

Aug. 5, 1941.

R. P. BUSHMAN

2,251,659

VALVE BAG FILLING SPOUT MEANS

Filed Oct. 31, 1939

Fig. 1.

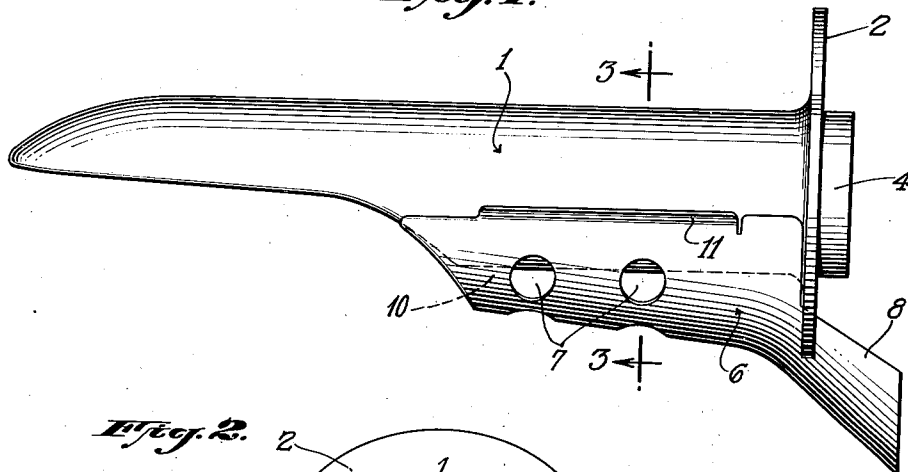


Fig. 2.

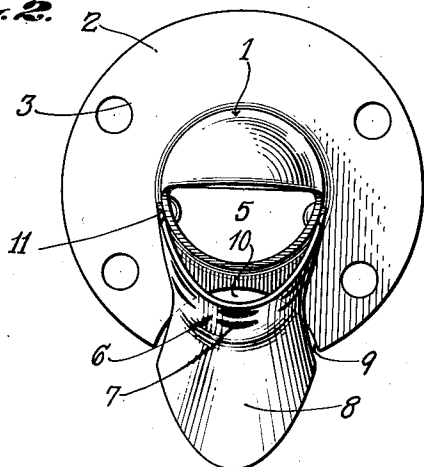
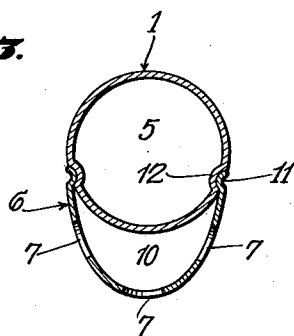


Fig. 3.



BY

INVENTOR.
Robert P. Bushman
BY
Ward Crosby & Neal
his ATTORNEYS

UNITED STATES PATENT OFFICE

2,251,659

VALVE BAG FILLING SPOUT MEANS

Robert P. Bushman, Allentown, Pa., assignor to
Modern Valve-Bag Company, Allentown, Pa.,
a corporation of Delaware

Application October 31, 1939, Serial No. 302,081

5 Claims. (Cl. 226-48)

This invention relates to a new and useful improvement in valve bag filling machines adapted to feed a quantity of pulverulent material, such for example as cement, plaster or other exceedingly fine comminuted material, into valve bags to be filled; and has particular relation to a device which may be removably attached to the filling spout of such a machine, thus adapting the same machine for filling either paper bags, when the device is attached, or cloth bags, when it is removed.

The valve bags used on the machine are entirely closed except for a close fitting valve opening into which the filling spout is inserted for introduction of material into the bags. The material is fed into the bags at a relatively high velocity to attain the desired speed of operation, and, due to the feed impeller action, becomes admixed with air; hence a substantial volume of air is introduced into the bags and must be expelled therefrom during the filling operation. When porous bags, such as cloth or fabric, are being filled this air can readily escape by filtering through the texture of the bags themselves. Since this filtering action removes substantially all of the dust from the escaping air, it is desirable to have the air pass out through the walls of porous bags rather than escape around the filling spout by means of the valve opening, for the latter means of escape would allow a great quantity of dust to be exhausted along with the air. It is, therefore, advantageous to assure that the valve walls of the cloth bags fit tightly around the outer surface of the filling spout. In any event, cloth bags have all been made with valve openings which are of just the proper size for insertion over the conventional spout; and since these bags are repeatedly used, present filling machines must be capable of handling them.

It often happens, however, that machines used for filling cloth bags are also desired to be used for filling bags made of relatively air impervious material, such as paper or the like coated or impregnated with asphalt, from which the entrained air must escape through the slight space between the filling spout and bag valve opening. Along with this air necessarily goes an appreciable amount of suspended pulverulent material, so that the resultant dust is not only obnoxious and highly injurious to the health of the operators, but is detrimental to the maintenance of the machine, soils the outside of the bags, and is wasteful in the loss of material.

In the past, to overcome this difficulty when filling impervious bags, the filling spout has been

provided with external ribs or other means (such as disclosed in the copending application of Fritz W. Haver, Ser. No. 240,891, filed November 17, 1938) which dilate the walls of the bag valve and prevent them from forming a sealing contact with the exterior surface of the filling spout. Suction and dust recovering means have also been provided in conjunction with these valve dilating means so as to entrap the escaping air and dust. While such a device is very satisfactory for filling paper and the like bags, it is very disadvantageous, for the reasons already stated, when used with cloth or porous bags, and in order to provide an economically satisfactory device for selective use of both and paper bags it is necessary that the operation of the machine be not interrupted for any appreciable time. In other words, the air impervious bags are provided with valve openings larger than those of the cloth bags and are thus adapted to accommodate the dilating means in addition to the normal spout diameter; while the cloth bags are only adapted for the normal spout diameter. Accordingly, in order for a given machine to fill both types of bags, it is necessary to have two forms of filling spout means, and desirable to have a rapid transformation from one to the other.

It is the object of this invention, therefore, to provide a bag filling machine which may be easily and rapidly altered for the selective use of paper or cloth bags as desired. It is a further object of the invention to provide a composite spout structure adapted for this purpose and so constructed and arranged that it may be produced at a small cost and withstand long use without repair.

The invention consists in the novel features, arrangements and combination of parts embodied by way of example in the apparatus hereinafter described as illustrating the preferred form of the invention, and the invention will be more particularly pointed out in the appended claims.

Further objects and advantages of the invention will more fully appear from the following description taken in connection with the accompanying drawing, which shows, by way of example, the preferred embodiment of the invention.

Referring to the drawing in which the same reference characters indicate the same parts in the various views:

Figs. 1 and 2 are, respectively, a side elevation and an end elevation of the composite filling spout structure embodying the novel features of my invention, and

Fig. 3 is a cross-sectional view taken at 3-3

of Fig. 1 showing in more detail the manner of attachment of the component parts of said structure.

In the drawing above briefly described, the numeral 1 denotes a conventional type of filling spout towards the inner end of which there is a circular flange 2, by means of which the spout is fastened to the machine by bolts passing through each of the holes 3 in the flange and into a plate (not shown). The remainder of the machine is of the well-known type and need not be described herein. When in filling position, the extreme inner end 4 of the spout is in aligned communication with a feed throat from which the pulverulent material is discharged into the bore 5 of the spout.

Attached beneath the spout 1 and towards the inner end thereof is a spacing member in the form of a shield or trough designated in its entirety by the numeral 6. When the spout and spacing member are inserted into a bag, the bag valve fits snugly and surrounds them, the exterior end of the valve extending practically to the flange 2, thus covering the openings 7, and the sides and bottom of the spacing member 6. This shield thus surrounding the lower portion of the spout extends up to the flange 2 and has a downwardly extending tongue 8 which protrudes through a cut-out portion 9 of the flange. Thus the shield in conjunction with the spout defines a passageway 10 through which air and dust entrapped within the bag may be exhausted by suction means (not shown) communicating with the passageway 10 exterior the flanged cut-out 9. The member 6 is preferably imperforate throughout the portion between the rear holes 7 and plate 2, to thus provide a restricted passageway at the point where the member passes out of the bag being filled. The openings 7 provide a means for removing any dust which may remain within the passageway 10 after the filled bag is removed.

The method of attaching the shield to the spout is shown in Figs. 2 and 3 of the drawing, in which the convex inwardly directed beads 11 formed on the longitudinally extending trough edges of the shield fit into the cooperating concave grooves 12 which extend longitudinally along and on oppositely disposed sides of the spout. Due to the partially resilient nature of the material, such as steel, from which the shield is formed, it may be readily and instantaneously forced upward against the spout until the beads 11 resiliently snap into their respective grooves 12 which they grip with sufficient firmness to prevent them from becoming accidentally dislodged during the regular operation of the machine. It is obvious that the longitudinally disposed attaching means need not be continuous (though preferably so) but may be interrupted, i. e., instead of a continuous convex bead 11 and cooperating concave recess 12, a plurality of longitudinally disposed protuberances and cooperating recesses may be employed.

Whenever it is desirable to use the spout alone, as when filling porous bags, this resilient method of attachment permits the shield to be easily and rapidly removed by applying a downward pressure thereto. This ingenious method of attachment enables the device to be automatically locked in place below the spout by merely pressing it on, no other adjustments being required; or in the alternative it may be dispensed with by reversing the direction and pressure which causes it to snap away from the spout. Also the construction and arrangement of the parts are such

that rapid and economic manufacture is permitted and substantially no upkeep service is required.

Having thus described my invention with particularity with reference to a preferred embodiment of the same, it will be obvious to those skilled in the art, after understanding my invention, that changes and modifications may be made therein without departing from the spirit and scope of the invention, and I aim in the appended claims to cover such changes and modifications as are within the scope of the invention.

What I claim is:

1. In a valve bag filling machine for feeding pulverulent material into a valve bag, the combination of a horizontally disposed filling spout for receiving a paper or like bag to be filled, and valve spacing means comprising laterally spaced longitudinally disposed attachment means detachably securing said valve spacing means to the spout along laterally spaced longitudinally disposed portions thereof, said valve spacing means having an imperforate rear portion positioned beneath and surrounding a portion only of the periphery of the spout adjacent the mouth of the bag being filled so as to provide a passageway defined by the lower portion of said spout and said spacing means and serving when inserted into the valve of a bag to maintain the valve in spaced relationship away from the lower portion of the spout area lying peripherally adjacent thereto.

2. In a valve bag filling machine for feeding pulverulent material into a valve bag, the combination of a filling spout for receiving a paper or like bag to be filled, and valve spacing means positioned longitudinally along the spout and surrounding a portion only of the periphery of said spout, said spacing means and said spout being so constructed and arranged as to provide a conduit therebetween for directing material vented therethrough rearwardly at a restricted discharge zone, longitudinally extending laterally spaced cooperative securing means formed respectively on the spout and on the valve spacing means so constructed and arranged that the latter resiliently grips the former.

3. The combination of a horizontally disposed filling spout member for insertion into the valve of a bag to be filled, a removable elongated shield member having a bottom, sides and an open top providing longitudinally extending upper edges attached to said spout surrounding and spaced from a lower peripheral portion thereof, said shield member in conjunction with said lower peripheral spout member portion being so constructed and arranged as to define a passageway adjacent said spout member for conducting air and dust from out the bag at a restricted discharge zone beneath said spout, cooperative locking means located respectively along oppositely disposed longitudinal portions of the spout member and along the longitudinal upper edges of the shield member, said locking means comprising a set of oppositely disposed tongue portions on one of said members resiliently held into engagement with a corresponding set of groove portions in the other of said members.

4. In a valve bag filling machine for feeding pulverulent material into a valve bag, the combination of a filling spout for receiving a paper or like bag to be filled, a longitudinally extending shield like member having a bottom, sides and an open top providing longitudinally extending upper edges attached to said spout at either side

and said member encircling the lower peripheral portion thereof so as to define between said spout and shield an exhaust conduit through which dust and air in the bag may escape, locking means located on said spout and on the said upper edges of said shield for frictional engagement with each other, and means formed in said shield for venting the lower walls of the bag valve.

5. In a device of the character described, the combination of a filling spout for insertion into the valve of a bag to be filled, and a removable shield attached to said spout to define a venting passage between the respectively adjacent walls

of said spout and shield, said shield being in the general shape of a trough providing spaced apart longitudinal edges having cooperative engaging means for snap-on engagement with said spout, said spout being provided along opposite sides with longitudinally disposed means for cooperative engagement with said means provided on the longitudinal edges of said shield, whereby said shield may be readily and quickly secured to and removed from said spout to thereby permit the selective use of either cloth or paper bags on the same device.

ROBERT P. BUSHMAN.