Aug. 26, 1958 A. P. WATTS 2,848,857

BAG VALVE OPENER

Filed Feb. 9, 1955

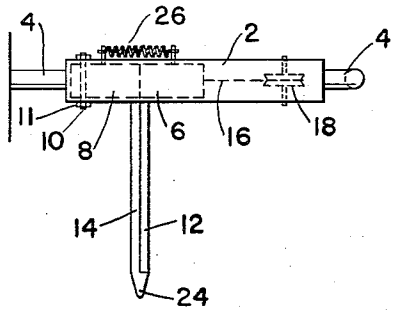


FIGURE 1

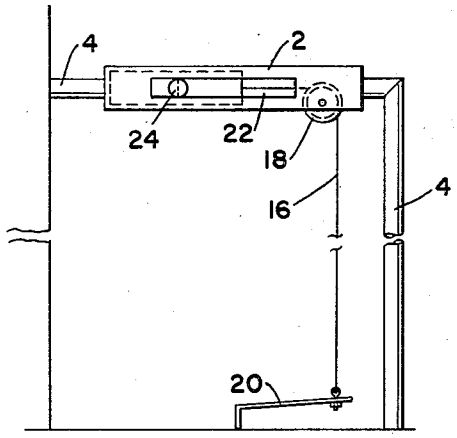


FIGURE 2

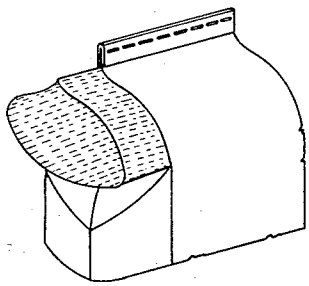


FIGURE 4

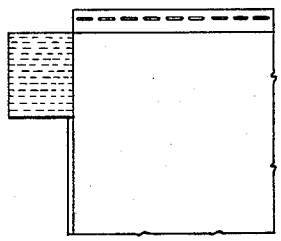


FIGURE 3

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BAG VALVE OPENER

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Application February 9, 1955, Serial No. 487,104

2 Claims. (Cl. 53—384)

This invention relates to a mechanism for opening the valves of valve bags, and more particularly relates to a valve-opening mechanism for opening valves of valve bags where such valves have become closed during manufacture or storage.

In general, valve bags are constructed so as to provide top and bottom seams which are sewn, and between these seams are the front rear panels attached to the side panels by means of gussets, thus forming the body of the bag. Adjacent the top seam and extending for some distance from the side panel is a tubular member which serves as an opening through which the bag is filled, and which is referred to as the valve of a valve bag. After the bag is filled, the valve may be folded and tucked into the inside of the bag to prevent leakage of the contents thereof.

In the manufacture of valve bags, the bags are pressed so that they may be placed in packages providing a maximum number of articles within the given space of the package.

In the course of pressing the valve bags the walls of the tubular member are also pressed together to form a flattened piece. When the bags are removed from the package, in preparing the bags for use in a filling operation, it is difficult to open the valves throughout their entire length so that the valve will not interfere with the filling operation when the bag is placed in position on the filling tube of the bag filling machine. Since the tubular valve is customarily too small to provide entrance of the hand of the operator therein, and especially where such operator, by the nature of the material with which the bag is filled, is required to wear gloves or the like as a protective measure, it becomes highly desirable to have some means of opening the valves quickly and completely throughout the length of the valve in order that the bag filling operation may be carried on efficiently.

One of the objects of the present invention is to provide a valve opening mechanism whereby the valves of valve bags may be opened throughout their length quickly and without danger of damaging the valve body.

Another object of the invention is to provide a mechanism for opening the valves of valve bags in such a way that the valve is immediately available for connection with the filling tube of the bag filling machine.

These and other objects will be apparent to those skilled in the art from the description of the invention set forth hereinbelow.

Referring now to the drawings attached hereto and forming a part hereof;

Fig. 1 is a top-plan view of an apparatus constructed in accordance with the present invention;

Fig. 2 is a side elevation of the apparatus of Fig. 1;

Fig. 3 is an elevation of part of the top portion of a valve bag, such as those commonly used in packaging particulate solids, showing the valve extending from the side of the bag near the top, the bag being in pressed

condition in the form in which it is ordinarily removed from a bundle of several bags;

Fig. 4 is an isometric view of a portion of a valve bag showing the valve after it has been opened by the mechanism of the present invention.

In the drawings, particularly Figs. 1 and 2, a channel member **2** is maintained in any suitable position and at any suitable height by means of supports **4**. Within the channel member **2** are mounted carrying members or guide blocks **6** and **8**, the latter being fixedly mounted while the former is slidably mounted within the channel member as shown, by means of suitable bolts **10**, and nuts **11**, or by rivets or the like. To the guide blocks are attached fingers **12** and **14**, which fingers when held adjacent each other, shown nested in Fig. 1, preferably form a cylindrical rod-like member; finger **14** also is preferably rounded or bevelled at its terminus, as shown at **24**, so as to be in register with the vertical portion of the end of the finger **12**, and thereby not cause damage to the valve of the valve bag.

Means are provided in conjunction with the carrying members or guide blocks suitably to move the fingers with respect to each other in a direction generally normal to the long axes of the fingers. In Fig. 2, such means are provided by a wire, rope, or cable **16**, which passes over pulley **18** and descends vertically to a treadle **20**. In the operation of the mechanism a force applied at treadle **20** downwardly, for example by the foot of the operator, causes the guide block **6** to move within the channel member which in turn causes the finger **12** to move within the slot **22** of the channel member in a direction horizontally (normal to the long axes of the fingers) for a suitable distance, for example, about three inches is ordinarily sufficient to effect the opening of the valve, but insufficient to tear, or to put undue strain on, the walls of the valve. The fingers **12** and **14** are preferably of the order of 12 inches long so as to insure opening of the valve throughout its entire length.

In operating the mechanism of the present invention, the following procedure may be employed:

A valve bag, such as that shown in Fig. 3 of the drawings, is removed from a package of bags, whereupon the operator may spread the outermost portion of the walls of the valve by means of his fingers sufficiently to place the valve in its initial position on the rounded end **24** of the finger **14**. Thereafter, a slight force is exerted upon the bag to slide the valve over the fingers **12** and **14** so that these fingers extend throughout the length of the valve. By depressing the treadle **20**, the fingers **12** and **14** are caused to move with respect to each other in a direction normal to the long axes of the fingers, for a distance sufficient to cause the full spread of the valve tube throughout its length. The pressure upon the treadle **20** is then released and the guide block **6** is returned to its original position by any suitable means, for example, a spring **26**, or other mechanism forcing block **6** to return to this position. The bag valve may then be withdrawn from the fingers, and placed in connection with the filling tube of the bag filling machine.

While there have been described various embodiments of the invention, the apparatus described is not intended to be understood as limiting the scope of the invention as it is realized that changes therewithin are possible and it is further intended that each element recited in any of the following claims is to be understood as referring to all equivalent elements for accomplishing substantially the same results in substantially the same or equivalent manner, it being intended to cover the invention broadly in whatever form its principle may be utilized.

What is claimed is:

1. A bag valve opener comprising, in combination,

a horizontally-extending housing and a support therefor, a horizontal opening in said housing from which extend two parallel horizontal fingers perpendicular to said housing, said fingers being secured to carrying members disposed within said housing, one of said carrying members being movable longitudinally in said housing but biased toward the other carrying member, a flexible, nonextensible connector secured to the movable carrying member and to actuating means operatively-connected thereto for moving said connector vertically, thereby to effect separation of said fingers, the cross section defined by said fingers in a closed position being small enough to slide into said valve.

2. A bag valve opener as in claim 1 wherein the horizontally-extending house is supported at one end by a vertical post and houses a horizontally-journaled pulley over which extends said flexible, nonextensible connector operatively-secured to the movable carrying member at one end and to a foot treadle at the opposite end.

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CERTIFICATE OF CORRECTION

Patent No. 2,848,857 August 26, 1958

Aaron P. Watts

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 4, line 2, for "house" read -- housing --.

Signed and sealed this 18th day of November 1958.

(SEAL)

Attest:

KARL H. AXLINE
Attesting Officer

ROBERT C. WATSON
Commissioner of Patents