

Aug. 31, 1943.

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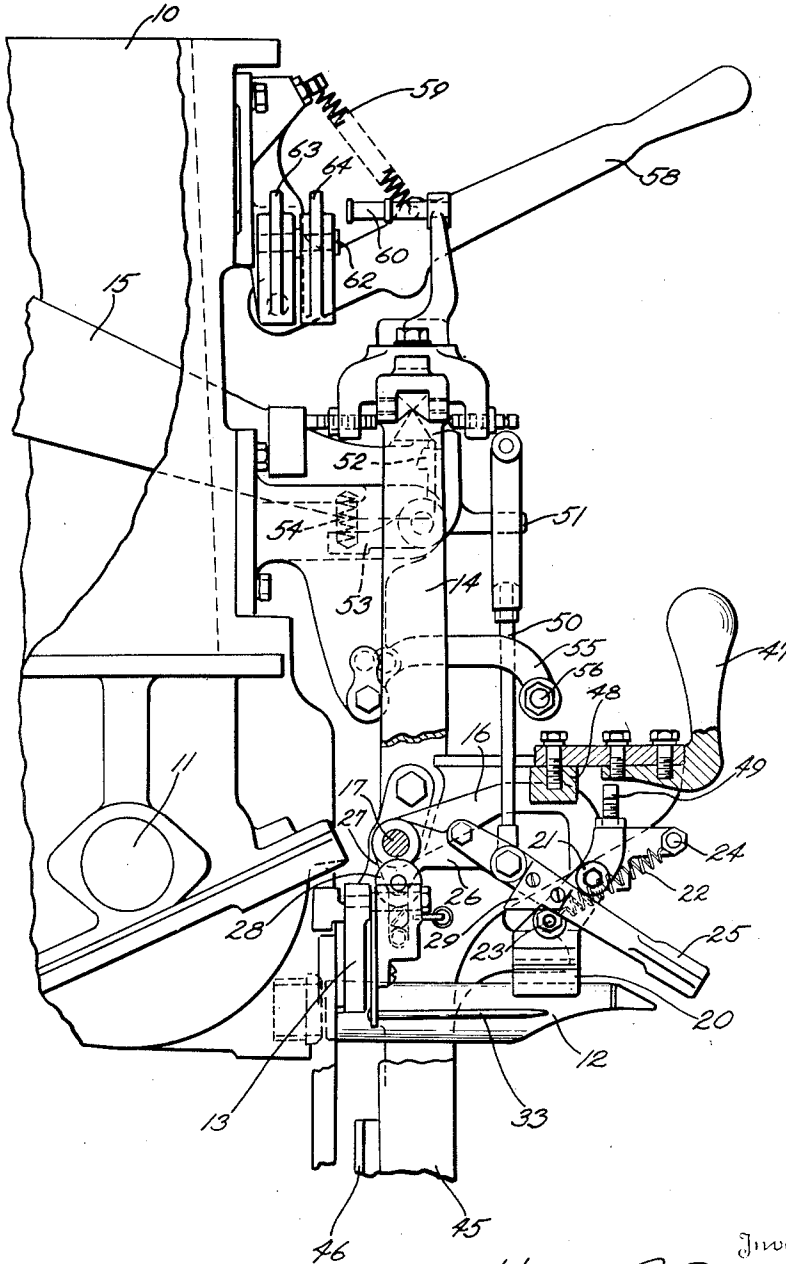
2,328,165

BAG FILLING APPARATUS WITH HAND DISCHARGE

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2 Sheets-Sheet 1

FIG. 1.



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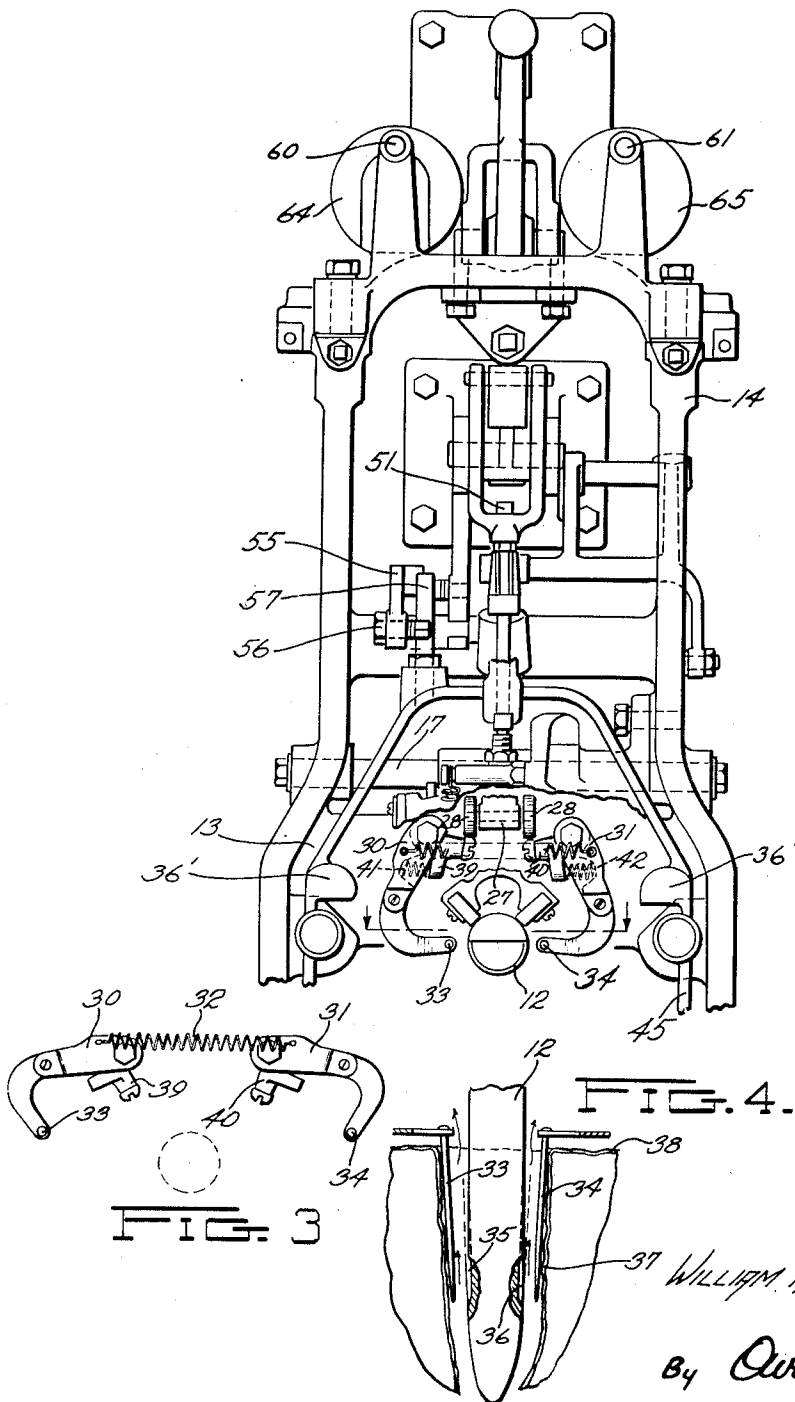
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2 Sheets-Sheet 2

FIG. 2.



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BAG FILLING APPARATUS WITH HAND
DISCHARGE

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15 Claims. (Cl. 226—48)

This invention relates to a bag filling machine adapted to fill and simultaneously weigh valve bags.

More particularly the device includes means for manual discharge of the bag after filling and to certain improvements in the venting of the bag during filling.

Another object of the invention is to provide means by which the device may be adapted for use for filling paper bags or cloth bags as desired.

Other details will appear as the description proceeds.

In the accompanying drawings forming a part of this specification,

Figure 1 is an elevation with parts in section and parts broken away of a portion of a bag filling device comprising the improvements to which this invention relates;

Fig. 2 is a front elevation of the portion of the device shown in Fig. 1;

Fig. 3 is a separate view of the venting fingers, and

Fig. 4 is a view partly in section showing diagrammatically the operation of the venting fingers during the filling of the bag.

This relates to a valve bag filling apparatus of a well known type where a spout adapted to enter a bag is mounted upon a support which in turn is pivoted on one end of the scale beam. A substantially complete apparatus of this type is disclosed in Patent No. 2,173,479, which issued September 19, 1939, to Carl H. Hartman et al., for "Cement packer." Only sufficient portions of the apparatus are disclosed in this application to show the relation of the improved parts to the device as a whole.

Apparatus of this type is provided with a hopper 10 which supplies material for filling the bag and on a continuously rotating shaft 11 there is mounted a propeller within the hopper adapted to drive material out through a spout 12 which is mounted upon a frame, usually described as an A-frame, which in turn is mounted upon a cross-piece 13 on a scale beam 15, which in turn is, of course, suitably mounted and counter-balanced.

In my improved apparatus, there is a clamp-holding bracket 16 mounted for lateral adjustment upon a cross-piece 17 of the A-frame.

A bag clamp 20 is pivoted at 21 upon bracket 16 in position to clamp a bag upon spout 12. A spring 22 connects a pin 23 upon the bag clamp with a pin 24 on bracket 16, the pins and pivot of the clamp being so arranged that when the clamp is in clamping position, as indicated in Fig. 1, the spring passes below the pivot 21 of the clamp and so holds it down in clamping position, but when the clamp is raised, the spring

passes the pivot point 21 and so maintains the clamp in raised position until it is forcibly lowered.

An operating handle 25 is attached to an arm 26 of a bell crank lever which is loosely mounted upon shaft 17. The other arm 27 of bell crank lever carries rollers 28. The handle 25 is provided with a plate 29 in position to contact pin 23 to which spring 22 is attached when handle 25 is lowered.

Also, suitably pivoted on cross-piece 13 are bell crank levers 30 and 31. A spring 32 is attached to the bell crank levers in such a way that when the levers are swung to the position in which they are shown in Fig. 3, the spring maintains them in that position, but when the levers are lowered, as indicated in Figs. 2 and 4, the spring is below the pivot points of the levers and tends to draw them together.

Mounted in the ends of the long arms of levers 30 and 31 are pins 33 and 34. When in the lowered position, the ends of these pins may enter recesses 35 and 36 in the sides of spout 12. Guards 36' are provided for the ends of the pins when they are swung to inoperative position. It will be readily understood that the valve 37 of a bag 38, as indicated in Fig. 4, is slipped over the spout and when the pins are spread, as indicated in Fig. 4, they provide relief between the valve and the spout, as will be explained later in greater detail.

The short arms 39 and 40 of levers 30 and 31 are pivotally connected to the long arms and springs 41 and 42 are interposed between the two arms, as shown in Fig. 2. It will be readily seen that when rollers 28 press down upon arms 39 and 40, as indicated in Fig. 2, the compressed springs 41 and 42 tend to spread pins 33 and 34.

Suitably pivoted near the bottom of the A-frame is a discharging frame 45 which has a plate 46 to press against the rear of the bag when it is discharged, in the same manner as indicated in the patent identified above. Frame 45 is provided with handle 47 and with an abutment 48 which contacts an adjustable pin 49 on clamp 23 when handle 47 is moved forward.

Extending upward from handle 25 there is a rod 50 provided with a yoke embracing the forward end of an arm 51 on a scale latch 52. Another arm 53 of the scale latch is normally pressed downward by a spring 54, as indicated on Fig. 1.

An arm 55 mounted on the same bracket as the scale lock latch 52 is provided with a pin 56 which normally is in front of a pin 57 on frame 45, as will be seen from Fig. 2.

A handle 58 is pivoted upon the hopper above the A-frame and is normally held upward in the position in which it is shown in Fig. 1 by a spring 59, but can be moved down when desired to de-

press the A-frame and the load end of the scale beam.

The upper end of the A-frame is provided with pins 60, 61 which are in line respectively with a pin 62 on the front of the hopper, shown in Fig. 1, and another pin, not shown. On pin 62, there are weights 63, 64, and on the companion pin in line with pin 61 there is shown a weight 65 and back of it is another weight, not shown. When the load end of the scale is in a lower position, the pins 60 and 62 are in alignment.

The operation of the apparatus will be readily understood from the structure described, but may be summarized for convenience as follows:

Presuming the apparatus to be in the position in which it is shown in Figs. 1, 2 and 4, with a bag placed upon the spout, as indicated in Fig. 4, but not shown in Figs. 1 and 2, it will be seen that spout 12 is in position to receive material from the discharge outlet from the hopper. The material will be fed into the bag until the weight on the other end of the scale beam 15 is overbalanced, whereupon the A-frame with the bag thereon drops by gravity until the spout 12 is out of alignment with the outlet for the material and, therefore, the flow of the material through the spout is cut off. This lowering of the A-frame carries down pin 57 below pin 56. Thereupon, handle 47 is pulled to the right, as viewed in Fig. 1. This through contact of pins 48 and 49 tilts the bag clamp and releases the bag from the spout at the same time pin 23 contacts plate 29, raises handle 25 and with it operates bell crank lever 26 and raises rollers 28 off of arms 39 and 40 and allows pins 33 and 34 to snap back so that their ends are nested in recesses 35 and 36. At the same time, rod 50 is raised so that latch 52 is forced by spring 54 into latching position on the end of the scale beam. By this latch, the scale beam and A-frame are maintained in their lowered position.

After the bag has been discharged, another bag is placed upon the spout and then handle 25 is moved down until plate 29 contacting pin 23 forces spring 22 past the line of pivot 21, after which the spring snaps the bag clamp into holding position. At the same time, rollers 28 exert their force upon lever arms 39 and 40 and yieldingly separate pins 33 and 34 so as to provide vent openings along the side of the spout for the filling operation.

Depression of handle 25 also depresses rod 50 and arm 51 of latch 52, thereby releasing the latch and allowing the scale beam to return upward. This causes return of spout 12 to registering position with the discharge opening so that the filling of the bag is started and the procedure is repeated.

When for any reason it is desired to shut off the flow of material before the scale is lowered in the normal operation, handle 58 may be lowered to force the scale beam down so that latch 52 will hold it in the lowered position and prevent further discharge of the material until such action is resumed by the depression of handle 25.

The operation above described is suitable where paper bags are to be filled and vent openings in the sides of the spout during the filling operation are desirable because of the relatively impervious nature of paper bags, which requires some place for the escape of air from the bag during the filling operation. Cloth bags are normally sufficiently pervious so that vent means along the spout are not necessary, and for that reason the valves of cloth bags are usually made

small enough so as to just comfortably fit over the filling spout. Accordingly, the presence of pins 33 and 34 is undesirable during the filling of cloth bags. With the apparatus above described, the pins 33 and 34 may be merely raised by hand to the position in which they are shown in Fig. 3 where they will be held by spring 32.

Also, cloth bags require an adjustment of the weighing device in order to provide for the proper weight of the material within the bag, the scale weighing the bags as well as the material.

The pins 60, 61, etc., with the weights 63, 64, 65, etc., are provided for this purpose. The weights will be of somewhat different size so that by proper arrangement, the necessary adjustment may be made simply by transferring the weights as needed from one pin to another while these pins are in alignment. As will be seen, the pins are provided with collars to prevent accidental displacement of the weights, and the clearance between the ends of the pins is not sufficient to allow the falling off of the weights even when the pins are out of alignment.

Arm 55 may be swung upward so that pin 56 will clear pin 57 at any time when it is desired, but in normal operation of the apparatus, pin 56 remains in this lowered position by gravity.

As will be seen, an apparatus has been provided which locks the bag against accidental discharge until it has been properly filled and then locks the load end of the scale beam in its down position until an empty bag has been placed upon the tube. Thereupon, by the operation of a single handle, the bag clamp is rendered operative, the venting pins are spread and the scale beam lock is released. Conversely, when the bag has been filled so that the scale is once more locked in the down position, the simple movement of handle 47 not only releases the clamp and discharges the bag, but also returns the venting pins to their collapsed position so as to facilitate the placing of an empty bag upon the tube.

While one embodiment of the invention has been disclosed in some detail, it will be readily understood that various modifications may be made within the scope of the appended claims.

What I claim is:

1. In apparatus for filling valve bags comprising a spout adapted to enter the valve of a bag and means to feed material to and through the spout, a movably mounted vent-forming member outside the spout and extending in the same general direction, and means to move said member towards the axis of the spout while a bag is being placed thereon and away from the spout while the bag is being filled.

2. In apparatus for filling valve bags comprising a spout adapted to enter the valve of a bag and means to feed material to and through the spout, a movably mounted vent-forming member outside the spout and extending in the same general direction, and yieldable means to move said member towards the axis of the spout while a bag is being placed thereon and away from the spout while the bag is being filled.

3. In apparatus for filling valve bags comprising a spout adapted to enter the valve of a bag and means to feed material to and through the spout, a movably mounted vent-forming member outside the spout and extending in the same general direction, and resilient means tending to move the vent-forming member away from the spout.

4. In apparatus for filling valve bags comprising a spout adapted to enter the valve of a bag and means to feed material to and through the spout, movably mounted pins on opposite sides of the spout and extending in the same general direction, and means to move the pins towards and from the spout.

5. In apparatus for filling valve bags comprising a spout adapted to enter the valve of a bag and means to feed material to and through the spout, movably mounted pins on opposite sides of the spout, and extending in the same general direction, and means to move the pins towards and from the spout, the spout having recesses in its walls adapted to receive the ends of the pins which project towards the discharge end of the spout.

6. In apparatus for filling valve bags comprising a spout adapted to enter the valve of a bag and means to feed material to and through the spout, movably mounted pins on opposite sides of the spout and extending in the same general direction, and resilient means to move the pins away from the spout.

7. In apparatus for filling valve bags comprising a spout adapted to enter the valve of a bag and means to feed material to and through the spout, movably mounted pins on opposite sides of the spout and extending in the same general direction, resilient means to move the pins towards the spout, and resilient means to move the pins away from the spout, the spout having recesses in its walls adapted to receive the ends of the pins which project towards the discharge end of the spout.

8. In apparatus for filling valve bags comprising a spout adapted to enter the valve of a bag, means to feed material to and through the spout, and a clamp for clamping a bag onto the spout, a movably mounted vent-forming member outside of the spout and means operatively connected with the clamp and member for moving the member away from the spout when the clamp is moved into clamping position.

9. In apparatus for filling valve bags comprising a spout adapted to enter the valve of a bag, means to feed material to and through the spout, and a clamp for clamping a bag onto the spout, a movably mounted vent-forming member outside of the spout, means operatively connected with the clamp and member for moving the member away from the spout when the clamp is moved into clamping position, and means moving the member towards the spout when the clamp is released.

10. In apparatus for filling valve bags comprising a spout adapted to enter the valve of a bag, means to feed material to and through the spout, movably mounted pins extending in the same general direction as the spout on opposite sides thereof, pivoted members carrying the pins, and resilient means biasing the pins towards the spout when they are near thereto and biasing the pins away from the spout after they have been moved a predetermined distance therefrom.

11. In apparatus for filling valve bags comprising a spout adapted to enter the valve of a bag, means to feed material to and through the spout, a clamp adapted to clamp a bag onto the spout, a scale beam on which the spout is supported, manually operable means to release the clamp and discharge the bag, and means to prevent operation of said manual means until the

spout is lowered a predetermined extent, a movably mounted vent-forming member outside the spout and extending in the same general direction, and connections between the clamp and member operated by the discharge means for moving the member towards the spout.

12. In apparatus for filling valve bags comprising a spout adapted to enter the valve of a bag, a scale beam on which the spout is mounted, means to feed material to and through the spout, and a clamp for clamping a bag upon the spout, a latch for locking the load end of the beam in down position, a movably mounted vent-forming member outside the spout and extending in the same general direction, and manually operable means for simultaneously actuating the clamp to clamping position, releasing the latch and resiliently biasing the vent member away from the spout.

13. In apparatus for filling valve bags comprising a spout adapted to enter the valve of a bag, a scale beam on which the spout is mounted, means to feed material to and through the spout, and a clamp for clamping a bag upon the spout, a latch for locking the load end of the beam in down position, a movably mounted vent-forming member outside the spout and extending in the same general direction, a single manually operable handle for moving the clamp to clamping position, releasing the lock and resiliently biasing the vent member away from the spout.

14. In apparatus for filling valve bags comprising a spout adapted to enter the valve of a bag, means for feeding material to and through the spout, and a scale beam on which the spout is mounted, a movably mounted vent-forming member extending outside of and in the same general direction as the spout, a pivotal mounting for the member, means normally biasing the member towards the spout but biasing the member away from the spout after it has been moved a predetermined distance away therefrom, whereby the member when moved into operative position for filling paper bags will maintain an operative position near the spout, and when moved away from the spout to an inoperative position for filling cloth bags will maintain such inoperative position, a pin mounted upon the spout support and extending in an approximately horizontal direction and near enough said member so both are readily accessible to the same operator, a pin mounted upon a stationary support and aligning with the first said pin when the scale beam is in one position, and weights on said pins which may be shifted from one to the other while they are in alignment.

15. In apparatus for filling valve bags comprising a spout adapted to enter the valve of a bag, means for feeding material to and through the spout, and a scale beam upon which the spout is mounted, a pin extending in an approximately horizontal direction in a position readily accessible to an operator who is in position to place a bag upon said spout and movable vertically with the spout during the movement of the scale beam, a pin mounted in a fixed position and aligning with the first said pin when the scale beam is in one position, and weights shiftable from one pin to the other when the pins are in alignment.

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