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(54) Opening device for a package for pourable food products, and package including the same

(57) A reclosable opening device (4) for a pourable food product package (1) comprising a frame portion (5) defining a pouring opening (6) delimited by an edge (26) and a lid (8) hinged to the frame portion (5) and provided with a pair of projections (34) designed to contact respective protrusions (28) of the edge (26) of the frame portion (5) to keep the lid (8) open; the projections (34) of the lid (8) extend perpendicularly from the lid (8) and include a first portion (35) designed to be located between the respective protrusions (28) of the edge (26) and the hinge axis (A) in a closed position of the lid (8) and interfering with the first portion (28) of the edge (26) in an open position of the lid (8).

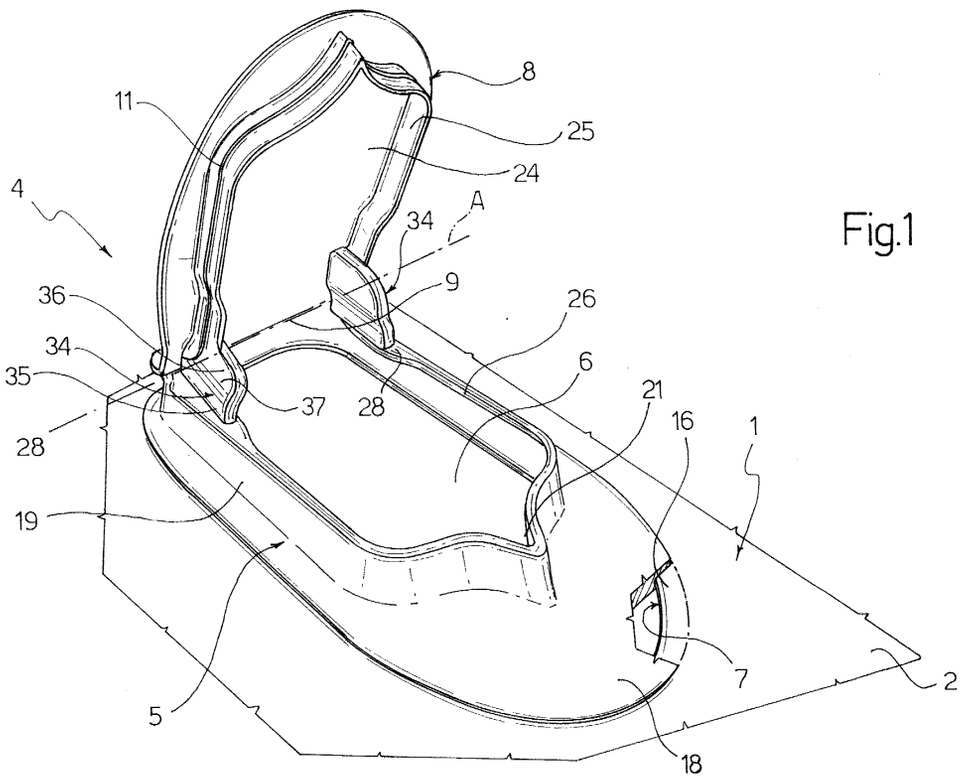

Fig.1

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Description

[0001] The present invention relates to an opening device for a package for pourable food products, as well as to a food product package including such an opening device.

[0002] Many pourable food products, such as fruit juice, milk, wine, tomato sauce, etc., are sold in packages made of laminated packaging material.

[0003] A typical example of such a package is the parallelepipedal package for liquid or pourable food products known as Tetra Brik Aseptic (registered trademark), which is formed by folding and sealing laminated web packaging material. The laminated packaging material comprises a layer of fibrous material, e.g. paper, covered on both sides with thermoplastic material, e.g. polyethylene. In the case of aseptic packages for long-store products such as UHT milk, the packaging material also includes a layer of barrier material, such as an aluminium foil, which in turn is covered with a layer of thermoplastic material defining the inner surface of the package actually contacting the food product.

[0004] As is known, such packages are produced on fully automatic packaging machines, in which a continuous tube is formed from the web packaging material. The web of packaging material is sterilized, and then fed to a forming unit where it is longitudinally folded and sealed to form a tube. The tube is then filled with the food product, and is sealed by pairs of jaws and then cut at equally spaced transverse bands to form pillow packets, which are subsequently folded mechanically to form the finished, e.g. parallelepipedal, packages.

[0005] Alternatively, the packaging material may be cut into blanks, which are formed on forming mandrels to make the packages. Such packages are then filled with the food product and sealed. One example of this type of package is the so-called "gable-top package" known as Tetra Rex (registered trademark).

[0006] Reclosable opening devices for packages of the above types are known, which include a frame portion defining a pouring opening and adapted to be fitted to a hole or a punch-through or pull-off portion in a wall of the package, and a lid hinged to the frame portion. The lid is moulded integrally with the frame portion, and is originally sealed to the same along a peripheral edge extending around the opening, by a thin, breakable annular connecting portion. Once unsealed, the lid is movable between a closed position in which it cooperates in a fluidtight manner with the frame portion, and an open position.

[0007] Opening devices are known in which the lid is provided with means for keeping the same open at a given minimum angle with respect to the frame, so that the lid does not interfere with the food product as this is poured through the pouring aperture.

[0008] According to US-A-5 791 508, said means for keeping the lid open are defined by a couple of lateral projections of the lid, which extend from the lid towards the inside of the package and are inclined outwards, so as to rest against a peripheral edge of the pouring aperture.

[0009] Though simple and in many aspects advantageous, the above solution still leaves room for improvement. In fact, the inclined projections are critical to manufacture because either highly complex and costly moulding tools are used, or the projections are elastically deformed during extraction from the mould, which may cause the projection (34) to stick to the mould walls.

[0010] Furthermore, when the lid is closed, such projections rest permanently against the pouring aperture edge, which is thereby elastically deformed; this increases the manual force required to close the lid, and generates an elastic force which acts permanently on the closed lid in the opening direction, which force might cause an unwanted opening of the lid.

[0011] Other solutions are known in which the edge of the pouring aperture is more rigid than the projections, so that the latter are highly deformed during closure of the lid in order to bend inwards to overcome the edge and flip back beyond the edge at the inside. According to this solution, the projection are subjected to repeated flexure and constitute a weak part which may break, be permanently deformed or not work properly.

[0012] It is an object of the present invention to provide a reclosable opening device for pourable food product packages, designed to eliminate the aforementioned drawbacks associated with known opening devices.

[0013] According to the present invention, there is provided a reclosable opening device for a pourable food product package made from a sheet packaging material, and comprising a frame portion designed to be fitted to said packaging material at a hole or removable portion thereof and defining a pouring opening surrounded by an edge of said frame portion, and a lid hinged to said frame portion for rotation about a hinge axis, said lid including at least one projection extending from a side thereof facing said opening, said projection contacting a first portion of said edge of said frame portion to keep said lid open, characterised in that said projection of said lid extends from said lid perpendicularly and includes a first portion designed to be located between said first portion of said edge and said hinge axis in a closed position of said lid and interfering with said first portion of said edge in an open position of said lid.

[0014] The present invention also relates to a package for pourable food products made from sheet packaging material and comprising a reclosable opening device as above defined.

[0015] A preferred non-limiting embodiment of the present invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of a reclosable opening device in accordance with the present invention, in an open position, and applied to a wall of a package for pourable food products;

Figure 2 shows a lateral view of the opening device of figure 1; and

Figure 3 is a bottom plan view of the opening device in a closed position.

[0016] Numeral 1 in Figure 1 indicates a package for pourable food products, of which a top wall 2 only is shown.

[0017] Package 1 is made from a packaging material 3 having a multilayer structure (not shown), and comprises a layer of fibrous material, normally paper, covered on both sides with respective layers of thermoplastic material, e.g. polyethylene. The side of the packaging material eventually contacting the food product in package 1 may also have a layer of barrier material, e.g. aluminium, in turn covered with one or more layers of thermoplastic material.

[0018] Package 1 is provided with a reclosable opening device 4 on top wall 2. With reference to Figures 2 and 3, too, opening device 4 comprises a frame portion 5 defining a pouring opening 6 by which to pour out the food product contained in package 1, and fitted to wall 2 at a hole 7 thereof (figure 2) ; and a lid 8 connected to frame portion 5 by a hinge 9 defining a hinge axis A.

[0019] Lid 8 is moulded integrally with frame portion 5. Opening device 4 is preferably formed by injecting plastic material through hole 7 and between two mould elements (not shown) cooperating with each other on opposite sides of packaging material 3, so that frame portion 5 embeds an edge 16 of hole 7 and forms an annular, internal flange 17 and an annular, external flange 18 which rest on respective faces of wall 2 thereby preventing opening device 4 to be removed from hole 7. Frame portion further includes a raised, annular neck 19 extending from external flange 18 and delimiting pouring opening 6.

[0020] Lid 8 comprises a flat, substantially oval main portion 24, which is connected to frame portion 5 by hinge 9; and a raised, substantially U shaped sealing lip 25 extending from the ends of hinge 9 and projecting from main portion 24 for engagement with neck 19. Lid 8 is originally sealed to an internal edge 26 of neck 19 of frame portion 5 surrounding opening 6 by a thin breakable rib 11 (Figures 1 and 2) extending along a peripheral line around lip 25, and which is broken when the lid is unsealed.

[0021] Neck 19 of frame portion 5 and lip 25 of lid 8 are conveniently so shaped as to define a V shaped pouring beak 21.

[0022] Once unsealed, lid 8 is movable between an open position (Figures 1 and 2) and a closed position (fig 3), in which lip 25 of lid 8 is retained in fluid-tight manner inside neck 19 of frame portion 5 by rib 11 snapping beyond edge 26.

[0023] Frame portion 5 includes a pair of symmetrical internal protrusions 28 extending from edge 26 towards a median plane π of opening device 4 perpendicular to hinge axis A (figure 3). Protrusions 28 are located along edge 26 at a short distance from hinge axis A and, according to a preferred embodiment, have a trapezoidal shape; in particular, each protrusion 28 has a head 29 parallel to plane π and a flank 30 gradually sloping from head 29 to a recessed (i.e. farther than head 29 from plane π) portion 33 of edge 26 closer to hinge axis A.

[0024] Lid 8 includes a pair of symmetrical projections 34 which extend from respective end portions of lip 25 close to hinge axis A in a direction perpendicular to flange 24 of lid 8. Projections 34 have an elongated cross-section in a direction substantially parallel to plane π, and are flex-shaped so as to have a variable distance from plane π. More particularly, projections 34 include a first portion 35 adjacent to hinge axis 9 and having a maximum distance from plane π which is greater than the minimum distance of head 29 of protrusions 28 of edge 26 from plane π, a second portion 36 farther from hinge axis 9 and having a maximum distance from plane π which is less than said distance of head 29, and an intermediate portion 37 defining an inflexion area. As can be seen from figure 3, the shape of projections 34 is such that, when lid 8 is closed, projections 34 are housed within pouring aperture 6, with second portions 36 closely facing respective heads 29 of protrusions 28, intermediate portions 37 facing flanks 30 of protrusions 28, and first portions 35 facing portions 33 of edge 26.

[0025] In use, when lid 8 is opened, projections 34 slightly flex inwards, essentially due to contact between flanks 30 and intermediate portions 37, and then elastically recover their undeformed configuration beyond protrusions 28. Lid 8 is kept open (figures 1 and 2) by projections 34 which, in the open position of the cap, extend forward and have their first portions 35 interfering with and resting on respective protrusions 28 of frame portion 5.

[0026] In order to close lid 8, a manual pressure must be applied, which makes protrusions 28 bend downwards and possibly protrusions 34 slightly bend inwards, so that first portions 35 can overcome protrusions 28 downwards. When lid 8 is closed, the position of figure 3 is again reached, in which no interference between projections 34 and 28 exists.

[0027] The advantages of opening device 4 according to the present invention will be clear from the foregoing description.

[0028] In particular, projections 34 extend from lid 8 perpendicularly; therefore, no need for complex moulding tools arise, and projections 34 are not deformed during extraction from moulding tools.

[0029] Furthermore, when lid is in the closed position no substantial interaction between projection 34 and frame portion 15, and only very slight deformation of projection 34 occurs during closure and opening of lid 8, so that projections 34 do not constitute a delicate part of the opening device and do not cause any reliability problem.

[0030] Clearly, changes may be made to opening device 4 as described and illustrated herein without, how-

ever, departing from the scope of the accompanying Claims.

Claims

1. A reclosable opening device (4) for a pourable food product package (1) made from a sheet packaging material (3), and comprising a frame portion (5) designed to be fitted to said packaging material (3) at a hole (7) or removable portion thereof and defining a pouring opening (6) surrounded by an edge (26) of said frame portion (5), and a lid (8) hinged to said frame portion (5) for rotation about a hinge axis (A), said lid (8) including at least one projection (34) extending from a side thereof facing said pouring opening (6), said projection (34) contacting a first portion (28) of said edge (26) of said frame portion (5) to keep said lid (8) open, **characterised in that** said projection (34) of said lid (8) extends from said lid (8) perpendicularly and includes a first portion (35) designed to be located between said first portion (28) of said edge (26) and said hinge axis (A) in a closed position of said lid (8) and interfering with said first portion (28) of said edge (26) in an open position of said lid (8).

2. A device as claimed in claim 1, **characterised in that** said edge is an internal edge (26) of said frame portion (5) delimiting said pouring opening (6), said first portion (28) of said edge (26) protruding towards a median plane (π) of said pouring opening (6) perpendicular to said hinge axis (A) with respect to a second portion (33) of said edge (26) which is closer to said hinge axis (A) than said first portion (28) of said edge (26), said projection (34) being housed in said pouring opening (6) with said frame portion (35) of said projection (34) facing said second portion (33) of said edge (26) in the closed position of said lid (8).

3. A device as claimed in claim 2, **characterised in that** said projection (34) of said lid (8) has a cross-section elongated in a direction generally transversal to said hinge axis (A), and further includes a second portion (36) farther from said hinge axis (A) than said first portion (35) of said projection (34) and designed to be housed in said pouring opening (6) facing said first portion (28) of said edge (26) in said closed position of said lid (8), said first portion (35) of said projection (34) having a maximum distance from said median plane (π) greater than a minimum distance of said first portion (28) of said edge (26) from said median plane (π).

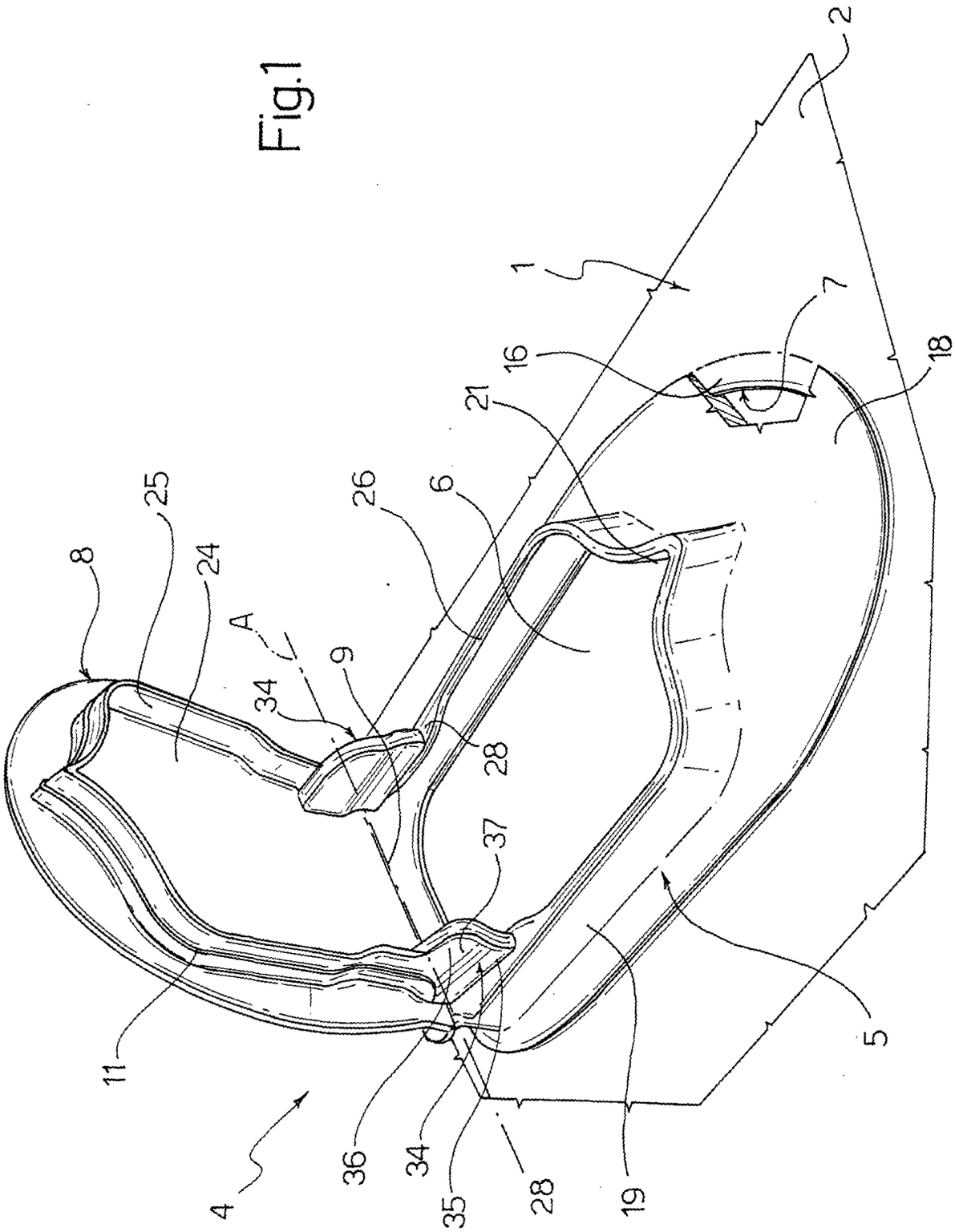
4. A device as claimed in any of the foregoing claims, **characterised in that** said first portion of said edge (26) is a protrusion (28) extending from said edge (26) towards said median plane (π), said protrusion (28) being limited towards said second portion (33) of said edge (26) by an inclined flank (30).

5. A device as claimed in claim 4, **characterised in that** said projection (34) of said lid (8) includes an intermediate portion (37) connecting said first and second portions (35, 36) of said projection (34) and facing said flank (30) of said protrusion (28) in said closed position of said lid (8).

6. A device as claimed in any of the foregoing claims from 2 to 5, **characterised in that** said lid (8) includes a pair of said projections (34) located symmetrically with respect to said median plane (π), said frame portion (5) including a corresponding pair of said first portions (28).

7. A sheet material package for pourable food products including an opening device (4) as claimed in any of the foregoing claims.

Fig.1



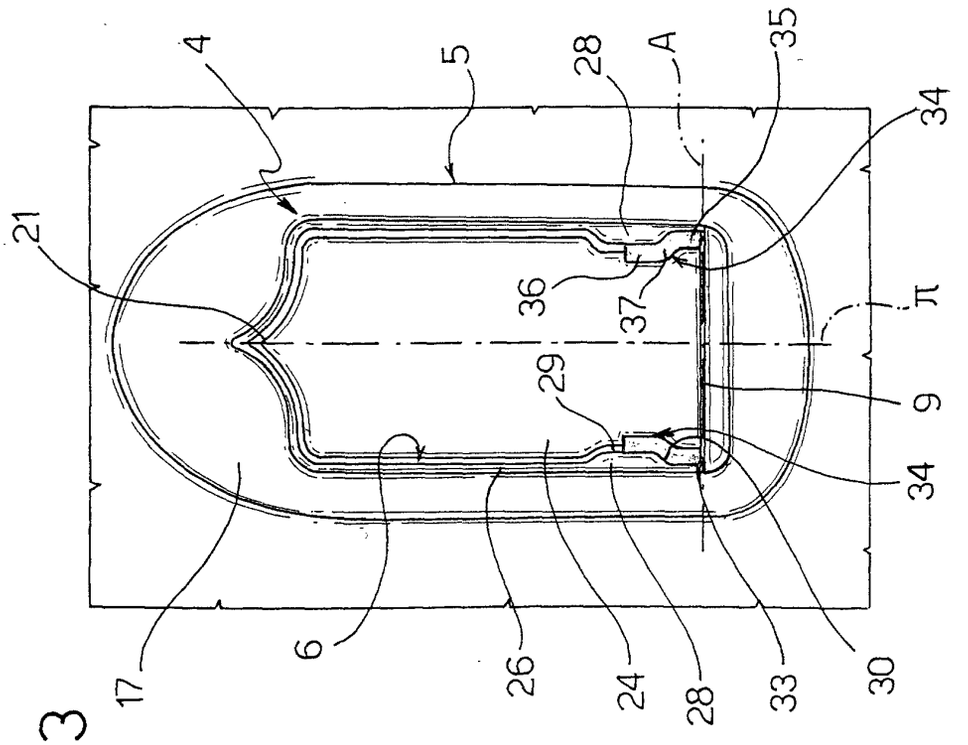

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Fig.3

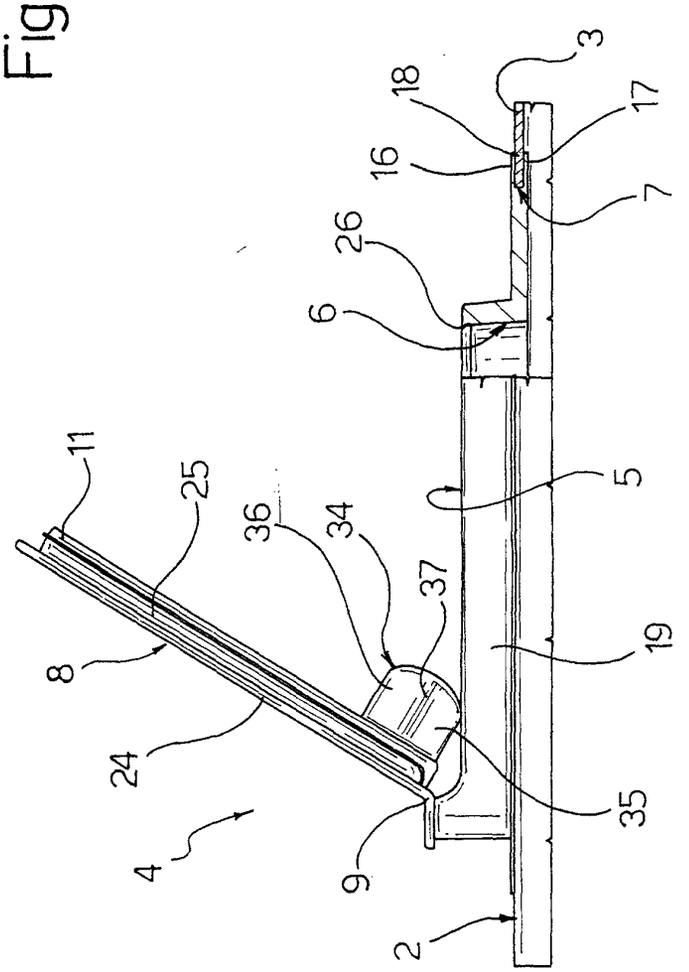
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Fig.2

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EUROPEAN SEARCH REPORT

Application Number
EP 00 11 1550

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TECHNICAL FIELDS SEARCHED (Int.Cl.7)

B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	7 November 2000	Spettel, J

CATEGORY OF CITED DOCUMENTS

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