May 7, 1968 J. C. LOWRY 3,381,887

SEALING PATCH VALVE FOR PLASTIC BAGS

Filed April 14, 1967

FIG. 1

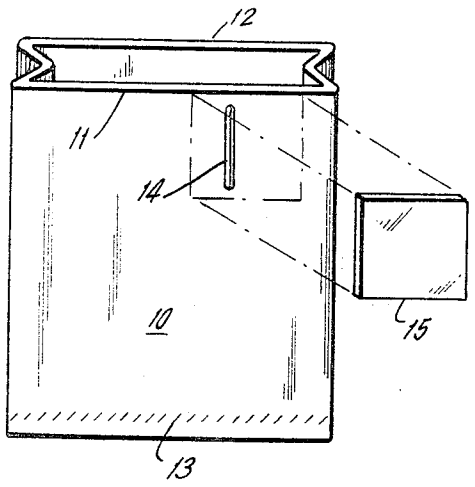


FIG. 2

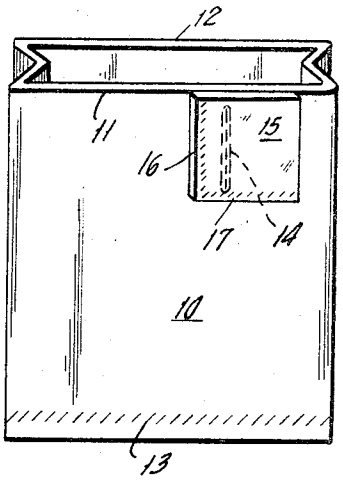


FIG. 3

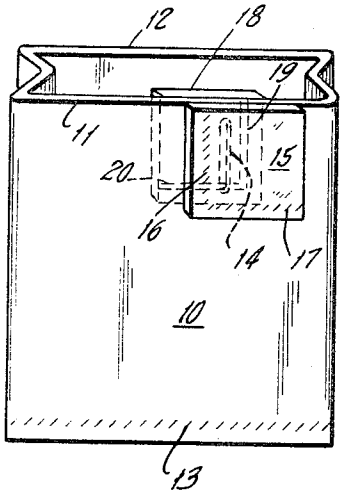


FIG. 4

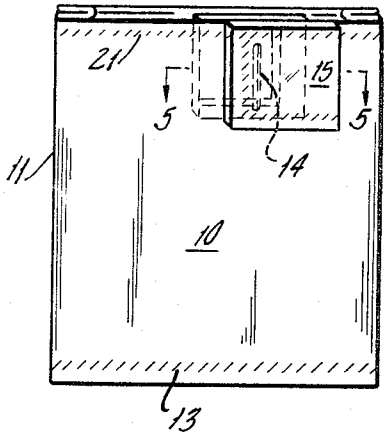
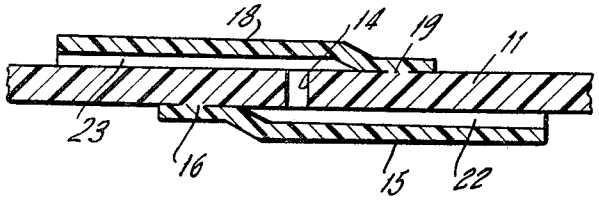


FIG. 5



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SEALING PATCH VALVE FOR PLASTIC BAGS

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1 Claim. (Cl. 229—62.5)

ABSTRACT OF THE DISCLOSURE

A plastic bag has a slot in one panel which is covered on the exterior by a thin plastic patch which is sealed to the panel along the bottom of the patch and along one side parallel to the slot. An internal patch is placed over the slot and is sealed along its bottom and top to the panel and along the side of the slot opposite to the side sealed to the outer patch. A channel is then formed between the outer panel and the interior surface of the outer patch which leads to the slot with this channel continuing through the slot between the interior surface of the panel and the interior surface of the inner patch to the interior of the bag. When the bag is filled through this filling slot, the patches will crumble to close the slot and prevent sifting of the material from the bag.

This invention relates to a valve for plastic bags, and more particularly relates to a novel valve structure having improved closure action which comprises an interior and exterior patch of material sealed over a slot in a panel of a bag. These patches define a continuous channel from the exterior of the bag to the interior of the bag which includes the two interior surfaces of the two patches which crumble when the bag is filled to provide effective closure of the slot.

It is a primary object of this invention to provide a novel valve structure for plastic valves which can be manufactured simply and inexpensively.

Another object of this invention is to form a novel sift-proof valve for plastic bags which is composed of an interior and exterior plastic patch which includes a slot in a panel of the bag and provides a continuous channel through the panel which is closed by crumbling when the bag is filled.

These and other objects of this invention will become apparent from the following description when taken in connection with the drawings in which:

FIGURE 1 is a perspective view of a plastic bag having a slot in one panel thereof which is to be closed by the valve of the invention with the outer plastic sheet shown in exploded view.

FIGURE 2 illustrates the bag of FIGURE 1 after the outer patch has been sealed over the opening in the bag panel.

FIGURE 3 illustrates the bag of FIGURE 2 after the interior patch has been sealed to the interior of the panel containing the slot opening.

FIGURE 4 illustrates the bag of FIGURE 3 after the top of the bag is sealed closed.

FIGURE 5 is a cross-sectional view of FIGURE 4 taken across the line 5—5 in FIGURE 4 to illustrate the configuration of the continuous channel extending to the panel exterior, through the slot in the panel and to the interior of the bag.

Referring first to FIGURE 1, there is illustrated a plastic bag **10** having a front panel **11** and rear panel **12** which are joined by gusseted sides. Note that any suitable bag configuration such as a pillow-type bag could also use the present invention.

The bottom of bag **10** then has a heat seal **13** extending therethrough to close the bottom of the bag by sealing

the bottom of panels **11** and **12** to one another. The bag **10** can be formed of any desired material such as polyethylene having a thickness, for example, of 10 mils, the bag being useful for the packaging of fertilizer, or the like.

In accordance with the present invention and in order to provide a valve for filling the bag with its desired contents while preventing sifting of these contents from the bag, a slot **14** is placed in the outer panel **11**, as illustrated, where slot **14** could, for example, be a knife-cut through panel **11** having a length of about 2 inches. An outer patch **15** of plastic material such as polyethylene having a thickness of about 2 mils and having a square shape of about 3 inches on a side, is then placed over the slot **14**, as illustrated in FIGURES 1 and 2, and is heat sealed to panel **11** along the two heat seals **16** and **17** which run respectively parallel to slot **14** to the left of slot **14** and perpendicular to the bottom of slot **14**. Note that the upper edge of the right-hand edge of patch **15** is free from panel **11** at this point in the manufacture of the valve.

Thereafter, an interior patch **18**, similar to patch **15**, is applied to the interior surface of panel **11** as shown in FIGURE 3, and is heat sealed over the slot **14** to panel **11** along heat seal lines **19** and **20** which are respectively parallel to slot **14** on the right-hand side of the slot and perpendicular to the slot running below the bottom of the slot.

If desired, patches **15** and **18** could be initially secured to the panel **11** simultaneously by a common bottom heat seal which would define heat seals **14** and **20** with their vertical seals being made subsequently. Note that the heat seal **19** is made only to panel **11** and does not reach patch **15**.

Thereafter, the bag top is closed by a common heat seal **21**, shown in FIGURE 4, which extends through the two panels **11** and **12**, the patches **18** and **19**, and the side gussets so that the sole entry to the bag is through the slot **14**.

As best seen in FIGURE 5 and recognizing that the tops and bottoms of these patches **15** and **18** are secured at their respective tops and bottoms, the only entry to the bag is through slot **14** and is defined by the channel **22** between panel **11** and patch **15** and thence through channel **23** which leads to the interior of the sealed bag and is formed between patch **18** and the interior of panel **11**. Clearly, when the bag is filled, the panel **11** will distort, as will patches **15** and **18**, in order to securely close their respective channels to the slot **14**.

Although this invention has been described with respect to its preferred embodiments, it should be understood that many variations and modifications will now be obvious to those skilled in the art, and it is preferred, therefore, that the scope of the invention be limited not by the specific disclosure herein, but only by the appended claim.

The embodiments of the invention in which an exclusive privilege or property is claimed are defined as follows:

1. A plastic bag having a valve for preventing the sifting of contents of the bag; said plastic bag comprising first and second opposing panels joined at the sides thereof; the tops and bottoms of said first and second panels joined to one another to form a closed interior volume; said valve including an elongated slot in said first panel, an exterior patch of flexible plastic material and an interior patch of flexible plastic material; said exterior and interior patches disposed on the exterior and interior surface of said first panel, respectively, and extending across said slot; said exterior patch connected to the exterior surface of said first panel by heat sealing lines partially encircling said slot and forming a channel from

regions exterior of said panel to said slot; said interior patch being connected to the interior surface of said panel by heat sealing lines partially encircling said slot and defining a second channel extending from said slot to the interior of said bag; said first and second channels communicating with one another through said slot; said first and second channels forming a single continuous channel extending through said slot; said exterior and interior patches sealed to said exterior and interior surfaces respectively of said panel with respective seal lines extending perpendicular to and below the bottom edge of said slot and by vertical seal lines laterally displaced from and parallel to and respectively on opposite sides of said slot; the top edges of said exterior and interior patches being heat sealed to said panel by a common heat seal line; said common heat seal line joining the top edges of said exterior and interior patches of said panel extending completely across the top of said panel and additionally seals said first and second panels together at the top of said bag.

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