D. SQUIER, Jr., & E. A. PRESTON.

Grain Meter.

No. 30,430. Patented Oct. 16, 1860

Fig. 2.

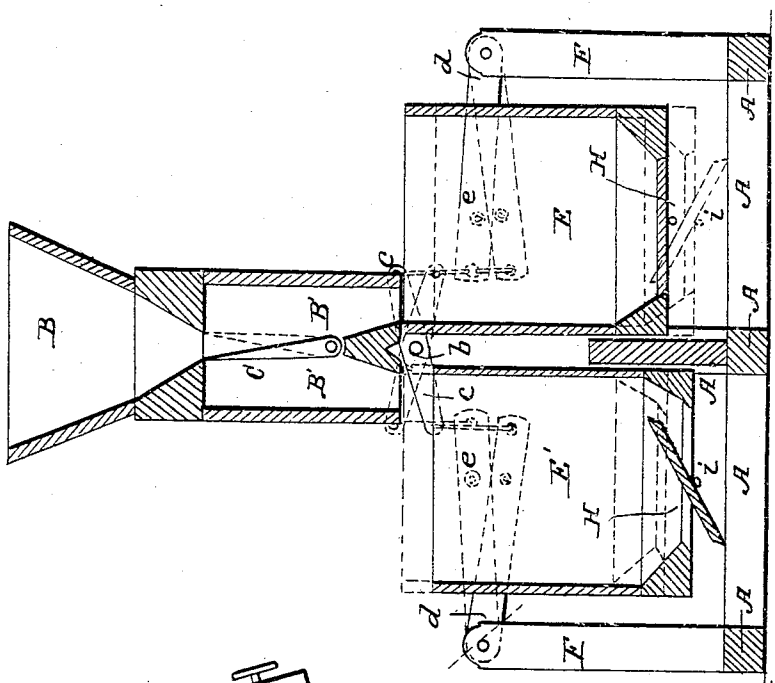
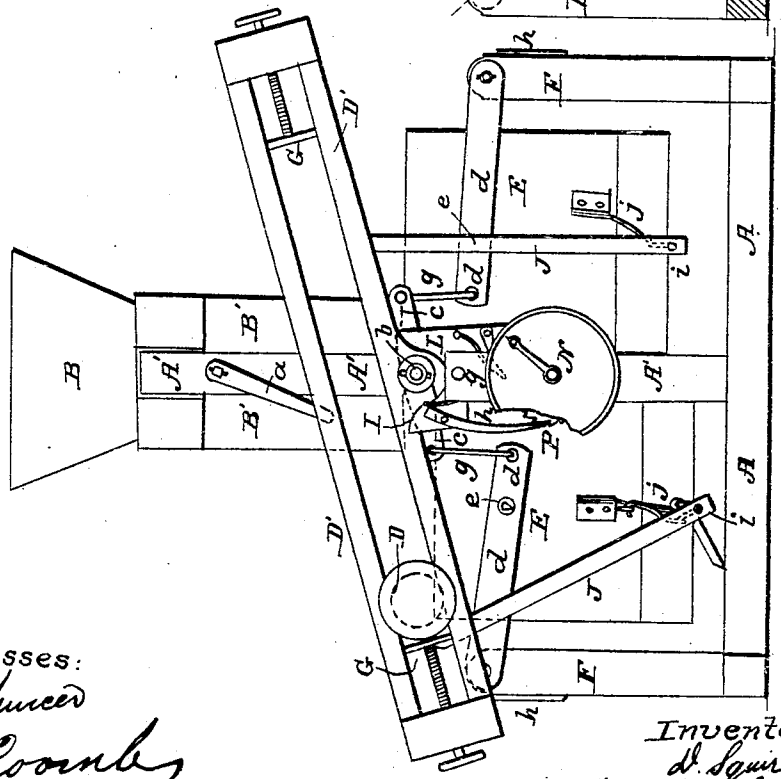


Fig. 1.



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UNITED STATES PATENT OFFICE.

D. SQUIER, JR., AND E. A. PRESTON, OF BATTLE CREEK, MICHIGAN.

GRAIN-WEIGHING MACHINE.

Specification of Letters Patent No. 30,430, dated October 16, 1860.

To all whom it may concern:

Be it known that we, D. SQUIER, Jr., and E. A. PRESTON, both of Battle Creek, in the county of Calhoun and State of Michigan, have invented a new and Improved Automatic Grain-Weighing Machine; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which,—

Figure 1 represents a front elevation of the machine. Fig. 2, is a longitudinal vertical section taken through the measuring boxes and delivering apparatus, showing the same in two positions.

Similar letters of reference indicate corresponding parts in both figures.

To enable those skilled in the art to fully understand our invention, we will proceed to describe its construction and operation.

In the drawings, A, represents a frame for supporting the mechanism about to be described. In the middle of this frame and on each side of it, proceed up two standards A′, that support the hopper B, which has two discharge spouts B′, B′, and a vibrating cut-off valve C, that alternately forms a communication with the hopper to either one or the other of these spouts, which valve is operated by a reciprocating weight D, working on an oscillating slotted lever D′, which will be hereinafter described, through the medium of an arm *a*, that is attached to the rod to which said valve is connected. The grain, as it flows from the spouts, falls into weighing boxes E, E, which boxes are hung in the following manner, so as to be depressed by the weight of the grain received in them.

b is a central shaft passing through and having its bearings in the two uprights A′, and passing transversely across the frame directly under the mouths of the spouts B, B′. On this shaft the short levers *c*, *c*, have their fulcra, and the ends of these levers are connected with the ends of arms *d*, *d*, on which the boxes E, E, are hung by knife edges *e*, *e*, by links *g*, *g*. The opposite ends of the arms *d*, *d*, are supported by upright posts F, F, as shown in the drawings. The boxes should in this manner be hung in equilibrio, and so as to be capable of a free vertical motion when acted upon jointly by the grain and the weight D, on oscillating lever D′.

The slotted lever D′, is fixed at its center to the shaft *b* and receives a rocking motion from said shaft in consequence of the alternate operations of receiving and discharging grain from the measuring or weighing boxes E, E.

h h are rest plates that regulate the motion of the lever D. These project out from each post F, and are arranged in such a relation to the slotted lever and weighing boxes E, E, that when either box is depressed this lever will at that moment be stopped by said plates. Between the two bars of this lever is placed a cylinder or ball D, which has an annular groove in it for keeping it between the two bars and allowing it to roll from end to end of the lever as this lever is alternately oscillated. This rolling weight D, plays between two adjustable head blocks G, G, which regulate its motion and which will, by adjusting, increase or diminish the capacity of the machine, on account of the varying distances the weight is placed from the fulcrum *b*. This weight thus serves as the scale weight for the receiving scales E, E. It has, however, another object, viz., to actuate the valvular bottoms H, H, (Fig. 2) of the scale boxes E, E, in a suitable manner to discharge the grain from the boxes at the proper time. For effecting this object the valvular bottoms, H, H, are hung upon rods *i*, *i*, that have arms J, J, proceeding a suitable distance up from them on the outside of the boxes E, E, which arms are acted upon by the weight D, in rolling from end to end of the lever D′, so as to open and hold open the valves H, H, alternately as each end of the lever is brought down by the gravity of the grain in the boxes E, E. When the weight descends to the opposite box springs *j*, *j*, return the arms J, J, and consequently the valves H, H, to their former position, but one of the valves is open at a time as will be readily understood, so that while the grain is flowing from one spout B′, into its box E, the grain is being discharged from the bottom of the opposite box.

This description completes the mechanism for weighing and discharging grain automatically the operation of which may be briefly summed up as follows: The garner or hopper B, is filled with grain which in Figs. 1 and 2, will flow down through the right hand spout B′, into the box E, the bottom of which is closed. The grain will

continue to flow into the box E, until the desired weight is attained, when the box will descend in consequence of its preponderance over the rolling weight D, which is on the opposite end of its lever D′, and raise the weighted end of this lever D′, when the weight D, will roll down the incline and act upon the arm *a*, so as to close the spout B′, and open the opposite spout B′, that leads from the hopper to the opposite box E, whose bottom is closed by the action of spring *j*, upon the arm J, as soon as the weight D, leaves this arm. The weight in descending, after shutting off the flow of grain from the right hand box E, (and opening the flow into the opposite box) will instantly open the bottom of this box, and allow the grain in it to flow out, at the same time the grain is flowing into the opposite box, thus when one box is emptied of its contents, the other box will be filled, and this operation will continue on as long as the flow of grain from the hopper is kept up.

In connection with this automatic weighing and discharging of grain, we arrange an index hand and plate N, for registering the quantity weighed during a day, week, or month. This registering is effected by a rocking plate L, pivoted to a shaft *g*, which is alternately moved back and forth by the weight D, as it rolls from one end of its lever to the other. From the plate L to a ratchet wheel P, motion is communicated by pawls *h*, *h*, and thus at every movement of the weight D, from one end of its lever to the other, the index hand is moved a certain distance which registers the quantity weighed.

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

The arrangement of the adjustable head blocks G G, slotted lever D′ and valve C, with the rods *i*, *i*, arms J, J, valves H, H, boxes, E E, plate L wheel P, and index plate N as and for the purposes herein shown and described.

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