

This invention has as its subject a device for the sealing (welding) and cutting off of at least one corner of a sachet of synthetic material, of the type produced from a cushion filled with liquid, in which device the sachet is disposed on a flat surface in a restraining unit which assures positioning and holding of the sachet, said corner being sealed by a sealing jaw and cut off.

A sachet of this type and a device for producing it were the subject of European Patent Application EP-A-0 142 456 in the name of the applicant, to which reference is expressly made here and which forms part of the state of the art according to Article 54(3) EPC.

Products obtained in this manner are usually present in the form of sachets having a flat base and equipped in their upper part with two corners.

Furthermore, the Patent FR-A-1 332 651 describes a shaping device, in which the corners of the cushions are folded over onto the body of same and are later glued. There is therefore no cutting-off and this requires the phase of folding and gluing.

Finally, the Patent FR-A-1 259 662 describes a device for sealing and cutting off, according to the preamble of Claim 1, but this is of complicated structure and not very reliable in practice.

Moreover, when it is desired to equip a sachet of the above type with a gripping and/or stiffening handle, it is subsequently necessary, in order to ensure improved stability of the sachet, a good hold and correct pouring, to cut off the upper corner disposed just above said handle.

No device at present enables this to be achieved.

The present invention has the objective of proposing a device for achieving this result.

This result is achieved with a device of the type quoted in the preamble, characterized in that it comprises:

- a conveyor belt operating in indexed manner and bringing the sachets to the restraining unit which holds and positions them, said restraining unit being composed respectively of a lateral plate, of a stop plate and of a closure angle piece, said cushions

/ having

having previously been fitted with a handle or stiffening element, said sealing jaw incorporating a cutting tool.

Preferably, in the construction of this device, the two lower corners will already have been sealed and cut off in order to impart stability to the sachet.

According to one advantageous embodiment, the device comprises, in addition, a device for bringing and supplying cushions of flexible synthetic material, filled with liquid, upstream of a shaping unit for shaping said cushions into individual sachets each equipped with a handle, said cushions being brought by the slope of a chute towards a conveyor belt carrying cages integral in translatory movement with said belt, each cage being intended to receive one cushion for the purpose of its final shaping, and in that the device comprises, on the one hand, a bascule at the end of the chute, said bascule receiving, in succession, each cushion coming from the chute and being controlled in tilting for releasing the cushion which it supports while each cage of the conveyor belt passes vertically beneath the bascule, and, on the other hand, an assembly permitting, in succession, each cushion to be retained and released individually on the chute before the cushions reach the bascule, said assembly being connected in control with the bascule in such a manner as to retain the following cushion when the bascule already contains a cushion and causes it to fall into the cage which is offered up, and to release said cushion so that it is present on the bascule when the latter returns into position.

The invention will be more effectively understood from the following description of forms of embodiment thereof, given by way of non-limiting examples with reference to the attached drawings, in which:

- Figure 1 is a schematic view of the device according to this invention;
- Figure 2a illustrates the device for holding and positioning the sachet, seen in the direction of arrow 1 of Figure 1,
- Figure 2b is a variant of the device of Figure 2a,
- Figures 3a and 3c illustrate different phases of intervention on the restrained sachet,
- Figure 4 is a variant of embodiment of a device in accordance with the invention,
- Figure 5 is a schematic lateral elevation of a variant of embodiment of the invention, showing the elements for controlling the bascule,
- Figure 6 is a schematic lateral elevation of the device of Figure 5, showing the elements for controlling the assembly for retaining and releasing the cushions on the chute.

/ In Figure 1,

In Figure 1, there is shown a sachet (101) equipped with a handle or stiffening element (102), which has been fixed to it.

There has also been indicated, as a reminder, the phase of sealing and cutting off of the lower corners, carried out previously by a unit (103), itself known.

In this way an intermediate sachet is obtained, which can be used as it is, referenced (104).

The invention has as its subject the further improvement of the structure of the intermediate sachet (104).

In order to do this, it is proposed to cut off the upper corner (105) disposed directly above the handle (102).

In order to do this, the sachets (104) are disposed, after the lower corners have been cut off, one by one on a conveyor belt (106), operating in indexed manner, which brings them towards a restraining unit (107), which assures holding and positioning of the sachets for the purpose of carrying out the desired operations of sealing and cutting-off.

This restraining unit is composed of a lateral plate (108), of a stop plate (109) and of a closure angle piece (110).

Referring to Figure 2a, it will be seen that the lateral plate (108) is fixed. The stop plate (109), which stops the sachet conveyed by the belt (106), is retractable.

When the sachet is blocked by the plates (108) and (109), it is firmly held and blocked under the influence of the retractable angle piece (110), articulated on an axle (113) on the one hand, and of a suction cup (114) operating in translatory movement through an aperture (115) formed in the plate (108).

In this form of embodiment, the restraining unit forms a cage partly open on one of its faces (opposite the suction cup).

According to the variant of Figure 2b, the fixed lateral plate (111) is still present (without aperture), as also the stop plate (109), but the angle piece (112) is more enveloping, so that the restraining unit is an almost closed cage sufficient by itself to ensure holding and positioning of the sachet without the help of a suction cup.

In this position, the upper corner (105) of the sachet is disposed between the two articulated jaws (116, 117) of a sealing tongs (118), which also comprises an incorporated cutting tool (119).

The sealing and cutting off take place automatically as soon as the sachet is definitively positioned, for example under the influence of the suction cup (114) as shown in Fig. 3b.

/ Then the tongs

Then the tongs (118), suction cup (114), plate (109) and the plates (110, 112 respectively) are released or retracted, the sachet being disengaged by the conveyor belt at the same time as the next one is positioned.

The whole of the operations is, of course, carried out in a sequential and ordered manner, using pneumatic, mechanical or electrical devices within the reach of the person skilled in the art.

According to one embodiment, shown in Figure 4, the restraining unit is a rigid cage (120), into which the cushions fall.

The cage is integral in translatory movement with the conveyor belt (121).

In this device, the pinching and cutting off of the lower corners and of one of the upper corners are carried out while the cushion is in said cage.

When the sachet is finished, it is removed from the cage while the latter tilts at the position of the return roller of the conveyor belt.

Reference is now made to Figures 5 and 6, which show a device arranged upstream of the device of Figure 4.

This device, as indicated above, is composed basically of:

- a bascule (200),
- a retaining and releasing assembly (201),
- a chute (202).

The method of operation of the bascule will first be explained, This bascule is intended for feeding cushions to the cages which pass beneath it, each being intended for receiving one cushion.

When each cage appears beneath the bascule, a proximity detector, not shown, initiates tilting of the bascule about its axle (203), by means of a jack (204), the head (205) of which is connected to the frame (206), and the rod (207) of which is connected by a crank (208) to the axle (203). The extension or retraction of the rod of the jack therefore cause, respectively, the tilting or return into position of the bascule.

In order to ensure proper positioning of each cushion on the bascule, the latter may in addition comprise a chute-like profile (209), which will become a continuation of the chute (202), and a holding jaw (210), articulated on the body of the bascule about an axle (211). This jaw serves for holding the cushion on the bascule for as long

/ as possible,

as possible, so that the cushion falls as near as possible to the vertical. Opening of the jaw (210) is controlled by a roller, rotatably fixed to the bascule, the movement of which during tilting actuates a lever, which releases the jaw. The jaw is restored into position by a restoring spring (212), fixed at the one end to the jaw and at the other end to the bascule (200). The final position of the bascule (200') and of the jaw (210') at the instant of releasing the cushion have been shown in dotted lines.

It has been indicated above that the cushions come from a chute (202). Depending upon the nature of the products conditioned, the rates of handling required, and the size of the cushions, it is desirable for the chute to be equipped with a conventional slope-controlling device (213), composed essentially of an axle capable of occupying any positions in a curved aperture and capable of being fixed in any one of these positions.

Reference will now be made to Figure 6. Since the individual cushions arrive one after another through the chute (202), it is necessary to prevent the next cushion from striking against the bascule (200) while the latter tilts since, in addition to damage to the cushion resting on the chute, there would be a risk of entraining both cushions by the bascule, which must of course be prevented.

It is the objective of the assembly (201) to avoid such a situation.

The assembly (201) is composed basically of a double arm (214), articulated about an axle (215) which revolves in a mounting block (216) fixed to the frame.

Rotation of the double arm is governed by a lever (217), and an assembly of connecting rod (218) and crank (219).

The lever (217) is governed in rotation about its axis (220) on the one hand by a lug (221) integral with the bascule (200) and on the other hand by a restoring spring (222).

The method of operation is as follows. When a cushion has been loaded onto the bascule, the downstream arm (223) is lowered towards the chute and prevents passage of any cushion towards the bascule. As the bascule progressively pivots further to release its cushion, the double arm (214) also progressively pivots about its axis and it is the upstream arm (224) which blocks the descent of the cushions towards the bascule. When the bascule ascends, the front arm releases the cushion which it was holding and this cushion arrives on the bascule when it comes back into position.

To prevent any damage to the cushions, the ends of the arms (223, 224) will be protected by a flexible, rounded material.

/ Claims



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Claims

1. Device for the sealing (welding) and cutting off of at least one corner (105) of a sachet (104) of synthetic material, of the type produced from a cushion filled with liquid, in which device the sachet is disposed on a flat surface in a restraining unit (107) which assures positioning and holding of the sachet, said corner (105) being sealed by a sealing jaw (118) and cut off, characterized in that the device comprises:
- 5
- 10 - a conveyor belt (106, 121) operating in indexed manner and bringing the sachets to the restraining unit which holds and positions them, said restraining unit (107) being composed respectively of a lateral plate (108, 111), of a stop plate (109) and of a closure angle piece (110, 112), said cushions having been previously fitted with a
- 15 handle or stiffening element (102), said jaw (118) incorporating a cutting tool (119).
2. Device according to Claim 1, characterized in that the stop plate (109) is retractable and that the angle piece (110, 112) is articulated about an axis (113).
- 20 3. Device according to one of Claims 1 and 2, characterized in that it comprises, in addition, a suction cup (114) operating through the lateral plate (111) via an aperture (115), said suction cup being removable in translatory motion.

/ 4. Device



4. Device according to Claim 1, characterized in that the restraining unit is composed of a cage (120), integral in translatory movement with the conveyor belt (121), allowing the lower corners and the upper corner to be pinched and cut off simultaneously.
5. Device according to Claim 4, characterized in that it comprises a device for bringing and supplying cushions of flexible synthetic material, filled with liquid, upstream of a shaping unit for shaping said cushions into individual sachets each equipped with a handle, said cushions being brought by the slope of a chute towards a conveyor belt carrying cages integral in translatory movement with said belt, each cage being intended to receive one cushion for the purpose of its final shaping, and in that the device comprises, on the one hand, a bascule (200) at the end of the chute (202), said bascule (200) receiving, in succession, each cushion coming from the chute and being controlled in tilting for releasing the cushion which it supports while each cage of the conveyor belt passes vertically beneath the bascule, and, on the other hand, an assembly (201) permitting, in succession, each cushion to be retained and released individually on the chute before the cushions reach the bascule, said assembly being connected in control with the bascule in such a manner as to retain the following cushion when the bascule already contains a cushion and causes it to fall into the cage which is offered up and to release said cushion so that it is present on the bascule when the latter returns into position.

/ 6. Device



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6. Device according to Claim 5, characterized in that the tilting of the bascule (200) about its axis (203) is controlled by a proximity detector as each cage passes, which detector starts a ram (204), the rod (207) of which is connected by a crank (208) to the axis (203).
7. Device according to any one of Claims 5 and 6, characterized in that the bascule (200) comprises, in addition, a holding jaw (210), articulated on the body of the bascule about an axis (211).
8. Device according to Claim 7, characterized in that opening of the jaw (210) is controlled by a roller rotatably integral with the bascule, the movement of which roller during tilting actuates a lever which releases the jaw, said jaw being restored by a spring (212).
9. Device according to any one of Claims 5 to 8, characterized in that the chute comprises a slope adjustment device (213).
10. Device according to any one of Claims 5 to 9, characterized in that the assembly (201) is composed of a double arm (214) articulated about an axis (215), the rotation of said arm being governed by a lever (217) and a connecting rod (218)-crank (219) assembly, the lever being rotatably governed about its axis (220) on the one hand by a lug (221) integral with the bascule (200) and on the other hand by a restoring spring (222).
11. Device according to Claim 10, characterized in that the double arm (214) comprises an upstream arm (224) and a downstream arm (223), which can release or block the cushions descending down the chute.

/ 12. Device



12. Device according to any one of Claims 10 and 11, characterized in that the ends of the arms (223, 224) are rounded and protected by a flexible material.