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(54) **Method and machine for packing groups of cigarettes**

(57) A method and machine (2) for packing groups (3) of cigarettes in respective sheets (7) of packing material, whereby a succession of rigid packing pockets (5), each having a substantially tubular first portion (23) and a C-shaped, outwardly-concave second portion (24) aligned with the first portion (23), is fed through a first loading station (6) where a U-folded sheet (7) of packing material is fed into the second portion (24) of each packing pocket (5); through a second loading station (10) where a group (3) of cigarettes is fed axially into each packing pocket (5) through the first portion (23) of the packing pocket (5) and into a temporary relative position with respect to the sheet (7) of packing material; and through an unloading station (12) where each group (3) of cigarettes is moved axially with respect to the relative sheet (7) of packing material, so as to position the group (3) of cigarettes in a final relative position with respect to the sheet (7) of packing material.

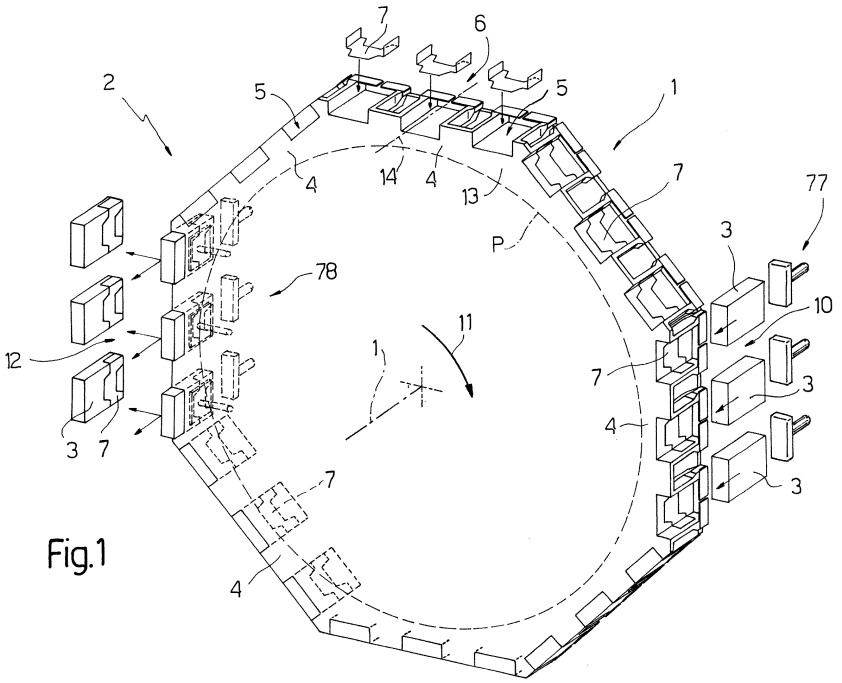


Fig.1

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## Description

**[0001]** The present invention relates to a method and machine for packing groups of cigarettes.

**[0002]** In machines for packing groups of cigarettes, the groups of cigarettes and packing material are fed into relative packing pockets fed along a packing path by a packing conveyor.

**[0003]** Known packing pockets normally have walls, which are normally movable to receive and retain the relative groups of cigarettes and packing material, and which seriously complicate the structure, reduce the reliability, and increase the cost, of the packing conveyors.

**[0004]** It is an object of the present invention to provide a method and machine for packing groups of cigarettes, and which eliminate the aforementioned drawback.

**[0005]** According to the present invention, there are provided a method and machine for packing groups of cigarettes, as claimed in the accompanying respective independent Claims, or in any one of the Claims depending directly or indirectly on the independent Claims.

**[0006]** A non-limiting embodiment of the present invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows a schematic view in perspective, with parts removed for clarity, of a portion of a preferred embodiment of a packing wheel of a machine for packing groups of cigarettes in accordance with the present invention;

Figure 2 shows a larger-scale view in perspective of a first detail of Figure 1;

Figures 3 to 5 show the Figure 2 detail in three successive operating positions;

Figure 6 shows a schematic side view of a second detail of Figure 1;

Figure 7 shows a larger-scale view in perspective of part of the Figure 6 detail in a different operating position;

Figures 8 and 9 show a schematic operating sequence of the Figure 6 and 7 detail.

**[0007]** Number 1 in Figure 1 indicates as a whole a packing wheel of a machine 2 for packing groups 3 of cigarettes, in particular, groups of cigarettes already wrapped in a preferably foil inner wrapping.

**[0008]** Packing wheel 1 is in the form of a regular polygon, and has a number of sides, along each of which are equally spaced at least two rigid packing pockets 5, i.e. with no moving parts (the example shown has three packing pockets 5, but may have only one, or more than three).

**[0009]** Packing wheel 1 is powered to rotate in steps about an axis 1a to feed packing pockets 5 in steps along a packing path P extending through a loading station 6, where a sheet of packing material - in the example shown, a collar 7 having a central panel 8 and two lateral wings 9 on opposite sides of central panel 8 - is inserted inside each packing pocket 5; a loading station 10 located downstream from loading station 6 in the travelling direction 11 of packing pockets 5 along packing path P, and where a group 3 of cigarettes is fed into each packing pocket 5; and an unloading station 12, where a group 3 of cigarettes and respective collar 7 are expelled together from each packing pocket 5.

**[0010]** As shown more clearly in Figure 2, packing wheel 1 comprises two polygonal disks 13, which are coaxial with each other and with axis 1a, are spaced apart by a distance equal to the length of packing pockets 5, and support respective ends of each packing pocket 5. More specifically, each packing pocket 5 has a longitudinal axis 14 parallel to axis 1a, and comprises two bottom cross members 15 and 16 located at the peripheries of respective polygonal disks 13 and defining a bottom wall 17 having a central opening 18 between polygonal disks 13; two parallel lateral walls 19 and 20 parallel to axis 1a and projecting radially outwards from polygonal disks 13; and an outer cross member 21 connected integrally to the free edges of lateral walls 19, 20 and located over cross member 16. Outer cross member 21 is parallel to cross member 16, is relatively narrow, measured parallel to longitudinal axis 14, with respect to the length of packing pocket 5, and is divided into two equal parts by an intermediate slit 22.

**[0011]** Outer cross member 21 defines on packing pocket 5 a tubular portion 23 coaxial with longitudinal axis 14; and a portion 24, which is aligned with tubular portion 23, is C-shaped with its concavity facing radially outwards, and defines, with tubular portion 23, a seat 25 for receiving a respective group 3 of cigarettes coaxially with longitudinal axis 14. A further seat 26 is formed inside seat 25 to receive the U-folded collar 7, and is shaped so that collar 7, when housed inside seat 26 inside packing pocket 5, is retained axially inside packing pocket 5 and remains outside seat 25. For this purpose, seat 26 comprises two grooves 27, which are deeper than the thickness of collar 7, are formed in the inner surfaces of lateral walls 19 and 20 inside the C-shaped portion 24 of packing pocket 5 and flush with outer cross member 21, and each receive a respective lateral wing 9 of collar 7. Seat 26 also comprises a sunken surface 28, which is defined by two longitudinal ribs 29 bounding opening 18, is lower than bottom wall 17 by an amount equal to the depth of grooves 27, and provides for supporting central panel 8 of collar 7. Each longitudinal rib 29 comprises a suction device 30, which cooperates with central panel 8 to hold collar 7 in position inside seat 26.

**[0012]** In actual use, at each rotation step, packing wheel 1 arrests one side 4, and therefore the three packing pockets 5 arranged along side 4, at loading station 6, where each of the three packing pockets 5 receives a respective collar 7 supplied by a feed unit 31 shown in Figures 6 and 7 and common to all three packing pockets 5.

**[0013]** Feed unit 31 comprises a belt conveyor 32, a suction conveyor belt 33 of which is looped about pulleys

34 (only one shown) and comprises a conveying branch 35, which extends along a feed path parallel to the side 4 of packing wheel 1 arrested at loading station 6, and is raised and offset transversely with respect to said side 4. Belt 33 has a number of pairs of pins 36, each of which provides for keeping slightly raised a respective lateral wing 9 of a relative collar 7, the central panel 8 of which is gripped by suction on belt 33, is interposed between pins 36 of the relative pair of pins 36, and is arrested by belt 33, at loading station 6, in a position aligned with a respective packing pocket 5.

**[0014]** Feed unit 31 also comprises a transfer device 37, in turn comprising a number of suction heads 38, each of which is substantially the same shape and size as central panel 8, is aligned with a respective central panel 8 and a respective packing pocket 5 at loading station 6, and moves back and forth, together with the other suction heads 28, between a pickup position, in which suction head 38 is tangent to conveying branch 35 of conveyor 32 and rests on central panel 8 of a respective collar 7 on conveying branch 35, and a release position, in which suction head 38 is inserted inside portion 24 of relative packing pocket 5 to release the U-folded collar 7 inside relative seat 26.

**[0015]** Transfer device 37 comprises two shafts 39, 40, which are oscillated about respective fixed axes 41, 42, parallel to conveyor 32, by a cam actuating device 43, which comprises a cam roller 44 powered to rotate about an axis parallel to axis 1a, and having two cams 45, 46 for controlling, by means of respective cam follower rollers 47a, 48a, two cranks 47, 48 fitted to shafts 39, 40 respectively.

**[0016]** Transfer device 37 also comprises a deformable-quadrilateral crank mechanism 49 interposed between shafts 39, 40 and a bar 50 supporting suction heads 38, and which transmits a back-and-forth movement to bar 50. Crank mechanism 49 comprises a rocker arm 51 pivoting about axis 41 and fitted to shaft 39; and a rocker arm 52 pivoting about axis 42 and fitted idly to shaft 40. Two corresponding first arms of rocker arms 51, 52 are connected to each other by a connecting rod 53, and two second arms of rocker arms 51, 52 are hinged at their free ends to respective connecting rods 54, 55, which connect rocker arms 51, 52 to two distinct end points of a central portion 56 of a further connecting rod 57 movable in a plane perpendicular to bar 50. Connecting rod 57 comprises an end portion 58, which projects from central portion 56 towards conveyor 32, is substantially T-shaped, and comprises an end upright 59, to the bottom end of which bar 50 is connected integrally. On the opposite side to that connected integrally to end portion 58, central portion 56 is connected integrally to a further end portion 60, which is hinged to the connecting rod 61 of a crank mechanism 62 having a crank 63 pivoting about axis 42 and fitted to shaft 40.

**[0017]** In other words, in transfer device 37, shaft 39 imparts a transverse, substantially vertical movement to connecting rod 57, and therefore to bar 50; and shaft 40 imparts to connecting rod 57, and therefore to bar 50, a substantially horizontal movement, which, combined with the vertical movement, moves suction heads 38 cyclically between the pickup and release positions.

**[0018]** As shown in Figure 6 and particularly in Figure 7, transfer device 37 also comprises a folding device 64, which, for each suction head 38, comprises a fork-shaped folding member 65, which surrounds relative suction head 38 and folds a relative collar 7, at loading station 6, into a U by folding lateral wings 9 squarely with respect to relative central panel 8 as collar 7 is transferred from conveyor 32 to relative packing pocket 5.

**[0019]** Folding device 64 comprises a frame 66 common to all the suction heads 38 and in turn comprising a head 67, which is located over bar 50 and fitted with a vertical plate 68 located behind bar 50 and perpendicular to axis 1a; and each folding member 65 comprises two prongs 69 projecting, parallel to axis 1a, from plate 68 and on opposite sides of relative suction head 38. Head 67 is connected to upright 59 of connecting rod 57 by an articulated quadrilateral 70 comprising a connecting rod, defined by head 67, and two cranks interposed between head 67 and upright 59 and hinged to upright 59 to oscillate about respective axes parallel to axes 41, 42. One of these two cranks is defined by one arm of a rocker arm 71, the other arm of which defines a crank of a further articulated quadrilateral 72 comprising a connecting rod 73 connected to rocker arm 71, and a further crank 74 fitted to a powered shaft 75, parallel to shafts 39, 40, to oscillate about a fixed axis 76 of shaft 75.

**[0020]** In other words, frame 66 moves with upright 59 and, therefore, with suction heads 38 by virtue of the movements imparted to suction heads 38 by actuating device 43, and moves, with respect to upright 59 and by virtue of the combined movements of upright 59 and of crank 74 with respect to axis 76, to move each folding member 65 along an annular path with respect to relative suction head 38.

**[0021]** More specifically, as shown in Figures 8 and 9, which show one collar 7 positioned on conveying branch 35 of conveyor 32 at loading station 6, with wings 9 slightly raised and resting on respective pins 36, folding member 65 is initially located behind conveyor 32 (Figure 8a). Next, suction head 38 moves down towards the pickup position, and, at the same time, prongs 69 are positioned on a level with conveying branch 35, are moved forward and inserted (Figure 8b) between wings 9 and conveying branch 35, and are then raised to fold wings 9 about suction head 38 as this reaches the pickup position (Figure 8c). As suction head 38 moves into the release position (Figure 9a), prongs 69 remain in a substantially fixed position with respect to suction head 38 to keep wings 9 folded and assist insertion of suction head 38 (Figure 9b) inside portion 24 of relative packing pocket 5, and release of the U-folded collar 7 inside relative seat 26. As suction head 38 returns to its original position over conveying branch 35 of conveyor 32, folding member 65 backs up with respect to suction head 38, and then moves

down behind conveyor 32.

**[0022]** With reference to Figure 1, on receiving respective collar 7, each packing pocket 5 is fed along packing path P and arrested at loading station 10, where it receives a respective group 3 of cigarettes fed axially by a push device 77 into relative seat 25 through tubular portion 23, which defines an input portion of packing pocket 5.

**[0023]** Seat 26 (Figure 4) being located inside portion 24 flush with tubular portion 23, and being lower than seat 25, group 3 of cigarettes slides axially inside seat 25 without interfering with the collar, and, once loaded completely inside seat 25, assumes, with respect to collar 7, a temporary position, in which collar 7 is folded into a U about an intermediate portion of group 3 of cigarettes.

**[0024]** Again with reference to Figure 1, each packing pocket 5, on receiving group 3 of cigarettes, is fed along packing path P and arrested at unloading station 12, where a push device 78 expels group 3 of cigarettes and the respective U-folded collar 7. To do this, push device 78 first pushes group 3 of cigarettes axially to disengage it (Figure 5) from tubular portion 23 of packing pocket 5, and, at the same time, slides it axially with respect to collar 7, so that group 3 of cigarettes projects partly from the opposite end of seat 25 to cross member 21, and collar 7 is positioned, with respect to group 3 of cigarettes, in its final position flush with the end of group 3 of cigarettes facing cross member 21. Next, push device 78 pushes group 3 of cigarettes and respective collar 7 radially out of portion 24 of packing pocket 5.

## Claims

1. A method of packing groups of cigarettes in respective sheets (7) of packing material, the method comprising the following steps :

   - a conveying step of feeding a succession of rigid packing pockets (5) in a given travelling direction (11) along a packing path (P) extending through a first loading station (6) for loading sheets (7) of packing material, a second loading station (10) for loading groups (3) of cigarettes, and an unloading station (12); each packing pocket comprising a substantially tubular first portion (23) with an axis (14) crosswise to the travelling direction (11), and a C-shaped, outwardly-concave second portion (24) aligned with the first portion (23);
   - a first feed step, at the first loading station (6), of feeding a sheet (7) of packing material into each packing pocket (5) in a first direction crosswise to the packing path (P) and to the axis (14) of the relative packing pocket (5), so that, inside the relative packing pocket (5), the sheet (7) of packing material assumes a U-shaped configuration with its concavity facing outwards; and
   - a second feed step, at the second loading station (10), of feeding a group (3) of cigarettes into each packing pocket (5) through the first portion (23) of the packing pocket (5) and in a second direction crosswise to the packing path (P) and to the first direction and axially with respect to the first portion (23) of the packing pocket (5).

2. A method as claimed in Claim 1, wherein the first loading station (6) is located upstream from the second loading station (10) along the packing path (P); and each group (3) of cigarettes is deposited, inside the relative packing pocket (5), over the relative sheet (7) of packing material.

3. A method as claimed in Claim 1 or 2, wherein each sheet (7) of packing material is fed into the second portion (24) of the relative packing pocket (5).

4. A method as claimed in any one of Claims 1 to 3, wherein each sheet (7) of packing material is fed and fixed inside a sunken seat (26) formed transversely inside the second portion (24) of the relative packing pocket (5) and adjacent to the first portion (23) of the packing pocket (5).

5. A method as claimed in Claim 3 or 4, and comprising an unloading step of unloading each group (3) of cigarettes and the relative sheet (7) of packing material from the relative packing pocket (5) at the unloading station (12); the unloading step comprising the substeps of :

   - moving the group (3) of cigarettes in the second direction, so as to slide the group (3) of cigarettes axially along the relative packing pocket (5) and with respect to the relative sheet (7) of packing material, to release the group (3) of cigarettes from the first portion (23) of the relative packing pocket (5) and position the group (3) of cigarettes in a final relative axial position with respect to the relative sheet (7) of packing material; and
   - expelling the group (3) of cigarettes and the relative sheet (7) of packing material in the first direction from the second portion (24) of the relative packing pocket (5), while maintaining the group of cigarettes and the sheet of packing material in the final relative position.

6. A method as claimed in any one of Claims 1 to 5, wherein each sheet (7) of packing material is prefolded into a U before being inserted into the relative packing pocket (5).

7. A method as claimed in any one of Claims 1 to 6, wherein each group (3) of cigarettes is a wrapped group (3) of cigarettes, and each sheet (7) of packing material is a collar (7) comprising a central panel (8),

and two lateral wings (9), which are square with respect to the relative central panel (8) when the sheet (7) of packing material is folded into a U inside the relative packing pocket (5).

**8.** A machine for packing groups of cigarettes, comprising a packing conveyor (1), in turn comprising a number of packing pockets (5), each of which receives and houses a group (3) of cigarettes and a respective sheet (7) of packing material, and moves, with the packing conveyor (1) and in a given travelling direction (11), along a packing path (P) extending through a first loading station (6) for loading the relative sheet (7) of packing material, a second loading station (10) for loading the relative group (3) of cigarettes, and an unloading station (12);
the machine being **characterized in that** each packing pocket (5) is a rigid pocket comprising a substantially tubular first portion (23) crosswise to the travelling direction (11), and a C-shaped, outwardly-concave second portion (24) aligned with the first portion (23).

**9.** A machine as claimed in Claim 8, wherein the sheet (7) of packing material is a collar (7).

**10.** A machine as claimed in Claim 8 or 9, and comprising a feed conveyor (32) for feeding a succession of sheets (7) of packing material along a feed path (P1) to the first loading station (6); and a transfer device (37) located at the first loading station (6) to transfer the sheets (7) of packing material from the feed conveyor (32) to the relative packing pockets (5).

**11.** A machine as claimed in Claim 10, wherein the transfer device (37) is designed to transfer each sheet (7) of packing material from the feed conveyor (32) to the second portion (24) of the relative packing pocket (5).

**12.** A machine as claimed in Claim 10 or 11, wherein the transfer device (37) comprises at least one transfer head (38) movable between a pickup position tangent to the feed conveyor (32), and a release position in which the transfer head (38) is inserted inside a packing pocket (5) at the first loading station (6).

**13.** A machine as claimed in Claim 12, wherein the transfer head (38) moves into the release position to insert the sheet (7) of packing material, folded into a U, inside the relative packing pocket (5).

**14.** A machine as claimed in any one of Claims 11 to 13, wherein the transfer device (37) comprises a group of transfer heads (38) for simultaneously transferring a group of sheets (7) of packing material.

**15.** A machine as claimed in Claim 14, wherein the transfer device (37) comprises a deformable-quadrilateral crank mechanism (49) supporting the transfer head (38) and for imparting a reciprocating movement to the transfer head (38).

**16.** A machine as claimed in Claim 15, wherein the deformable-quadrilateral crank mechanism (49) is connected to a cam actuating system (43) comprising cam follower rollers (47a, 48a) engaging cams (45, 46) formed on the outer surface of a powered roller (44).

**17.** A machine as claimed in any one of Claims 10 to 16, wherein the sheet (7) of packing material comprises a central panel (8), and two lateral wings (9) on opposite sides of the central panel (8); and the transfer device (37) comprises a movable folding device (65) for folding the sheet (7) of packing material into a U by folding the lateral wings (9) squarely with respect to the central panel (8) as the sheet (7) of packing material is transferred from the feed conveyor (32) to the relative packing pocket (5).

**18.** A machine as claimed in Claim 17, wherein the transfer device (37) comprises at least one suction transfer head (38) for inserting a respective sheet (7) of packing material into a respective packing pocket (5); the suction transfer head (38) is the same shape and size as the central panel (8) of the sheet (7) of packing material; and the movable folding device (65) is fork-shaped and surrounds the suction transfer head (38) to fold the sheet (7) of packing material.

**19.** A machine as claimed in any one of Claims 8 to 18, wherein the packing pocket (5) defines a first seat (25) covering the first and second portion (23, 24) of the packing pocket (5) and for receiving the relative group (3) of cigarettes; and a second seat (26) which is formed in the first seat (25), is lower than the first seat (25), and receives and fixes a relative U-folded sheet (7) of packing material in position, so that, inside the packing pocket (5), the sheet (7) of packing material is located, in use, completely outside the first seat (25).

**20.** A machine as claimed in Claim 19, wherein the second seat (26) is formed in the second portion (24) of the packing pocket (5).

**21.** A machine as claimed in Claim 20, wherein the second seat (26) is formed in the second portion (24) of the packing pocket (5) flush with the first portion (23) of the packing pocket (5).

**22.** A machine as claimed in any one of Claims 8 to 21, wherein the first loading station (6) is located upstream from the second loading station (10) in the travelling direction (11) of the packing conveyor (1).

**23.** A machine as claimed in Claim 22, wherein first push means (77) are provided at the second loading station (10) to feed each group (3) of cigarettes axially into the relative packing pocket (5) and relative sheet (7) of packing material, in a direction crosswise to the packing path (P) and through the first portion (23) of the packing pocket (5).

**24.** A machine as claimed in Claim 23, wherein the first portion (23) of each packing pocket (5) constitutes an input portion through which the relative group (3) of cigarettes is inserted into the packing pocket (5); and the second portion (24) of each packing pocket (5) constitutes an output portion, through which the relative group (3) of cigarettes and relative sheet (7) of packing material are expelled from the packing pocket (5).

**25.** A machine as claimed in any one of Claims 10 to 24, wherein the packing conveyor (1) is a polygonal packing wheel having a number of sides (4), each of which supports at least two packing pockets (5); the packing wheel (1) moving in steps to arrest each side (4) at the loading stations (6, 10) and the unloading station (12).

**26.** A machine as claimed in Claim 25, wherein each side (4) is arrested at the first loading station (6) in a position parallel to the feed conveyor (32).

**27.** A machine as claimed in Claim 14 or 26, wherein the transfer device (37) comprises a number of suction transfer heads (38) equal to the number of packing pockets (5) on each side (4) of the packing wheel (1).

**28.** A machine for packing groups (3) of cigarettes, comprising a packing conveyor (1), in turn comprising a number of packing pockets (5), each of which receives and houses a group (3) of cigarettes and a respective sheet (7) of packing material, and moves, with the packing conveyor (1) and in a given travelling direction (11), along a packing path (P) extending through a first loading station (6) for loading the relative sheet (7) of packing material, a second loading station (10) for loading the relative group (3) of cigarettes, and an unloading station (12);
the machine (2) being **characterized in that** each packing pocket (5) comprises a first seat (25) for housing a respective group (3) of cigarettes, and a second seat (26) for housing the respective sheet (7) of packing material; and the second seat (26) is lower than the first seat (25), so that, inside the packing pocket (5), the sheet (7) of packing material is positioned lower down than the relative group (3) of cigarettes.

**29.** A machine as claimed in Claim 28, wherein the first loading station (6), where the sheets (7) of packing material are fed into the respective packing pockets (5), is located upstream, in the travelling direction (11), from the second loading station (10) where the groups (3) of cigarettes are fed into the respective packing pockets (5).

**30.** A machine as claimed in Claim 29, wherein push means (77) are provided at the second loading station (10) to feed each group (3) of cigarettes axially into the respective packing pocket (5), so that the group of cigarettes slides, with respect to the packing pocket (5), over the relative sheet (7) of packing material inserted previously inside the second seat (26), and assumes a first relative axial position with respect to the sheet (7) of packing material.

**31.** A machine as claimed in Claim 30, wherein further push means (78) are provided at the unloading station (12) to move each group (3) of cigarettes axially along the respective packing pocket (5), so that the group of cigarettes slides, with respect to the packing pocket (5), over the relative sheet (7) of packing material into a second relative axial position with respect to the sheet (7) of packing material.

**32.** A method of folding a sheet of packing material about a group (3) of cigarettes; the method comprising the steps of:

feeding a packing pocket (5) along a packing path (P) extending through a first and second loading station (6, 10) and an unloading station (12);
feeding the sheet (7) of packing material into the packing pocket (5) at the first loading station (6);
feeding the group (3) of cigarettes into the packing pocket (5) at the second loading station (10), so that the group (3) of cigarettes assumes a first relative position with respect to the sheet (7) of packing material; and
expelling the group (3) of cigarettes and the sheet (7) of packing material together from the packing pocket (5) at the unloading station (12);
the method being **characterized in that** the step of expelling the group (3) of cigarettes together with the sheet (7) of packing material comprises the further step of moving the group (3) of cigarettes with respect to the sheet (7) of packing material to position the group (3) of cigarettes in a second relative position, different from the first relative position, with respect to the sheet (7) of packing material.

**33.** A method as claimed in Claim 32, wherein, inside the packing pocket (5), the group (3) of cigarettes is located inside a first seat (25), and the sheet (7) of packing material is located inside a second seat (26) lower than the first seat (25), so that, inside the pack-

ing pocket (5), the sheet (7) of packing material is lower down than the group (3) of cigarettes.

**34.** A method as claimed in Claim 32 or 33, wherein, at the second loading station (10), the group (3) of cigarettes is fed axially into the packing pocket (5), so as to slide with respect to the packing pocket (5), and over the sheet (7) of packing material fed previously into the second seat (26), into the first relative position with respect to the sheet (7) of packing material.

**35.** A method as claimed in any one of Claims 32 to 34, wherein the step of expelling the group (3) of cigarettes and the sheet (7) of packing material together comprises the steps of:

moving the group (3) of cigarettes axially with respect to the packing pocket (5) and with respect to the sheet (7) of packing material, so as to position the group (3) of cigarettes in the second relative position, different from the first relative position, with respect to the sheet (7) of packing material;
moving the group (3) of cigarettes and the sheet (7) of packing material together transversely, to expel the group (3) of cigarettes and the sheet (7) of packing material from the packing pocket (5).

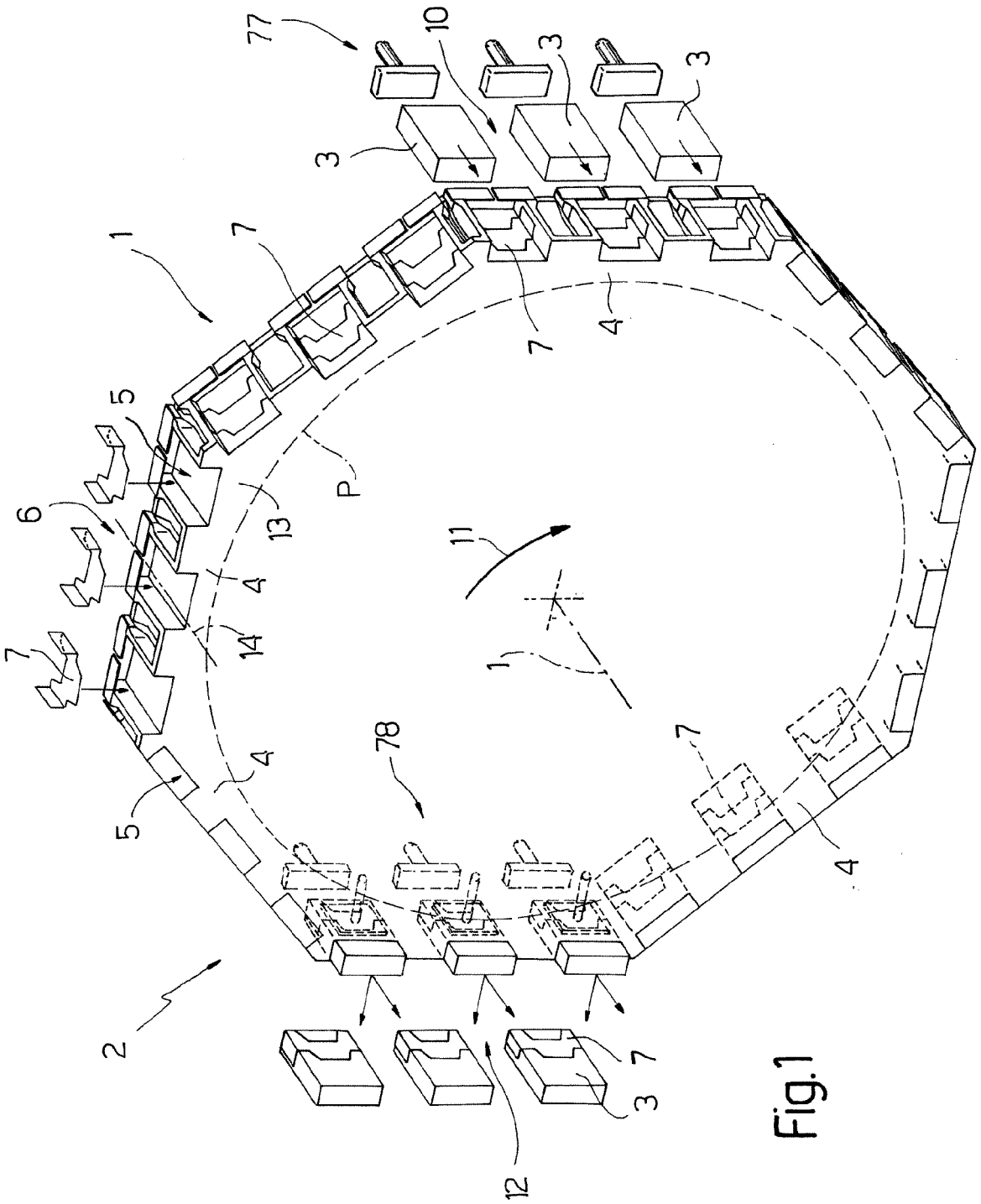
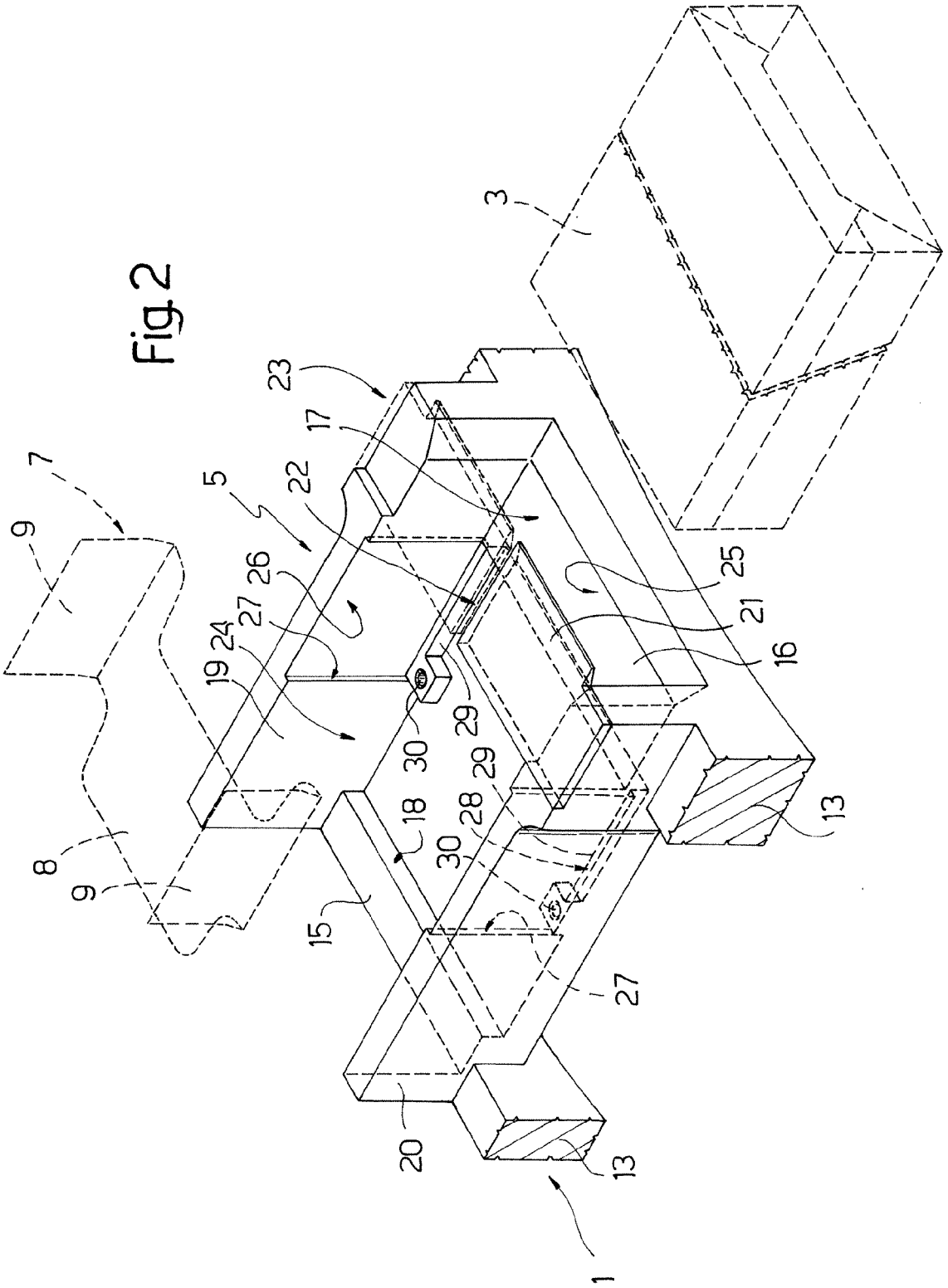



Fig.1

Fig.2



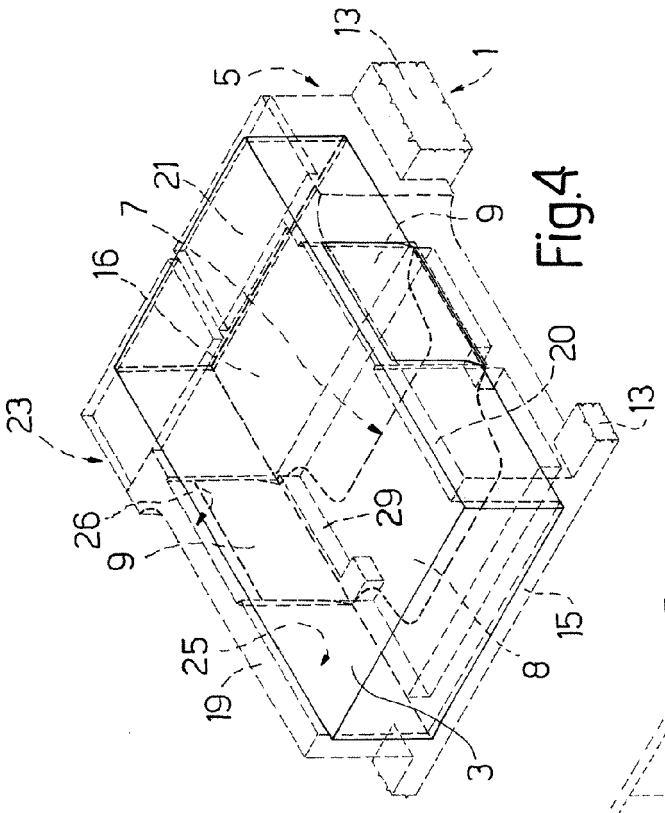



Fig.4

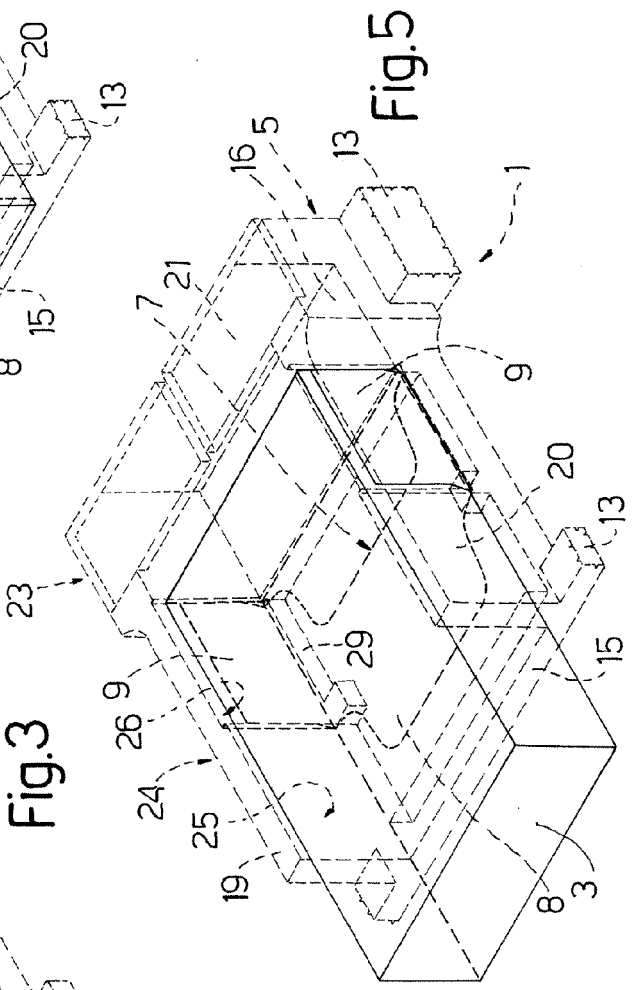



Fig.5

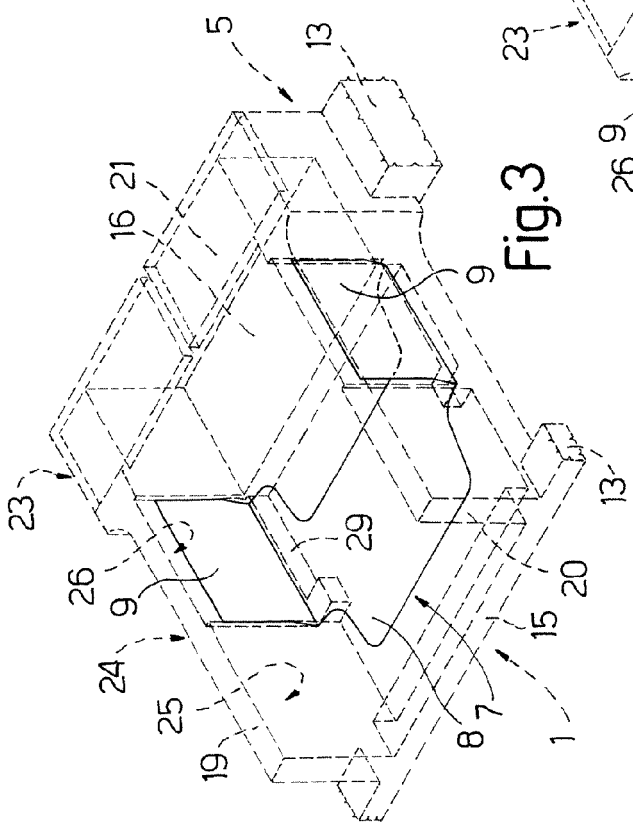



Fig.3

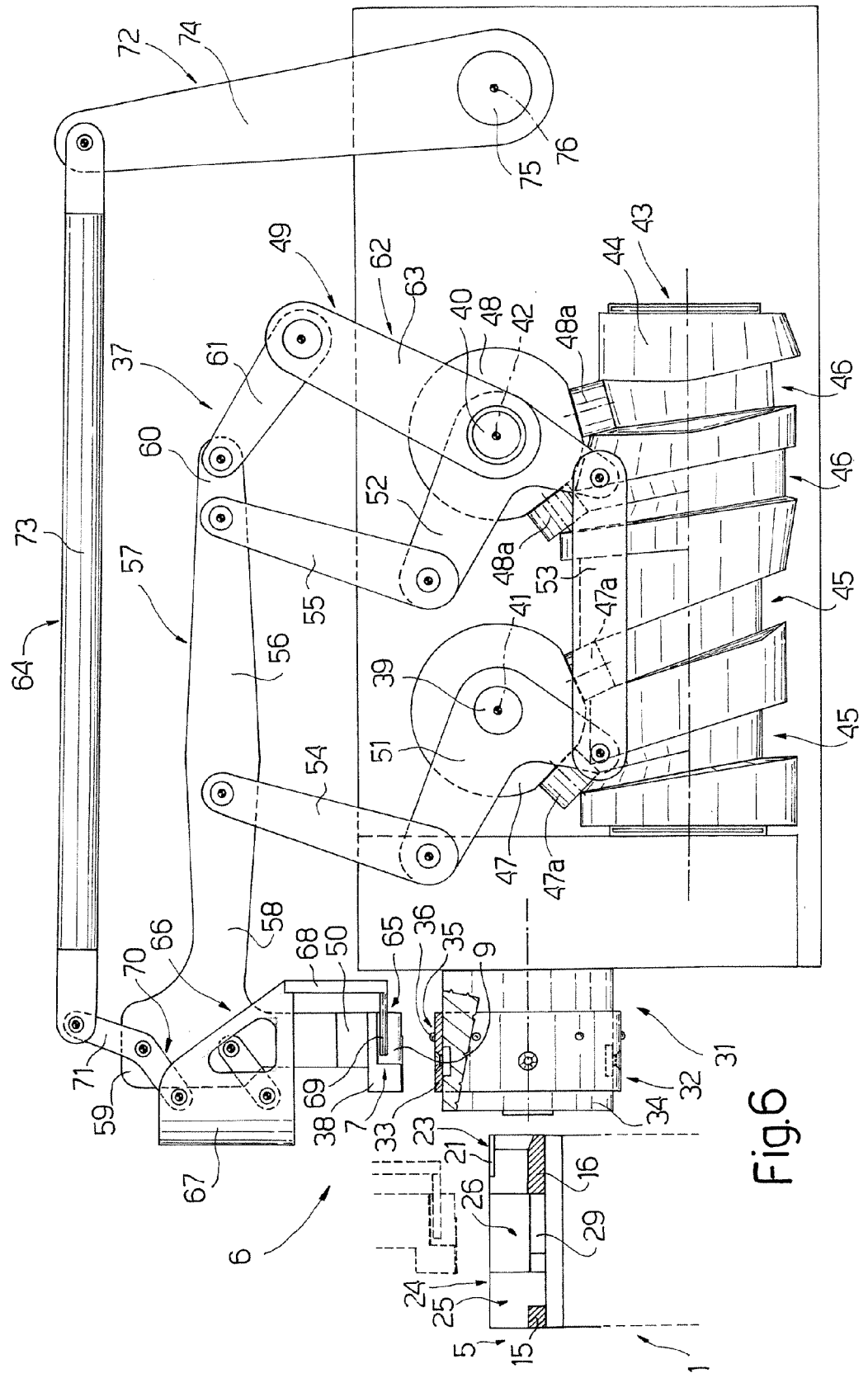

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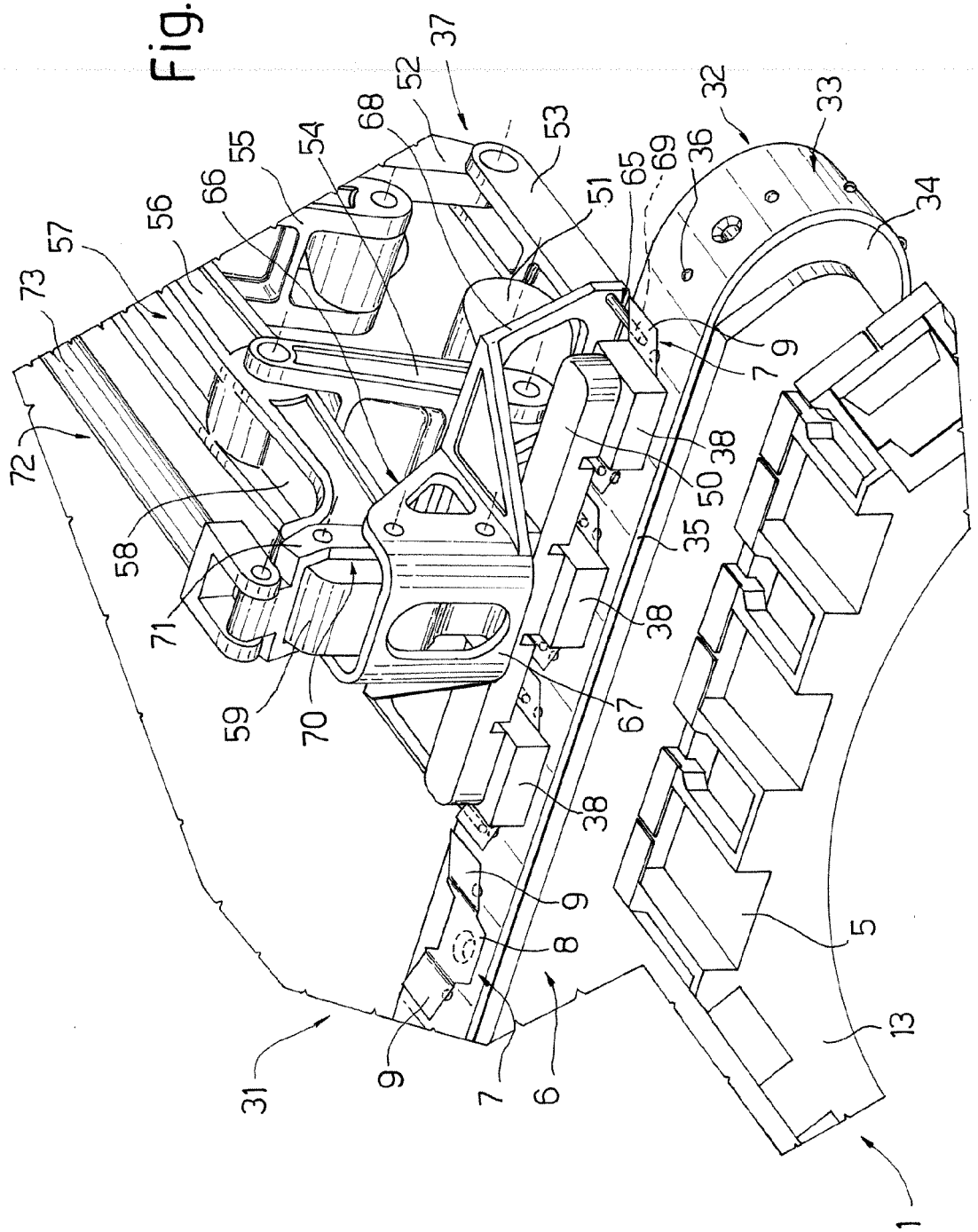
Fig.6

Fig.7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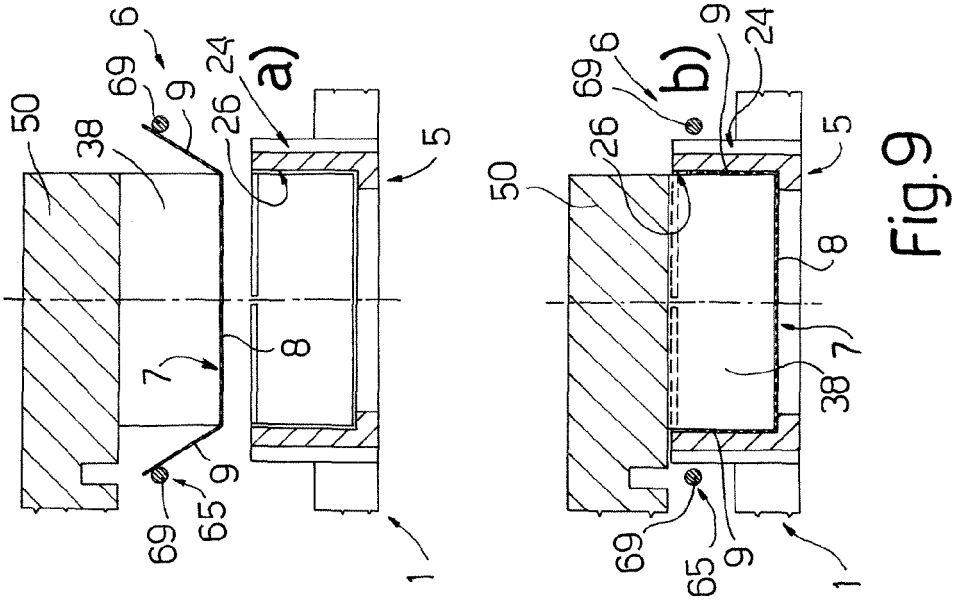


Fig.9

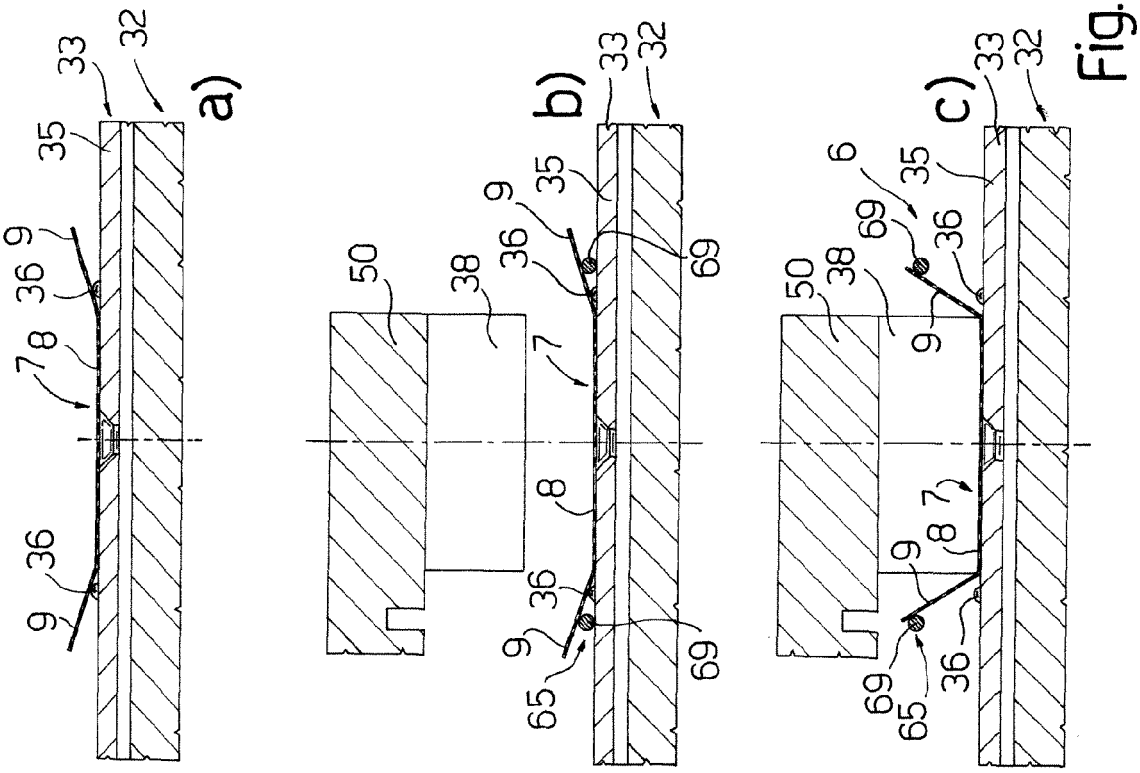


Fig.8

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# EUROPEAN SEARCH REPORT

Application Number
EP 07 10 7770

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B65B

The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
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