The invention relates to a film bag with two front faces (1, 1'), side folds (2) which are inserted between the front faces in a V-shaped manner, and a resealable closure (3) in a top opening in the bag, comprising two profiled strips (4, 4') and a slide (5). The film layers of the bag which rest one on the other are connected to transverse and longitudinal sealed seams at the bottom and along the edges of the side folds (2), with the longitudinal sealed seams (6) which run along the side folds extending from the bottom to the upper edge (7) of the bag. The resealable closure (3), including its slide (5), is arranged at a distance from the upper bag edge (7) inside the bag. At least one front face (1') of the bag contains a punched-out area (8) for the slide (5) which is matched to the dimensions of the slide (5) and in which the slide (5) is positioned before the bag is used for the first time. The invention also relates to a method for producing the described film bag.
FILM BAG AND METHOD FOR PRODUCING IT

[0001] The invention relates to a film bag with two front faces, side folds inserted between the front faces in a V-shaped manner, and a resealable closure in a top opening of the bag comprising two profiled strips and a slide joining the profiled strips, wherein one of the profiled strips is connected to a front face and the other profiled strip after a filling of the bag can be connected to the other front face, wherein the film layers of the bag which rest one on the other of the bag are connected to transverse and longitudinal sealed seams at the bottom and along the edges of the side folds and wherein the longitudinal sealed seams which run along the side folds extend from the bottom to the upper edge of the bag. The film bag which lies flat at first is filled with the filling material in bag filling facilities. The filling takes place at the top of the bag. The filling material is introduced in an opening which is still present between the resealable closure and a front face of the film bag. Subsequently, this opening is sealed by a sealed seam. Film bags with the described features are used, among others, for the packaging of animal feed.

[0005] A film bag with the described features is known from DE 202 07 333 U1. The slide of the resealable closure overlaps the seal edges rider-like and projects at the top side of the bag. The profile strips are connected to each other at their end facing the slide and form an originality seal which can be torn open at the first use of the film bag. Disadvantageous is that from the outside it is not clear whether the originality seal is still undamaged. Furthermore, there is a danger that the projecting slide catches on obstacles during transport of the bag and during handling in the trade and thereby moves unchecked. The production of the film bag is also complicated. Following the bag manufacture, resealable closures are applied in a downstream facility. For this purpose a film section of the film bag already manufactured is opened at the top section of the bag, a resealable closure is placed on the film sheet lying underneath and connected to it. Subsequently, the opened film section is folded back and the sealed seams which are still missing are applied. For the application of the resealable closures existing equipment for the manufacture of film bags have to be enlarged by an additional facility for applying the resealable closures. The additional facility for applying the resealable closures is complicated and requires considerable space. In this respect there is also a need to integrate the application of resealable closures in the usual bag manufacturing method.

[0006] Against this background the object of the invention is to provide a film bag having a slide closure which is arranged covered and which is simple to manufacture. Further, a method is provided in which the application of the resealable closure is carried out during the continuous forward run of a planar film web before the manufacture of the bag.

[0007] Departing from a film bag with the features described in the above, the object of the invention is solved in that the resealable closure including its slide are arranged at a distance to the upper bag edge inside the bag and that at least one front face of the bag contains a punched-out area for the slide which is matched to the dimension of the slide in which the slide is positioned before the bag is used for the first time. According to the invention, the resealable closure which is arranged in the top opening of the film bag covered wherein the slide remains visible through the slide. For the consumer it is immediately recognizable from the outside that the bag is provided with a slide closure and the slide closure is properly closed. Furthermore, the slide punch-out fulfills an important function in the manufacture of the film bag. The slide punch-out which is matched to the dimension of the slide and encloses it, enables an application of the resealable closure on a planar film web before the latter runs through folding stations in which the film web is folded and the side folds are formed. The slide punch-out sits exactly at the position of the slide and prevents a shifting of the resealable closure during the web run over guiding trays of the folding stations against the direction of movement of the film.

[0008] The front sides of the film bag have a strip-shaped section which covers the resealable closure at the upper end of the bag which can be torn off in accordance with a preferred embodiment of the invention along a perforation line arranged approximately at the level of the slide or underneath the slide. Punching lines extending through the longitudinal sealed seams up to the outer edges of the bag suitably join at the ends of the perforation line. The strip can be completely removed as a waste strip in a simple way from the film bag in the embodiment described when a film bag is used for the first time. In order to facilitate the detachment of the strip, it is advantageous to have the side fold end underneath the perforation line.

[0009] The waste strip, which can be torn off along the perforation line, can also fulfill the function of an originality seal when the double-layered strip is sealed at its upper edge with a transverse sealed seam after the filling of the film bag. At the first use of the film bag, the upper side strip has to be detached in which the resealable closure is exposed at the upper edge of the film bag. If the transverse sealed seam of the strip is not damaged, it is thusly ensured that the film bag has not been opened.

[0010] Within the context of the invention is that before the filling of the bag the profiled strip is connected only to the front face over its entire length and extends into the region of the side folds. In this embodiment the bag can be completely open at its upper side for filling. An alternative embodiment provides that the profiled strip connected to the front face is placed over the side folds and is connected with these before a filling of the bag. In this embodiment, the bag filling opening is somewhat smaller.

[0011] The subject matter of the invention is also a method for manufacturing the described film bag. The method according to the invention comprises the following method steps:

[0012] a) slide punch-outs are applied to a flat foil web;

[0013] b) resealable closures consisting of two profiled strips which rest one on the other and connected to each other as well as a slide which overlaps the sealed edges of the profiled strips in a rider-like manner are placed on the planar film web transversely to the direction of the web in such a way that the slides lie inside the slide punch-outs, and are joined to the film web at the ends;

[0014] c) subsequently the film web is guided through folding stations in which the film web is folded and the side folds are formed;

[0015] d) the film layers of the film web which rest one on the other are connected by sealed seams, wherein
with transverse sealed seams the bottom of the bags are formed transverse to the direction of the web and the resealable closures are connected with a front face of the bags and wherein along the side folds longitudinal sealed seams are applied in the longitudinal direction of the web which extend from the bottom to the upper edge of the bag;

[0016] e) bags are separated from the bag run formed in the method step d)

[0017] The invention is based on the consideration of applying resealable closures on the planar film web before the film web runs through the folding stations in which it is folded and the side folds are formed. The application of the resealable closures according to the invention can be integrated especially in present manufacturing systems. The method according to the invention makes use of punching means and folding apparatus already present. Therefore the technical problem has to be solved, however, that the resealable closures can shift during the transport of film web through the system, in particular, in the folding apparatus since the resealable closures at first are only connected to the film web at their ends. An opening has to remain between the perforated strips of the resealable closures and the film web so that the bag can be pulled at the top end. Only after the bag is filled is this opening closed by the sealing of the perforated strips to the front face of the film bag. The technical problem described is solved according to the invention through method step b). In accordance with the invention, slide punch-outs are introduced which lie exactly at the position of the slide and prevent a shifting of the resealable closures and the slide against the run direction of the film during the run of the web through the bag production system, in particular, also during the run of the web over the guiding trays of the folding stations. The slides are fixed to some extent in the associated slide punch-outs. The slide punch-outs are round holes in the simplest case whose diameter is adapted to the geometry of the slide.

[0018] According to a preferred embodiment of the invention, in zones of the planar film web from which the side folds are formed window-shaped openings are punched which define the upper end of the side folds of the bag. Advantageously, perforation lines are punched in further in the planar film web transverse to the longitudinal direction of the web which are arranged at the level of the window-shaped openings and in the bag run respectively define a strip-shaped section projecting over the slide of the resealable closures up to the bottom sealed seam of the adjacent bag. The strip can be used as an origami seal. Before the first use of a bag, the strip is torn off in whereby the slide is exposed. The window-shaped openings as well as the perforation lines are introduced in the planar film web before this runs through the folding stations in which it is folded and the side folds are formed. In this connection, the technical problem exists that the film web can tear in the folding stations at the perforation lines and at the window-shaped openings can tear when the forming tools engage in the perforation or in punch-outs and the film web catches on the tools. This problem can be solved in a surprisingly simple manner in that the perforation lines extend substantially over the web width, however, with the provision that between the perforation and the window-shaped openings, respectively a 5 mm to 50 mm wide, non-perforated film area remains. The film web is guided in the folding stations such that the edges of the folding tools do not abut against the non-perforated film regions between the perforation and the window-shaped openings. The folding over of the film web to a tubular web takes place by using triangular folding trays. When the window-shaped openings are guided concentrically over the triangular trays, surprisingly they do not catch on the trays.

[0019] Subsequently, punching cuts can also be introduced in the longitudinal sealed seams which join at the perforation lines.

[0020] In the following, the invention will be explained on the basis of a drawing illustrating only one embodiment. The figures show schematically:

[0021] FIG. 1 a flattened film bag,
[0022] FIG. 2 shows the film bag in FIG. 1 after its filling,
[0023] FIG. 3 shows a method for producing the flattened film bag illustrated in FIG. 1,
[0024] FIG. 4 shows a flat film web with the punch-outs according to the invention introduced before the film web runs through the folding stations and the sealing stations.

[0025] The film bag illustrated in FIG. 1 has two front faces 1, 1' side folds 2 which are inserted between the front faces in a V-shaped manner and a resealable closure 3 in a top opening in the bag. The resealable closure 3 comprises two perforated strips 4, 4' and a slide 5 joining the perforated strips. One of the perforated strips 4 is connected to a front face 1. The other perforated strip 4 can be connected to the other front face 1' after a filling of the bag. The film layers of the bag which rest one on top of the other are connected by transverse and longitudinal sealed seams at the bottom and along the edges of the side fold 2, wherein the longitudinal sealed seams 6 run along the side folds 2 extending from the bottom to the upper edge of the bag. The resealable closure 3 including its slide 5 is arranged at a distance from the upper bag edge 7 inside the bag. A front face 1' of the bag contains a slide punch-cut 8 matched to the dimension of the slide 5 in which the slide 5 is positioned before the bag is used for the first time.

[0026] The front faces 1, 1' have a strip-shaped section 9 covering the resealable closure 3 at the upper end of the bag which can be torn off along a perforation line 10 arranged approximately at the level of the slide 5 or below the slide. Punching lines join at the end of perforation line 10 which extend through the longitudinal seal seams 6 up to the outer edges of the bag. The side folds 2 end below the perforation line 10. The strip-shaped section 9 can be separated along the perforation line 10 and the joining punching lines 11 of the film bag. The resealable closure 3 is thereby exposed.

[0027] The film bags represented in FIG. 1 are used, for example, for packaging animal feed. The filling is carried out at the top of the bag. The filling is introduced in an opening which is still present between the resealable closure 3 and a front face 1' of the film bag. Afterwards this opening is sealed by a sealed seam. In addition, the upper edge of the strip-shaped section 9 which is torn off at the first use of the film bag is sealed as an origami seal. The sealing is carried out with a transverse sealed seam 12 which connects the film layers. In the bag filling system the bottom of the film bag is folded again to a flat bottom standing bag. FIG. 2 shows the filled flat bottom standing bag.

[0028] The method for producing the flattened film bag illustrated in FIG. 1 is represented schematically in FIG. 3. In a planar film web 13 slide punch-outs 8 are introduced. On the film web 13 provided with slide punch-outs 8, resealable closures 3 consisting of two perforated strips 4, 4' which rest one on the other and connected with one another as well as a slide 5 which overlaps the closure edges of the perforated strips 4, 4' in rider-like manner are placed transverse to the web direction
in such a way that the slide 5 lies in the slide punch-outs 8. The profiled strips 4, 4' are connected only at the ends with the film web 13. Subsequently, the film web 13 runs through the folding stations in which the film web 13 is folded to a tube and the side folds 2 are formed. In the sealing station 15, the film layers which rest one on the other are connected by sealing seams 6, 16, 16', in which the bottom of the bags are formed with transverse sealed seams 16, 16' transverse to the web direction and the resealable closures are connected to a front face 1 of the bags and were in along the side folds 2 longitudinal sealed seams 6 are applied in the longitudinal direction of the web which extend from the bottom up to the upper edge 7 of the bag. In this manner a bag run 17 of bags ensues which are connected together at the bottom side, respectively, top side end. The bags are finally separated from the bag run 17.

It is particularly clear from FIG. 4 that in zones 18 of the planar film web 13 from which the side folds 2 are formed, window-shaped openings 19 are punched out which define the upper end of the bag side folds. In addition, the perforations lines 10 are punched in which are arranged at the level of the window-shaped openings 19 and in the bag run 17 respectively define a transverse strip and/or strip-shaped section 9, which projects over the slide 5 of the resealable closure 3 up to the bottom sealed seam 16 of the adjacent bag. It is inferred from FIG. 4 that the perforation line 10 extends over the web width provided that between the ends of the perforation and the window-shaped openings 19, respectively, a 5 mm to 50 mm wide non-perforated film region 20 remains. The non-perforated film region 20 between the perforation and the window-shaped openings 19 prevents that the film web 13 tears in the folding station 14. In the longitudinal sealed seams 6 punching cuts and/or punching lines 11 are applied which join at the perforation lines 10.

In the exemplary embodiment illustrated in FIG. 1, the profiled strip 4 connected with the front face 1 is placed over the side folds 2 before a filling of the bag and connected with these. Within the context of the invention is also that before a filling of the bag the profiled strip 4 is connected only with the front face 1 over its entire length and extends up to the area of the side folds 2.

1. A film bag with two front faces (1, 1'), side folds (2) which are inserted between the front faces in a V-shaped manner, and a resealable closure (3) in a top opening in the bag, comprising two profiled strips (4, 4') and a slide (5) joining said profile strips, wherein one of said profiled strips (4) is connected to a front face (1) and the other profiled strip (4') after a filling of the bag can be connected to said other front face (1'), wherein the film layers of the bag which rest one on top of the other are connected to transverse and longitudinal sealed seams at the bottom side and along the edges of said side folds (2) and wherein the longitudinal sealed seams running along said side folds (2) extend from the bottom to the upper edge (7) of the bag, wherein said resealable closure (3) including its slide (5) is arranged at a distance from the upper edge (7) inside the bag and that at least one front face (1') of said bag contains a punched out area (8) for the slide which is matched to the dimensions of said slide (5), in which said slide (5) is positioned before the use of the bag for the first time.

2. The film bag according to claim 1, wherein said front faces (1, 1') have a strip-shaped section (9) at the upper end of said bag covering said resealable closure (3), which can be torn off along a perforation line (10) arranged at the level of slide (5) or below said slide.

3. The film bag according to claim 2, wherein punching lines (11) which extend through said longitudinal sealed seams (6) to the outer edges of said bag join at the ends of said perforation lines (10).

4. The film bag according to claim 2, wherein side folds (2) end below said perforation line (10).

5. The film bag according to claim 1, wherein said profiled strip (4) connected to said front face (1) before a filling of the bag is connected on its entire length only to said front face (1) and extends into the region of said side folds (2).

6. The film bag according to claim 1, wherein said profiled strip (4) connected to said front face (1) is placed over said side folds (2) and connected with these before a filling of a bag.

7. The method for producing film bags according to claim 1, comprising the following method steps:
   a) in a planar film web (13) slide punch outs (8) are introduced;
   b) resealable closures (3) consisting of two profiled strips (4, 4') resting one on the other and connected to each other as well as a slide (5), which overlaps the sealing ends of said profiled strips (4, 4') in a rider-like manner, are disposed transverse to the web direction such on the planer film web (13) that the slide (5) lies in said slide punch-out (8), and are connected at the ends to said film web (13);
   c) said film web (13) is guided through folding stations (14) in which said film web (13) is folded and side folds (2) are formed;
   d) the film layers which rest one on the other are connected by sealed seams (6, 16, 16'), wherein the bottom of the bags formed with transverse sealed seams (16, 16') transverse to the web direction and said resealable closures (3) are connected with a front face (1) of the bags and wherein said side folds (2) longitudinal sealed seams (6) are applied in the longitudinal direction of the web, which extend from the bottom to the upper edge (7) of the bags;
   e) bags are separated from the bag run (17) formed in the method step d).

8. The method according to claim 7, wherein window-shaped openings (19) which define the upper end of said bag folds (2) are punched out in zones (18) of said planar film web (13) from which said side folds (2) are formed.

9. The method according to claim 8, wherein in said film web (13) transverse to the longitudinal direction of the web, perforation lines (10) are punched which are arranged at the level of said window-shaped openings (19) and which define in said bag run (17), respectively, a strip-shaped section (9) which projects over said slide (5) of said resealable closure (3) up to said bottom sealed seam (16) of the adjacent bag, wherein said perforation lines extend over the width of the web provided that a 5 mm to 50 mm wide, non-perforated film region (20) remains, respectively, between the perforation and said window-shaped openings.

10. The method according to claim 9, wherein in the longitudinal sealed seams (6), punched cuts (11) are introduced which join at said perforation line (10).

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