Sept. 26, 1944. F. D. GOTTWALD 2,359,033

VALVE FOR BAGS

Filed April 7, 1943

Fig. 1.

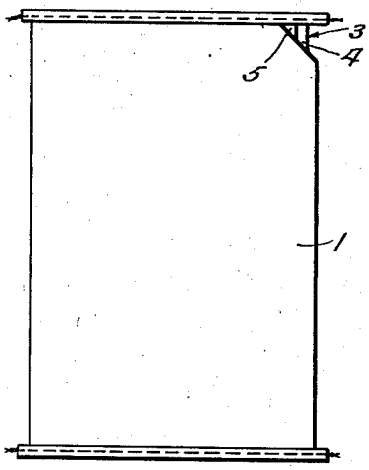



Fig. 2.

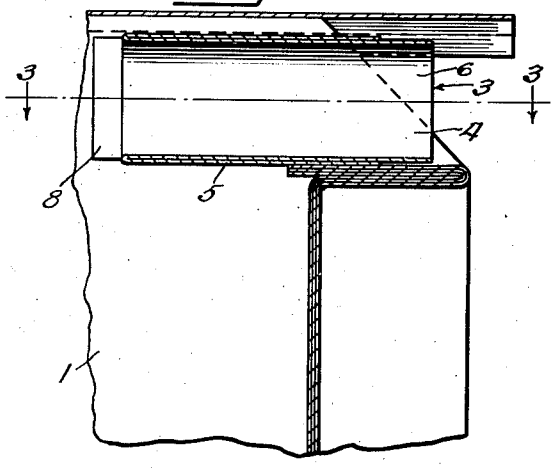



Fig. 3.

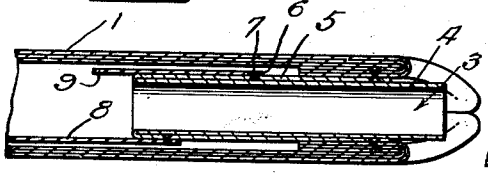



Fig. 4.

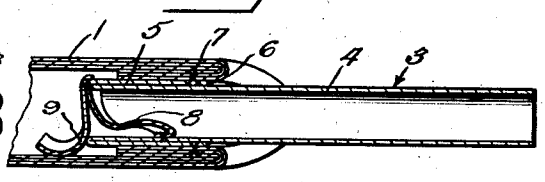



Fig. 5.

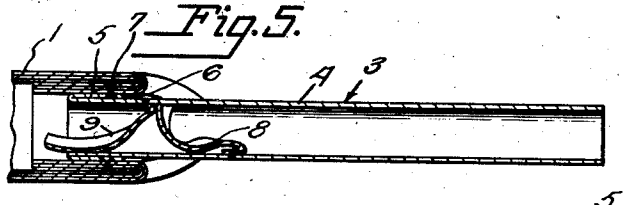



Fig. 6.

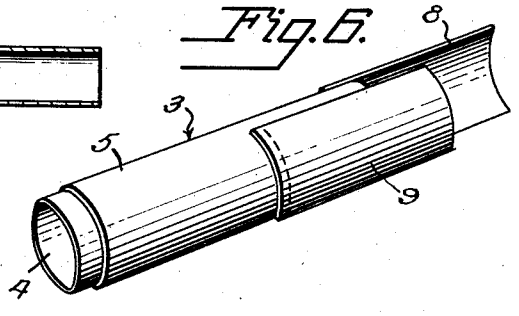
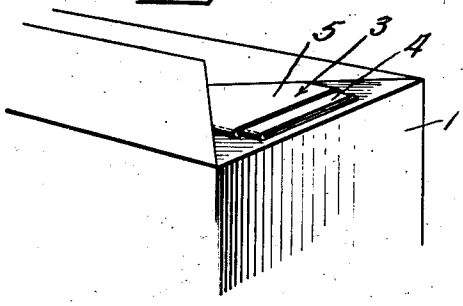



Fig. 7.




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2,359,033

## VALVE FOR BAGS

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Application April 7, 1943, Serial No. 482,179

4 Claims. (Cl. 229—62.5)

This invention relates to paper bags of that type designed to be closed across the top before filling, then filled through a valve, and is directed particularly to the valve structure.

For some time heavy duty paper bags, usually of multiple wall construction such as are used for cement, fertilizer, etc., have been closed at both ends in their manufacture and have been provided with a valve communicating with the inside of the bag by means of which a filling spout can be inserted to fill the bag. As the material rises within the bag it presses the valve against the top of the bag. This type of valve has proven more or less satisfactory, but a certain amount of sifting occurs through the valve. Many expedients have been adopted to prevent sifting with varying degrees of success.

It is an object of the present invention to provide a bag valve in which the valve tube is open from end to end for the free insertion of a filling spout, but which may be effectively closed when the spout is withdrawn.

Another object is to provide means to block or choke the valve passage to prevent sifting of the bag's contents by simply drawing out a projecting portion of the valve.

Still another object is to provide closure members for the valve so designed that there will be an automatic overlapping of the closure members as the valve is closed.

Other objects will become apparent from the following description taken in conjunction with the accompanying drawing in which a preferred and practical embodiment of the invention has been shown, like characters of reference being applied to like parts throughout.

In the drawing:

Figure 1 is an elevational view of a heavy duty bag provided with a valve embodying the principles of the present invention;

Figure 2 is an enlarged partial vertical sectional view through the upper corner of the bag and the valve;

Figure 3 is a horizontal section through the bag and valve taken on the line 3—3 of Figure 2;

Figure 4 is a view similar to Figure 3 but showing the valve in partially closed position;

Figure 5 shows the valve in fully closed position;

Figure 6 is a perspective view of the improved valve disassociated from the bag; and

Figure 7 is a perspective view showing the valve in place in another type bag.

Referring to the drawing in detail, Figure 1 shows a heavy duty bag 1 such as is customarily used for cement, fertilizer, salt, etc., and which is usually made of several thicknesses of paper in tubular form, the tubes being nested one within the other, and the several plies being unattached to each other except the ends. At the onset it should be understood that the bag may be any of the several well known types of heavy bags, either paper or fabric, now in use; Figures 1 and 7 showing two types, the sewed-seam type illustrated in Figure 1 and the flat folded-top type shown in Figure 7. In all of these various bags both bottom and top are closed in the manufacture of the bag.

As is usual, the valve, which is generally indicated at 3, is inserted into the bag near or in the top depending upon the type of bag. In a sewed bag, one upper corner of the bag wall may be tucked in, in a manner well known in the art, and the valve placed through the opening formed by the corner tuck, as is shown in Figures 1 and 3. In a square top bag the valve will be positioned between the folds of the top as is shown in Figure 7, as is the custom in such bags. In each case the valve will establish communication from the outside to the inside of the bag.

The valve consists of a flattened tubular length of material, such as fabric or a tough, soft, flexible paper, which is rolled or turned back upon itself to form two connected tubes, one within the other, and each being a continuation of the other. The tube is turned back until the two ends of the original tube almost but not quite meet, the inner tube being slightly longer than the outer, thus forming an inner sleeve 4 and a turned back outer cuff 5. The cuff portion 5 is attached to the bag along its edge 6 by means of stitching, stapling, pasting, or in any other suitable manner as is shown at 7. The particular means of attachment to the bag is not important so long as only the peripheral outer margin of the cuff is attached, the balance of the tube being free.

At staggered positions on the cuff 5, tube closure flaps 8 and 9 are secured; the flap 8 being near the inner end of the finished valve or, in other words, adjacent the return fold connecting the sleeve and cuff when the valve is in its initial or open position, and the flap 9 being positioned at a point further removed from the return fold. The flaps may be secured to the valve in any desired manner, such as by stitching or pasting, and the securing means is applied only along one transverse edge of the flap. The flaps

are approximately the same width as the valve tube, and their free ends extend toward and beyond the end of the valve tube. It will be noted that the flaps are staggered a distance which is less than the length of the flaps. The reason for this will be apparent from the following description of the operation of the valve.

In all of the above description, the shape, size, and relative positions of the various elements of the valve are as they appear in the initial or open position of the valve, before and during filling. As is customary, the bag is filled through the valve, the filling spout projecting into the valve sleeve portion **4**. After the bag is filled, the spout is withdrawn, and an operator proceeds to close the valve. This is done by grasping the protruding end of the inner sleeve **4** and pulling it outward. The outer marginal portion of the cuff **5**, being attached to the bag, is held stationary and the material of the tube begins to roll back, the return bend approaching closer and closer to the attached end of the cuff. As the material rolls under making the cuff constantly shorter and the sleeve correspondingly longer the point of adherence of the first flap reaches the point of roll, and rolls inwardly with the basic material of the tube. This causes the flap to swing in an arc inwardly across the end of the tube. As the sleeve is drawn farther, the flap will bunch and be pulled into the sleeve closing it. Because of their relative positions, the second flap will begin to move into the inner sleeve before the first flap is fully drawn in. The two flaps will be in contact and the second will serve to force the free end of the first into the sleeve before it would normally enter. This will cause the first flap to extend across the tube, closing it much more fully and effectively than would be the case if no second flap were used or if the second flap was positioned far enough back to allow the first to be drawn completely into the sleeve by the outward movement of the sleeve. Without the function of the second flap the first flap would occupy a position much more nearly in axial alignment with the sleeve. In addition to controlling, to some extent, the movement of the first flap, the second flap swings into position overlapping the free end of the first flap, and bunching as it enters the sleeve, effectively completes the choking of the valve. If the inner sleeve protrudes too far beyond the edge of the bag after it has been drawn out, the end of the sleeve may be folded over and the folded portion inserted in the space between the sleeve and cuff.

The closing of this valve is an extremely simple operation merely requiring the operator to draw out the inner sleeve far enough to ensure the flaps entering and closing the valve.

It will be seen that while a valve operating with two flaps has been specifically described that some materials may better be packed using one flap, whereas others might require three or more.

While I have in the above description disclosed what I believe to be a preferred and practical embodiment of the invention, it will be understood to those skilled in the art that the specific details of construction and arrangement of parts are subject to some latitude of variation without transcending the spirit and scope of the appended claims.

What I claim is:

1. A valve for bags comprising a tubular member rolled back upon itself to form an inner sleeve and an outer cuff, the said cuff having its outer marginal edge attached to the bag, and a flap having one edge secured to the outer cuff whereby the said flap will be drawn into the inner sleeve and close off the sleeve when the sleeve is pulled outwardly.

2. A valve for bags comprising a tubular member rolled back upon itself to form an inner sleeve and an outer cuff, the said cuff having its outer marginal edge attached to the bag, and flaps secured by one edge on opposite sides of the cuff whereby the said flaps will be drawn into the inner sleeve and close off the sleeve when the sleeve is pulled outwardly.

3. A valve for bags comprising a tubular member rolled back upon itself to form an inner sleeve and an outer cuff, the said cuff having its outer marginal edge attached to the bag, and flaps secured by one edge in staggered relation on opposite sides of the cuff whereby the said flaps will be drawn into the inner sleeve in overlapping relation to close off the sleeve when the sleeve is pulled outwardly.

4. A valve for bags comprising tubular sleeve and cuff portions, the sleeve being a continuation of the cuff and the cuff surrounding the sleeve, the relative lengths of the sleeve and cuff being proportionately variable when the sleeve is drawn outwardly, and means attached to the cuff to be drawn into the inner sleeve to close off the sleeve when the sleeve is drawn outwardly.

FLOYD D. GOTTWALD.