(No Model.) 2 Sheets—Sheet 1.

L. BRONSON.

GRAIN MEASURE.

No. 479,551. Patented July 26, 1892.

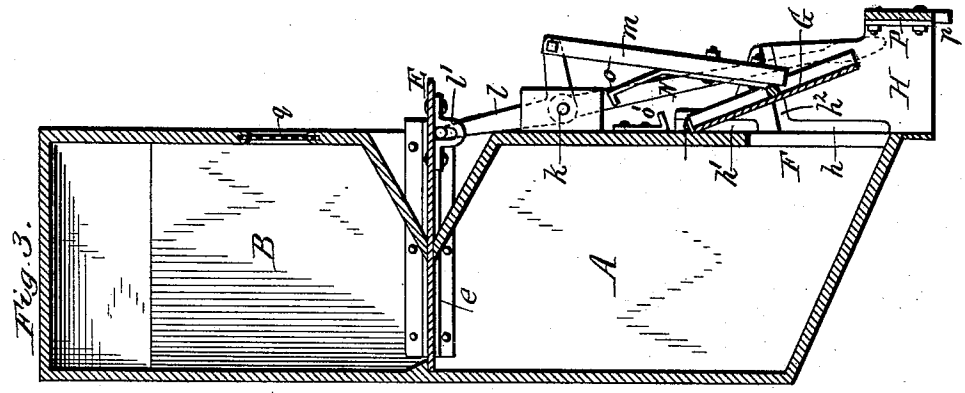

Fig. 3.

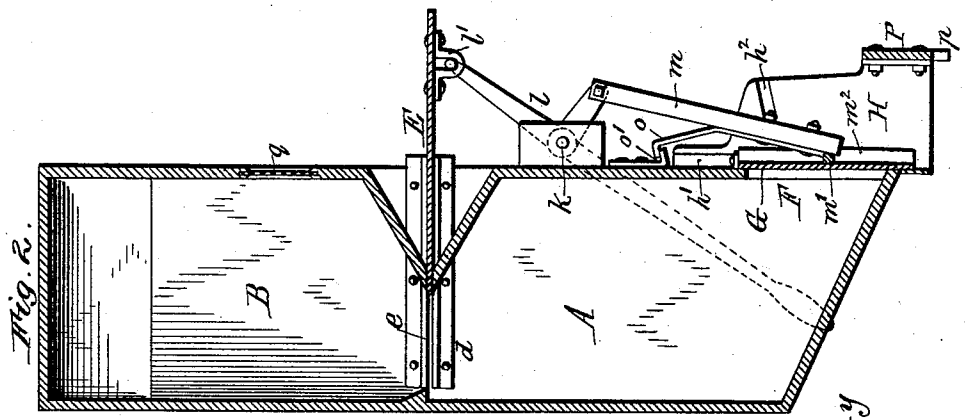

Fig. 2.

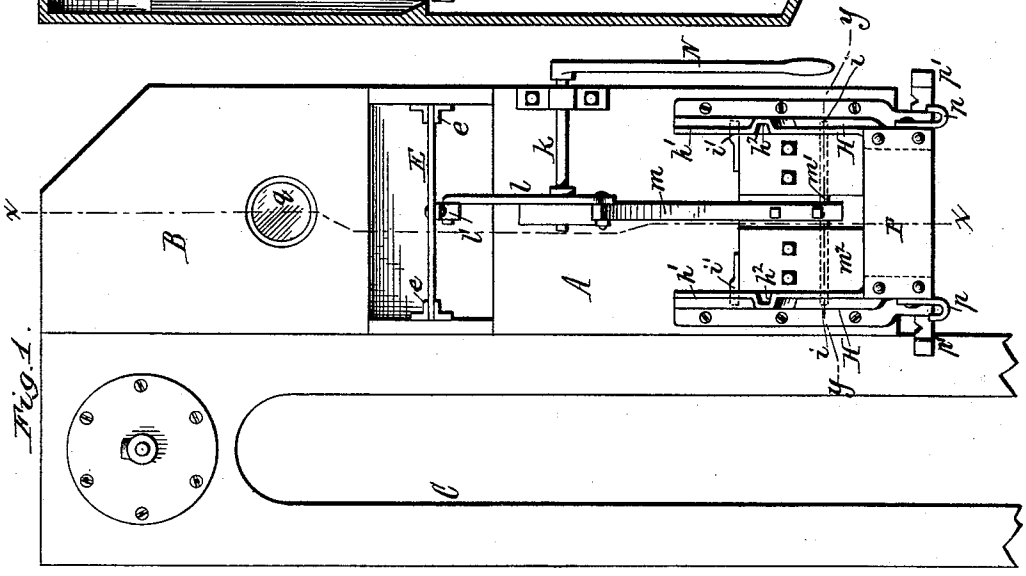

Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 4.

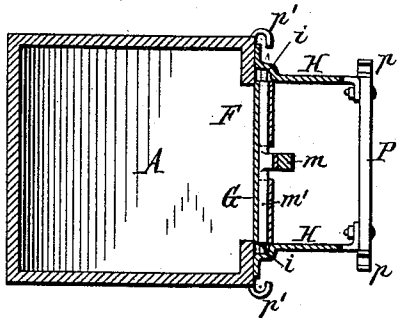


Fig. 5.

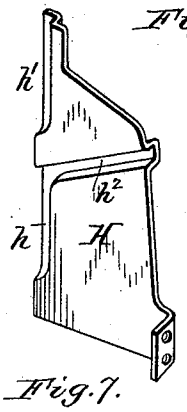


Fig. 6.

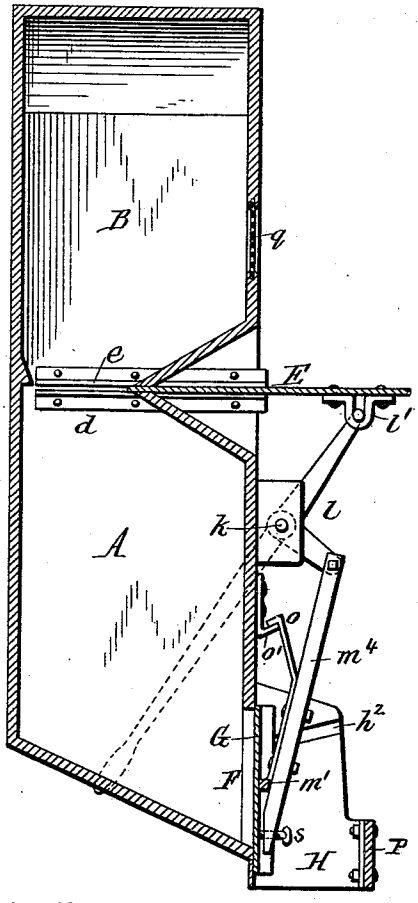
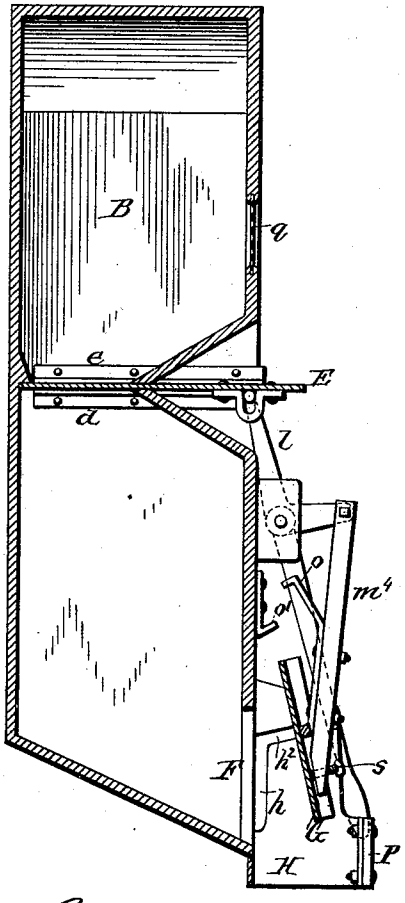


Fig. 7.



Witnesses:
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UNITED STATES PATENT OFFICE.

LEVI BRONSON, OF BUFFALO, NEW YORK, ASSIGNOR OF ONE-HALF TO THE PITTS AGRICULTURAL WORKS, OF SAME PLACE.

GRAIN-MEASURE.

SPECIFICATION forming part of Letters Patent No. 479,551, dated July 26, 1892.

Application filed March 28, 1892. Serial No. 426,680. (No model.)

To all whom it may concern:

Be it known that I, LEVI BRONSON, a citizen of the United States, residing at the city of Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Grain-Measurers, of which the following is a specification.

This invention relates to the measuring devices which are employed in connection with thrashing-machines and other grain-separating machines for measuring the grain as it is discharged from the machine and delivering it into bags, and more particularly to such measuring and bagging devices in which the cut-off and discharge valves or gates of the measuring-chamber are operated by a single movement.

The objects of my invention are to improve the machine for operating the cut-off and discharge valves so as to insure an accurate measure of the grain and to so arrange the discharge-gate and the bag-support that the mouth of the bag is not obstructed by the discharge-gate or its operating devices.

In the accompanying drawings, consisting of two sheets, Figure 1 is a front elevation of my improved grain-measurer, showing the same in connection with the elevator of a thrashing-machine. Fig. 2 is a vertical section thereof in line $x\,x$, Fig. 1, showing the cut-off gate of the measuring-chamber open and the discharge-gate closed. Fig. 3 is a similar section with the cut-off gate closed and the discharge-gate open. Fig. 4 is a horizontal section in line $y\,y$, Fig. 1. Fig. 5 is a perspective view of one of the plates between which the discharge-gate is guided. Figs. 6 and 7 are vertical sections showing a modification of my improvement, the cut-off and discharge gates being shown in the relative positions indicated in Figs. 2 and 3.

Like letters of reference refer to like parts in the several figures.

A is the measuring-chamber, and B a feed-hopper or receptacle surmounting the same, and to which the grain is delivered by an elevator C or other suitable means. The measuring-chamber is provided at its top with a contracted throat or inlet-opening d, to which is applied a horizontal cut-off slide or gate E, whereby the passage of the grain into the measuring-chamber is controlled. This cut-off gate is guided in horizontal ways or grooves e, arranged on the side walls of the measuring-chamber, and extends outwardly through a slot formed in the front wall of the chamber.

F is a discharge-opening arranged in the front wall of the measuring-chamber, at or near its bottom, and G is the gate or valve applied to the discharge-opening. This gate is capable of moving vertically and outwardly away from the discharge-opening F and is provided at its vertical edges, near its middle, with horizontal studs i, which are guided in upright grooves or ways h, formed in vertical plates H, secured to the front wall of the measuring-chamber on opposite sides of its discharge-opening. At its upper end the discharge-gate is provided with similar laterally-projecting studs i', which are arranged in vertical ways or grooves h', formed in the plates H above the grooves h.

h^2 are inclined branch grooves or ways extending outwardly and upwardly from the upper ends of the lower vertical grooves h and which permit the discharge-gate to move outward when it is raised sufficiently to allow its lower studs to enter said grooves, as shown in Fig. 3.

k is a horizontal rock-shaft arranged between the cut-off and discharge gates and journaled in bearings secured to the front wall of the measuring-chamber.

l is a bell-crank or elbow lever secured to said rock-shaft and having its upper arm pivoted to the projecting portion of the cut-off gate, said arm being provided with a lateral stud, which plays in a vertically-elongated loop l', secured to the under side of the cut-off gate. The discharge-gate is connected with the lower arm of the elbow-lever by a rod m, which is provided at its lower end with a cross-bar m', arranged in horizontal openings formed in cleats m^2, which stiffen the plate forming the discharge-gate, the cross-bar being arranged loosely in the openings of the gate to permit the latter to pivot on the bar. The ends of this bar preferably project laterally beyond the vertical edges of the discharge-gate, so as to form the lower studs i; but, if preferred, these studs may be separate from the bar.

N is a hand-lever secured to the rock-shaft k, whereby the latter is turned for operating the cut-off and discharge gates.

o is a stop secured to the rear side of the connecting-rod m and which is adapted to engage against a hook or projection o', secured to the front wall of the measuring-chamber, so as to limit the downward movement of the discharge-gate.

P represents a cross-bar connecting the lower front portions of the guide-plates H and which is provided at its ends with bag-supporting hooks p, as shown in Figs. 1 and 4. p' are similar hooks secured to the lower rear portions of the guide-plates H. These guide-plates and the cross-bar P and hooks p p' constitute the support from which the bag or sack is suspended.

When the hand-lever N is in the position shown in Fig. 2, the discharge-gate of the measuring-chamber is closed and the cut-off gate is open, allowing the grain to flow from the feed-hopper into the measuring-chamber and filling the latter. The feed-hopper is provided in its front wall with the usual window or sight-aperture q for indicating to the operator whether or not the measuring-chamber is filled.

Upon pulling the hand-lever N outwardly to the position shown in Fig. 3 the upper arm of the elbow-lever is caused to swing inwardly and close the cut-off gate, thereby cutting off the body of grain in the feed-hopper from that in the measuring-chamber. At the same time the lower arm of the elbow-lever ascends and, through the medium of the connecting-rod m, moves the discharge-gate upwardly and outwardly in its ways, thus opening it and allowing the grain to escape from the measuring-chamber and flow into the bag suspended below its discharge-opening. The elbow-lever and its connecting-rod m tend to move the discharge-gate outward away from the discharge-opening; but the studs ii' of the gate, being confined in the vertical ways in the plates H, compel the gate to move in close contact with the front wall of the measuring-chamber until its lower studs i arrive opposite the inner ends of the inclined ways h^2, when they enter said inclined ways and permit the gate to move outward and uncover the discharge-opening. During this outward movement of the discharge-gate its upper studs i', which are confined against outward movement in the upper vertical ways h', restrain the outward movement of the upper end of the gate and act as pivots upon which the lower portion of the gate swings. By confining the upper end of the gate in this manner and allowing only its lower portion to move outward the gate is caused to open quickly during the final portion of the stroke of the hand-lever. By thus giving the discharge-gate a certain amount of dead movement or vertical play before it uncovers the discharge-opening the cut-off gate is nearly closed during the vertical movement of the discharge-gate and is entirely closed at the same time that the discharge-gate is swung outward and opened, thereby practically preventing any additional grain from entering the measuring-chamber after its discharge-gate is opened and insuring an accurate measure.

The discharge-gate in its normal position is made to extend a sufficient distance below the lower edge of the discharge-opening to keep the latter covered during the vertical movement of the gate.

Upon swinging the hand-lever inwardly the discharge-gate is guided inwardly and downwardly over the discharge-opening by its inclined and vertical ways and the cut-off gate is opened, thereby again filling the measuring-chamber preparatory to filling another bag.

By locating the bag-support on one side of the measuring-chamber and arranging the discharge-gate to move upwardly away from the support in opening the mouth of the bag is left free and unobstructed, so that it can be conveniently filled without spilling the grain when it rises nearly to the top of the bag.

In the modified construction of my invention shown in Figs. 6 and 7 the upper studs of the discharge-gate and the guideways for the same are omitted. In this construction the gate, being free at its upper end, is moved bodily outward as soon as its guide-studs arrive opposite the inclined ways h. The connecting-rod m^4 is in this case preferably extended below the bar on which the gate swings and is provided with a set-screw or adjustable stop s, which limits the swinging movement of the gate on the connecting-rod.

I claim as my invention—

1. The combination, with the measuring-chamber having inlet and discharge openings, of a cut-off gate applied to said inlet-opening, a sliding discharge-gate applied to said discharge-opening and capable of moving vertically and outwardly away from said opening, and actuating devices connecting said gates, whereby one gate is opened when the other is closed, substantially as set forth.

2. The combination, with the measuring-chamber having inlet and discharge openings, of a cut-off gate applied to said inlet-opening, vertical ways arranged on the measuring-chamber and having outwardly-extending branchways, a sliding discharge-gate applied to the discharge-opening of the measuring-chamber and having studs or projections moving in said ways, and actuating devices connecting the cut-off and discharge gates, substantially as set forth.

3. The combination, with the measuring-chamber having inlet and discharge openings, of a cut-off gate applied to said inlet-opening, vertical guideways arranged on opposite sides of said discharge-opening and having outwardly-extending branchways, a discharge-gate applied to said discharge-opening and provided at its upper end with studs

or projections arranged in the upper portions of said vertical ways, and studs or projections arranged below its upper end and moving in the lower portions of said inclined ways and their outwardly-extending branchways, and actuating devices connecting the cut-off and discharge valves, substantially as set forth.

4. The combination, with the measuring-chamber having an inlet-opening at its top and a discharge-opening on one side near its bottom, of a cut-off gate applied to said inlet-opening, a discharge-gate applied to said discharge-opening, a rock-shaft supported on the measuring-chamber, an elbow-lever mounted on said shaft and having its upper arm attached to the cut-off gate, and a rod connecting the lower arm of said lever with the discharge-gate, substantially as set forth.

5. The combination, with the measuring-chamber having inlet and discharge-openings, of a cut-off gate applied to said inlet-opening, vertical ways arranged on said measuring-chamber and having outwardly-extending branchways, a sliding discharge-gate applied to said discharge-opening and having guide-studs moving in said ways, a rock-shaft supported on the measuring-chamber, an elbow-lever mounted on said shaft and having its upper arm attached to the cut-off gate, and a rod connecting the lower arm of said lever with the sliding discharge-gate, substantially as set forth.

6. The combination, with the measuring-chamber having inlet and discharge openings, of a cut-off gate applied to said inlet-opening, upright plates arranged on opposite sides of the discharge-opening and having upright ways provided with inclined branchways, a discharge-gate having studs moving in said ways, a rock-shaft, an elbow-lever mounted on said shaft and having its upper arm connected to the cut-off gate, and a rod connecting the lower arm of said elbow-lever with the sliding discharge-gate, substantially as set forth.

7. The combination, with the measuring-chamber having an inlet-opening at its top and a discharge-opening on one side thereof, of a cut-off valve applied to said inlet-opening, an upwardly-sliding gate applied to said discharge-opening, a bag-support arranged below and in front of said discharge-opening, and actuating devices connecting the cut-off and discharge gates, substantially as set forth.

Witness my hand this 25th day of March, 1892.

LEVI BRONSON.

Witnesses:
JNO. J. BONNER,
FRED. C. GEYER.