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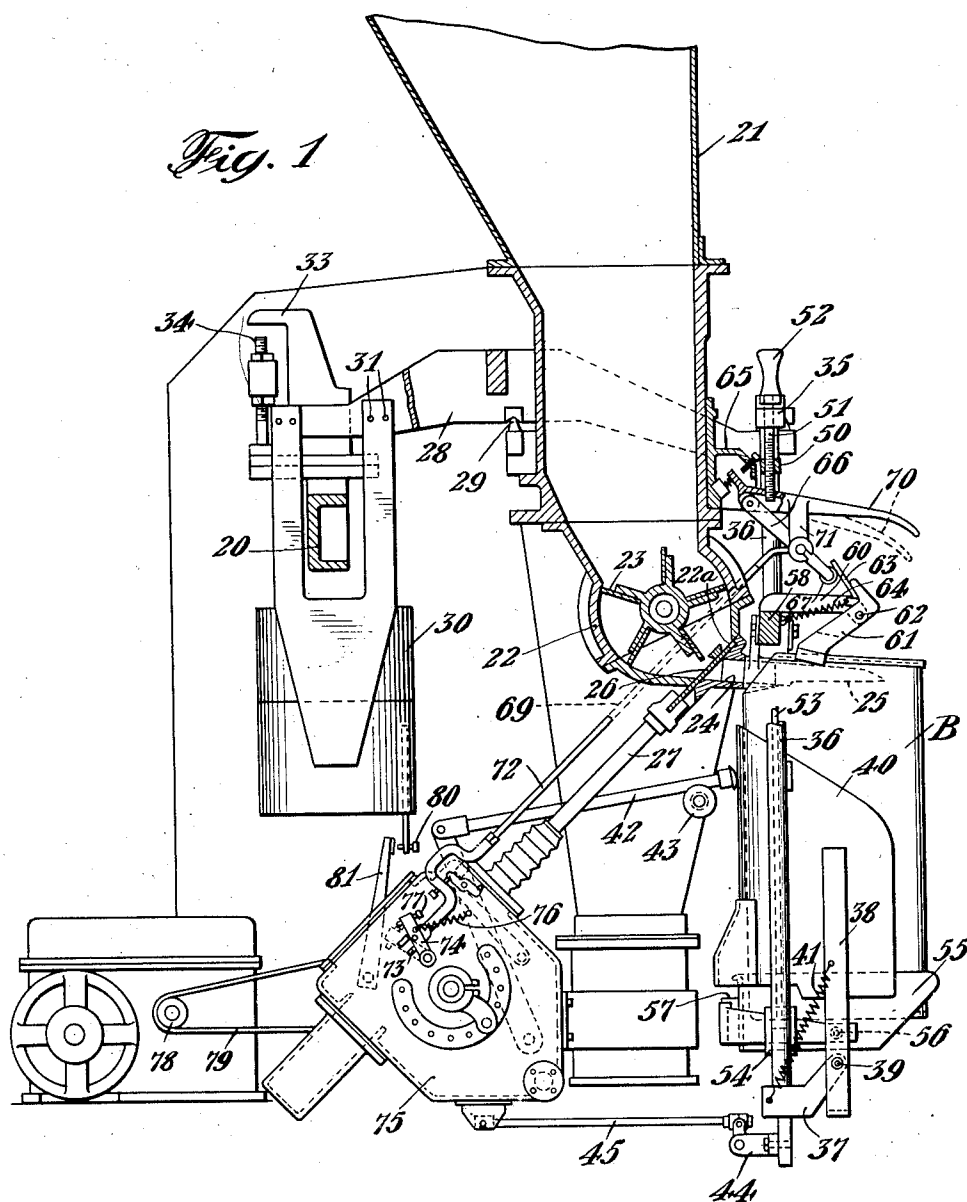
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2,500,768

BAG SUPPORT FOR FILLING MACHINES

Filed Feb. 11, 1946

3 Sheets-Sheet 1



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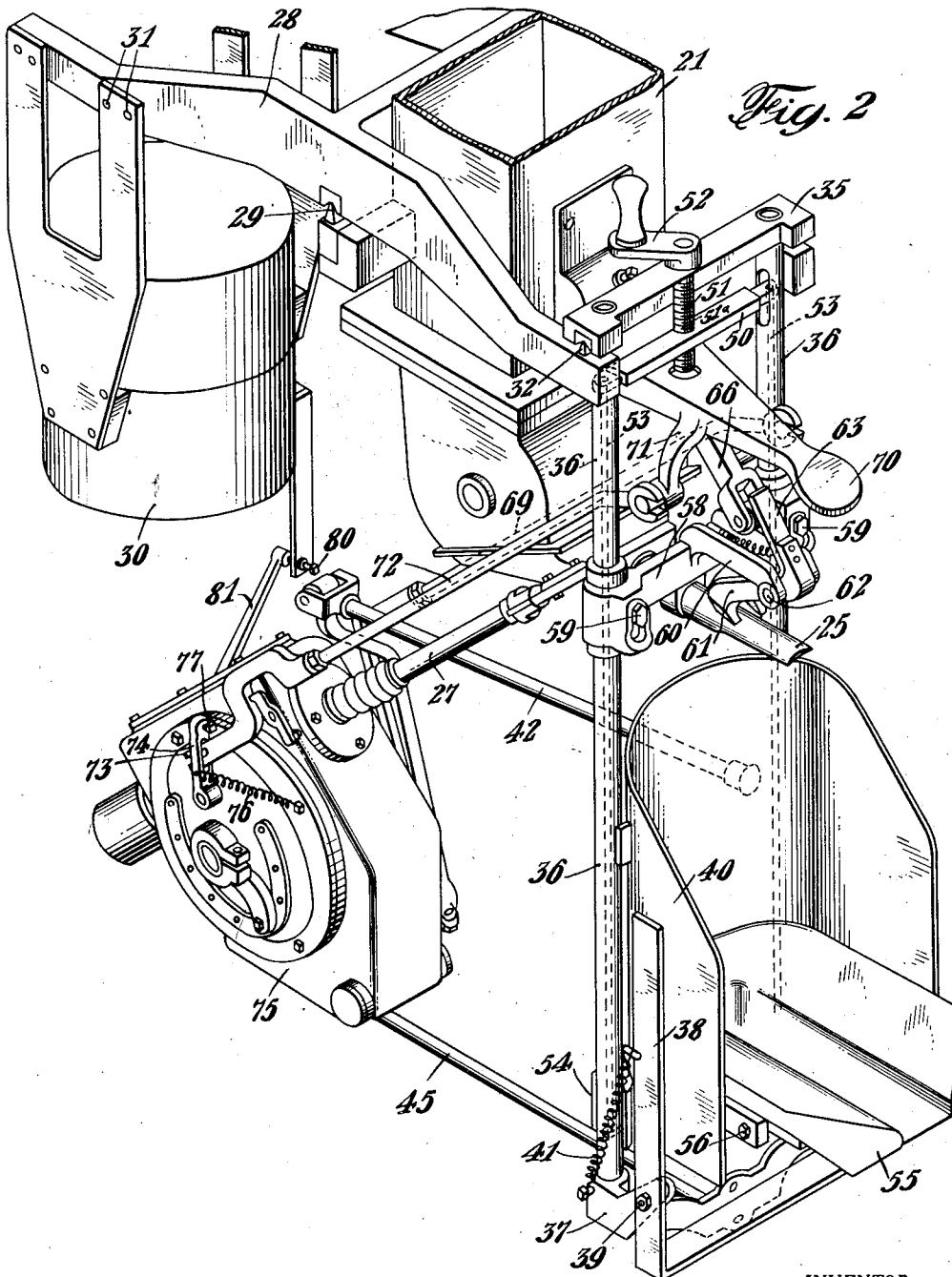
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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

Fig. 3

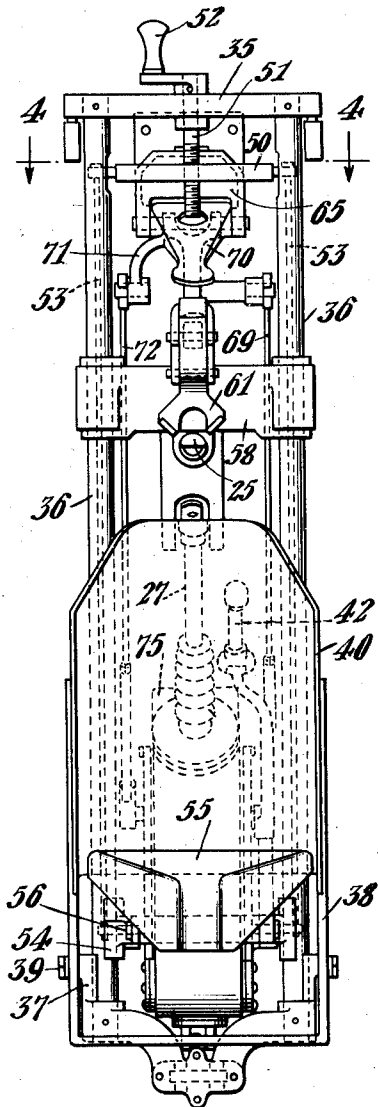
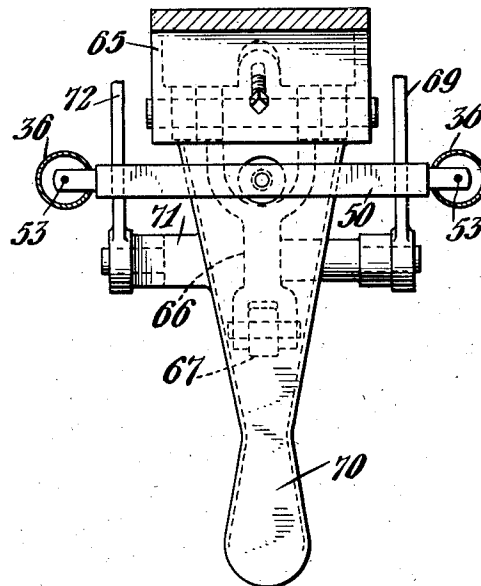


Fig. 4



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UNITED STATES PATENT OFFICE

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BAG SUPPORT FOR FILLING MACHINES

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Original application July 22, 1942, Serial No.
451,883. Divided and this application February
11, 1946, Serial No. 646,798

7 Claims. (Cl. 226-48)

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My invention relates to a novel bag support arrangement for a filling machine.

The usual automatic filling machine comprises a support upon which the bottom of a bag rests during the filling operation. In order to adapt the machine for bags having different lengths or for those which are formed from different materials, it becomes necessary to change the elevation or height of the bag support. To this end, in accordance with the present invention, the bag support is suspended or mounted in a novel manner and, more particularly, the suspending or mounting means may comprise a vertical screw adapted to be rotated manually in either direction to thereby elevate or lower the bag support.

Various other objects, advantages and features of my invention will become apparent from the following detailed description.

My invention resides in the bag support, adjustable features and arrangements of the character hereinafter described and claimed.

This application is a division of application Serial No. 451,883, filed July 22, 1942, which has matured into Patent No. 2,403,225.

For an understanding of my invention and for an illustration of one of the forms thereof, reference is to be had to the accompanying drawings, in which:

Figure 1 is a side elevational view of one embodiment of the invention, with parts in section and with parts removed for clarity of illustration;

Fig. 2 is an isometric elevational view of the apparatus shown in Fig. 1;

Fig. 3 is a partial front elevational view of the apparatus shown in Fig. 1; and

Fig. 4 is a horizontal sectional view, partly in elevation, taken on the line 4-4 of Fig. 3.

The apparatus embodying the invention is mounted upon suitable framework, some of which is shown as at 20 in Figure 1 and some of which is omitted in order to more clearly disclose the operating mechanism. The bag filling apparatus comprises a hopper 21 which may be connected with any suitable source of supply of cement or other material to be packaged. At the bottom of the hopper, there is a propeller housing 22 in which there is a constantly rotating propeller 23 mounted on a horizontal axis. At the right of the housing, as shown in Figure 1, there is a substantially horizontal discharge opening or passage 24 normally in alignment with a filling spout 25. The propeller is normally in continuous operation during the use of the mechanism, but discharge of material is cut off when desired by a

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suitable cut-off slide or gate 26 which is operated by a rod 27. The housing 22 is provided with a slideway or groove which is open at the bottom and closed at the sides and top. The gate 26 is movable in this slideway. As indicated at 22a, the upper end of the slideway opens into the propeller housing 22.

A double armed scale beam 28 is fulcrumed at 29 and carries a suitable weight 30 fixed to the scale beam, as shown at 31. It will be seen that the weight is rigidly fastened to the scale beam and, therefore, gives the scale beam a pendulum action. The front end of the scale beam is provided with pivots 32 for a load support, Fig. 2. A rigid stop member 33, Fig. 1, projects from the frame over the rear end of the scale beam and an adjustable stop screw 34 mounted in the scale beam arms limits the height to which the rear end of the scale beam may rise and the frame member 20 as shown in Figure 1 limits the lowering of the rear end of the scale beam.

The load support comprises a top cross-piece 35 which rests upon the scale beam pivots 32. Depending from cross-piece 35, there are hollow supporting columns 36. The lower ends of the columns have attached thereto a bracket 37 to which a U-shaped member 38 is pivoted at 39. The U-shaped member 38 has attached thereto a bag shield 40 adapted to surround the sides and rear of a bag B being filled upon the apparatus. A spring 41 normally holds the shield 40 in upright position, as shown in Figures 1 and 2.

A discharge pusher rod 42 is supported at its front end upon a roller 43 and normally clears but contacts on movement, with shield 40, being operated to tilt the shield and discharge the bag at the proper time after completion of the bag-filling operation. The bracket 37 has attached to the rear side thereof an arm 44 which is connected to a portion of the frame by a check rod 45 which operates parallel with the portion of the scale beam between pivots 29 and 32 so as to keep the load supporting rods 36 in upright position.

Beneath cross-piece 35, there is an adjusting cross-piece 50 which may be raised or lowered by a screw 51 operable by a handle 52. The respective ends of cross-piece 50 work in slots in hollow rods 36 and have attached thereto rods 53 which are within the respective hollow tubes 36. The lower ends of rods 53 have attached thereto, through slots in tubes 36, a bracket 54. A bottom support 55 for the bag is pivoted to bracket 54 at 56 (see Figure 3). The rear of the bottom support 55 is provided with a lug 57

which normally rests upon the bracket 54 and maintains the bottom support in the position in which it is shown in Figure 1.

A cross-piece 58 is secured at 59 to tubes 36 and the filling tube 25 is secured to and supported by cross-piece 58. Extending forward from the cross-piece 58, there is an arm 60. Bag clamp 61 is pivoted at 62 to arm 60. The clamp is provided with a tail piece 63 to which there is attached a spring 64 which normally presses the clamp down toward the filling tube.

Mounted on the front of the hopper, there is a bracket 65 (see Figure 1) to which there is pivoted a clamp releasing lever 66 (see Figure 1, 2 and 4). On the end of the lever 66, there is a roller 67 in position to engage the tail piece 63 of the bag clamp. An arm extends from lever 66 and is operated by a rod 69, Fig. 2, the movement of which is controlled in a manner to be described hereafter.

The pivot carried by bracket 65 for the support of lever 66 also supports a trip handle 70 from which there extends an arm 71 engaging a connecting rod 72. The lower end of the connecting rod is provided with a fork 73 which straddles a pin in a trip arm 74 on the control unit housing 75. A spring 76 normally pulls arm 74 to the right, as viewed in Figure 1, against an adjustable stop 77.

In my aforesaid application Serial No. 451,383, there is a complete disclosure of the various operations which are performed in connection with the bag-filling operation. These may be summarized briefly as follows: The housing 75 contains clutch mechanism which comprises a clutch wheel and a mechanical arrangement adapted to be driven thereby. The clutch wheel is rotated constantly by a suitable source of power 78 which drives a belt or chain 79 connected to said clutch wheel. The apparatus being in the stop position, the shut-off slide or gate 26 is closed. At this time, the valve of a valve bag B is associated with the filling spout 25. Thereupon, the trip handle 70 is moved downward momentarily to the dotted line position thereof as shown whereby, through the connecting rod 72, the trip arm 74 is swung in a counter-clockwise direction to thereby connect the aforesaid mechanical arrangement to the rotating clutch wheel. This initiates a cycle of automatic operation of the bag filling apparatus. Immediately thereafter, the rod 69 is lowered and, as a result, the spring 64 becomes effective to cause the clamp 61 to clamp the bag upon the filling spout 25. Substantially simultaneously, the rod 27 is moved downwardly with resultant opening of the gate 26 and consequent discharge of material into the bag B by the constantly rotating propeller 23. The bag B, during the filling operation, is supported by the filling spout 25 and the bottom thereof rests on the support 55. Eventually, as the filling operation continues, the scale beam 28 moves clockwise and moves screw 80 into engagement with trip arm 81 with consequent movement of the latter in a counter-clockwise direction. As a result, under the control of a spring mechanism disposed within the housing 75, the gate 26 is moved to closed position. Thereafter, while the mechanism in housing 75 is in motion for a predetermined spaced interval, the filled bag B remains positioned as shown on the drawing to permit dissipation of the air pressure which was established therein by the propeller 23 and avoid the puff of dust-laden air that would otherwise be discharged through the valve opening of

the bag upon removal thereof from the filling tube. At the end near the expiration of this interval, the bag clamp 61 is opened and, in response to movement of the rod 42, the bag shield 40 is tilted in a clockwise direction, Figs. 1 and 2, to discharge the filled bag from the support 55.

The particular mounting of the bottom support 55 for the bag B allows of the accurate adjustment of the height of the support, without suspending the operation of the filling apparatus, to give the degree of support desired, both during filling and discharging. In response to rotation of the screw 51 by handle 52, the support 55 may be positioned at exactly the right distance from the filling tube to give the necessary support to obviate tearing of the top of the bag where it is threaded onto the filling tube and at the same time avoid holding the bag bottom so high that there is any interference with proper filling. When shield 40 is moved by pusher 42, it shoves the bag off of the filling tube while the bottom of the bag rests upon the horizontal bag support. After the bag moves far enough so that its center of gravity is in front of pivot 53, the bottom support tilts with the bag and allows the bag to slide off. More particularly, with the arrangement disclosed, the handle 52 is readily accessible to the operation of the machine. The provision of the screw 51 permits accurate and small scale adjustment of the support 55 to thereby properly locate the position to be taken by the bottom of the bag. Moreover, the adjusting screw 51, because of the short pitch in the thread, is self-locking and this maintains the support 55 in any desired position in which it is set.

A longitudinal groove 51a (see Fig. 2) similar to a keyway is provided in screw 51 which provides a cutting tapping edge which tends to clean out the thread in bar 50 and keep it free so that the handle 52 is easily moved even though the unit operates in dust-laden air.

While the invention has been described with respect to a certain particular preferred example which gives satisfactory results, it will be understood by those skilled in the art after understanding the invention, that various changes and modifications may be made without departing from the spirit and scope of the invention and it is intended therefore in the appended claims to cover all such changes and modifications.

What is claimed as new and desired to be secured by Letters Patent is:

1. In combination in a valve bag filling device, an approximately horizontal filling tube adapted to enter the valve of a bag, a pivoted support for the bottom of a bag being filled through said spout, manually operable means located above the filling tube, and a linkage for operatively interconnecting the manually operable means with said bottom support for adjusting the distance of said support from said tube, said manually operable means being operable during use of the apparatus.

2. In combination in a valve bag filling apparatus, a weighing beam, parallel tubes mounted upon the beam and held in vertical position, a substantially horizontal filling tube mounted in fixed position upon said parallel tubes, rods slidable vertically within the tubes, a bracket attached to said rods, a support for the bottom of a bag being filled through the filling tube, a pivotal mounting for the support upon the bracket, and means to simultaneously adjust the vertical position of the rods with respect to the parallel tubes.

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3. In bag-filling apparatus, a weighing beam, depending means secured to one end of said weighing beam, a support for a bag, means adjustable in a vertical direction for securing said support to said depending means, and a vertical screw positioned in close proximity to said end of the weighing beam and coactable with said adjustable means to change the vertical position of said support.

4. In bag-filling apparatus, a weighing beam, spaced members secured to and depending from said weighing beam, depending rods mounted adjacent said members, respectively, and being vertically adjustable as a unit with respect thereto, a bag support secured to said rods, and means positioned approximately at the level of said weighing beam and coactable with said rods to change the vertical position of said support.

5. In bag-filling apparatus, a weighing beam, spaced members secured to and depending from said weighing beam, depending rods mounted substantially parallel with said members, respectively, and being vertically adjustable as a unit with respect thereto, a bag support secured to said rods, and means comprising a vertical screw positioned approximately at the level of said weighing beam and coactable with said rods to change the vertical position of said support.

6. In combination in a valve bag filling apparatus, a weighing beam, parallel tubes mounted upon the beam and held in vertical position, a substantially horizontal filling tube mounted in fixed position upon said parallel tubes, rods slidable vertically within the tubes, a bracket at-

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tached to said rods, a support for the bottom of a bag being filled through the filling tube, a pivotal mounting for the support upon the bracket, and means comprising a vertical screw positioned approximately at the level of said weighing beam for simultaneously adjusting the vertical position of the rods with respect to the parallel tubes.

7. In combination, in a valve bag filling apparatus, a weighing beam, parallel tubes mounted upon the beam and held in vertical position, a substantially horizontal filled tube mounted in fixed position upon said parallel tubes, rods slidable vertically within the tubes, a bracket attached to said rods adjacent the lower end thereof, a support for the bottom of a bag being filled through the filling tube, a pivotal mounting for the support upon the bracket, a cross-piece attached to said rods adjacent the upper end thereof, and a journaled vertical screw disposed in threaded relation with respect to said cross-piece.

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