

DESCRIPTION

Automated-machine bag with side folding formation

5 The invention relates, in general terms, to a side-gusset bag which is intended for use in a packaging machine and is made of a sheet material. The bag comprises a bag wall, a bottom seam, side gussets and an introduction opening. The invention also relates to
10 a stack formed from a plurality of side-gusset bags and to the use of this stack in a packaging machine and to a method of producing the bag.

Such side-gusset bags are known, for example, from
15 DE 199 16 646 A1. They are distinguished in that the bag has gussets or folding formations which are arranged laterally in relation to the introduction opening, wherein corresponding unfolding increases the bag volume in order for the bag thus to accommodate a
20 product which is to be packaged. On account of this longitudinal folding formation extending up to the introduction opening, the side-gusset bag, despite a large accommodating volume, has a small storage volume in the empty, that is to say collapsed state. In
25 addition, in comparison with so-called folded-bottom bags, which have merely one folding formation on the bottom, the side-gusset bag can adapt better to the volume of the product which is to be packaged, this being advantageous not just in respect of the visual
30 appearance, as a result of a more or less box-like exterior, but also in respect of the storage volume which is required in the filled state, in particular for packaging bulk material. All this makes it desirable to use the side-gusset bag in packaging
35 machines.

However, these side gussets, in most cases, make it difficult to use the side-gusset bags in a packaging machine. One reason for this is that, during the

packaging operation carried out by the packaging machine, the bag is retained in the region of the introduction opening at at least one fixing location, usually two spaced-apart fixing locations, in order
5 that the product can be introduced into the bag efficiently, that is to say inter alia, without any losses; the inwardly folded portions of the bag wall are problematic in respect of this retaining operation. In addition, it is necessary, for storage,
10 transportation to packaging machines and for use in the packaging machine, for a plurality of bags to be in a stack-like block formation, in order that these bags can be handled more easily. Here too, the folding formations of the bag, which extend as far as the
15 introduction opening, are problematic, in which case use has usually been made in practice, up until now, of bags without a side folding formation, and possibly of those with a bottom folding formation. In order to solve the problem, DE 199 16 646 A1 proposes that side-
20 gusset bags, in order for handling, in particular filling, to be facilitated, should be provided, on the side directed toward the introduction opening, with tear-off tabs essentially in the region of the side gussets. These tear-off tabs are bounded by a
25 perforation line. This has the disadvantage that the operation of tearing off the tear-off tabs give the periphery of the introduction opening an attractive appearance, and added to this is the fact that there is no particular control for the tearing-off operation and
30 the bag wall, which is used for packaging purposes, is subject to damage, such as tearing and over-stretching.

It is thus an object of the present invention to provide a side-gusset bag which is intended for use in
35 a packaging machine, is made of a sheet material and has a bag wall, a bottom seam, side gussets and an introduction opening and, on the one hand, can be reliably fixed, and/or arranged in block form to create

a stack, for example during storage, transportation and/or use in the packaging machine, but, on the other hand, does not thus result in the bag wall, which is used for packaging purposes, being adversely affected.

5 This object is achieved by a side-gusset bag as claimed in claim 1 and by a stack as claimed in claim 9. A use which is advantageous in this context is the subject matter of claim 10. Claim 11 relates to a furthermore equally advantageous production method. The dependent

10 claims each relate to advantageous configurations.

The invention relates to a side-gusset bag which is intended for use in a packaging machine. The side-gusset bag consists essentially of a sheet material,

15 preferably of a thermoplastic sheet material, for example made of polyethylene. The sheet material may also be made in a number of layers from different sheet materials. The side-gusset bag comprises a bag wall, a bottom seam, side gussets and an introduction opening,

20 the latter generally being arranged on that side of the bag which is located opposite the bottom seam. The side-gusset bag according to the invention is distinguished by the provision of a tab which is applied in an adhesive manner to the bag wall and has

25 at least one fixing and/or block-forming location. The tab here consists essentially of a sheet material, for example of the same sheet material as the wall of the side-gusset bag. By means of the at least one fixing and/or block-forming location, the tab serves for

30 fixing the bag in a packaging machine, and/or for arranging a plurality of stacked bags in block form to create a stack of interconnected bags, in order to facilitate the storage and the transportation of the bags and/or the filling of the packaging machine with

35 the bags. In order to achieve particularly stable fixing and/or block formation, one preferred embodiment provides at least two fixing and/or block-forming locations.

The invention is not restricted in respect of how the tab is applied in an adhesive manner to the bag wall. The tab is applied to the bag wall, for example, by
5 means of a contact adhesive without any hardening mechanism (non-setting adhesive). The contact adhesive contains for example, in addition to additives such as plasticizers and the like, at least one basic polymer, selected from various rubber polymers (CR, NBR, SBR),
10 acrylates, modified polyesters, ethyl vinyl acetate copolymers, polyurethanes, polysiloxane elastomers, modified phenolic resins and melamine resins. The adhesion between the bag wall and tab can be established by evaporation of a solvent contained in
15 the adhesive, by thermal action or radiation cross-linking (for example using UV radiation). In further exemplary embodiments, the adhesion between the tab and bag wall is achieved by a transfer-adhesive tape or a double-sided adhesive tape, i.e. a carrier tape which
20 is coated with contact adhesive on both sides.

The adhesive application means that the tab, which becomes superfluous once the side-gusset bag has been used for packaging, can easily be removed from the bag
25 wall largely without leaving any remnants behind and without having any adverse mechanical effect on the bag wall. For example over-stretching and tears, which are unavoidable in the case of a perforation line, are easily avoided by virtue of the capacity for adhesion
30 of the adhesive being adjusted. In addition, the tab can be applied to more or less any desired location of the bag, wherein the side gussets provided in the bag wall do not pose any problems and also application of the tab, without obstruction by the side gussets, and
35 the functioning thereof are selected such that block formation and/or fixing are/is achieved in a very effective manner. As has already been mentioned in the introduction, side-gusset bags can thus be supplied for

use by packaging machines, wherein the side-gusset bags are distinguished by a comparatively large possible packing volume with an exterior which is box-like, and therefore attractive and space-saving for storage purposes, and a volume which is small in the empty state.

The tab with the at least one fixing and/or block-forming location is preferably arranged such that it projects, at least in part, beyond the bag wall. This facilitates access for block formation and for fixing in the packaging machine.

The tab is preferably arranged in the region of the introduction opening, in order for it thus to be possible for the bag to be securely fixed and held open when being filled with the material which is to be packaged.

In a preferred configuration, the tab is applied in an adhesive manner to the outside of the bag wall. This means that the filling operation is not obstructed.

The at least one fixing and/or block-forming location is preferably configured as a hole and thus serves, for example, for accommodating a so-called wicket, for arranging the stacks in block formation, or for accommodating pins of a wicket conveyer.

In a further configuration, a tearing aid is provided in the tab in the region of the fixing and/or block-forming location. It is thus possible for the tab, for example following packaging and separation from the bag wall, to be removed from the packaging machine or to be removed from the wicket or the pin of the wicket conveyer.

Furthermore, it is likewise conceivable according to the invention for the tab to be in more than one part. In a preferred embodiment, the tab is formed from two tabs fastened one beside the other on the bag. This may
5 be advantageous, in particular, when it is necessary for the tabs to be removed from the bag with a very low tear-off force or when it is required for the tabs to produce only small amounts of waste. Depending on requirements and on the design of the bag, for example
10 in the case of very wide bags, it is also conceivable for three or more separate tabs to be fastened on the bag.

According to a further advantageous configuration, in
15 the region of the introduction opening, with the side gussets in the folded-flat state, the bag wall has a rectilinear periphery, and this facilitates the filling operation.

20 In the case of a further advantageous configuration, with the side gussets in the folded-flat state, the bag wall has a right-angled configuration. In particular in the case of a product which is to be packaged being made of loose or compliant material, this results in a
25 more or less box-like configuration of the packaged product and thus in the efficient, i.e. space-saving, storage and transportation thereof.

The invention also relates to a stack, wherein a
30 plurality of side-gusset bags in one of the above-described embodiments are fixed to one another via the in each case at least one block-forming location provided on the tab. For example, the fixing is achieved by a steel clip and a collecting sleeve,
35 either of which is guided through the respective block-forming location in the form of a hole. Two spaced-apart holes are preferably provided. This gives rise to a stack which is compact and therefore easy to

transport or is suitable for filling a packaging machine.

The invention also relates to the use of the stack
5 in a packaging machine, preferably in an automated packaging machine. In one configuration of the invention, use is made, for example, of the automated packaging machine described in DE 199 35 065 A1, which is hereby included by way of reference, wherein the
10 adhesive connection between the tab and bag wall replaces the perforation line which is provided on the bag, and has to be severed, in DE 199 35 065 A1.

The invention also relates to a method of producing a
15 side-gusset bag in one of the above embodiments, wherein, in a first step, the bag wall is produced, from a flexible sheet-material tube with side folding formation, by virtue of the bottom seam being introduced, for example by welding, this giving rise to
20 a separating seam without a seam overhang or to a shrink seam with a seam overhang of, for example, 2 to 3 mm, and by the flexible sheet-material tube being severed, possibly independently of the welding operation. In a second step, a tab with at least one
25 fixing and/or block-forming location is adhesively bonded to the bag wall, preferably using a contact adhesive.

Accompanying figures 1 and 2 illustrate a preferred
30 embodiment of the side-gusset bag according to the invention and a stack formed from a plurality of side-gusset bags.

The perspective side view of figure 1 shows a side-gusset bag 1 according to the invention which is made
35 of a thermoplastic sheet material and has a bag wall 2 which is closed toward the bottom by a bottom seam 2 and thus forms a bag-like cavity which serves for

accommodating a product and thus for packaging the same, wherein the product (not illustrated) is introduced into the bag-like cavity via the introduction opening 4 which is located on that side of the side-gusset bag 1 which is located opposite the bottom or the bottom seam 2. In order to allow the volume of the cavity to be altered by the introduction of the product, two parallel side gussets 6a, 6b are provided in the bag wall 2, the side gussets being arranged laterally and folded inward in the empty state. These side gussets 6a, 6b extend from the bottom seam 3 to the introduction opening 4. In the region of the introduction opening 4, a tab 9 made of a thermoplastic sheet material is applied in an adhesive manner to the outside of one of the comparatively large-surface-area portions of the bag wall 2, wherein this adhesive application is achieved by a contact-adhesive layer 7 arranged between the tab and the bag wall. The tab 9 projects beyond the bag wall and, in the region of its outermost corners, is provided with holes 5a, 5b which serve as fixing and/or block-forming locations. As figure 2 shows, a plurality of side-gusset bags are arranged in block form by means of a steel clip or two collecting sleeves 9a, 9b, these being guided through the holes 5a, 5b, to create a stack, as is indicated in figure 2. In order for it to be possible for the tabs 9, which remain on the steel clip or the collecting sleeves 9a, 9b following packaging, to be removed relatively easily, tearing aids 8a, 8b in the form of perforations or slits are optionally provided in the region of the holes 5a, 5b.

PATENT CLAIMS

1. A side-gusset bag (1) which is intended for use in a packaging machine, is made of a sheet material and has a bag wall (2), a bottom seam (3), at least one side gusset, preferably two side gussets (6a, 6b), and an introduction opening (4), characterized by a tab (9) which is made of a sheet material, is applied in an adhesive manner to the bag wall (2) and has at least one fixing or block-forming location, preferably at least two fixing and/or block-forming locations (5a, 5b).

2. The side-gusset bag (1) as claimed in claim 1, characterized in that the tab (9) with the at least one fixing and/or block-forming location (5a, 5b) projects, at least in part, beyond the bag wall (2).

3. The side-gusset bag as claimed in one of the preceding claims, characterized in that the tab (9) is arranged in the region of the introduction opening.

4. The side-gusset bag as claimed in one of the preceding claims, characterized in that the tab (9) is applied in an adhesive manner to the outside of the bag wall (2).

5. The side-gusset bag as claimed in one of the preceding claims, characterized in that the at least one fixing and/or block-forming location (5a, 5b) is configured as a hole.

6. The side-gusset bag as claimed in one of the preceding claims, characterized in that a tearing aid (8a, 8b) is arranged in the tab in the region of the fixing and/or block-forming location (5a, 5b).

7. The side-gusset bag as claimed in one of the preceding claims, characterized in that the tab (9) is in more than one part and comprises, in particular, two separate tabs (9).

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8. The side-gusset bag as claimed in one of the preceding claims, characterized in that in the region of the introduction opening (4), with the side gussets (6a, 6b) in the folded-flat state, the bag wall (2) has
10 a rectilinear periphery.

9. The side-gusset bag as claimed in one of the preceding claims, characterized in that, with the side gussets (6a, 6b) in the folded-flat state, the bag
15 wall (2) has a right-angled configuration.

10. A stack, characterized by a plurality of side-gusset bags (1, 1', 1'', 1''') as claimed in one of the preceding claims, wherein the side-gusset
20 bags (1, 1' 1'', 1''') are fixed to one another via the in each case at least one block-forming location (5a, 5b).

11. The use of the stack as claimed in the preceding
25 claim in a packaging machine, preferably in an automated packaging machine.

12. A method of producing a side-gusset bag as claimed in one of preceding claims 1 - 9, wherein, in a first
30 step, the bag wall is produced, from a flexible sheet-material tube with side folding formation, by virtue of the bottom seam being introduced and the flexible sheet-material tube being cut to size, characterized in that, in a second step, a tab with at least one fixing
35 and/or block-forming location is adhesively bonded to the bag wall.