(No Model.)

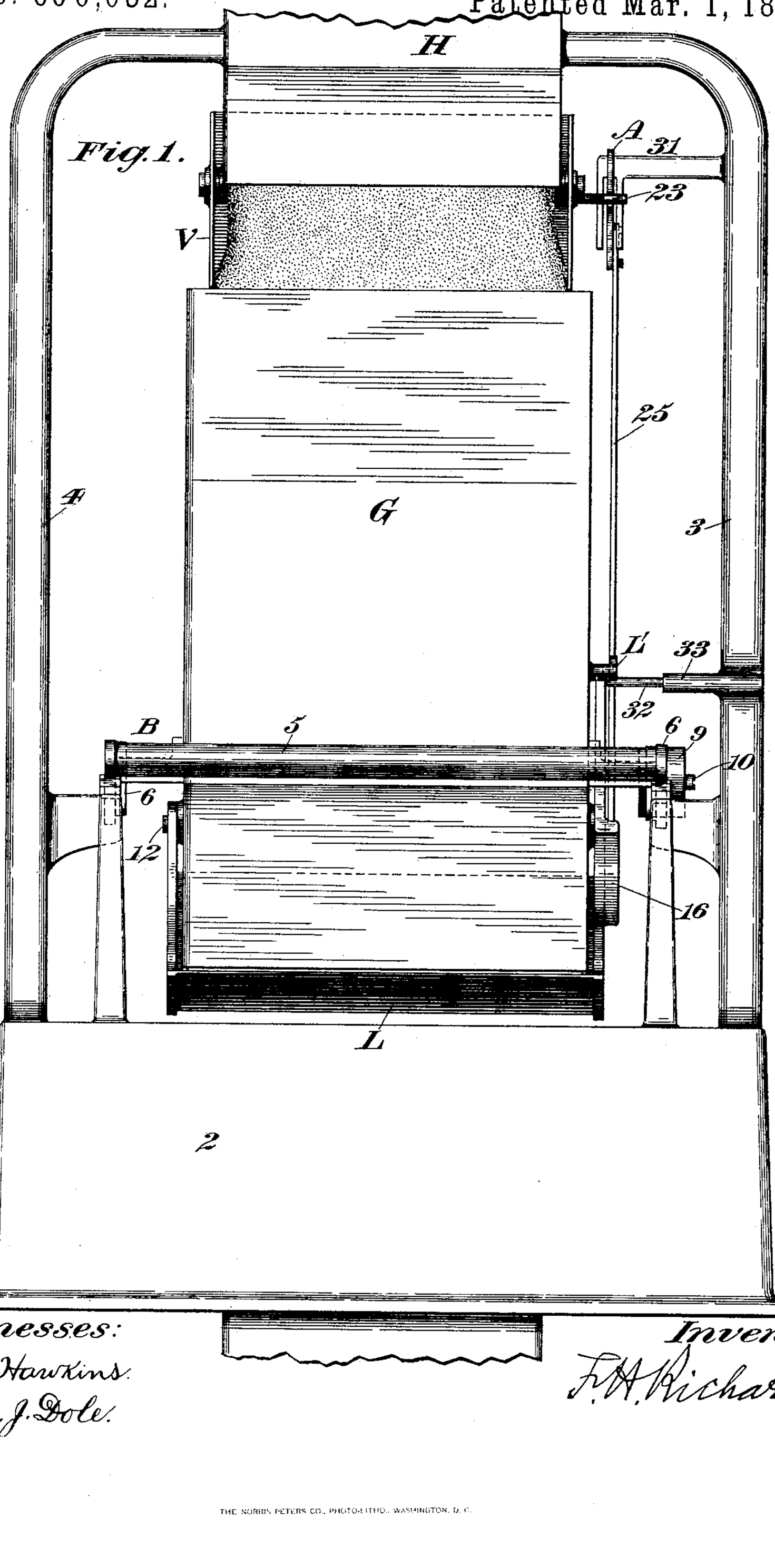
4 Sheets—Sheet 1.

F. H. RICHARDS.

WEIGHING MACHINE.

No. 600,032. Patented Mar. 1, 1898.

Fig. 1.



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(No Model.)

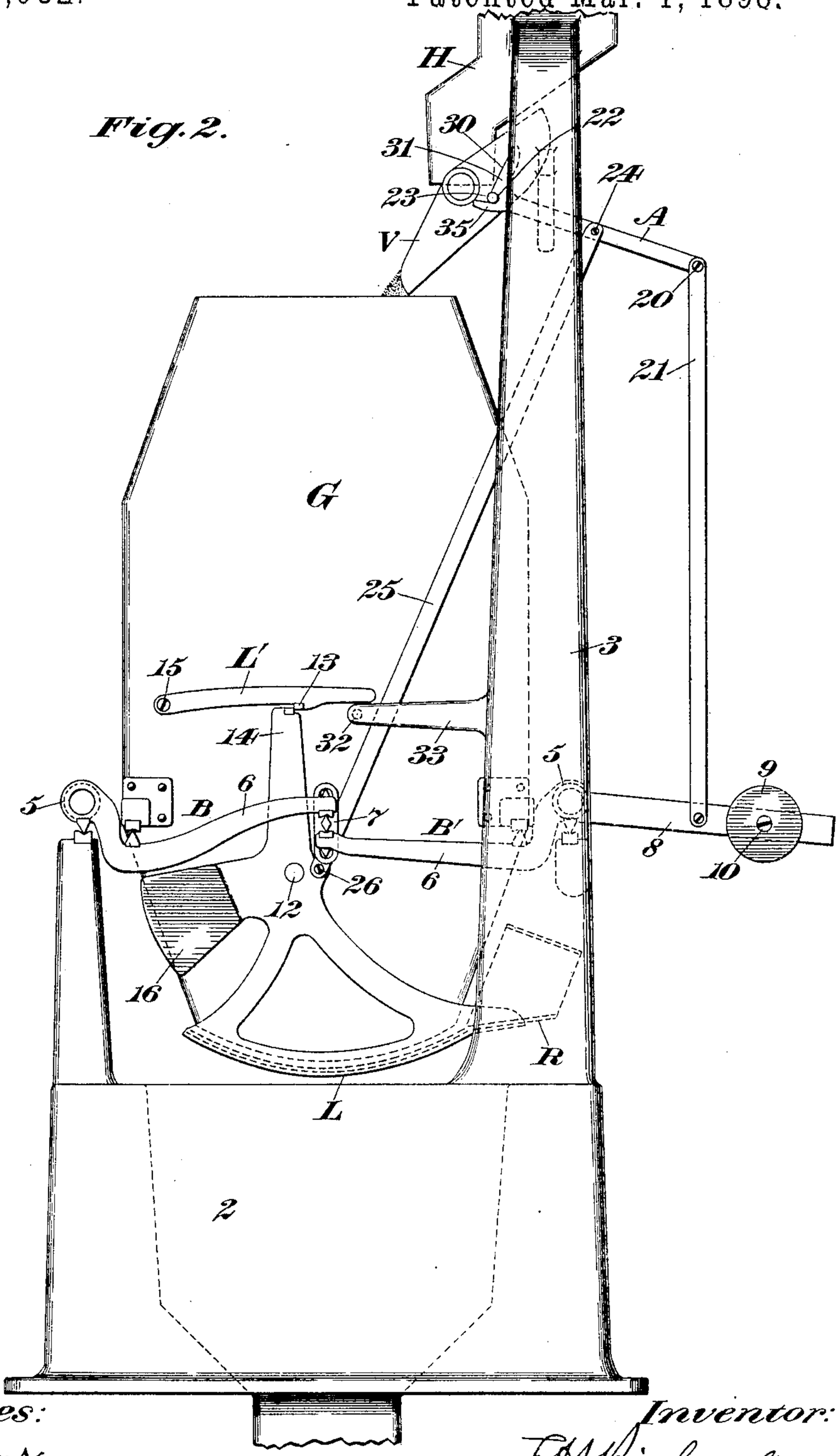
4 Sheets—Sheet 2.

F. H. RICHARDS.

WEIGHING MACHINE.

No. 600,032. Patented Mar. 1, 1898.

Fig. 2.



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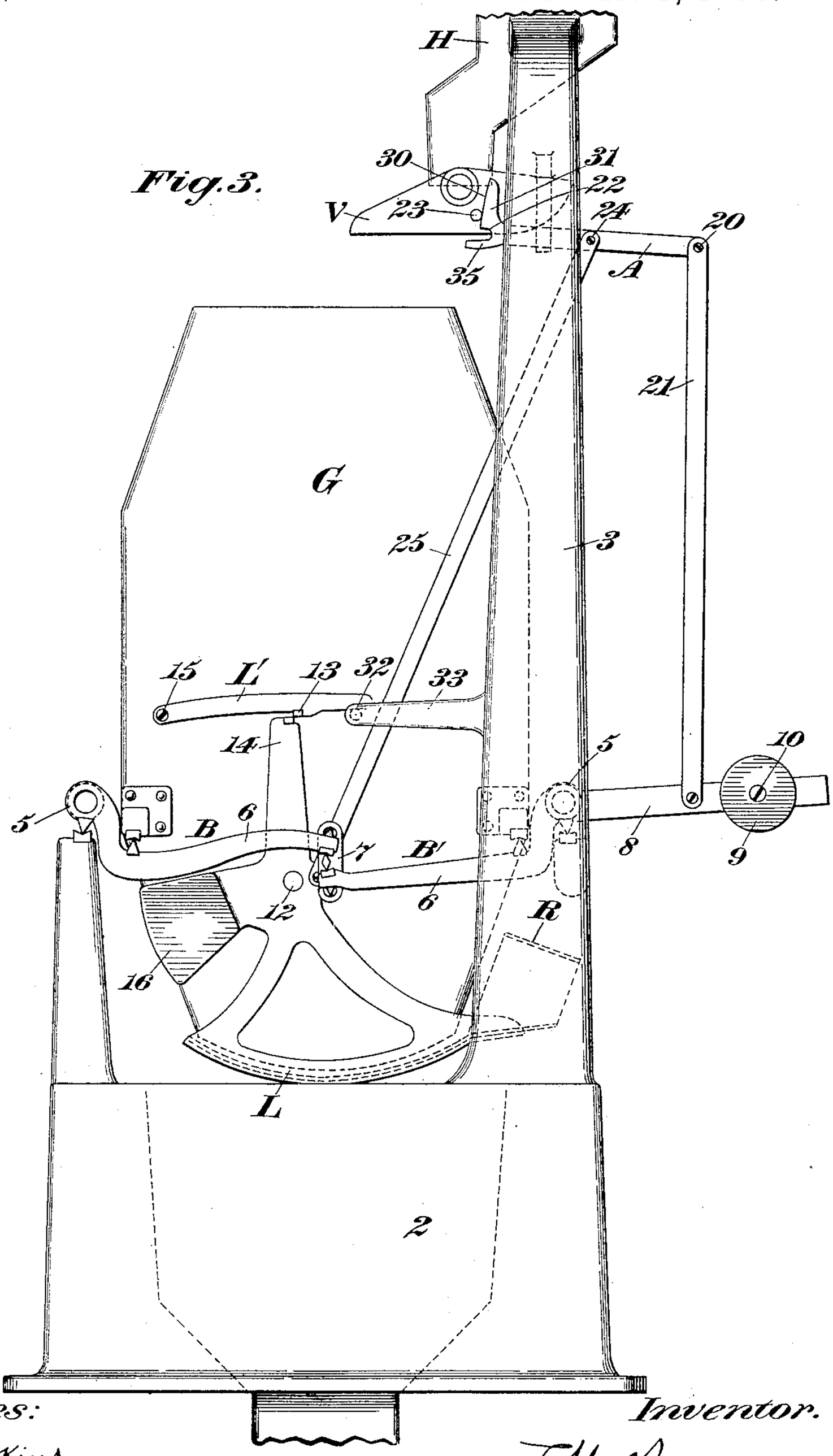
4 Sheets—Sheet 3.

F. H. RICHARDS.

WEIGHING MACHINE.

No. 600,032. Patented Mar. 1, 1898.

Fig. 3.



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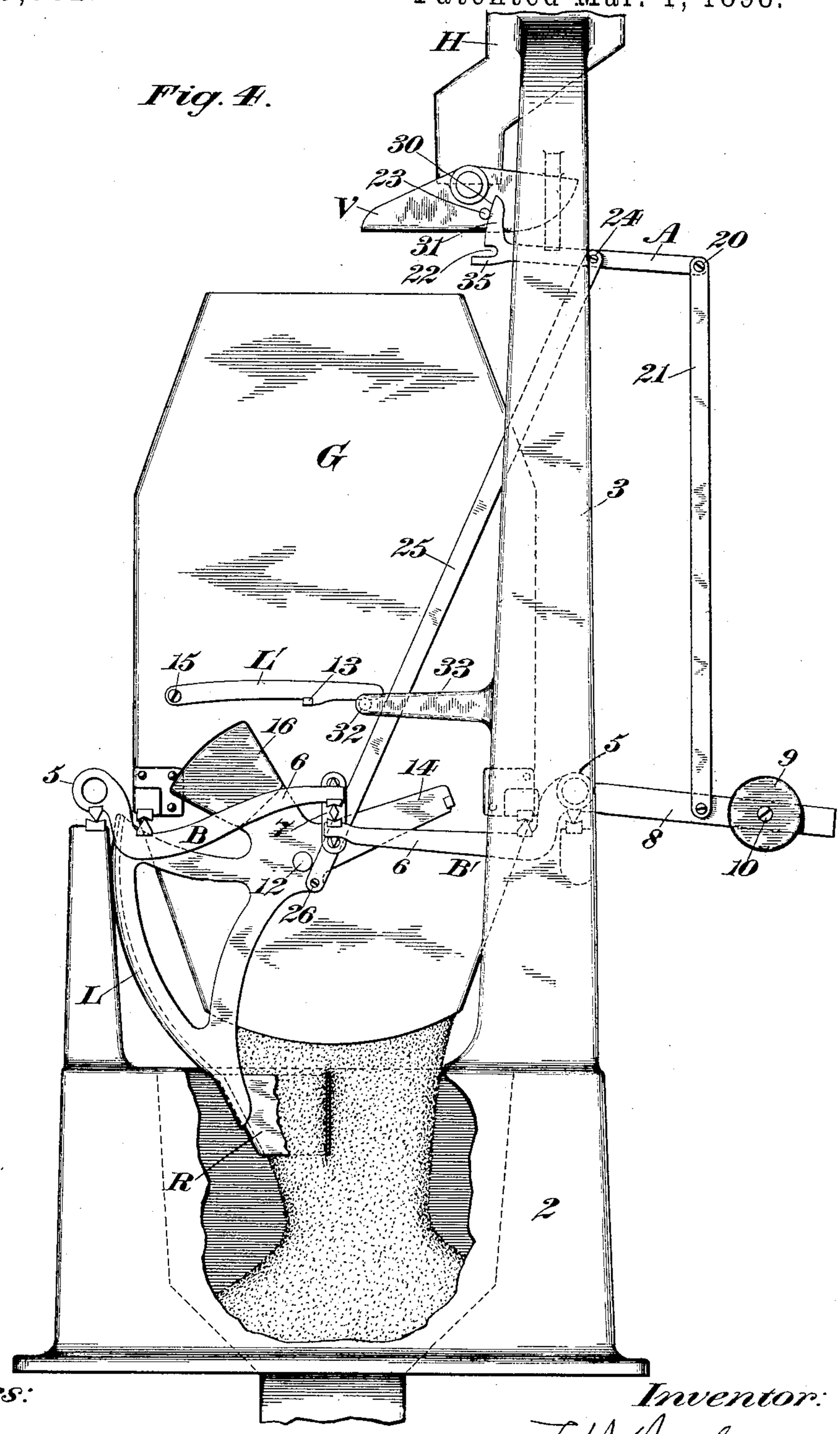
4 Sheets—Sheet 4.

F. H. RICHARDS.

WEIGHING MACHINE.

No. 600,032. Patented Mar. 1, 1898.

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. 600,032, dated March 1, 1898.

Application filed October 26, 1897. Serial No. 656,457. (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, the object thereof being to provide an improved machine of this character in which the material from the supply mechanism is positively prevented from entering the load-receiver during the discharge of a load, this result being obtained by shifting the valve-actuator into position to prevent the opening of the supply-valve, which operation is effected by the closer mechanism concurrently with the opening of the closer.

My improved machine embodies a supply-valve, a valve-actuator in position to operate the valve, and means coöperative, respectively, with the closer mechanism and the valve-actuator and serving to shift the latter on the opening of the closer, thereby to prevent the operation of the valve. The closer mechanism consists of a closer proper and a latch for holding said closer shut, and in the present case the valve-actuator is connected with the closer, so that as the latter opens the action set forth will immediately follow.

In the drawings accompanying and forming part of this specification, Figure 1 is a front elevation of a weighing-machine embodying my present improvements, and Figs. 2, 3, and 4 are side elevations of the machine as seen from the right in Fig. 1.

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

The framework for supporting the different parts of the machine may consist of a chambered base or bed 2 and the side frames or uprights 3 and 4, bent at their top and connected with the supply-spout H, which constitutes a convenient means for supplying a stream of material to the load-receiver of the weighing mechanism.

The weighing mechanism consists of a load-receiver, as G, and a plurality of scale-beams B and B′ for supporting the same. Each of the scale-beams consists of a shaft portion 5 and the supporting-arms 6 for the load-receiver, the shaft portions being fulcrumed upon the framework in the customary manner. Two of the arms of the beams are joined at their adjacent ends by the link 7, connected with said arms in the usual manner.

The load-receiver G is supported upon the beams B and B′, between their fulcrums or supports.

The beam B′ or the shaft portion 5 thereof is provided with the rearwardly-extending arm 8, which carries the slidable counterbalance-weight 9, held in a fixed position by the screw 10.

The spout H is located over the load-receiver G and is adapted to supply a stream of material thereto, the supply being governed or regulated by a suitable valve, as V, of the "pan" type familiar in this art, said valve being mounted to swing under the outlet or opening in the spout H to arrest the supply of material to the load-receiver. Means for actuating the valve alternately to close and open the same will be hereinafter described.

The load-receiver has the usual discharge-outlet, through which the material may intermittingly pass and which is normally covered by a closer, as L, pivoted to the load-receiver, as at 12, the axis of oscillation of the closer being a short distance forward or what is herein illustrated as the "left" of a line intersecting the center of the load-receiver, whereby when the closer is released the pressure of material thereon will force it to its open position.

For the purpose of holding the closer shut I have shown a gravity-latch L′, having a detent or shoulder 13, adapted to engage the upper end of the arm 14 on the closer to lock the latter shut, as indicated in Fig. 2. The latch L′ is pivoted at 15 upon the load-receiver, and when it is lifted relatively to and above the arm 14 the closer will be released and can be swung open, as hereinbefore specified.

For the purpose of retarding the shutting of the closer I provide in connection therewith a regulator-hopper, as R, fixed upon the discharge edge of the closer, and the latter forms part of one of the regulator-walls, as indicated in the several side elevations. The outlet of the regulator R is of less area than the inlet, as shown in Fig. 4, whereby when the closer is opened and when said regulator is carried to a position to receive the material

from the load-receiver said regulator will retain sufficient of said material to hold the closer open until the entire load is discharged.

To shut the closer, it is provided with a counterweight 16.

For the purpose of alternately closing and opening the valve V, I have illustrated the actuator A constructed to be coupled to the valve to operate the same and preferably connected with the closer and beam mechanism. The valve-actuator A consists of a bar connected at one end, as by a pivotal joint 20, with the longitudinal rod 21, likewise attached at its lower end to the counterpoise side of the beam B′, or that part of said beam which carries the counterweight 9. The free end of the actuator A has a socket 22 adapted to receive a projection 23, extending from the valve-wall, as indicated in Fig. 2, when the valve is open. The actuator is fulcrumed, as at 24, between its ends to the longitudinal support or rod 25, which rod is pivoted, as at 26, at its lower end to the closer, near the axis of oscillation of the latter, so that as said closer opens the rod 25 will be drawn downward for a purpose that will hereinafter appear and will be thrust upward when the closer is shut.

At the commencement of operation, as indicated in Fig. 2, the valve will be wide open, and the projection 23 thereof will be seated in the socket 22 at the inner or free end of the actuator A. The valve being wide open a stream of large volume will enter the load-receiver G, and when a certain proportion of the load has been received said load-receiver will descend, thereby elevating the counterpoised arm S of the scale-beam B′ and consequently the rod 21 and right-hand arm of the actuator A, whereby the opposite arm of said actuator will be lowered, and by reason of the connection between the actuator and the valve V the latter will be closed or swung under the outlet of the spout H to cut off the supply, this operation being concluded when the completed load is in the receiver G, at which time the projection of the valve will have passed out of the socket on the actuator, as shown in Fig. 3. The actuator, after the load is completed, is pulled down for a short distance, so that the projection 23 is caused to ride along the straight guide-face 30 of the angular extension 31 on said valve-actuator, and by reason of its connection with the closer said actuator is pulled downward for some distance, whereby the valve cannot be opened as the emptying load-receiver rises.

I have illustrated for the purpose of tripping the latch L′ the pin 32, extending laterally from the arm 33 on the side frame 3, disposed in the path of the free end of the latch. The latch strikes the pin when the load is nearly completed, and as the load-receiver descends for a short distance beyond this point the upper end of the arm 14 is carried out of engagement with the shoulder 13, thereby releasing the closer L.

When the closer is released, the pressure of the material in the load-receiver G forces the same open in the manner hereinbefore specified, and immediately on this operation the rod 25 is drawn downward, as shown in Fig. 4, the actuator being moved in a corresponding direction and carrying the guide-face 30 of the angular extension 31 along the projection 23 of the valve, as shown in said figure. The actuator A has at its inner end the lug 35, which is adapted to strike the pin 23 on the valve when the closer shuts, by reason of which the valve V can be opened, and as it opens the pin 23 will ride into the socket 22, whereby on the succeeding operation the valve can be shut by the actuator A, which receives its power from the beam B′. As soon as the load commences to discharge from the receiver G the latter will rise, due to the falling of the counterweight 9; but the lug 35 on the actuator when the receiver reaches its highest position does not quite come into contact with the pin 23 on the valve. The closer is held open for a sufficiently long period to permit the entire load to empty, after which it is shut, and as it does so it imparts an upward thrust to the rod 25, forcing the actuator A upward, with the lug 35 in contact with the valve-pin 23, thereby swinging the valve open, this motion continuing until the actuator has returned to its primary position, (shown in Fig. 2,) by which time the pin will have been thrust entirely within the socket in said actuator.

The operation of the hereinbefore-described machine is as follows: Fig. 2 represents the positions occupied by the several parts at the commencement of operation, at which time the closer L is shut and held by the latch L′, engaging the closer-arm 14, the valve V being wide open, with the pin 23 thereof seated in the socket 22 at the end of the actuator. The valve being wide open a stream of large volume will enter the load-receive G, and said load-receiver will descend when a certain proportion of the load has been received, the counterpoise S of the beam B′ being elevated, which results in raising the rod 21 and the right-hand arm of the actuator A, thereby lowering the opposite arm of the actuator and swinging the valve V shut, as shown in Fig. 3. At a time immediately succeeding this point the latch L′ strikes the pin 32 on the framework, so that the closer-arm 14 will be moved away from the latch to effect the release of the closer, which is then opened by the action of the material thereagainst. When the load is entirely discharged, the closer is returned to its shut position by the counterweight 16 and held shut by the latch L′, after which the operation is repeated.

Having described my invention, I claim—

1. The combination, with weighing mechanism including a load-receiver provided with

a closer shiftable for discharging the load, of a valve; a valve-actuator supported for operation independently of the valve; and a connection operatively connected with the closer and extending to the valve-actuator, and adapted on the opening of the closer to shift the valve-actuator and thereby prevent the opening of the valve.

2. The combination, with weighing mechanism including a load-receiver, of closer mechanism controlling the discharge of a load and embodying a latch; means for tripping the latch; stream-supplying means; a valve; a valve-actuator independent of, and in position to operate the valve; and a connector coöperative with the closer mechanism and valve-actuator, respectively, and serving to shift the valve-actuator on the opening of the closer and thereby prevent the opening of the valve.

3. The combination, with weighing mechanism embodying a load-receiver, of closer mechanism controlling the discharge of the load and including a latch; means for tripping the latch; stream-supplying means; a valve; a valve-actuator independent of, and in position to operate, and constructed to be coupled to, the valve; and a connector coöperative with the closer mechanism and valve-actuator, respectively, and serving to shift the valve-actuator on the opening of the closer and thereby prevent the opening of the valve.

4. The combination, with weighing mechanism embodying a load-receiver, of closer mechanism controlling the discharge of a load and including a latch; means for tripping the latch; stream-supplying means; a valve having a projection; a valve-actuator independent of, and constructed to engage said projection to operate the valve; and a connector coöperative with the closer mechanism and valve-actuator, respectively, and serving to shift the latter on the opening of the closer and thereby prevent the opening of the valve.

5. The combination, with a load-receiver and its supporting-beam mechanism, of a closer for the load-receiver; stream-supplying means; a supply-valve; a valve-actuator independent of the supply-valve; and a connection between the valve-actuator and the closer for shifting said actuator relatively to the valve on the opening of the closer.

6. The combination, with a load-receiver and its supporting-beam mechanism, of a closer for the load-receiver; stream-supplying means; a supply-valve; a valve-actuator connected with the beam mechanism; and means between the actuator and the closer for shifting the actuator to a position for preventing the opening of the valve on the opening of the closer.

7. The combination, with a load-receiver and its supporting-beam mechanism, of a closer for the load-receiver; stream-supplying means; a supply-valve; a valve-actuator; a rod connected, respectively, with the valve-actuator and the beam mechanism; and a connection between the valve-actuator and the closer for shifting said valve-actuator on the opening of the closer.

8. The combination, with a load-receiver and its supporting-beam, of a closer for the load-receiver; stream-supplying means; a supply-valve provided with a projection; a valve-actuator having a socket at one end to receive the projection and connected with the scale-beam; and means for supporting the valve-actuator between its ends.

9. The combination, with a load-receiver and its supporting-beam mechanism, of a closer for the load-receiver; stream-supplying means; a supply-valve; a valve-actuator; a rod connected with the beam mechanism and to one end of the actuator; and a second rod connected with the closer and also with the actuator intermediate the ends of the latter.

10. The combination, with a load-receiver, of a plurality of supporting-beams therefor one of which has a rearwardly-extending counterweighted arm; a supply-valve; a valve-actuator; a rod connected, respectively, with the actuator and the counterweighted arm; and a support on which the actuator is fulcrumed.

11. The combination, with a load-receiver and its supporting-beam mechanism, of an oscillatory closer for the load-receiver; stream-supplying means; a supply-valve; a valve-actuator independent of the valve; and a rod connected with the actuator and also with the closer, the point of connection with the closer being adjacent to the axis of oscillation of the latter.

12. The combination, with weighing mechanism embodying a load-receiver, of a closer for the load-receiver; a supply-valve; an actuator for the supply-valve, having a socket at one end and also provided with a lug adapted to engage the valve; and a connection between the actuator and the closer for shifting the actuator on the opening of the closer.

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