

(No Model.)

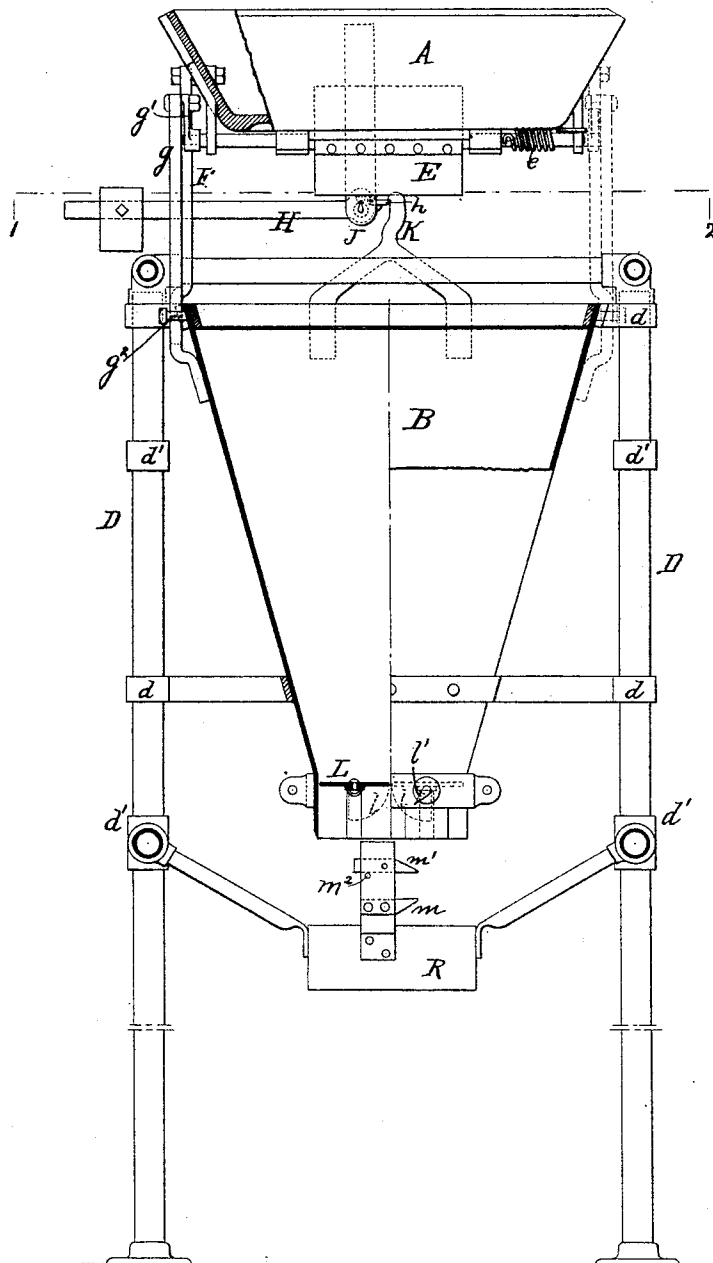
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H. PARRISH.
AUTOMATIC GRAIN WEIGHING MACHINE.

No. 463,407.

Patented Nov. 17, 1891.

Fig. 1.



WITNESSES:
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INVENTOR
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his ATTORNEYS

(No Model.)

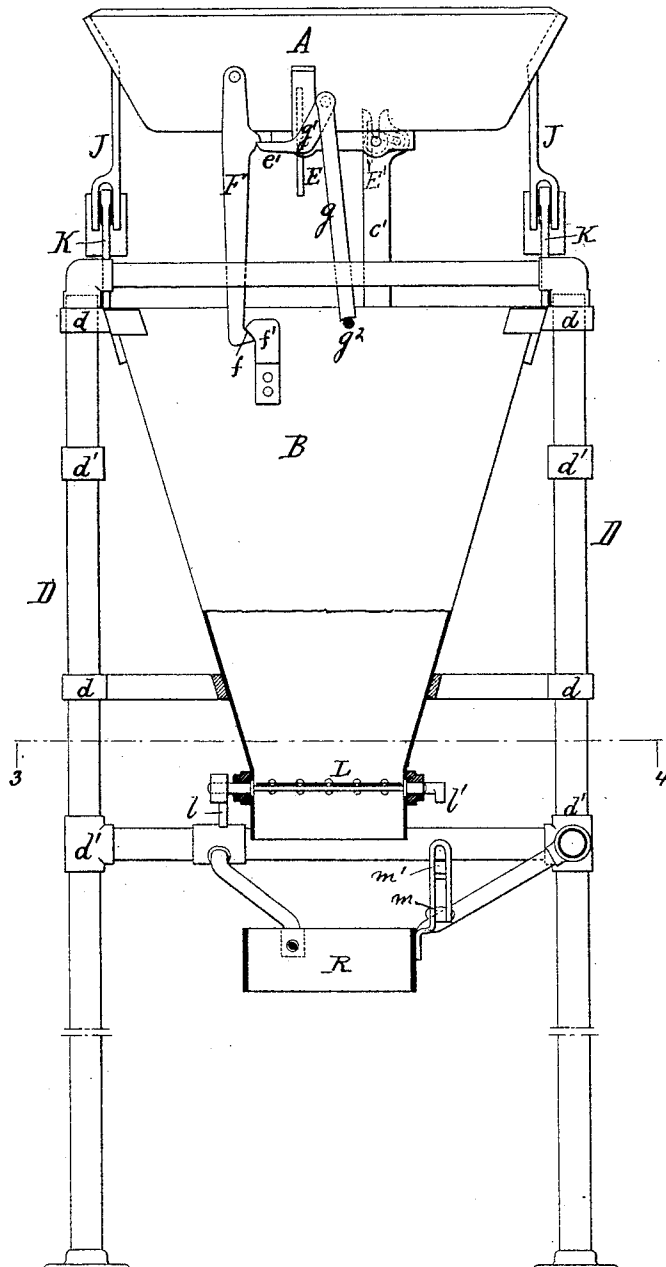
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Fig. 2.



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Fig. 3.

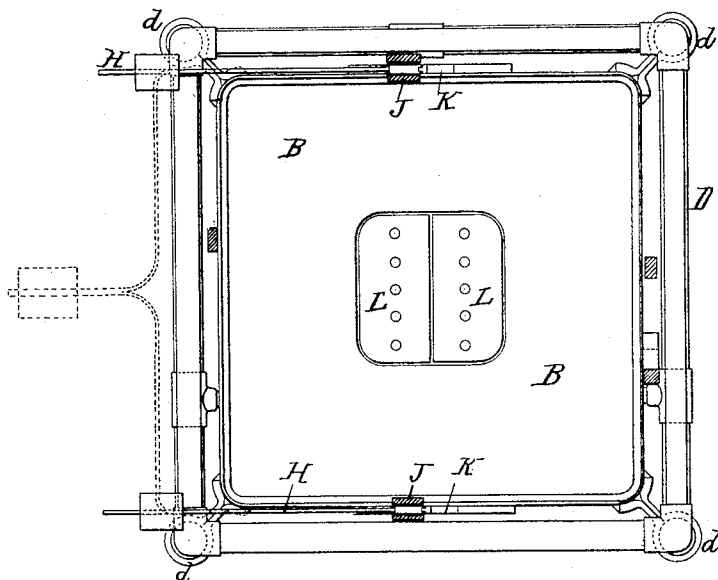
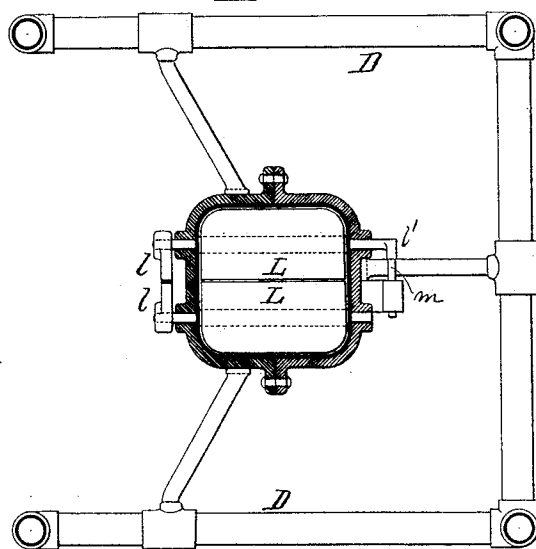


Fig. 4.



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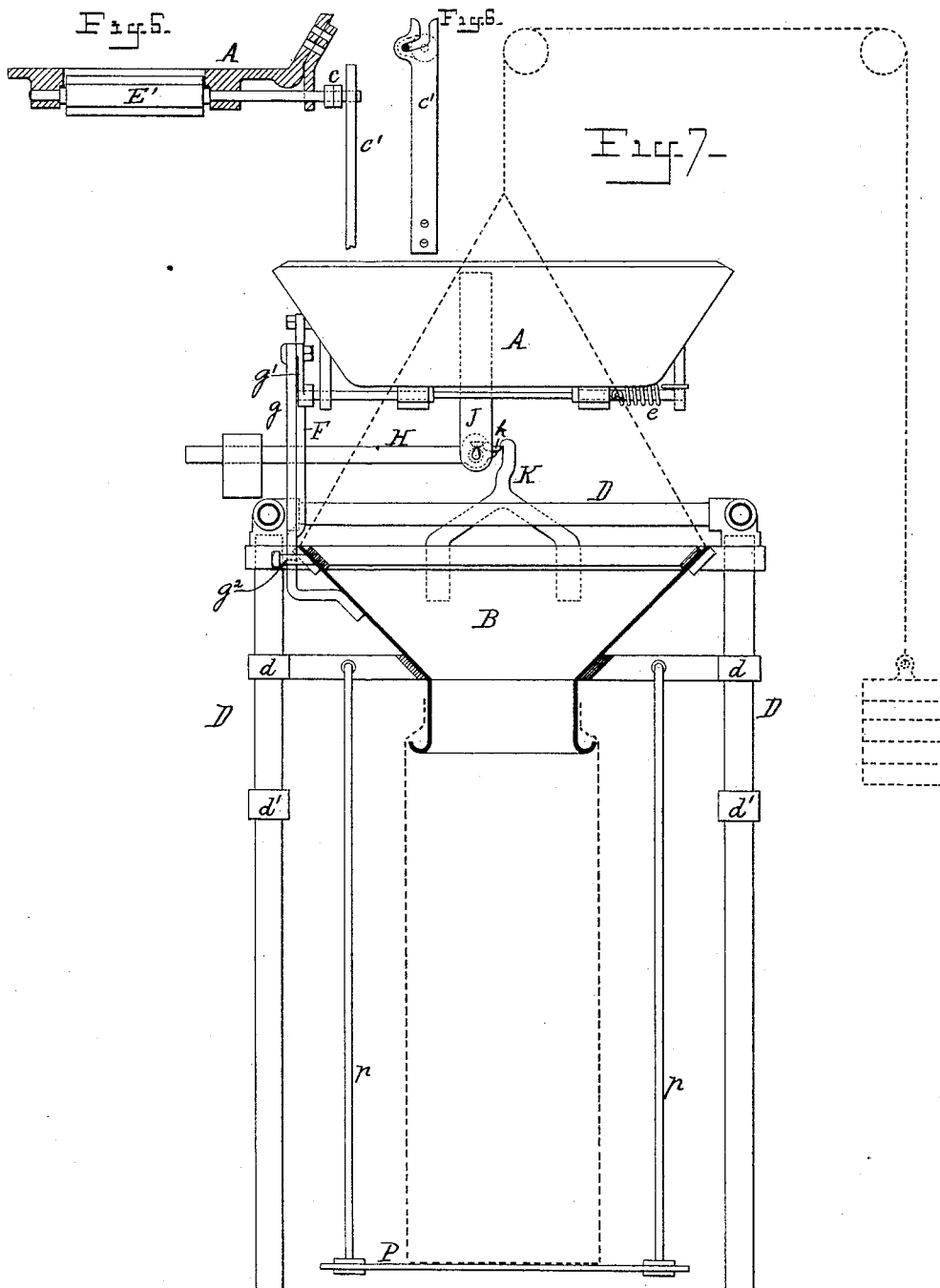
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UNITED STATES PATENT OFFICE.

HAMILTON PARRISH, OF NEW YORK, N. Y.

AUTOMATIC GRAIN-WEIGHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 463,407, dated November 17, 1891.

Application filed December 1, 1890. Serial No. 373,190. (No model.)

To all whom it may concern:

Be it known that I, HAMILTON PARRISH, a citizen of the United States, and at present a resident of New York city, New York, have invented an Improved Automatic Grain-Weighing Machine, of which the following is a specification.

The object of my invention is to construct a simple, strong, and convenient form of automatic grain-weighing machine which shall not be apt to get out of order and which shall be reliable in its action.

By the term "grain-weighing machine" I mean one which is adapted for the weighing of almost any form of granular or pulverulent material.

In the accompanying drawings, Figure 1 is an elevation, with parts in section, of my improved machine; and Fig. 2 is a side elevation at right angles to Fig. 1 and also showing the parts in section. Fig. 3 is a sectional plan view on the line 1 2, Fig. 1. Fig. 4 is a sectional plan view on the line 3 4, Fig. 2. Figs. 5 and 6 are detail views of part of the machine; and Fig. 7 is an elevation, partly in section, of a modified form of machine.

A is the lower end of the feed-hopper, which is shown in this case as adapted to be supported from above by any suitable means. It may, for instance, form the lower end of a discharge-spout from an elevator-leg.

B is the receiving-hopper immediately below the hopper A, and it is mounted upon a suitable frame-work D, so as to be free to have vertical motion thereon to a limited extent. This frame D may conveniently stand upon the floor of the building, or it may be otherwise supported, and it preferably consists, as shown, of a suitable number of vertical tubular legs connected together by cross-tubes to form an open rectangular frame, within which is contained the receiving-hopper B.

The feed-hopper A is provided with two gates E E' of different sizes, and these gates are mounted upon central axes or pivots, so as to be capable of being fully opened or closed with a quarter-turn, and means are provided for closing these gates successively when the receiving-hopper descends under the weight of the grain. The extended axis of the larger gate E is provided with a spring

e, which tends to turn the gate to the closed position; but during the feeding operation it is maintained open against the action of the spring by a finger *e'* on the opposite end of the axis of the gate engaging with a latch F, pivoted to the feed-hopper A or other suitable fixed point, as shown in Fig. 2. The extended end of this latch F has an inclined or cam surface *f*, engaging with a corresponding projection *f'* upon the receiving-hopper B, so that when the latter begins to descend under the weight of the grain admitted the latch F will be thrown out of engagement with the finger *e'* upon the axis of the larger gate E, so that the latter will immediately close under the action of its spring. In order to provide for the reopening of this gate E when the receiving-hopper is raised again for refilling, I provide a rod *g*, pivoted at its upper end to an arm *g'* on the axis of the gate in such a position that when the gate is closed the lower end of the rod will be in the path of a pin *g²* on the receiving-hopper B, and consequently when the latter rises the pin *g²* will strike the lower end of the rod and push it upward to turn the gate E to the open position shown in Fig. 2. When the receiving-hopper begins to descend, the rod *g* will no longer be supported by the pin *g²*, and will then fall from the inclined position shown in Fig. 2 to a vertical position out of line with and free of the pin *g²*, and therefore when the latch F is thereupon disengaged from the finger *e'* the gate will be free to return to the closed position under the action of its spring. I provide means for the closing of the smaller door after the large door has been closed, and instead of a spring action I prefer to close the smaller door by positively-acting devices, which also effect the reopening when the receiving-hopper is moved again. For this purpose I have in this instance shown the outer end of the axis of this door E' as provided with a crank *c*, whose pin engages in a cam-slot in the upper end of an arm *c'*, carried by the receiving-hopper B, as illustrated more clearly in Figs. 5 and 6.

As I have said, the receiving-hopper B is guided upon the fixed frame D, and for this purpose the hopper is provided with one or two lugs *d*, fitting upon each of the vertical legs of the frame. Stops *d'* upon these legs

limit the downward movement of the receiving-hopper. This receiving-hopper is normally supported upon the two weighing-levers H, but becomes disengaged therefrom when these levers are tilted. The levers H themselves are mounted upon knife-edges carried by arms J, projecting from any fixed support, and in this instance the arms J are shown supported from the feed-hopper A. These levers H may have their outer ends connected, as indicated by dotted lines in Fig. 3, so as to be in some sense a single-forked lever.

The receiving-hopper B is provided with arms K, hooked at their upper ends to engage with the short arms of the weighing-levers H, the engagement being such that the hopper will be supported by the levers until the latter, under the weight of the grain received into the hopper, have tilted to an angle permitting the arms K to slip off the ends of the levers and allow the hopper H to drop. To permit the hooked ends of the arms K to readily re-engage with the ends of the levers H when the hopper is raised again the engaging edges of the levers may be in the form of pivoted latches *h*, as shown in Fig. 1. The machine may be constructed so that the weighing of the grain takes place while it is contained in the hopper B, or the weighing may take place while the grain is in the bag or other receptacle which is to be filled with grain. In the former case the receiving-hopper B will be of sufficient capacity to receive the desired quantity to be weighed, as illustrated in Figs. 1 and 2, while if the grain is to be weighed in the bag the hopper B may be of the smaller form illustrated in the modification, Fig. 7.

Where the grain is to be weighed in the hopper B, I prefer to construct the latter so that immediately after the grain has been weighed it will be at once discharged into the bag or other receptacle which is arranged below but independently of the hopper, as shown in the construction illustrated in Figs. 1 and 2. In such case the lower end of the receiving-hopper B is closed by a pair of balanced doors or gates L, having their axes at one end geared together by segmental gears *ll*, so that the doors will always open and close simultaneously. The opposite end of the axis of one of these doors or gates is provided with a finger *l'*, which on the descent of the hopper will come into contact with a projection *m* on a fixed part of the frame, so as to give the doors a quarter-turn to the open position to discharge the grain from the hopper into the bag which is held below. As the hopper B rises again this finger *l'* will come into contact with another projection *m'*, which gives a quarter-turn in the opposite direction to the doors or gates to close them again. The upper projection *m'* fails to act on the finger *l'* on the descent of the hopper because it is pivoted and free to turn when

pressed down, but cannot yield in the opposite direction because its rear end is supported by a pin *m*². In this case I have shown the stops *m m'* as carried by the ring R, which is supported on the frame D and which receives the mouth of the bag to be filled.

When the machine is constructed to weigh the grain in the bag, the receiving-hopper B may be made quite shallow and adapted to have the mouth of the bag held to its open lower end, as shown in Fig. 7. The bag itself may be supported upon a platform P, suspended by rods *p* from the lugs *d* on the receiving-hopper. The weighing devices and the mechanism for closing the doors E E', however, may be the same as described.

The receiving-hopper B may be provided with a suitable counter-balance, as indicated by the dotted lines in Fig. 7, to raise the receiving-hopper again when the grain-bag is removed or in the construction such as shown in Fig. 1 when the grain has been emptied from the hopper. The weights upon the weighing-levers H will in such case be suitably adjusted of course.

It should be understood that the devices for opening and closing the gates of the feed-hopper may, if desired, be duplicated—that is, there may be a second set on the opposite side of the machine from the first set, as indicated by the dotted lines in Fig. 1. In the same way the tripping devices for opening and closing the gates at the bottom of the receiving-hopper may be duplicated.

I claim as my invention—

1. The combination of a grain-weighing machine with a feed-hopper having two centrally-pivoted gates to close the discharge-opening in the feed-hopper and devices for closing these gates successively.

2. The combination of a grain-weighing machine with a feed-hopper having two centrally-pivoted gates of different sizes to close the discharge-opening and a spring to close one of the gates and retaining and releasing devices therefor, substantially as specified.

3. The combination of a grain-weighing machine with a feed-hopper having two centrally-pivoted gates of different sizes to close the discharge-opening and a spring to close one of the gates, retaining and releasing devices therefor, and means for positively opening and closing the other gate.

4. The combination of the receiving-hopper of a grain-weighing machine with a feed-hopper having a spring-operated pivoted door, a retaining-latch to keep the door open against the action of its spring, and a projection upon the receiving-hopper to disengage the latch and free the door to permit it to close.

5. The combination of the receiving-hopper of a grain-weighing machine with a feed-hopper having a spring-operated door, a retaining-latch for the latter, a projection upon the receiving-hopper to release the latch, and devices for positively reopening the gate against

the action of the spring when the receiving-hopper is raised again.

6. The combination of the receiving-hopper of a grain-weighing machine with a feed-hopper having two differently-sized gates centrally pivoted, one of the gates having a crank on the end of its axis, and an arm on the receiving-hopper, and a cam-slot to close or open the gate according to the movement of the receiving-hopper.

7. The combination of the weighing-levers of a grain-weighing machine with a receiving-hopper normally suspended from and carried by the grain-weighing levers, but free to be disengaged therefrom when the levers tilt under the load, all substantially as set forth.

8. The combination of the weighing-levers of a grain-weighing machine having short arms provided with latches, with a receiving-

hopper having arms with hooked ends to engage with the weighing-levers, but free to be disengaged from the latter when the levers tilt under the load.

9. The combination of the receiving-hopper of a grain-weighing machine having its lower end closed by balanced pivoted gates geared together, with two stops on the frame to act on a finger on the axis of one of the gates to open the latter on the descent of the hopper and to close them again when the hopper rises.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HAMILTON PARRISII.

Witnesses:

EDITH J. GRISWOLD,
JOHN REVELL.