A device and method for reinforcing a blister, including a transport mechanism for transporting the blister, and a centering mechanism that bring the blister into a particular position in the direction transverse to the travel direction of the transport mechanism. A gluing station applies an adhesive to the blister and/or to a card, with the card having at least one opening that is matched to the geometry of a pocket of the blister. An insertion device is provided that sets the card into place on the blister.
DEVICE AND METHOD FOR REINFORCING A BLISTER

BACKGROUND OF THE INVENTION

[0001] The invention is based on a device and method for reinforcing a blister, as generically defined by the preambles to the independent claims. A device for inserting a packaged good into packaging, in particular for inserting blister strips into folding cardboard boxes, is already known from EP 1389166 B1. After the blister has been inserted into the manufacturing of a conventional way. It is necessary, however, to modify this device if in lieu of a conventional folding cardboard box, a blister strip is to be stored in a so-called wallet pack—a folding cardboard box in the form of a billfold that can be folded open and then closed again. The blister to be stored must be attached to this packaging and is therefore subjected to greater mechanical stresses.

OBJECT AND SUMMARY OF THE INVENTION

[0002] The object of the present invention is to modify the species-defining device so that it permits the manufacture of a stable wallet pack. This object is attained by the defining characteristics of the independent claims.

[0003] The device and method according to the invention for reinforcing a blister have the advantage over the prior art that the blister is stabilized by placing a card onto it. This type of stabilization is also suitable for a better attachment of the packaged good to the wallet pack because the gluing of the card that covers the blister stabilizes the blister and holds it in position in the wallet. The centering means contribute to a very precise positioning of the blister. The card can be placed onto the blister so that the openings enclose the pockets in a uniform way. This also improves the visual appearance of the blister in the wallet pack.

[0004] In a suitable modification, the centering means are embodied to be adjustable to various blister geometries. It is thus possible to use the same device for different blister and pocket geometries.

[0005] In a suitable modification, at least one guide rail is used as a centering means and at least one latent edge of the blister or pocket that is parallel to the direction of travel is guided against this rail. This type of centering brings the blisters into an approximate position in a simple way. Another guide rail can be provided, which is oriented in the travel direction and cooperates with at least one pocket of the blister in order to center the blister. This guide rail, which preferably influences the central region of the blister, aligns the blister even more precisely since the card’s position must match exactly, in particular because the card is to cover over the pockets. This type of centering makes a further contribution to positioning precision.

[0006] In a suitable modification, a die is used as part of the insertion device and, with the aid of vacuum, places the card onto the blister. Thanks to the use of vacuum, it is also possible for different card sizes to be reliably picked up and inserted, without having to change the die.

[0007] In a suitable modification, the die presses the card against the blister. This makes it possible to more quickly produce a glued connection between the card and blister without having to provide an additional device for this.

[0008] Other suitable modifications ensue from additional dependent claims and the description.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The invention will be better understood and further objects and advantages thereof will become more apparent from the ensuing detailed description of a preferred embodiment, taken in conjunction with the drawings.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0010] FIG. 1 is a perspective view of the blister with the applied glue points,

[0011] FIG. 2 shows the card used to stabilize the blister,

[0012] FIG. 3 shows the blister stabilized with the card,

[0013] FIG. 4 shows the stabilized blister resting in the cups,

[0014] FIG. 5 is a perspective view of the packaged goods chain during its passage through the centering and the glue application,

[0015] FIG. 6 shows another view of the packaged goods chain, and

[0016] FIG. 7 is a perspective view, in particular of the insertion and pressing device.
are spaced apart from each other in the direction transverse to the travel direction 34, thus permitting the glue points 11 shown in FIG. 1 to be applied to the centered blister 10. It is also alternatively possible for the gluing heads 21 to apply glue lines. In the view according to FIG. 6, it is clear that the guide rails 23 situated the furthest apart from each other in the gluing station are situated between the cups 26 that constitute part of the packaged goods chain 24. The blister 10 has been previously counted into the packaged goods chain 24 by an insertion system as it travels in the travel direction 34. During the movement, the guide rails 23 guide the blister 10 along its pockets 12 and hold it in position for the glue application until before the card 14 is set into place. The centering means 23 and the position of the gluing heads 21 can be adjusted for different blister sizes. The gluing head 21 dispenses hot glue onto the horizontal blister 10 between the pockets 12 before it travels into the insertion and pressing device 27.

[0020] This insertion and pressing device 27 is shown in greater detail in FIG. 7. It includes a die 25 that can be moved in both the vertical direction and the direction transverse to the travel direction 34. The die 25 places the card 14 onto the blister 10 and in particular, presses the card 14 against the glue points 11. The card 14 is kept at the ready in a storage hopper, not shown, and the die picks it up from there by means of integrated suction cups, guides it into position, and presses it onto the blister 10. Instead of being driven by pneumatic cylinders, the die 25 of the insertion and pressing device 27 can also be driven by means of servo motors or a linear drive unit. For the sake of clarity, the drive means of the die 25 have not been shown.

[0021] The blister 10 shown in FIGS. 1 through 3, which has been stabilized by the card 14, is packed into a so-called wallet. This wallet is embodied in the form of a modified folding cardboard box and like a billfold, can be folded open and then closed again. It protects the blister 10 that is to be subsequently fastened into this folding cardboard box. The fastening can, for example, be carried out by folding in and gluing the cover tabs of the wallet onto the blister 10 or the card 14. In order to achieve the re closability of the wallet pack, an overlap region of the openable folding cardboard box is provided, which has an adhesive on it. In order to assure a greater stability of the wallet pack according to the invention, the blister 10 must then be covered with the card 14.

[0022] The corresponding device for reinforcing the blister is shown in greater detail in FIGS. 4 through 7. Essentially, the following method steps are carried out. The blister 10 is conveyed in the travel direction 34 by an insertion system, not shown in detail, of the packaged goods chain 24. The blister 10 is centered by the guide rails 23 functioning as centering means. This centering assures that glue points 11 can be applied and the card 14 can be set into place, both in a precisely positioned fashion. The centered blister 10 is brought into the working region of a gluing station that includes, for example, two gluing heads 21. Then at least one glue point 11 or a glue line is applied to the centered blister 10 on the side of the blister 10 from which the pockets 12 protrude. The packaged goods chain 24 moves the centered blister 10 to which the glue points 11 have been applied into the working region of the insertion and pressing device 27. The insertion and pressing device 27 includes a die 25 that performs the functions of card guidance, placement of the card 14 onto the blister 10, and pressing of the card 14 onto the glue points 11 of the blister 10. It is also possible to omit the pressing step. It is essential, however, to place the card 14 onto the blister 10 in order to form a stabilizing attachment to it by means of the glue points 11. The insertion device 27 is supplied with cards 14 stored in a storage hopper; the die 25 picks up the waiting card 14 by vacuum suction and places it onto the waiting blister 10. The card 14 is positioned so that its openings 13 fit over the pockets 12 of the blister 10. In a subsequent step, the blister 10, which has been stabilized by the card 14, is moved out of the working region of the insertion and pressing device 27 through a further movement of the packaged goods chain 24 in the travel direction 34.

[0023] The insertion device 27 can be used in both a cyclically operating and continuously operating machine, preferably a boxing machine. In a continuously operating boxing machine, the insertion station 27 is then operated as it travels along with the motion. The insertion device 27 is generally used to assemble the blister 10 and the card 14. This can occur—as described here—by means of the insertion device 27 picking up the card 14 and placing it onto the blister 10. Another possibility would be picking up the blister 10 and placing it onto the waiting card 14.

[0024] Various devices can be used to apply an adhesive substance to the blister 10 and/or the card 14. Suitable adhesive means including a double-stick adhesive tape or adhesive film, which the device unrolls, applies to the blister 10 or card 14, and then cuts to length. The adhesive means can be applied to either the blister 10 or the card 14. In the device shown, the glue is applied for example to the blister 10.

[0025] The device for reinforcing a blister features particularly high flexibility. It is necessary to assure that it is possible to work with different blister sizes A, B. To this end, the guide rails 23 that function as centering means, are embodied as adjustable. In particular, they can be moved transverse to the travel direction 34. As a result, they are easy to adapt to various external dimensions of the blister 10 and different sizes of the pockets 12. For example, the front guide rails 23 permit adaptation to the outer dimension while the subsequent two guide rails 23 are to be brought into line with the respective spacing of the pockets 12 and consequently the pocket geometry. The cooperation of cups 26 of the packaged goods chain 24 with the guide rails 23, in particular the arrangement of the guide rails 23 between the cups 26, makes the arrangement very flexible in terms of format. The cups 26 can be moved in relation to each other in the travel direction 34, thus making it possible to easily adopt the packaged goods chain 24 to blisters 10 of various widths A. As a rule, at least one pocket 12 comes to rest in the interstice between two cups 26 spaced apart from each other transverse to the travel direction 34, the edge of which cup can be used for centering purposes by at least one guide rail 23. Alternatively, a centering of the card 14 could also be carried out, for example, by means of guide rails. It is essential that the blister 10 and card 14 reach a definite, exact position before they are assembled.

[0026] The gluing heads 21 are also embodied as movable. Consequently, the glue points 11 can be applied to the suitable locations as a function of the respective blister dimension. The gluing heads 21 can in particular be moved in a direction transverse to the travel direction 34 of the packaged goods chain 24. The insertion and pressing device 27 is also correspondingly designed to permit it to work with different card sizes. Particularly with the use of vacuum for transporting the card 14 from the storage hopper to the blister 10, this device can potentially work with several card sizes 14 so that it is not absolutely necessary to change the die 25.
In a subsequent operation that is not shown, the blister 10 stabilized with the card 14 is inserted into a wallet-style folding cardboard box; covering tabs attached to the side of the wallet-style folding cardboard box are folded into the inside of the wallet-style folding cardboard box and—likewise provided with glue—are attached to the card 14 of the stabilized blister 10. The use of the stabilized blister 10 is in fact preferably suited for accommodation in a wallet pack, but it can also be used just as well with other types of packaging. The foregoing relates to a preferred exemplary embodiment of the invention, it being understood that other variants and embodiments thereof are possible within the spirit and scope of the invention, the latter being defined by the appended claims.

1-11. (canceled)

12. A device for reinforcing a blister with a card, comprising:
   centering means for positioning the blister and/or a card into a particular position;
   adhesive applying means for applying an adhesive to the blister and/or card, the card being provided with at least one opening which has a complementary geometry to at least one pocket provided on the blister, and at least one insertion device that assembles the card with the blister.

13. The device as recited in claim 12, wherein the centering means are embodied as adjustable to accommodate different blister geometries.

14. The device as recited in claim 12, wherein at least one guide rail is used as a centering means.

15. The device as recited in claim 13, wherein at least one guide rail is used as a centering means.

16. The device as recited in claim 12, wherein at least one guide rail is provided on which at least one lateral edge of the blister is guided.

17. The device as recited in claim 13, wherein at least one guide rail is provided on which at least one lateral edge of the blister is guided.

18. The device as recited in claim 14, wherein at least one guide rail is provided on which at least one lateral edge of the blister is guided.

19. The device as recited in claim 11, wherein at least one guide rail is provided that cooperates with at least one pocket of the blister in order to center the blister.

20. The device as recited in claim 13, wherein at least one guide rail is provided that cooperates with at least one pocket of the blister in order to center the blister.

21. The device as recited in claim 14, wherein at least one guide rail is provided that cooperates with at least one pocket of the blister in order to center the blister.

22. The device as recited in claim 12, wherein a die is used as part of the insertion device and, with the aid of vacuum, the die places the card onto the blister.

23. The device as recited in claim 13, wherein a die is used as part of the insertion device and, with the aid of vacuum, the die places the card onto the blister.

24. The device as recited in claim 22, wherein the die presses the card against the blister.

25. A method for reinforcing a blister with a card, the card being provided with at least one opening that has a complementary geometry to at least one pocket of the blister, comprising the steps of:
   centering of the blister and/or card into a position for assembly of the blister and the card; and
   assembling of the blister and card so that at least one opening of the card encompasses at least one pocket of the blister.

26. The method as recited in claim 25, further comprising the step of, before assembling of the blister and card, placing an adhesive such as at least one glue point, a glue line, or an adhesive strip onto the blister and/or card.

27. The method as recited in claim 25, further comprising pressing of the blister and/or the card.

28. The method as recited in claim 26, further comprising pressing of the blister and/or the card.

29. The method as recited in claim 25, wherein a die assembles the blister and card through an application of vacuum.

30. The method as recited in claim 26, wherein a die assembles the blister and card through an application of vacuum.

31. The method as recited in claim 28, wherein a die assembles the blister and card through an application of vacuum.

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