(No Model.) 2 Sheets—Sheet 1.

F. H. RICHARDS.

WEIGHING MACHINE.

No. 572,065. Patented Nov. 24, 1896.

Fig 1.

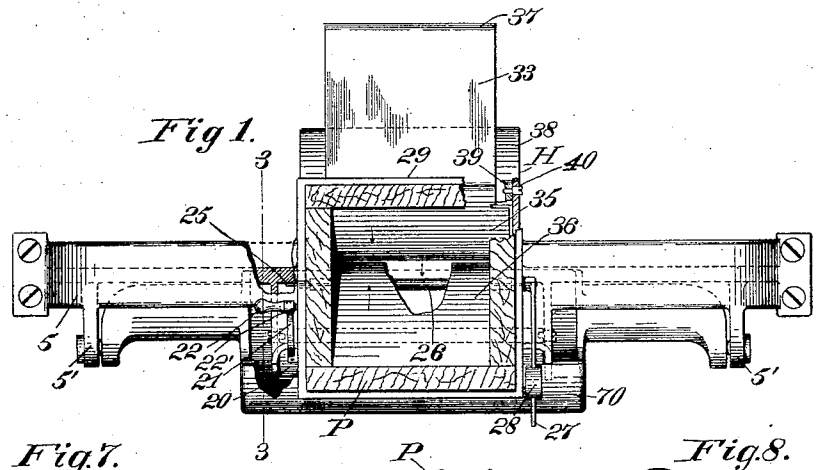


Fig.7.

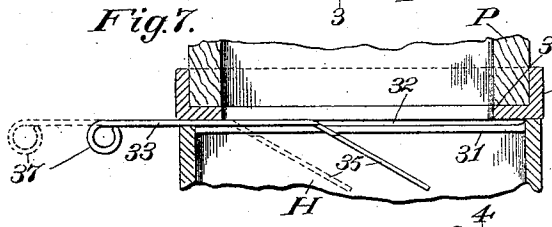


Fig.8.

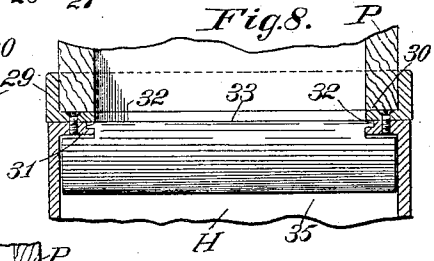
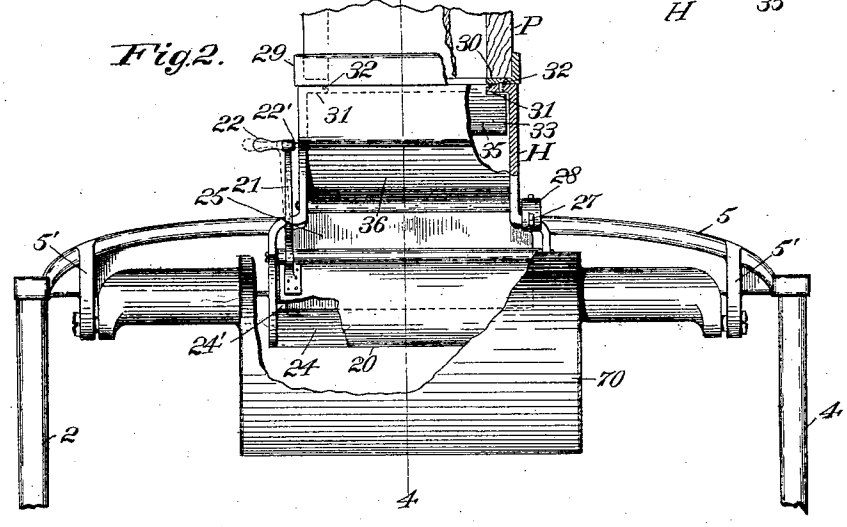


Fig.2.



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(No Model.) 2 Sheets—Sheet 2.

F. H. RICHARDS.

WEIGHING MACHINE.

No. 572,065. Patented Nov. 24, 1896.

Fig. 6.

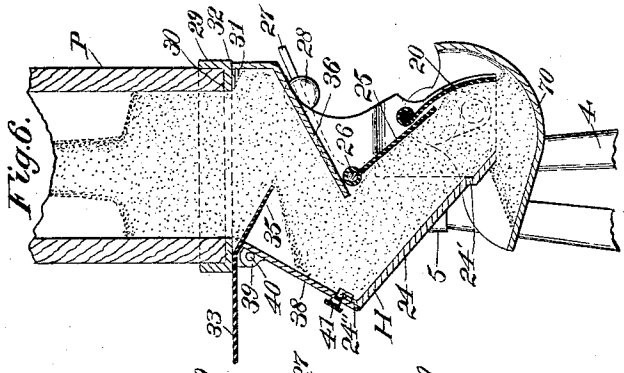


Fig. 5.

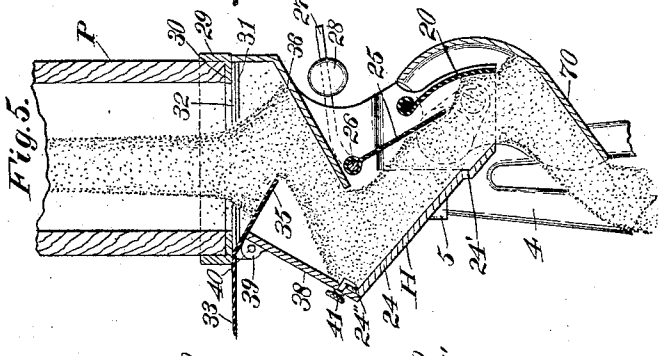


Fig. 4.

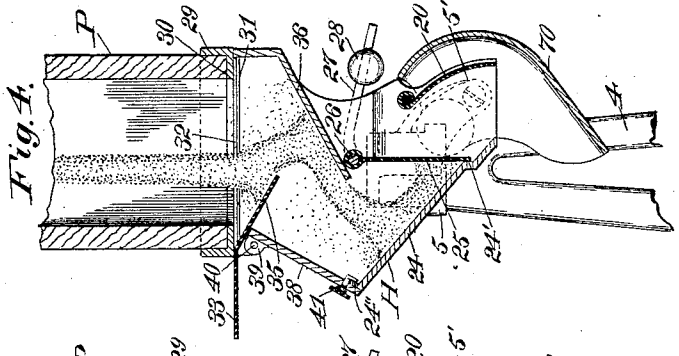
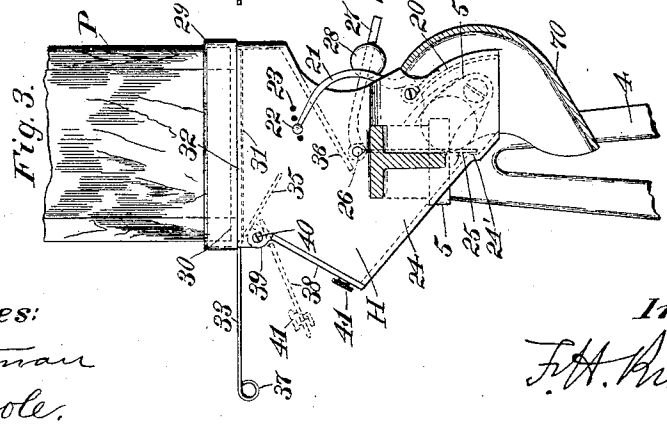


Fig. 3.



Witnesses:
R. W. Pittman
Fred. J. Dole.

Inventor:
F. H. Richards.

UNITED STATES PATENT OFFICE.

FRANCIS H. RICHARDS, OF HARTFORD, CONNECTICUT.

WEIGHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 572,065, dated November 24, 1896.

Application filed April 10, 1896. Serial No. 586,928. (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 weighing-machines, an object being to provide improved stream-supply means therefor so organized as to prevent scattering or spattering of the material and consequent waste thereof at points above the stream-controlling valve.

In the drawings accompanying and forming part of this specification, Figure 1 is a plan view of the upper part of a weighing-machine embodying my improvements in the preferred form thereof, the supply-pipe being shown in horizontal section. Fig. 2 is a rear elevation of the same, parts being broken away more clearly to illustrate certain peculiar features of construction. Fig. 3 is a sectional end elevation as seen from the left in Figs. 1 and 2, the section being taken in line 3 3, Fig. 1. Fig. 4 is a central vertical section taken in line 4 4, Fig. 2, illustrating the valve open and the supply of material held back by a detent device. Figs. 5 and 6 are similar views illustrating the valve in the open and closed positions, respectively, the supply-stream being shown in said first-mentioned figure as having forced the detent device outward. Fig. 7 is a detail view, in vertical section, as seen from the left in Fig. 1, showing a stream-deflecting gate. Fig. 8 is a detail view, in transverse section, looking from the rear in Figs. 1 and 2, also illustrating said gate.

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

My present improvements are capable of efficient use in connection with various types of weighing-machines, one instance of the practical application thereof being to the weighing-machine disclosed by Letters Patent No. 548,840, granted to me October 29, 1895, to which reference may be had.

There is illustrated in the drawings the upper part of the framing usually employed for supporting the operative parts of said weighing-machine. The framing so shown comprises the two side frames or uprights 2 and 4, respectively, connected at their top by the plate or beam 5, suitably secured thereto, and with which may be formed, integrally, the supply chute or hopper H, (to be hereinafter more particularly described,) or which may be made separable and connected thereto by some suitable fastening means.

As a means for controlling the supply-stream of material issuing from the hopper or chute H, a valve, similar in construction and mode of operation to the improved valve shown and described in Letters Patent No. 535,727, granted to me March 12, 1895, is herein illustrated, although it is to be distinctly understood that some other type of valve might be substituted without departing from the spirit of the invention.

The valve 70 is illustrated pivotally supported for oscillatory movement between the arms or brackets 5', depending from the top plate 5, and it is preferably located substantially beneath the mouth or discharge-outlet of the chute H. Said valve will also preferably extend sufficiently far beyond the forward edge of said chute to support the descending column or stream of material therein, as indicated in Fig. 6.

For actuating the valve to open and close the same any suitable mechanisms may be employed—for example, those illustrated in Letters Patent Nos. 548,839 and 548,843, respectively, which were granted to me October 29, 1895.

It is one of the aims of my present invention to reduce the time consumed in completing a load of material in the bucket (not shown) of the weighing-machine to a standard, an additional idea being to insure the greatest amount of work possible in a given time consistent, of course, with accuracy.

In weighing granular materials with the ordinary types of machines where the supply-stream is maintained at a uniform volume with different classes of materials the time consumed in filling the bucket or load-carrying receptacle varies materially in accordance with the peculiar characteristics possessed by the different materials as they are weighed. To obtain a reduction in time and assure a uniformity thereof in filling the bucket when weighing different materials, my present invention involves the provision

of a stream-regulator or stream-regulating plate which is operable for varying the volume of the supply-stream prior to its emergence from the chute or hopper, said regulator constituting practically a regulable wall for the chute. (Herein shown as the rear wall thereof.)

The stream-regulator is designated by 20 and is shown consisting of a curved plate, by reason of which construction it offers the least resistance to the downflowing stream and also tends to obviate scattering of the material. The stream-regulator is shown pivoted for oscillation between the end walls of the chute H and is movable either inward or outward for decreasing or increasing the volume of the supply-stream, as is necessary in practice. Means will also be provided for adjusting said plate and for maintaining the same in an adjusted position, and the means illustrated for this purpose will now be described.

The plate 20 is shown having suitably secured thereto at a point adjacent to the upper edge thereof the actuating-arm 21, which is preferably a spring-arm, the handle 22 of which is equipped with a pin or like device 22′, adapted to be seated in any one of the series of recesses or openings 23, Fig. 3, suitably formed in the end wall of the chute H and concentric with the axis of movement of the stream-regulator 20, whereby when said pin 22′ is engaged in any one of said recesses the connected plate 20 may be held against movement.

To alter the position of the stream-regulator, the arm 21 is sprung outward (see dotted lines, Fig. 2) and turned either to the right or the left, and the pin 22′ in the handle 22 thereof is thrust into the proper recess of the series and the plate thus held in its adjusted position.

The front wall 24 of the chute H will be preferably disposed at an inclination, as indicated in the drawings, so that it serves practically as a stream-directing wall for directing the downflowing stream of material to the rear and away from the discharge edge of the valve, whereby the power necessary to close said valve is materially reduced.

In practice stray and separated particles of the supply in descending from a point above the empty valve in the form of a drizzle strike said valve with such force as to rebound and in rebounding generally pass through the space intervening between the valve and the chute, and consequently are wasted. It is therefore an object of my present invention to prevent this waste, which frequently is quite appreciable. This result is accomplished through the medium of a yieldingly-supported supply detent device, which in the present instance consists of a blade 25 and which is substantially vertically disposed when in its effective position, being shown located within the chute H and disposed in the line of flow of the supply-stream. This detent device is pivotally supported for oscillation between the end walls of the chute, its opposite edges being preferably in contact with the inner faces of said walls, and when in its effective position the lower edge thereof will preferably bear against the chute-wall 24 or a stop 24′, suitably formed, so that said vertical detent-blade and front wall of the chute form a pocket in which the separated or stray particles of the material hereinbefore mentioned may lodge, said plate serving as an effectual bar to their impact against the valve.

As a means for supporting the blade 25 a shaft 26 is illustrated, which passes through the bent-over portion formed on the upper edge of the blade 25 and which may be secured in place therein by suitable holding devices. Said shaft 26 will be journaled in bearings formed in the opposite end walls of the chute, and one of the shaft ends is shown extended for a short distance beyond said wall. The detent-blade 25 will be preferably counterweighted, whereby it is held in its effective position for preventing escape of material. The extended end of said shaft is illustrated as carrying the rearwardly-projecting arm 27, provided with the counterweight 28, preferably adjustable along said arm, the function of which is to hold said blade 25 with its lower edge in bearing engagement with the wall 24 or stop 24′ thereon, so that, as hereinbefore stated, it forms with said wall a pocket for the lodgment and retention of descending particles of material. When the accumulation of material is sufficient to overcome the counterweight 28, it will be evident that the blade 25 will be forced outward by the weight of the mass from its position against the stop 24′, whereby the accumulated material may flow in the form of a stream onto the valve and thence into the load-carrying receptacle of the machine.

The arm 27 serves as a convenient means for moving the blade 25 outward, so that obstructions may be removed, and also as a pointer for indicating to an attendant by its movement if the connected blade 25 is working properly.

It is obvious that the counterweight 28 might in some instances be dispensed with, the weight of the arm 27 being then sufficient to hold the blade 25 in bearing engagement with the wall of the chute, whereby waste of the material is prevented.

It will be evident that during the normal operation of the machine the weight of the supply-stream is sufficient to force the detent-blade 25 away from the chute-wall 24 to permit its flow onto the valve 70, to be thereby disposed of in the well-known manner.

There is shown supported by the chute H, and preferably of a shape corresponding therewith at its upper edge, the rectangular collar 29, which is provided adjacent to the chute H with the inwardly-projecting flange 30, which serves as a suitable means for sup-

porting the supply pipe or conduit P, so that at this point a tight joint is provided and waste absolutely prevented. The pipe or conduit P may communicate with an elevator or analogous supply apparatus, and a stream of material from said supply will gravitate down said conduit P to the connected chute H, and from thence to the bucket of the weighing-machine.

The upper edge of the chute H is shown provided with an inwardly-extending flange 31, through which and the complementary flange 30 of the collar 29 suitable fastening means may be passed to hold these parts together and preserve a close joint. The flange 31 is also shown as cut away at 32, so that said cut-away, in connection with the flange 30, serves as a groove or guideway, the purpose of which will now be described.

A horizontally-disposed gate is shown at 33, which slides in the guideway 32. The gate 33 is also shown having the stream-deflecting portion or incline 35 preferably of the same width as the pipe P and chute H, which is interposable in the line of flow of the supply-stream and which constitutes a means for deflecting a portion of the descending stream of material and directing it toward the inclined brake wall or plate 36. The gate 33 is also shown provided with the bent-over portion 37, which serves as a finger-piece, whereby said gate may be operated for moving it either inward and outward into contact with the descending stream, so that said gate may direct a portion of the mass to the brake-wall 36.

The brake-wall or stream-brake 36, which is shown inclined in an opposite direction from the wall 24, is preferably an integral part of the chute H, and receives the major part of the shock caused by the impact of the supply-stream, whereby the force thereof cannot be exerted against the valve, liability to disadjustment of the latter being thereby wholly obviated. Said brake-wall directs the stream to the chute-wall 24, by which its force of impact is further broken. A pivoted door is also shown at 38, having lugs or ears (one of which is shown at 39) formed adjacent to the upper edge thereof and at its opposite ends, through which pins or like supports carried by or formed on the opposite end walls of the chute may be passed, one of said pins being illustrated at 40.

If from any cause the mass should so clog in the chute as to interfere with the operation of the machine, the door 38 may be swung open (see dotted lines, Fig. 3) and the difficulty readily removed.

For maintaining the door in its closed position during the normal operation of the machine, hook-bolts, one of which is shown at 41, may be employed, which pass through the door 38 and the hooks of which engage a suitably-formed flange 24″ on the front wall of the chute H.

Having thus described my invention, what I claim is—

1. The combination with a chute embodying a stream-directing wall and an inclined brake-wall located above said first-mentioned wall, of a sliding gate having a stream-deflecting portion and interposable in the path of flow of the supply-stream, and a valve for said chute.

2. The combination with a chute embodying a stream-directing wall and an inclined brake-wall located above said first-mentioned wall, of a conduit communicating with said chute for supplying a stream of material thereto, and a sliding gate supported above said inclined brake-wall and interposable in the path of flow of said stream.

3. In a weighing-machine, the combination with a chute embodying a stream-directing wall, and an inclined brake-wall located above said first-mentioned wall, said chute having also a flange provided with a cut-away portion; a flanged collar resting on said flange, whereby there is formed by said cut-away portion a guideway; and a gate slidable in said guideway.

4. In a weighing-machine, the combination with a chute embodying a stream-directing wall, and an inclined brake-wall located above said first-mentioned wall; of a supply-conduit communicating with said chute for supplying a stream of material thereto; and a sliding gate located above said stream-directing wall and interposable in the line of flow of said stream.

5. In a machine of the class specified, the combination with a chute having a front wall and an adjustable rear wall extending from one of the end walls of the chute to the other, of a yieldingly-supported detent-blade located within said chute; and means for maintaining said blade in contact with the front wall of the chute when the machine is at rest.

6. The combination with a chute having an adjustable rear wall extending from one end wall of the chute to the other, said chute also having two oppositely-inclined walls; of a yieldingly-supported detent-blade located within said chute; and means for holding said blade in contact with one of the chute-walls when the machine is at rest.

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