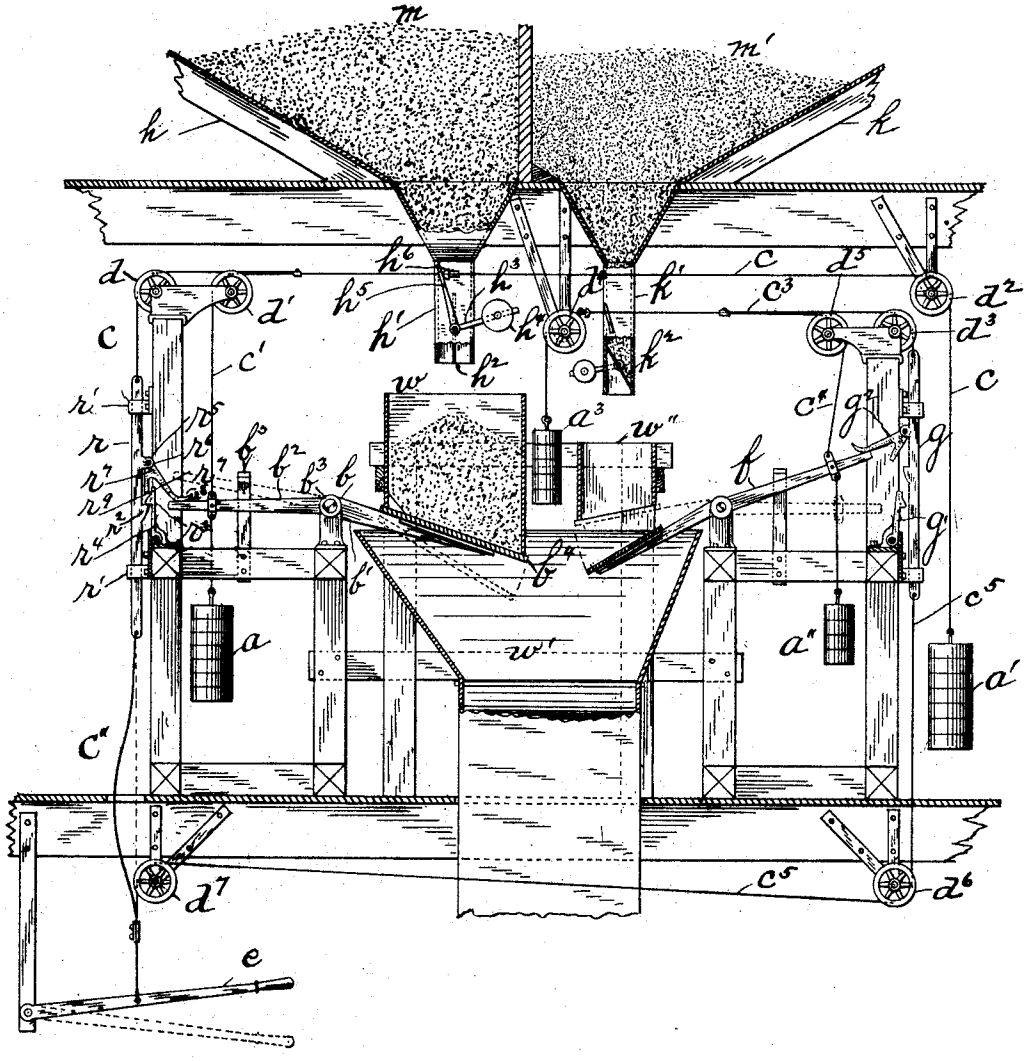
No. 632,284. Patented Sept. 5, 1899.

W. SEWARD.

AUTOMATIC WEIGHING MACHINE.

(Application filed Nov. 15, 1898.)

(No Model.)



Witnesses
Charles Hanimann
Herman Meyer

Inventor
William Seward
By His Attorney William R. Baird

UNITED STATES PATENT OFFICE.

WILLIAM SEWARD, OF NEW YORK, N. Y.

AUTOMATIC WEIGHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 632,284, dated September 5, 1899.

Application filed November 15, 1898. Serial No. 696,497. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SEWARD, a citizen of the United States, residing in the borough of Manhattan, New York city, in the county and State of New York, have invented certain new and useful Improvements in Automatic Weighing-Machines, of which the following is a specification.

My invention relates to automatic weighing-machines, and its novelty consists in the construction and adaptation of the parts, as will be more fully hereinafter pointed out.

In the drawing is illustrated a side elevation and partial vertical section of two of my improved machines at different stages of their operation and showing their joint use.

I will describe the construction and mode of operation of one machine first.

A feed-hopper h, suitably supported above the weighing mechanism and adapted to contain the material m to be weighed, is made with sloping sides and a funnel-shaped bottom provided with a dependent chute h' in a manner well known to the art. The chute is adapted to be closed by a valve h^2, adapted to oscillate on a horizontal axis supported in bearings in the side of the chute. It is kept normally closed by means of a projecting lever h^3, provided with a weight h^4, which may be rigidly or adjustably secured to it. It is opened by means of an upwardly-projecting lever h^5, adapted to be moved by a button h^6, secured to a cord c, the use of which will presently appear.

The scale-beam b consists of a bent lever having one arm b^2 extending rearwardly and another arm b' extending forward from a suitably-supported rock-shaft b^3, on which the lever as a whole is adapted to oscillate. The arm b' is made so as to slope downward and supports upon its upper side the bottom b^4 of the weighing-hopper w, which is suitably supported in any convenient manner. To the arm b^2 of the scale-beam is secured by a strap or sleeve or in any other suitable manner a cord c', to which is attached a weight. A stop b^5 serves to limit the upward oscillation of the arm b^2 as it turns on the shaft b^3.

A latch-rod r, adapted to slide vertically in guides r' r', attached to the framework of the mechanism, is provided with a latch r^2, adapted to engage with a catch r^3, pivoted on the framework of the machine and normally held against the latch by a spring r^4. The latch-rod r is provided with a lug r^5, forming a bearing for a pivot r^6, on which a trip r^7 in the form of a bell-crank lever is adapted to oscillate. The longer member r^8 of this trip rests normally against the arm b^2 of the scale-beam. The smaller member r^9 depends between the latch-rod r and the upper end of the catch r^3.

The cord c is secured to the upper end of the latch-rod r and passes over a pulley d, a second pulley d', and a third pulley d^2, a weight a' being attached to its other end. The several pulleys are supported in bearings on the framework of the machine. The cord c is secured to the cord c' at any convenient place between the pulleys d' and d^2. A third cord c'' depends from the lower end of the latch-rod r and is fastened to a hand-lever e, pivoted to the wall or in some other suitable location.

A receiving-hopper w' is placed underneath the weighing-hopper w.

The operation of the device is as follows: As illustrated in the figure, the feed-hopper valve h^2 is open. This permits the material to be weighed to fall into the weighing-hopper w. This action continues until the weight of the accumulated material is sufficient to counterbalance the weight a and to tip the scale-beam b around its shaft b^3. The arm b^2 being raised the trip r^7 is made to swing forward on its pivot. This forces the catch r^3 in the same direction and loosens the latch-rod r, which is at once pulled upward by the cord c, acted upon by the weight a'. As, however, the cord c moves from left to right, the button h^6, attached to it, is forced to move in the same direction. The pressure to the left on the lever-arm h^5 being thus released the weight h^4 under the action of gravity tips the valve h^2 and closes the chute h' against the discharge of further material.

It is evidently desirable that the amount of the material permitted to pass into the weighing-hopper w after the scale-beam has been tipped should be as small as possible, and hence the weights a and a' should be so adjusted as to insure a rapid closing of the

valve. The weight of the two arms b' and b^2 of the scale-beam should likewise be equal, or nearly so.

The weight a', which is suspended from the cord c, not only opens and closes the valve by means of the button h^6 and the weight h^4, but as the cord c' (which is attached to the end of the lever-arm) is itself attached to cord c the weight a' holds the bottom of the weighing-hopper w open until the load is entirely discharged. The weight a' is slightly heavier than the counterweight a, thus insuring the entire discharge of the load.

It can be seen that after the discharge of the machine the weights a and a' are acting against each other, the result being that in resetting the mechanism for another charge the only weight to lift is the difference between the weights a and a'.

As the sides of the weighing-hopper w are stationary when the scale-beam is tipped the contents of the hopper w are dumped into the receiving-hopper w' below. The valve h^2 will remain closed, being held in position by the weight a' until the hand-lever e is depressed. This will move the button h^6 and open the valve and at the same time pull down the latch-rod r and set the mechanism for another weighing operation.

Mounted alongside of the mechanism just described is a precisely similar second mechanism, in which f is the scale-beam, w'' is the weighing-hopper, k is the supply-hopper, m' the material therein, k' the chute, k^2 the cut-off valve, g the latch-rod, a'' and a^3 the weights, c^3, c^4, and c^5 the cords, g' the catch, g^2 the trip, and d^3, d^4, d^5, d^6, and d^7 the guiding-pulleys for the cord c^2. The operation of the device is precisely the same as the one previously described when it is worked alone. It is one purpose of my invention, however, to use such weighing mechanisms conjointly and for the purpose of mixing predetermined quantities of materials. This is a necessary step in the manufacture of many compound materials, and my device affords an easy, accurate, and rapid way of accomplishing it. To that end the two hoppers h and k are mounted in close proximity. The weighing-hoppers each discharge into the same receiving-hopper, and by attaching the cord c^5 to the same hand-lever e as is used to operate upon the cord c^2 a simultaneous joint operation of the two mechanisms is secured. The lengths of the cords may likewise be so adjusted that the valve for one weighing mechanism may be closed at a predetermined time after the valve of the other or another similar mechanism. Similarly the number of such mechanisms conveniently grouped and discharging into a common hopper may be indefinitely increased.

Within certain limits the details of my invention may be varied without departing from the principles upon which it is based. The cut-off valves of the supply-hopper may be of any common form or style. The material, location, and size of the hoppers and most of the mechanical parts of the structure may be changed within the limits of the skill of an educated mechanic.

Having described my invention, what I claim as new is—

1. The combination of a plurality of valve-controlled supply-hoppers, weighing-hoppers adapted to receive the material discharged therefrom, scale-beams carrying the bottoms of said weighing-hoppers, means brought into action through the tipping of the scale-beams whereby the valves of the several supply-hoppers discharging into their respective weighing-hoppers are closed and the contents of each weighing-hopper are discharged into a common receiving-hopper, and a single means for opening the valves of all of said supply-hoppers simultaneously or successively.

2. The combination with a scale-beam supporting the bottom of a weighing-hopper and normally held against the sides of the latter by a weight suspended from the scale-beam beyond the fulcrum thereof, of means for counteracting the influence of said weight and simultaneously acting upon the outlet-valve of the supply-hopper in which the material to be weighed is stored.

3. The combination of the weighing-hopper, the movable bottom therefor, the weights and their cords, the latch-rod, its catch and trip and means adapted to pull down said latch-rod, the supply-hopper and its outlet-valve.

In testimony whereof I have hereunto set my hand, this 14th day of November, 1898, in the presence of two subscribing witnesses.

WILLIAM SEWARD.

Witnesses:
HERMAN MEYER,
CHESTER H. HIGGINS.