

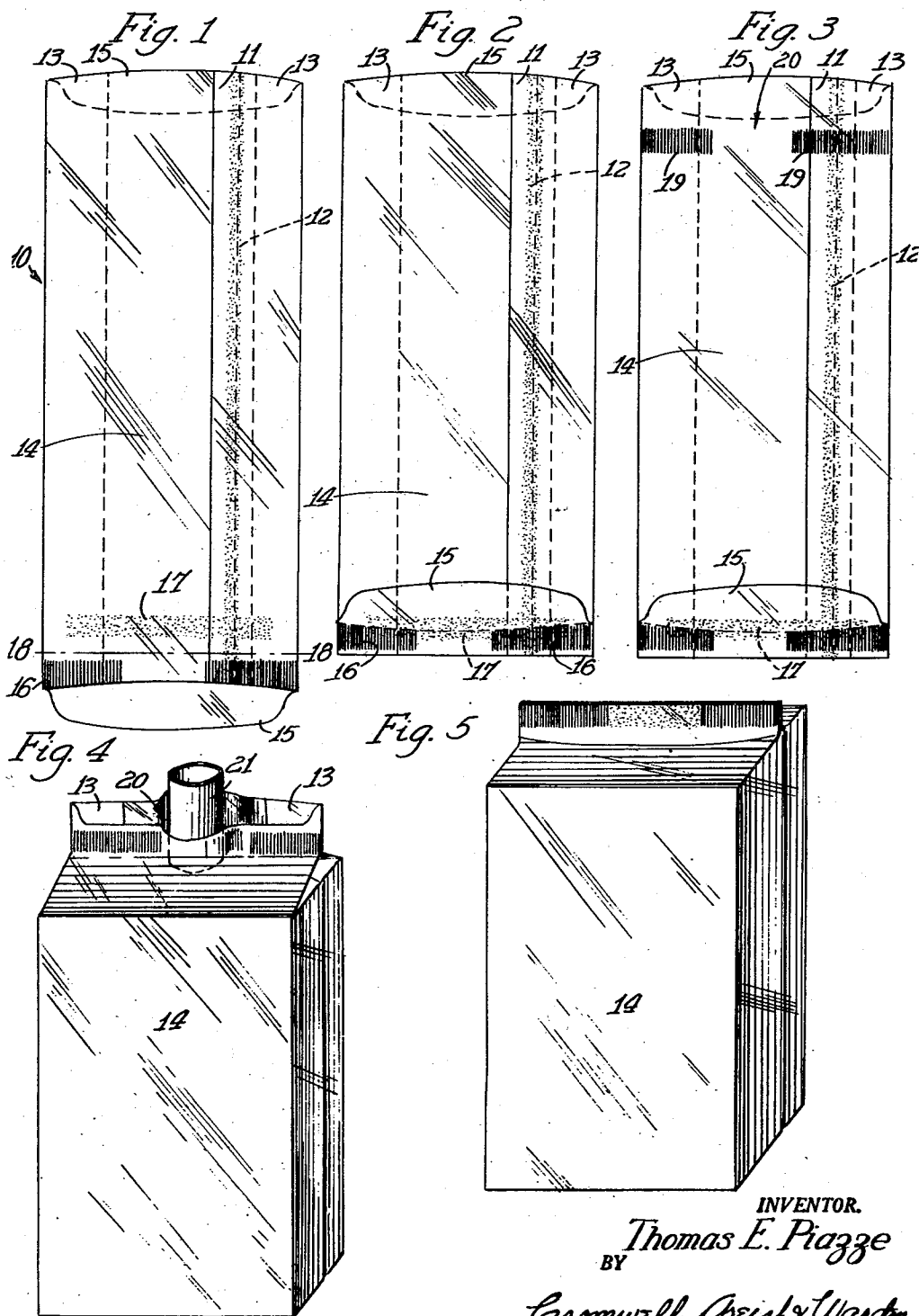
July 31, 1951

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2,562,389

BAG AND METHOD

Filed Nov. 3, 1945



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2,562,389

BAG AND METHOD

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Application November 3, 1945, Serial No. 626,550

9 Claims. (Cl. 229—62)

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This invention relates to the manufacture of bags. More particularly, it pertains to a bag made from a single web of material having a square bottom and preferably a square top with a novel type of filling valve of the type disclosed in my co-pending application filed December 7, 1944, Serial No. 566,985, now abandoned, of which this application is a continuation-in-part, and the provision of a longitudinal seam for such bags, which is offset in a manner to be included within the sealed portions of the top and bottom of the bag, and the method for folding such sheet material to provide such an article, is a principal object of the invention.

In conventional types of bag constructions, of either the flat or gusseted type folded and secured together into tubular formation from a running web, the longitudinal seam is formed in such a way so as to be disposed along the longitudinal axis of the front or rear wall of the tube. While I have disclosed this conventional method of locating the longitudinal seam in my above mentioned co-pending application I have found that a bag having enhanced sift-proof and hermetically sealed properties can be provided by differently folding the sheet and changing the location of the longitudinal seam.

Specifically, it is an object of the invention to provide a bag and method for making the same by folding a sheet of material into a tubular wall forming body so that the longitudinal seam is offset with respect to the longitudinal axis of the tube, extending into the bottom closure, as well as the top closure when desired in which opposite contacting inwardly extending marginal wall segments of the tube on each side thereof are heat-sealed together, each of the heat-sealed segments terminating short of each other a substantial distance from the center of the tube which partially seals the open end thereof to provide the closures.

Other objects of the invention will in part be obvious and will in part appear hereinafter.

The invention accordingly comprises an article of manufacture possessing the features, properties, and the relation of elements which will be exemplified in the article hereinafter described and the scope of the application of which will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention reference should be had to the following detailed description taken in connection with the accompanying drawing, in which:

Fig. 1 is a view of a web of heat-sealable material folded and secured into tubular body formation illustrating the position of the longitudinal seam extending into a sealed portion of a gusset type of bag;

Fig. 2 shows the tubular body formation of

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Fig. 1 folded over across the bottom and sealed to provide a bottom closure for the bag;

Fig. 3 shows a bag, such as that shown in Fig. 2, sealed to provide a filling valve, in which the longitudinal seam extends through the sealed portions thereof;

Fig. 4 is a perspective view of the bag shown in Fig. 3 expanded to illustrate a method of filling the same; and

Fig. 5 is a perspective view illustrating the bag of Fig. 4 filled with a suitable commodity and sealed at the top to provide a completely finished package.

Referring more particularly to the drawing, there is illustrated generally at 10 a tubular body formation formed from a web of heat-sealable material such as, for example, Pliofilm or similar material, or heat-sealable cellophane, or the like.

In the formation of the tube, opposite side edges are brought into overlapping position and sealed together by means of heat and sometimes with an additional application of adhesive. It is conventional to form such seams along the front wall or the rear wall of the tube along its longitudinal axis. However, in accordance with the principles of the present invention I provide such a seam in an offset position as shown at 11, preferably utilizing a suitable adhesive 12.

Opposite wall portions of the tube are tucked inwardly to provide gusseted end walls 13 between side walls 14. The side walls 14 have closure flaps 15, 15, each extending beyond an open end of the tube.

Referring more particularly to Figs. 1 and 2, it will be seen that the tubular body has been sealed to provide a bottom closure having marginal wall segments 16, 16, including the adjacent gusseted portions, which are fused together, and also including therein the longitudinal seam 11. It is within the contemplation of the invention to fold the sheet so that the longitudinal seam 11 can be on either front or rear wall. In any event, the longitudinal seam 11 should be placed so as to be included and sealed within one of the segments 16. Also, the invention is not restricted to a gusset type bag but relates, for example, to flat type bags as well. Each of the fused segments extends inwardly from opposite sides of the tube and terminates in the area of the inner ends of the tuck-in folds of the gusset, thereby partially sealing the open end of the tube in that region. The segments 16, 16, preferably are sealed together by means of heat and pressure applied in this area by suitable sealing irons, such as the type which produces a crimp seal. If, for example, Pliofilm is used, the four layers of material constituting the sealed segment, namely the portions of the end walls formed by the gusset and the side walls, as well as the longitudinal seam 11, will be welded or

coalesced in such a manner as to form an autogenous bond, or unitary mass. Where, for example, cellophane is utilized having an overall or partial application of heat-sealing lacquer in the closure area a surface fusion will result.

The remaining portion of the tube in this region remains unsealed, leaving an opening which is thereafter sealed, preferably by means of an adhesive application, applied inwardly of the sealed segments as indicated at 17. It is of importance to note that the unsealed portion between segments greatly facilitates the manufacture of such bags as well as the sealing operation by speeding up the same because this permits suitable means, such as a transmission belt, disposed above and below the walls along the longitudinal center thereof and between the segments, more readily to propel the bag beyond the sealing irons and out of the machine. The application of the adhesive 17 need not be made in the exact area shown but it should be applied in a zone adjacent a fold line in such a manner that the remaining portions of the open end of the tube will become sealed, as more fully illustrated in Fig. 2. Wherever the adhesive is originally applied, whether on the body wall as indicated, or on the flap 15, it should ultimately appear in the bottom closure as shown in Fig. 2. The partially sealed tube end should be folded along the transverse line of fold 18, which preferably is disposed inwardly of the segments 16, 16, so that the latter, together with a closure flap 15, will lie against the tube body with the closure flap outermost. The adhesive 17 will then seal the remaining portion of the tube end because it will extend along the closure flap 15 between the segments 16, 16, across the open tube end, the closure flap being sealed to one of the side walls 14.

Referring more particularly to Figs. 3 and 4, there is illustrated a novel type of mouth closure, particularly applicable to a gusset type of bag which will provide a square top type of container. The bottom of such a bag may be provided with a closure such as that illustrated in Figs. 1 and 2, or any other conventional type of bottom closure. The top closure illustrated in Fig. 3 is provided by heat-sealing portions of the walls and adjacent gussets as shown in connection with the formation of the bottom closures of Fig. 1. This will provide heat-sealed segments 19, 19. The longitudinal seam 11 will be included within one of the sealed segments 19. When both ends of the longitudinal seam 11 have been sealed within one of each of the segments 16 and 19 the possibility of leakage occurring in this area of the seam is remote.

The unsealed portion between segments 19, 19, provides a valve, indicated generally at 20, for the reception of a filling nozzle 21. The segments 19, 19, and the remaining portions of the gussets lying outwardly thereof provide gripping portions suitable for an operator to pick up such a prefabricated bag and to hold the same for filling when the nozzle 21 is inserted in the valve 20.

It will be seen from Fig. 4 that a square type top portion of a bag is provided. This is particularly advantageous in that less material is used than heretofore wherein it was necessary to have enough material to permit a plurality of folds of the mouth opening in order to secure a proper type of seal for the closure.

After such a bag has been filled, it may be folded transversely in any area adjacent the segments 19, 19, and secured in sealed position by any suitable means, such as by heat-sealing or by

an adhesive. After the bag has been filled and the mouth closure sealed a package such as that illustrated in Fig. 5 will be provided.

Since certain changes may be made in the above article and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

Having described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a bag formed from a single web of heat-sealable material into a tubular wall forming body having a single longitudinal seam provided by opposite marginal portions of said web being sealed to each other, and in which one wall of said tube has a closure flap extending beyond an open end of the tube, a bottom closure for said bag comprising opposite contacting inwardly extending marginal wall segments of said tube on each side thereof which are sealed together, each of said segments terminating short of each other a substantial distance from the center of the tube which partially seals said open tube end, said single longitudinal seam being offset with respect to the longitudinal axis of said tube and extending into said bottom closure and being included within one of said sealed together segments, said partially sealed tube end being folded along a transverse line of fold inwardly of said segments so that the segments, together with said closure flap, lie against the tube body with said closure flap outermost, and the remaining portion of said open tube end being sealed by an adhesive extending along said closure flap between said segments across the bottom of the open tube end, said closure flap being sealed to said tube body, and said open tube end being closed by said adhesive.

2. In a bag of the character defined in claim 1, and wherein there is provided a mouth closure portion comprising opposite contacting inwardly extending marginal wall segments of said tube on each side thereof which are sealed together, each of said segments terminating short of each other a substantial distance from the center of the tube which partially seals the other open end of the tube, said longitudinal seam being included in one of said segments forming the mouth closure, and a filling valve provided by the segments forming the mouth closure portion.

3. In a bag folded into a tubular wall forming body member from a single web adapted to be sealed which is secured in such position by means of a single longitudinal seam provided by opposite marginal portions of said web being sealed to each other, and in which opposite wall portions of the tube have tuck-in folds to provide gusseted end walls between side walls, one of the side walls having a closure flap extending beyond an open end of the tube, a bottom closure for said bag comprising marginal wall segments of said tube, including adjacent gusseted portions, being fused together, each of said fused segments extending inwardly and terminating in the area of the inner ends of the tuck-in folds which partially seal the open tube end, said single longitudinal seam being offset with respect to the longitudinal axis of

said tube and extending into said bottom closure and being included within one of said fused together segments, said partially sealed tube end being folded along a transverse line of fold so that the segments, together with said closure flap, lie against the tube body with said closure flap outermost, and a remaining portion of said tube end being sealed by an adhesive extending along said closure flap between said segments across the bottom of the open tube end, said closure flap being sealed to said tube body to provide a square bottom type of bag prior to filling the same, and said open tube end being closed by said adhesive.

4. In a bag of the character defined in claim 3, and wherein there is provided a mouth closure portion comprising marginal wall segments of said tube, including adjacent gusseted portions, which are sealed together, each of said segments extending inwardly and terminating around the bottom of the gusset thereby partially sealing said other open end of the tube, said longitudinal seam being included in one of said segments forming the mouth closure, and a filling valve provided by the segments forming the mouth closure portion.

5. In a bag folded into a tubular wall forming body member from a single web adapted to be sealed and which is secured in such position by means of a single longitudinal seam provided by opposite marginal portions of said web being sealed together, and in which opposite wall portions of the tube are tucked inwardly to provide gusseted end walls between side walls, and said bag having a bottom closure, a mouth closure for said bag comprising marginal wall segments of said tube, including adjacent gusseted portions, which are adhered together, said longitudinal seam being offset with respect to the longitudinal axis of said tube and extending into said mouth closure and being included within one of said sealed together segments, each of said segments extending inwardly and terminating around the bottom of the gusset thereby partially sealing said open tube end, and a bag filling valve at the remaining unsealed portion of the tube end provided by said segments which form a square top type of bag prior to filling the same, said bottom closure for said bag comprising opposite contacting inwardly extending marginal wall segments of said tube on each side thereof which are sealed together, each of said segments terminating short of each other a substantial distance from the center of the tube which partially seals said open tube end, said single longitudinal seam being offset with respect to the longitudinal axis of said tube and extending into said bottom closure and being included within one of said sealed-together segments, said partially sealed tube end being folded along a transverse line of fold inwardly of said segments so that the segments, together with said closure flap, lie against the tube body with said closure flap outermost, and the remaining portion of said open tube end being sealed by an adhesive extending along said closure flap between said segments across the bottom of the open tube end, said closure flap being sealed to said tube body, and said open tube end being closed by said adhesive.

6. A method of manufacturing a bag from a web of heat sealable material comprising folding said web into a tube formation with marginal edge portions arranged to form a longitudinal seam which is offset with respect to the longitudinal axis thereof, heat-sealing together opposite con-

tacting inwardly extending marginal wall segments of said tube at an end thereof with each of the heat-sealed segments terminating short of each other a substantial distance from the center of the tube to provide a bottom closure for said bag, said sealed segments being formed a sufficient distance from the side edge of said tube to include a portion of said longitudinal seam whereby to partially seal the open end of the tube, applying an adhesive to said tube in an area inwardly of and adjacent said heat-sealed segments and folding the partially sealed tube end along a transverse line of fold inwardly of said heat-sealed segments to secure the remaining portion of the open tube end by said adhesive between the segments.

7. In a method of the character defined in claim 6 and sealing together opposite contacting inwardly extending marginal wall segments at the other end of said tube on each side thereof with each of said heat-sealed segments terminating short of each other and a substantial distance from the center of the tube, one of said sealed segments being extended inwardly a sufficient distance to include therein the longitudinal seam thereby providing a mouth closure with an unsealed portion providing a bag filling valve.

8. A method of manufacturing a bag from a web of heat sealable material which comprises folding the web into flattened tube formation with marginal side edge portions arranged in longitudinal seam forming relation and with tuck-in folds arranged to provide gusseted end walls between the side walls when the bag is opened up, said web being folded with a closure flap extending beyond an open end of the tube formation and with the longitudinal seam offset with respect to the longitudinal axis thereof, fusing together marginal wall segments at said open end of said tube with each of said fused segments extending inwardly and terminating in the area beyond the inner end of each tuck-in fold and with one of said fused segments including a portion of the longitudinal seam, applying an adhesive to said tube formation in an area extending along said closure flap between said fused segments across the tube end, and folding the end of the tube inwardly along a transverse line of fold with the closure flap pressed against the tube body whereby to provide a square bottom type bag.

9. A method of the character described in claim 8, and adhering together marginal wall segments at the other end of said tube formation, including adjacent gusseted portions, with each of said segments extending inwardly and terminating adjacent the bottom of the gusset and on opposite sides of the longitudinal axis thereof and with one of said segments including a portion of the longitudinal seam, whereby to provide a mouth closure with a bag filling valve formed by the unsealed portion between said segments.

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The following references are of record in the file of this patent:

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