

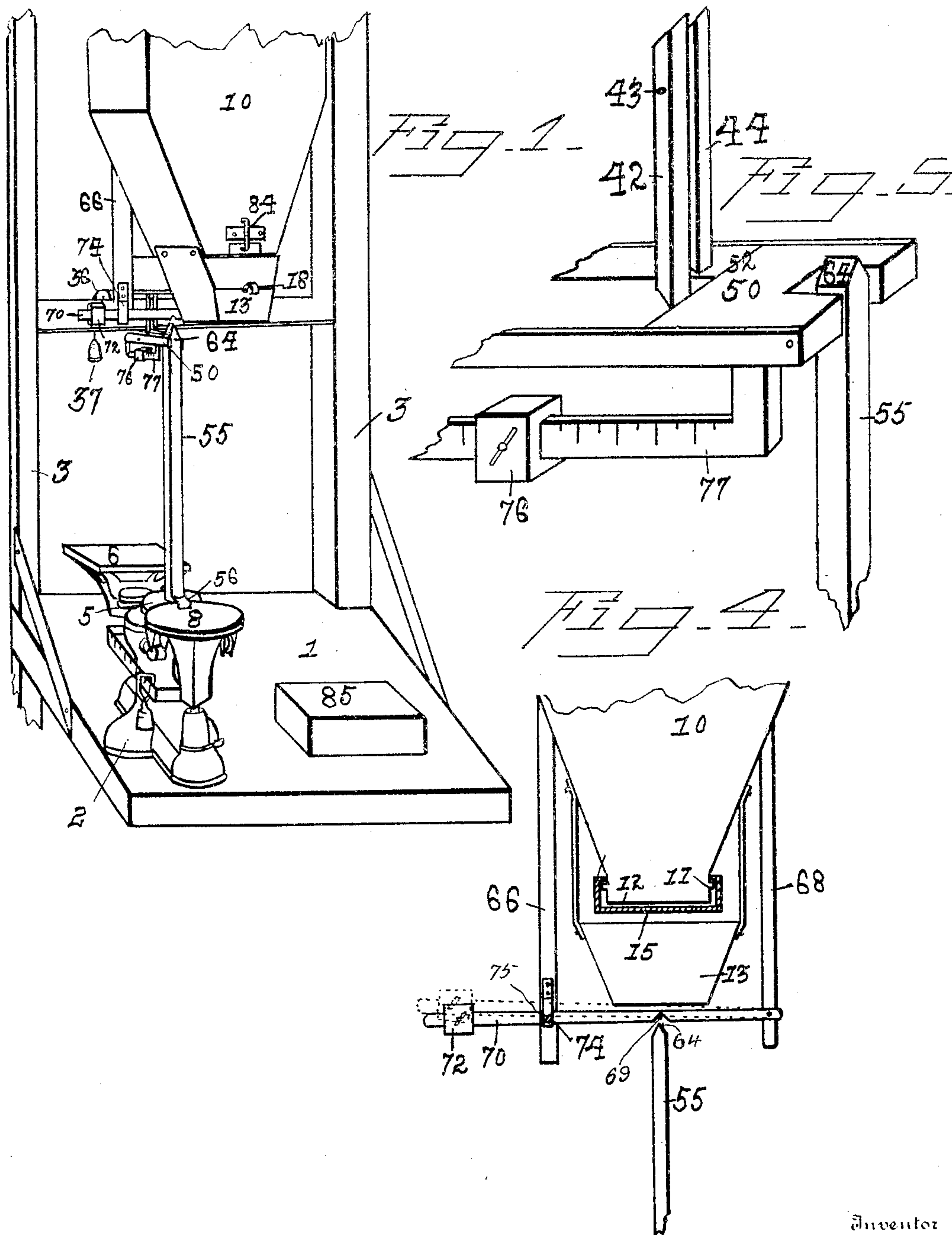
No. 806,441.

PATENTED DEC. 5, 1905.

E. STAHELI.
WEIGHING MACHINE.

APPLICATION FILED AUG. 8, 1904

3 SHEETS—SHEET 1.



Inventor
Emil Stäheli

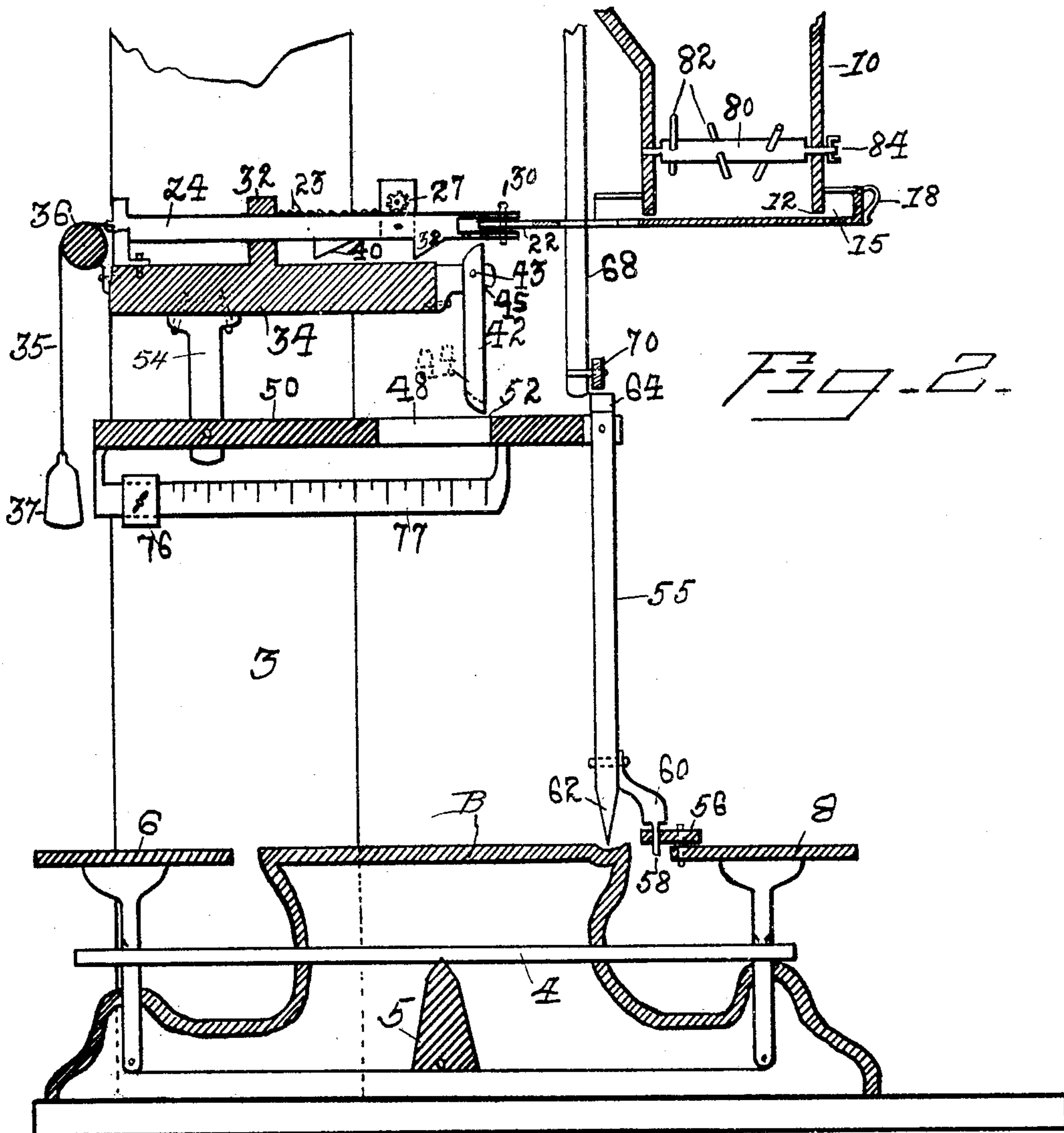
Witnesses
M. Marsh Cady -
M. R. Hemmer

By

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3 SHEETS—SHEET 2.



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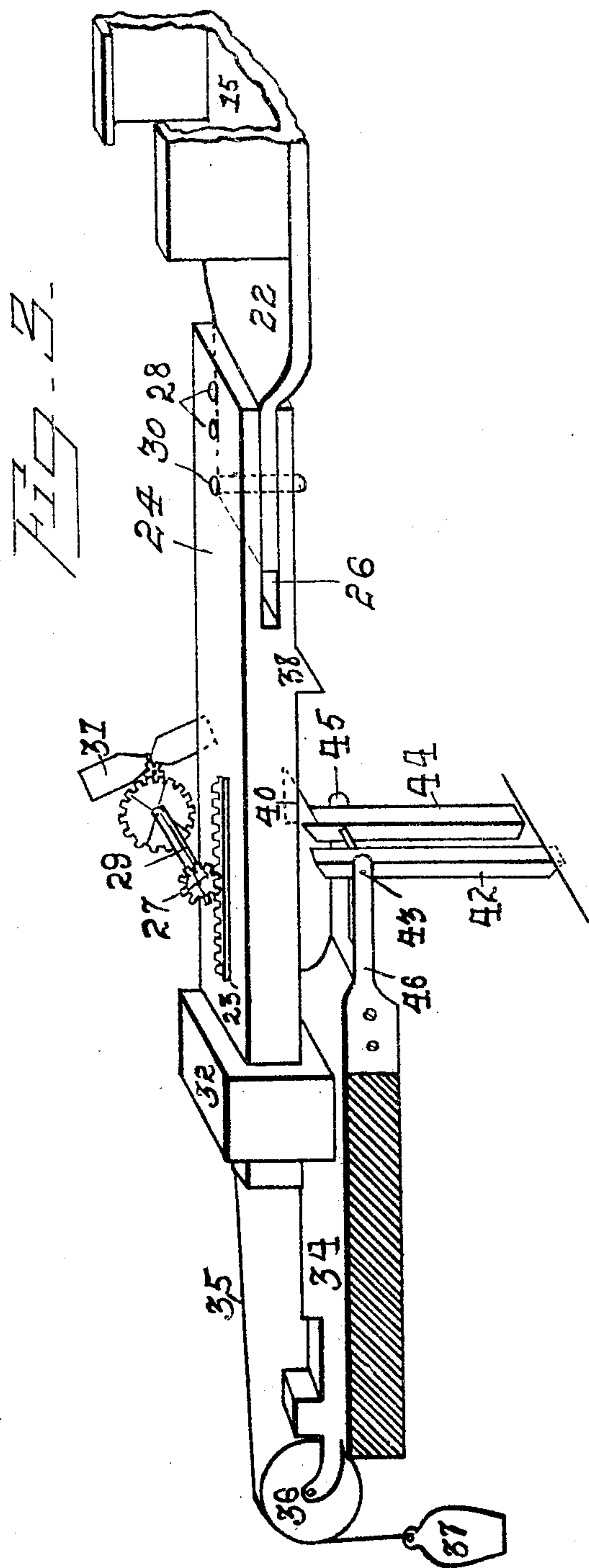
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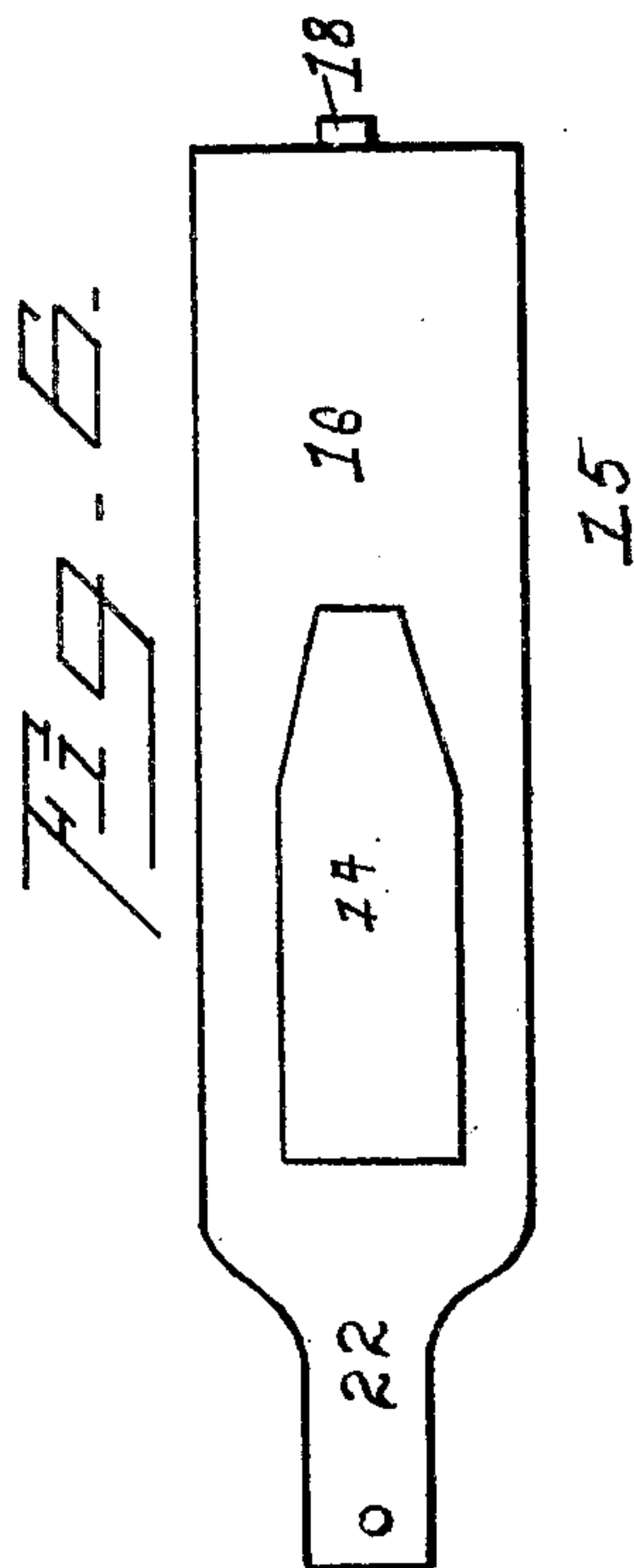
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3 SHEETS—SHEET 3.



Witnesses

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UNITED STATES PATENT OFFICE.

EMIL STAHELI, OF DUBUQUE, IOWA, ASSIGNOR TO ISAAC J. CUSHING,
OF DUBUQUE, IOWA.

WEIGHING-MACHINE.

No. 806,441.

Specification of Letters Patent.

Patented Dec. 5, 1905.

Application filed August 8, 1904. Serial No. 219,825.

To all whom it may concern:

Be it known that I, EMIL STAHELI, a citizen of the United States, residing at Dubuque, in the county of Dubuque and State of Iowa, have
5 invented new and useful Improvements in Weighing-Machines, of which the following is a specification.

My invention has relation to automatic weighing-machines, and has for its object to
10 automatically and accurately weigh out and deliver into a package a predetermined quantity of the material to be packed and then to close or shut off the supply by the action of the filling and filled package upon the weigh-
15 ing device, in combination with other devices to be fully described hereinafter.

For a more complete understanding of my invention and manner in which it is constructed and its mode of operation attention is called
20 to the following specification, together with the drawings accompanying the same and forming a part hereof, in which—

Figure 1 is a perspective view taken from one corner of the machine. Fig. 2 is a vertical section showing in full lines the slide-bar and the compensating weight and graduating-
25 bar. Fig. 3 is a perspective view of the slide-bar which operates the cut-off, together with the stops, catches, and fan. Fig. 4 is a vertical section of the lower end of the hopper and the cut-off or slide-box and a plan view of one of the compensating weights and supplemental beam and showing in dotted lines the movement of the beam. Fig. 5 is a per-
30 spective view of the catches, supplemental beam, and upright bar, with compensating weight in part. Fig. 6 is a plan view of the under side of the cut-off box.

Referring to the drawings, 1 designates the
40 platform on which the scales rest; 2, the base of the scales; 3, the side pieces of the frame; 4, the scale-beam; 5, the pivotal standard of the scale-beam; 6, the scale-pan on which the weight is placed, and 8 the scale-pan on which
45 the package to be filled is placed.

Over the scale-pan 8 is secured a hopper or reservoir 10, in which the supply to be packed is stored. The lower end 12 of the hopper is made considerably smaller and preferably of
50 rectangular shape, and below the end 12 of the hopper and removably attached thereto is a guide 13 for directing the material into the package in the process of filling. Along the opposite sides of the end 12 runs a lug or ledge

11, upon which the slide-box 15 is adapted to
55 travel. The upper edges of the slide-box 15 are bent inwardly and are adapted to engage the ledges 12 and slide thereon. This slide-box is provided with an opening 14 in the base 16 and also with a handle 18. The opening
60 14 is preferably narrowed at one end to adapt it to decrease the flow of the material from the hopper to a very small stream when very close accuracy and uniformity in weight is required. The end 12 of the reservoir projects
65 down to the bottom 16 of the slide-box, so that when the slide-box is drawn out or shoved in it opens and closes the flow of material from the reservoir. The inner end of the slide-box terminates in a plate 22, to which is adjust-
70 ably attached a slide-bar 24. A convenient mode of adjustably attaching said bar 24 to the plate 22 is by cutting a channel or groove 26 in the bar 24 and also holes 28 and a hole in the plate 22 and then inserting said plate
75 22 in the groove 26 and securing it in the groove 26 by a pin 30, passing through one of the holes 28 of the bar 24 and through the corresponding hole in the plate 22. The ob-
80 ject of adjustably attaching the slide-box to the slide-bar is to control the flow from the reservoir both before and after the first cut-off is made in the filling of packages by decreasing the size of the hole 14 in the bottom of the slide-box, which by this construction
85 the flow may be reduced exceedingly small.

The slide-bar 24 extends back of the machine and passes through a plate 32, fixed upon one part of the frame 34 of the machine. Upon the rear end of the bar 24 is secured by a
90 rope or chain 35, passing over a pulley 36, a weight 37. For the purpose of controlling the speed of the slide-bar and preventing any sudden jerk or shock caused by the intermittent movements of this bar there is attached
95 to the slide-bar 24 a gear-plate 23, with which a gear 27, attached to a shaft 29, engages. This shaft is connected by supplemental gears with a fan 31. By this mode of construction when the slide-bar is released and the weight
100 35 comes into action to retreat the slide-bar and make the first cut-off, whereby the flow of material into the packages is decreased, the gear 27 will engage the gear-plate 23 and rotate the fan 31, and this rotation of the fan
105 will curtail the movements of the slide-bar, and there will be no sudden jerk or jar on the slide-bar when its movements are suddenly arrest-

ed in the manner hereinafter to be described. It will be noticed that this gear-plate 23 extends along the slide-bar only just the length of the first movement of the bar to accomplish the first cut-off, and when the gear-wheel 27 is disengaged from the gear-plate it will permit the weight 37 to operate quickly and positively to make the second cut-off. This is necessary, as the last cut-off should be decisive and should be done quickly to avoid too much flow and drip from the reservoir.

Upon the under side of the slide-bar 24 are secured two stops 38 and 40. These stops are set upon the opposite edge of the under surfaces of the bar and one somewhat in advance of the other. Beneath the bar are pivoted near their upper ends two catches 42 and 44 by a pivot-pin 43, passing through arms 45 and 46, secured to the frame 34. The catch 44 which engages the stop 40 is somewhat shorter than the catch 42 which engages the stop 38, for the reason presently to appear. The lower ends of these catches project into a recess 48 in a supplemental beam 50 and under certain circumstances to be explained hereinafter engage the edge 52 of the recess 48 in said beam. The rear end of the supplemental beam 50 is pivoted to hangers 54, attached to the frame 34 beneath the bar 24. In the forward end of the beam 50 is pivoted an upright bar 55, which extends down and is adapted to engage the scale-pan 8 and also the scale-frame B. There is attached to the scale-pan a clip 56, and the lower end of the upright bar 55 terminates at one edge in a pin 58, which is adapted to engage a hole in the clip 56 and move up and down therein; but the movement of the pin in the hole in the clip is limited by a shoulder 60 on the bar 55. The opposite edge of the bar 55 is also provided with a pin 62, adapted to come in contact with the scale-frame B. The upper end of the bar 55 terminates in a wedge 64.

For the purpose of partially operating the first cut to diminish the flow of the material into the package there are rigidly attached to the hopper or frame two hangers 66 and 68. To the hanger 68 is pivoted a bar 70, provided with a weight 72. The bar 70 passes through a loop 74, adjustably attached to the hanger by a set-screw 75, and in its lower end is a notch 69, with which the wedge 64 of the bar 55 engages.

The supplemental beam 50 is pivoted in its hangers at a short distance from its rear end, and to the under side of the beam in the rear of the pivot of said beam is attached a scale-beam 77, provided with a weight 76. This weight 76 may be adjusted along the beam 77 to not only balance the beam 50 and bar 55, but also for certain other compensating purposes hereinafter to be described.

Within the base of the reservoir is journaled a shaft 80, provided with beaters or arms 82, and upon the outside of the reser-

voir is a handle 84, by which the shaft is rotated to stir up the material to be packed in order that there may be no stop of the flow and also that the flow may be uniform.

As this device is especially adapted to weigh and fill packages with cereals or other granular material, when it is desired to fill a package with a different amount from that to which the scale has been adjusted or fill a package of a different height from the last filled if the amount to be placed in the package be less the operator places upon the scale-pan 6 the required weight and upon the scale-pan 8 a block or platform 85, which raises up the package till the spout of the hopper is within the package. The operator also places on the scale-pan 6 another weight which just balances the platform 85. Under most circumstances there would be no need of any other adjustment of any part of the machine; but if the package to be filled be exceedingly large or very small, so that the drip of the hopper after the shut-off occurs becomes a greater element in the accurate filling of the package, then the weight 76 is adjusted to exert a greater or less influence on the bar 55.

The manner of operating my device is substantially as follows: In filling a package—say a paper bag holding when filled five pounds—the operator places upon the scale-pan 6 a five-pound weight, then determines the amount he desires to deliver into the package before the first cut-off, which herein we will call four and three-fourths pounds, leaving one-quarter of a pound to be placed in the package after the first cut-off. The operator then adjusts the weight 72 on the bar 70, preferably so that the bar 70 will exert upon the scale-pan through the upright bar 55 a pressure of nearly a quarter of a pound, and adjusts the weight 76 upon the scale-beam 77, so that the beam 50 and the bar 70 together will exert a pressure of just one-quarter of a pound over and above the amount to balance the beam 50 and upright bar 55. The operator then grasps the handle 18 of the slide-box and draws forward the slide, allowing the material to pass from the reservoir through the opening in the base of the slide-box into the package. When the package is filled to the amount of four and three-fourths pounds, then the weights 72 and 76 will exert a pressure of one-quarter of a pound on the scale-pan through the beam 50 and the bar 55 and the scale-pan 8 will be forced partially down till the bar 70 has reached the bottom of the loop 74, when it can go no farther, but will rest upon the base of the loop 74, but will prevent the scale-pan 8 from rising. This movement down of the beam 50 will release the catch 44 from its engagement with the stop 40 and also from its engagement with the edge 52 of the recess 48 in the beam 50, permitting the weight 37 to come into action and draw back the slide-bar 24 till the catch 42 has come into contact with

the stop 38 upon the bar 24. This movement back of the bar 24 will draw back the slide-box and partially cut off or decrease the flow of material into the package. It will now be
 5 seen that the bar 70, with its weight 72, will no longer exert any influence upon the beam 50 and through the bar 55 on the scale-pan 8, except to prevent them from rising. When the material that is in suspension between the
 10 reservoir and the package has fallen into the package and the decreased flow from the smaller openings in the slide-box, together with the weight 76, has equaled a quarter of a pound, the beam 50 will be further lowered and
 15 the catch 42 will be released from its engagement with the stop 38 and with the beam 50 and the weight 36 will again come into action and immediately cut off the entire flow from the reservoir. When after the final cut-off
 20 the material in suspension has dropped into the package, the scale-pan will be lowered, and with it the upright 55, till the pin 62 has come in contact with the pivot-standard 5, when all pressure is released upon the scale-pan and
 25 the two scale-pans 6 and 8 will exactly balance. It will be observed that the weight 76 after the first cut-off practically compensates only for the weight of material in suspension after the last cut-off.

30 It is manifest that the bar 70 may be set by the loop 74, so that when it is brought down by the weight 72 it will carry down the beam 50 sufficiently low to release both of the catches 42 and 44 and cut off wholly the flow from
 35 the reservoir. When it is so set, then the weight 72 should be adjusted on the bar 70 to compensate for all of the material in suspension after the cut-off has been made, and the weight 76 should also be adjusted to just bal-
 40 ance the pressure on the scale-pan caused by the weight of the beam 50 and the bar 55. However, when both rapidity and also great accuracy are required in filling the packages a partial cut-off followed by the complete cut-
 45 off is preferably used, substantially as set out above. It will be seen by this mode of construction that the flow of material may be at first very large and fill the package to the amount of four and three-fourths pounds very
 50 quickly and then after the first cut-off the flow of material will be greatly reduced and the balance of the package filled slowly. It will also be seen that the cut-offs are practically controlled by the beam 50 and the
 55 weights 72 and 76 and that the scales are first lowered by the filling package and the pressure of the weights on the scale-pan 8 through the bar 55.

60 It is manifest that the details of construction may be widely varied by a skilled mechanic without departing from or varying the spirit of my invention.

Having now described my invention, what I claim is—

65 1. In a device of the character described, a

weighing mechanism, a reservoir, a single cut-off, a stop for holding the cut-off open, and a compensating weight adapted to coact with the partially-filled package to disengage the
 70 stop and permit the closing of the cut-off and compensate for the drip after the cut-off is entirely closed.

2. In a device of the character described, in combination with a weighing mechanism, a reservoir, a single cut-off, means for holding
 75 the cut-off both in its open and partially-closed positions, and two weights coacting with the partly-filled package for releasing the cut-off to decrease the flow of material when the package is partly filled and one of the weights to
 80 operate the mechanism to entirely cut off the flow when the package is completely filled and compensate for the drip after the final cut-off has been made.

3. In a device of the character described, in
 85 combination with a weighing mechanism, a reservoir, a cut-off beneath the reservoir, means for controlling the movement of the cut-off to decrease the flow of material into the package on the scale-pan, means for par-
 90 tially lowering the scale-pan before the package is filled and preventing the said pan with package thereon from rising thereafter consisting of an adjustable weight set to coact
 95 with the partially-filled package to exert a downward pressure upon the scale-pan, and a second weight to compensate for the drip after the cut-off has been finally closed.

4. In a device of the character described, a weighing mechanism, a cut-off, a single bar at-
 100 tached to the cut-off, means for operating the bar to first decrease the flow of material from the reservoir and then to complete the cut-off, stops on the bar for controlling the move-
 105 ments of the bar, and weights for releasing the bar from its engagement with the stops to operate the cut-off.

5. In a device of the character described, a weighing mechanism, a reservoir, a cut-off, a single bar attached to the cut-off, means for
 110 actuating the bar, two stops on the bar to limit its movements, a compensating weight adapted to coact with the partially-filled package to release the bar from one of the stops and operate the cut-off to decrease the flow of ma-
 115 terial into the package, and means for releasing the bar from the other stop to entirely close the cut-off.

6. In a device of the character described, a weighing mechanism, a filling mechanism con-
 120 sisting of a single slide cut-off, and two weights adapted by their connection with the filling mechanism to control the filling mechanism and decrease the flow of material into the partially-filled package and one of the
 125 weights to compensate for the drip after the entire closing of the cut-off.

7. In a device of the character described, a weighing mechanism, a filling mechanism, and
 130 two weights for controlling the filling mech-

anism and adapted to both exert a pressure upon the scale-pan while the package is being partly filled then releasing the pressure of one of the weights, continuing the pressure of the other weight upon the scale-pan until the required amount has been filled into the package and then releasing the pressure of the second weight upon the scale-pan.

8. In a device of the character described, a weighing mechanism, a filling mechanism, and two weights adapted to coact with the filling package for controlling the filling mechanism, to first partly fill the package by a large flow of material from the reservoir into the package and then complete the filling with a less flow and one of the weights to compensate for the drip after the cut-off has been finally closed.

9. In a device of the character described, a weighing mechanism, a filling mechanism, and two compensating weights having connections with the filling and weighing mechanism and adapted to compensate for all of the flow and drip of material into the package after the first cut-off has been made to reduce the flow of material into the package and the second weight to compensate for the drip after the final cut-off.

10. In a device of the character described, a weighing mechanism, a filling mechanism consisting of a reservoir and a single slide cut-off, two weights adapted to control the filling mechanism, and connection between the weights and the weighing mechanism adapted to coact with the partially-filled package to operate the filling mechanism.

11. In a device of the character described, a weighing mechanism, a reservoir, a cut-off, a single slide-bar attached to the cut-off, means for operating said bar to first partially reduce the flow of material from the reservoir into the package and then to wholly cut off the flow, and two compensating weights adapted to control the movements of said slide-bar and to compensate for all the flow and drip of material into the package after the partial cut-off has been made.

12. In a device of the character described, a weighing mechanism, a filling mechanism adapted to partly fill the packages placed on the weighing mechanism rapidly then to decrease the flow of the material into the package upon the weighing mechanism then to wholly cut it off, and two weights connected with the filling and weighing mechanism for controlling the filling mechanism to decrease the flow of material and one of said weights for controlling the filling mechanism to wholly cut off the flow of material.

13. In a device of the character described, a weighing mechanism, a filling mechanism, consisting of a single slide cut-off, provided with means for holding the cut-off to partly fill the package rapidly then to decrease the flow of material into the package and then to wholly

cut off the flow, and two weights connected with the filling and weighing mechanism for controlling the filling mechanism to decrease the flow of material from the reservoir and one of said weights for controlling the filling mechanism to wholly cut off the flow of material and compensate for the drip of the reservoir after the final cut-off.

14. In a device of the character described, a weighing mechanism, a reservoir, a cut-off, a bar attached to the cut-off, means for actuating the bar to operate the cut-off, two weights adapted to exert a pressure on the weighing mechanism, and connections between the weights and bar for controlling the cut-off.

15. In a device of the character described, a weighing mechanism, a single slide cut-off provided with stops thereon, catches adapted to engage the stops on the cut-off, and two weights adapted to exert a pressure on the scale-pan with the partly-filled package to disengage the catches from the stops on the cut-off and compensate for the drip after the cut-off is complete.

16. In a device of the character described, in combination with a weighing mechanism, a reservoir, a cut-off beneath the reservoir, means attached to the cut-off for first decreasing the flow of material from the reservoir into the package and then to entirely cut off the flow, and two compensating weights for partially lowering the package when it is partly filled and holding the package in its lowered condition till the filling is complete and one of the weights to compensate for the drip of the material into the package after the final cut-off.

17. In a device of the character described, a weighing mechanism, a reservoir, a cut-off, a single slide-bar attached to the cut-off, means connected with the slide-bar for operating the cut-off to first diminish the flow of material from the hopper into the package and then to wholly cut off the flow, and two weights for partly lowering the filling-package and holding it in its partially lowered position until the final cut-off has been made when the action of one of the weights ceases and the other weight compensates for the drip after the final cut-off.

18. In a device of the character described, a weighing mechanism, a reservoir, a cut-off, a single bar attached to the cut-off, means connected with said bar for operating the cut-off to first decrease the flow of material from the reservoir and then cut it off altogether, means for controlling the movements of said cut-off, and two weights both adapted to coact with the partly-filled package to lower the package on the scale-pan and then the action of one of the weights to be withdrawn and the other weight continues its action to compensate for the drip of the cut-off into the package after the final cut-off has been made.

19. In a device of the character described, a

weighing mechanism, a reservoir, a single cut-off, a slide-bar attached to the cut-off, means for actuating the cut-off to first decrease the flow of material from the reservoir and then to cut it off wholly, means for controlling the movement of the cut-off consisting of stops on the cut-off two catches of unequal lengths adapted to engage the stops on the cut-off and two weights adapted to exert a pressure on the scale-pan on which the package rests and disengage the catches from the stops on the cut-off to control the movements of the cut-off.

20. In a device of the character described, a weighing mechanism, a reservoir, a cut-off, a single bar attached to the cut-off, stops on said bar for holding the cut-off open and partly closed, two compensating weights adapted to coact with the weight of the partially-filled package to release the bar, and means connected with the bar to first decrease the flow of the material from the reservoir and then to wholly cut off the same and compensate for the drip from the cut-off after the cut-off is entirely closed.

21. In a device of the character described, a weighing mechanism, a reservoir, a cut-off, a slide-bar attached to the cut-off, a weight for actuating the cut-off, and means for controlling the movements of the cut-off consisting of stops on the slide-bar, catches engaging the stops and two weights adapted to release the catches from the stops sequentially.

22. In a device of the character described, a weighing mechanism, a cut-off, a slide-bar attached to the cut-off, a weight attached to the slide-bar for actuating the cut-off, two weights adapted to exert a pressure upon the scale-pan on which the package to be filled rests, and connections between said weights and the slide-bar for controlling the movements of the cut-off.

23. In a device of the character described, a weighing mechanism, a filling mechanism, the cut-off means for actuating the cut-off, a beam 50, connections between the beam and the scale-pan, connections between the beam and the means for actuating the cut-off, and a weight attached to said beam to compensate for the drip of the filling device after the cut-off has been entirely closed.

24. In a device of the character described, a weighing mechanism, a reservoir, provided with ledges thereon, a cut-off consisting of a slide-box adapted to engage the ledges on the reservoir and slide thereon, a bar attached to the slide-box, a weight attached to the bar for actuating the bar, and means connected with said bar for controlling the movements of the bar to operate the cut-off.

25. In a device of the character described, a weighing mechanism, a reservoir, a cut-off consisting of a slide-box provided with an opening in the base of the box and adapted to slide beneath the base of the reservoir and in

contact therewith, a single slide-bar attached to the cut-off, a weight attached to said bar for actuating the cut-off, stops on said bar for controlling the movements of the slide-bar, catches adapted to engage said stops, and two weights coacting with the partly-filled package to disengage the catches from the stops on the slide-bar and permit the weight attached to the slide-bar to cut off the flow of material from the reservoir.

26. In a device of the character described, a weighing mechanism, a filling mechanism consisting of a single slide-box, a bar adjustably attached to the slide-box, means for actuating the bar, stops on said bar, catches set to engage said stops sequentially, and two weights coacting with the partly-filled package for releasing the catches from engagement with the stops, and permitting said bar to impart to the cut-off in intermittent movement.

27. In a device of the character described, a weighing mechanism, a cut-off, a slide-bar attached to the cut-off, means for actuating the slide-bar, and two adjustable weights adapted to both exert a pressure on the weighing mechanism till the package is partly filled and then one of the weights to continue the pressure on the weighing mechanism until the package is filled.

28. In a device of the character described, a weighing mechanism, a cut-off, a slide-bar attached to the cut-off, stops on the slide-bar, catches set to engage the stops of the slide-bar and limit its movements, two weights both adapted to coact with the partly-filled package to release one of the catches from one of the stops when one of the weights is withdrawn and the other weight continues to coact with the partly-filled package to subsequently release the other catch from the other stop, and to adapt the filling mechanism to fill packages of different heights and capacities.

29. In a device of the character described, a weighing mechanism, a cut-off, a bar attached to the cut-off, means attached to the bar for actuating the cut-off, two weights adapted to exert a pressure on the weighing mechanism, connections between the weights and the bar for controlling the movements of the cut-off, and a supplemental platform placed upon one of the platforms of the weighing mechanism to raise the package to be filled nearer to the filling mechanism.

30. In a device of the character described, a weighing mechanism, a filling mechanism, a pivoted bar provided with a weight adjustably attached thereto, means for limiting the movement of said bar, a beam having an adjustable weight connected therewith, connections between said beam and the filling mechanism, and connections between the bar, the beam, and the weighing mechanism.

31. In a device of the character described, a

weighing mechanism, a filling mechanism consisting of a reservoir, a single slide cut-off attached to a single slide-bar, stops on the bar, catches engaging the stops; means for releasing the slide-bar to operate the cut-off, two compensating weights having connections with the weighing mechanism and the cut-off for compensating for the drip after the cut-off has been closed and a supplemental platform connected with the weighing mechanism for varying the relations of the package to the filling mechanism.

32. In a device of the character described, a weighing mechanism, a cut-off a slide-bar attached to the cut-off, means for actuating said cut-off, and means attached to said slide-bar for controlling its speed.

33. In a device of the character described, a weighing mechanism, a reservoir, a cut-off, a single slide-bar attached to the cut-off, a gear upon the slide-bar, a fan adapted to be operated by said gear and control the speed of the

slide-bar, and means for actuating the slide-bar to operate the cut-off.

34. In a device of the character described, a weighing mechanism, a reservoir, a cut-off, a single slide-bar attached to the cut-off, a gear upon the slide-bar, a fan adapted to be operated by said gear and control the speed of the slide-bar, and means for actuating the slide-bar to operate the cut-off.

35. In a device of the character described, a weighing mechanism, a cut-off, a single slide-bar attached to the cut-off, means engaging the slide-bar to control its speed, means for actuating the slide-bar, and two weights connected with the slide-bar and weighing mechanism to operate the cut-off intermittently.

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

EMIL STAHELI.

Witnesses:

M. R. HEMMER,
M. M. CADY.