(No Model.) 3 Sheets—Sheet 1.

# J. MILLER.

## GRAIN TALLY.

No. 344,395. Patented June 29, 1886.

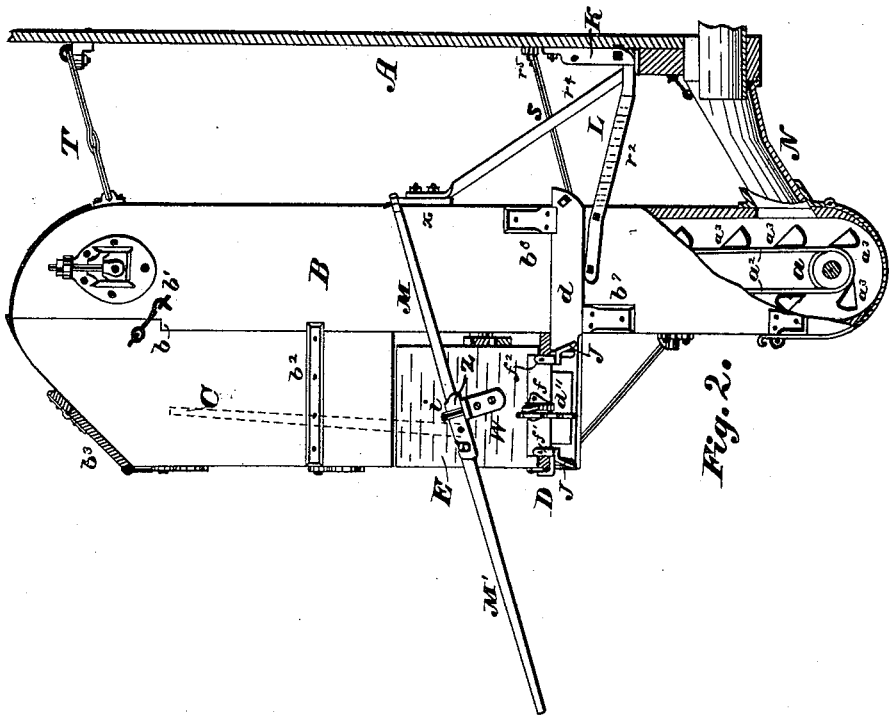

Fig. 2.

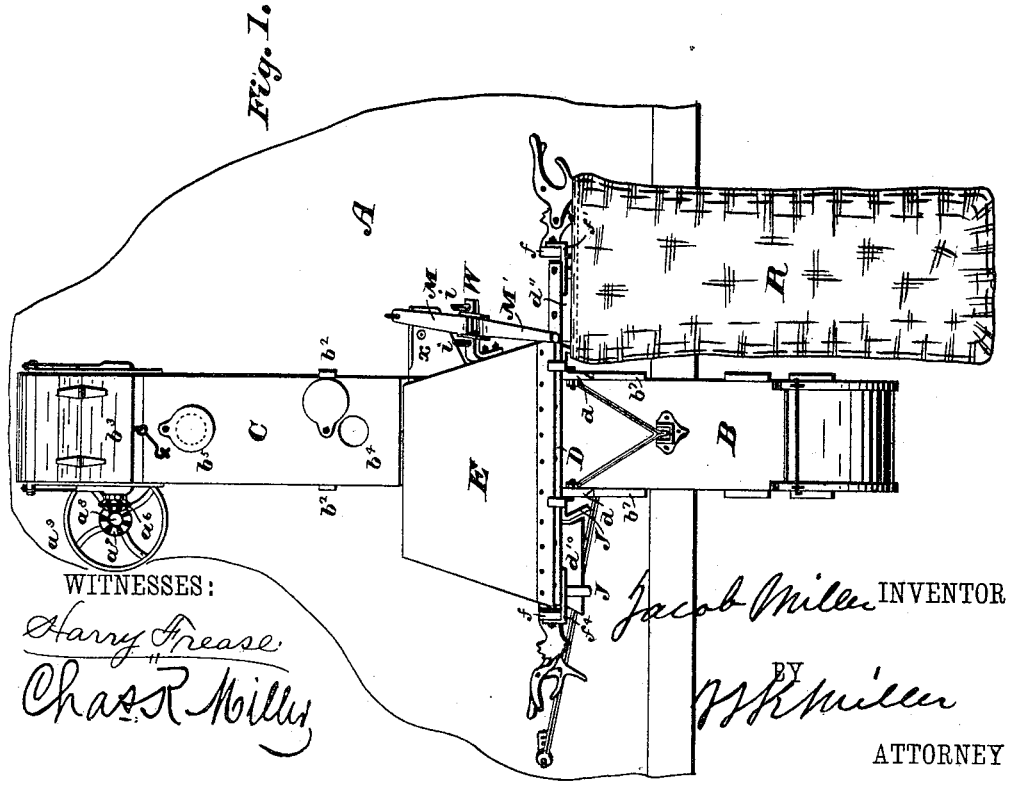

Fig. 1.

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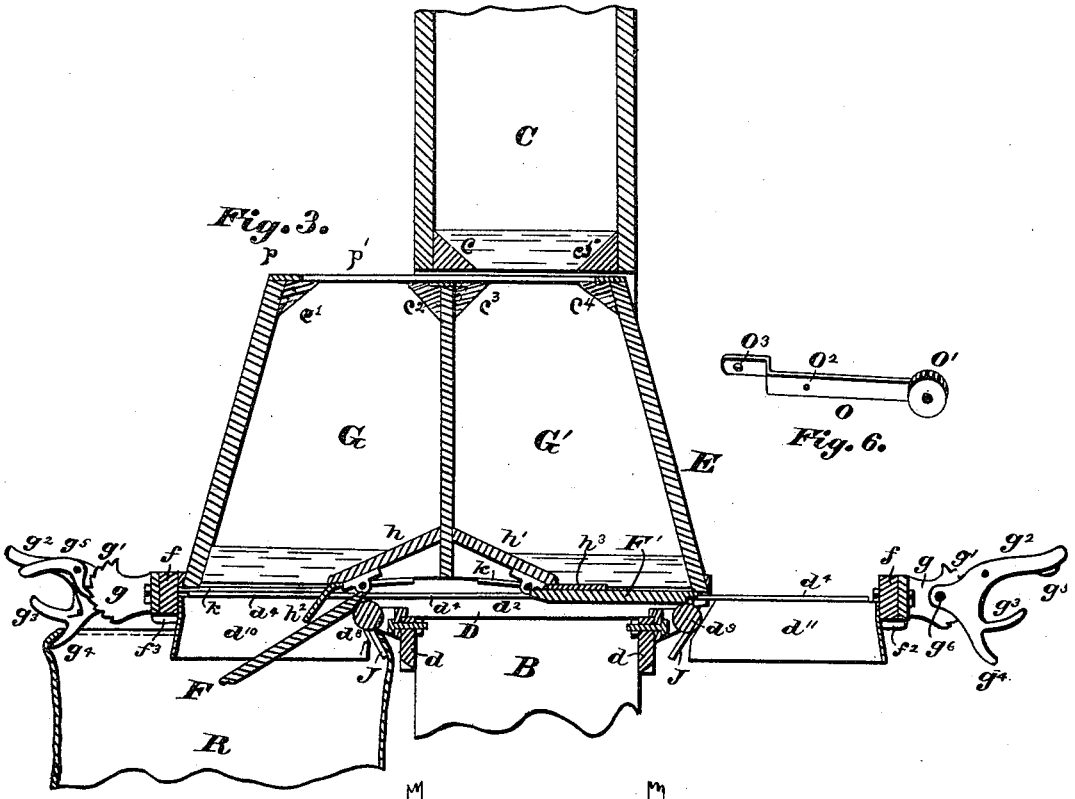


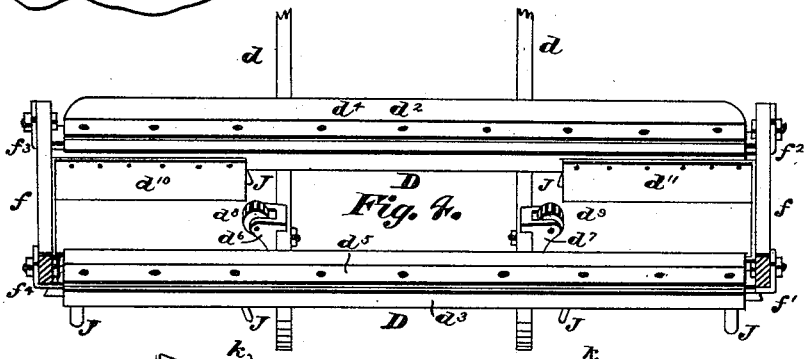


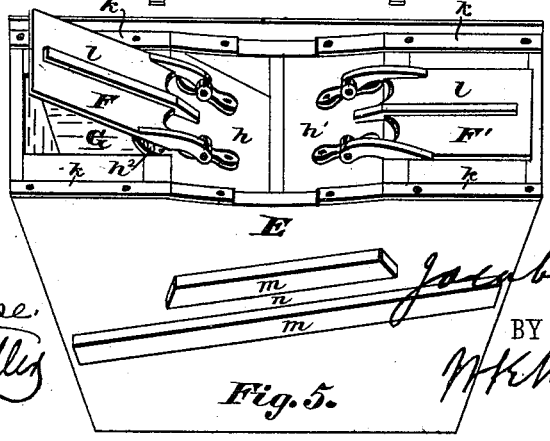


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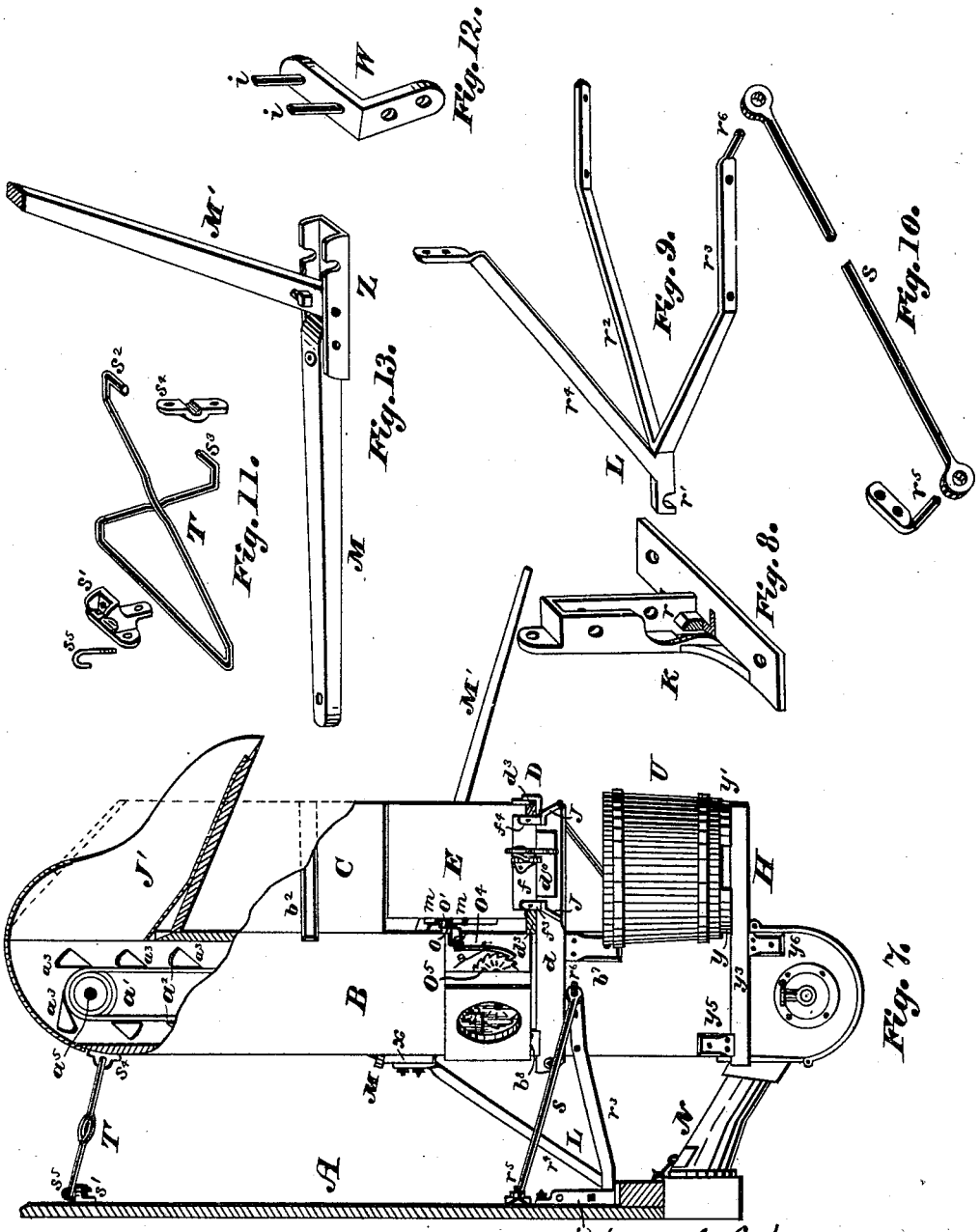

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# UNITED STATES PATENT OFFICE.

JACOB MILLER, OF CANTON, OHIO.

## GRAIN-TALLY.

SPECIFICATION forming part of Letters Patent No. 344,395, dated June 29, 1886.

Application filed September 3, 1885. Serial No. 176,109. (No model.)

*To all whom it may concern:*

Be it known that I, JACOB MILLER, a citizen of the United States, and a resident of Canton, county of Stark, State of Ohio, have invented a new and useful Improvement in Grain-Tallies, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to improvements in grain-tallies; and it consists in providing means by which grain may be measured and registered as ejected from a thrashing-machine.

A further object of my invention relates to and consists in providing means for elevating and depositing the grain into the body of a wagon in bulk, which are interchangeable with the hopper and measuring devices.

Figure 1 is a front elevation of my improved grain-tally, showing the parts in normal position. Fig. 2 is a side elevation showing the manner of attaching the device to the side of a thrashing-machine. Fig. 3 is a longitudinal sectional view of the measuring-box and the hopper. Fig. 4 is a view of the ways on which the measuring-boxes slide. Fig. 5 is a view of the measuring-box inverted, showing the valves in position, and the cam-groove that vibrates the lever that actuates the registering-dial. Fig. 6 is a perspective of the lever and roller by which the registering-dial is actuated. Fig. 7 is a side elevation with the upper front part of elevator-trunk and hopper cut away, showing the manner of attaching the discharge-spout when used to discharge into a wagon-body, also showing the manner of using any of the well-known measuring or carrying devices when it is not desirable to bag the grain. In this view is also shown the manner of connecting with and operating the registering-dial. Fig. 8 is a perspective of bracket-supports. Fig. 9 is a view of the arms that assist in supporting the elevator-trunk. Fig. 10 is a view of side brace. Fig. 11 is a view of the arm braces and connections by which the upper end of the elevator-trunk is held in position. Fig. 12 is an isometrical view of the bracket-support for the vibrating lever; Fig. 13, same view of the lever by which the measuring-boxes are vibrated or moved under the hopper.

A is a fragment of the side board work and frame of a thrashing-machine to which the device is attached by devices hereinafter explained.

B is an elevator-trunk inclosing the usual form of grain-elevator, there being two drums, $a$, at the lower and $a'$ at the upper end of the trunk, and a belt, $a^2$, passing around them, set with buckets $a^3$, which carry the grain from the lower end of the trunk when it is received from the spout N, extending from the side of the thrasher, and carries it to the upper end and discharges it into the hopper C, which is an open-ended box or trunk, which rests on a shoulder, $b$, near the upper end of the trunk B, and is fastened to it by the clasping-hooks $b'$ and side strips, $b^2$, which overlap the sides of the trunk B.

At the upper end of the elevator-trunk B and the upper end of the hopper C there is an aperture of equal size in each, and so adapted to each other that the grain when ejected from the elevator-buckets will fall into the hopper. The hopper is also provided at the upper end with a hinged lid, $b^3$, (see Fig. 1,) which may be opened at any time for observation or to remove any obstruction, and is also provided with observation-holes $b^4$ and $b^5$, fitted with glass and a protecting-cover. The object of these openings is to allow the operator to note when the hopper is about empty or when about full. The upper elevator-drum shaft, $a^5$, is projected through the side of the trunk, and is fitted with a miter-wheel, $a^6$, which engages with a similar wheel, $a^7$, attached to the end of a shaft, $a^8$, which projects from the side of the thrasher. This shaft has mounted on it a pulley, $a^9$, which has a belt-connection with the thrashing-cylinder and by which the elevator in the trunk B is actuated.

The bars $d$ $d$ are attached to and support the table D. These bars project from the table and embrace the elevator-trunk B, and are supported in position by the blocks $b^7$ and $b^8$.

In the construction of the table D the parallel bars $d^2$ $d^3$ are rigidly secured to the bars $d$ $d$, and in a position at right angles thereto. The parallel bars are provided on their upper sides with strips of iron or hard wood, $d^4$ $d^5$, which form ways upon which the measuring-box E may rest and be moved from one end of

the table to the other. The brackets $d^6$ $d^7$, bolted to the bars $d$ $d$, support the rollers $d^8$ and $d^9$, which close and support in position the valves F and F′ alternately as the measuring-boxes G G′ are passed over them. Table D is also provided with end pieces, $f$ $f$, which are supported by irons $f^2$ $f^3$ $f^4$ $f'$, and is also provided with deflecting-boards $d^{10}$ and $d^{11}$, by which the grain is directed into the mouth of the bag or other receptacle, and catch-pins J for holding the bag.

To the end pieces, $f$ $f$, is bolted an overhanging sector, $g$, which is provided with notches on its periphery $g'$. A hand-lever, $g^2$, is pivoted centrally to the sector, and is provided with fingers $g^3$ and $g^4$, and a spring-pawl, $g^5$, which engages with the notches $g'$. The use of this pawl and the fingers will be explained hereinafter.

The measuring-box E is divided into two compartments, G and G′, each of which is provided with a falling valve, F F′, which have a hinged or flexible connection with the inclined bottom boards, $h$ $h'$, also with a flexible drop-curtain, $h^2$ $h^3$, by which the falling grain may be deflected from the valve-hinge and directed into the mouth of the bag. The box is preferably larger at the bottom than at the top, having upright sides and inclining ends. The object of this form of construction is to enlarge the holding capacity and secure larger openings and valves in the bottom, through which the grain may be speedily discharged, and by this form the upper end may be better adapted to the hopper C, and the movement of the box E under the hopper C reduced and so arranged that the valve F of the empty box G will be closed before the opening into the box will have reached the opening in the hopper C. Otherwise the grain would pass through the box unregistered.

To further prevent the grain passing through the box and valve unregistered, deflecting-pieces $c$ $c^5$ are placed at the bottom of the hopper C, and corresponding pieces, $c'$ $c^2$ $c^3$ $c^4$, placed in the opening into the grain-box, and the valves so arranged that when the grain-box has been moved from P to P′ valve F will have closed, and valve F′ has not begun to open, and will not until the edge of the opening formed by the block $c^3$ has passed the edge of the deflecting-piece $c^5$ in the hopper, at which point valve F will have closed and a passage-way for the grain opened from the hopper to the measuring-box, so that in no event can the grain pass through the meter without being registered, as the valve F in the bottom of compartment G′ has not opened and cannot before the projecting piece $c^2$ has reached and passed under deflecting-piece $c$.

On the bottom of the measuring-box there are provided strips $k$ $k$, (see Fig. 5,) which are adapted to the ways formed by the strips $d^4$ and $d^5$ on table D, and by which the box is guided in its movements and held in its relative position with other parts.

On the under side of the valves F and F′ there are provided raised ribs $l$ $l$, which engage with the rollers $d^8$ and $d^9$.

On the side of the box E strips $m$ and $m$ form a cam-groove, $n$, by which the register-actuating lever O is vibrated. This lever O (see Fig. 6) is provided with a roller, O′, which is adapted to the groove $n$, and is pivoted at $O^2$ to the elevator-trunk B, and at $O^3$ to the spring-pawl $O^4$, which engages with and rotates the registering-dial $O^5$. (See Fig. 7.)

Fig. 7 is intended to represent my invention as used when the thrashed grain is to be deposited in the body of a wagon in bulk, and when used in connection with the ordinary carrying boxes or measures.

H is a removable table formed of two parallel bars, Y Y, and two supporting-arms, $Y^3$, which embrace the elevator-trunk B and rest on and under the supporting-blocks $y^5$ and $y^6$. The upper section of this view shows the hopper C removed, and a sectional view of the spout, also sectional view of the upper end of the elevator-trunk B. The spout J′ and the hopper C may be interchangeable, the spout resting upon the shoulder $b$, (see Fig. 2,) and held in position by hooks provided on the spout engaging with the staple $b'$. (See Fig. 2.)

In Fig. 7 may be seen an end view of the measuring-box E, showing an end of the cam-groove $n$, the roller O′, the actuating-lever O, its location and connection through the spring-pawl $O^4$, which engages with the registering-dial $O^5$, which may be of any of the well-known compounding-wheels and registering-dials.

Supporting-bracket K rests upon and is bolted to the sill of the machine-frame, and also to the board-work. Projecting upwardly from the bottom plate there is provided a shoulder, upon which rests the end of the trifurcated support L, the head of which is adapted to the shoulder $r$, the notch $r'$ resting upon it, and is held in position by a bolt or pin passed through the perforations in the side or cheeks of the bracket. Near the upper end of the bracket there are provided perforations for a bolt or pin, on which the arms may rest when the elevator-trunk is carried or held in a more elevated position. Two of the arms of the trifurcated support, $r^2$ and $r^3$, embrace the elevator-trunk and are bolted thereto. The third arm, $r^4$, extends upwardly, and is bolted to the back of the trunk. The outwardly-projecting end of the arm $r^3$ is formed into an outwardly-projecting pin, $r^6$, on which one end of the brace-rod $s$ rests, the other end connected to a projecting pin, $r^5$, placed upon the side of the machine. The upper end of the elevator-trunk is supported and held in position by the cross-braces T. Bracket $s'$ is bolted to the side of the machine. The free ends $s^2$ and $s^3$ of the brace T are connected with the elevator-trunk by the caps $s^4$. When coupled, the link-section of brace T is dropped into the notch provided in the bracket

$s'$, and is secured by the threaded hook $s^5$. Actuating-lever M is pivoted to an arm, $x$, (see Fig. 1,) projecting from the rear of the elevator-trunk, and rests on bracket W, which is bolted to the end of the measuring-box E. This bracket is provided with two upwardly-projecting pins, $i$ $i$, against which the lever M is exerted in moving the box. Hinge Z, which rests on the bracket W, will allow the free end M′ of the lever to fold upwardly, for convenience in transportation, but is rigid in all other directions, as shown. (See Fig. 13.)

The operation of my invention is as follows: The thrashed grain is passed over the spout N into the elevator-trunk B, and is then carried up and over the drum $a^5$ in the upper end of the trunk by the elevating-buckets $a^3$, and when ejected from the buckets will fall into the hopper C, and then into the measuring-box G′. A bag, R, having been placed over the pins J and one of the fingers, $g^4$, and the hand-lever $g^2$ drawn up until the bag is tightly held on the points mentioned by the spring-pawl engaging with the notches $g'$ of the sector $g$, when the measuring-box G′ has been filled and the grain become visible through the observation-hole $b^4$, the lever M may be brought into action and the box E moved so as to bring the full measure G′ over the bag R, releasing the valve F′, and allow the grain to fall into the bag and place the empty compartment G of the measuring-box under the hopper C, when the operation may be repeated. By placing a bag on the other end of the table D and reversing the lever, grain may accumulate in the hopper C until visible through observation-hole $b^5$. In case there should be any delay in handling the bags or vessels by which the grain may be handled as the measuring-box E is moved to and fro under the hopper C, the lever O will be vibrated by the cam-groove N, and the registering-wheel actuated and the number of measures registered by the dial. These measures may be bushels or half-bushels, or may be adjusted to any other quantity by varying the size of the measuring-box E. When the grain is handled in bushel or half-bushel measures U, the table H may be placed in position, as shown in Fig. 7, and, when desired, the hopper C may be removed and the spout J′ substituted, and the grain pass in a continuous stream from the thrasher to a wagon-body or grain-bin, as desired.

Having thus fully described the nature and operation of my invention, what I desire to secure by Letters Patent is—

1. The combination, with a hopper and a horizontal guideway located below the hopper, of a horizontally-reciprocating measuring device divided into two compartments, each compartment having a valve, and rollers secured to the guide for operating the valves, substantially as described.

2. The combination, with a hopper, a horizontally-reciprocating measuring-box divided into two compartments, a valve located in the bottom of each compartment, and a horizontal guideway provided with rollers for operating said valves, of a grain-tally and an actuating-lever connecting the tally and grain-registering box, whereby the movements of the former are communicated to the latter, substantially as set forth.

3. In a grain-tally, a vibrating measuring-box having guideways adapted to ways on a supporting-table and valves that may be oscillated about a hinged connection with the bottom of the measuring-box by engagement with rollers mounted upon the supporting-table, by which engagement the valves may be raised up or allowed to fall, thus closing or opening the apertures in the bottom of the measuring-box as it is vibrated over the table, substantially as described, and for the purpose set forth.

4. In a grain-tally, the combination of the elevator B, hopper C, vibrating box E, having bottom perforation and valves F F′, adapted thereto as described, a supporting-table, D, provided with rollers $d^3$ and $d^9$, for actuating the valves, and a hand-lever, M, for vibrating the box E over the table, substantially as described, and for the purpose set forth.

5. In a grain-tally, the combination of the elevator B, hopper C, vibrating box E, cam-groove N, lever O, a registering-dial, $O^4$, a supporting-bracket, W, and a hand-lever, M M′, substantially as described, and for the purpose set forth.

6. In a grain-tally, the combination, with the vibrating measuring-box E, having the valves F and F′, and the hopper located above said measuring-box, of the supporting-table and the rollers $d^3$ and $d^9$, for operating the valves, substantially as set forth.

7. The combination, with the hopper and the horizontally-reciprocating measuring-box having the valves F F′, of a supporting-table having means provided at each of its ends for holding an open bag to receive the grain when discharged from the measuring-box, substantially as set forth.

8. In a grain-tally, the combination of the hopper C, the deflecting corner-pieces $c$ and $c'$, the two-compartment vibrating measuring-box E, the projections $c'$ and $c^2$, the bottom perforations having valves adapted thereto, and a supporting-table, substantially as described and set forth.

9. In a grain-tally, the combination of a two-compartment vibrating measuring-box having discharge-valves in each, a supporting-table, upon which it may be vibrated, provided with means at each of its ends for holding a bag to receive the grain as discharged from either compartment of the measuring-box and at either end of the table as the box may be vibrated, substantially as described and set forth.

10. The combination, with the hopper C, having the deflecting-pieces $c$ and $c^5$, secured to the lower edge thereof, of the reciprocating

measuring-box divided into two compartments and provided with valves, and the deflecting-pieces $c'$ $c^2$ $c^3$ $c^4$, secured to the inner faces of the measuring-box at the upper end thereof, substantially as set forth.

11. In a grain-tally, the combination of the two-compartment vibrating measuring-box, the valves F F, the rollers for opening and closing the valves as the box is reciprocated, and the deflecting-screens $h^2$ and $h^3$, all of the above parts combined and operating substantially as set forth.

In testimony whereof I have hereunto set my hand this 15th day of August, A. D. 1885.

JACOB MILLER.

Witnesses:

CHAS. R. MILLER,

W. K. MILLER.