March 17, 1936. A. J. VERWYS 2,034,217

ADAPTER FOR VALVE BAGS

Filed April 30, 1935

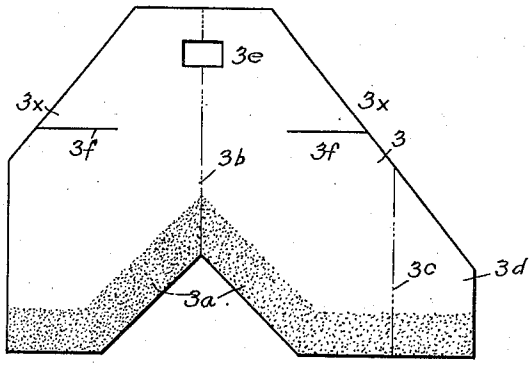

FIG 1.

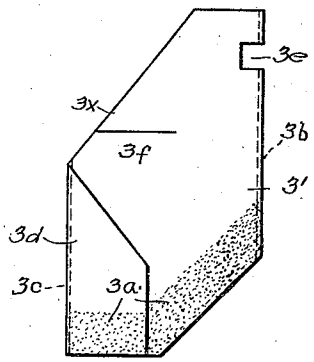

FIG 6.

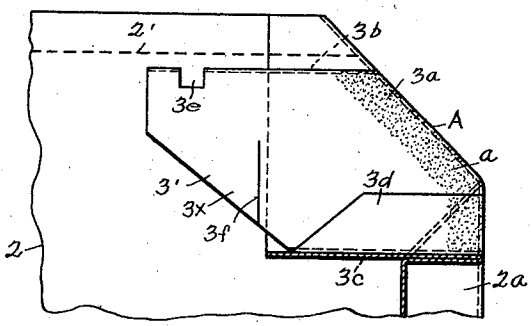

FIG 7.

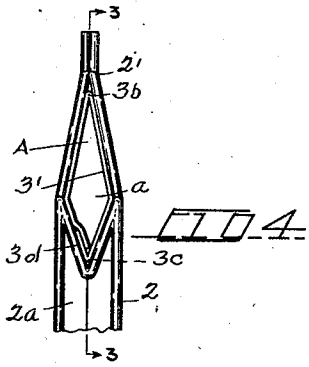

FIG 4.

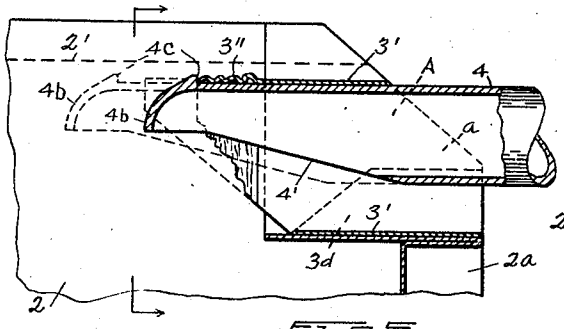

FIG 5.

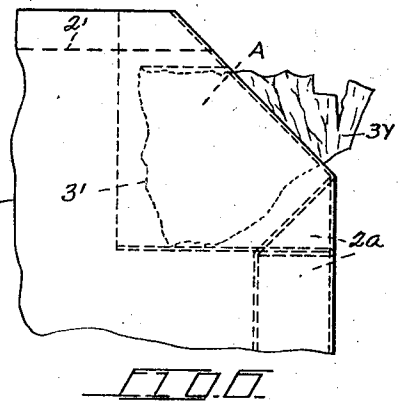

FIG 10.

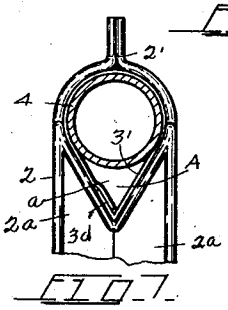

FIG 8.

Inventor.
ANDREW J. VERWYS.

By Harry DeHallaer

Attorney.

Patented Mar. 17, 1936 2,034,217

UNITED STATES PATENT OFFICE

2,034,217

ADAPTER FOR VALVE BAGS

Andrew J. Verwys, Oswego, N. Y.

Application April 30, 1935, Serial No. 18,976

2 Claims. (Cl. 150—9)

This invention relates to valve bags, and has especial reference to novel and simple means for controlling the pneumatic filling of the bags, as well as obviating subsequent leaking or sifting of the contents of the bags through the valves.

The invention relates to an important improvement in the adapters for valve bags shown and described in my pending application, Serial No. 739,725.

The primary object of this invention, like my former application, is to prevent the supercharging of the bags during the filling operations with an excess of pressure that tends to unduly inflate and distort or balloon the bags beyond the extent normal to the proper filling thereof and the clogging and sealing of the valves following the filling operations; the said preventive means comprising flexible or pliable fibrous adapters or elements, having generally the form of flat or collapsed tubes that are normally split at their bottom edges, and which may be telescopically and permanently inserted in the filling openings or valves of the bags before or after the bag ends are sewed or pasted; the adapters of both styles of valve bags being preferably made from common blanks, and having their outer end portions pasted to the corresponding inner surfaces of the mouths of the valves while their opposite or inner ends preferably remain loose, and the whole of said adapters being disposed within and free to expand with the valves when the filling pipes are inserted therein, and accordingly occupy the usual spaces between the opposing inner walls of the valves and filling pipes like flexible or pliable bushings which are disposed in the valve openings with sufficient looseness to provide substantially free V-shaped vents between the pipes and the adapters, for the escape of any of the excess or accumulated pressure, which may bleed away through the bushed valves while the bags are being filled. After the bags are filled, the filling pipes are withdrawn, and at the start of the withdrawal movements, hooks or grappling means formed at the tips of the pipes or spouts engage said free unpasted ends of the adapters and draw said ends back towards the mouths of the valves, and in so doing, the loose ends are rolled or folded and crumpled and caused to virtually telescope the pasted ends until the hooks, owing to the increased resistance offered by said pasted ends of the body and said flap, tear the grappled loose end portion of the fiber and come free. This leaves the passages through the valves substantially plugged with waddings of the crumpled fiber which not only prevents subsequent sifting or leaking of the contents of the bags, but also obviates all danger of atmospheric moisture entering the filled bags and damaging the various products with which the bags are loaded.

The present adapter is substantially the same as that shown and described in my pending application, except that an integral foldable flap or wing is added to one of the lower normally free edges to give the adapter, when folded, a substantially tubular form that is not glued, however, the full length of the flap, but only at the end of the adapter adjacent the mouth of the valve which holds the adapter in the desired position and shape and materially adds to the complete and even plugging and sealing of the valve. The filling pipe is usually cylindrical with a pointed free end that permits the bag to be placed over the pipe with ease, by holding the bag with but one hand. When a bag fitted with the adapter is disposed over the spout, the valve and adapter take the shape of the filling pipe at their tops, while their bottom portions assume a V-shape corresponding to the normal shape of the valve through which the excess pressure may escape during the filling of the bags.

The present adapter having the folded flap which is only pasted at its outer end is of the form and nature of a perfect tube wherein the adapter is reinforced by the overlapping of the flap and prevents spreading of the lower V-shape venting opening and thereby facilitates the substantial reversing of the free end of the adapter in the region of the medial and upper portion of the diamond-shaped partially expanded valve mouth that offers less resistance to the withdrawal of the filling pipe and therefore effects the more even crumpling and plugging as the pipe draws the free end of the adapter through the valve, which my former adapter frequently fails to do.

I attain these objects by the means set forth in the detailed description which follows, and as illustrated by the accompanying drawing, in which—

Figure 1 is a diagrammatical plan of the common blank from which the adapters may be formed prior to their insertion in the bags. Fig. 2 is a view showing the folding of the blank for insertion in a sewed bag. Fig. 3 is a broken vertical section, taken on line 3—3 of Fig. 4, showing the adapter in the form of a flat tube inserted in the valve. Fig. 4 is a broken elevation of a sewed bag with the adapter of Fig. 2 operatively disposed in the valve. Fig. 5 is a central vertical section taken on line 3—3 of Fig. 4, showing the

pipe being withdrawn and in the act of crumpling and folding the free end of the adapter. Fig. 6 is a broken side elevation of the bag after it has been filled and the filling pipe removed, showing the wadding of the adapter left in the mouth of the valve. And Fig. 7 is a broken end elevation with the adapter bushing the valve, and a cross-sectional view of the filling pipe.

In the drawing, Figs. 3 to 5, inclusive, show similar broken fragments, as 2, of a sewed bag, the stitches being indicated at 2', and the tube being folded inwardly at one corner in the usual manner to form a normally open valve A. This type of valve bag is usually formed with lateral tucks, as 2*a*, that have long been important features in the well-known Bates valve bags, wherein the top of the valve opening is virtually defined by the stitches 2'.

The means for controlling the pneumatic filling of the sewed bag 2, as well as obviating the sifting or leaking of the contents of the bags, consists of a novel and simple pliable adapter or element, preferably in the form of a substantially flat crinkly paper tube, as 3', which may be telescopically and permanently disposed in the valve A, either before or after the valve end of the bag is sewed, as shown in Figs. 3, 4, 5 and 6, the said adapter having its outer end portion pasted to the corresponding adjacent mouth of the valve, as shown at 3*a* in Fig. 3. The present adapter is preferably formed from a peculiarly shaped standardized blank, as 3, shown diagrammatically in Fig. 1, which, when folded upon a central crease 3*b* and upon a parallel lateral crease 3*c*, produces the reinforced adapter or bushing 3' of Figs. 2, 3, 4 and 5, the said lateral crease defining an angular flap or wing 3*d*, that is foldable upon the adjacent web of the body of the blank and combining with the two plies of said body to produce a substantially perfect flat tube, as shown in Fig. 4; the said body being formed near its free end with a weakening slot 3*e*, and with transverse oppositely facing weakening slits 3*f*, whose purpose will be explained later on. In Fig. 4, the valve A and also the adapter 3' are shown expanded so as to facilitate the proper and quick insertion of a pipe, as 4, by which the filling of the bag 2 is effected, usually by the aid of a strong air pressure. The pipe 4 is of the usual type that is formed at its underside with a relatively long tapered opening 4' through which cement, lime or other pulverized or granulated products may be blown downwardly into the bag. The inner end of the pipe is preferably formed beak-shaped, as at 4*b*, to aid in its insertion, and adjacent its top, said end is also formed with a tooth or hook 4*c*, that faces the mouth *a* of the valve and adapter. During the filling operation, the pipe 4 is usually inserted in the valve to the extent shown by the dotted lines in Fig. 5. When the bags are loaded with the material, the pressure is shut off and pipe 4 is withdrawn from the valve, and at the start of this latter movement, the hook 4*c* engages either the free end of the adapter or else a shoulder of the slot 3*e* and draws the free end towards the mouth *a* (see initial crumpling of the adapter, as at 3'' in Fig. 5), and in so doing, causes the free end to telescope the valve and the pasted end of the adapter, until the hook finally tears the fiber and comes loose. This leaves the mouth of the valve plugged with a wadding 3*y* of the crumpled portion of the adapter, as shown in Fig. 6, which prevents sifting of the contents of the bag.

When the filled bag is being removed from the spout 4, the hook 4*c* draws along inside the top of the bag until it encounters the free end of the adapter, at or near the weakening slot 3*e*, and draws the latter towards and past the weakening slits 3*f*, until the spout is free from the bag. The weakening slits 3*f* enable the angular portion 3*x* formed by the said slits to come together at the end of the filling spout, and as the spout moves out of the valve, the foldable flap 3*d*, by its rigidity or stiffness forces the free end of the adapter into an upward position making the folds and crumplings 3*y* of the web of the adapter that closes the opening in the valve; the bag being fully expanded by its contents, and the support under the bag being such that while the whole weight does not hang on the filling pipe, it causes the valve to gape open, the hook or tooth means break through the slot 3*e* as the free end of the adapter approaches the mouth of the valve, thereby leaving a flat folded and crumpled mass in the tubular mouth end of the adapter to prevent the material from leaking through the valve, as explained.

The maintaining of the tubular shape of the adapter due to the folding and overlapping of the flap or wing 3*d* throughout the filling of the bag and the removal of the pipe, causes the crumpled portion of the adapter to be evenly distributed throughout the height of the diamond-shaped opening shown in Fig. 4 which includes the V-shaped vent hereinabove referred to.

Having thus described my invention, what I claim, is—

1. A valve bag for use with a filling pipe provided with a hook or the like, having an adapter folded upon itself and secured at the sides of its front portion to the valve, and having an upwardly facing slot extending through its folded portion adjacent the inner end of the latter to receive said hook, whereby upon withdrawal of the pipe the adapter will move therewith and be crumpled and disposed in the mouth of the valve to close same, and an integral flap projecting below the normal lower edge of one of the halves of the body of the adapter, adapted to be folded upon the lower face portion of the other half of the body to form, when its outer end is pasted to said other half and to the inner face of the valve, a complete tubular front end portion that extends substantially the length of the said flap.

2. A valve bag for use with a filling pipe provided with a hook or the like, having an adapter folded upon itself and secured at the sides of its front portion to the valve and having a slot extending through its folded portion adjacent the inner end of the latter, to receive said hook whereby upon withdrawal of the pipe the adapter will move therewith and be crumpled and disposed in the mouth of the valve to close same, said adapter provided with transverse weakened portions, and with an integral foldable flap extending below the normal bottom edge of one half of the body adapted when folded upon and pasted to the other half of the body and also to the inner face of the mouth of the valve, to form a complete tubular front end portion that cooperates with said weakened portions to effect the even crumpling of the adapter.

ANDREW J. VERWYS.