(No Model.) 3 Sheets—Sheet 1.

F. H. RICHARDS.

WEIGHING MACHINE.

No. 565,222. Patented Aug. 4, 1896.

Fig. 2.

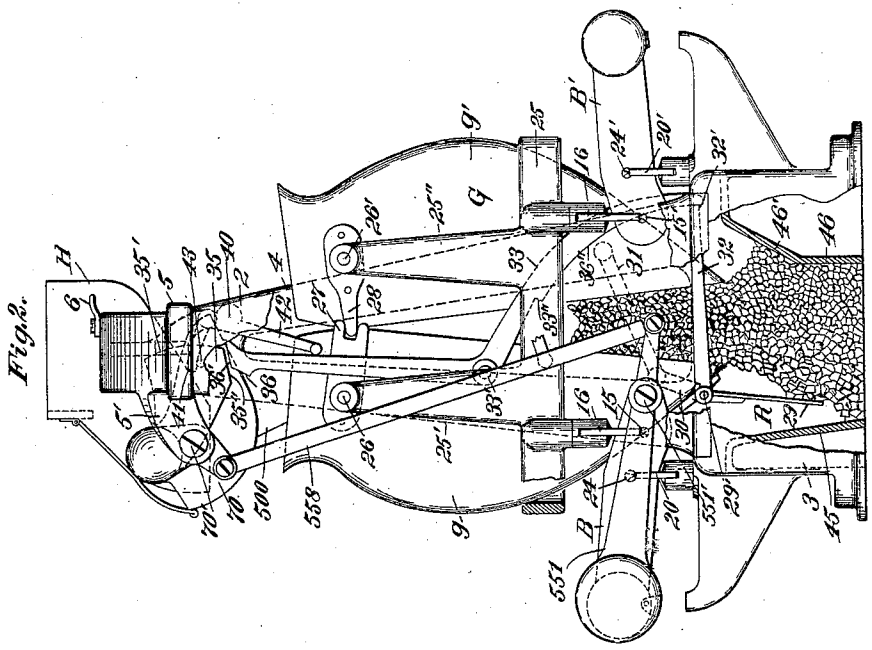
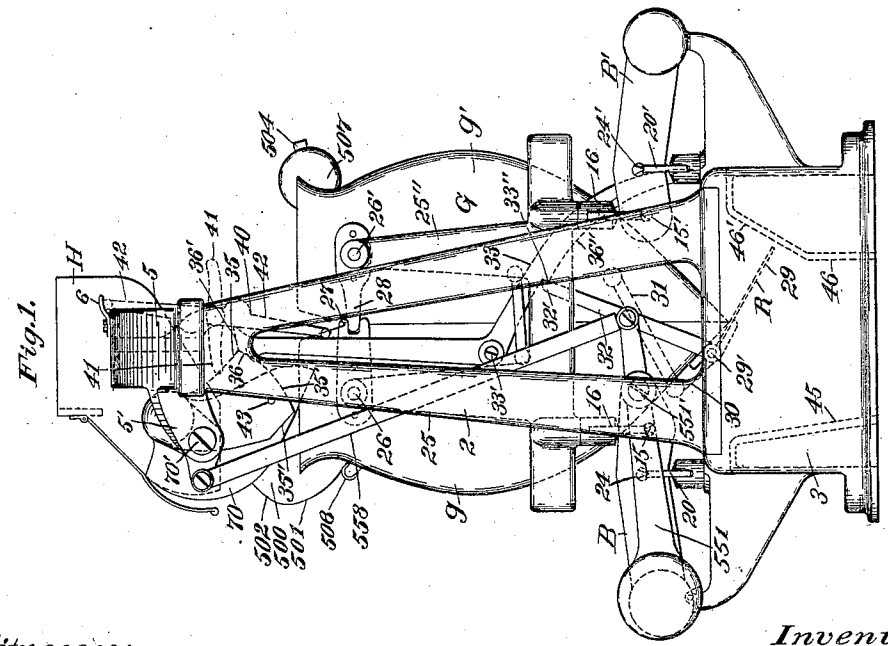


Fig. 1.



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(No Model.) 3 Sheets—Sheet 2.

F. H. RICHARDS.

WEIGHING MACHINE.

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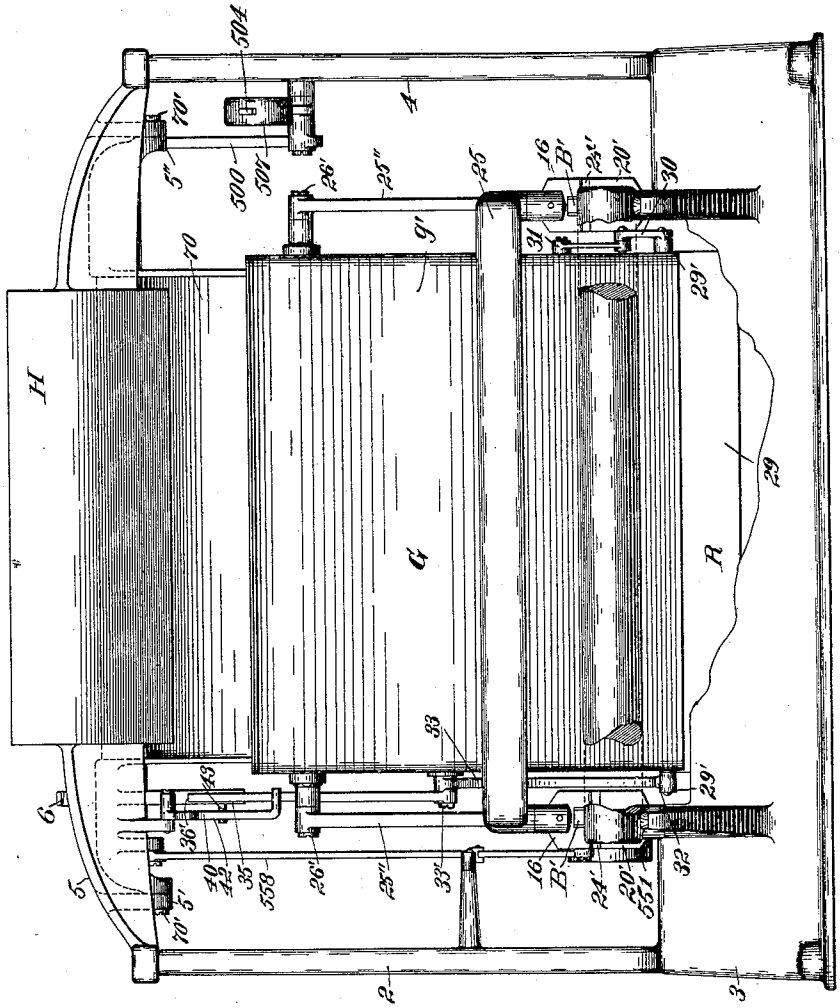

Fig. 3.

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(No Model.) 3 Sheets—Sheet 3.

F. H. RICHARDS.

WEIGHING MACHINE.

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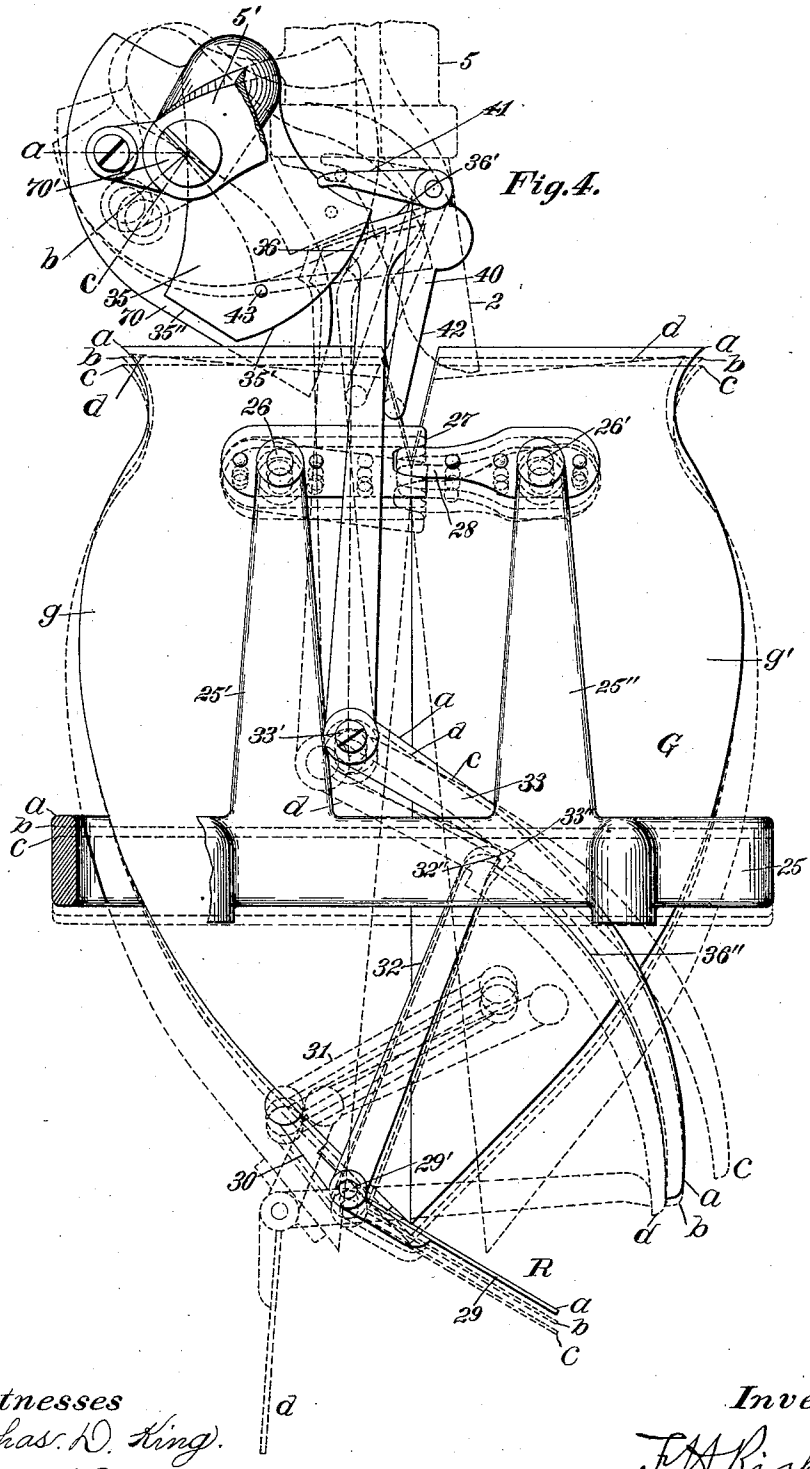

Fig. 4.

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UNITED STATES PATENT OFFICE.

FRANCIS H. RICHARDS, OF HARTFORD, CONNECTICUT.

WEIGHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 565,222, dated August 4, 1896.

Application filed February 24, 1896. Serial No. 580,392. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS H. RICHARDS, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Weighing-Machines, of which the following is a specification.

This invention relates to that class of automatic weighing-machines which are more especially adapted for the weighing of wet and slow-running substances—such as coal and other minerals.

The object of the invention is to provide a weighing-machine of the class specified having an improved organization of mechanism for rendering the machine automatic in its operation and safe in its action.

With these objects in view the machine, in the preferred form and arrangement thereof herein shown, embodies a beam mechanism; a bucket mechanism comprising a two-part bucket, one of whose parts is shiftable relatively to the other for discharging the load; a regulator shiftably supported on one of said bucket parts, and a reciprocally-effective interlocking stop system operative, respectively, with the valve and the regulator devices, whereby the premature operation of each of these members, and also of the bucket mechanism, is positively prevented and that nicety of operation secured which is essential to the successful operation of a weighing-machine.

In the drawings accompanying and forming part of this specification, Figure 1 is a right-hand end elevation of my improved weighing-machine, the valve being open and the bucket parts closed for receiving the bucket-load. Fig. 2 is a similar view of the machine, illustrating the valve closed and the bucket open and discharging the bucket-load. Fig. 3 is a front elevation with the operative mechanisms of the machine in positions corresponding with Fig. 1. Fig. 4 is a diagrammatic view, in right-hand end elevation, of the principal operative mechanisms of the machine and illustrates, by full and dotted lines, the positions assumed by said mechanisms throughout a cycle of movements thereof.

Similar characters designate like parts in all the figures of the drawings.

The framework for supporting the operative parts of the machine may be of any suitable construction, and it is shown in the drawings comprising two side frames or uprights 2 and 4, mounted upon a chambered supporting-base 3 and connected by a top plate or beam 5, which latter is illustrated carrying a supply chute or hopper H, which may be of some well-known type.

The base 3 is illustrated carrying beam-supports in the form of V-shaped bearings 20 and 20′ for pivotally supporting the beam mechanism, which latter supports the bucket.

The beam mechanism is illustrated consisting of the oppositely-disposed counterweighted scale-beams B and B′, the arms of which are shown carrying pivots or knife-edges 24 and 24′, which are supported by said V-shaped bearings.

The arms of the scale-beams intermediate of the beam-supports are illustrated carrying bucket-supports 15 and 15′, which pivotally support the V-shaped bearings 16, carried by the bucket-frame 25.

The bucket-frame for carrying the bucket is illustrated as being approximately rectangular, the front and back sides thereof constituting bucket-stops, the peculiar function of which will be hereinafter specified. The bucket-frame 25 is also illustrated provided with risers or brackets 25′ and 25″, which serve as supports for the two bucket parts or sections.

The bucket, which is designated in a general way by G, is illustrated comprising the two parts or sections g and g', which are pivotally supported at 26 and 26′, respectively, by the arms or risers 25′ and 25″ of the bucket-frame, said pivotal supports being located at a point above the centers of gravity of the empty bucket-sections, so that when the bucket has discharged its bucket-load said sections will be thereby returned to the normal or closed position thereof, as indicated in Fig. 1, thereby obviating the employment of extraneous means for this purpose.

Holding means, embodying a latch, to be hereinafter described, are employed for normally holding the bucket or bucket parts g and g' closed, and when said holding means release the two bucket parts the weight of the bucket contents will be effective for forcing the said sections apart or open for dis-

charging the bucket-load, said opening movement being limited by the front and back sides of the rectangular bucket-frame 25, against which said sections *g* and *g'* may abut. The bucket-sections will be approximately semiangular and when closed will taper to a point, the angle of disposition being relatively great, so that particles of the bucket contents cannot adhere to the inner faces of the bucket-walls when the bucket or bucket-sections are forced open for discharging the bucket-load, as indicated in Fig. 2.

On the opening movement of the two bucket-sections the entire load or mass within the bucket is instantly subjected, simultaneously through all parts of the same, to a shifting action, whereby the material tends to clean the bucket-surfaces of all matter adhering thereto in a more thorough manner than in the ordinary types of buckets.

It is essential that the two bucket-sections should move in unison during the opening and closing movements thereof, and the present invention contemplates the provision of means for effecting this result. One of the sections of the bucket, herein illustrated as the section *g*, is shown carrying the two teeth 27, and a tooth 28, meshing therewith, is shown carried by the other section *g'*, these teeth being in the nature of ordinary gear-teeth. It will be evident that by the employment of this peculiar form of connection between the two bucket-sections *g* and *g'* a movement in unison thereof is insured as these swing about their pivots for either discharging the bucket-load or for returning to the normal or closed position thereof.

One of the parts or sections of the bucket G will be provided with a regulator, preferably shiftably supported thereon and in position to be acted upon by the mass discharged by the bucket, so that the movement of said bucket-section, and hence its complementary section, may be impeded or retarded during the bucket-discharging period, whereby said bucket-sections may be also limited in their discharge movement, so that the bucket may have ample time in which to discharge its bucket-load.

A regulator, which is designated in a general way by R, is shown, consisting of a regulating plate or blade 29, which is pivotally supported at 29' by the bucket-section *g* for swinging movement thereon and preferably operatively connected with the section *g'*, so that said regulator and bucket-section *g'* may have simultaneous shifting movements, whereby said regulator may be swung into or out of the path of movement of the stream discharged by the bucket to be acted upon by said stream or the mass of material composing the same for retarding the closing movement of the bucket-sections.

The regulator R is illustrated operatively connected with the bucket-section *g'* by a toggle connection, which, in the form shown, comprises the two members 30 and 31, the first mentioned of which is an arm rigidly secured to the pivot of said regulator and pivotally connected with the connecting-link 31, which latter constitutes the other member of said toggle, said last-mentioned toggle member being shown pivotally connected with the bucket-section *g'*.

The bucket-section-holding means, embodying a latch, are normally operative for holding the two bucket-sections together or in the closed position thereof.

The pivot 29' of the regulator R is illustrated carrying the stop member 32, the latter being also operative with the bucket part *g*, the free end of which is illustrated provided with a stop or detent 32' in position to be engaged by a bucket-latch when the parts are in the closed position previously described.

The bucket is illustrated carrying a latch 33, pivotally supported at 33' on the bucket-section *g* for swinging movement, and as having the detent or stop 33'' in position for engaging the coöperating stop or detent 32' of the regulator-arm or stop member when the bucket is in its closed position. There will be a preponderance of weight of the latch 33 below the pivot thereof, so that the normal tendency thereof, or of the lower arm thereof, is to swing to what is illustrated as the left in Fig. 1, for preventing opening movement of the bucket-sections. The upper arm of the latch is in position to be engaged by a latch-actuator, so that when so engaged it will be forced to the left, whereby said latch will be swung about its pivot and the lower arm of said latch swung to the right, whereby the detents 33'' and 32' of the latch 33 and regulator-arm 32, respectively, will be disengaged and the two bucket-sections *g* and *g'* released or freed of all restraint, so that they may be opened. (See Fig. 2.) On the release of the two bucket-sections the weight of the bucket contents will force the same open or apart, and simultaneously therewith the regulator R will be shifted by the bucket-section *g'* through the medium of the toggle connection therewith and into the path of the stream discharged by the bucket, where it may be acted upon by the mass to thereby retard the movement of the two sections until these have fully discharged their contents.

As a means for controlling the supply-stream from the supply chute or hopper H, I prefer to employ the valve 70 illustrated, which is substantially similar to the improved valve shown and described in Letters Patent No. 535,727, granted to me March 12, 1895. The valve 70 is illustrated pivoted at 70' for oscillatory movement between the arms or brackets 5' and 5'', depending from the top plate 5 of the machine. The valve is also illustrated located substantially beneath the mouth of the supply-chute and extending beyond the forward edge thereof sufficiently far to support the descending column or stream of material when the valve is closed. The valve is also preferably balanced so as to

have, normally, no tendency to either open or close, the balance-weight being shown at 90′, extending from opposite ends of the valve-pan.

As a means for actuating the valve to close the same, I prefer to employ the valve-actuating mechanism shown and described in Letters Patent No. 548,843, granted to me October 29, 1895, which is illustrated in the accompanying drawings, and which will now be briefly described.

A valve-closing cam depending from and oscillatory with the valve is illustrated at 500, and provided with the connected cam-faces 501 and 502, the latter being of relatively greater power or efficiency than the former.

A valve-closing lever is illustrated at 504 (see Fig. 1) pivoted to the framework of the machine and having at its rear end an anti-friction-roll 506, in position for engaging the cam-surfaces 501 and 502. The lever is shown provided with a weight 507 on the forward arm thereof, said weight being preferably adjustable along said arm. During the reducing period the roll 506 will ride along the cam-face 501, thereby oscillating the cam 500, and hence closing the valve 70 for reducing the volume of the supply-stream. At the commencement of the poising period the roll 506 will be at the intersection of the two cam-faces, at which point in the operation of the machine the valve is momentarily held by suitable means (not shown) to permit the flow of the drip-stream into the nearly-loaded bucket G. On the release of the valve the roll 506, leaving the cam-face 501, will engage the cam-face 502, whereby the valve is quickly closed for cutting off the supply-stream.

As a means for actuating the valve to open the same, I prefer to employ the mechanism illustrated, which is substantially similar to the improved valve-actuating mechanism shown and described in Letters Patent No. 548,839, granted to me October 29, 1895, to which reference may be had, and which will now be briefly described.

The valve 70 is illustrated provided with the depending rod 558, pivotally connected thereto a point to the rear of the center of movement thereof, the lower end of which is in position to be engaged by a valve-opening actuator.

The scale-beam B is illustrated carrying the supplemental counterpoise or counterweighted lever 551, pivoted thereto at 551′, constituting a valve-opening actuator, and which normally forms a part of the bucket-counterpoising mechanism, or that part of the beam mechanism located outside of the beam-supports, but which is shiftable onto the bucket-poising mechanism, or that part of the beam mechanism located between said beam-supports at a predetermined point in the operation of the machine.

During the descending movement of the bucket the supplemental counterpoise 551 will be carried with the scale-beam B thereof, so that said counterpoise 551 is also operable for limiting the closing movement of the valve by engaging the free end of the connecting-rod 558. This supplemental counterpoise is shiftable from its normal position and onto the bucket-poising mechanism. On the return stroke of said member to its normal position it is effective for engaging the free end of the connecting-rod 558, thereby imparting an upward thrust thereto for opening the valve.

In connection with a valve and a shiftable regulator, a reciprocally-effective stop member operative, respectively, with the valve and with the regulator, is employed and is so positioned as to limit the opening movement of the valve by the non-shifting of the regulator and the shifting of said regulator by the non-closing of the said valve, whereby the bucket-sections are also limited in their movements, or positively held against movement while the valve is in its open position, and the valve held against opening movement during the bucket-discharging period, and the bucket-latch 33 is illustrated constituting such stop member.

The valve is illustrated provided with a stop member 35, which is in the nature of a regulator-movement limiter, and the stop member 32 of the regulator is in the nature of a valve-movement limiter, the interposed stop member 33 reciprocally limiting the movement of these two first-mentioned stop members, and thereby the movement of the valve and of the regulator, and hence of the two bucket parts *g* and *g′*.

The valve-operative stop member 35 is illustrated provided with two stop-faces 35′ and 35″, the first-mentioned of which is a curved face and is defined by an arc struck from a center of movement of the valve 70, and the other of which is a straight face departing from said curved face. The stop member 33, carried by the bucket, is also illustrated provided with two stop-faces which coact with said first-mentioned stop-faces, (one of which is illustrated at 36,) and as slightly curved, and the other of which is shown at 36′ as a straight stop-face. Said stop member 33 is also shown provided with a second pair of stops 33″ and 36″, the latter being curved and approaching an arc struck from the center of movement of the regulator R when the bucket is in its closed position, as indicated in Fig. 1. The supplemental stops 33″ and 32′ being in engagement, thereby limiting the shifting movement of the regulator R, and hence the opening of the bucket sections, the disengagement of these stops will be positively prevented by the contact of the stop-face 36′ with the stop-face 35′ of the stop member 35, said stop member 35 serving, practically, as a fixed abutment so long as these stops are in contact or approximately in contact. When, however, the curved stop-face 35′ has passed beyond the stop-face 36, the stop member 33 may be oscillated about its pivot on the bucket-section *g*,

and the detents 33″ and 32′ disengaged, whereby the regulator R may be released, the bucket-sections opened, and the stop member 33 thrust under the valve-operative stop member 35 by a suitable actuator, the stop-faces 36′ and 35″ being approximately in contact, whereby the opening movement of the valve may be prevented. On the disengagement of the two stops 33″ and 32′ the bucket-sections, as hereinbefore stated, will be released, so that the bucket-contents may force the same apart for discharging the bucket-load. As the bucket-sections are forced apart the stop member 33 will be oscillated in unison with and about the regulator-pivot, and any tendency of the stop member to oscillate about its pivot, whereby the stop member might be moved from under the valve-stop member 35, will be effectively limited and prevented by the abutment of the stop-face 36″ of said stop member 33 against the stop member 32, whereby the opening movement of the valve is limited by said regulator-stop member, so long as the regulator is in its shifted position.

As a means for disengaging the detents 33″ and 32′ of the latch and regulator arms, respectively, a latch-actuator is shown at 40 and in position to be operated by some reciprocatory member of the machine, herein illustrated as the valve 70, said actuator being in the nature of a valve-operated actuator—that is, one actuated by and from the power of the closing-valve.

The valve-actuator is shown in the form of an angle-lever independently supported of the valve and pivoted at 40 for oscillatory movement, one arm of which (illustrated as the arm 41) being in position to be engaged by a suitable device, such as the pin 43, operative with the valve 70, and illustrated carried by the stop member 35 thereof. The arm 41 is in position to be normally engaged by said pin 43, whereby the other arm 42 of said actuator 40 will operate or actuate the latch and disengage the detent 33″ from the detent 32′ of the regulator-stop arms and simultaneously therewith thrust the stop member or latch 33 under the valve-operative stop member 35, whereby it may limit or prevent the opening movement of the valve during the bucket-discharging period.

On the disengagement of the detents 33″ and 32′ the bucket-sections, it will be apparent, are free of all restraint, so that the weight of the bucket-contents may force the same open or apart. On the opening of the bucket-sections the regulator R will be shifted from its normal position (illustrated in Fig. 1) to the position shown in Fig. 2 by the straightening of the toggle members 30 and 31, so that said regulator may be acted upon by the mass of material discharged by the bucket, whereby the closing movement of the regulator-carrying bucket part is retarded, and the movement of the complementary bucket-section being likewise retarded by virtue of the operative connection therebetween, so that the bucket-sections cannot close or move toward each other until the regulator has been released by the mass discharged by the bucket, as this passes into a suitable conveyer which communicates with the base 3. As a means for prolonging this retardation of the closing movement of the bucket parts g and g' by the regulator R the plates 45 and 46 are provided, which cause a temporary stoppage or choking of the discharged mass in the chambered base 3 of the machine, said plate 46, which constitutes a deflecting-plate, being shown provided with an inclined portion 46′, which tends to direct the discharged mass toward the lower edge of the regulating-plate 29.

It is desirable at periods to test the accuracy of the machine. It will be remembered that a latch-actuator 40 has been described as having the member 41 in position to be normally engaged by the pin 43, carried by the valve. Said actuator 40 is illustrated pivotally supported by the framework of the machine. When it is desired to make a test, the actuator 40 is simply grasped by hand and swung about its pivot to its inoperative position, as shown by the dotted line in Fig. 1, where it may be engaged by the spring-catch 6, carried by the top plate of the machine, to thereby retain said latch-actuator in its inoperative position. It will be observed that when in such position the member 41 of said actuator 40 has been thrown out of the path of movement of the pin 43, whereby the latter is ineffective for operating said actuator on the closing of the valve, and the test may be then made in the well-known manner.

The operation of the weighing-machine hereinbefore described is briefly as follows: Fig. 4 illustrates the operation of the machine, (the letters a, b, c, and d indicating the successive positions assumed by the operative mechanisms thereof.) The letter a indicates the normal position of the operative mechanisms at the commencement of operation, the bucket-sections or bucket being closed and held in such position by the engagement of the latch-detent 33″ with the detent 32′ of the stop member 32, and the valve being open to permit the flow of the full stream into the bucket. When a certain proportion of the material has been received by the bucket, this slowly descends to the position indicated by b, the valve being then in the position illustrated by the line b. This represents the position of the mechanisms at the commencement of the poising period, at which time the valve is momentarily held against further closing movement. The drip-stream then flows into the bucket to complete the bucket-load therein, when the valve is closed to the position c for cutting off the supply-stream. The bucket then descends to the poising line. (Shown by the letter c.) During this final closing movement of the valve the device 43, which is operative therewith, engages the arm 41 of the latch-actua-

tor 40 and oscillates said actuator 40 about its pivot, whereby the other arm 42 of said actuator, engaging the latch 33, will swing the latter about its pivot, disengaging thereby the latch and stop-arm detents 33″ and 32′, respectively, as indicated by the line *c*, and freeing or releasing the two bucket-sections. When the two sections are released, these will be oppositely swung, the line *d* indicating the open or discharging position thereof, the stop member 31 riding along the curved face 36″ of said latch as the regulator is shifted about its pivot on the bucket-section *g*.

Having thus described my invention, I claim—

1. In a weighing-machine, the combination with beam mechanism, of a bucket consisting of two parts supported by said beam mechanism, one of which is movable; and a shiftable blade connected to said movable bucket part and operable for preventing premature movement thereof.

2. In a weighing-machine, the combination with beam mechanism, of a two-part bucket supported by said beam mechanism; and a blade shiftably supported by one of said bucket parts and directly connected with the other of said bucket parts.

3. In a weighing-machine, the combination with beam mechanism, of a two-part bucket supported thereby; a blade shiftably supported on one of said bucket parts; and a toggle operatively connecting said blade with the other bucket part.

4. In a weighing-machine, the combination with beam mechanism, of a two-part bucket supported by said mechanism; a blade shiftably supported by one of said bucket parts; a stop-arm operative with said blade; a latch for said stop-arm; and a latch-actuator.

5. In a weighing-machine, the combination with beam mechanism, of a bucket consisting of two movably-supported parts carried thereby, two gear-teeth carried by one of said bucket parts; a single gear-tooth carried by the other bucket part and meshing with said teeth; and a blade carried by one of said bucket parts.

6. In a weighing-machine embodying a reciprocatory member, the combination with a two-part bucket, of means embodying a latch for holding said parts against opening movement; and a pivotally-supported latch-actuator normally operated by a reciprocatory member, said member being independent of the bucket.

7. In a weighing-machine, the combination with beam mechanism, of a supply-chute; a stream-controlling valve therefor; a two-part bucket; means embodying a latch for holding the bucket against opening movement; and a latch-actuator supported independently of the valve and in position to be operated thereby.

8. In a weighing-machine embodying a reciprocatory member, the combination with beam mechanism, of a two-part bucket supported thereby; holding means embodying a latch for said bucket parts; and an angle-lever constituting a latch-actuator and having one of the arms thereof in position for operating said latch, and the other arm in position to be operated by said reciprocatory member.

9. In a weighing-machine, the combination with beam mechanism, and with a bucket supported thereby; of a supply-chute; a stream-controlling valve for said chute; a regulator shiftably carried by said bucket; and a stop member operative with said valve and regulator for reciprocally limiting the movements thereof.

10. In a weighing-machine, the combination with beam mechanism, and with a two-part bucket supported thereby; of a supply-chute; a stream-controlling valve for said chute; a regulator shiftably carried by one of said bucket parts; and a stop member operative with the valve and regulator for reciprocally limiting the movements thereof.

11. In a weighing-machine, the combination with beam mechanism, and with a bucket supported thereby; of a supply-chute; a stream-controlling valve for said chute; a regulator shiftably supported by one of said bucket parts; and a reciprocally-effective stop member operative with said valve and regulator, and so positioned as to limit the opening movement of the valve by the non-shifting of the regulator, and the shifting of said regulator by the non-closing of the valve.

12. In a weighing-machine, the combination with a two-part bucket, of a regulator-blade pivotally supported by one of said bucket parts; and means for shifting said regulator-blade into and from the path of the bucket-discharge stream.

13. In a weighing-machine, the combination with beam mechanism, of a two-part bucket supported by said beam mechanism; holding means for said bucket parts embodying a latch; a valve; a stop member operative with said valve; and a latch-actuator in position for operating said latch whereby the same may be thrust under the valve-stop member, to thereby limit the opening movement of said valve.

14. In a weighing-machine, the combination with beam mechanism, and with a valve; of a two-part bucket supported by said beam mechanism; a blade shiftably supported by one of said bucket parts; a stop member also carried by the bucket and operable for limiting the movement of the valve; and a second stop member operative with said regulator for limiting the movement of said first-mentioned stop member.

15. In a weighing-machine, the combination with beam mechanism, and with a two-part bucket supported thereby; of a supply-chute; a stream-controlling valve for said chute; a regulator shiftably supported by one of said bucket parts; stop members operative, respec-

tively, with said valve and regulator; and a third stop member operative for reciprocally limiting the movements of said first-mentioned stop members, whereby the movements of the valve and the regulator will also be limited.

16. In a weighing-machine embodying a reciprocatory member, the combination with beam mechanism and with a two-part bucket supported thereby; of a supply-chute; a stream-controlling valve for said chute; means embodying a latch for holding said bucket parts against movement; and a latch-actuator so supported as to be normally operated by said valve, and adapted also to be swung from said normal position.

17. In a weighing-machine embodying a reciprocatory member, the combination with beam mechanism and with a two-part bucket supported thereby; of a supply-chute; a stream-controlling valve for said chute; holding means embodying a latch for said bucket parts; a latch-actuator in position to be normally operated by said valve to thereby actuate said latch, and adapted also to be swung into an inoperative position; and means for retaining said actuator in said inoperative position.

18. In a weighing-machine, the combination with beam mechanism and with a valve; of a two-part bucket supported by said beam mechanism; a stop member carried by one of said bucket parts; a stop member operative with the valve; a toggle operatively connecting the bucket parts; and a third stop member operative for reciprocally limiting the movements of said first-mentioned stop members.

19. In a weighing-machine, the combination with a base, of beam-supports carried by said base; beam mechanism supported by said beam-supports, said beam mechanism having also bucket-supports; a bucket-frame supported by said last-mentioned supports, and having risers; and a two-part bucket supported by said frame and having the two parts thereof pivotally supported by said risers.

20. In a weighing-machine, the combination with a base, of beam-supports carried by said base; beam mechanism supported by said beam-supports, said beam mechanism having also bucket-supports; a bucket-frame supported by said last-mentioned supports, and having risers; a two-part bucket supported by said frame and having the two parts thereof pivotally supported by said risers at points above the centers of gravity of the empty bucket parts; means embodying a latch for holding said parts against movement; and a latch-actuator.

21. In a weighing-machine embodying a chambered supporting-base for the operative mechanisms thereof; the combination with a two-part bucket; beam mechanism supporting said bucket and supported by said base; a regulator shiftable on said bucket; and a deflecting plate located within said base and adapted for directing the mass discharged by the bucket toward said regulator.

22. In a weighing-machine, the combination with a two-part bucket having opening and closing movements, of means for effecting said movements in unison; operative connections between said bucket parts; a stop-arm carried by one of said bucket parts; a latch for engaging said stop-arm, to thereby hold said bucket parts against movement; and a latch-actuator.

23. In a weighing-machine, the combination with beam mechanism and with a two-part bucket supported thereby, of two gear-teeth carried by one of said bucket parts; a single gear-tooth meshing with said teeth and carried by the other bucket part; a regulator shiftably supported by one of said bucket parts; means embodying a latch for holding said parts against movement; and a latch-actuator.

24. In a weighing-machine, the combination with beam mechanism and with a two-part bucket supported thereby, of two gear-teeth carried by one of said bucket parts; a tooth meshing therewith and carried by the other said bucket part; a toggle operatively connecting said bucket parts; means embodying a latch for holding said bucket parts against movement; and a latch-actuator.

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