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METHOD OF AND APPARATUS FOR SEALING BAG VALVES

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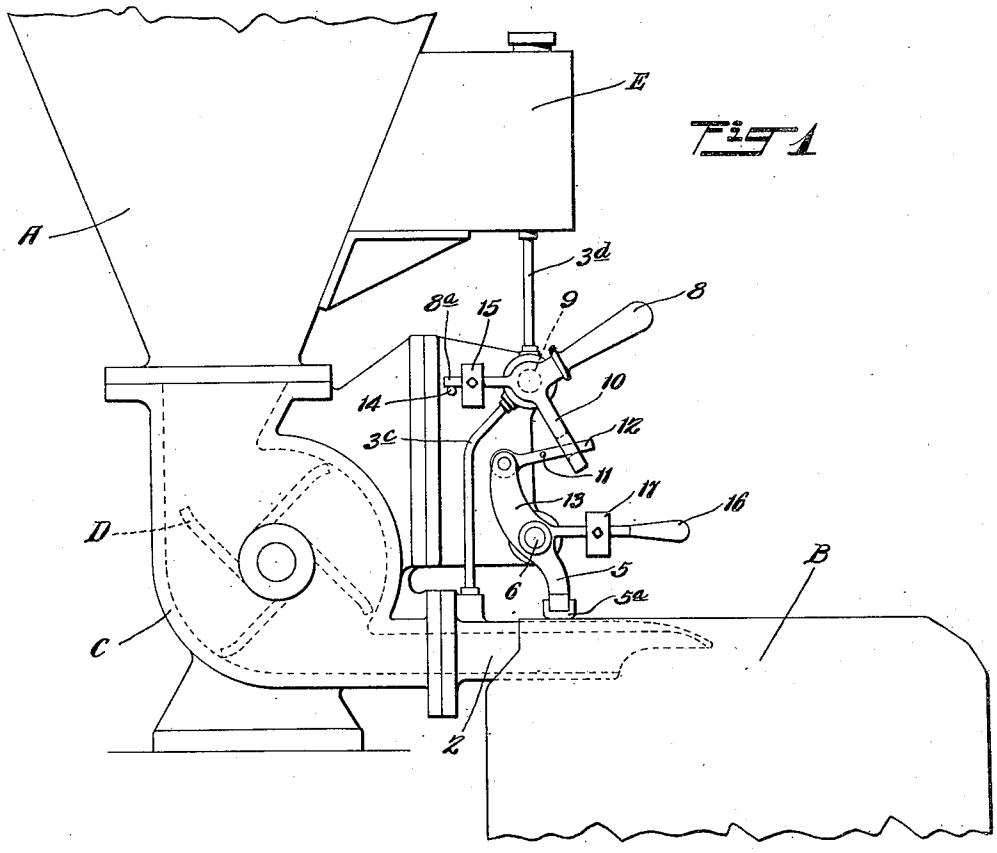


Fig 1

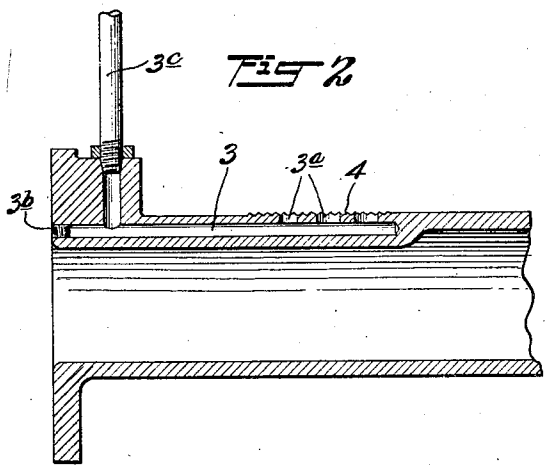


Fig 2

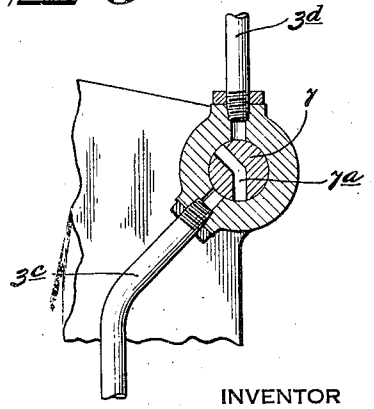


Fig 3

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METHOD OF AND APPARATUS FOR SEALING BAG VALVES

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This invention relates to a method and apparatus for sealing the flaps of valve bags against the bag walls. As is known, the flaps in valve bags are commonly adapted to close the valve openings by reason of the pressure of material in the bags. However, such closures are apt to permit some of the material to escape especially during handling and shipping of the bags due to the fact that the flaps are free to move to some extent and hence do not perfectly close the valve openings.

The principal object of the present invention is, hence, to provide for sealing bag valves in a simple and effective manner, without the necessity for additional labor, and more particularly by means of a device interconnected to a bag filling machine so that it is controlled in the course of the usual motions involved in operating such machine, i. e. without additional manipulations. I have found that the desired result may be accomplished in a highly advantageous manner by applying adhesive to the interior of the valve opening while the valve is on the spout used for conveying material into the bag, and preferably just as or just before the bag is removed from the spout. More specifically, I have devised means for applying adhesive to desired points in the bag, which means are preferably combined with the spout, and have provided for operation of these means by the handle or other mechanism ordinarily used to release the bag from the spout, so that the operator can cause the adhesive to be applied and the bag to be discharged by a single motion.

These and other objects and advantages will be better apparent from the following detailed description of a preferred embodiment of the invention, reference being had to the accompanying drawing wherein:

Fig. 1 is a side elevation showing one form of the present invention. Figs. 2 and 3 are enlarged vertical sections showing details of the adhesive applying means.

For purposes of illustration, my invention is shown in connection with a bag filling machine including a hopper A, a propeller housing or casing C and a propeller D for advancing material from the hopper into valve bag B. A spout 2 is shown secured to the propeller housing and communicating with the outlet thereof. The bag B, in Fig. 1, is placed on the spout, that is, with the spout entering its valve opening, according to known practice. When the bag is so positioned, the flap which is ordinarily provided for closing the valve opening lies along the underside of the spout. After the bag has been filled with material, and tipped so that the material pushes the flap into position where it closes the valve, the flap ordinarily lies across the opening with its end against the upper wall of the bag. For present purposes I prefer to have the flap sufficiently large so that it extends along the upper wall of the bag, when in the position just discussed, over a considerable area, so that when paste or other adhesive is applied, in accordance with the invention, to at least one of the surfaces, preferably before the valve is closed and while the bag is on the spout, a secure joint will be formed after the bag has been removed from the spout and the material has urged the flap into closed position, the weight of material in the bag serving to hold the two surfaces in contact while the paste dries. For this purpose a conduit 3 is shown formed adjacent the upper wall of the spout, the latter being provided with openings 3*a* leading to the conduit. The end of conduit 3 is closed by plug 3*b*, and paste or other adhesive may be conveyed thereto through a tube 3*c*.

It will be appreciated that in this arrangement paste may be supplied by gravity, or other suitable pressure, and will then pass through the openings 3*a* and be applied to the upper wall of the bag at the inside of the valve opening. In order to effect proper spreading of the adhesive over a suitable area, the surface of the spout is desirably roughened or corrugated as shown at 4, and this roughened surface is desirably located beneath the bag clamp which is ordinarily used to maintain the bag in position on the spout. The bag clamp is shown as including an arm 5 provided with a portion 5*a* of re-

silient material for engaging the bag, the arm being pivoted as at 6.

The paste or other adhesive, should not, of course, be supplied continuously and I have shown means for controlling the supply of paste. A supply container E, suitably mounted, is employed for receiving a quantity of adhesive and a tube 3*d* leads from the bottom of this container to a valve which controls the flow of paste from the container to the tube 3*c* and the opening 3*a*. This valve may conveniently consist of a rotatably mounted member 7 as at 9 and having a passage 7*a* formed therein adapted to place the tubes 3*d* and 3*c* in communication. When the parts are in the position shown in Fig. 1 the valve is closed, as shown in Fig. 3. A handle 8 is secured to the valve member 7. When this handle 8 is pulled down it opens the valve and permits the adhesive to flow into conduit 3.

As already indicated, it is desirable to apply the paste or other adhesive to the bag just as it is released and discharged from the spout, or immediately previously to such discharge. Moreover, it is highly advantageous to provide for release of the bag and application of the paste by a single motion on the part of the operator. For this purpose, I have provided an extension 10 on the handle 8, which is adapted to abut against pin 11 on arm 12 secured to arm 13, which latter is shown as formed integral with the bag clamp 5. The parts are desirably arranged so that the arm 10 moves to a position where the valve 7 is just about to open when said arm contacts with the pin 11. In this arrangement, the valve thus opens just as the bag clamp is released. However, it will be understood that the paste may be applied at a somewhat earlier stage, or just after the release of the bag clamp, but before the bag has left the spout. The sequence of operations is, of course, readily varied by the simple expedient of altering the lost motion between arm 10 and pin 11. However, it is generally desirable to apply the paste while the top of the bag is retained against the spout by the clamp 5, for in this way a superior spreading of the paste is apt to be secured. For limiting the travel of the valve 7, a stationary stop 14 is provided against which arm 8*a* is automatically returned by counterweight 15 after release of the handle 8. In order to provide for release of the bag clamp without the application of paste, a handle 16 is shown secured to the bag clamp 5. The clamp may be automatically returned to clamping position by counterweight 17.

The operation of the device would seem to be clear from the above description but it may be summarized as follows:

A bag having been placed on the spout, the material for filling it passes through the spout 2, the bag being retained in place during this operation by means of the bag clamp 5. After the bag is full and the flow of material has ceased, the handle 8 is pulled down, starting the flow of paste and releasing the bag clamp. As the bag leaves the spout its upper wall is drawn along the roughened surface and the paste is spread over the desired area, so that when the bag falls and the material therein closes the flap, the latter comes against the pasted surface and is secured thereto as the paste dries. On release of handle 8 the parts return to their positions as shown in Fig. 1.

It will be understood that the invention is not limited to the application of the paste to the bag at the particular point illustrated, for it may be applied to the flap itself, that is, at the underside of the spout, or at any other suitable point. Moreover, the terms and expressions which I have employed are used as terms of description and not of limitation, and I have no intention, in the use of such terms and expressions, of excluding any equivalents of the features shown and described or portions thereof, but recognize that various modifications are possible within the scope of the invention claimed.

I claim:

1. That method of filling and sealing a valve bag which includes inserting a spout into the valve opening applying adhesive to the interior of the valve, while the latter is on the spout, and sliding the bag off the spout to spread the adhesive.

2. In the sealing of a bag valve, the step which comprises applying adhesive to the valve while it is on a bag filling spout.

3. In a device for filling and sealing valve bags, a spout adapted to enter the valve opening, and means to convey adhesive to the outer surface of the spout.

4. In a device for filling and sealing valve bags, a spout adapted to enter the valve opening and means for conveying adhesive to the interior of the valve while it is on the spout.

5. In a device for filling and sealing valve bags, a spout adapted to enter the valve opening and having a roughened surface for contact with the wall of the valve and means to convey adhesive to the outer surface of the spout.

6. In a device for filling a valve bag and applying adhesive to the valve, a spout, a bag clamp for retaining the bag on the spout, means to convey adhesive to the valve while the latter is on the spout, means to control the flow of adhesive, a manually operable member, and connections between said member and the control means and clamp, whereby a single motion of the handle effects an application of adhesive and release of the clamp.

7. In a device for applying adhesive to the interior of a bag valve, a spout adapted substantially to fill the valve opening and means for conveying adhesive to the interior of the

valve, said means being carried with the spout.

8. In a device for applying adhesive to the interior of a bag valve, a spout adapted substantially to fill the valve opening and means for conveying adhesive to the interior of the valve, said means being formed in the spout.

9. In a device for sealing a bag valve, means to enter the valve, a roughened surface on said means, means to hold the bag against said surface, and means to convey adhesive to said surface.

10. In the sealing of a bag valve, the step which comprises applying adhesive to the interior of the valve just previous to causing the bag to be closed.

11. That method of sealing a bag valve which comprises applying adhesive to the interior of the valve opening after the bag has been filled with material, and tipping the bag so that the material closes the valve.

12. That method of sealing a valve in a bag, which comprises inserting a filling spout into the valve, applying adhesive to the interior of the valve, and removing the bag from the spout immediately after the application of adhesive.

13. That method of applying adhesive to a bag valve, which includes inserting adhesive carrying means into the valve, pressing a portion of the valve wall against said means, causing adhesive to flow to said pressed portion of the wall, and substantially immediately thereafter pulling the bag off said means.

14. That method of filling and sealing a valve bag, which includes inserting a spout into the valve, pressing a portion of the valve wall against said spout, applying adhesive to the interior of the valve during said pressing, and substantially immediately thereafter pulling the bag off the spout.

15. In a device of the class described, a bag filling spout adapted to enter the valve opening of a bag, means for clamping the bag on said spout, and means for causing adhesive to be supplied to the valve opening in said bag and concommitantly causing operation of the clamp to release the bag from the spout.

16. In a machine for filling valve bags, a spout having a passageway for material entering the bag, and a passageway for adhesive to be applied to the bag.

In testimony whereof, I have signed my name to this specification this 1st day of October, 1931.

ARNO ANDREAS.