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This invention relates to a sachet of flexible synthetic material of the type produced from at least one band of synthetic material sheet, shaped in such a manner as to determine by seals (welds) a base, on which the sachet rests, two lateral walls, a rear face forming a stiffening and gripping zone connecting together the two lateral walls, a front face corresponding to the side where pouring of the contents of the sachet takes place after it has been opened and which is equipped with a means for stiffening and stabilizing the sachet.

Similar sachets are themselves known. They have, for example, formed the subject, although in a non-limiting context, of the Patent Applications in France 2 314 327, 2 417 445, 2 474 457 and 2 554 785 in the name of the applicant, to which applications reference is expressly made here.

These sachets give complete satisfaction and the results set out in the aforementioned applications are achieved.

For sachets of large capacity, however, it has become apparent that it was still necessary to improve the stability of the sachet in order to prevent it from falling onto its side or tilting forwards.

Similarly, the Patent US-A-3 462 067 describes a sachet of the type described above, which however does not allow the sachet to be closed again after it has once been used.

The present invention aims to overcome these disadvantages.

According to a first form of embodiment of the invention, a sachet of the above type is proposed, in which the means consists of a buttress of generally oblong form which is firmly attached to the sachet by two lines of sealing (welding) or gluing, disposed, the one substantially at the base of the front face, the other slightly set back with respect to the upper part of said buttress, thus determining a zone open on three sides and especially towards the top of the sachet, where the pouring opening is to be formed.

According to a second variant of embodiment, the means forming the buttress is equipped in its upper part with a means for closing and pinching the upper corner of the sachet through which said pouring takes place, this latter means being composed essentially

/ of two tabs,

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of two tabs, substantially symmetrical about the longitudinal axis of the buttress and cooperating with a finger disposed between said tabs.

The invention will be better understood with the help of the description given below with reference to the attached drawings, in which:

- Figure 1 is a front perspective view of a sachet with buttress;
- Figures 2 to 5 illustrate sachets of the type of that in Figure 1 with different forms of buttress;
- Figure 6 is a rear perspective view of a sachet with gripping handle of complementary shape to that of the buttress of Figure 1;
- Figure 7 illustrates an oblong buttress occupying the entire front face of the sachet, according to a first form of embodiment of the invention;
- Figures 8 and 9 show, to enlarged scale, the arrangement of Figure 7 which cooperates in the closing of the sachet;
- Figure 10 illustrates an oblong buttress comprising a means for closing the sachet, according to a second form of embodiment of the invention;
- Figures 11 and 12 show, to enlarged scale, the arrangement of Figure 10 illustrating its method of closing the sachet;
- Figure 13 is a perspective view of a sachet having two frontal stiffening ribs;
- Figure 13A is a transverse section on A-A of the sachet of Figure 13;
- Figure 14 is a perspective view of a sachet having one frontal stiffening rib;
- Figure 14A is a transverse section on B-B of the sachet of Figure 14;
- Figure 15 shows a machine for shaping the ribs of the sachets of Figures 13 and 14;
- Figures 15A, 15B and 15C are transverse sections through the shaping machine of Figure 15, respectively on A-A, B-B and C-C;
- Figure 16 is a perspective view of a sachet with stiffening of the frontal arrises;
- Figures 17 to 25 illustrate schematically various embodiments, enabling the desired stiffening to be achieved at the frontal arrises of the sachet;

/ - Figure 26

(12)

- Figure 26 is a schematic view of a device for the production of the sachets of Figures 16 to 25;

- Figure 27 is a schematic view in section illustrating one particular form of embodiment of the device of Figure 26 corresponding to the sachet of Figure 17.

Reference is first made to Figure 1.

According to this form of embodiment, a sachet (1) comprising essentially:

- two lateral walls such as (2);
- a base (3), on which it is expected to rest;
- a stiffening and gripping zone (4) connecting together the two lateral walls (2);
- a front face (5) also connecting together the two lateral walls (2);
- is equipped with a stiffening and stabilization means.

This means may be:

- a rigid buttress (6)
- and/or one or more vertical ribs (7). The buttress will preferably be disposed in such a manner that its base (6'), when the sachet rests on a plane surface, can bear on said plane surface.

It may be of any material, for example of synthetic material, possibly obtained by recycling in order to limit the initial cost, of cardboard etc., in a non-limiting manner.

It may, in addition, have any form compatible with the function provided such as, for example, but not in a limiting context:

- a semi-circular form, as shown in Figure 1;
- a quadrilateral form (7), as shown in Figure 2;
- a trapezium shape (8), possibly truncated, as shown in Figure 3;
- an open form (9), of horseshoe shape, as shown in Figure 4;
- a trapezium shape (10), as shown in Figure 5, the base corners being folded onto the lateral walls in order still further to increase the stabilization.

It will be seen that, in all the illustrative forms proposed, a line of contact exists respectively (6', 7', 8', 9', 10') between the buttress (6, 7, 8, 9, 10) and the surface on which the sachet equipped with it rests.

/ Optionally,

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Optionally, as shown in Figure 6, it will be possible to arrange for the buttress (6), with a concern for economy of material, to be cut from the element (11) applied in the stiffening and gripping zone (4) referred to earlier.

Other forms of front buttress could be used, which would advantageously fulfil, not only the desired function, that is to say stiffening and stabilization of the sachet, but also one or more complementary functions.

Thus, it may be envisaged in accordance with this invention for the buttress to cooperate in the closing of the sachet when the latter has been opened.

In the form of embodiment according to the invention of Figures 7, 8 and 9, to which reference will now be made, the buttress is of a generally oblong and trapezium shape. It is firmly connected to the sachet (1) by two lines of sealing (welding) or gluing (13, 14), the one line (13) disposed substantially at the base of the front face and the other (14) being slightly set back from the upper part of said buttress (12), thus determining a zone (15) open on three sides and especially towards the top of the sachet, where the pouring opening (16) is to be formed.

This structure of the upper part of the sachet is shown, enlarged, in Figure 8.

In order to re-close the sachet after a first use, the upper corner (17) comprising the opening (16) is folded down opposite the buttress (12) and is inserted between the zone (15) and the front face of the sachet, as shown in Figure 9.

In the variant of Figures 10, 11 and 12, the function of which is entirely identical with the foregoing, the sachet comprises a buttress (18) equipped in its upper part with a means (19) for closing and pinching the upper corner (17) of the sachet. As shown in Figure 11, the means (19) is composed essentially of two tabs (20, 21), substantially symmetrical about the longitudinal axis of the buttress (18) and cooperating with a finger (22) disposed between said tabs.

The closure is achieved by folding down the upper corner (17) of the sachet in such a manner as to place it over the tabs (20, 21) and below the finger (22), where it is held by the pinching effect thus achieved.

The buttress of the type described above and shown in Figures 1 to 12 can be attached to the sachet by any suitable means, such as sealing or gluing, at any instant during the manufacturing and filling process for the sachet.

/ For example,

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For example, the buttress (6, 7, 8, 9, 12, 18) could be attached by a process analogous to that which enables the stiffening and gripping element (11) to be attached, as described by way of example in the Patent Application in France No. 83-18257 in the name of the applicant.

According to a second form of embodiment, the stiffening and stabilizing means could consist of one or more vertical ribs (7), already shown in Figure 1. In this illustration, the ribs (7) are used in combination with a buttress such as (6) of the type illustrated in the foregoing.

The rib or ribs (7) may also alone contribute to the achieving of the desired result, that is to say stiffening and stabilization of the sachet.

Thus, in Figures 13 and 13A, a sachet (1'), equipped with two vertical front ribs (23, 24) of this type has been shown.

With advantage, the lower arris of the front face of the sachet (1') in contact with the surface on which the sachet rests will also be reinforced by a seal or weld (25).

In Figures 14 and 14A a form of embodiment of the same type as the foregoing has been shown, but with a single stiffening and stabilizing rib (26), possibly reinforced by a seal (27) on the lower arris of the front face.

The ribs (23, 24, 26) may be formed, in a non-limiting example, by means of the following device.

On a shaper (28) of a type known to the person skilled in the art, on which a sheet (29) is shaped into a continuous tube (30), then filled with the liquid to be conditioned and converted into individual sachets or cushions transversely, amongst other things, to a central nozzle (31), there are provided operating and shaping stations for the rib or ribs (23, 24, 26).

The example of the formation of two ribs (23, 24) will be considered.

At a first station (32), the sheet being ready at this stage to be sealed for conversion into a continuous tube (30), a shaper (33) into which the sheet passes gives to this sheet a W-shape.

At the station (34), disposed downstream of the former, the following are carried out together or in succession:

- sealing of the sheet (29) to shape it into a tube (30) in the conventional manner, by means of a sealing jaw (35),

- sealing of the aforementioned W-shaped fold at its two arrises (36, 37) by means of two sealing elements (38, 39), an insulating

/ element (40)

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element (40) being placed between them to prevent sealing of the two arrises (36, 37) to each other.

Finally, a station (41) disposed further downstream is equipped with two separator fingers (42, 43), which unfold the W-shaped zone in such a way as to give it the desired structure for forming the front face of the future sachet.

Reference is now made to Figure 16. The sachet (101) comprises on its front face (102) two arrises (103, 104), which are stiffened to impart stability and shape to the sachet.

This result is achieved either by the forming of folds or by the attachment of stiffening or structural elements at said arrises.

These elements are fixed at the surface onto the sleeve forming the sachet by gluing, sealing, welding or any other suitable process.

As will be illustrated later, said elements may be of a single material or composite materials, flat or angular, etc.

Thus in Figure 17 there is shown a reinforcement (105), fixed externally to the sachet and forming a corner, the apex of which denotes the arris of the sachet. The angle of opening of the reinforcement (105) may have any value. It is also possible to envisage giving it a certain elasticity, so that the corner remains well marked even when the sachet is completely filled.

In Figure 18 there is shown an analogous structure with external reinforcement (106), which is applied onto the arris by enveloping an insert (107) disposed parallel to said arris. The insert may be formed of any material.

In the embodiment of Figure 19, the reinforcement (108) is produced by pinching the arris of the sachet, as shown earlier.

In Figure 20, the same result is achieved by fitting a cord (109) along the arris.

In Figure 21, the arris is marked along the edge of a reinforcing strip (110).

In Figure 22, the corner of the external reinforcement (111) is pinched, which accentuates the marking of the arris.

Finally, the embodiment shown in Figure 23 shows an external reinforcement (112) folded back onto itself, forming a longitudinal cavity (113) which may be empty or inflated, thus accentuating the stiffening.

/ Reference

Reference is now made to Figures 26 and 27, which illustrate a device enabling the forms of embodiment of Figures 17 to 23 to be obtained.

The positioning of the stiffening element will preferably be undertaken while the sheet is being shaped from a tube on a shaper which predetermines the form and dimensions of the finished package. A feed system will bring up the stiffening element, which will be attached at the shaper onto the tube of sheet.

Thus, the sachets are produced from a tube (116), which passes onto a former (117). This former comprises one or more shapers (118), for shaping the front arrises.

At the shaper (118) the stiffening element (119) is applied by welding, gluing or sealing from a feed spool (120), by means of an appropriate device (121), the nature of which is associated with the manner of fixing, that is to say welding, gluing or sealing. The device (121) will comprise, for example, a head (122) having a profile complementary to that of the shaper (118).

The system will function in an alternating manner, that is to say that while one sachet is being filled, the feed of the sheet is stopped and the device applies a stiffening element onto a sachet which is being shaped.

The stiffening element will be automatically cut before or during its placing to the necessary length, for example the length of the arris, corresponding to the filled and closed sachet.

According to one variant of embodiment, provision will also be made for reinforcing the upper arrises of the sachet. The structure of this horizontal reinforcement will be identical to that illustrated in Figures 17 to 25 for the vertical reinforcement.

Placing will be carried out from a feed (124) and by an operating method entirely analogous to that described above for the vertical reinforcement.

Claims

1. Sachet of flexible synthetic material of the type produced from at least one band of synthetic material sheet, shaped in such a manner as to determine by seals (welds) a base (3), on which the
5 sachet rests, two lateral walls (2), a rear face forming a stiffening and gripping zone (4) connecting together the two lateral walls (2), a front face corresponding to the side where pouring of the contents of the sachet takes place after it has been opened and which is equipped with a means for stiffening and
10 stabilizing the sachet, characterized in that the means consists of a buttress of generally oblong form which is firmly attached to the sachet (1) by two lines of sealing (welding) or gluing (13, 14), disposed, the one (13) substantially at the base of the front face, the other (14) slightly set back with respect
15 to the upper part of said buttress (17), thus determining a zone (15) open on three sides and especially towards the top of the sachet, where the pouring opening (16) is to be formed.

2. Sachet of flexible synthetic material of the type produced from at least one band of synthetic material sheet, shaped in such a
20 manner as to determine by seals (welds) a base (3), on which the sachet rests, two lateral walls (2), a rear face forming a stiffening and gripping zone (4) connecting together the two lateral walls (2), a front face corresponding to the side where pouring of the contents of the sachet takes place after it has been
25 opened and which is equipped with a means for stiffening and stabilizing the sachet, characterized in that the means consists of a buttress (18), equipped in its upper part with a means (19) for closing and pinching the upper corner of the sachet through which said pouring takes place, this latter means (19) being
30 composed essentially of two tabs (20, 21), substantially symmetrical about the longitudinal axis of the buttress (18) and cooperating with a finger (22) disposed between said tabs.