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(54) **PACKAGE OF TOBACCO ARTICLES COMPRISING A SEALED INNER PACKAGE**

PACKUNG FÜR TABAKWAREN MIT EINER GESIEGELTEN INNEREN VERPACKUNG

PAQUET D'ARTICLES DE TABAC POSSÉDANT UN PAQUET INTÉRIEUR SCELLÉ

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Description

TECHNICAL FIELD

[0001] The present invention relates to a package of tobacco articles comprising a sealed inner package.

[0002] The present invention may be applied to advantage to a rigid packet of cigarettes, to which the following description refers purely by way of example.

BACKGROUND ART

[0003] Rigid, hinged-lid packets of cigarettes are currently the most widely marketed, by being easy to produce and easy and practical to use, and by effectively protecting the cigarettes inside.

[0004] A rigid, hinged-lid packet of cigarettes comprises an inner package comprising a foil-wrapped group of cigarettes; and a rigid outer container housing the inner package. The outer container comprises a cup-shaped container housing the group of cigarettes and having an open top end; and a cup-shaped lid hinged to the container to rotate, with respect to the container, between an open position and a closed position opening and closing the open end respectively.

[0005] A sealed (i.e. airtight) inner package has recently been proposed comprising a cigarette extraction opening closed by an open-close sealing flap (the sealing flap is applied with non-dry, re-stick glue enabling it to be stuck repeatedly in the closed position closing the cigarette extraction opening).

[0006] Patent US6237760A1 and Patent Application DE102009060134A1 describe two examples of a sealed inner package containing a group of cigarettes and having a cigarette extraction opening closed by an open-close sealing flap. The group of cigarettes inside the sealed inner package is enclosed in a stiffener inserted inside the sealed inner package, directly contacting the cigarettes, and which comprises a front wall contacting the cylindrical lateral walls of the cigarettes; two lateral walls on opposite sides of the front wall and contacting the cylindrical lateral walls of the cigarettes; and a bottom wall contacting the tips of the cigarettes.

[0007] Patent Application WO2011110272A1 describes a packing method for producing a sealed inner package containing a group of cigarettes. As a whole, the packing method described is substantially conventional, by causing the group of cigarettes to intercept a flat sheet of packing material, so that the sheet of packing material folds into a 'U' about the group of cigarettes.

[0008] To improve the efficiency of the packing cycle described in Patent Application WO2011110272A1, Patent Application WO2011110272A1 proposes a further packing method for producing a sealed inner package containing a group of cigarettes. This further method is based on the so-called 'flow-pack' method, in which a tubular wrapping is formed about a succession of groups of cigarettes by continuously and longitudinally heat-sealing a web of packing material folded into a tube; and the tubular wrapping is heat-sealed and cut transversely, upstream and downstream from each group of cigarettes, into individual sealed inner packages.

[0009] When forming the tubular wrapping using the packing method described in Patent Application WO2011110272A1, however, each group of cigarettes may possibly fall out of shape, i.e. the cigarettes in the group may shift out of position, thus resulting in the formation of an irregularly shaped sealed inner package which is inevitably rejected.

[0010] Patent Application WO2013053408A1 belongs to the state of the art according to Art. 54(3) EPC and discloses a package of tobacco articles comprising a sealed inner package provided with a stiffener, which is located inside the sealed inner package contacting the group of tobacco articles and has a connecting system for connecting a bottom wall to lateral walls, to prevent movement of the two lateral walls with respect to the bottom wall.

DESCRIPTION OF THE INVENTION

[0011] It is an object of the present invention to provide a package of tobacco articles comprising a sealed inner package, and which is designed to eliminate the above drawbacks and at the same time is cheap and easy to produce.

[0012] According to the present invention, there is provided a package of tobacco articles comprising a sealed inner package, as claimed in the accompanying Claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] A number of non-limiting embodiments of the present invention will be described by way of example with reference to the attached drawings, in which:

Figure 1 shows a front view in perspective of a packet of cigarettes, not forming part of the present invention, in a closed configuration;

Figure 2 shows a front view in perspective of the Figure 1 packet of cigarettes in an open configuration;

Figure 3 shows a rear view in perspective of the Figure 1 packet of cigarettes in a closed configuration;

Figure 4a shows a front view in perspective of a sealed inner package of the Figure 1 packet of cigarettes;

Figures 4b and 4c show front and rear views in perspective respectively of the Figure 4a sealed inner package prior to folding lateral heat-seal fins;

Figure 5 shows a view in perspective of a group of cigarettes enclosed in the Figure 4 sealed inner package;

Figure 6 shows a view in perspective of a stiffener inserted inside the Figure 4 sealed inner package;

Figure 7 shows a longitudinal section of the Figure

6 stiffener;

Figure 8 shows a view in perspective of the Figure 6 stiffener, illustrating the way in which a tab on the bottom wall is folded;

Figure 9 shows a spread-out view of a blank from which to form the Figure 6 stiffener;

Figures 10-31 show alternative embodiments of the Figure 6 stiffener and/or the blank from which to form the Figure 6 stiffener which do not form part of the present invention;

Figure 31 shows an embodiment of the blank from which to form the Figure 6 stiffener in accordance with the present invention;

Figure 32 shows a schematic view in perspective, with parts removed for clarity, of a packing machine for producing the Figure 1 packet of cigarettes;

Figures 33 and 34 show two schematic views in perspective, with parts removed for clarity, of a packing unit of the Figure 32 packing machine, for producing the sealed inner package in Figure 4;

Figure 35 shows a schematic plan view, with parts removed for clarity, of the packing unit in Figures 33 and 34;

Figure 36 shows a schematic plan view of material flow on the Figure 33 and 34 packing unit;

Figure 37 shows a schematic view in perspective of how the Figure 9 blank is folded to form the Figure 6 stiffener;

Figure 38 shows a schematic section, with parts removed for clarity, of a coupling conveyor of the Figure 33 and 34 packing unit;

Figure 39 shows a schematic view in perspective, with parts removed for clarity, of a packing conveyor of the Figure 33 and 34 packing unit;

Figure 40 shows a schematic view in perspective of material flow on an end portion of the Figure 39 packing conveyor;

Figures 41, 42 and 43 show three schematic views in perspective, with parts removed for clarity, of a variation of the Figure 33 and 34 packing unit.

PREFERRED EMBODIMENTS OF THE INVENTION

[0014] Number 1 in Figures 1, 2 and 3 indicates as a whole a rigid packet of cigarettes. Packet 1 of cigarettes comprises a cup-shaped outer container 2, which is made of cardboard, has a hinged lid, and houses a sealed inner package 3 (Figure 2). Sealed inner package 3 encloses a parallelepiped-shaped group 4 of cigarettes (Figure 5) and, at the top and front, has a central cigarette extraction opening 5 extending over part of a front wall and part of a top wall of sealed inner package 3. The cigarettes in group 4 are cylindrical with a longitudinal axis. Sealed inner package 3 comprises a reclosable (i.e. 'open-close') sealing flap (i.e. sealing panel) 6 designed to seal extraction opening 5 and coated on the underside with non-dry, re-stick glue (i.e. non-dry glue allowing the sealing flap to be detached and re-attached repeatedly). That is, sealing flap 6 normally adheres to sealed inner package 3 to seal extraction opening 5, and can be detached temporarily from sealed inner package 3 to free, and so withdraw a cigarette through, extraction opening 5.

[0015] In the embodiment shown in the attached drawings, sealing flap 6 is applied externally to the packing material of sealed inner package 3. In alternative embodiments, sealing flap 6 is either formed in two-layer packing material of sealed inner package 3, or is in the form of a frame applied to the inside of the packing material of sealed inner package 3.

[0016] As shown more clearly in Figure 4, sealing flap 6 has a grip tab 7 with no re-stick adhesive and located close to, normally beneath, extraction opening 5.

[0017] As shown in Figures 6, 7 and 8, sealed inner package 3 comprises a U-shaped stiffener (i.e. tray) 8 made of cardboard (identical to that of outer container 2) and which is inserted inside sealed inner package 3, contacting group 4 of cigarettes. Stiffener 8 comprises a front wall 9 positioned contacting the cylindrical lateral walls of the cigarettes in group 4; two lateral walls 10 on opposite sides of front wall 9 and positioned contacting the cylindrical lateral walls of the cigarettes in group 4; and a bottom wall 11 positioned contacting the tips of the cigarettes in group 4. Front wall 9 preferably has a top recess 12 located at cigarette extraction opening 5, so that front wall 9 does not overlap cigarette extraction opening 5.

[0018] Each lateral wall 10 comprises a lateral tab 13, which is folded 90° with respect to lateral wall 10 onto bottom wall 11. Bottom wall 11 comprises a bottom tab 14, which is folded 180° with respect to and onto bottom wall 11; and bottom tab 14 comprises an appendix 15, which is folded 90° with respect to bottom tab 14 onto front wall 9.

[0019] Stiffener 8 has no glue, and comprises a jointing system to hold bottom wall 11 and lateral walls 10 in position. The jointing system comprises a U-shaped through slit 16 formed through front wall 9, along the fold line between front wall 9 and bottom wall 11; and a U-shaped projection 17 formed on bottom tab 14, along the fold line between bottom tab 14 and appendix 15. Projection 17 on bottom tab 14 is inserted through slit 16 in front wall 9 (by elastically deforming projection 17) to form a joint, between projection 17 and through slit 16, which holds bottom wall 11 and lateral walls 10 in position, by requiring significant deformation for its release. Through slit 16 is formed by making a U-shaped cut through front wall 9, along the fold line between front wall 9 and bottom wall 11. Likewise, projection 17 is formed by making a U-shaped cut through appendix 15, along the fold line between appendix 15 and bottom tab 14.

[0020] In the finished packet 1 of cigarettes, stiffener 8 serves to reinforce and maintain the shape of sealed inner package 3, to prevent sealed inner package 3 from collapsing, when some of the cigarettes are removed, and so complicating withdrawal of the remaining ciga-

rettes and, in particular, opening and closing of sealing flap 6. When producing sealed inner package 3, on the other hand, and as described in detail below, stiffener 8 serves to hold the cigarettes in group 4 together in the right position.

[0021] Figure 9 shows a blank 18, which is folded to form the stiffener 8 in Figures 6, 7 and 8. Figure 8 clearly shows the cuts defining through slit 16 and projection 17.

[0022] Figure 10 shows a variation of the Figure 9 blank 18. The Figure 10 blank 18 differs from the Figure 9 blank 18 by comprising a 'logo', which is visible in positive form at top recess 12 (i.e. at the part of stiffener 8 visible through extraction opening 5 of sealed inner package 3), and in negative form at bottom tab 14 and appendix 15 (in this way, the Figure 10 blank 18 can be formed from a continuous web of cardboard with no waste).

[0023] Figures 11 and 12 show an alternative embodiment of the Figure 6, 7 and 8 stiffener 8, which differs from the Figure 6, 7 and 8 stiffener 8 by comprising an appendix 15 reduced to a minimum in size.

[0024] Figures 13 and 14 show an alternative embodiment of the Figure 6, 7 and 8 stiffener 8, which is formed from the blank 18 shown in Figure 15, and which differs from the Figure 6, 7 and 8 stiffener 8 by having no appendix 15, and by the tip of bottom tab 14 being inserted (by elastically deforming bottom tab 14) through slit 16 to form a joint between bottom tab 14 and through slit 16.

[0025] Figures 16 and 17 show an alternative embodiment of the Figure 6, 7 and 8 stiffener 8, which is formed from the blank 18 shown in Figure 18, and which differs from the Figure 6, 7 and 8 stiffener 8 by having no through slit 16 and no projection 17, and by front wall 9 having a through slit 19 (typically inverted-U-shaped) through which appendix 15 is fitted (by elastically deforming through slit 19). In other words, the jointing system comprises the inverted-U-shaped through slit 19 in front wall 9; and appendix 15 on bottom tab 14, which is folded 90° with respect to bottom tab 14 onto front wall 9, at and to fit inside through slit 19. Figure 19 shows a variation of the Figure 18 blank 18, which differs from the Figure 18 blank 18 by comprising a 'logo', which is visible in positive form at top recess 12 (i.e. at the part of stiffener 8 visible through extraction opening 5 of sealed package 3), and in negative form at bottom tab 14 and appendix 15 (in this way, the Figure 19 blank 18 can be formed from a continuous web of cardboard with no waste).

[0026] Figures 20, 21 and 22 show an alternative embodiment of the Figure 6, 7 and 8 stiffener 8, which is formed from the blank 18 shown in Figure 23, and which differs from the Figure 6, 7 and 8 stiffener 8 by having no appendix 15, no through slit 16, and no projection 17, and by lateral tabs 13 having slits 20 into which bottom tab 14 fits (by elastically deforming lateral tabs 13).

[0027] Figures 24, 25 and 26 show three alternative embodiments of the Figure 9 blank 18, which differ from the Figure 9 blank 18 by having no bottom tab 14, no appendix 15, no through slit 16, and no projection 17; by lateral tabs 13 having slits 20; and by bottom wall 11 having two slits 21. When lateral tabs 13 are superimposed on bottom wall 11, each slit 20 fits inside a corresponding slit 21 (by elastically deforming relative lateral tab 13).

[0028] Figure 27 shows an alternative embodiment of the Figure 6, 7 and 8 stiffener 8, which differs from the Figure 6, 7 and 8 stiffener 8 by having no bottom tab 14, no appendix 15, no through slit 16, and no projection 17, and by bottom wall 11 having two slits 21. When lateral tabs 13 are superimposed on bottom wall 11, the tip of each lateral tab 13 deforms elastically to fit inside a corresponding slit 21.

[0029] Figure 28 shows an alternative embodiment of the Figure 6, 7 and 8 stiffener 8, which differs from the Figure 6, 7 and 8 stiffener 8 by having no bottom tab 14, no appendix 15, no through slit 16, and no projection 17; by the two lateral tabs 13 being connected to opposite ends of bottom wall 11, and being folded 90° with respect to bottom wall 11 onto lateral walls 10; and by each lateral wall 10 comprising a lateral wing 22, which is folded 180° with respect to and onto lateral wall 10 to enclose a corresponding lateral tab 13. Each lateral wing 22 has two projections 23, which (by deforming elastically) fit through corresponding through slits 24 in front wall 9 to form a joint between projections 23 and through slits 24.

[0030] Figures 29 and 30 show an alternative embodiment of the Figure 6, 7 and 8 stiffener 8, which differs from the Figure 6, 7 and 8 stiffener 8 by having no appendix 15, no through slit 16, and no projection 17; and by bottom tab 14 being folded 90° with respect to bottom wall 11.

[0031] Figure 31 shows an alternative embodiment of the Figure 9 blank 18, which is part of the present invention and differs from the Figure 9 blank 18 by having no bottom tab 14, no appendix 15, no through slit 16, and no projection 17; and by each lateral tab 13 being glued by glue 25 to bottom wall 11. In other words, in all the embodiments shown in Figures 6-30 (which do not form part of the present invention), stiffener 8 has no glue, and comprises a jointing system to hold bottom wall 11 and lateral walls 10 in position; whereas, in the Figure 31 embodiment (which is part of the present invention), stiffener 8 has no jointing system, but has two areas of glue 25 to hold bottom wall 11 and lateral walls 10 in position. In an alternative embodiment (not shown) perfectly equivalent to the one in Figure 31, the two lateral tabs 13 are connected to opposite ends of bottom wall 11, are folded 90° with respect to bottom wall 11 onto lateral walls 10, and are glued by glue 25 to lateral walls 10.

[0032] Choosing which of the above embodiments of stiffener 8 to employ depends on the relationship between the thickness of group 4 of cigarettes (and therefore the size of bottom wall 11 of stiffener 8) and the size of recess 12 (which, to avoid waste, also affects the shape and size of bottom tab 14 and appendix 15).

[0033] Number 26 in Figure 32 indicates as a whole a packing machine for producing packet 1 of cigarettes in Figures 1, 2 and 3. Packing machine 26 comprises a

packing section 27 for producing sealed inner packages 3; and a follow-up packing section 28 for producing outer containers 2 by folding rigid blanks 29 about the sealed inner packages 3 from packing section 27.

[0034] As shown in Figure 33, packing section 27 comprises a forming unit 30 for producing groups 4 of cigarettes, and for producing stiffeners 8 by folding blanks 18; a coupling unit 31 for fitting groups 4 of cigarettes with respective stiffeners 8; and a packing unit 32 for producing sealed inner packages 3 by folding and heat-sealing a strip 33 of packing material (complete with extraction openings 5 and superimposed sealing flaps 6) about groups 4 of cigarettes fitted with respective stiffeners 8.

[0035] Forming unit 30 comprises a hopper 34 with four outlets; and a forming belt conveyor 35 supporting a number of forming pockets 36. Forming conveyor 35 feeds each forming pocket 36 from an input station 37, located in front of an outlet of hopper 34 and where a group 4 of cigarettes is expelled from the outlet of hopper 34 into forming pocket 36, to an output station 38 where the group 4 of cigarettes is expelled from forming pocket 36. Forming unit 30 also comprises a folding belt conveyor 39 supporting a number of folding pockets (not shown) and extending parallel to and alongside forming conveyor 35. Folding conveyor 39 feeds each folding pocket from an input station 40, where a blank 18 is fed into the folding pocket; through a number of folding stations, where blank 18 is folded (completely or partly) to form a stiffener 8; and to an output station 41, where the stiffener 8 is expelled from the folding pocket.

[0036] As shown in Figure 38, coupling unit 31 comprises a coupling conveyor 42, which is positioned perpendicular to forming conveyor 35 and folding conveyor 39, picks up each group 4 of cigarettes at output station 38 of forming conveyor 35, couples group 4 of cigarettes with a corresponding stiffener 8 at a coupling station 43 (located over and aligned vertically with output station 41 of folding conveyor 39), and feeds group 4 of cigarettes, fitted with stiffener 8, to an input station 44 of packing unit 32. Coupling conveyor 42 comprises an endless belt 45 fitted with a number of paddles 46, which push groups 4 of cigarettes along a slide surface 47 connecting output station 38 of forming conveyor 35 to input station 44 of packing unit 32.

[0037] Slide surface 47 is static (i.e. mounted in a fixed position) and is connected to an elevator 47a movable vertically between a bottom position (Figure 38), in which elevator 47a is located at output station 41 of folding conveyor 39, and a top position (not shown in Figure 38), in which elevator 47a is located at coupling station 43. Slide surface 47 has a through opening, through which a stiffener 8 is raised by elevator 47a. In actual use, elevator 47a is moved into the bottom position to pick up a stiffener 8, and is then raised to feed stiffener 8 into coupling station 43, where stiffener 8 intercepts and couples with a corresponding group 4 of cigarettes (i.e. as it moves along, group 4 of cigarettes impacts bottom wall 11 of stiffener 8, thus drawing stiffener 8 along with it). In a preferred embodiment, the end of slide surface 47 around the through opening is designed to finish folding bottom tab 14 and appendix 15 as stiffener 8 is pushed up by elevator 47a.

[0038] As shown in Figure 39, packing unit 32 comprises a packing conveyor 48, which feeds each group 4 of cigarettes (fitted with respective stiffener 8) along a straight packing path P. A fixed folding device 49 (shown schematically in Figure 35) winds strip 33 of packing material longitudinally, i.e. parallel to packing path P, about packing path P to bring the two opposite edges of strip 33 of packing material into contact and so form a tubular wrapping enclosing groups 4 of tobacco articles (fitted with respective stiffeners 8). Packing unit 32 also comprises a heat-sealing device 50 (shown schematically in Figures 35 and 40) located downstream from folding device 49, and which heat-seals the two opposite overlapping edges of strip 33 of packing material longitudinally, i.e. parallel to packing path P, to stabilize the tubular wrapping. Packing unit 32 also comprises a heat-sealing device 51 (shown schematically in Figures 35 and 40) located downstream from heat-sealing device 50, and which heat-seals and cuts the tubular wrapping transversely, i.e. perpendicularly to packing path P, upstream and downstream from each group 4 of cigarettes (fitted with respective stiffener 8), to complete sealed inner packages 3.

[0039] It is important to note that packing conveyor 48 feeds each group 4 of cigarettes (fitted with respective stiffener 8) transversely along packing path P, i.e. with the longitudinal axes of the cigarettes perpendicular to packing path P and to the longitudinal heat-seal, and parallel to the transverse heat-seals. Feeding groups 4 of cigarettes along the packing path in this way is extremely important, by enabling the formation of sealed inner packages 3 with the transverse heat-seals along the lateral walls, and with no heat-seals at all on the bottom wall and, more importantly, on the top wall in which extraction opening 5 is formed.

[0040] As stated, strip 33 of packing material is already complete with extraction openings 5 covered with open-close sealing flaps 6, which are formed and applied respectively at work stations (not shown) upstream from packing unit 32. On strip 33 of packing material, extraction openings 5 covered with open-close sealing flaps 6 are located on the opposite side of the tubular wrapping to the longitudinal heat-seal, and are centred between the two transverse heat-seals. In a different embodiment not shown, extraction openings 5 covered with open-close sealing flaps 6 may be located on the same side as the longitudinal heat-seal and, as opposed to being centred, may be more or less asymmetrical in shape and/or position.

[0041] As shown in Figure 39, packing conveyor 48 comprises a static (i.e. stationary) slide surface 52, along which each group 4 of cigarettes slides, and about which strip 33 of packing material is wound; and a push device

53 located over groups 4 of cigarettes, and which pushes each group 4 of cigarettes along packing path P. Push device 53 comprises a conveyor belt 54, which is located over each group 4 of cigarettes, extends parallel to packing path P, presses each group 4 of cigarettes against slide surface 52, and comprises paddles 55, which project from conveyor belt 54 and are positioned upstream and downstream from, to define a seat for, each group 4 of cigarettes.

[0042] Finally, packing unit 32 comprises a feed conveyor 56, which receives groups 4 of cigarettes from coupling conveyor 42 at input station 44, and feeds groups 4 of cigarettes onto slide surface 52. Feed conveyor 56 comprises two parallel, side by side conveyor belts 57 located beneath groups 4 of cigarettes, and on which groups 4 of cigarettes rest. Each conveyor belt 57 comprises paddles 58, which project from conveyor belt 57 and are positioned upstream and downstream from, to define a seat for, each group 4 of cigarettes.

[0043] In a preferred embodiment, packing unit 32 comprises two conveyor belts 59 positioned facing each other on opposite sides of packing path P, directly upstream from heat-sealing device 50. As strip 33 of packing material is wound, the two conveyor belts 59 press on opposite sides of the tubular wrapping to compress the two opposite longitudinal edges of the tubular wrapping transversely (i.e. the two conveyor belts 59 press on the longitudinally oriented bottom wall and top wall of each sealed inner package 3 in the making).

[0044] As shown more clearly in Figure 40, longitudinally heat-sealing (by means of heat-sealing device 50) the two opposite overlapping edges of strip 33 of packing material to stabilize the tubular wrapping produces a longitudinal fin 60, which initially projects perpendicularly from the tubular wrapping. In a preferred embodiment, heat-sealing device 50 forming the longitudinal heat-seal is connected to a folding device, which folds the longitudinal fin 60 ninety degrees and presses it onto the tubular wrapping. Likewise, each transverse heat-seal (by heat-sealing device 51) on the tubular wrapping produces a transverse fin 61, which initially projects perpendicularly from (i.e. from a lateral wall of) the corresponding sealed inner package 3. In a preferred embodiment, a folding device downstream from heat-sealing device 51 folds each transverse fin 61 ninety degrees and presses it onto the corresponding sealed inner package 3 (i.e. onto a lateral wall of the corresponding sealed package 3). Each transverse fin 61 is preferably fixed (heat-sealed or glued) to the corresponding sealed inner package 3 (i.e. to a lateral wall of the corresponding sealed package 3) so that it remains permanently contacting sealed inner package 3.

[0045] It is important to note that, whereas each transverse fin 61 must be fixed to remain permanently contacting the corresponding sealed inner package 3, the transverse heat-seals provide for holding the longitudinal fin 60 permanently contacting the corresponding sealed inner package 3.

[0046] Figures 4b and 4c show a sealed inner package 3 prior to folding (fixing) the two transverse fins 61, and Figure 4a a sealed inner package 3 after the two transverse fins 61 are folded (fixed).

[0047] In the Figure 32-40 embodiment, each group 4 of cigarettes is formed on forming conveyor 35 independently and separately from the corresponding stiffener 8; each stiffener 8 is folded on folding conveyor 39 independently and separately from formation of the corresponding group 4 of cigarettes; and each pre-formed group 4 of cigarettes is coupled on coupling conveyor 42 with the corresponding pre-folded stiffener 8. As stated, forming conveyor 35 for forming groups 4 of cigarettes extends parallel to and alongside folding conveyor 38 for folding stiffeners 8; whereas coupling conveyor 42, on which each pre-formed group 4 of cigarettes is coupled with the corresponding pre-folded stiffener 8, is perpendicular to forming conveyor 35 and folding conveyor 38.

[0048] In the Figure 41-43 embodiment, on the other hand, each stiffener 8 is fed into a forming pocket 36 on forming conveyor 35, upstream from hopper 34; and each group 4 of cigarettes is transferred from hopper 34 into forming pocket 36 (containing stiffener 8) and directly into stiffener 8. In this embodiment, as opposed to extending parallel to and alongside forming conveyor 35, folding conveyor 39 for folding stiffeners 8 is located upstream from forming conveyor 35 to feed stiffeners 8, already folded, to the start of forming conveyor 35.

[0049] For the sake of simplicity, Figures 41-43 show a simplified stiffener 8 with only front wall 9 and lateral walls 10 (i.e. with no bottom wall 11). Though, clearly, stiffener 8 in the Figure 41-43 embodiment may also be as described with reference to Figures 6-31.

[0050] In one embodiment, packing unit 32 comprises a processing device for extracting air (by suction) from the tubular wrapping to form vacuum-sealed inner packages 3. Alternatively, in addition to extracting air by suction from the tubular wrapping, the processing device also injects inert gas to form controlled-atmosphere sealed inner packages 3.

[0051] In a different embodiment not shown, packing machine 26 only comprises packing section 27 for producing sealed inner packages 3, which are marketed as they are, without outer containers 2 (i.e. each packet 1 of cigarettes only comprises a sealed package 3, and has no outer container 2); or else a further packing machine (separate from and fully independent of packing machine 26) receives sealed inner packages 3 from packing machine 26, and forms outer containers 2 about sealed inner packages 3.

[0052] Sealed inner package 3 described above has numerous advantages.

[0053] Firstly, it can be produced using the 'flow-pack' method, ensuring the correct shape of group 4 of cigarettes. Essential to ensuring the correct shape of group 4 of cigarettes is the fact that stiffener 8 comprises a system for connecting bottom wall 11 to lateral walls 10, and for preventing bottom wall 11 from moving with re-

spect to lateral walls 10 (or, conversely, preventing lateral walls 10 from moving with respect to bottom wall 11). This connecting system, in fact, increases the rigidity of stiffener 8 and so further prevents unwanted movements of the cigarettes in group 4, particularly when forming the tubular wrapping.

[0054] Moreover, in a preferred but non-invention conform embodiment, the system connecting bottom wall 11 and lateral walls 10 has no glue, thus eliminating any glue inside sealed inner package 3, and the possibility of the substances in the glue somehow altering the taste and/or aroma of the tobacco in the cigarettes.

[0055] Given its numerous advantages, the design of packet 1 of cigarettes described may also be used for producing a carton of cigarettes, which is substantially the same as packet 1 described, except that it contains a group of packets of cigarettes as opposed to a group of cigarettes, or for producing a packet of cigars or similar, which is substantially the same as packet 1 described, except that it contains a group of cigars or similar, as opposed to a group of cigarettes.

Claims

1. A package (1) of tobacco articles, comprising:

   a group (4) of tobacco articles;
   a sealed inner package (3) enclosing the group (4) of tobacco articles and having an extraction opening (5) from which to extract the tobacco articles and closed by a sealing flap (6); and
   a stiffener (8) located inside the sealed inner package (3), contacting the group (4) of tobacco articles, and which comprises a front wall (9) contacting the cylindrical lateral walls of the tobacco articles; two lateral walls (10) located on opposite sides of the front wall (9) and contacting the cylindrical lateral walls of the tobacco articles; and a bottom wall (11) contacting the tips of the tobacco articles;

   the package (1) being **characterized in that:**

   the stiffener (8) comprises a connecting system for connecting the bottom wall (11) to the lateral walls (10) of the stiffener (8), to prevent movement of the two lateral walls (10) with respect to the bottom wall (11) ;
   each lateral wall (10) comprises a lateral tab (13), which is folded 90° with respect to the lateral wall (10) onto the bottom wall (11), and is secured mechanically to the bottom wall (11) by the connecting system; and
   the connecting system comprises glue (25) securing the lateral tabs (13) to the bottom wall (11).

2. A package (1) according to claim 1, and comprising a hinged-lid outer container (2) housing the sealed inner package (3).

Patentansprüche

1. Packung (1) von Tabakartikeln, die Folgendes umfasst:

   eine Gruppe (4) von Tabakartikeln;
   eine versiegelte innere Packung (3), die die Gruppe (4) von Tabakartikeln umschließt und eine Entnahmeöffnung aufweist, aus der die Tabakartikel entnommen werden und die durch eine versiegelnde Lasche (6) geschlossen wird; und
   ein Versteifungselement (8), das sich in der verschlossenen inneren Packung (3) befindet, das mit der Gruppe (4) von Tabakartikeln in Kontakt ist, und das eine vordere Wand (9), die mit den zylindrischen seitlichen Wänden der Tabakartikel in Kontakt ist; zwei seitliche Wände (10), die sich an gegenüberliegenden Seiten der vorderen Wand (9) befinden und mit den zylindrischen seitlichen Wänden der Tabakartikel in Kontakt kommen; und eine untere Wand (11), die mit den Spitzen der Tabakartikel in Kontakt kommt, umfasst;

   wobei die Packung (1) **dadurch gekennzeichnet ist, dass**:

   das Versteifungselement (8) ein Verbindungssystem zum Verbinden der unteren Wand (11) mit den seitlichen Wänden (10) des Versteifungselements (8) umfasst, um eine Bewegung der zwei seitlichen Wände (10) in Bezug auf die untere Wand (11) zu verhindern;
   wobei jede seitliche Wand (10) einen seitlichen Streifen (13) umfasst, der um 90° in Bezug auf die seitliche Wand (10) auf die untere Wand (11) gefaltet ist und an der unteren Wand (11) durch das Verbindungssystem mechanisch befestigt ist; und
   das Verbindungssystem Klebstoff (25) umfasst, der die seitlichen Streifen (13) an der unteren Wand (11) befestigt.

2. Packung (1) nach Anspruch 1, die einen äußeren Behälter (2) mit einem angelenkten Deckel umfasst, der die verschlossene innere Packung (3) aufnimmt.

Revendications

1. Paquet (1) d'articles de tabac, comprenant :

un groupe (4) d'articles de tabac ;
un paquet interne scellé (3) renfermant le groupe (4) d'articles de tabac et ayant une ouverture d'extraction (5) à partir de laquelle les articles de tabac doivent être extraits, et fermée par un rabat de scellement (6) ; et
un renfort (8) situé à l'intérieur du paquet interne scellé (3), en contact avec le groupe (4) d'articles de tabac, et qui comprend une paroi avant (9) en contact avec les parois latérales cylindriques des articles de tabac ; deux parois latérales (10) situées sur des côtés opposés de la paroi avant (9) et en contact avec les parois latérales cylindriques des articles de tabac ; et une paroi inférieure (11) en contact avec les embouts des articles de tabac ;

le paquet (1) étant **caractérisé en ce que** :

le renfort (8) comprend un système de liaison pour relier la paroi inférieure (11) aux parois latérales (10) du renfort (8), pour empêcher le mouvement des deux parois latérales (10) par rapport à la paroi inférieure (11) ;
chaque paroi latérale (10) comprend une patte latérale (13), qui est pliée selon un angle de 90° par rapport à la paroi latérale (10) sur la paroi inférieure (11), et est fixée mécaniquement à la paroi inférieure (11) par le système de liaison ; et
le système de liaison comprend de la colle (25) fixant les pattes latérales (13) à la paroi inférieure (11).

2. Paquet (1) selon la revendication 1, et comprenant un récipient externe à couvercle articulé (2) recevant le paquet interne scellé (3).

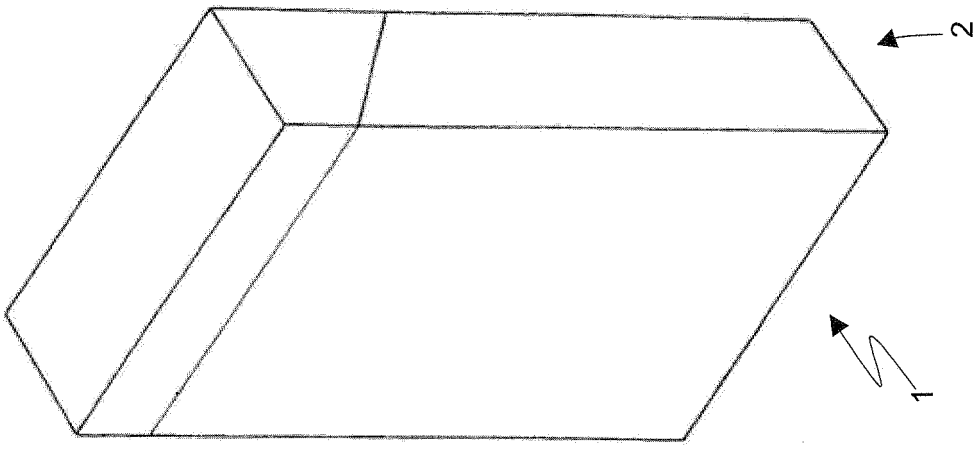


Fig.3

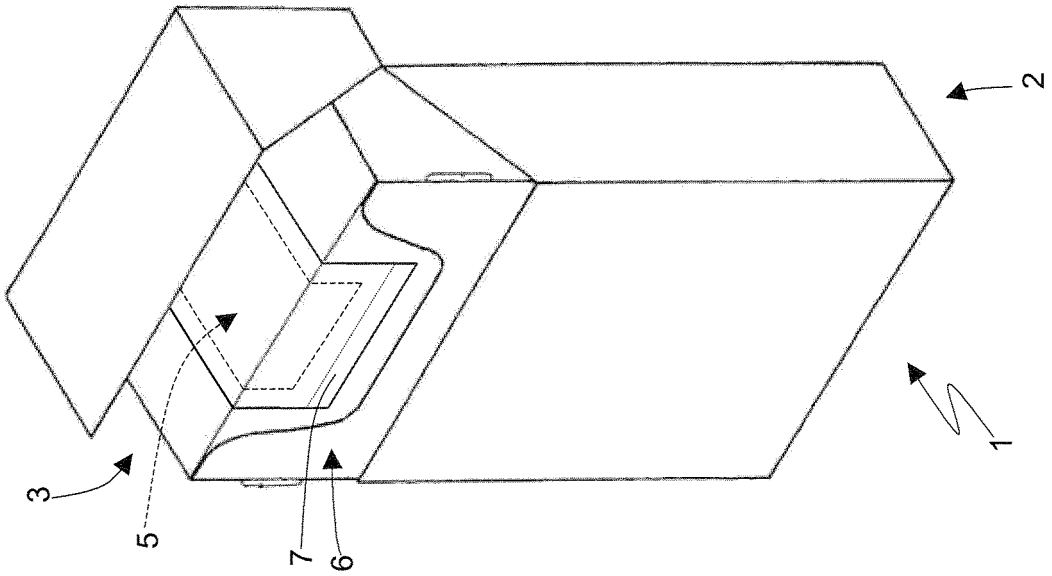


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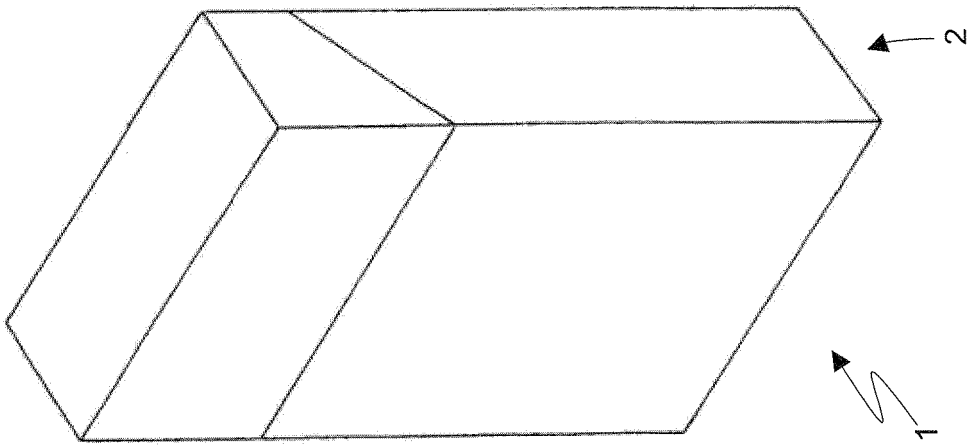
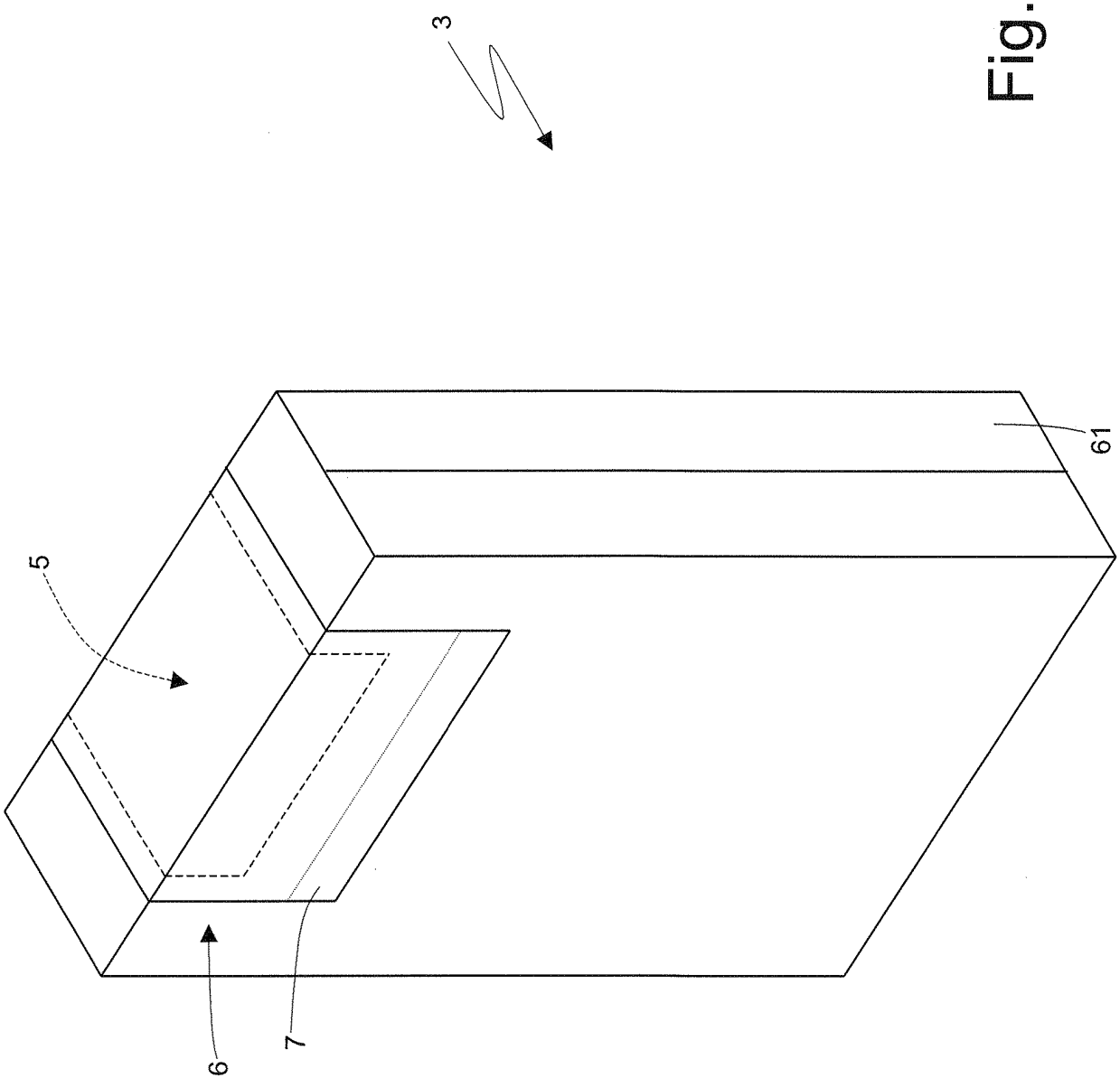


Fig.1

Fig.4a



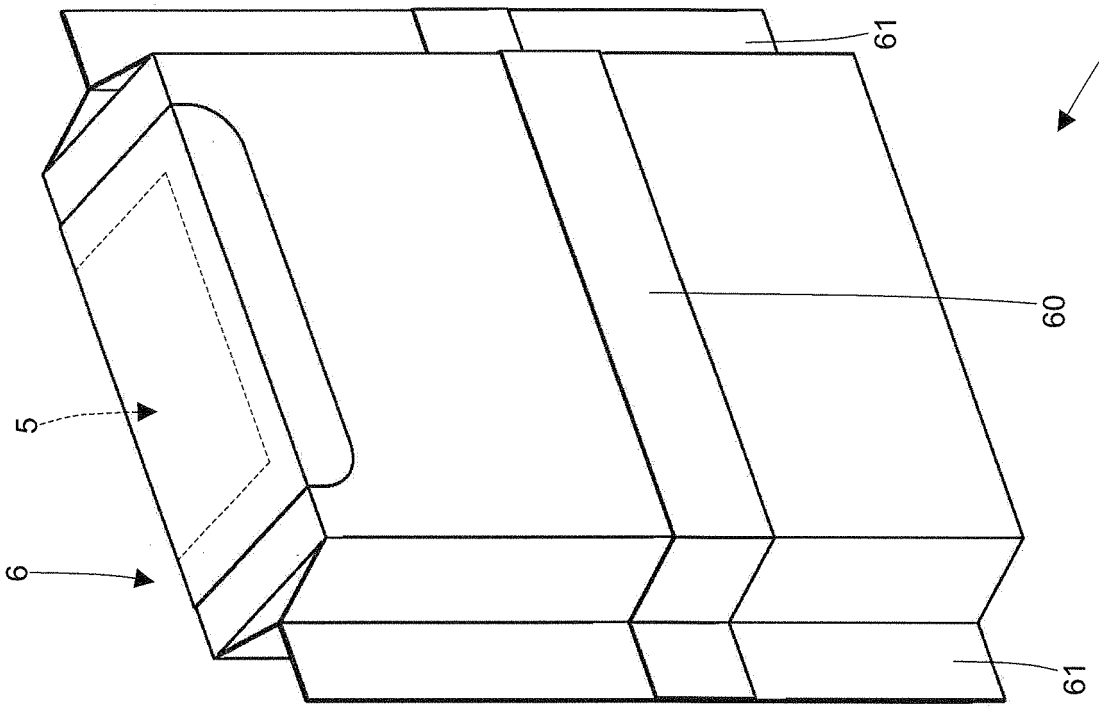


Fig.4c

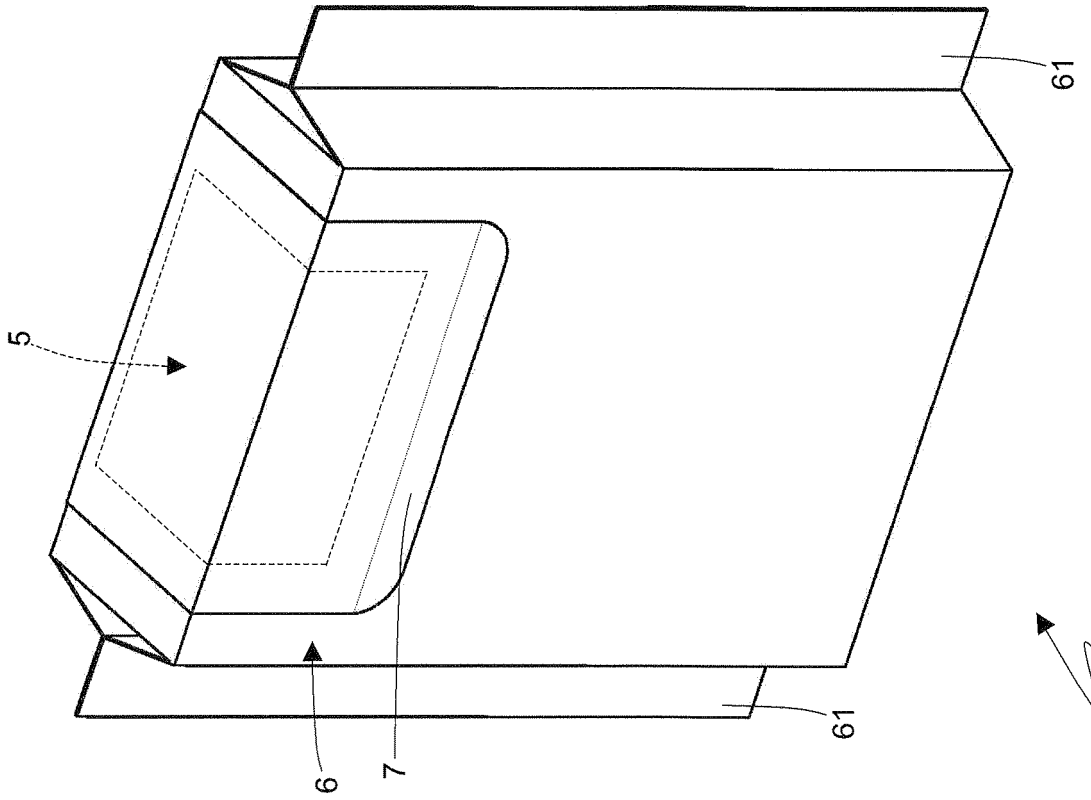


Fig.4b

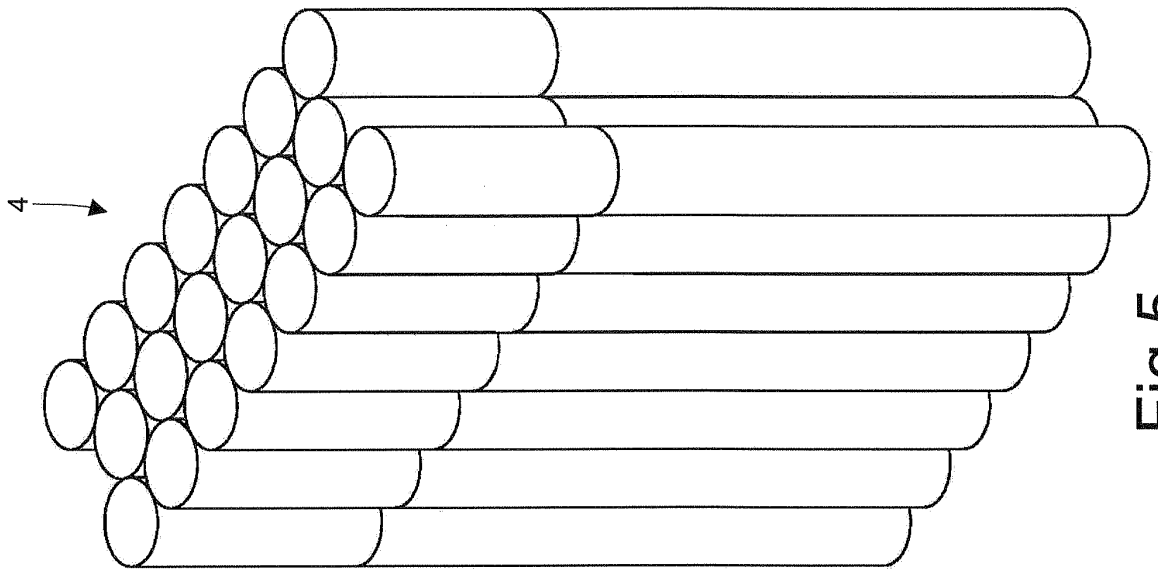


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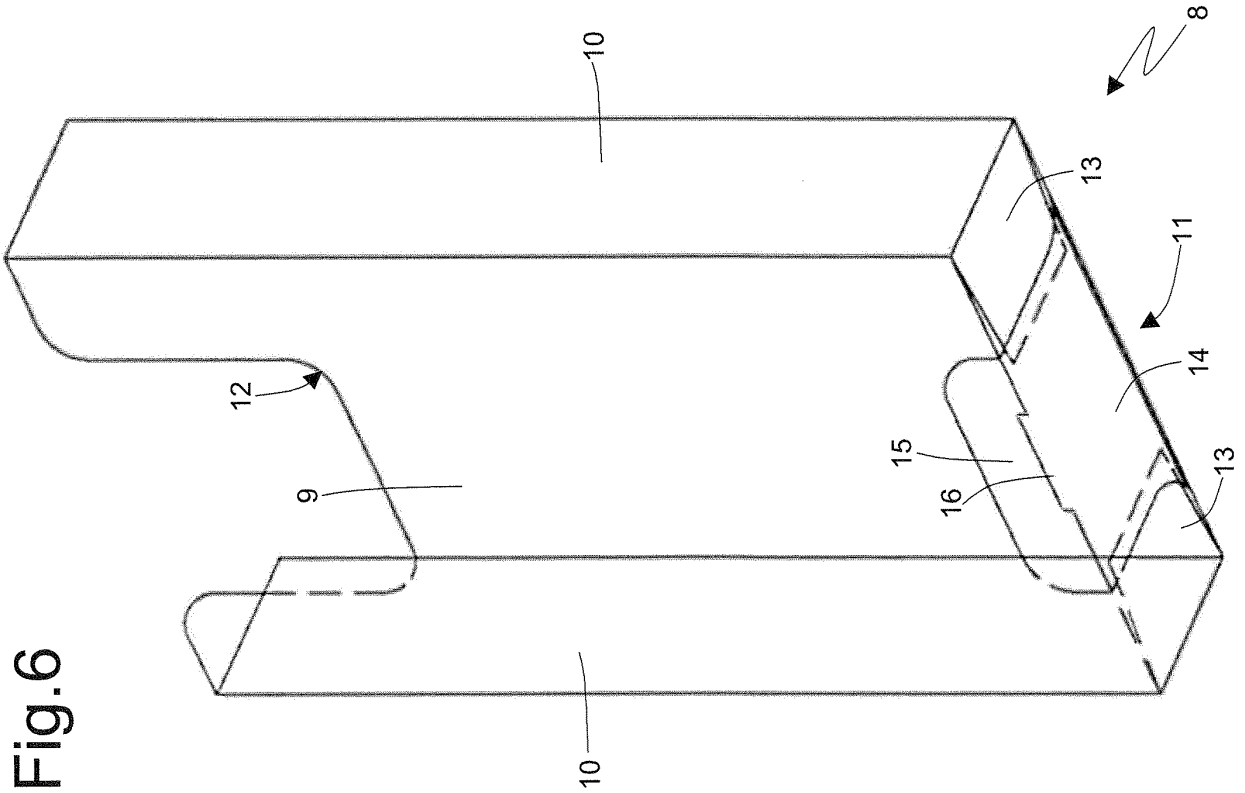


Fig.6

Fig.8

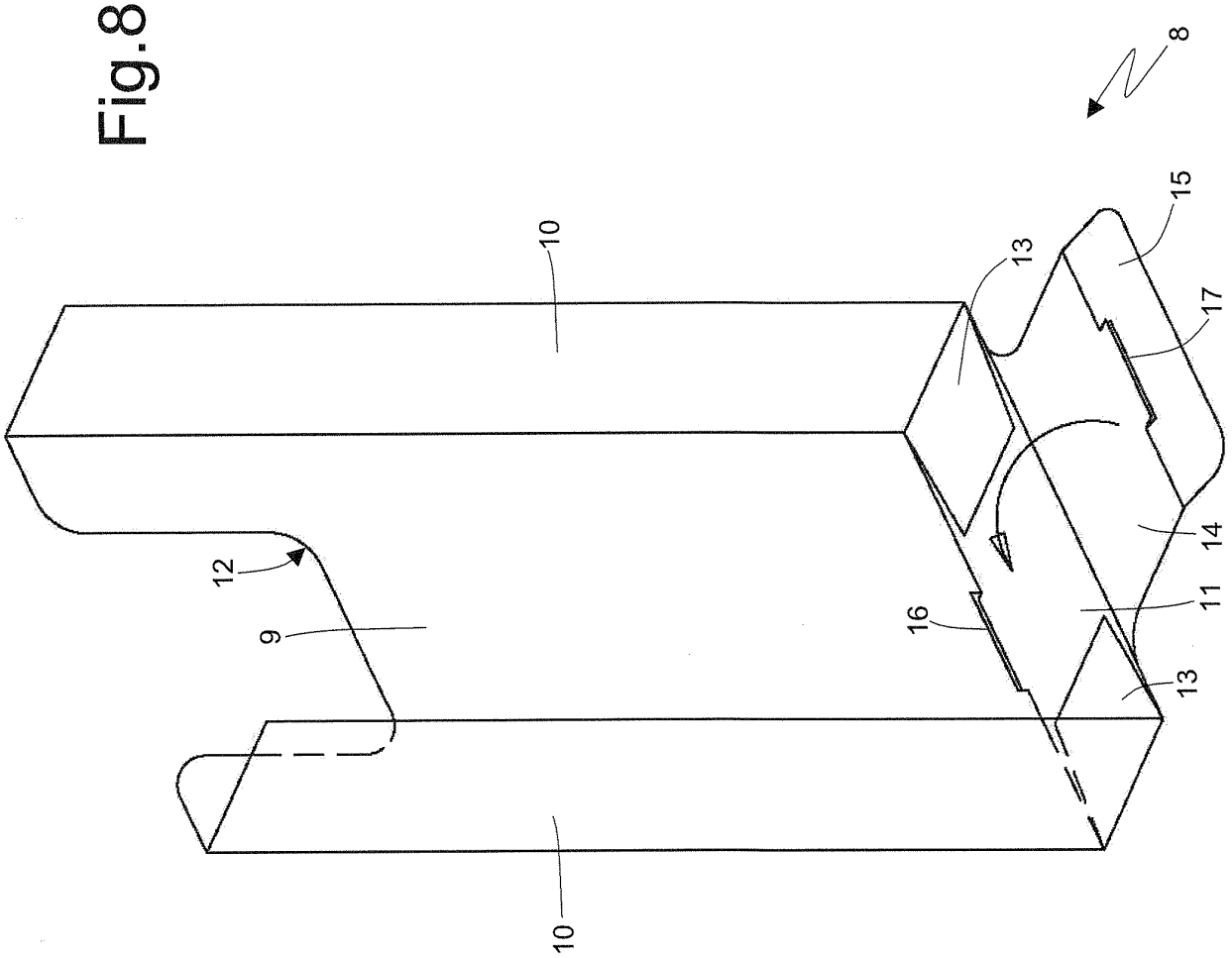
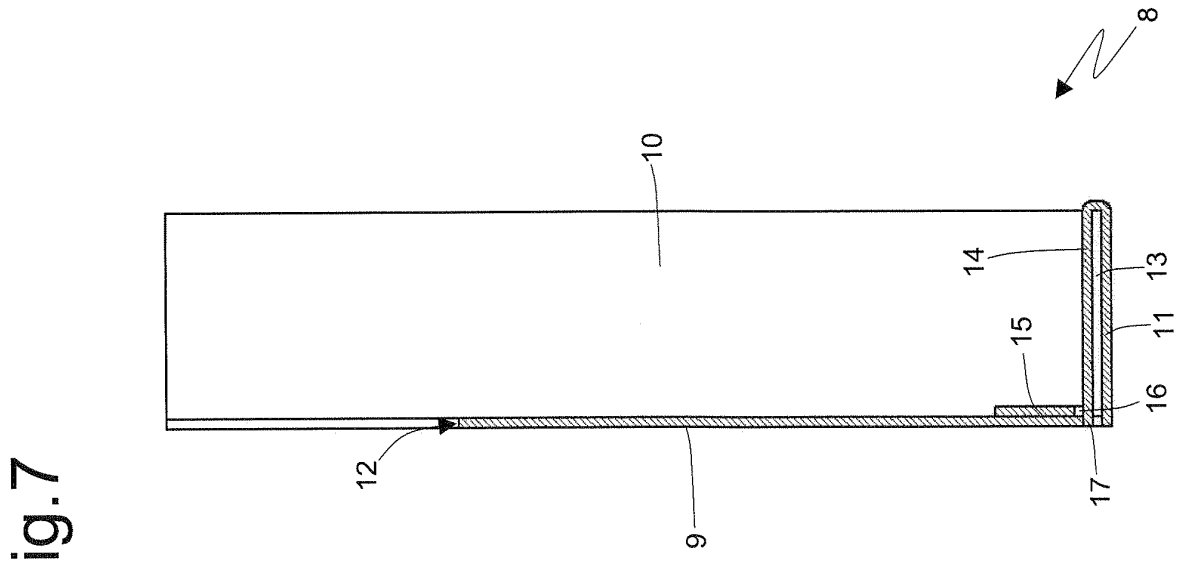


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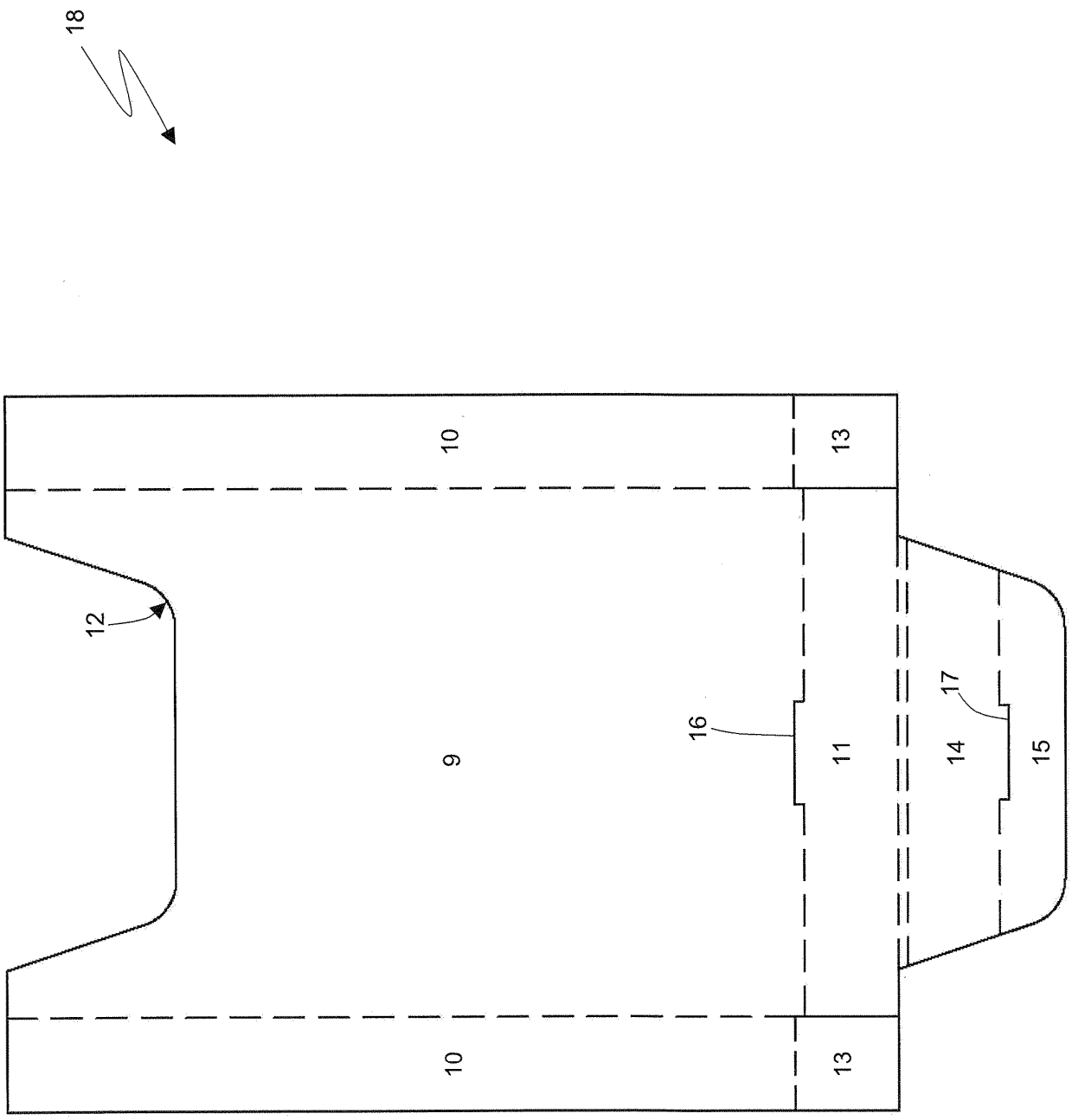


Fig.9

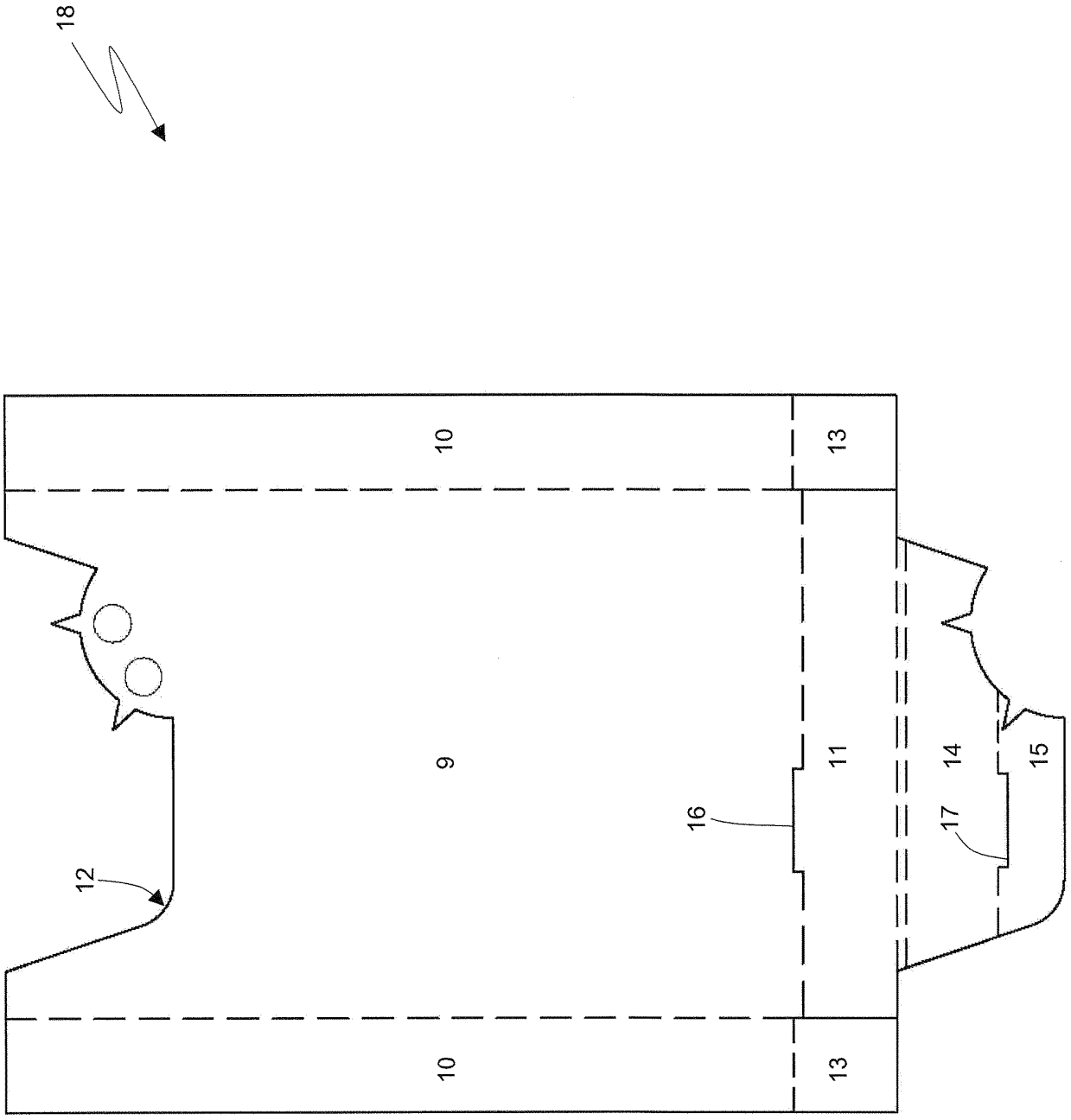


Fig.10

Fig.11

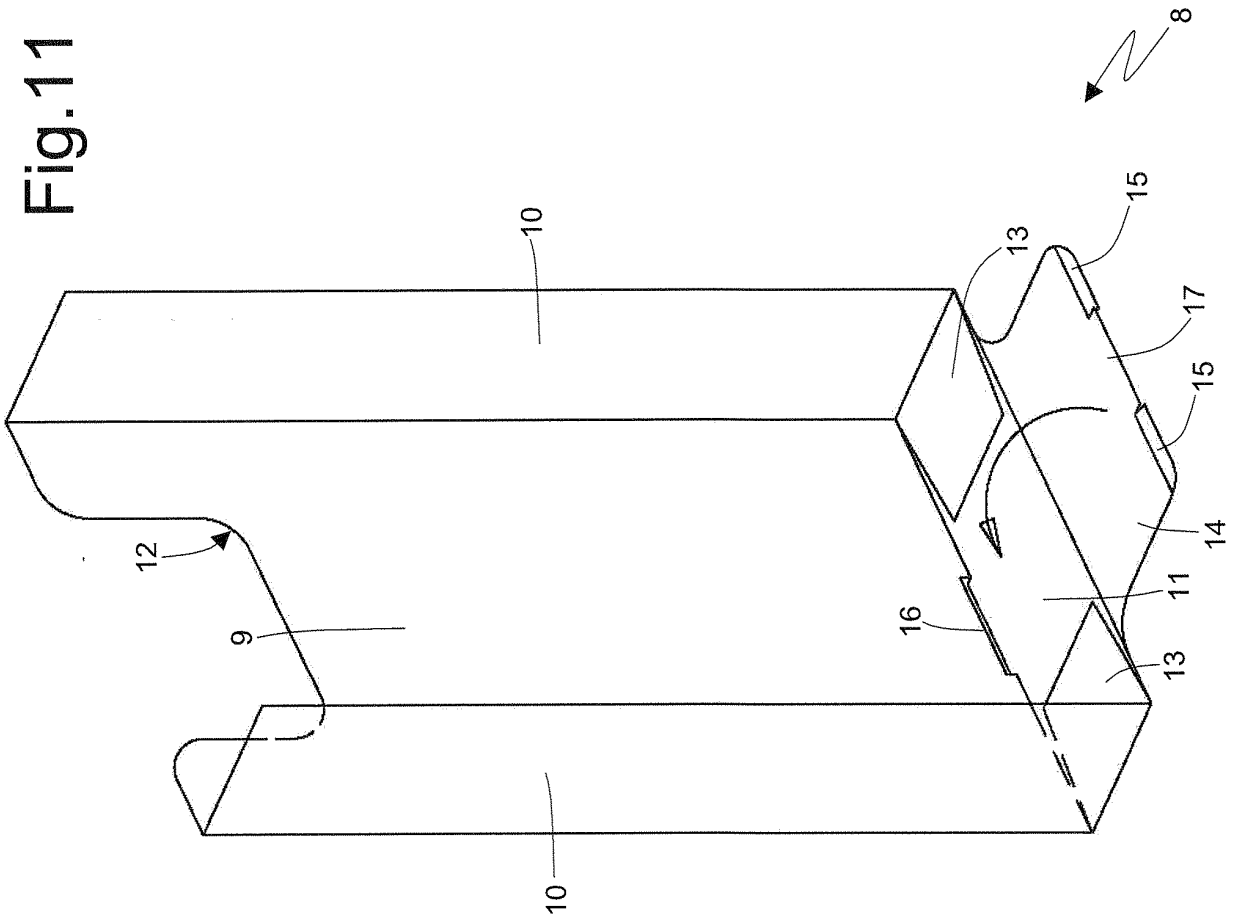


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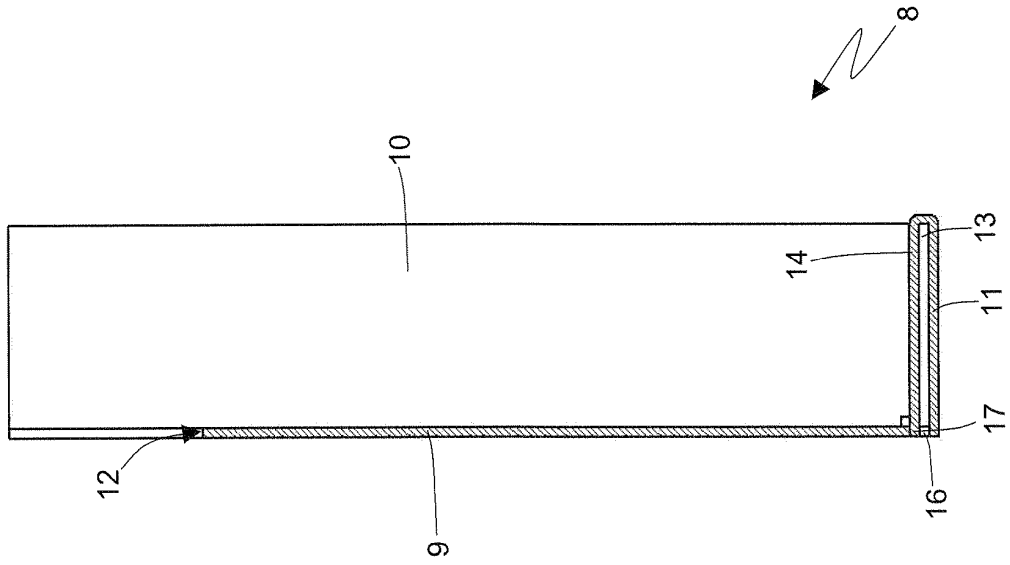


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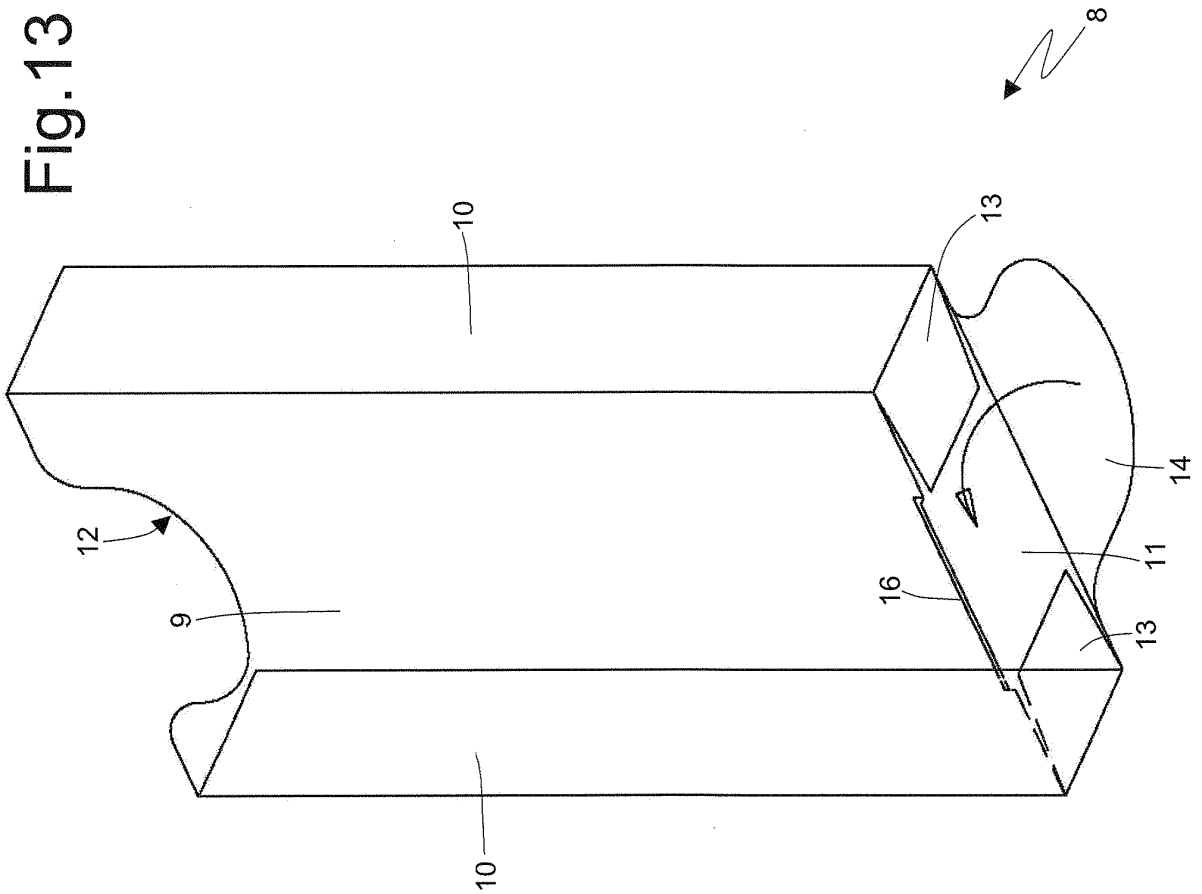
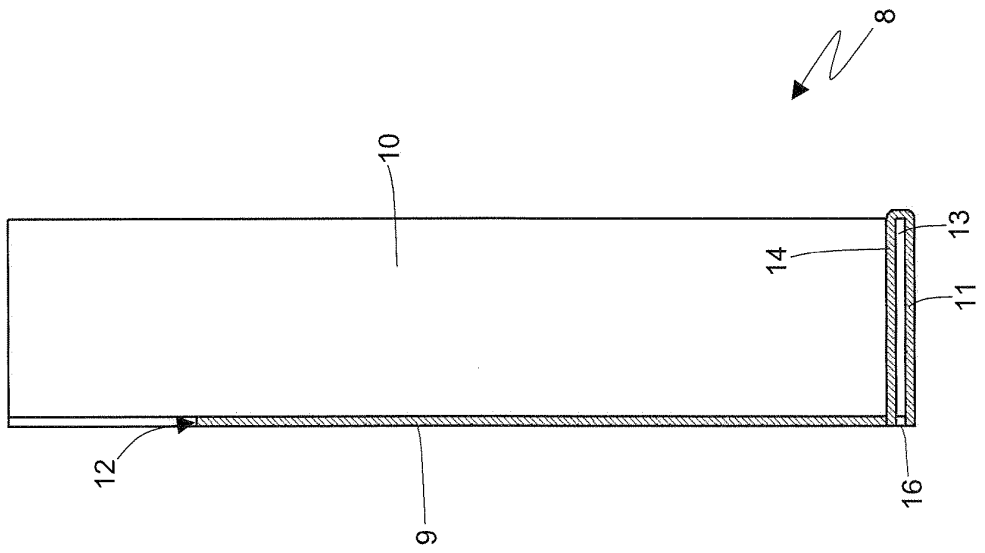


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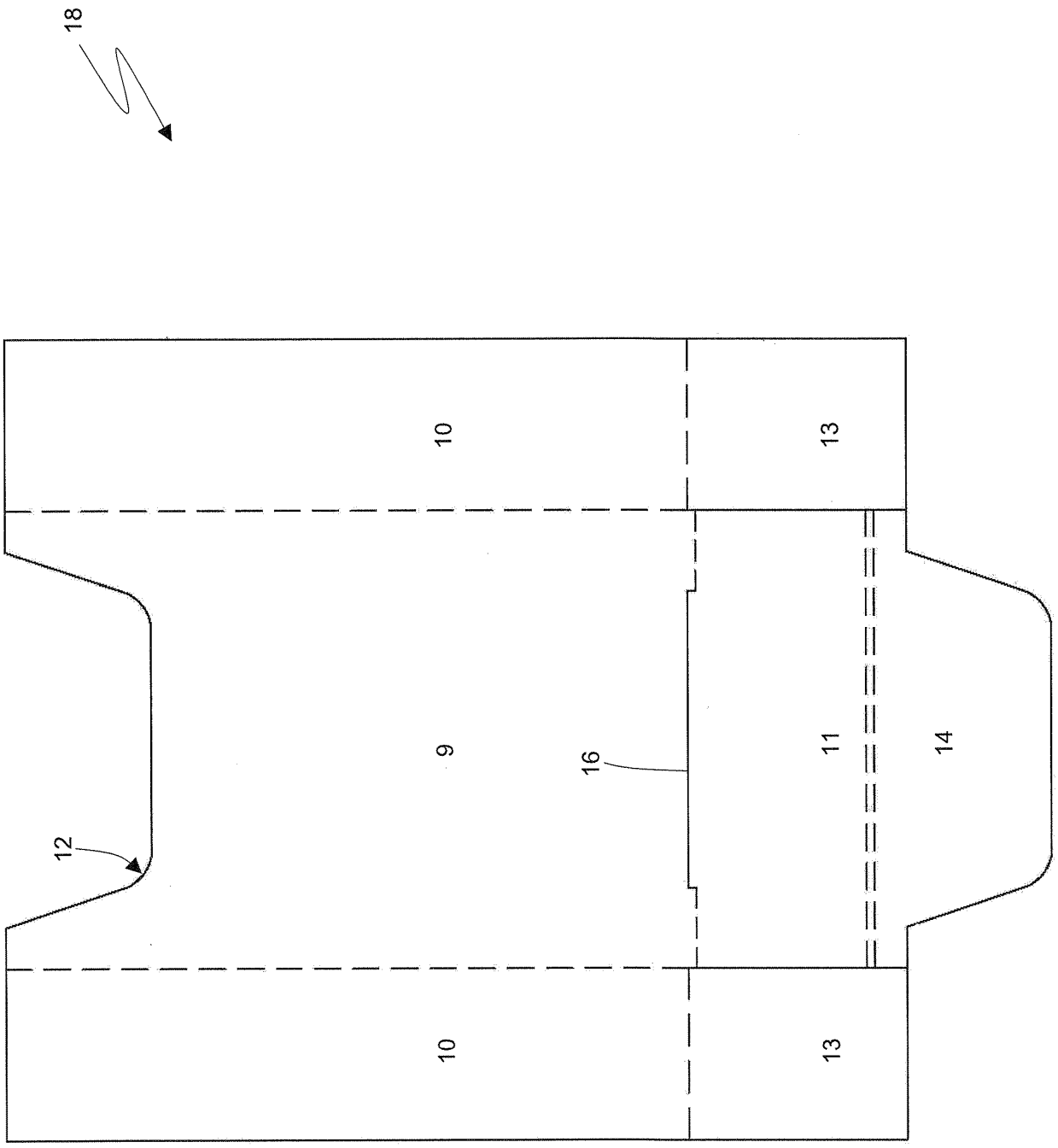


Fig.15

Fig.16

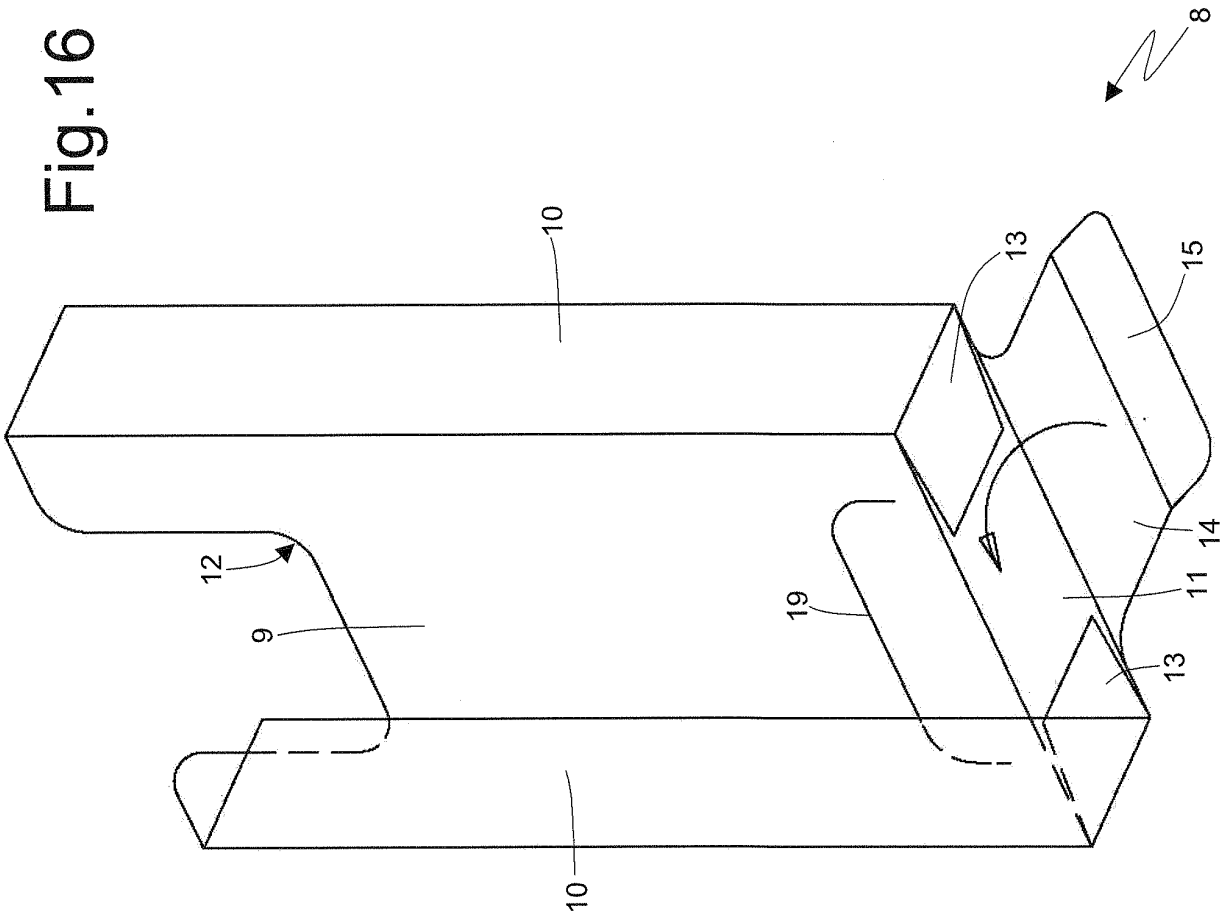


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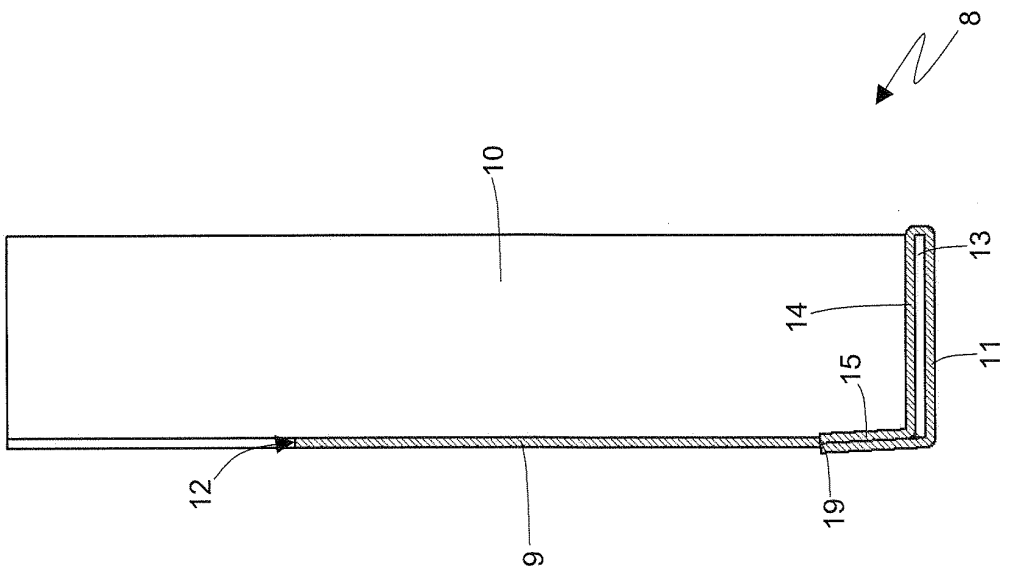


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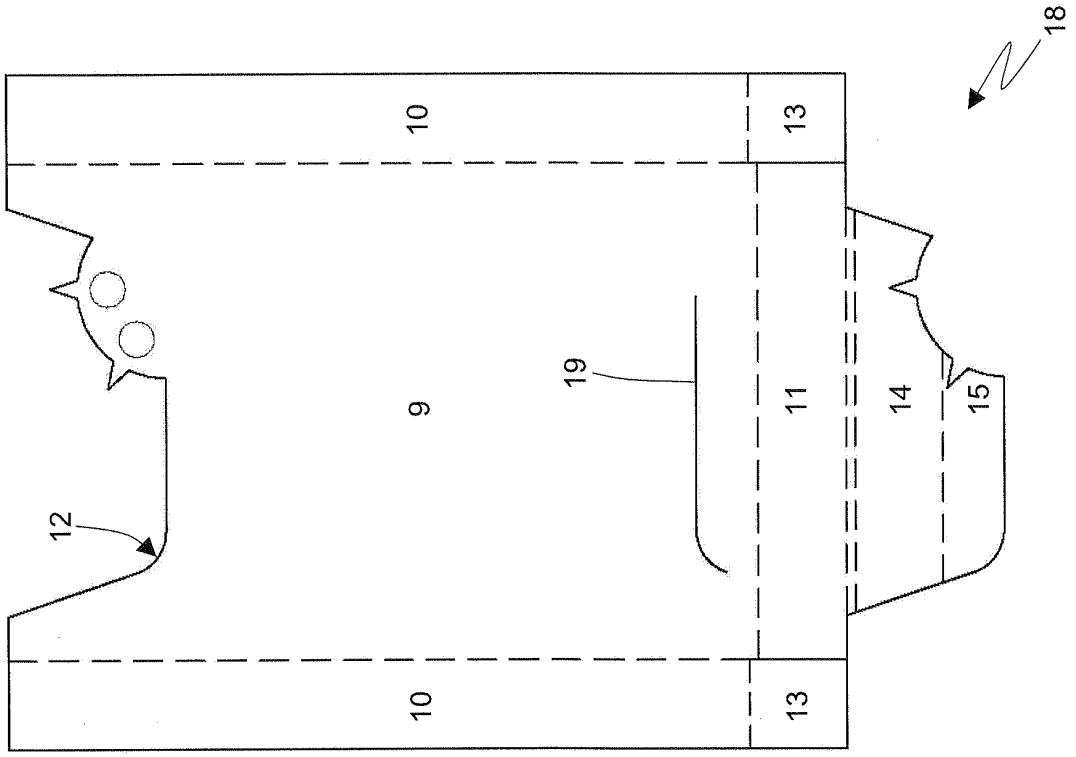


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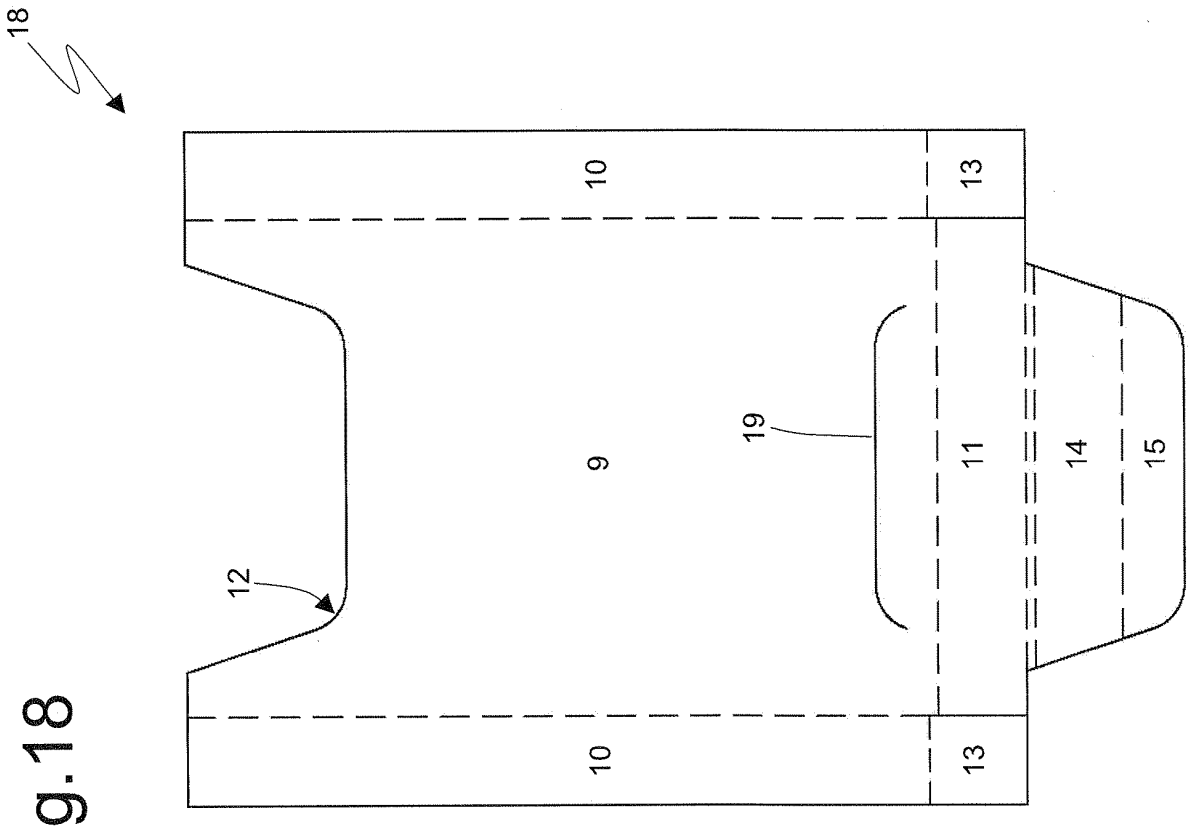


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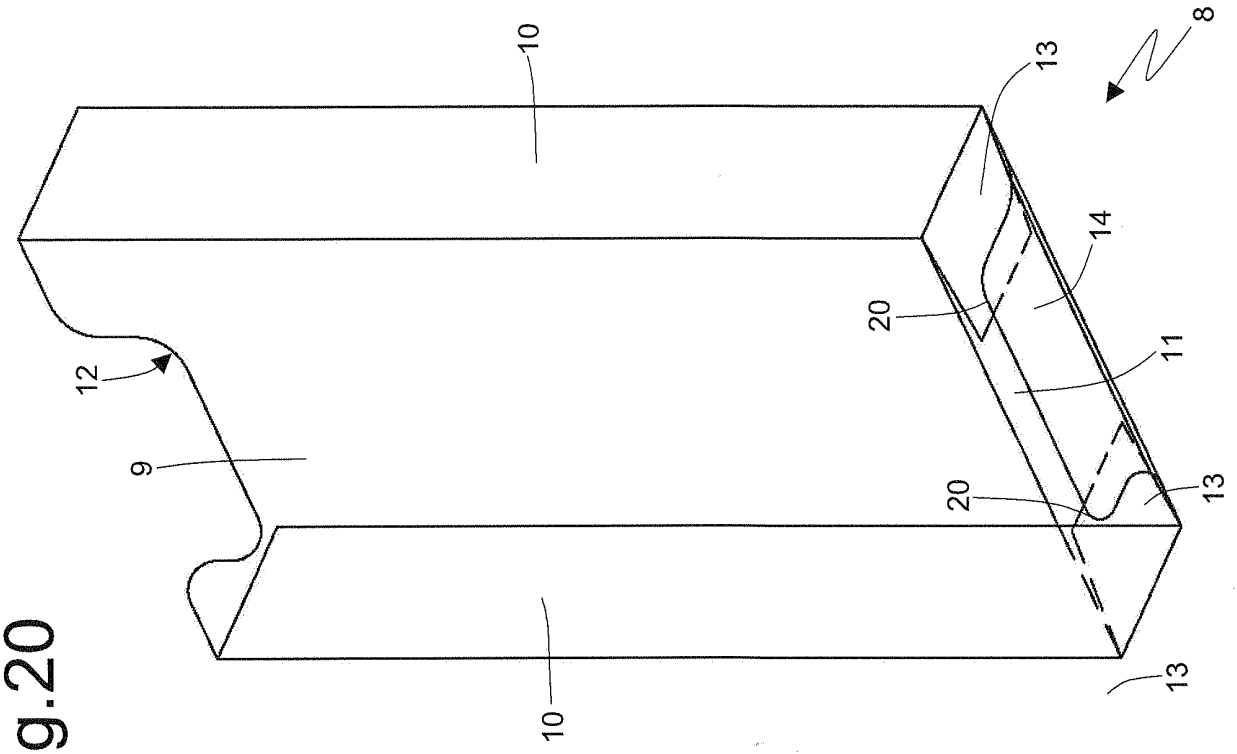


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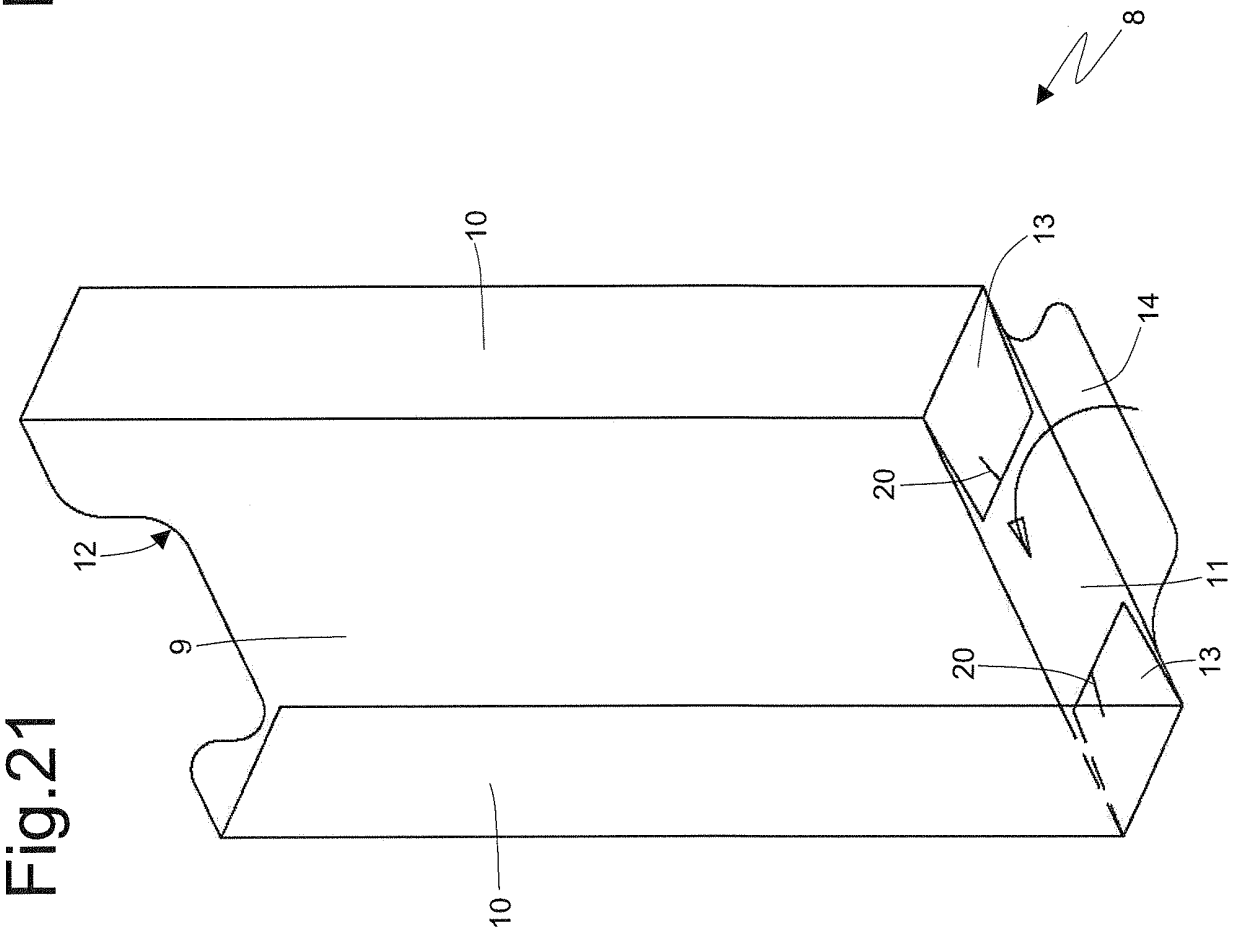


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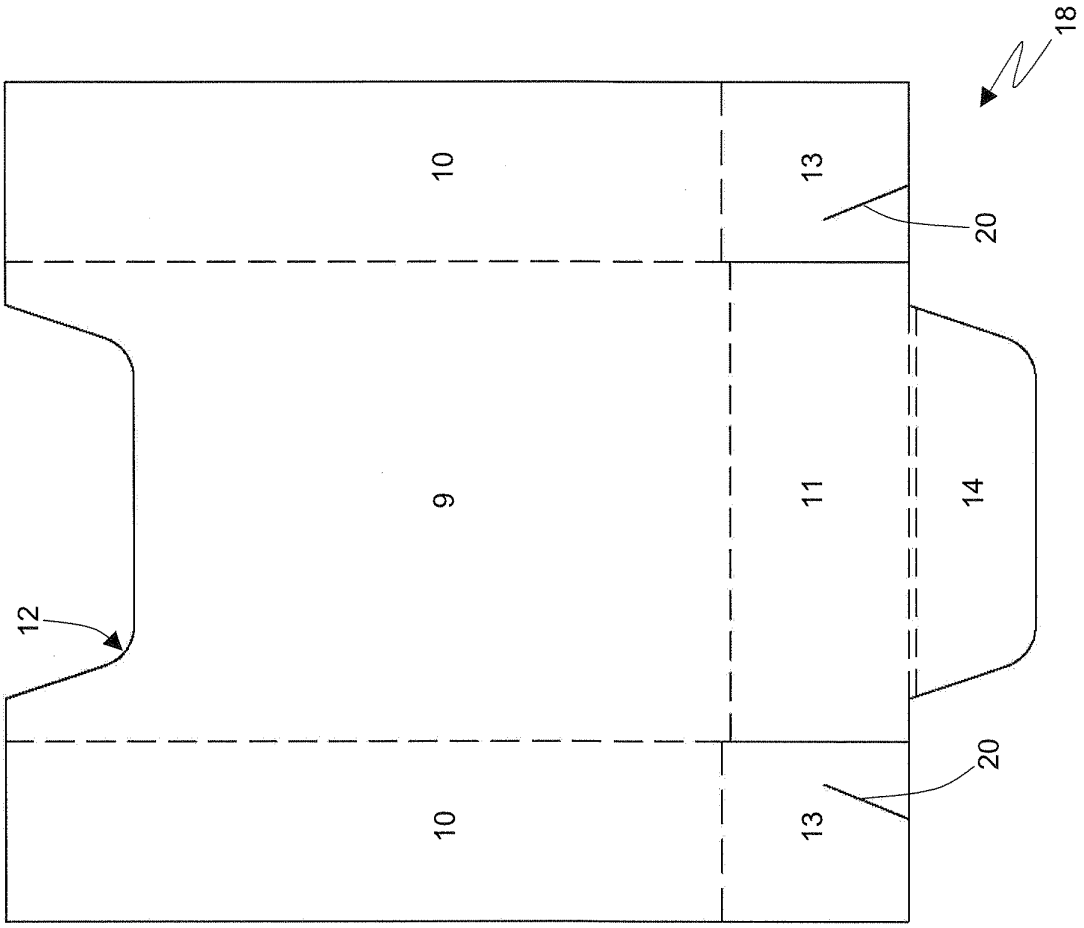
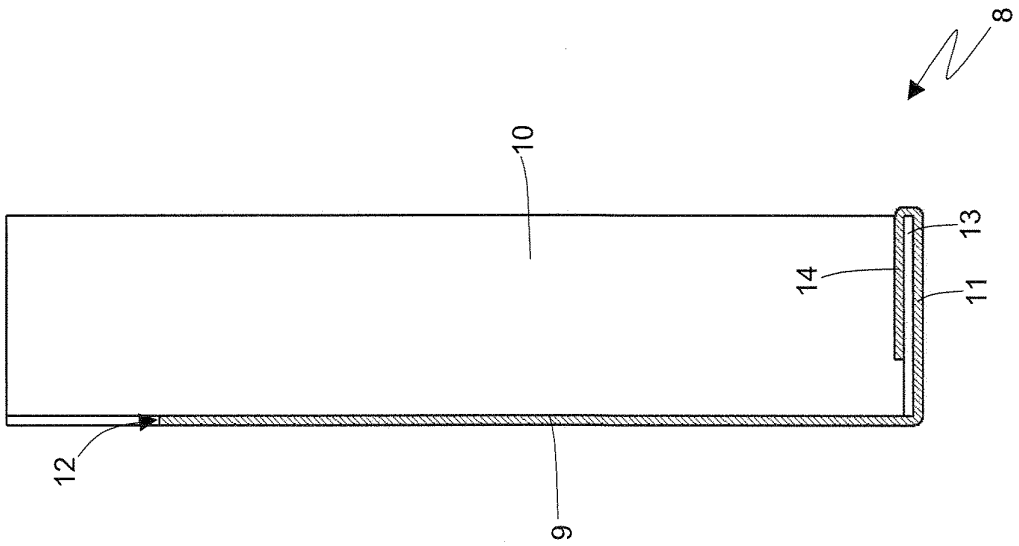


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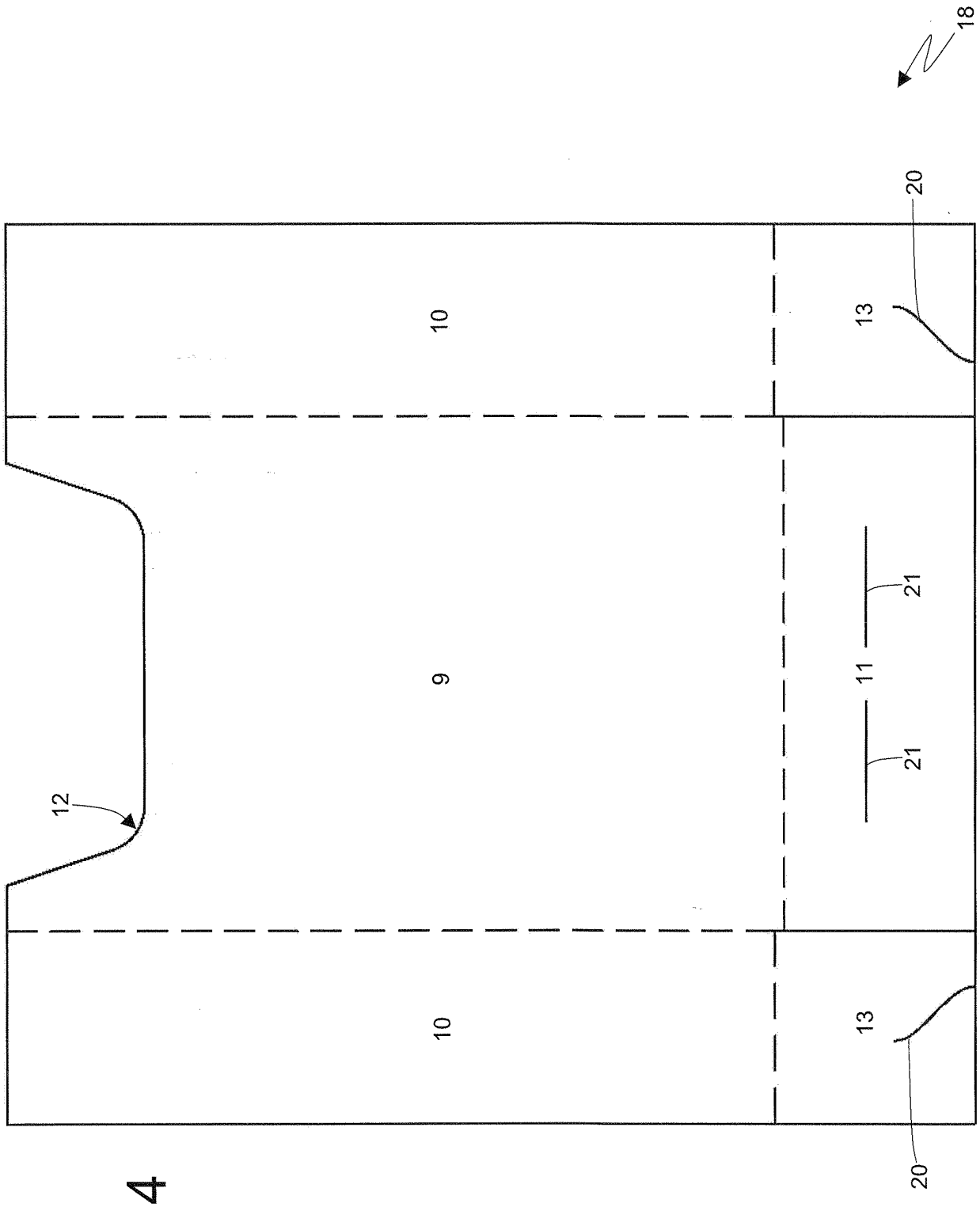


Fig.24

Fig.26

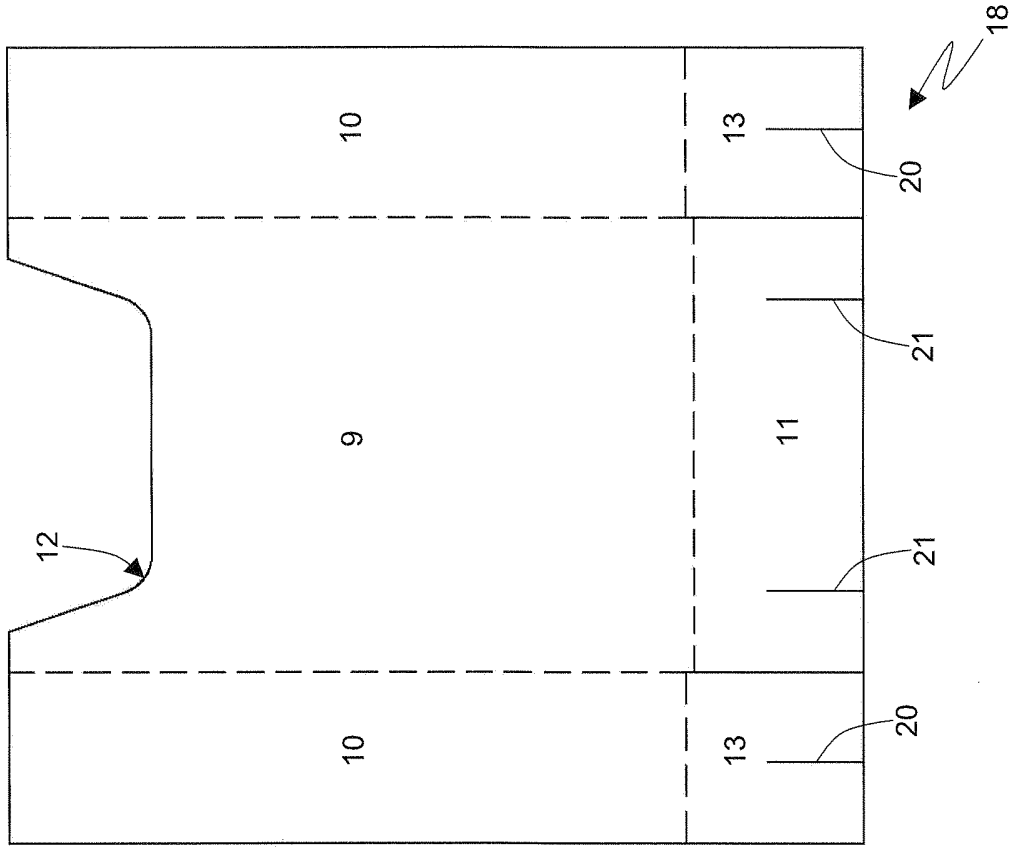


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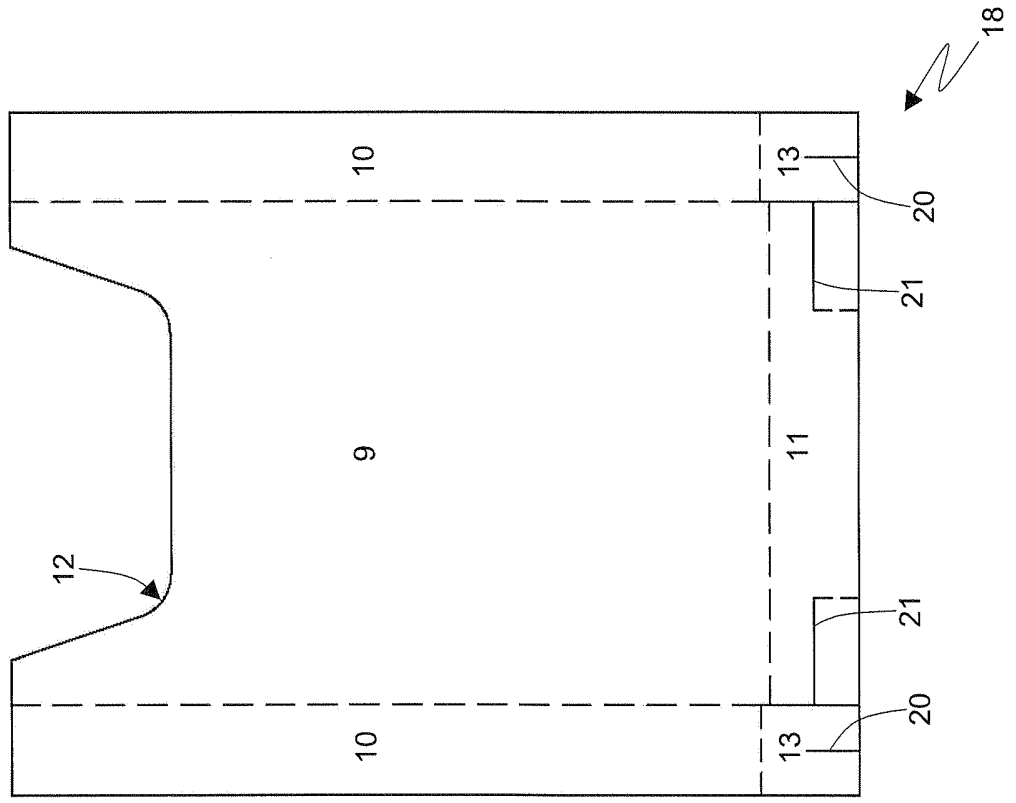


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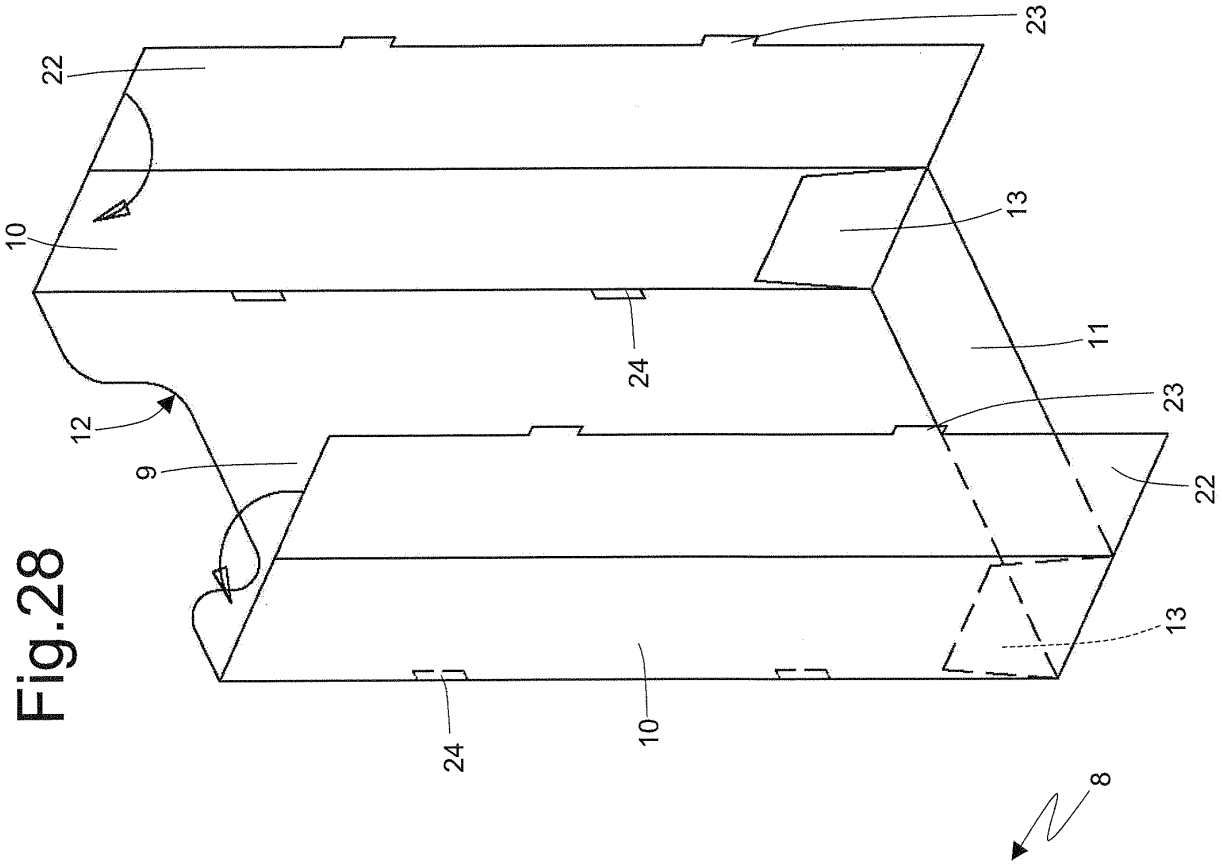


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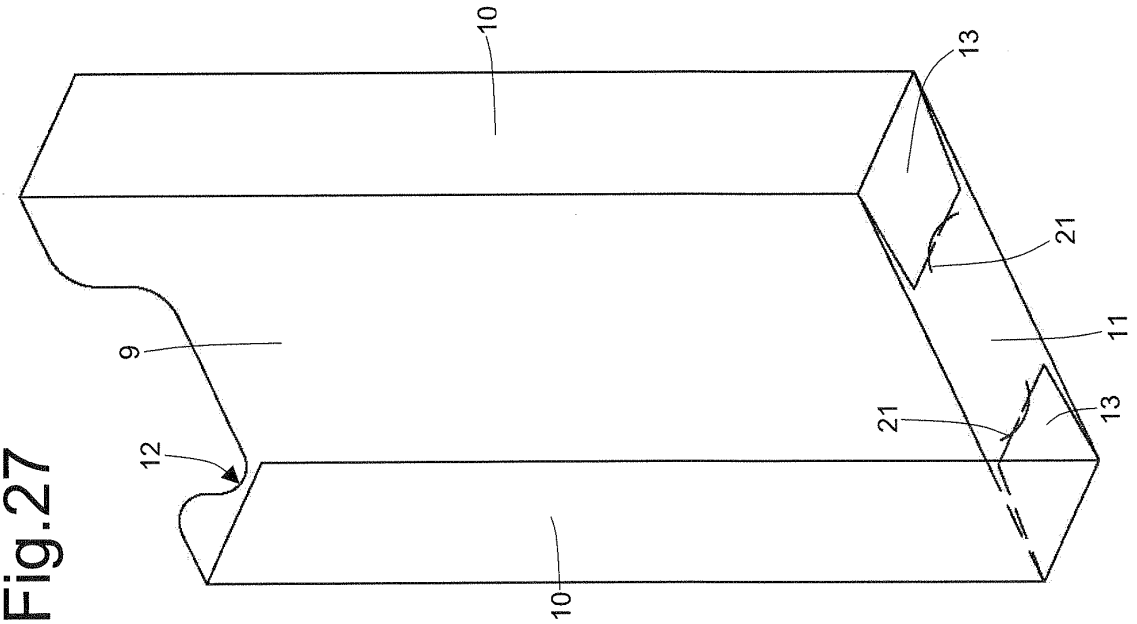


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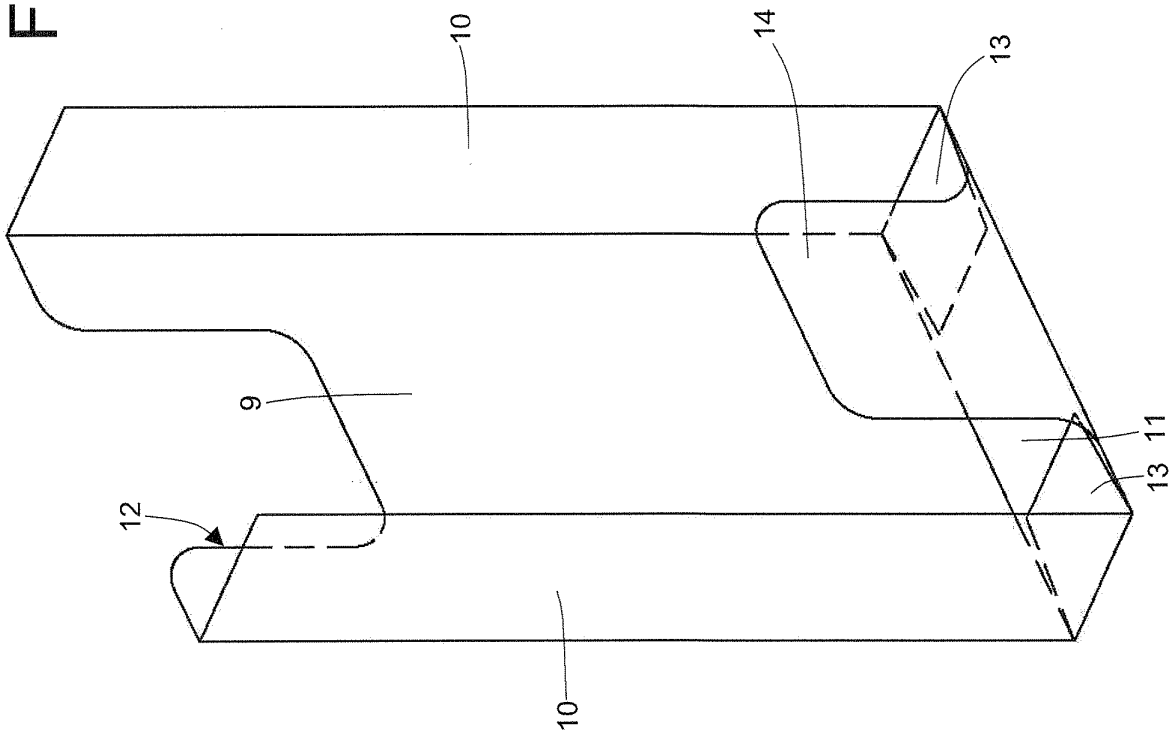
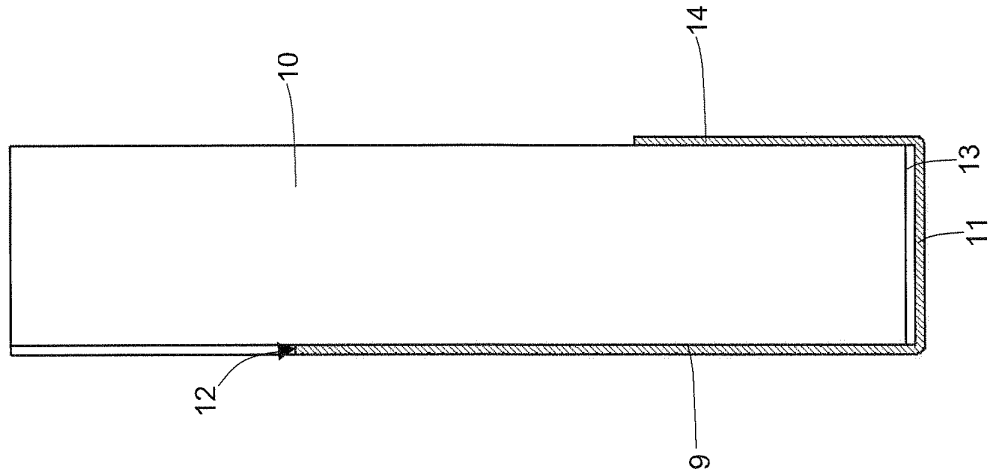


Fig.30



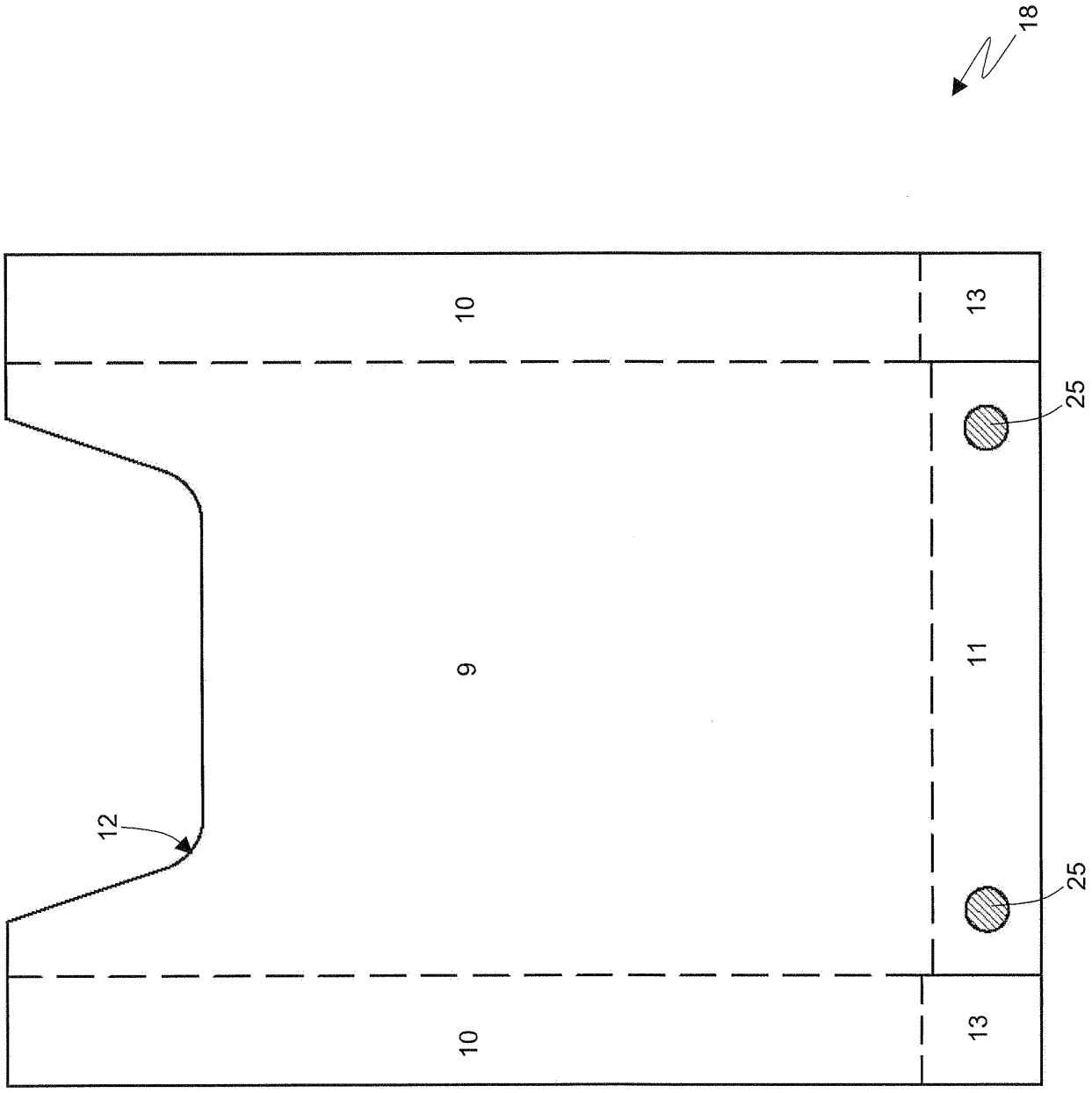


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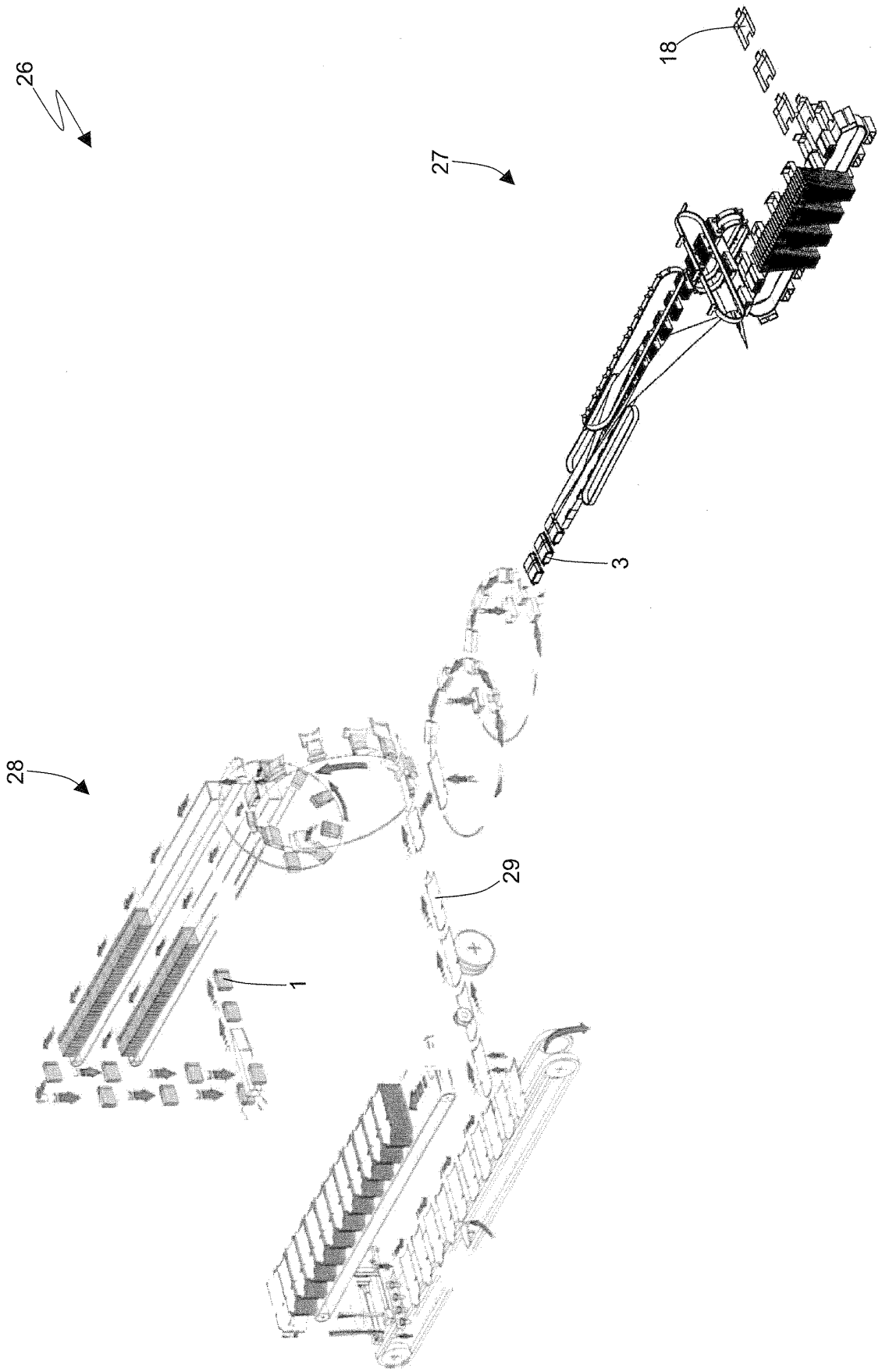


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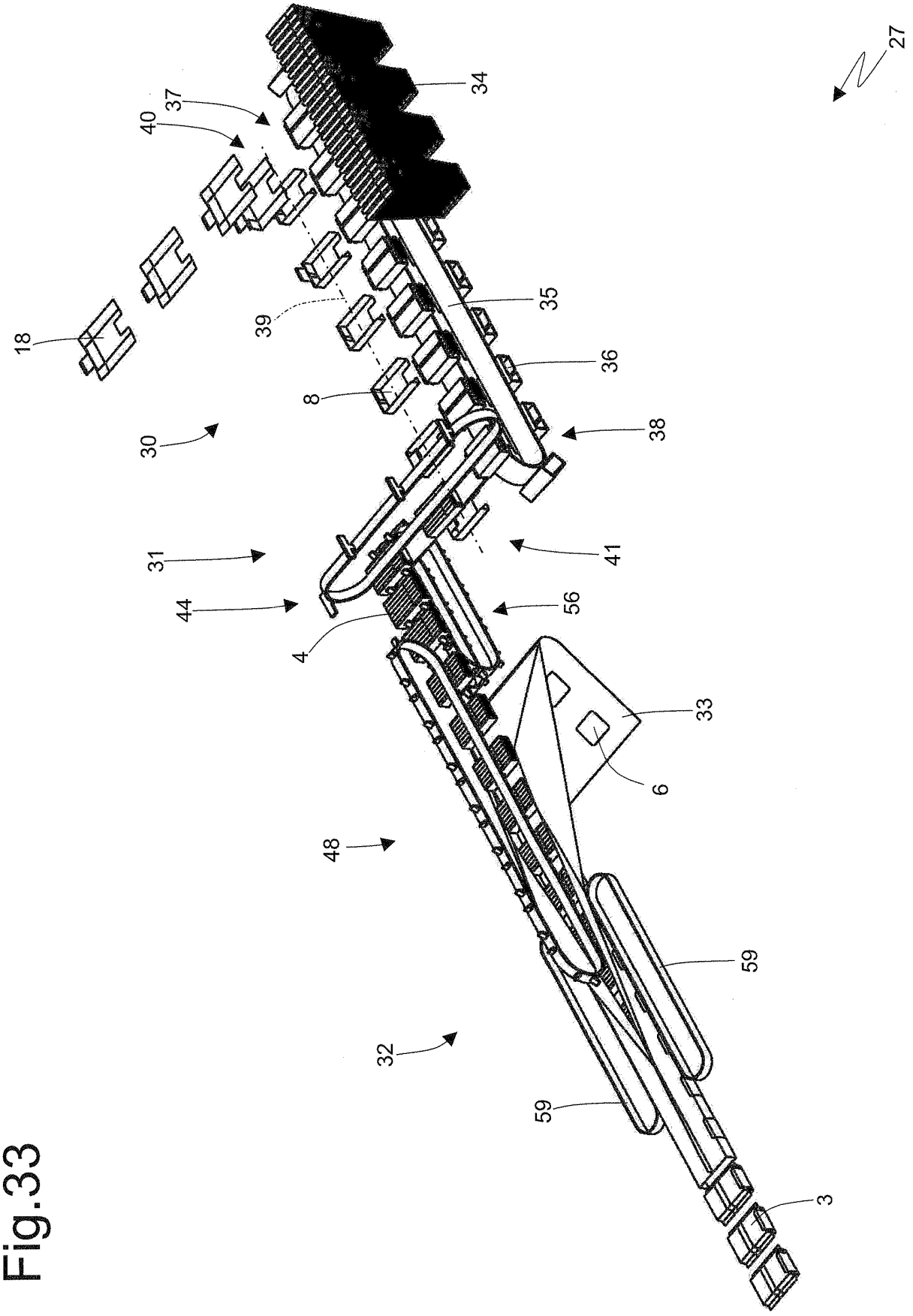


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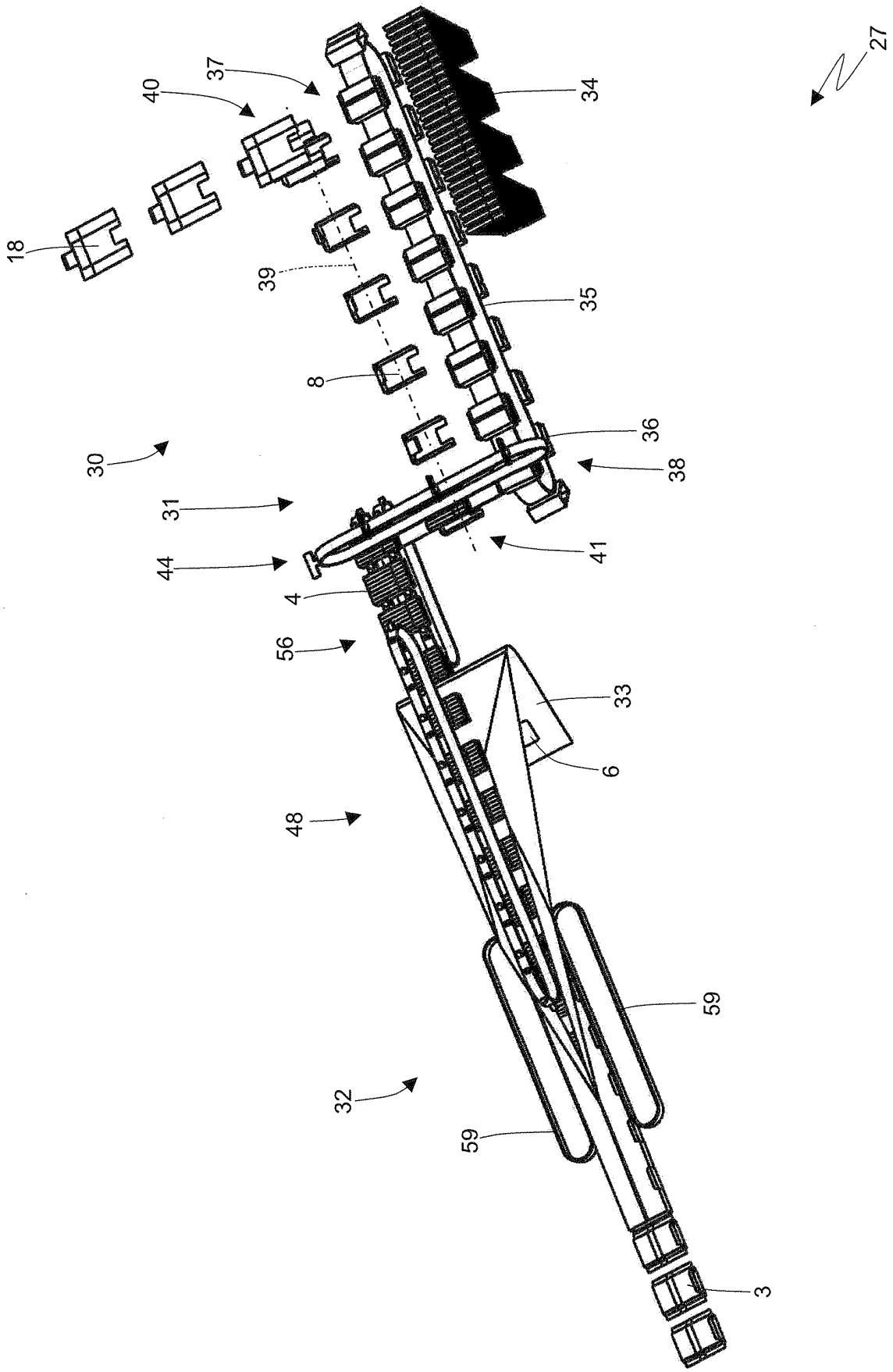


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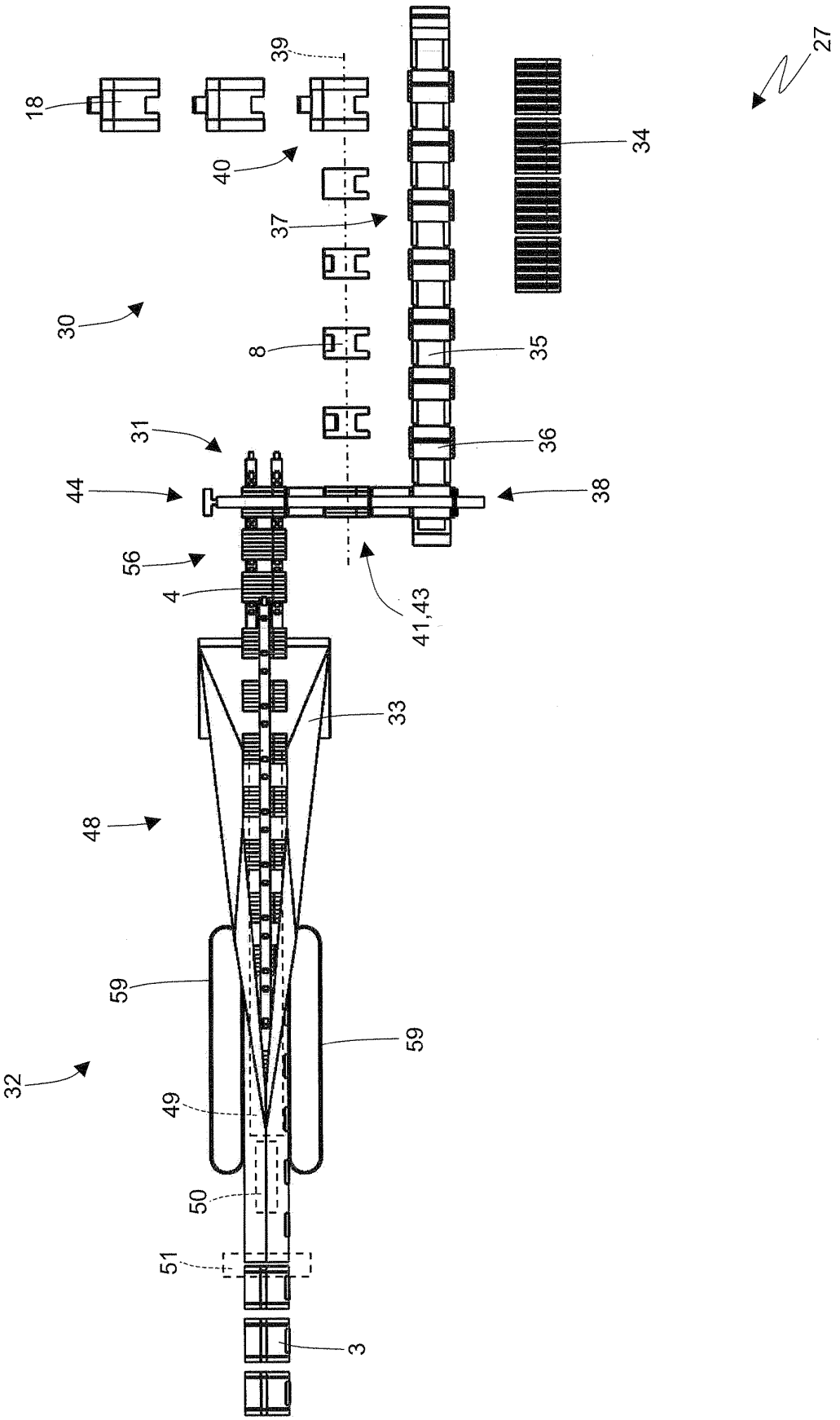


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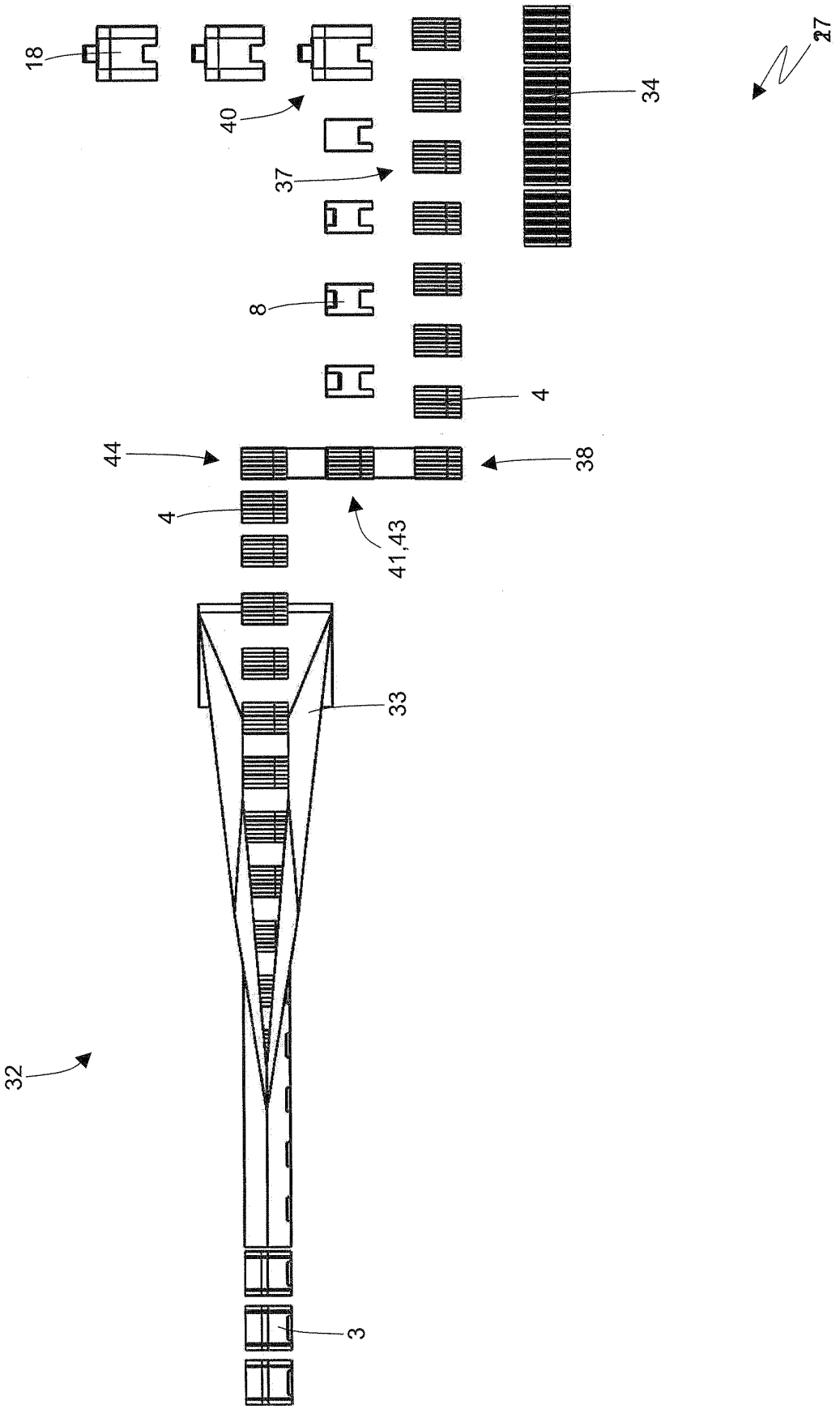
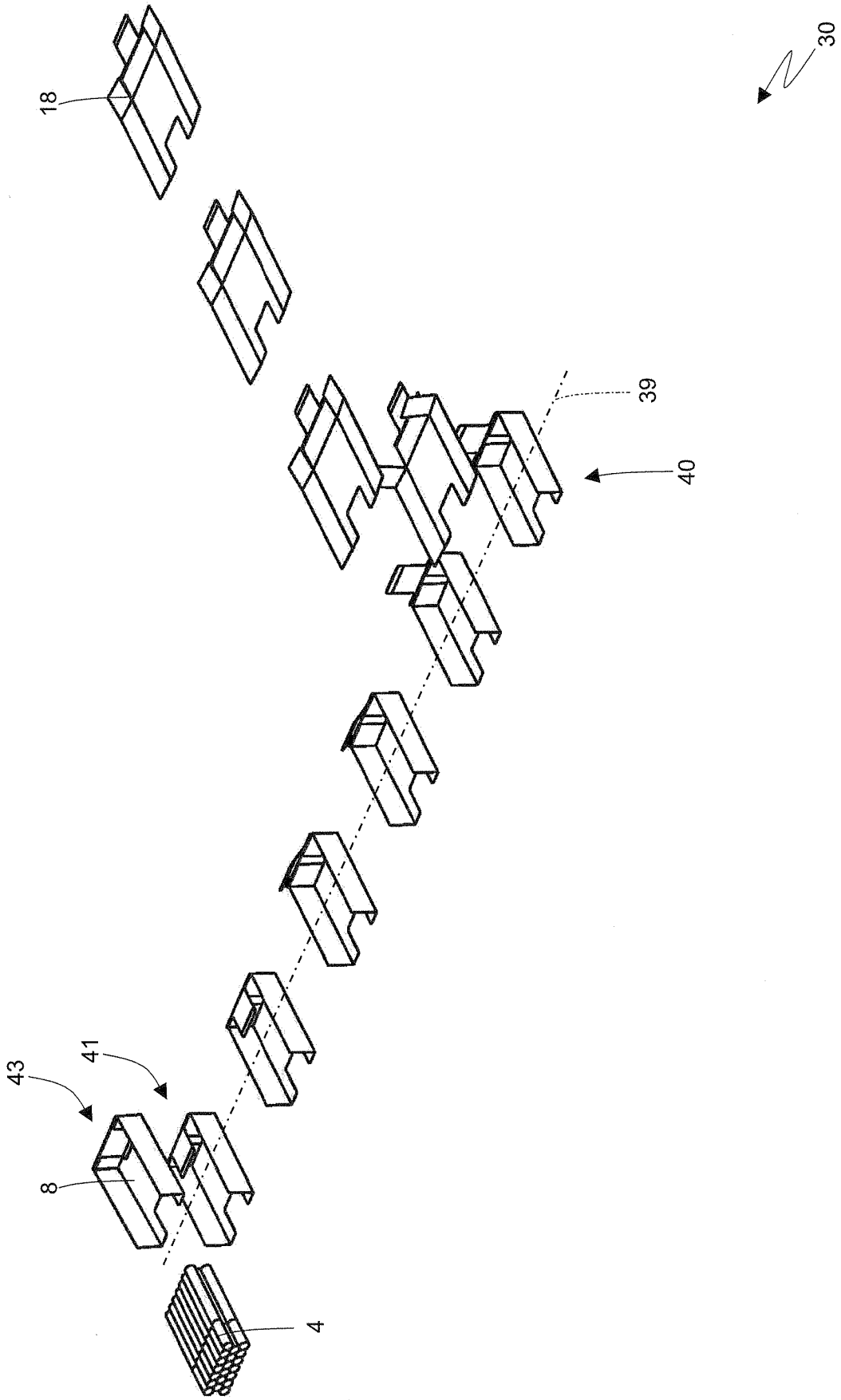


Fig.36

Fig.37



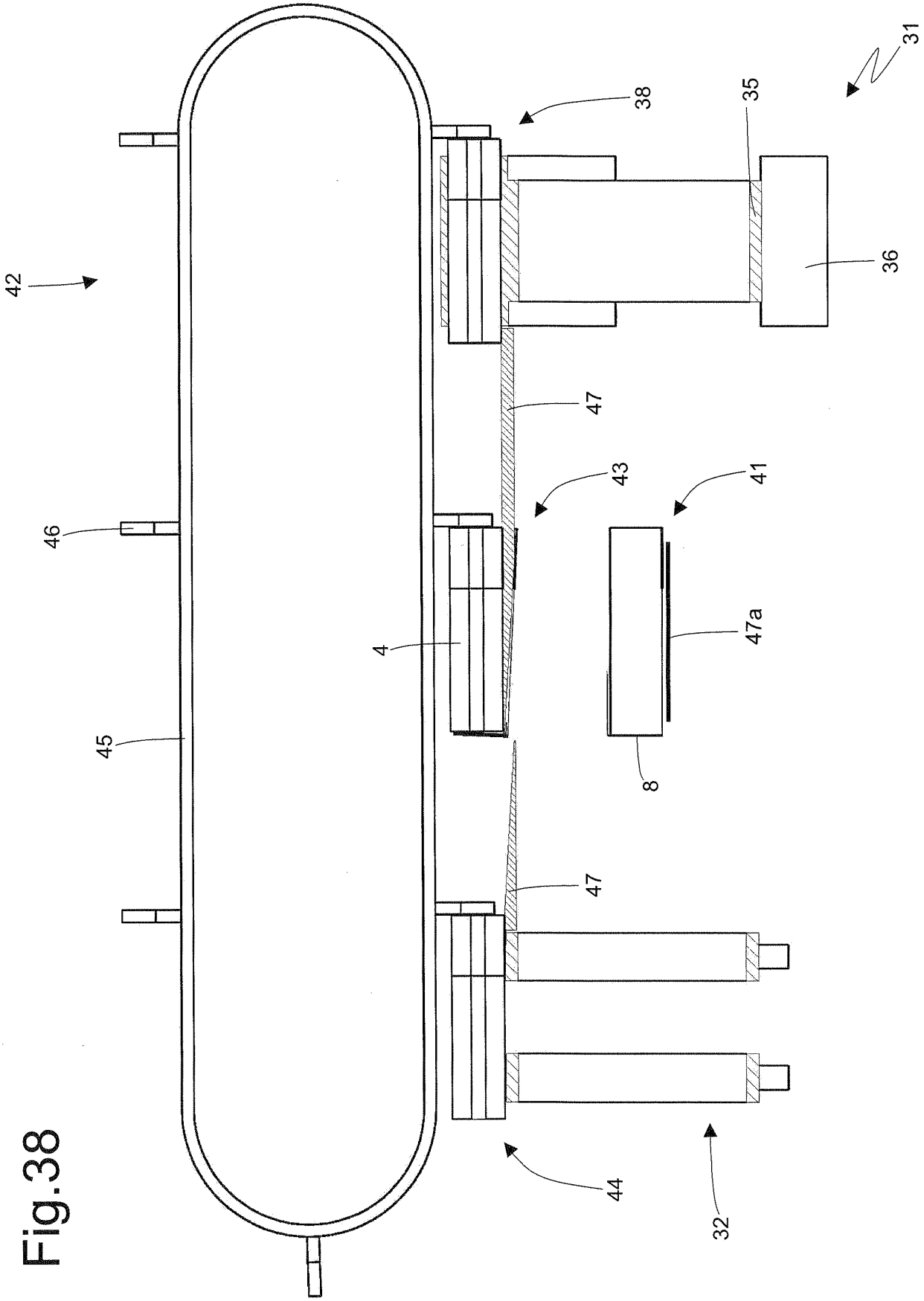


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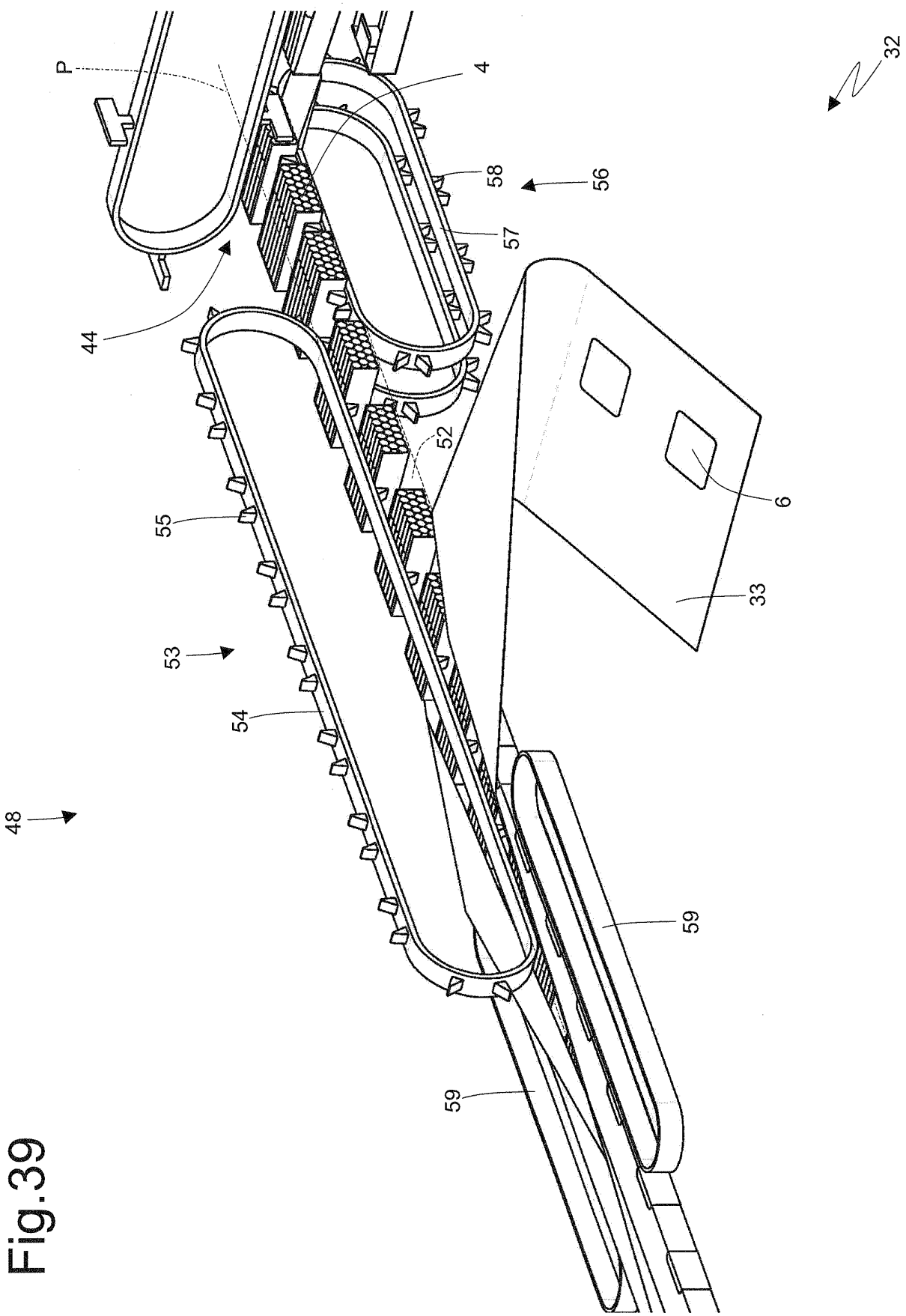


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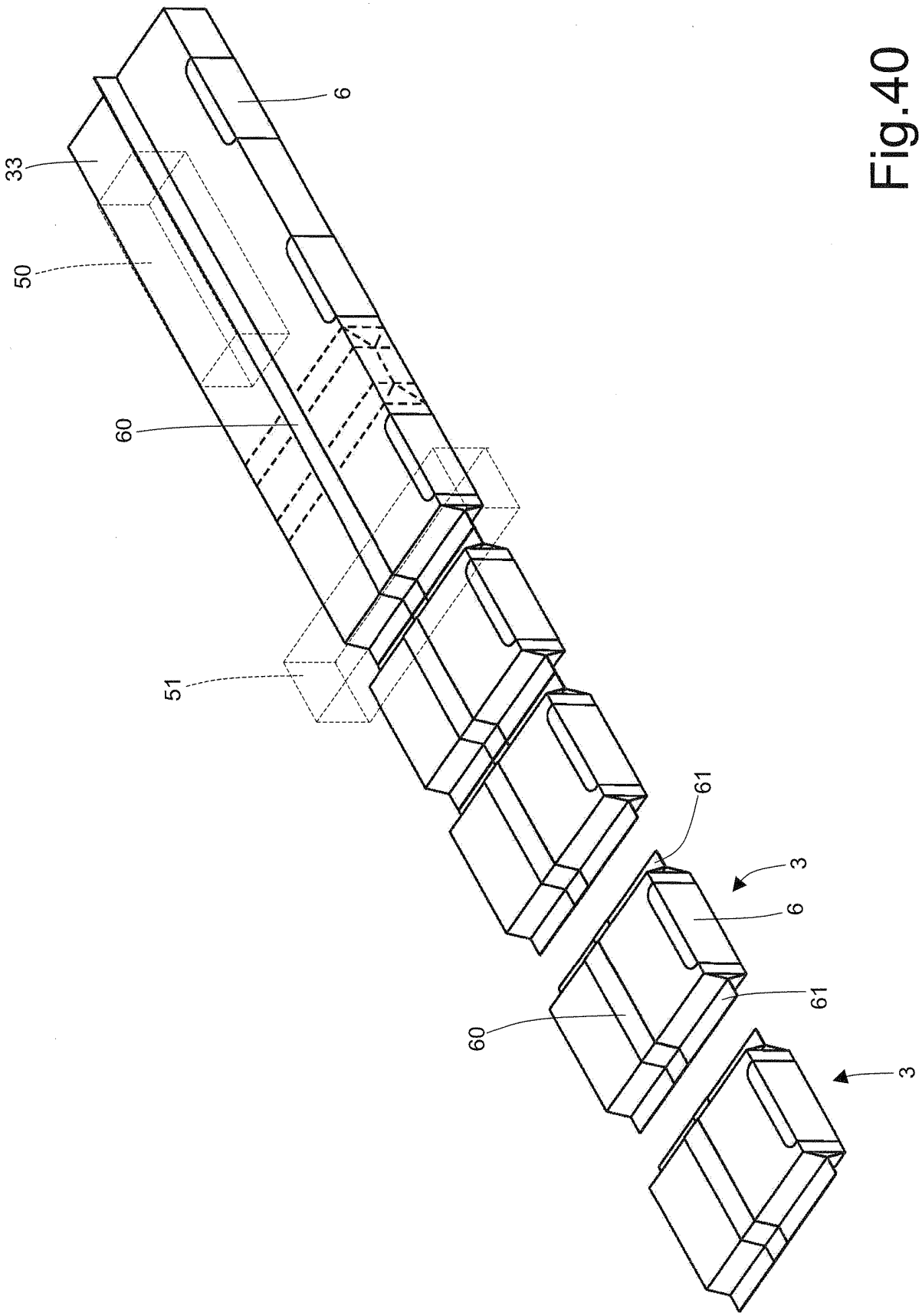


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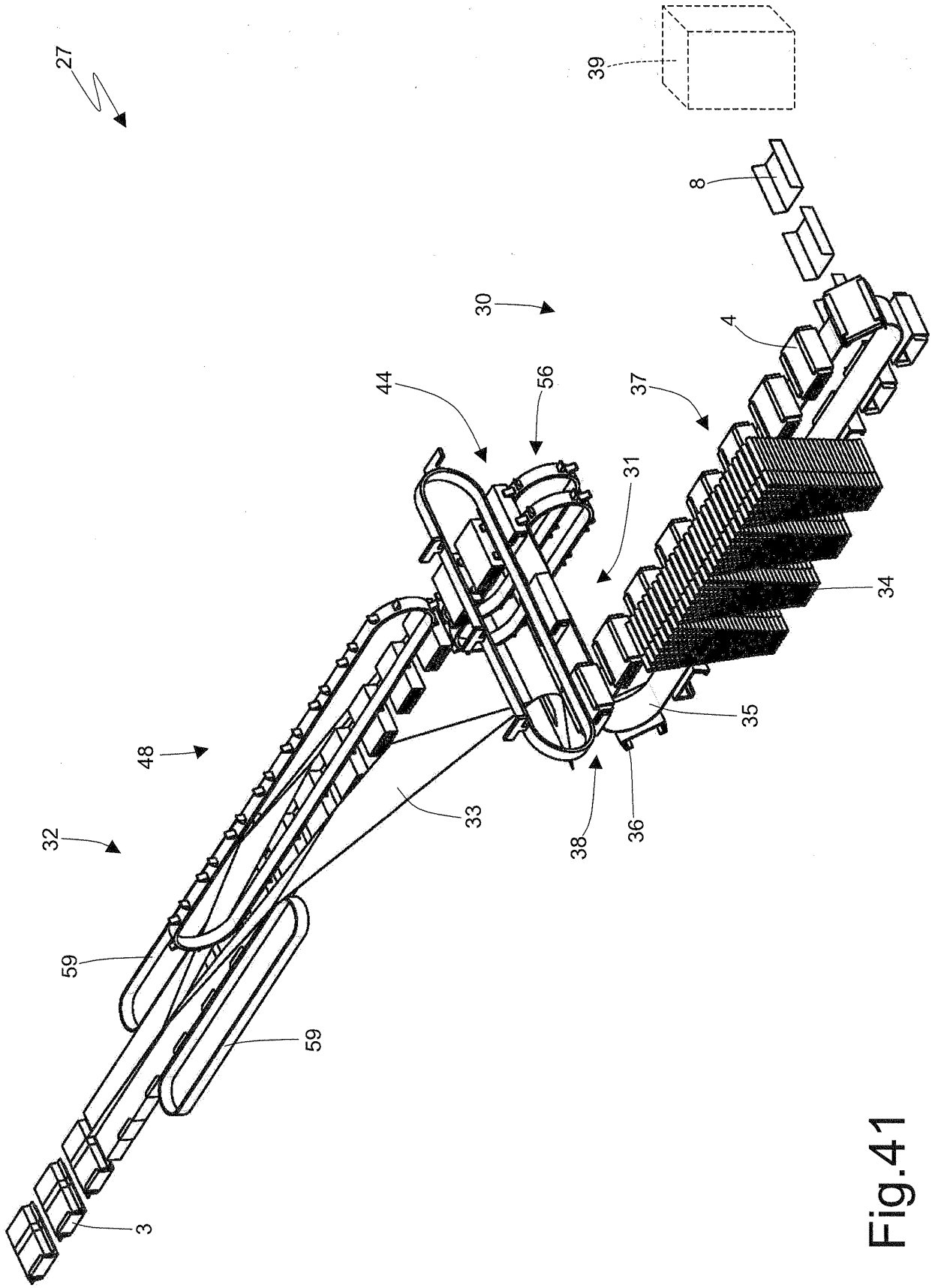
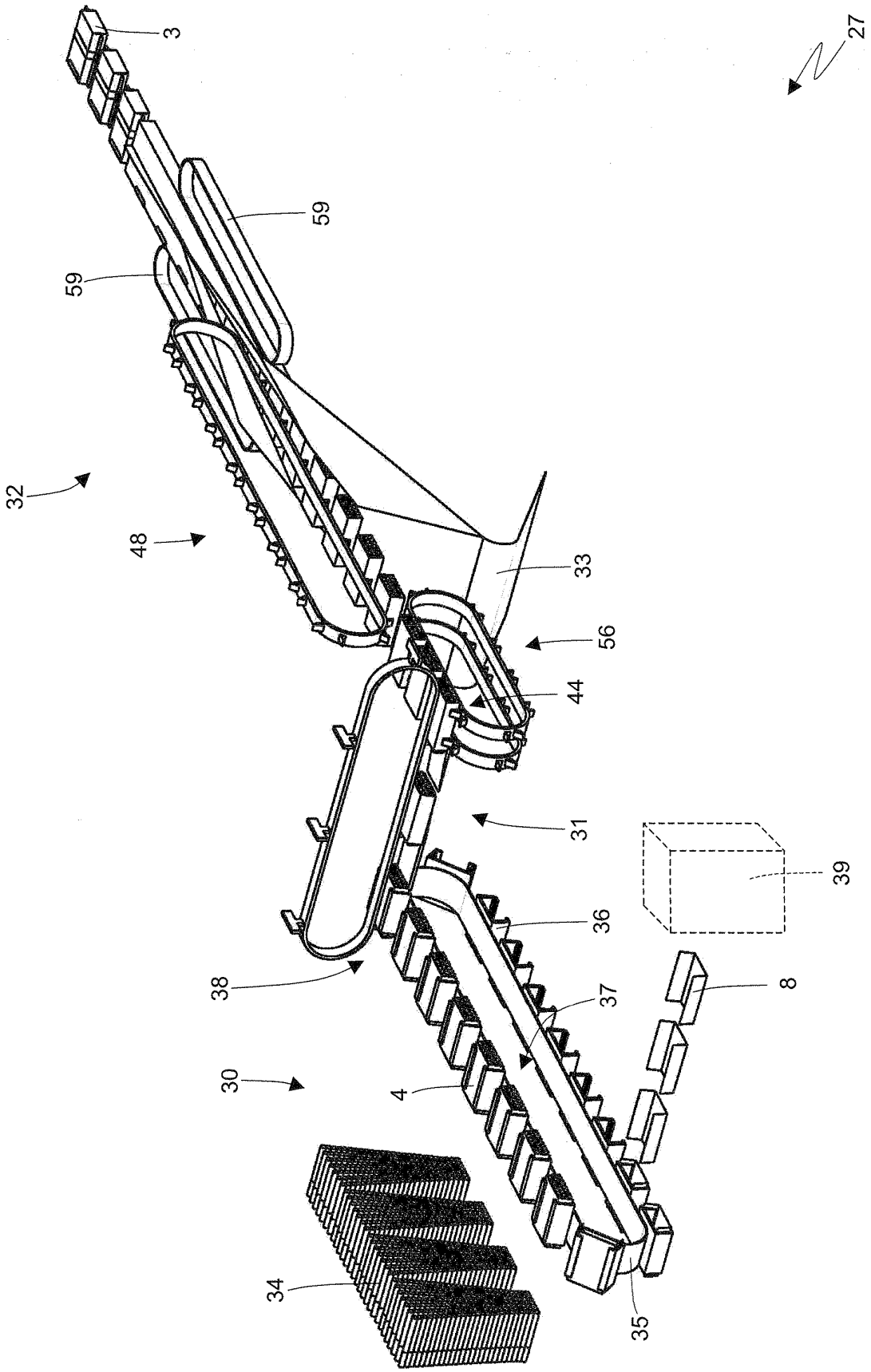


Fig.41

Fig.42



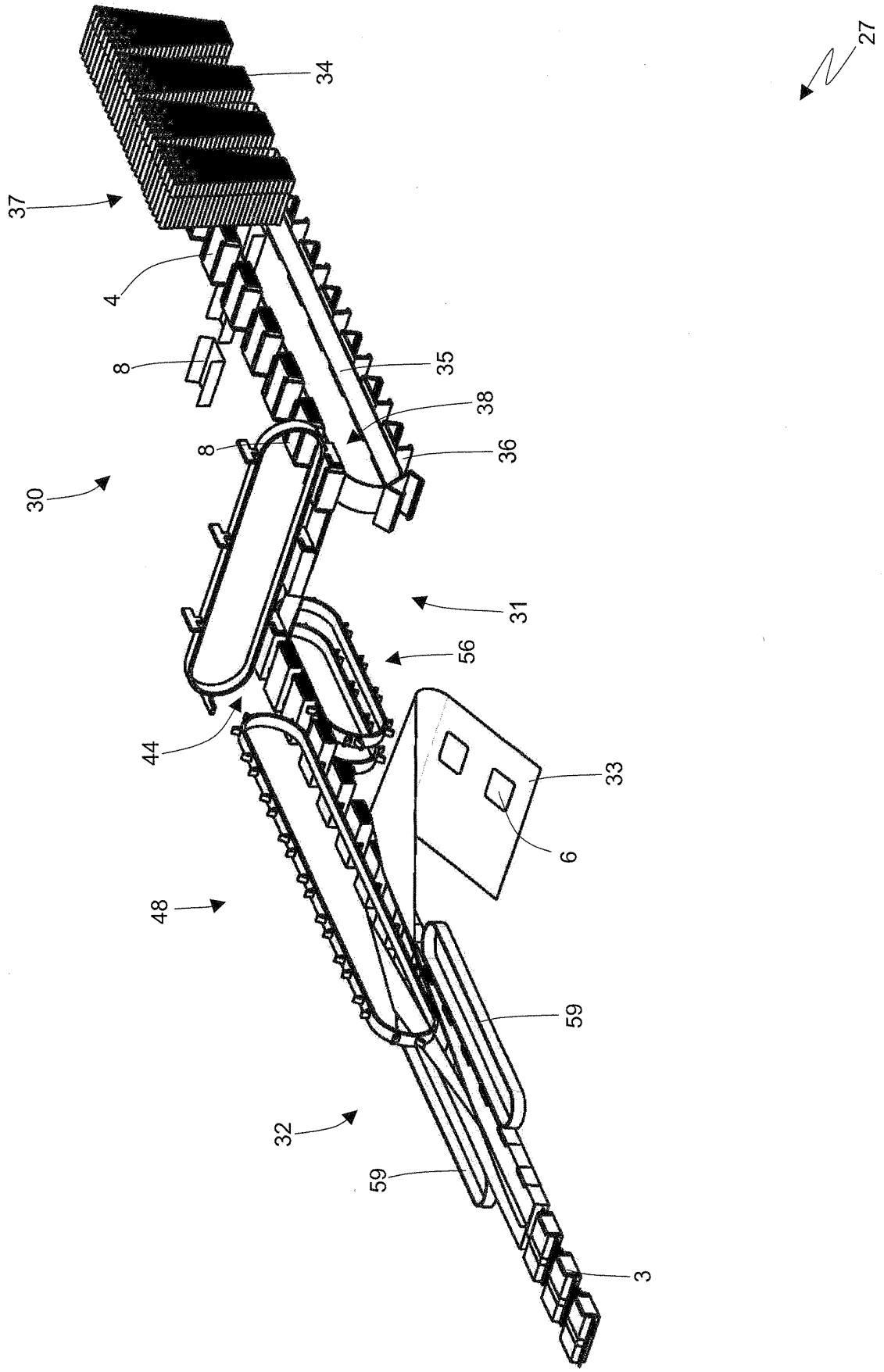


Fig.43

REFERENCES CITED IN THE DESCRIPTION

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