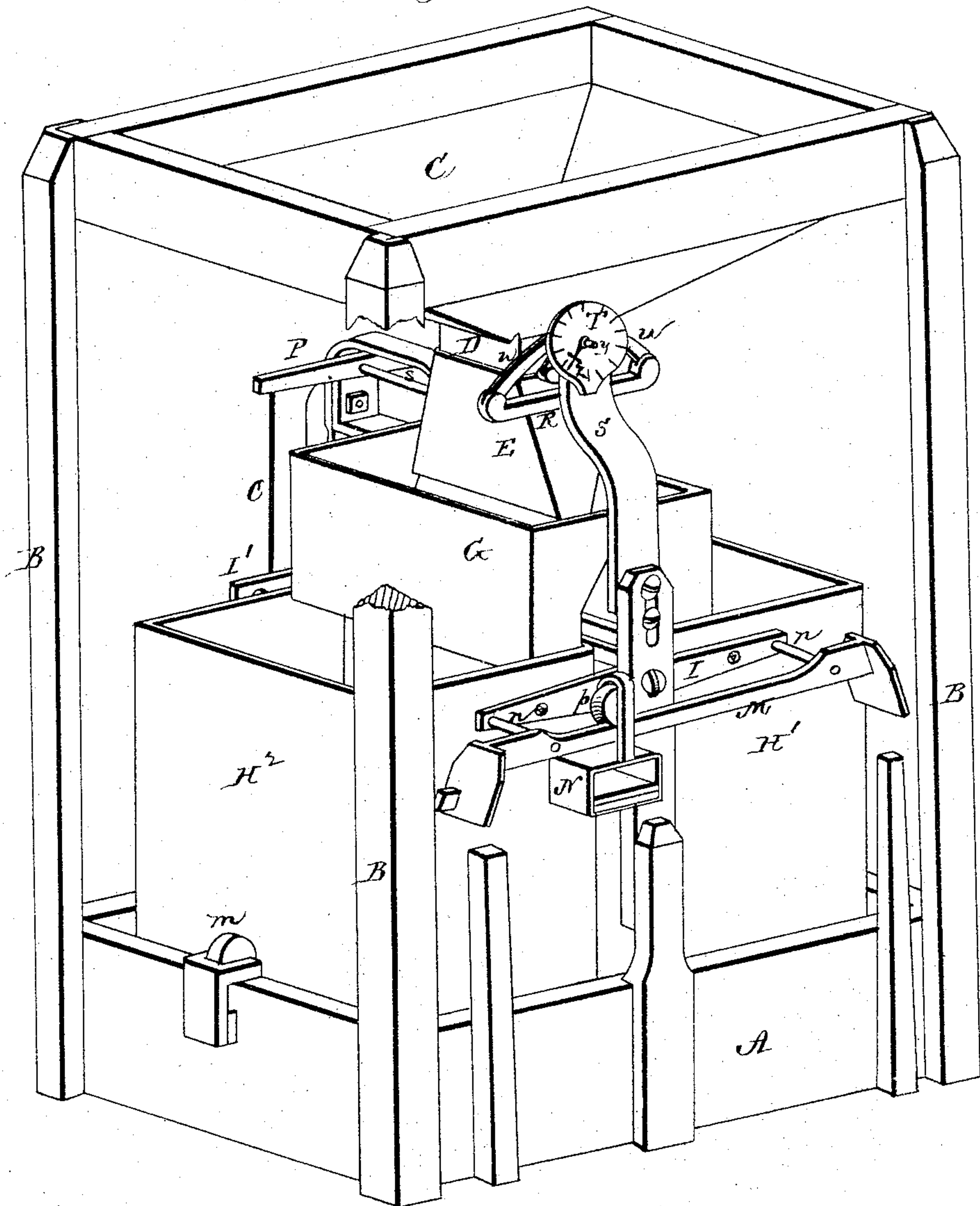


C. J. PAINE.  
Grain-Scales.

No. 153,369.

Patented July 21, 1874.

Fig 1



WITNESSES.  
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C. L. Evert.

By

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Alexander M. Mott

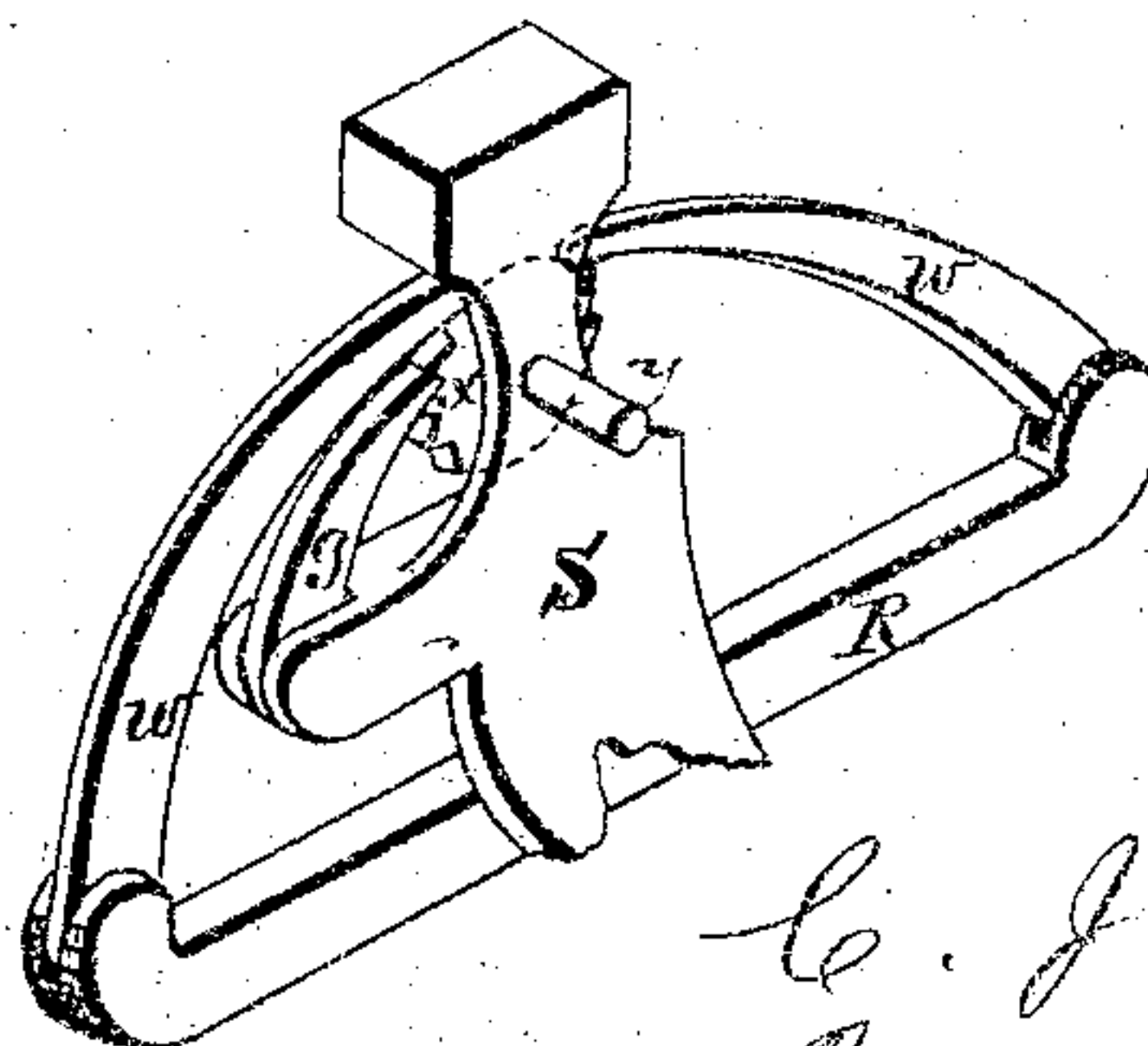
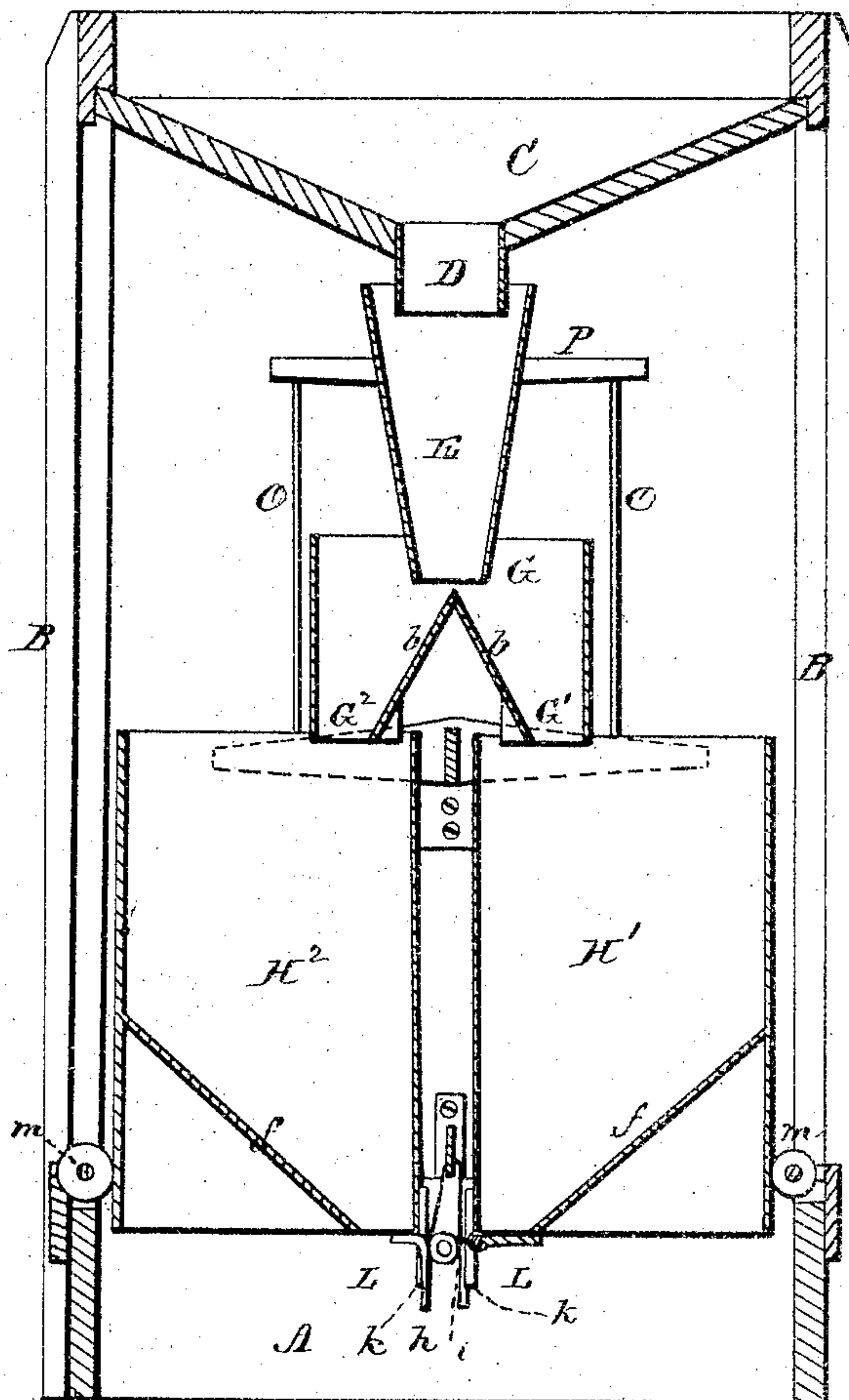
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Fig 2



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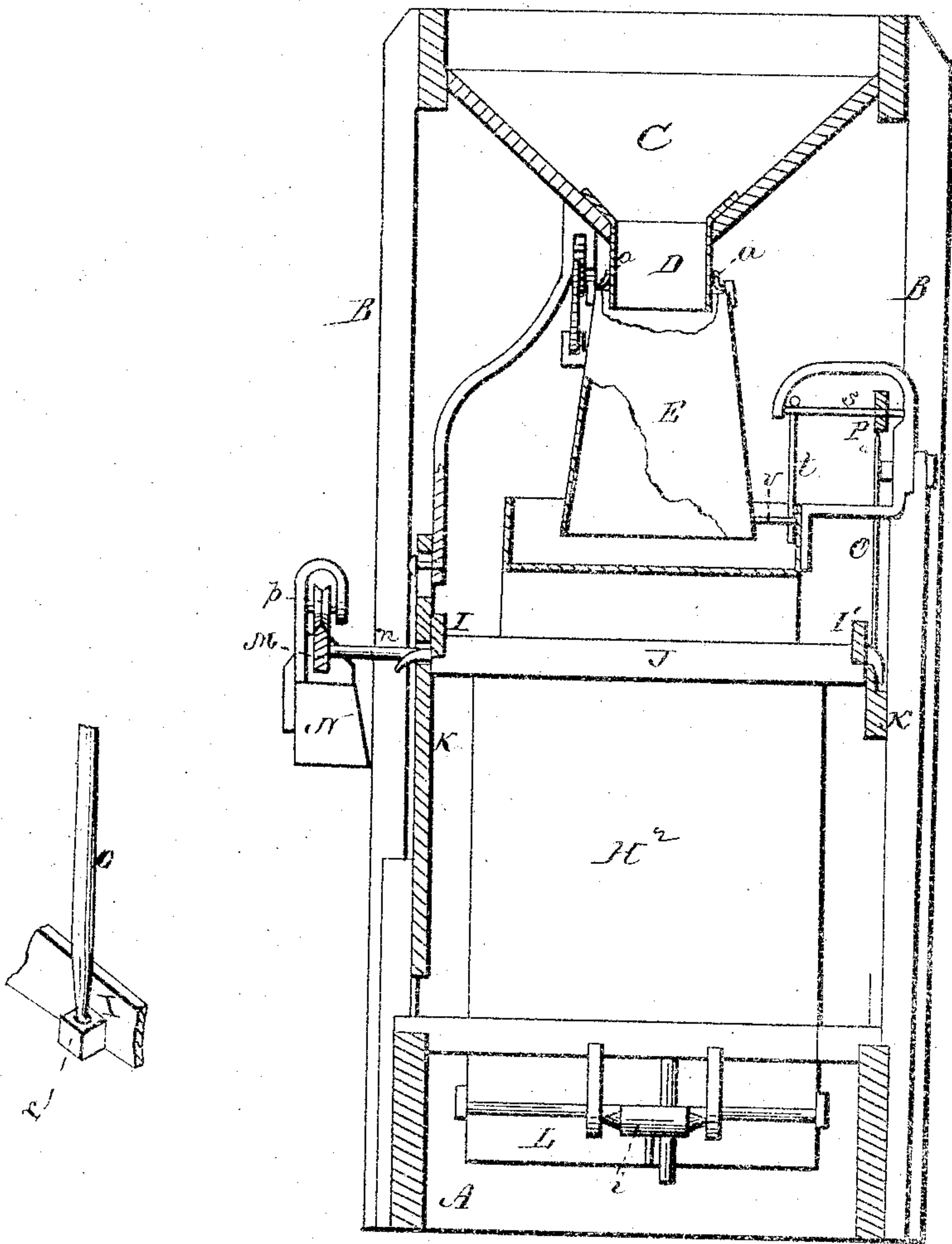
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Fig 3



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# UNITED STATES PATENT OFFICE.

CLINTON J. PAINE, OF YOUNG AMERICA, ILLINOIS, ASSIGNOR TO HIMSELF  
AND THOMAS W. BEERS, OF SAME PLACE.

## IMPROVEMENT IN GRAIN-SCALES.

Specification forming part of Letters Patent No. **153,369**, dated July 21, 1874; application filed  
April 25, 1874.

*To all whom it may concern:*

Be it known that I, CLINTON J. PAINE, of Young America, in the county of Warren and in the State of Illinois, have invented certain new and useful Improvements in Grain-Scales; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consists in the construction and arrangement of a balance-scale for weighing grain from a steady stream, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, in which—

Figure 1 is a perspective view of my scale. Fig. 2 is a longitudinal vertical section, and Fig. 3 is a transverse vertical section, of the same.

A represents a bottom or base frame, from which rise four corner-posts, B B, supporting at their upper ends a hopper, C. The four sides of this hopper all incline toward the center, where is a suitable aperture with a collar, D, extending downward from the same. On opposite sides of the collar D are pins *a a*, upon which is hung a spout, E. Below this spout is a case, G, into the top of which the lower end of the spout is allowed to swing back and forth. In the case G are two inclined partitions, *b b*, which come together with their upper edges in the center of the case, and thus divide the same into two channels or passages, G<sup>1</sup> and G<sup>2</sup>, as shown in Fig. 2, and the space between said channels or stationary spouts is left open by the cutting out of the sides of the case. H<sup>1</sup> and H<sup>2</sup> represent the two weighing-buckets, which are hung, by means of projecting pins *d d*, in the ends of two beams, I and I'. These beams are firmly secured on a middle beam, J, passing between the two buckets, and resting in suitable bearings on standards K K. Each of the weighing-buckets is provided with an inclined partition or bottom, *f*,

extending from the outer side downward and inward to a suitable distance from the inner side, and the opening thus left along the inner side is provided with a downward-opening valve, L, which is hinged along the inner edge of the bucket, and closes against the lower end of the partition *f*. Each valve is provided with an arm, *h*, extending at right angles with it, and each bucket is at its lower end, on the inner side, provided with a rod, *k*. The arms *h* and rods *k* of the two buckets are held close to opposite sides of an elongated roller, *i*, by means of a friction-roller, *m*, against which the outer side of each bucket bears as it moves up and down.

In the operation of this grain-scale, one bucket descends as the other ascends. The valve of the ascending bucket is closed by its arm *h* being held in a vertical position by the roller *i*, while the descending bucket has its valve opened by the weight of the grain upon it, the arm of said valve passing under the roller *i*. The rods *k*, attached to the inner sides of the buckets, and working against the roller *i*, simply prevent any lateral motion of the buckets, guide them, in connection with the rollers *m*, in their upward and downward movement, and reduce the friction which would be produced if the whole side of the bucket was against the roller. From each end of the beam I extends a rod, *n*, to which is attached a beam, M, forming a track for the passage of a roller, *p*. This roller is hung in a frame attached to a weight-box, N, containing any desired number of weights. On the rear side of the rear beam I', a suitable distance from each end, is formed a lug, *r*, which is recessed on its upper side, and in which is placed a pointed rod, O, the upper end of said rod being also pointed, and inserted in a recess in the under side of a beam, P. This beam is attached to a shaft, *s*, which has its bearings in a suitable frame attached to the back standard *k*. The shaft *s* is provided with a slotted arm, *t*, in which is placed a pin, *v*, extending from the rear side of the spout E.

It will readily be seen that by the movements of the buckets the spout E is moved laterally



from one side of the partitions *b* in the case *G* to the other, so that the spout will be changed to be always over the passage in said case leading to the bucket which is up and has its valve closed.

On the front side of the spout *E* is secured a bar, *R*, the ends of which are turned upward and forked, and in the same are pivoted two dogs, *w w*, which engage with a ratchet-wheel, *x*, upon a horizontal shaft, *y*, having its bearings in a frame, *S*, attached to the hopper *C* and front standard *K*. The front end of the shaft *y* passes through the center of a dial-plate, *T*, attached to the front of the frame *S*, and upon the shaft is secured a hand, *z*. To the frame *S* is connected a pawl, *g*, to engage with the ratchet-wheel *x*, to prevent the same from turning back.

The operation of this grain-scale is as follows: Supposing that the bucket *H*<sup>2</sup> is down discharging the grain therein, and the bucket *H*<sup>1</sup> is up, the spout *E* is over the passage *G*<sup>1</sup>, and the valve *L* of the bucket *H*<sup>1</sup> closed. The grain passes then from the hopper *C* down through the spout *E* and passage *G*<sup>1</sup> into the bucket *H*<sup>1</sup>, and as soon as the grain in this bucket overbalances the weights in the box *N*, the said bucket descends, raising the bucket *H*<sup>2</sup>, closing its valve, changing the spout *E*, and the weight-box *N* passes to the other end of the track *M*. The valve of the descending bucket *H*<sup>1</sup> opens and allows the grain to discharge therefrom, while the bucket *H*<sup>2</sup> receives grain from the hopper, and thus alternately weighing one bucket of grain at a time. Each movement of the spout operates the index-hand *g*, to show on the dial-plate the amount

of grain passing through the scale. In this manner grain may be weighed from a steady stream.

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

1. The combination of the buckets *H*<sup>1</sup> *H*<sup>2</sup>, beams *I* *I'*, balance-beams *J*, rods *n n*, beam or track *M*, and weight-box *N*, all substantially as and for the purposes herein set forth.

2. The swinging spout *E*, operated from the beam *I'* by means of the rods *O*, beam *P*, shaft *s*, slotted arm *t*, and pin *v*, substantially as and for the purposes herein set forth.

3. The combination, with the swinging spout *E*, of the bar *R*, pawls *w w* and *g*, ratchet-wheel *x*, shaft *y* with index *z*, and dial *T*, as and for the purposes herein set forth.

4. The combination of the hopper *C*, swinging spout *E*, box *G*, with interior partitions forming passages *G*<sup>1</sup> *G*<sup>2</sup>, and the buckets *H*<sup>1</sup> *H*<sup>2</sup>, all substantially as and for the purposes herein set forth.

5. The combination, in a grain-scale, of the buckets *H*<sup>1</sup> *H*<sup>2</sup>, the swinging spout *E*, and the index *T* *t*, the spout being operated by the buckets, and the index by the spout, all substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 20th day of April, 1874.

CLINTON J. PAINE. [L. S.]

Witnesses:

H. W. ALLEN,

WM. L. JOHNSON.