E. L. BUSCHMAN.

BAG FILLING MACHINE.

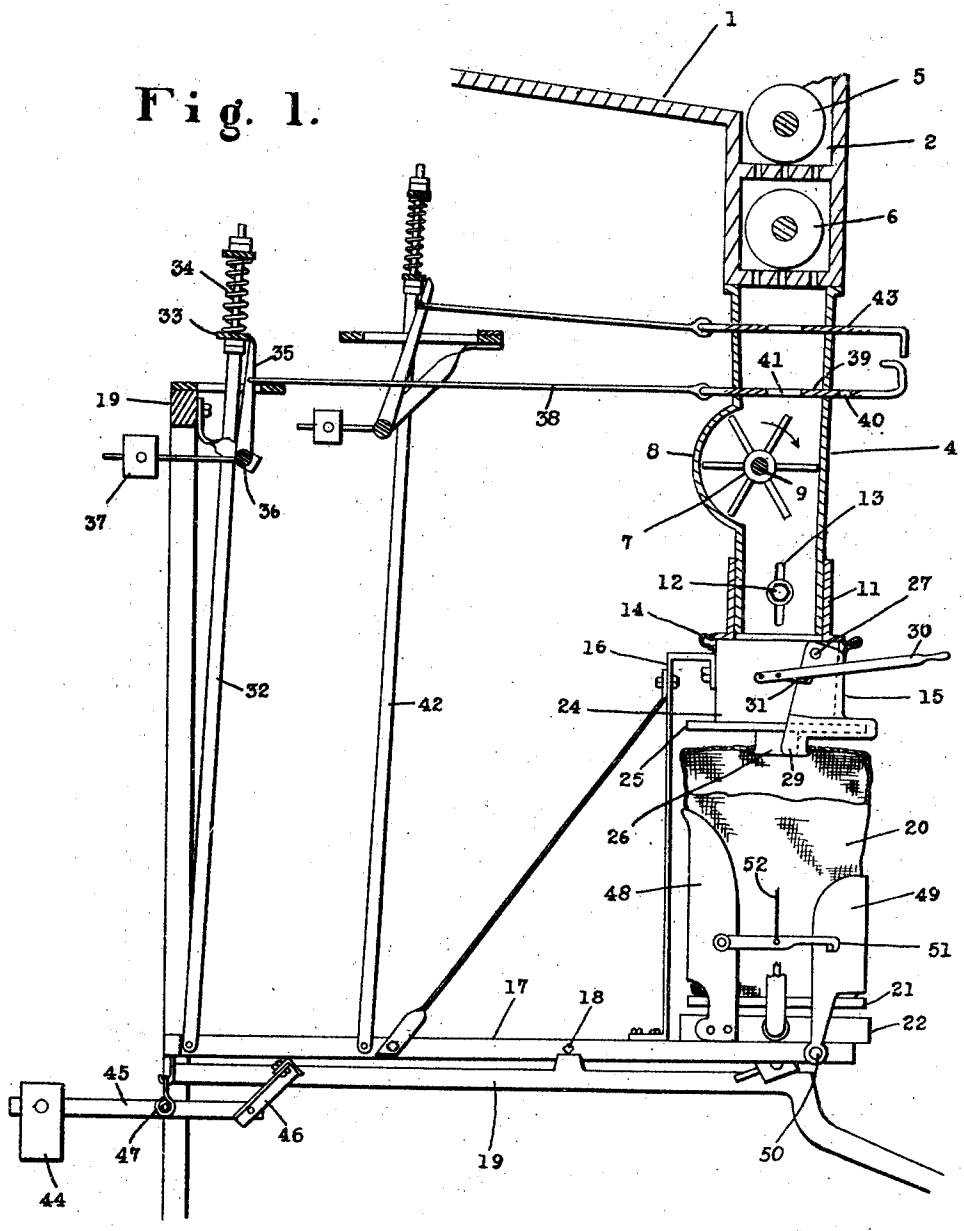
APPLICATION FILED SEPT. 8, 1916.

1,372,480.

Patented Mar. 22, 1921.

3 SHEETS—SHEET 1.

Fig. 1.



WITNESS

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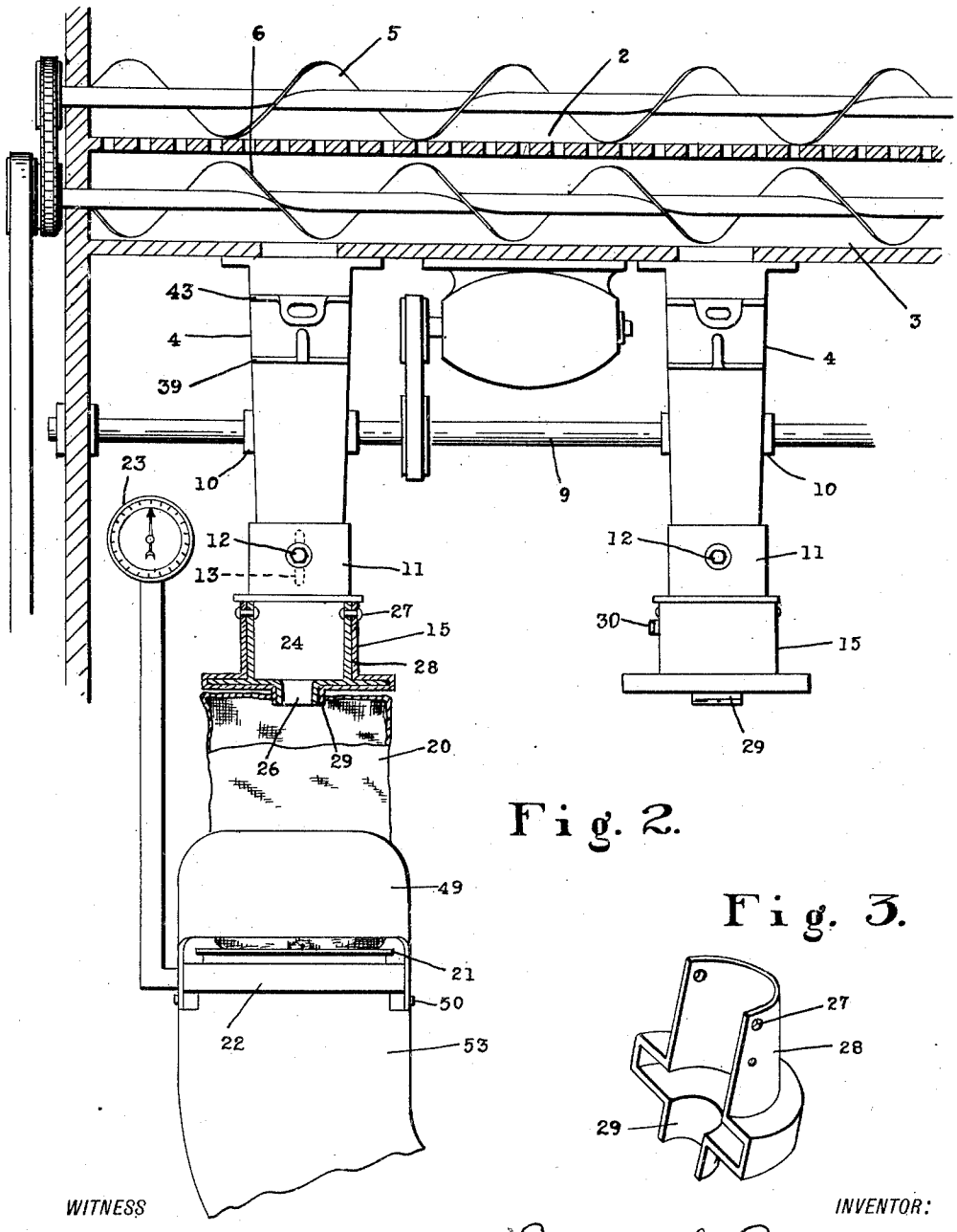


Fig. 2.

Fig. 3.

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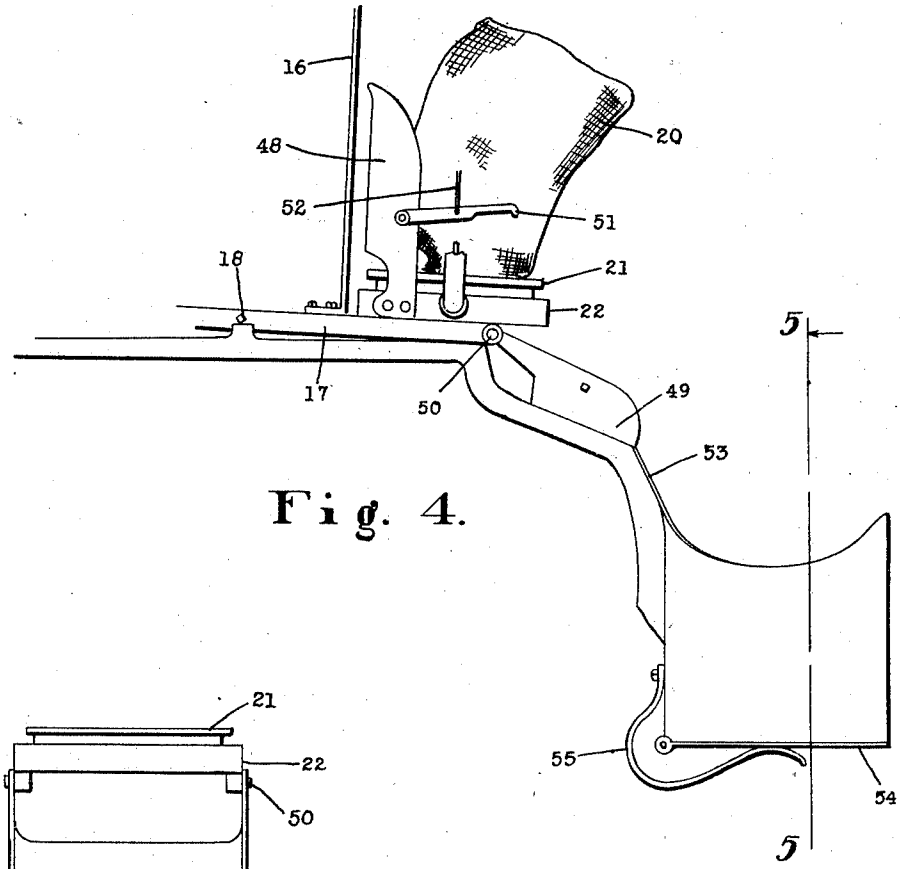


Fig. 4.

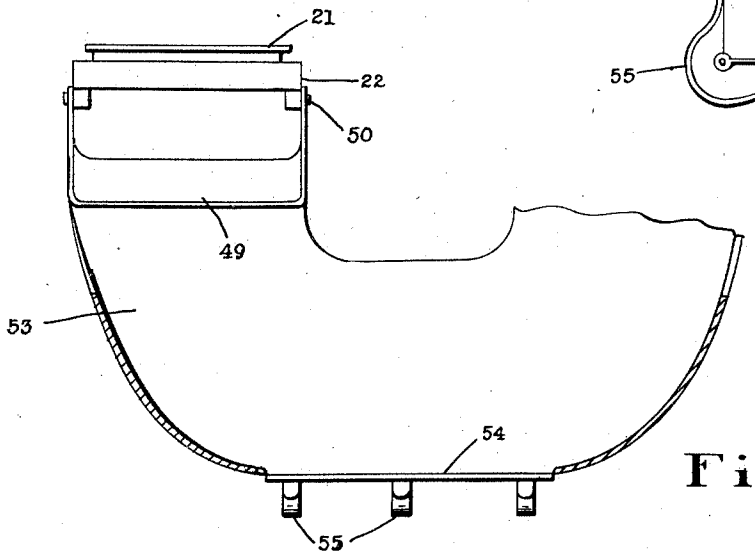


Fig. 5.

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UNITED STATES PATENT OFFICE.

EDWARD L. BUSCHMAN, OF EAST ORANGE, NEW JERSEY.

BAG-FILLING MACHINE.

1,372,480. Specification of Letters Patent. Patented Mar. 22, 1921.

Application filed September 8, 1916. Serial No. 118,976.

To all whom it may concern:

Be it known that I, EDWARD L. BUSCHMAN, a citizen of the United States of America, and a resident of East Orange, county of Essex, in the State of New Jersey, have invented certain new and useful Improvements in Bag-Filling Machines, of which the following is a specification.

This invention relates more particularly to machines for filling bags with cement, although of course it will be understood that it could be used for any kind of bag filling desired and to which it is adapted. As is well-known, cement bags must be filled in rapid succession and it is desirable to remove them with the least possible labor and with as little strain and rough handling of the bags as possible.

The objects of the invention are to secure an easy and quick discharge of the filled bags from the machine and delivery of the same to a truck or other depository; to enable the bags to be delivered all in substantially the same position and thus received upon the truck or other depository in an orderly manner; to thus save time and labor; to do all this without strain upon the bags so as to tear or injure them, and to obtain other advantages and results as may be brought out in the following description.

Referring to the accompanying drawings, in which like numerals of reference indicate the same parts throughout the several views,

Figure 1 is a vertical sectional view of a machine embodying my invention, the parts being shown in the position of filling a bag;

Fig. 2 is a front view of the machine showing two of the individual bag fillers, and being partly in section to illustrate the cement supplying means more clearly;

Fig. 3 is a detail perspective view of the pivoted member of the bag holder;

Fig. 4 shows a portion of the machine as shown in Fig. 1, with the parts in the position of discharging a filled bag, and

Fig. 5 is a view of the bag-discharge means from the front of the machine partly in section on line 5—5, Fig. 4.

In the specific embodiment of the invention shown in said drawings, and referring more especially to Figs. 1 and 2, the reference numeral 1 indicates a supply hopper from which the material, such as cement, is supplied to the trough-like compartment 2 which extends horizontally and longitudinally of the machine with a perforated bottom through which the cement passes to a lower similar compartment 3 from the bottom of which depend feed chutes 4 which are in communication with said lower compartment by openings through the bottom thereof. Spiral conveyers 5 and 6 are arranged one in each of said compartments 2 and 3 and adapted to be driven by any suitable outside means to facilitate the passage of the cement to the feed chutes, as is common and well-known in the art.

In each feed chute 4 intermediate its upper and lower ends is arranged a transverse feed wheel 7 having its axis near one side of the chute and its blades just clearing the opposite side of the chute as the wheel rotates, a semi-cylindric extension 8 on the first-mentioned side of the chute affording space for the blades on their idle up-stroke. These feed wheels 7 for the series of chutes 4 are preferably all upon a single shaft 9 extending longitudinally of the machine with suitable bearings in the frame thereof and provided where it passes through the walls of the chute with suitable stuffing boxes 10. It will be understood that the rapid rotation of these feed wheels in the direction indicated by the arrow in Fig. 1 expedites the passage of the cement through the feed chutes and into the bags below, as will be hereinafter more fully described.

At the lower end of each feed chute 4 is an adjustable collar 11 which can be set with reference to the chute by means of a clamping bolt 12 extending through the collar and into a longitudinal slot 13 of the chute and this collar 11 serves to support the upper end of flexible sleeve-like means 14 which overlaps and incloses at its lower end the bag holder 15 beneath. Said flexible sleeve-like means 14 may be any suitable construction adapted to prevent the escape of cement between the feed chute and bag holder, and for purposes of illustration I have shown canvas or the like loose enough to permit necessary up and down movement of the bag holder with respect to the sleeve.

The bag holder 15 is carried by a support 16 extending upward from a tilting carrier 17 which occupies a horizontal position and

is fulcrumed by transverse trunnions 18 upon the fixed base frame 19 of the machine, as shown in Fig. 1. It will be understood that this tilting carrier is arranged transversely of the machine, with its forward end toward the front of the machine beneath the feed chute. It is this front end of the carrier 17 which supports the bag during filling operation, and preferably the bag 20 stands upon the platform 21 of a weighing scale 22 fixed upon said front end of the carrier 17 and having its graduated index 23 at a point convenient for observation. The use of weighing scales in this connection has nothing to do with my invention, however, and is illustrated only because it is customary. The bag could just as well stand upon the front end of the carrier 17.

The bag holder 15 comprises a cylindrical portion 24 in alinement with the feed chute, provided with a flange 25 at its lower end with a middle reduced spout 26. Upon one side of this body portion is pivoted as at 27 a semi-cylindric member 28 which will close against the side of the body portion including its flange 25 and spout 26, as shown. Said spout 26 with the overlying portion 29 of the pivoted member, is adapted to enter the aperture or valve opening of the bag to be filled, and then by swinging the pivoted member away from the body portion of the bag holder, obviously the mouth of the bag will be stretched tight and the bag firmly held in position, its lower end resting upon the platform 21 of the weighing scale. Any suitable means may be employed for thus swinging the pivoted member 28 of the bag holder, but I have shown for purposes of illustration, a lever 30 pivoted upon the body portion and connected by a link 31 to the swinging portion, as shown, so that depression of the lever will swing the member 28 away from the body portion and elevation of it will bring them together to release the bag.

It will be understood that the bag adapted to be filled by my improved machine has a very small aperture or inlet, which is preferably valved as hereinafter described, and that the construction of my machine is especially adapted to the filling of such a bag. The bag is entirely closed except for this valved opening or inlet, and thus as soon as it is released from the bag holder it is ready to be removed from the machine, without any tying or the like.

The tilting carrier 17 is so proportioned and arranged that as the bag becomes nearly filled with cement its weight tilts the carrier to automatically shut off the supply of cement through the feed chute, as is common in the art. To accomplish this the rear end of the tilting carrier 17 is provided with an upright frame 32 provided with a transverse stop 33 near its top which is normally held downward by springs 34 in the path of a finger 35 mounted upon a rock shaft 36 journaled in the frame 19 of the machine and provided with a weight 37 which holds said finger 35 against the stop 33. Said finger is also connected by rod 38 with a gate 39 in the feed chute 4 just above the feed wheel 7, and it will be understood that as the carrier 17 tilts so that the stop 33 moves upward out of engagement with the finger 35, the weight 37 will drop and slide the gate 39 so as to restrict the passage of cement to the small opening 40 of the gate instead of the larger opening 41. As the carrier 17 continues to tilt another similar control device, but having its frame 42 connected to the rear end of the tilting carrier nearer its fulcrum than the frame 32 of the first-mentioned control device, so that it acts somewhat later, operates a second or upper gate 43 to completely close the feed chute 4 to the passage of cement. When this is done, however, the feed wheel 7 continues to drive whatever cement is still in the feed chute into the bag to completely fill the same.

The control devices above described are more fully and completely shown and described in my prior Patent No. 993,751 issued May 30, 1911, and to which reference can be had if desired. The tilting carrier is however counterbalanced in my present invention by means of a weight 44 upon the end of a lever 45 of the second class fulcrumed to a fixed support 46 on the frame 19 and linked to the rear end of the carrier 17 as at 47. This lever 45 extends longitudinally of the tilting carrier 17, beneath the frame 19, with its weight-carrying end projecting rearwardly.

It is only by use of the feed wheel 7, that it is possible to fill bags with small apertures or valved inlets such as herein described through a feed chute of the character shown, especially when said feed chute is provided with the gates 39, 43.

At the front and rear sides of the bag, as it is being filled, are upright curved guards 48 and 49, the rear one being fixed, as to the scale platform 22 and the front one hinged, as at 50, so as to swing forwardly downward as clearly shown in Fig. 3 and permit the discharge of the filled bag. This front guard 49 is during filling held upright by a latch 51 extending from the fixed guard 48 and connected as by a cable 52 to the bag holder releasing lever 30, so that when said lever is swung to release the bag from the holder it also releases the hinged guard 49 which then drops into idle position.

The filled bag is then free to leave the position or place where it is filled, and by my invention I enable it to be discharged by a mere touch from the operator, sufficient to

tip the bag over. When thus tipped, the bag falls end over end onto a chute 53 which curves laterally in an edgewise direction, as shown in Figs. 4 and 5, so that the bag lies horizontally and longitudinally of the machine at the discharge portion of the chute. Preferably such discharge portion is common to two individual bag-filling devices, as shown, the chutes 53 of said individual bag-fillers curving edgewise in opposite directions, toward each other, and the common discharge portion being between them. In said discharge portion is a trap door 54, forming a portion of the floor thereof and normally closed by springs 55 which, however, will be overcome by the weight of the bag of cement and allow the same to escape. The curved chute 53 thus turns the bag from a vertical endwise position extending transversely of the machine into a horizontal position and disposed longitudinally of the machine. The trap door 54 normally closes the discharge opening of the chute 53 and forms a continuation of the floor thereof so as to prevent a bag sliding through the curved portion of the chute from falling endwise through the discharge opening, the springs 55 holding the trap door closed until the bag is lying in a horizontal position and longitudinally of the machine with its full weight upon the door. The successive bags will therefore all issue in an orderly manner in the same position, instead of tumbling end over end, and can be received directly by gravity upon any suitable conveyer, such as the truck shown in my prior application filed July 29, 1916, Serial No. 111,982. In this way, all labor of lifting the heavy filled bags is avoided, and also much time saved in getting them away from the bag-filling machine.

Having thus described the invention, what I claim is:

1. In a bag-filling machine, bag discharging means comprising a chute having a substantially vertical portion adapted to receive a bag in substantially vertical and endwise position, and a curved portion terminating in a substantially horizontal portion to guide the bag into substantially horizontal position, and means for delivering the bag in such horizontal position.

2. In a bag-filling machine, bag discharging means comprising a chute having a substantially vertical portion adapted to receive a bag in substantially vertical and endwise position, and a curved portion terminating in a substantially horizontal portion to guide the bag into substantially horizontal position, and a trap door arranged in the floor of said horizontal portion of the chute to receive the bag and deliver it in such horizontal position.

3. In a bag-filling machine, the combination of a bag support, a discharge chute arranged to receive a bag from said bag support, a hinged guard for the side of the bag next said chute for holding the bag on the support and adapted to fall onto said chute and guide the bag from the support to said chute when the guard is released, and means for holding said guard upright while the bag is being filled and releasing it when the bag is full.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

EDWARD L. BUSCHMAN.

Witnesses:
HOWARD P. KING,
JANET A. AYERS.