

UNITED STATES PATENT OFFICE.

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AUTOMATIC WEIGHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 790,146, dated May 16, 1905.

Application filed May 19, 1903. Serial No. 157,790.

To all whom it may concern:

Be it known that I, ALBION L. F. MITCHELL, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Automatic Weighing-Machines, of which the following is a specification.

This invention relates to weighing-machines in which the weighing is automatically performed, so that when one of the buckets or receptacles of the machine has received a predetermined quantity of material from a chute the feed of the material is automatically stopped and the full bucket discharged.

One of the objects of the present invention is to provide a means for disposing of dust in the weighing of powdered material and insure the proper feeding of the material into the buckets or receptacles of the machine.

A further object of the invention is to improve the general construction and operation of the machine, as more fully hereinafter set forth.

Of the accompanying drawings, Figure 1 represents a vertical sectional view of an automatic weighing-machine embodying my improvements. Fig. 2 represents a detail side elevation of one of the buckets. Fig. 3 represents an elevation of the upper part of the chute. Fig. 4 represents a section on line 4 4 of Fig. 3. Fig. 5 represents a detail sectional view of one of the guards for the pivots of the weight-levers. Fig. 6 represents a section on line 6 6 of Fig. 5. Fig. 7 represents a perspective view of the pivoted spouts and holder.

The same reference characters indicate the same parts in all the figures.

The machine illustrated in the drawings is of the same type as the weighing-machine forming the subject of a patent granted to me July 23, 1901, No. 679,154, and the main features of the machine need therefore be described only in a general way.

10 is a frame having pivots for a beam 11, on which two buckets 12 12 are pivotally suspended. On the two ends of the beam are pivoted trip-catches 13 13, which reside alternately underneath two weight-levers 14

14, pivoted between the side arms of the frame, said catches and levers having, respectively, knife-edge hardened plates 15 16. When the right-hand bucket is down and the left-hand bucket up, as shown in Fig. 1, the left-hand bucket is filling and the right-hand bucket has discharged a previous load. As soon as the left-hand bucket has received its quantum it lifts the right-hand catch 13, the edge of whose plate 15 escapes past the edge of the plate 16 of the right-hand weighted lever. In order to make the rise of the inner ends of the levers 14 as slight as possible, I drop the pivotal axes of said levers below the edges of the plates 16 a considerable distance, so that the said edges move on arcs at a considerable inclination to the paths of the edges of the plates 15 on catches 13. When either end of the beam 11 rises, the plates 15 16 will therefore quickly separate, the plate 15 moving in an arc opposite to that of the plate 16.

17 is a feed-chute having branches 18 18 discharging into the respective buckets, and 19 is a pivoted hollow switch or spout oscillated by the movements of the beam 11 through the arm 20 on said beam, having a pin 21 engaging an arm 22 on the holder of the spout 19. The movements of this spout direct the stream of material into the one or the other of the branches 18.

Along the two sides of the chute 17 and extending along the outer sides of the branches 18 are two air and dust ducts 23 23, whose lower ends terminate within the mouths of the buckets 12 alongside of the orifices of the chute branches 18 and whose upper ends are preferably connected, as shown, with pipes 24 24, returning into the hopper 25, from which the material is fed into the chute 17. The ducts 23 act as vents for the buckets 12, allowing the air which is displaced from said buckets by the entrance of the material thereinto to escape, thereby allowing the material to feed evenly and with an unbroken stream into either bucket, and thus creating much less dust than is ordinarily created. Such dust as arises from the material falling into the buckets passes up the ducts

23 with the air and is directed into the hopper 25. Much greater cleanliness of the machine and surroundings and greater comfort to the operative attending the machine are secured by this improvement than is commonly secured with other weighing-machines. Moreover, this construction enables the results named to be obtained without the employment of a suction-fan or other means for producing an artificial draft or exhaust.

The stem or delivery-pipe 26 of the hopper 25 leads into a pipe-section 27, which is removably fitted to the top of the chute 17. The deflecting spout or switch 19 is removably mounted below this pipe-section in a rectangular frame or holder 28, by which construction I am enabled to remove the spout for cleaning purposes or access to the branches of the chute. This holder is provided with knife-edge trunnions 29, supported on hardened plates 30, which are slidably fitted in guides 31, formed on the sides of the chute 17. Above the plates 30 plates 32 are removably mounted in said guides, and together with the plates 30 they serve to substantially close the sides of the chute 17 where the trunnions 29 pass through, thereby preventing the escape of dust.

33 represents closers or pivoted bottoms, hinged at 34 to the sides of the buckets 12, each closer being moved to closed position by gravity and locked by a latching-arm 35 in conjunction with a locking portion 36 on a latch-plate 37, fixed to the side of the bucket, the latching-arm being moved into closed position as the bucket rises by a stationary pin or abutment 38 engaging its upper side. As the bucket descends with a full load a second stationary pin or abutment 39 raises the latching-arm 35, and the free end of said arm rides up an incline 40 on the latch-plate. As thus far described the locking mechanism for the closers is constructed as described in my aforesaid patent; but I herein provide a guard 41, formed on the latch-plate 37 and located above and substantially parallel to the incline 40, the purpose of said guard being to prevent the latching-arm 35 from being thrown back too far on its pivot when the bucket descends and said arm is released from the locking-shoulder 36. The plate 37 is formed with a slot 47, occupied by screws 48 48, mounted in a supporting-plate 49 on the side of the bucket, whereby the plate 37 may be adjusted and the relation of the locking-shoulder 36 to the latch-arm 35 varied.

In Fig. 2, 340 represents a portion of a steadying or guiding lever similar to that shown at *i* in Fig. 4 of my aforesaid patent. This lever 340 is notched at its end, the notch fitting a projecting portion of the pin, on which the closer 33 is hinged at 34.

The weighted levers 14 are fixed to rods 42, whose ends are formed with knife-edge trunnions 43 43, supported in studs 44 44,

which are mounted in the side arms of the frame 10. To prevent said trunnions from jarring out of their seats 44, I provide guard-fingers 45, overlying the said trunnions and pivotally secured to the frame-arms by screws 46, which may be turned to frictionally hold the guard-fingers, but which may be loosened to allow said guard-fingers to be thrown up out of position to release the trunnions and allow the weighted levers to be removed.

I claim—

1. A weighing-machine including in its construction a movable weighing-receptacle, means for weighing said receptacle and its contents, a feed-chute, and a duct having its lower end within the mouth of the receptacle and constituting an air and dust vent for said receptacle, the said receptacle being movable independently of the duct whereby the efficiency of the weighing-machine will not be impaired by the presence of said duct.

2. A weighing-machine including in its construction a weighing-receptacle, a feeding-channel delivering thereto, means for weighing said receptacle and its contents, and an air and dust duct leading from within the mouth of said receptacle back into said channel, the said receptacle being movable independently of the duct whereby the efficiency of the weighing-machine will not be impaired by the presence of said duct.

3. In a weighing-machine, a pivoted scale-beam, a bucket supported thereby, a trip-latch pivoted to said beam, and a pivoted weight-lever engaging said latch and having its pivotal axis located a substantial distance below the trip-engaging portion of said lever, the pivots of said beam and lever being relatively positioned to cause the engaging portions of the latch and lever to move in opposite arcs.

4. In a weighing-machine, a pair of weighing-receptacles, a chute having outlets to said receptacles, a pivoted annular spout-holder, and a deflecting-spout removably supported in said holder and adapted to deflect the material alternately into said outlets.

5. In a weighing-machine, a pair of weighing-receptacles, a chute having outlets to said receptacles, a deflecting-spout adapted to direct the material alternately into said outlets and having a trunnion extending through the wall of said chute, and a pair of removable plates mounted on said wall and located respectively above and below said trunnion.

6. In a weighing-machine, a rising and falling bucket, a closer pivoted thereto and having a pivoted latching member, a cooperating latching element on the bucket, an incline above said latching element, stationary means to actuate said member, and an inclined guard located opposite and substan-

tially parallel with the incline above said element for limiting the swinging movement of said member.

5 7. In a weighing-machine, a rising and falling bucket, a closer pivoted thereto and having a pivoted latching member, a guard-plate mounted on said bucket and having a latching-shouldercoöperating with said member, and provisions for adjusting said plate
10 to vary the relation of said shoulder with respect to said member.

8. In a weighing-machine, a pivoted scale-beam, a weighing-bucket supported thereby,

a pivoted weight-lever coöperating with said beam and having a trunnion, a trunnion- 15 seat, and a pivoted guard having its free end extending over said trunnion to hold it in its seat, means being provided for frictionally holding said guard against turning on its pivot. 20

In testimony whereof I have affixed my signature in presence of two witnesses.

ALBION L. F. MITCHELL.

Witnesses:

C. F. BROWN,
A. D. HARRISON.