FILLED FLAT BAG AND A METHOD AND DEVICE FOR PRODUCING THE SAME

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ABSTRACT OF THE DISCLOSURE

A piece of wrapping material is folded in the form of a rectangular hose which extends around articles to be packaged, and the narrow longitudinal sides of the hose are bent or folded inwardly to give the package a neat appearance, an increased stiffness and permit an easy storage of the same. The device for producing these filled bags is provided with oppositely arranged pressing members producing the inwardly directed folds when the hose with the articles therein is advanced lengthwise to its longitudinal axis. The four longitudinal corners of the hose are provided with narrow marginal folds produced by pressing rollers cooperating with the pressing members.

The invention relates to a filled flat bag having an approximately rectangular profile and consisting of a single foil of packing material folded around the article or articles to be packaged and closed by a longitudinal seam or two transverse seams. The known flat bags of this type suffer from the disadvantage of not being rigid enough so that, if not filled to capacity, they are unsightly and difficult to store.

To overcome these disadvantages, the flat bag according to the invention is provided with a fold in its two opposite longitudinal sides.

The invention further relates to a method of producing the flat bag according to the invention, the method proceeding from a length of packing material from which a hose having an at least approximately rectangular profile is formed to enclose the articles to be packaged. This hose of packing material is united by a longitudinal seam and individual portions in the size of the desired bag are cut off and are united by two transverse seams so as to form a filled bag. The method according to the invention is characterized in that prior to cutting off individual portions from the hose of packing material, the two opposite longitudinal sides of the hose are provided with a fold.

Finally, the invention also relates to an apparatus for carrying out the method. This apparatus is characterized by two profile jaws having projecting edges disposed opposite each other which, when the hose is advanced, produce the folding lines in the narrow sides of the hose.

The invention will now be described in further detail with reference to the accompanying drawings.

In the drawings:

FIG. 1 is a perspective view of an embodiment of the flat bag according to the invention;
FIG. 2 is a diagrammatic cross-sectional view of the flat bag of FIG. 1;
FIGS. 3 and 4 are each a diagrammatic cross-sectional view of two known flat bags; and
FIG. 5 is a perspective diagrammatic view of an embodiment of the apparatus according to the invention.

Referring to FIGS. 1 and 2, the longitudinal flat bag consists of a single sheet of packing material, for example of an aluminum foil covered with a plastic layer. The bag has a substantially rectangular profile with its narrow sides not flat but kinked or folded inwardly. In about the center of one of the two wide sides 3 of the bag, the opposite longitudinal edges 4 (FIG. 2) of the foil 1 are folded outwardly and welded together in a butting relation which is achieved by pressing the edges together and heating the plastic layer (not illustrated) provided on the inner face of the bag. In the same manner the two ends of the bag are welded together along the two transverse edges 5 of the foil 1. In manufacturing the bag, the foil 1 is in known manner wrapped around the articles 6 to be packaged, for example bakery goods, and the narrow sides 2 of the bag are subsequently provided with a fold in a manner described below. The folding of the narrow sides of the bag results in a significant stiffening of the bag so that it retains its shape even though it is not completely filled by the articles 6 inside, a number of which may lie in series in longitudinal direction.

This is not the case for the known bags illustrated in FIGS. 3 and 4. The bag illustrated in FIG. 3 differs from that illustrated in FIGS. 1 and 2 only by the absence of the fold in its narrow sides, while the bag illustrated in FIG. 4 consists of two superimposed foils 7 and 8 welded together along their opposite longitudinal edges so that it has two welded longitudinal seams 9. Furthermore, the bag illustrated in FIG. 4 encloses its contents tightly and has the additional disadvantage compared to the bags illustrated in FIGS. 2 and 3 that it requires more packing material and that two longitudinal welding seams have to be made. The greater stiffness of the bag according to FIGS. 1 and 2 is desirable not only for a more pleasing display of it for the purpose of selling, but it is also advantageous for the storing of the filled bags.

The process of making the bag according to FIGS. 1 and 2 is preferably initially the same as that of the bag according to FIG. 3 as it is disclosed in detail in the Swiss Patent No. 385,324. A length of packing material is advanced to a folding apparatus which folds the sheet of packing material around articles which are simultaneously conveyed by a conveyor device to the folding apparatus. The packing material is folded around the articles in the form of a flat hose 10 having a substantially rectangular profile. This hose 10 with the articles therein is conveyed by the folding apparatus known per se to the apparatus 11 illustrated in FIG. 5.

The apparatus 11 is provided with two spaced, substantially parallel and substantially horizontally disposed plates 12 serving as guides for the two wide sides 3 of the hose 10 which is advanced in the direction of the arrow 13. The vertical distance a between the two plates 12 decreases slightly in the direction of the arrow 13 so that it is possible to fold the narrow sides 2 of the hose 10 inwardly about a centrally arranged fold line 16 which would not be possible if the narrow sides 2 would remain in their taut condition. At the end of the spaced plates 12 the hose 10 is moved between two profile jaws 14 which are provided with two oppositely arranged projecting edges 15 and these edges 15 produce the fold line 16 along the center of the narrow sides 2.

In order to prevent the four edges 17 at the corners of the hose 10 from being rounded when the narrow sides 2 are folded, these corner edges 17 are contacted between the upper and lower edges of the profile jaws 14 and preferably spring tensioned pressure rollers 18 so that a small marginal fold 19 is produced. Preferably, the pressure rollers 18, which rotate about horizontal axes extending transversely to the direction of movement of the hose 10, and/or the profile jaws 14 are heated electrically so that the fold 19 is welded together whereby the stiffness of the bag is significantly increased. If the marginal fold 19 along the edges 17 is not welded together,
it may later open up somewhat as is indicated in FIG. 2.

The advancement of the hose 10 is effected in known manner by means of two driven heated rolls which are not illustrated and which press the longitudinal edges 4 of the sheet of packing material together and at the same time effect the advance and the longitudinal welding of these edges 4. The hose 10 filled in individual sections with the articles wrapped therein is then, as also known, upon folding of the longitudinal welded edges 4 against the respective wide side 3 (see FIG. 2) cut into individual parts and the transverse edges 5 are welded together so as to form seams.

Although the aforesaid method is particularly expedient, modifications are possible. For instance, instead of employing the longitudinal edges 4 and folding the same against the wide side 3, one could arrange the longitudinal edges in a flat overlapping relation in the plane of the wide side 3 and then weld or glue the edges together. In that case, conveyor means other than the aforesaid ones, which engage the edges 4, will have to be employed for the advancement of the hose. For instance, the welding device used for producing the transverse seams could be used for this purpose. The folding line 16 need not always be a sharply defined edge, but the narrow side 2 may also have the form of a concave groove. In place of the pressure rollers 18 may also be used pressure shoes. Finally, the adhesive seams may be produced, depending upon the adhesive used, merely by pressure without applying heat thereto.

What I claim is:

1. In a device for producing filled flat bags of substantially rectangular cross-section by folding a flat web of wrapping material into the form of a hose of approximately the desired cross-sectional shape about the goods to be packaged while moving said web in its longitudinal direction and progressively joining laterally projecting longitudinal edge portions of said web together, means defining two stationary spacing plates each interiorly adjacent to and of substantially the same width as one of the broad sides of said hose, the distance between said spacing plates diminishing slightly in the direction of movement of the hose, and two profile jaws extending forwardly from said spacing plates in the direction of movement of the hose along the exterior of the narrow sides of the hose, each of said profile jaws being provided with a longitudinal ridge so located as to progressively make an indentation in the respective narrow side of the hose as said hose is moving forwardly.

2. A device as set forth in claim 1, in which each of said profile jaws has a top side and a bottom side substantially parallel with said top side, press means being provided adjacent said top and bottom sides in position to press the longitudinal edges of said narrow sides of the hose individually together to thereby form a narrow stiffening fold in the hose along each of said edges.

3. A device as set forth in claim 2, in which each of said press means comprises a press roll.

4. A device as set forth in claim 2, in which each of said press means comprises a press shoe.

5. A device as set forth in claim 2, including heating means associated with said profile jaws and said press means.

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