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METHOD OF MAKING BAGS

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This Invention relates to new and useful improvements in methods for making bags, and more particularly to the making of bags having an expandible square-like bottom and comprising a single ply of heat-fusible material in which all seams of the bag are formed by fusion thereof, the same being a division co-pending application Serial No. 307,894, filed December 6, 1939.

The principal object of the present invention is to provide a novel method of producing a bag having its seams disposed at the lateral side edges of the bag and provided with an expandible bottom capable of supporting the bag in an upright position.

Another equally important object of the invention is to provide a novel method for producing a bag which is constructed and arranged so as to preclude the occurrence of pin holes at the junction of the side seams and bottom of the bag.

These and other objects of the invention and the various features and details thereof are hereinafter more fully set forth and shown in the accompanying drawing, in which:

Figure 1 is a view in perspective of a bag produced by the process of the present invention showing the bottom thereof in open or expanded position.

Figure 2 is a view in perspective of the bag shown in Figure 1 but in flat or collapsed position, certain portions of said bag being broken away to better illustrate various details of its construction.

Figure 3 is a diagrammatic view in perspective of one form of apparatus capable of carrying out the method of the present invention; and

Figure 4 is an enlarged view in section taken on line 4—4, Figure 3.

Referring now to the drawing, and particularly Figures 1 and 2 thereof, a bag made according to the present invention is designated, 1 and comprises a single piece or sheet of thermelastic or heat-fusible material 2 such as "pilofilm" or the like which is substantially doubled upon itself and provided with an inward tuck or re-entrant fold 3 transversely and inwardly of the bottom of the bag from edge-to-edge thereof. The lateral side edges of the heat-fusible sheet material 2 are permanently fused together throughout the entire height of the bag by the application of heat thereto to form the side seams 4 thereof and the upper end of said bag is left open as indicated at 5 to permit of the insertion of the desired articles or material therein.

As previously stated, the heat-sealing of the lateral side edge portions of the sheet to form the seams 4 of the bag extends throughout the entire height thereof and hence fusion of adjacent superimposed surfaces of the sheet is effected also at the opposite edge portions of the inward tuck or re-entrant fold 3 at the bottom of the bag as clearly shown in the drawing. Thus by providing the inward tuck or re-entrant fold 3 in the bottom of the bag 1 and fusing the adjacent surfaces of the several thicknesses of the heat-fusible sheet material therein together as just described, a stronger bottom structure is obtained and a bag may be produced that is free from the possibility of the occurrence of pin holes at the junction of the side seams 4 and bottom.

In addition to eliminating the occurrence of pin holes at the corners of the bottom of the bag and generally affording a bottom structure of greater strength, the re-entrant bottom fold or tuck 3 is, of course, expandable and thus when expanded provides the bag with a bottom quite similar to the conventional square type of bag bottom, thereby affording a base which permits the bag to be placed in a standing or upright position as well as rendering it more adaptable for receiving articles or material of a more or less bulky nature.

Manufacture of the bag according to the present invention may be accomplished by drawing the web or sheet of heat-fusible material 2 from a vertically disposed supply roll 6 and causing said sheet to be engaged by a wheel or disk 7 which functions to fold or double the web as shown in Figure 3 of the drawing. By vertical adjustment of the disk 7 with respect to the web 2 the extent to which the folded or doubled portions of said web lap one another may be regulated as desired to provide the mouth of the bag with a projecting lip or not, as desired. Upon leaving the forming disk or wheel 7 the folded edge of the doubled web is engaged by a tucking element 8 which functions to form a longitudinally extending inward tuck or re-entrant fold 3 therein of desired depth after which the folded and tucked web is drawn between a pair of opposed draw rolls 9 and 10 and thence between rollers 11 and 12, the latter being provided with a heating element 13 comprising a pair of closely spaced parallel narrow portions 13b and 13c which engage the doubled web transversely thereof and fusibly seal together the thickness of said web in relatively narrow closely spaced zones 14, 14 transversely...
over the entire width of said web at predeter-
mined spaced intervals therealong. The web thus fused together transversely at periodic intervals is then conveyed as shown to a cut-off mechanism comprising a lower sta-
tionary cutting element 18 and an upper re-
volving cutting element 16 carried by a roller 17 and driven in timed relation to the sealing element 13 so that bags 1 are cut from the web along lines transversely thereof and intermediate the paired transverse fused zones 14, 14.

The resulting bags 1, now ready for use, may be opened and, upon insertion of the article or material to be packaged, the tuck or reentrant fold 3 is expanded as shown in Figure 1 presenting a substantially flat bottom surface capable of supporting the bag in an upright position. Bags produced according to the present invitation have the chief advantages of conventional square-bottom bags and at the same time the construction of the bags is such that the occurrence or formation of pin holes in the seam corners is prevented while all of the advantages of a moisture-proof sealed bag constructed are retained. After packaging, the goods may be sealed within the bag by fusing together the adjacent surfaces of the thermoplastic material at the top of the bag in the conventional manner.

While a particular embodiment of the inven-
tion has been set forth and described, it is not intended that said invention shall be limited to such disclosure but that changes and modifications may be made and embodied therein within the scope of the annexed claim.

I claim:

In the method of making open-mouth bags, the steps comprising advancing a web of heat-
fusible material, angularly deflecting and engag-
ing said web along a line longitudinally thereof and intermediate its side edges to fold said web into a doubled web in which the thicknesses of said doubled web lap one another in predetermined relation with the free edges thereof re-
siding adjacent one side of the doubled web and defining therebetween the open mouths of the bags, engaging the folded edge portion of the web with a member operable to tuck said folded edge portion inwardly of the lapped portions of said web to provide a reentrant fold longitudini-
ally thereof, transversely heat-sealing the doubled reentrant folded web from edge to edge thereof in pairs of relatively narrow closely spaced zones spaced at intervals along said doubled web, and then severing open-mouth bags from said doubled web transversely thereof in the spaces residing between the narrow closely spaced pairs of transverse heat-sealed zones of the web.

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