

Sept. 11, 1928.

P. GANGLER

1,683,771

CLOSING BAG

Filed Oct. 6, 1923

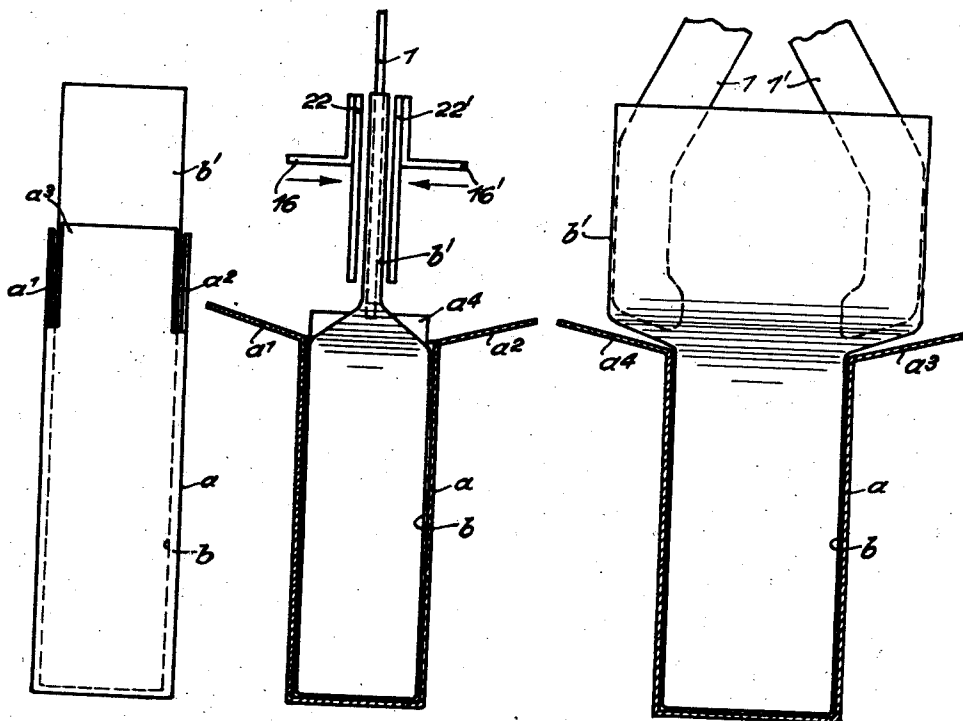


Fig. 1.

Fig. 2.

Fig. 3.

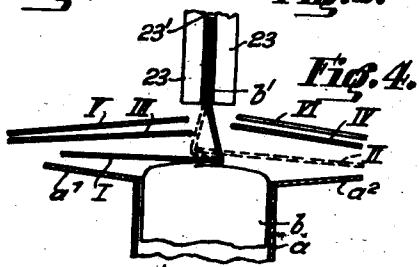


Fig. 4.

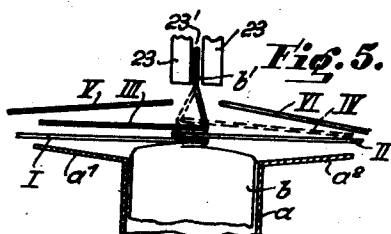


Fig. 5.

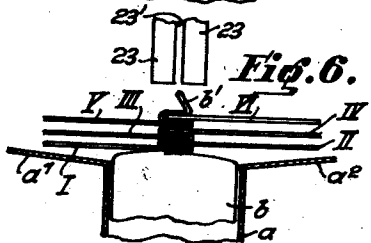


Fig. 6.

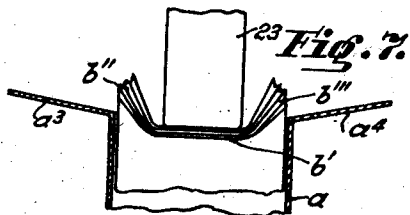


Fig. 7.

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UNITED STATES PATENT OFFICE.

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CLOSING BAG.

Application filed October 6, 1923, Serial No. 666,986, and in Germany October 12, 1922.

My invention relates to a method of closing packages consisting of an inner bag adapted to contain a pulverulent substance such as cocoa, and inserted in a carton or other protective envelope. It is an object of my invention to provide a method which may be easily performed by simple mechanical means in a simple and clean manner and provides an absolutely dust-proof closure.

To this end, the new method essentially consists in flattening the empty end of the inner bag which projects from the envelope by spreading said end, folding it in zigzag fashion by creasing it from opposite sides at superposed levels, forcing the central portion of the creased end into the outer envelope and folding the lateral portions of said creased end down upon said central portion by closing the flaps of the outer envelope. In this manner, in addition to the regular longitudinal creases made in the closed end of the inner bag irregular transverse creases will form at the edges of said end, and this system of intersecting creases makes a closure which is absolutely dust-proof and practically airtight.

It has already been proposed to close filled bags by means of flaps which are bent over from one side of the bag and pasted to its other side, or by rolling up the pasted upper empty end of the bag. The former method, however, does not make a reliable closure and in the latter method air is trapped during the rolling up, so that the bag cannot be folded down firmly on its contents and may even burst. It my method, on the other hand, the system of intersecting folds provides an absolutely reliable closure while allowing the air to escape during the folding operation.

My method is performed without the assistance of an adhesive, which is undesirable as it may exert chemical or hygroscopic influence on the contents of the bag and may soil the folding members.

In the drawings affixed to this specification and forming part thereof the closing of a package according to my method is illustrated diagrammatically by way of example in its several stages.

Referring to the drawings, Figs. 1, 2, and 3 illustrate the operation of spreading, Figs. 4, 5 and 6 illustrate the operation of folding the spread portion, and Fig. 7 il-

lustrates the creasing of the folds at their edges by forcing the folded portion of the bag into its envelope.

More particularly

Fig. 1 is an end elevation of an envelope, for instance a carton for cocoa or the like, with a paper bag inserted,

Fig. 2 is a transverse section of the carton showing the upper end of its paper bag flattened by spreading,

Fig. 3 is a longitudinal section corresponding to Fig. 2,

Figs. 4, 5 and 6 are sections similar to Fig. 2 illustrating the various stages of the folding operation, and

Fig. 7 is a section similar to Fig. 3 showing the creasing of the folded portion at both edges.

Referring now to the drawings, and first to Figs. 1, 2 and 3 *a* is the carton or envelope with four flaps *a'*, *a''*, *a'''* and *a''''* at its upper end in which is inserted a bag *b*, for instance of paper, the upper end *b'* of which projects from the carton *a*. The bag *b* is supposed to be filled as far as the base of the flaps *a'* etc. and is ready to be closed.

To this end spreaders 1 and 1' are inserted in the upper end *b'* of the bag. The spreaders may be operated by the mechanical means, described in my Patent No. 1,640,316. The spreaders are lowered into the end *b'* from above in adjacent relation and are then moved apart into the position illustrated in Fig. 3, spreading out and flattening the end *b'*. If desired, plates 22 and 22' may be provided at the ends of arms 16 and 16' for exerting pressure on both sides of the flattened end *b'*, as indicated in Fig. 2. The plates are moved in opposite directions as indicated by the arrows and this may be effected as described in my said copending application, where oscillating and reciprocating motion is imparted to the plates. The operation of compressing the end *b'* may be performed during or after the spreading operation illustrated in Fig. 3, or it may be dispensed with altogether, according to the material of the bag *b*.

Referring now to Figs. 4, 5 and 6, the flattened end *b'* is inserted in a slot 23' between two jaws 23, 23' which may be applied as described in my said copending

application. The end b' is not firmly gripped by the jaws but merely guided between them. Plate-shaped folding members I, III, and V, II, IV and VI now act on the lower portion of the end b' just above the filled portion of the bag, the plates being alternately advanced from the left and from the right. Fig. 4 shows the plate I advanced in full lines, bending over the end b' at its root and deflecting it horizontally. The next plate II is now advanced from the right as shown in dotted lines in Fig. 4 and folds over the end b' above the first fold, flattening it down upon the folder I. Fig. 5 shows the similar action of the folders III and IV which are advanced successively while the folders I and II remain in position, and Fig. 6 shows the corresponding operation of the folders V and VI. The folding operation is now completed and the end b' has been pulled out between the jaws 23, 23.

It will be understood that I am not limited to any definite number of folding members.

When the folding operation has been completed the jaws 23 are lowered into the carton a as shown in Fig. 7. The jaws exert pressure on the central portion of the folded-over end b' and, as the folded-over

end is longer than the carton a as shown in Fig. 3, its edges will be bent over and creased at the walls of the carton as shown at b'' and b''' in Fig. 7, and transverse creases are formed in the ends. The creased end is forced completely into the carton a by folding down the flaps a^3 , a^4 . All the flaps are then sealed or otherwise secured.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described for obvious modifications will occur to a person skilled in the art.

I claim:—

The method of closing packages which consist of an inner bag, contents and a carton, comprising flattening the empty end of the inner bag which projects from the carton by spreading said end, folding it zigzag fashion by creasing it from opposite sides at superposed levels, beginning from the level of said contents and continuing upwardly, forcing the central portion of the creased end into said carton and folding the lateral portions of said creased end down upon said central portion by closing the flaps of said carton.

In testimony whereof I affix my signature.

PAUL GANGLER.