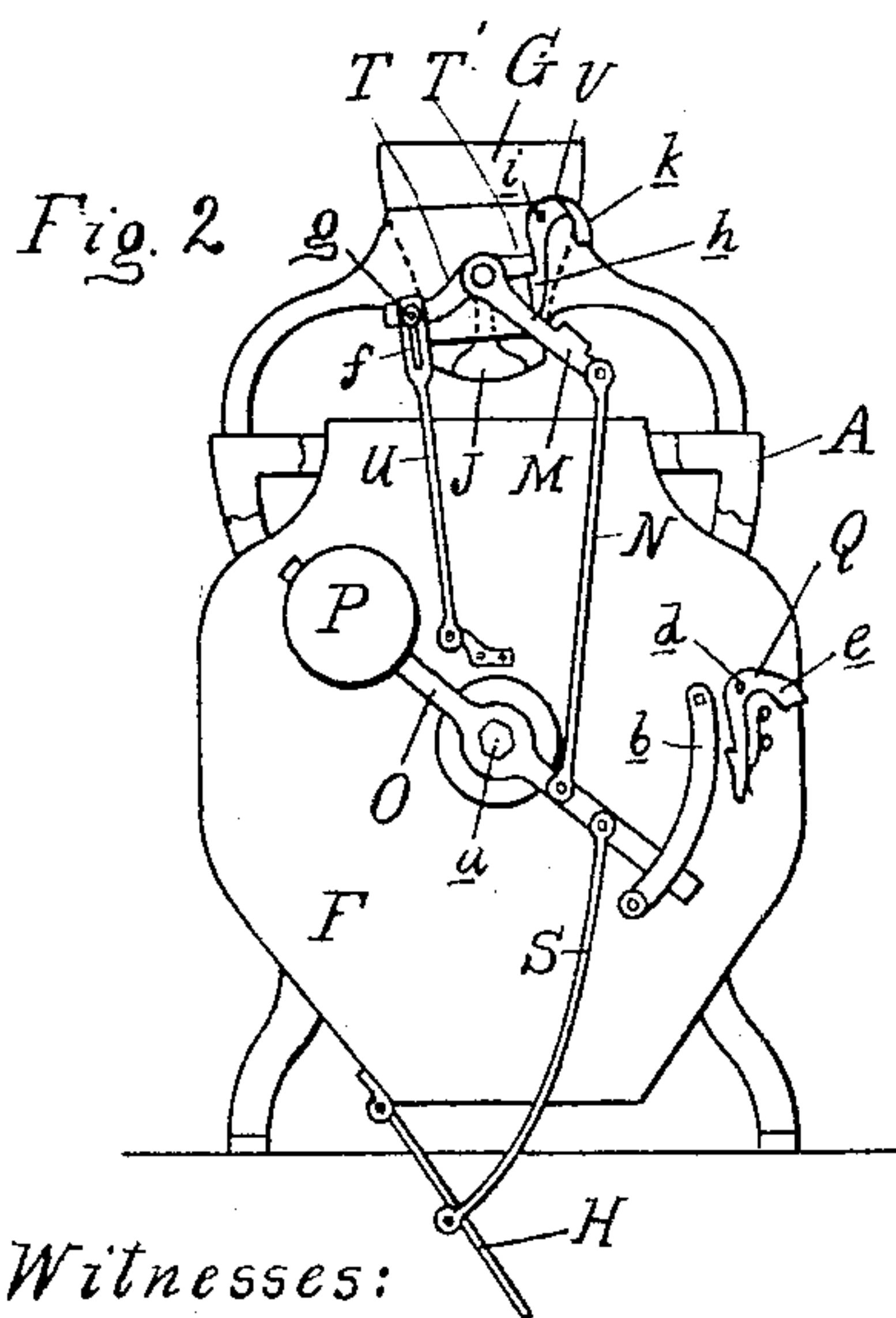
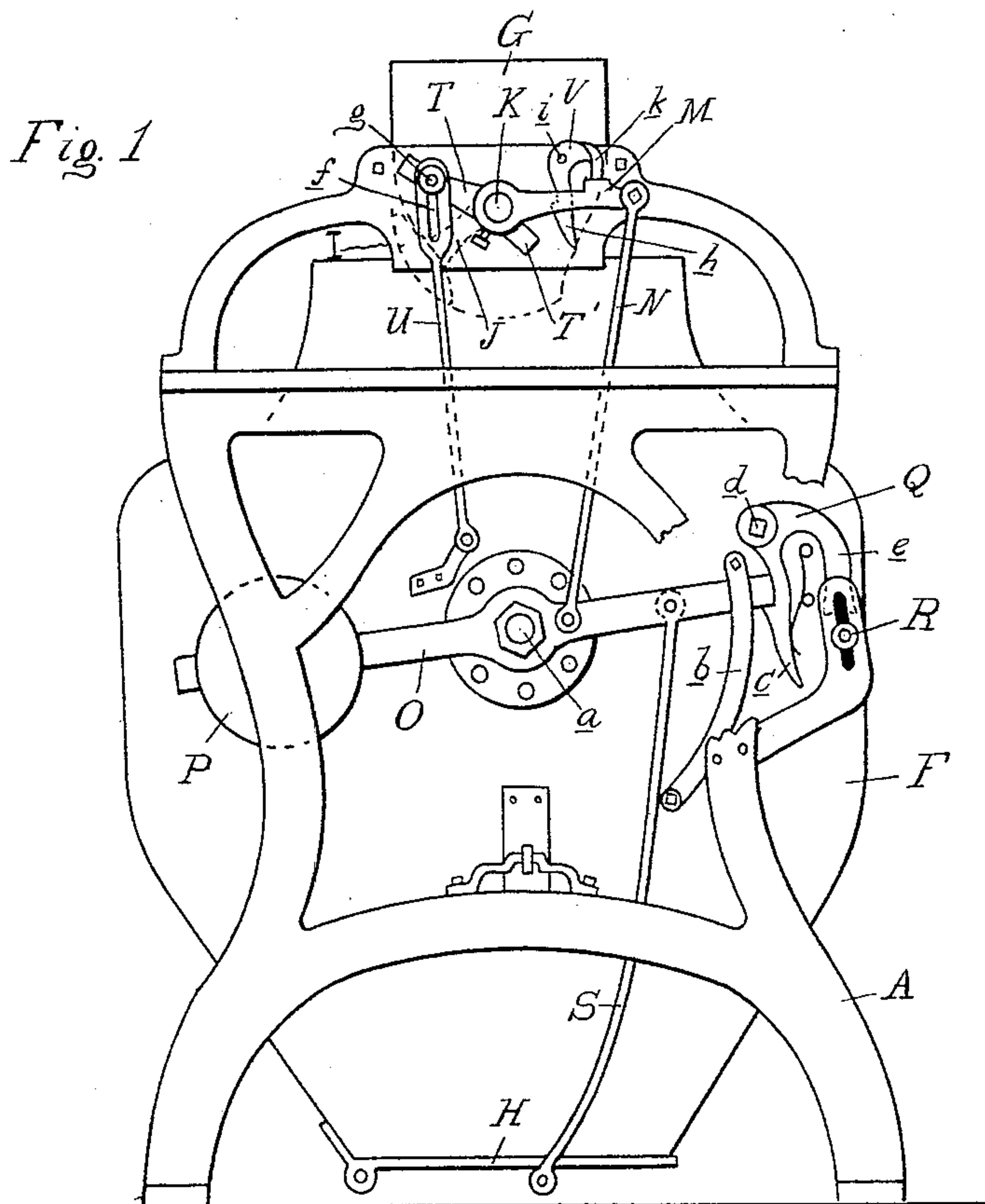


J. B. DUTTON.

GRAIN, FLOUR, AND FEED SCALE.

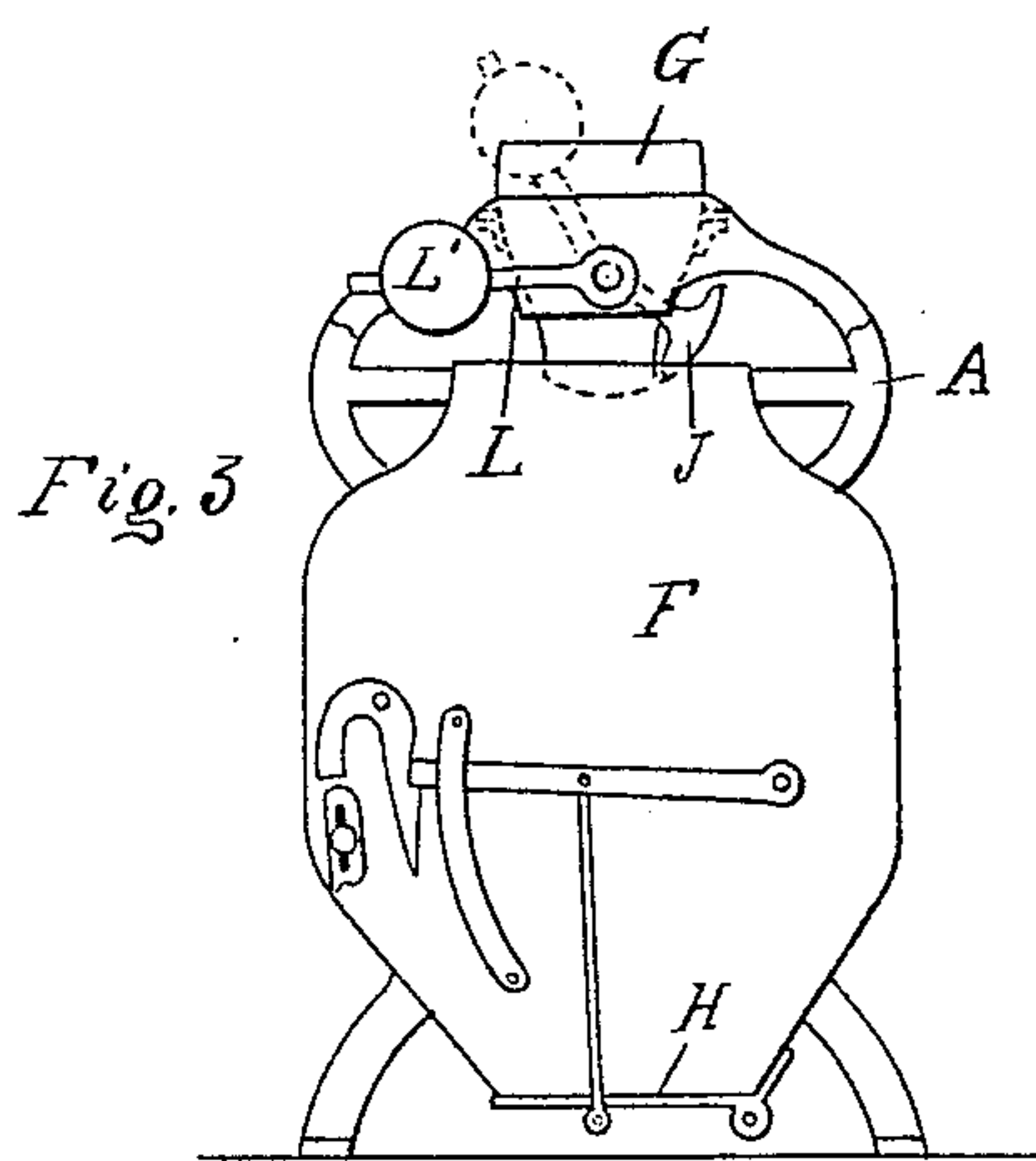
No. 387,154.

Patented July 31, 1888.



Witnesses:

*P. M. Hulbert,*  
*N. J. Sprague.*



Inventor:

*Joseph B. Dutton.*

*By Thos. T. Sprague & Son,*  
*Att'y.*

(No Model.)

2 Sheets—Sheet 2.

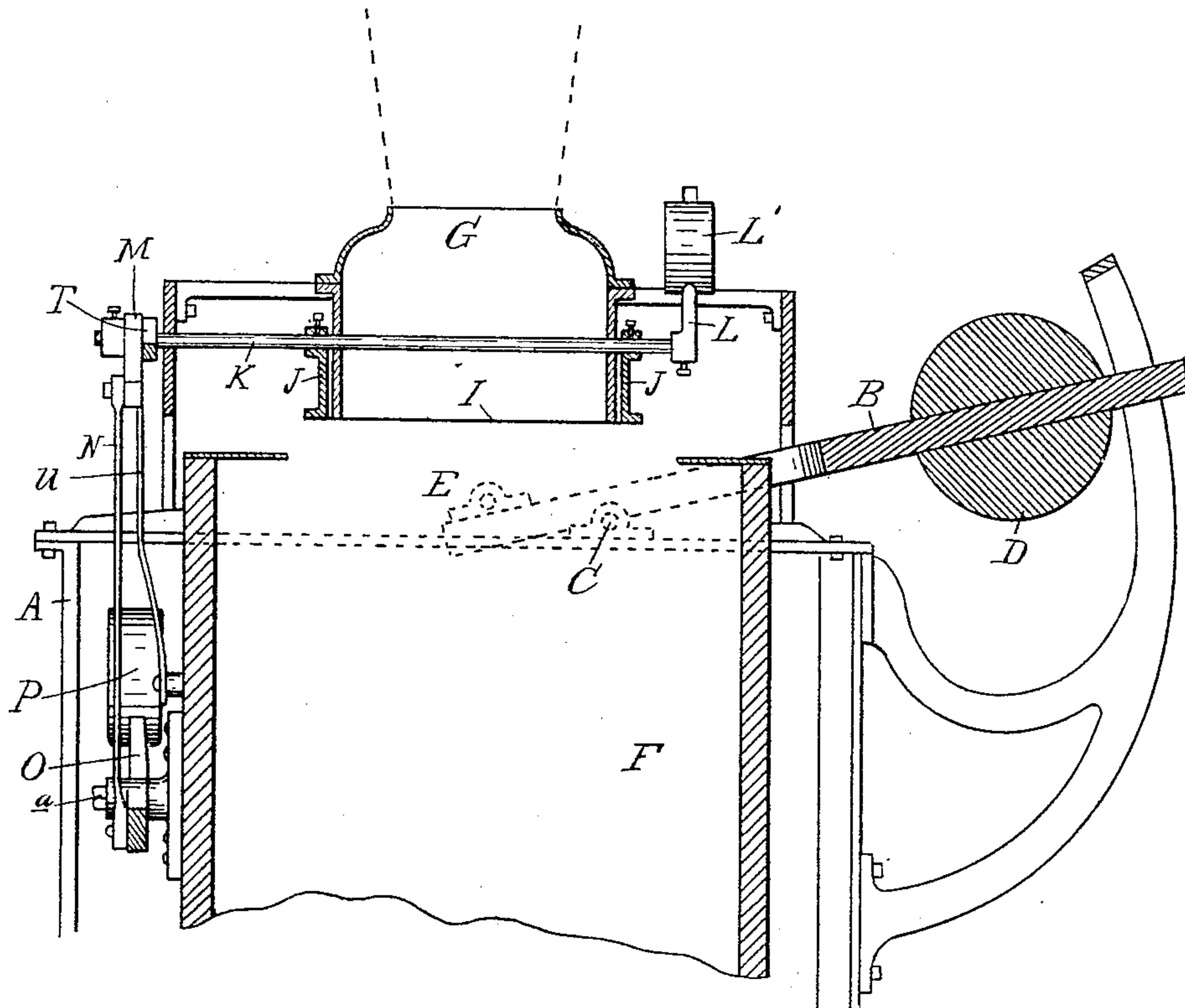
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Fig. 4



Witnesses:

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# UNITED STATES PATENT OFFICE.

JOSEPH B. DUTTON, OF DETROIT, MICHIGAN.

## GRAIN, FLOUR, AND FEED SCALE.

SPECIFICATION forming part of Letters Patent No. 387,154, dated July 31, 1888.

Application filed October 28, 1887. Serial No. 253,648. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH B. DUTTON, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Automatic Grain, Flour, and Feed Scales, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to new and useful improvements in automatic grain-scales of that class wherein the grain is automatically weighed while in transit.

15 My invention is especially designed for use for grain-elevators and mills; and it consists in the novel construction and arrangement of the automatic cut-off which regulates the admission and discharge of the grain from the weighing-receptacle, all as more fully hereinafter described.

20 In the drawings which accompany this specification, Figures 1 and 2 are end elevations with the cut-off valves in alternate reverse position. Fig. 3 is an end elevation of the end opposite to the one shown in Figs. 1 and 2, and Fig. 4 is a central longitudinal section.

A is a suitable frame supporting the operating mechanism.

25 B is a scale-beam fulcrumed on top of the frame in suitable journals, C, and provided with adjustable weighing-weight D, and the trunnions E, upon which the weighing-receptacle F is freely suspended between the forked ends of the scale-beam, all in known manner.

30 G is a hopper, into which the grain-spout leads, and this hopper is supported in any suitable manner upon the frame immediately on top of the receptacle and entirely independent and disconnected therefrom.

35 H is a door or cut-off hinged at the discharge-opening of the receptacle and provided with operating mechanism whereby that door is closed and opened automatically, as more fully hereinafter described.

40 I is an oscillating door or cut-off for the discharge end of the hopper, and consists of a cylindrical segmental plate attached to rock-arms J, which are secured upon a shaft, K, all so arranged that by rocking the shaft the discharge end of the hopper may be closed or disclosed by said cut-off by means of the automatically-operating devices hereinafter described. One end of the shaft K is provided

with a rock-arm, L, upon which is adjustably secured the counter-weight L'. The opposite end of this shaft K has loosely sleeved thereto the link M, the free end of which has pivotally secured to it one end of the connecting-rod N, the other end of which is secured in like manner to the lever O. This lever O is fulcrumed at a to the rear wall of the receptacle, and is free to swing in a vertical plane. At one end it is provided with the counter-weight P, and its opposite end projects through the curved guide b, and is adapted to engage with the hook c, formed on one end of the locking-lever Q, which is pivotally secured at d to the receptacle and has its other arm, e, terminating in proximity to a fixed stop, R, which is vertically adjustably secured in any suitable manner to the frame A.

S is a connecting-rod between the lever O and the door H, adapted to open and close the door by the movement of the lever O.

T is a rock-arm secured upon the shaft K, and U is a connecting-rod pivotally secured at its lower end to the receptacle, and provided at its upper end with the vertical slot f, which engages upon a wrist, g, on the rock-arm T. Another rock-arm, T', preferably formed integrally with rock-arm T, projects in opposite direction to the rock-arm T sufficiently to engage at a certain position of the parts, as shown in Fig. 2, with the hook h, formed at one end of the locking-lever V. This locking-lever is pivotally secured at i to the frame of the machine, and its free end k projects within the path of the link M.

In practice, the parts being constructed and arranged as described, the normal position of the parts—that is, when the receptacle is empty—as shown in Fig. 1, wherein the free end of the lever O is shown to be locked in position by the locking-lever Q and by means of the connecting-rod S from said lever to the door H, the latter is thereby firmly locked in a closed position, while the cut-off I is held at the same time in an open position by the action of the counter-weight L'. Now, if grain flows into the hopper G it will fall into the receptacle and accumulate therein until its weight overbalances the weight D upon the scale-beam and thereby cause the receptacle to drop. This dropping movement of the receptacle operates the parts in the following manner: As soon as the receptacle begins to drop, the con-



necting-rod U, pulling on the rock-arm T, rocks the shaft K, which movement carries the cut-off I to close the discharge-opening of the hopper, thereby preventing the further flow of grain into the receptacle. Simultaneous with this movement the arm T' engages with the hook *h* of the locking-lever V, thereby locking the cut-off in its closed position, all as shown in Fig. 2. As soon as this is completed, the dropping of the receptacle brings the free end *e* of the locking-lever Q in contact with the stop R and thereby trips the locking-lever, which movement unlocks the lever O, and thereby permits the weight of the grain in the receptacle to push open the door H and allow the grain to flow out, as shown in Fig. 2. The receptacle, being relieved of its weight, is swung back to its normal position, and at the same time the counter-weight P swings the lever O into its normal position, closing the door and locking it by re-engaging with the hook of the locking-lever Q. At the same time the connecting-rod N carries the link M back to its normal position, thereby tripping the locking-lever V, and now the counter-weight L', being free to act, will withdraw the cut-off to its normal position at the beginning of the operation.

A register (not shown) is suitably connected in any known manner with the receptacle to tally automatically by the movement of the said receptacle. I preferably place upon the opposite end of the receptacle a similar mechanism to that shown in Figs. 1 and 2 to automatically lock or unlock the door. This is shown in Fig. 3, and its operation and construction will be readily understood from the former description, as it is but a duplication of that shown upon the opposite end, except that it has no connection with the cut-off I.

All the parts where necessary are provided with suitable adjustments, and the locking-levers V and Q are provided with suitable springs and stops to automatically throw them into normal positions.

I want to call particular attention to the means for locking the cut-offs in position and to the positive connection between the two cut-offs, whereby the door is firmly locked in closed position before the cut-off I is permitted to disclose the discharge-opening in the hopper. I also claim the oscillating cut-off I as a valuable improvement, as in operation it is not interfered with by grain in the action of locking, as hinged cut-offs used for a similar purpose are liable to be interfered with, and it takes but a minimum of power for the radial movement of my improved cut-off, and it is moved in and out of position very rapidly.

What I claim as my invention is—

1. The combination, with the weighing-receptacle of a grain-scale and the pivoted door H thereof, of a hopper independently supported from said receptacle and provided with an oscillating cut-off secured to and operated by a rock-shaft to close and disclose the dis-

charge opening from said hopper, and pivotal connections between the rock-shaft and the door H of the receptacle, substantially as described.

2. The combination, with the weighing-receptacle F of a grain-scale and the pivoted door thereof, of the independently-supported hopper G, the rock-shaft K, the segmental cylindrical cut-off to said hopper, the counter-weight L', the rock-arm T, secured to said shaft, the connecting-rod U, connected at one end with the receptacle and at the other to the rock-arm, and pivotal connections between said rock-shaft and the door of the receptacle, substantially as and for the purpose specified.

3. The combination, with the weighing-receptacle F of the grain-scale, of the independently-supported hopper G, the rock-shaft K, carrying the oscillating cut-off, the counter-weight L' on said rock-shaft, and a locking device consisting of the rock-arm T' and the locking-lever V, with the hook *h*, and the link M, arranged to trip the lever V, all arranged to operate substantially as described.

4. The combination, with the weighing-receptacle F of the grain-scale, of the independently-supported hopper G, the rock-shaft K, the oscillating cut-off carried thereby, the counter-weight L, the rock-arm T, the connecting-rod U, the rock-arm T', the locking-lever V, provided with the hook *h* and the arm *k*, and the link M, arranged to trip said locking-lever V, substantially as described.

5. The combination, with the weighing-receptacle, of the independently-supported hopper G, the rock-shaft K, carrying the cut-off I, the cut-off or door H, the lever O, carrying the counter-weight P, the connecting-rod S, the locking-lever Q, provided with a hook, *e*, an arm, *e*, the stop R, the connecting-rod U, provided with slot *f*, the rock-arms T and T', secured to the rock-shaft K, the counter-weight L, the locking-lever V, provided with the hook *h* and arm *k*, the link M, and the connecting-rod N, the parts being constructed and arranged to operate substantially as described.

6. In a grain-scale of the kind described, the combination of the weighing-receptacle, the independently-supported hopper, the cut-off controlling the flow of grain from the hopper, the automatically-operating devices to open and close said cut-off, the hinged cut-off controlling the discharge of grain from the weighing-receptacle, the automatically-operating mechanism for opening and closing said cut-off in the weighing-receptacle, pivotal connections M, N, and S between the two cut-offs, and the locking-levers V and O and their tripping devices, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses, this 22d day of October, 1887.

JOSEPH B. DUTTON.

Witnesses:

JAS. WHITTEMORE,  
H. S. SPRAGUE.