(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 774 561 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
21.09.2022 Bulletin 2022/38

(21) Application number: **19721105.5**

(22) Date of filing: **28.03.2019**

(51) International Patent Classification (IPC):
B65D 5/38 *(2006.01)* ***B65D 5/42*** *(2006.01)*
B65D 85/10 *(2006.01)*

(52) Cooperative Patent Classification (CPC):
B65D 85/1036; B65D 5/38; B65D 5/4275;
B65D 2209/00

(86) International application number:
PCT/IB2019/052557

(87) International publication number:
WO 2019/186462 (03.10.2019 Gazette 2019/40)

(54) **PACKET OF SMOKING ARTICLES WITH A SLIDING OPENING AND WRAPPING METHOD AND PACKER MACHINE TO PRODUCE A PACKET OF SMOKING ARTICLES WITH A SLIDING OPENING**

PACKUNG VON RAUCHARTIKELN MIT EINER SCHIEBEÖFFNUNG SOWIE VERPACKUNGSVERFAHREN UND VERPACKUNGSMASCHINE ZUR HERSTELLUNG EINES PAKETS VON RAUCHARTIKELN MIT EINER SCHIEBEÖFFNUNG

PAQUET D'ARTICLES À FUMER DOTÉ D'UNE OUVERTURE COULISSANTE, PROCÉDÉ D'EMBALLAGE ET EMPAQUETEUSE POUR PRODUIRE UN PAQUET D'ARTICLES À FUMER DOTÉ D'UNE OUVERTURE COULISSANTE

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(30) Priority: **28.03.2018 IT 201800004033**

(43) Date of publication of application:
17.02.2021 Bulletin 2021/07

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Description

TECHNICAL FIELD

[0001] The present invention relates to a packet of smoking articles with a sliding opening.

[0002] The present invention finds advantageous application to a packet of cigarettes, to which the following description will make explicit reference without thereby losing generality.

PRIOR ART

[0003] Hard packets for cigarettes with a hinged lid are the most widespread packets of cigarettes on the market today as they are easy to manufacture, easy and practical to use and offer good mechanical protection for the cigarettes contained within them.

[0004] In addition to the rigid packets of cigarettes with hinged lids described above, rigid packets of cigarettes with a sliding opening (or slidable) have been proposed comprising two containers inserted one inside the other in a partially separable way. In other words, a rigid packet of cigarettes with a sliding opening comprises an inner container, which is adapted to accommodate a group of cigarettes wrapped in a wrapping sheet of metallised paper and is housed inside an outer container so as to slide with respect to the outer container between a closed position, in which the inner container is inserted inside the outer container, and an open position, in which the inner container is at least partially extracted from the outer container.

[0005] Patent US2058710A describes a packet of cigarettes with a sliding opening in which the inner container is divided into two side-by-side compartments (i.e. separated from one another by a dividing wall): by pushing the inner container towards a first direction, a first end of the inner container is extracted from the outer container, in which a first compartment is obtained, while by pushing the inner container in a second direction, opposite to the first direction, a second end of the inner container is extracted from the outer container, in which a second compartment is obtained. Consequently, the user can choose whether to extract the first compartment of the inner container from the outer container or, alternatively, the second compartment of the inner container according to which compartment of the inner container is to be used. In the patent US2058710A a compartment (of larger dimensions) is used to house a group of cigarettes (which are orientated perpendicularly to the sliding direction), whereas the other compartment (of smaller dimensions) is used as an ashtray.

[0006] Patent application EP0097895A2 describes a packet of cigarette filters with a sliding opening in which the inner container is divided into two identical side-by-side compartments (i.e. divided one from the other by a dividing wall): by pushing the inner container in a first direction a first end of the inner container is extracted from the outer container, in which a first compartment is obtained, whereas by pushing the inner container in a second direction opposite to the first direction a second end of the inner container is extracted from the outer container, in which a second compartment is obtained. Consequently, the user can choose whether to extract the first compartment of the inner container from the outer container or, alternatively, the second compartment of the inner container according to which compartment of the inner container is to be used. In patent application EP0097895A2 the two compartments are identical one to the other and each houses a corresponding group of cigarette filters which are orientated perpendicularly to the sliding direction.

[0007] Patent application FR2869590A1 describes a packet with a sliding opening in which the inner container is divided into two side-by-side compartments (i.e. separated from one another by a dividing wall): a compartment is used to house a group of chewing gums while the other compartment is used as waste containers.

[0008] Patent US2410923A describes a packet with a sliding opening in which the inner container is divided into two identical side-by-side compartments (i.e. separated from one another by a dividing wall): both compartments are used to house respective groups of tablets which are different from one another.

[0009] The utility model CN205023048U describes a rigid packet of cigarettes with a sliding opening and comprising an outer container having two opposite extraction openings and an inner container which has two compartments and is inserted inside the outer container; the inner container can be extracted from one side to take the cigarettes out of one compartment and can be extracted from the opposite side to take the cigarettes out of the other compartment.

[0010] The production of the packets with a sliding opening described above requires the use of a *"special"* packer machine (i.e. dedicated solely to the manufacturing of these packets with a sliding opening), since the folding of the blank to manufacture the inner container is rather complex and labour-intensive due to the fact that the inner container must centrally have at least a dividing wall that divides the two compartments. Consequently, to manufacture the packets with a sliding opening described above it is not possible to adapt an existing packer machine created for the manufacture of packets of cigarettes with a hinged lid, but it is necessary to design and build a *"special"* packer machine which has very high costs; in this regard it is important to note that on the market there is an abundance of packer machines for manufacturing packets of cigarettes with a hinged lid and that the packets with a sliding opening described above constitute a small niche that requires very few dedicated packer machines (consequently the design and development costs of a new *"special"* packer machine must be amortized in very few packer machines thus leading to a very high cost per unit of each packer machine).

DESCRIPTION OF THE INVENTION

[0011] The object of the present invention is to provide a packet of smoking articles with a sliding opening and a wrapping method and a packer machine to produce a packet of smoking articles with a sliding opening, the which pack, wrapping method and packer machine are free from the drawbacks described above and, in particular, are simple and inexpensive to implement.

[0012] According to the present invention, a packet of smoking articles with a sliding opening and a wrapping method and a packer machine are provided to produce a packet of smoking articles with a sliding opening according to what is claimed in the appended claims.

[0013] The claims describe preferred embodiments of the present invention forming an integral part of the present description.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] The present invention will now be described with reference to the annexed drawings, which illustrate some non-limiting embodiments thereof, wherein:

- Figure 1 is a perspective view and in a closed configuration of a rigid packet of cigarettes with a sliding opening, by way of translation, manufactured according to the present invention;
- Figures 2 and 3 are two perspective views of the packet of cigarettes of Figure 1 in two different open configurations;
- Figure 4 is a perspective view of a container of the packet of cigarettes of Figure 1;
- Figure 5 is an exploded perspective view of the container of Figure 4;
- Figure 6 is a plan view of a blank used to manufacture a tubular casing of the packet of cigarettes of Figure 1;
- Figure 7 is a plan view of a blank used to manufacture a box of the container of Figure 4;
- Figure 8 is a schematic view of a packer machine which manufactures the packet of cigarettes of Figure 1;
- Figure 9 is a schematic view of an alternative of the packer machine of Figure 8;
- Figure 10 is a schematic view of a further alternative of the packer machine of Figure 8;
- Figure 11 is a schematic plan view of a coupling unit and of a wrapping unit of the packer machine of Figure 8;
- Figure 12 is a perspective view of an alternative of the container of Figure 4;
- Figure 13 is an exploded perspective view of the container of Figure 12;
- Figure 14 is a plan view of a blank used to manufacture a box of the container of Figure 12; and
- Figure 15 is a schematic view of a packer machine which produces the packet of cigarettes of Figure 1 provided with the container of Figure 12;
- Figure 16 is a schematic view of a further packer machine which manufactures the packet of cigarettes of Figure 1 provided with the container of Figure 12;
- Figure 17 is a schematic view of a first wrapping unit of the packer machine of Figure 16; and
- Figure 18 is a schematic view of a second wrapping unit of the packer machine of Figure 16.

PREFERRED EMBODIMENTS OF THE INVENTION

[0015] In Figures 1-3, the number 1 denotes, as a whole, a rigid packet of cigarettes with a sliding opening by way of a linear movement.

[0016] The packet 1 of cigarettes comprises a wrap 2 (shown in Figure 2), which contains a group of cigarettes (not illustrated) wrapped in a wrapping sheet of metallised paper and provided with a removable tear-off upper portion to extract the cigarettes. Furthermore, the packet 1 of cigarettes comprises a rigid type container 3 which is provided with two compartments 4 arranged side-by-side, one of which is occupied by the wrap 2 (i.e. houses the wrap 2 which has the same dimensions as the compartment 4) whereas the other is empty (i.e. is available) and is normally used as an ashtray. Finally, the packet 1 of cigarettes comprises a rigid type tubular casing 5, which houses the container 3 in a sliding manner so as to allow the container 3 to slide with respect to the tubular casing 5 in order to move, with a linear movement, between a closed position (illustrated in Figure 1) in which the container 3 is completely inserted inside the tubular casing 5, a first open position (illustrated in Figure 2) in which the container 3 is partially extracted from the tubular casing 5 so as to expose the compartment 4 housing the wrap 2, and a second open position (opposite to the first open position and illustrated in Figure 3) in which the container 3 is partially extracted from the tubular casing 5 so as to expose the empty compartment 4.

[0017] In other words, the container 3 is divided into the two compartments 4 arranged side-by-side (i.e. separated from one another by a dividing wall): by pushing the container 3 towards a first direction a first end of the container 3 is extracted from the tubular casing 5, in which a first compartment 4 is provided (for example the compartment 4 housing the wrap 2 as illustrated in Figure 2) while pushing the container 3 in a second direction opposite to the first direction a second end of the container 3 is extracted from the tubular housing 5 in which a second compartment 4 is formed (for example the empty compartment 4 as illustrated in Figure 3). Consequently, the user can choose whether to extract the first compartment 4 of the container 3 from the tubular casing 5 or, alternatively, the second compartment 4 of the container 3 according to the compartment 4 of the container 3 to be used.

[0018] According to what is illustrated in Figures 4 and 5, the container 3 is formed by two identical boxes 6 which

are initially separated (i.e. totally independent of one another) and, once completed, are glued together only by means of glue 7. In other words, the two boxes 6 are manufactured completely independently and only once they have been completed, are coupled and then firmly connected to one another by means of the glue 7.

[0019] As illustrated in Figures 1-3, the tubular casing 5 has a parallelepiped shape and has a lower wall 8 and an upper wall 9 parallel and opposite to each other, a front wall 10 and a rear wall 11 parallel and opposite to each other, and two open end walls 12 which are interposed between the walls 10 and 11 and through which the container 3 passes, by moving from the closed position (illustrated in Figure 1) to an open position (illustrated in Figures 2 and 3).

[0020] As illustrated in Figures 4 and 5, each box 6 has a lower wall 13 and an upper wall 14 parallel and opposite to each other, a front wall 15 and a rear wall 16 parallel and opposite to each other, and two side walls 17 and 18 parallel and opposite to each other and interposed between the walls 15 and 16. The upper wall 14 of each box 6 has, near the side wall 18, an extraction opening 19, which is extended also to part of the walls 15 and 16 and adapted to be arranged, when the inner container 3 is in the corresponding open position, outside of the tubular casing 5 so as to allow the extraction of the cigarettes (not illustrated) from the wrap 2 after the elimination of the removable upper portion. According to a different embodiment not illustrated, in each box 6 the upper wall 14 is absent and is completely replaced by the extraction opening 19 which therefore has the same extension as the lower wall 5; in this embodiment, at least one of the side walls 17 or 18 can be lower than what has been illustrated in Figures 2-5.

[0021] The two boxes 6 are side-by-side and joined at the side walls 18, the side wall 18 of a box 6 is parallel and resting on the side wall 18 of the other box 6. The two boxes 6 are rigidly connected to each other (to form a single rigid and indivisible body forming the container 3 having the two compartments 4 made up by the two boxes 6) by means of the glue 7 which is interposed between the side walls 18 of the two boxes 6; i.e. the glue 7 firmly connects the side wall 18 of one box 6 to the side wall 18 of the other box 6.

[0022] In the embodiment illustrated in the attached Figures, the packet 1 of cigarettes comprises one single wrap 2 (i.e. one single group of cigarettes) housed in one compartment 4, whereas the other compartment 4 is empty (that is, available and usable as an ashtray); consequently, a box 6 is full (as it houses the wrap 2) while the other box 2 is empty. According to an alternative embodiment which is not illustrated, both compartments 4 are full and in this case the packet 1 of cigarettes can comprise two wraps 2 (perfectly identical to one another, i.e. housing the same, or different types of cigarettes, i.e. housing different types of cigarettes as non-flavoured cigarettes in a wrap 2 and flavoured cigarettes in the other wrap 2), or can comprise a wrap 2 (containing a group of cigarettes) and another object (for example a promotional/advertising gadget, a booklet ...).

[0023] In the embodiment illustrated in the attached Figures, the two boxes 6 which compose (once joined together by means of the glue 7) the container 3 are perfectly identical to one another (in terms of conformation, not necessarily in terms of content) and arranged in a mirror like manner (alternatively the two boxes can be identical to one another and arranged in a non-mirror like manner). According to an alternative embodiment not illustrated, the two boxes 6 which compose (once joined together by the glue 7) the container 3 are similar to each other (i.e. have the same conformation) but are not identical (i.e. they have a different size, for example the empty box 6 usable as an ashtray could be shorter than the box 2 that houses the wrap 2) .

[0024] As illustrated in Figure 6, the tubular casing 5 is manufactured by folding a flat blank 20 made by cardboard or rigid paperboard and having a substantially elongated rectangular shape; the parts of the blank 20 are denoted with accented reference numbers equal to the reference numbers which distinguish the corresponding walls of the tubular casing 5. According to a preferred embodiment illustrated in Figure 6, the blank 20 has a *"vertical development",* i.e. the panel 10' which forms the front wall 10 is connected to the panel 11' which forms the rear wall 11 by a single panel 9' which forms the lower wall 9.

[0025] As illustrated in Figure 7, each box 6 is manufactured by folding a flat blank 21 made of cardboard or rigid paperboard and having a substantially elongated rectangular shape; the parts of the blank 21 are denoted with accented reference numbers equal to the reference numbers which distinguish the corresponding walls of the box 6. According to a preferred embodiment illustrated in Figure 7, the blank 21 has a *"vertical development",* that is the panel 15' which forms the front wall 15 is connected to the panel 16' which forms the rear wall 16 by means of a single panel 13' which forms the lower wall 15.

[0026] According to a preferred but not binding embodiment, clearly visible in Figures 6 and 7, the packet 1 of cigarettes comprises a locking system which limits the maximum extraction of the container 3 from the tubular casing 5, i.e. blocks the extraction stroke of the container 3 from the tubular casing 5. For each compartment 4, or for each box 6, the locking system comprises a pair of locking tabs 22 (illustrated in Figure 6) carried by the tubular casing 5 and a corresponding pair of locking tabs 23 (illustrated in Figure 7) carried by the box 6.

[0027] According to what is illustrated in Figure 6, a pair of locking tabs 22 are connected to each wall 10 or 11, at the edges of the wall 10 or 11 delimiting the open ends 12, each locking tab protrudes from the respective wall 10 or 11 towards the inside of the tubular casing 5 and is adapted, during the extraction of the container 3, to couple with a corresponding locking tab 23 of the container 3 to limit the extraction stroke of the container 3 and prevent the complete exit of the container 3 from the

tubular casing 5.

[0028] According to what is illustrated in Figure 7, each of the walls 15 or 16 has a cut-shaped respective locking tab 23 near the side wall 18, which extends outwardly from the container 3 starting from the connection corner between the wall 15 or 16 and the side wall 18.

[0029] Figure 8 schematically illustrates a packer machine 24 which produces the packet 1 of cigarettes and operates in an intermittent manner (i.e. by means of step movements which cyclically alternate motion steps and rest steps).

[0030] The packer machine 24 comprises two twin wrapping units 25, each of which manufactures a box 6 by folding and stabilizing, by gluing, a blank 21. In the wrapping unit 25, that manufactures the full box 6 (i.e. housing the wrap 2), a group of cigarettes is initially formed, then a wrapping sheet of metallised paper is folded around the group of cigarettes to form the wrap 2, and finally a blank 21 is folded around the wrap 2. Whereas, in the wrapping unit 25 that manufactures the empty box 6, the blank 21 is initially folded around a spindle (for example, leaving the upper wall 14 to be formed so as to allow to extract the box 6 partially formed by the spindle).

[0031] Moreover, the packer machine 24 comprises a coupling unit 26, in which two boxes 6 coming from the two wrapping units 25 are coupled to one another, or firmly connected to one another by gluing, by means of glue 7, the corresponding side walls 18 thus forming a container 3.

[0032] Finally, the packer machine 24 comprises a wrapping unit 27 which receives the containers 3 (each formed by two boxes 6 glued to one another) from the coupling unit 26 and completes the formation of the packets 1 of cigarettes forming the tubular casings 5 around the containers 3, i.e. by folding and stabilizing a blank 21 by gluing, around each container 3.

[0033] In the embodiment illustrated in Figure 8, the packer machine 24 comprises two twin wrapping units 25; in this embodiment, the two boxes 6 of the same container 3 can be differentiated both in dimensions and in content (i.e. a box 6 can have a different content than the other box 6) since each box 6 is manufactured in its own wrapping unit 25 different than the wrapping unit 25 that manufactures the other box 6.

[0034] In the alternative illustrated in Figure 9, the packer machine 24 comprises a single wrapping unit 25 with a single line (i.e. having a single production line which produces a single box 6 at a time and therefore the boxes 6 are identical to one another and all have the same dimensions and the same content) and a subdividing unit 28, which receives a single flow of boxes 6 from the wrapping unit 25 and divides the boxes 6 into two distinct flows for supplying the coupling unit 26. Alternatively, the coupling unit 26 and the subdivision unit 28 could be replaced by a different (and more complex) coupling unit which is able to couple the boxes 6 coming from a single flow.

[0035] In the alternative illustrated in Figure 10, the packer machine 24 comprises a single double-line wrapping unit 25 (i.e. provided with two twin production lines which produce two boxes 6 at a time and therefore the boxes 6 can also be not identical to one another) which directly feeds two flows of boxes 6 to the coupling unit 26.

[0036] Obviously, the presence of two distinct wrapping units 25 which produce, at the same time, two boxes 6 to be coupled together allows the packer machine 24 to operate at higher productivity rate (theoretically with double the productivity rate compared to the solution with one single-line wrapping unit 27). Similarly, the presence of a single double-line wrapping unit 25 which produces, at the same time, two boxes 6 to be coupled together enables the packer machine 24 to be operated at higher productivity rate (theoretically with double the productivity rate compared to the solution with one single-line wrapping unit 27).

[0037] In general, the units 25, 26 and 27 can be integrated together to form a single body (i.e. they share a same support frame) or the units 25, 26 and 27 can be distant and separate and be connected to one another by conveyors (direct supply) or by trays (i.e. transportable containers that house groups of boxes 6 or groups of containers 3, indirect supply). Therefore, the units 25, 26 and 27 can also be very far apart from one another (for example in different areas of the same production plant or even in different production plants). Moreover, it is also possible for the units 25 and 26 to be integrated one with the other to form a single body (i.e. to share the same supporting frame) while the wrapping unit 27 is separate, or that the units 26 and 27 are integrated one with the other to form a single body (i.e. share the same supporting frame) while the wrapping unit 25 is separate. In other words, the packer machine 24 can have a single body or it can have several islands which are separate from one another and potentially also far from one another.

[0038] In other words, the wrapping unit 25 and the coupling unit 26 are part of first wrapping means to manufacture the rigid-type containers 3, while the wrapping unit 27 is part of second wrapping means to manufacture the tubular casings 5 surrounding the containers 3.

[0039] According to what is illustrated in Figure 11, the coupling unit 26 comprises two twin and mirror-like feeding conveyors 29, each of which feeds a succession of boxes 6 along a straight feeding path P1 and towards a same coupling station S1; in other words, the two feeding conveyors 29 converge towards the same coupling station S1 to cyclically feed pairs of boxes 6 to the coupling station S1. It is important to note that the two feeding conveyors 29 feed the respective boxes 6 with a mirror-like orientation, i.e. by arranging the corresponding side walls 18 in front. By way of example, each feeding conveyor 29 could comprise a flexible belt which is wound around two end pulleys and has transverse ribs which define a succession of pockets adapted to house the boxes 6.

[0040] A gluing device 30 is arranged along each feed-

ing path P1 (i.e. along each feeding conveyor 29), which applies the glue 7 on the side wall 18 of each box 6 (obviously the two gluing devices 30 apply the glue 7 in different areas of the side walls 18 of the two boxes 6). According to a different embodiment, not illustrated, only one gluing device 30 is provided, which is arranged along a corresponding feeding conveyor 29. Preferably (but not necessarily), the glue 7 applied by the gluing devices 30 is a quick-setting glue, i.e. a hot glue.

[0041] According to a preferred embodiment, a coupling device 31 is arranged in the coupling station S1 which cyclically compresses (i.e. pushes one against the other) the two boxes 6 to facilitate optimal adhesion (gluing) between the two boxes 6.

[0042] From the coupling station S1 a feeding conveyor 32 starts, which feeds a succession of containers 3 (each formed by two boxes 6 glued together) along a rectilinear feeding path P2 and towards an input station S2; i.e. the feeding path P2 develops from the coupling station S1 in which the feeding conveyor 32 receives the newly formed containers 3 at the input station S2, in which the feeding conveyor 32 releases the containers 3.

[0043] According to a different embodiment not illustrated, the two feeding conveyors 29 (and therefore the two feeding paths P1) are not aligned to one another and converging, as in the embodiment illustrated in Figure 10, but they are parallel to and (slightly) spaced apart from one another; then in the coupling station S1 two boxes 6 are cyclically brought closer to each other and then coupled by the compressor device 31.

[0044] The wrapping unit 27 comprises a wrapping wheel 33 which is mounted rotatably in a step like manner about a vertical rotation axis 34 and has a plurality of pockets 35. The rotation of the wrapping wheel 33 about the rotation axis 34 cyclically feeds each pocket 35 along a circular wrapping path and through: an input station S3, in which the pocket 35 receives a blank 21 from a feeding device 36, which is folded in a "L" shape inside the pocket 35, the input station S2, in which the pocket 35 receives a container 3, which is folded in a "L" shape, arranged inside the blank 21, folding stations S4 and S5, in which the blank 21 is folded around the container 3, and finally an output station S6 in which the tubular casing 5 (i.e. the folded blank 21) is extracted from the pocket 35.

[0045] Obviously, according to other embodiments not illustrated, the coupling unit 26 and/or the wrapping unit 27 could have a different conformation, without prejudice to the fact that two boxes 6 must be glued to one another in order to form a container 3 and then a blank 20 must be folded around the container 3 to form a tubular casing 5.

[0046] Figures 12 and 13 illustrate a different embodiment of the container 3 which differs, from the container 3 illustrated in Figures 2-5, by the conformation of the extraction openings 19, due to the absence of the upper walls 14, due to the absence of the locking tabs 23, and due to the presence of two wraps 2 arranged in the two compartments 4 (i.e. an empty compartment 4 is no longer present).

[0047] Figure 14 illustrates a blank 21 used to manufacture the boxes 6 which make-up the container 3 of Figures 12 and 13. According to a preferred embodiment illustrated in Figure 14, the blank 21 has a *"vertical development",* i.e. the panel 15', which forms the front wall 15, is connected to the panel 16' which forms the rear wall 16 by means of a single panel 13' which forms the lower wall 15.

[0048] Figure 15 illustrates a different embodiment of the packer machine 24 which produces the packet 1 of cigarettes and operates in an intermittent manner (i.e. by means of step movements which cyclically alternate motion steps and rest steps). The packer machine 24 illustrated in Figure 15 comprises a double-line wrapping unit 25 (i.e. provided with two twin production lines which produce two boxes 6 at a time and therefore the boxes 6 may also not be identical to one another), a coupling unit 26 which receives two flows of boxes 6 directly from the wrapping unit 25, and a wrapping unit 27 (completely identical to the wrapping unit 27 described above and illustrated in Figure 11).

[0049] The double-line wrapping unit 25 illustrated in Figure 15 comprises a wrapping wheel 37 which is mounted rotatably in a step like manner about a vertical rotation axis and has a plurality of pairs of pockets. The rotation of the wrapping wheel 37 about the rotation axis cyclically feeds each pair of pockets along a circular wrapping path and through: an input station S7 in which the pair of pockets receives a pair of blanks 21 from a feeding device each of which folds in a "L" shape inside a corresponding pocket, an input station S8 in which the pair of pockets receives, from a double-line wrapping conveyor 38, a pair of wraps 2 each of which, folded in a "L" shape is arranged inside a corresponding blank 21, folding stations in which the pair of blanks 21 is folded around the corresponding wraps 2, and finally an output station S9 in which the pair of boxes 2 (i.e. a pair of blanks 21 folded around the corresponding wraps 2) are extracted from the pair of pockets and transferred to a double line feeding conveyor 39 (which is part of the coupling unit 26).

[0050] Figure 16 illustrates a further embodiment of the packer machine 24 which produces the packet 1 of cigarettes and operates in an intermittent manner (i.e. by means of step movements which cyclically alternate motion steps and rest steps). The packer machine 24 illustrated in Figure 16 comprises a single line wrapping unit 25 (i.e. provided with a single production line which produces only one box 6 at a time and therefore the boxes 6 are identical to one another and all have the same dimensions and the same contents), a store 40 which receives the boxes 6 from the wrapping unit 25, a coupling unit 26 which receives the boxes 6 from the store 40, and a wrapping unit 27 which folds the blanks 6 around the containers 3 (each made-up by two boxes 6 side-by-side and glued one to the other). The store 40 is interposed between the wrapping unit 25 and the coupling unit 26,

transfers the manufactured boxes 6 from the wrapping unit 25 to the coupling unit 26, and is normally suited to house a large quantity of boxes 6 corresponding to at least a few operating minutes of the wrapping unit 25 (therefore of the wrapping unit 27). According to a different embodiment not illustrated, the store 40 is absent and therefore the wrapping unit 25 is directly connected to the coupling unit 26.

[0051] The wrapping unit 25 comprises a belt operated wrapping conveyor 41 in which the wraps 2 are formed by folding wrapping sheets around respective groups of cigarettes extracted from the bottom of (at least) one hopper. Moreover, the wrapping unit 25 comprises a wrapping wheel 42 which is mounted rotatably in a step like manner about a horizontal rotation axis 43 and has a plurality of pockets. The rotation of the wrapping wheel 42 about the rotation axis 43 cyclically feeds each pocket along a circular wrapping path and through: an input station S8 in which the pocket receives a wrap 2 from the wrapping conveyor 41, a feeding station S9 in which the pocket receives a blank 21 which rests on the wrap 2, and a transfer station S10 in which the wrap 2 coupled to the blank 21 is extracted from the pocket.

[0052] Finally, the wrapping unit 25 comprises a wrapping wheel 44 which is mounted rotatably in a step like manner about a horizontal rotation axis 45 and has a plurality of pockets. The rotation of the wrapping wheel 44 about the rotation axis 45 cyclically feeds each pocket along a circular wrapping path and through: the transfer station S10 in which the pocket receives a wrap 2 coupled to the blank 21 from the wrapping wheel 42, a series of folding stations in which the blank 21 is folded around the wrap 2, and an output station S11 in which the wrap 2 coupled to the blank 21 is extracted from the pocket.

[0053] The wrapping unit 27 comprises a wrapping wheel 46 which is mounted rotatably in a step like manner about a horizontal rotation axis 47 and has a plurality of pockets. The rotation of the wrapping wheel 46 about the rotation axis 47 cyclically feeds each pocket along a circular wrapping path and through: an input station S12 in which the pocket receives a blank 21, an input station S13 in which the pocket receives a container 3 which rests on the blank 21, folding stations in which the blank 21 is folded around the container 3, and finally an output station S14 in which the tubular casing 5 (i.e. the blank 21 folded around the container 3) is extracted from the pocket.

[0054] The store 40 can comprise a storage container in which the boxes 6 are accumulated (then transferred by other means to the coupling unit 26) or can comprise a transport and accumulation channel (in said case, the boxes 6 are accumulated in the store 40 and then transferred, from the same, to the coupling unit 26).

[0055] According to an embodiment not illustrated, the packer machine 24 can comprise a further store which is interposed between the coupling unit 26 and the wrapping unit 27 and which transfers the containers 3 from the coupling unit 26 to the wrapping unit 27. Said further store can be in addition or alternative to the store 40.

[0056] Also said further store can comprise an accumulation container in which the containers 3 are accumulated (then transferred by other means to the wrapping unit 27) or it can comprise a transport and accumulation channel (in said case, the containers 3 are accumulated in the store and then transferred, from the same, to the wrapping unit 27).

[0057] In the embodiments illustrated in the attached Figures, the packet 1 of cigarettes contains at least one group of cigarettes; alternatively, the packet 1 of cigarettes can contain any other type of smoking articles such as cigars, electric or electronic cigarettes (i.e. cigarettes that generate an aerosol without combustion), cartridges and refills for electronic cigarettes, new generation cigarettes.

[0058] The embodiments described herein can be combined with each other without departing from the scope of the present invention.

[0059] The packet 1 of cigarettes described above has numerous advantages.

[0060] Firstly, the packet 1 of cigarettes described above can be produced in the packer machine 24 which can be implemented by modifying (at least) a standard and existing packer machine created for manufacturing rigid packets of cigarettes with a hinged lid. In the simplest embodiment three standard and existing packer machines can be used, created for the production of rigid packets of cigarettes with a hinged lid: two packer machines form the two wrapping units 25 and the other packer machine forms the wrapping unit 27. Consequently, the manufacturing of the packer machine 24 which produces the packet 1 of cigarettes described above has very low design and development costs (being almost completely based on standard and existing packer machines with essentially format adaptations) which also make the manufacturing thereof feasible in very limited production as well.

[0061] Moreover, the packet 1 of cigarettes described above is extremely flexible, since it allows to very easily differentiate the two compartments 4 (i.e. the two boxes 6) of the container 3 both in terms of content and in terms of dimensions.

Claims

1. A packet (1) of smoking articles with a sliding opening and comprising:

   at least one wrap (2) containing a group of smoking articles;
   a rigid container (3) which is provided with two compartments (4), arranged side-by-side, one of which houses the wrap (2); and
   a tubular casing (5), which houses the container (3) in a sliding manner so as to allow the container (3) to slide relative to the tubular casing

(5) in order to move, with a linear movement, between a closed position, in which the container (3) is completely inserted inside the tubular casing (5), a first open position, in which the container (3) is partially extracted from the tubular casing (5) so as to expose a first compartment (4), and a second open position, which is opposite the first open position in which the container (3) is partially extracted from the tubular casing (5) so as to expose a second compartment (4);
the packet (1) of smoking articles is **characterized in that** the container (3) is formed by two boxes (6) which, are initially separate from and independent of one another, define the two compartments (4), and are glued to one another only by means of glue (7).

2. The packet (1) of smoking articles according to claim 1, wherein the two boxes (6) have respective side walls (18), which rest against one another and are glued to one another by means of the glue (7).

3. The packet (1) of smoking articles according to claim 2, wherein the two boxes (6) have respective side walls (18), which rest against one another, and the glue (7) firmly connects the side wall (18) of a box (6) to the side wall (18) of the other box (6).

4. The packet (1) of smoking articles according to claim 1, 2 or 3 and comprising two wraps (2), which contain respective groups of smoking articles and are housed in the two compartments (4) of the container (3).

5. The packet (1) of smoking articles according to claim 1, 2 or 3 and comprising one single wrap (2), which is housed in a compartment (4), whereas the other compartment (4) is available.

6. A wrapping method to produce a packet (1) of smoking articles with a sliding opening; the wrapping method comprising the steps of:

manufacturing at least one wrap (2) containing a group of smoking articles;
manufacturing a rigid container (3) which is provided with two compartments (4), arranged side-by-side, one of which houses the wrap (2); and
manufacturing a tubular casing (5), which houses the container (3) in a sliding manner so as to allow the container (3) to slide relative to the tubular casing (5) in order to move, with a linear movement, between a closed position, in which the container (3) is completely inserted inside the tubular casing (5), a first open position, in which the container (3) is partially extracted from the tubular casing (5) so as to expose a first compartment (4), and a second open position, which is opposite the first open position and in which the container (3) is partially extracted from the tubular casing (5) so as to expose a second compartment (4);
the wrapping method is **characterized in that** the step of manufacturing the container (3) comprises the further steps of:

separately manufacturing two boxes (6) which, are initially separate from and independent of one another and, define the two compartments (4), at least one of which houses the wrap (2); and
gluing the two boxes (6) to one another only by means of glue (7) so as to obtain the container (3).

7. The wrapping method according to claim 6, wherein the two boxes (6) have respective side walls (18), which rest against one another and are glued to one another by means of the glue (7).

8. The wrapping method according to claim 6 or 7, wherein:

a first box (6) containing the wrap (2) is manufactured by folding a blank (21) around the group of smoking articles; and
a second empty box (6) is manufactured by folding a blank (21) around a spindle.

9. A packer machine (24) to produce a packet (1) of smoking articles with a sliding opening; the packer machine (24) comprises:

first wrapping means (25, 26) to manufacture a rigid container (3) which is provided with two compartments (4), arranged side-by-side, at least one of which houses a wrap (2) containing a group of smoking articles; and
second wrapping means (27) to manufacture a tubular casing (5), which houses the container (3) in a sliding manner so as to allow the container (3) to slide relative to the tubular casing (5) in order to move, with a linear movement, between a closed position, in which the container (3) is completely inserted inside the tubular casing (5), a first open position, in which the container (3) is partially extracted from the tubular casing (5) so as to expose a first compartment (4), and a second open position, which is opposite the first open position and in which the container (3) is partially extracted from the tubular casing (5) so as to expose a second compartment (4);
the packer machine (24) is **characterized in that** the first wrapping means (25, 26) comprise:

at least one wrapping unit (25) which separately manufactures two boxes (6) which, are initially separate from and independent of one another, define the two compartments (4), and house the wrap (2); and
a coupling unit (26), which glues the two boxes (6) to one another only by means of glue (7) so as to obtain the container (3).

10. The packer machine (24) according to claim 9, wherein the first wrapping means (25, 26) comprise two distinct wrapping units (25), which simultaneously manufacture the two boxes (6).

11. The packer machine (24) according to claim 9, wherein the first wrapping means (25, 26) comprise one single wrapping unit (25), which manufactures the two boxes (6) in succession.

12. The packer machine (24) according to claim 9, wherein the first wrapping means (25, 26) comprise one single double line wrapping unit (25), which simultaneously manufactures the two boxes (6).

13. The packer machine (24) according to one of the claims from 9 to 12 and comprising a store (40), which is interposed between the wrapping unit (25) and the coupling unit (26) and transfers the manufactured boxes (6) from the wrapping unit (25) to the coupling unit (26), and/or a store, which is interposed between the first wrapping means (25, 26) and the second wrapping means (27) and transfers the containers (3) from the first wrapping means (25, 26) to the second wrapping means (27).

Patentansprüche

1. Rauchartikelverpackung (1) mit einer ausziehbaren Öffnung und umfassend:

wenigstens eine Hülle (2), die eine Gruppe Rauchartikel enthält;
einen starren Behälter (3), der mit zwei Fächern (4) versehen ist, die nebeneinander angeordnet sind und wovon eines die Hülle (2) aufnimmt; und
ein rohrförmiges Gehäuse (5), das den Behälter (3) gleitend aufnimmt, um dem Behälter (3) zu ermöglichen, relativ zum rohrförmigen Gehäuse (5) zu gleiten, um sich mit einer linearen Bewegung zwischen einer geschlossenen Position, in der der Behälter (3) vollständig in das rohrförmige Gehäuse (5) eingesetzt ist, einer ersten offenen Position, in der der Behälter (3) aus dem rohrförmigen Gehäuse (5) teilweise herausgezogen ist, um ein erstes Fach (4) freizulegen, und einer zweiten offenen Position, die entgegengesetzt zur ersten offenen Position ist, in der der Behälter (3) aus dem rohrförmigen Gehäuse (5) teilweise herausgezogen ist, um ein zweites Fach (4) freizulegen, zu bewegen;
wobei die Rauchartikelverpackung (1) **dadurch gekennzeichnet ist, dass** der Behälter (3) durch zwei Schachteln (6) gebildet ist, die anfänglich getrennt und unabhängig voneinander sind, die die zwei Fächer (4) definieren und nur mittels Klebemittel (7) aneinandergeklebt sind.

2. Rauchartikelverpackung (1) nach Anspruch 1, wobei die zwei Schachteln (6) entsprechende Seitenwände (18) haben, die aneinander anliegen und mittels des Klebemittels (7) aneinandergeklebt sind.

3. Rauchartikelverpackung (1) nach Anspruch 2, wobei die zwei Schachteln (6) entsprechende Seitenwände (18) haben, die aneinander anliegen, und wobei das Klebemittel (7) die Seitenwand (18) einer Schachtel (6) mit der Seitenwand (18) der anderen Schachtel (6) fest verbindet.

4. Rauchartikelverpackung (1) nach Anspruch 1, 2 oder 3 und umfassend zwei Hüllen (2), die jeweils Gruppen von Rauchartikeln enthalten und in den zwei Fächern (4) des Behälters (3) aufgenommen sind.

5. Rauchartikelverpackung (1) nach Anspruch 1, 2 oder 3 und umfassend eine einzige Hülle (2), die in einem Fach (4) enthalten ist, während das andere Fach (4) zur Verfügung steht.

6. Einwickelverfahren zum Herstellen einer Rauchartikelverpackung (1) mit einer ausziehbaren Öffnung; wobei das Einwickelverfahren die Schritte umfasst:

Anfertigen wenigstens einer Hülle (2), die eine Gruppe Rauchartikel enthält;
Anfertigen eines starren Behälters (3), der mit zwei Fächern (4) versehen ist, die nebeneinander angeordnet sind, wovon eines die Hülle (2) aufnimmt; und
Anfertigen eines rohrförmigen Gehäuses (5), das den Behälter (3) gleitend aufnimmt, um dem Behälter (3) zu ermöglichen, relativ zum rohrförmigen Gehäuse (5) zu gleiten, um sich mit einer linearen Bewegung zwischen einer geschlossenen Position, in der der Behälter (3) vollständig in das rohrförmige Gehäuse (5) eingesetzt ist, einer ersten offenen Position, in der der Behälter (3) aus dem rohrförmigen Gehäuse (5) teilweise herausgezogen ist, um ein erstes Fach (4) freizulegen, und einer zweiten offenen Position, die entgegengesetzt zur ersten offenen Position ist, und in der der Behälter (3) aus dem rohrförmigen Gehäuse (5) teilweise herausgezogen ist, um

ein zweites Fach (4) freizulegen, zu bewegen; wobei das Einwickelverfahren **dadurch gekennzeichnet ist, dass** der Schritt des Anfertigens des Behälters (3) die weiteren Schritte umfasst:

getrenntes Anfertigen von zwei Schachteln (6), die anfänglich getrennt und unabhängig voneinander sind, und die zwei Fächer (4) definieren, wovon wenigstens eines die Hülle (2) aufnimmt; und
Aneinanderkleben der zwei Schachteln (6) nur mittels Klebemittel (7), um den Behälter (3) zu erhalten.

7. Einwickelverfahren nach Anspruch 6, wobei die zwei Schachteln (6) entsprechende Seitenwände (18) haben, die aneinander anliegen und mittels des Klebemittels (7) aneinandergeklebt sind.

8. Einwickelverfahren nach Anspruch 6 oder 7, wobei:

eine erste Schachtel (6), die die Hülle (2) enthält, durch Falten eines Zuschnitts (21) um die Gruppe Rauchartikel gefertigt wird; und
eine zweite leere Schachtel (6) durch Falten eines Zuschnitts (21) um eine Spindel gefertigt wird.

9. Verpackungsmaschine (24) zum Herstellen einer Rauchartikelverpackung (1) mit einer ausziehbaren Öffnung; wobei die Verpackungsmaschine (24) umfasst:

erste Einwickelmittel (25, 26) zum Anfertigen eines starren Behälters (3), der mit zwei Fächern (4) versehen ist, die nebeneinander angeordnet sind, wovon wenigstens eines eine Hülle (2) aufnimmt, die eine Gruppe Rauchartikel enthält; und
zweite Einwickelmittel (27) zum Anfertigen eines rohrförmigen Gehäuses (5), das den Behälter (3) gleitend aufnimmt, um dem Behälter (3) zu ermöglichen, relativ zum rohrförmigen Gehäuse (5) zu gleiten, um sich mit einer linearen Bewegung zwischen einer geschlossenen Position, in der der Behälter (3) vollständig in das rohrförmige Gehäuse (5) eingesetzt ist, einer ersten offenen Position, in der der Behälter (3) aus dem rohrförmigen Gehäuse (5) teilweise herausgezogen ist, um ein erstes Fach (4) freizulegen, und einer zweiten offenen Position, die entgegengesetzt zur ersten offenen Position ist, und in der der Behälter (3) aus dem rohrförmigen Gehäuse (5) teilweise herausgezogen ist, um ein zweites Fach (4) freizulegen, zu bewegen; wobei die Verpackungsmaschine (24) **dadurch gekennzeichnet ist, dass** die ersten Einwickelmittel (25, 26) umfassen:

wenigstens eine Einwickeleinheit (25), die zwei Schachteln (6) getrennt anfertigt, die anfänglich getrennt und unabhängig voneinander sind, die die zwei Fächer (4) definieren und die Hülle (2) aufnehmen; und
eine Kopplungseinheit (26), die die zwei Schachteln (6) nur mittels Klebemittel (7) aneinanderklebt, um den Behälter (3) zu erhalten.

10. Verpackungsmaschine (24) nach Anspruch 9, wobei die ersten Einwickelmittel (25, 26) zwei getrennte Einwickeleinheiten (25) umfassen, die die zwei Schachteln (6) gleichzeitig anfertigen.

11. Verpackungsmaschine (24) nach Anspruch 9, wobei die ersten Einwickelmittel (25, 26) eine einzige Einwickeleinheit (25) umfassen, die die zwei Schachteln (6) nacheinander anfertigt.

12. Verpackungsmaschine (24) nach Anspruch 9, wobei die ersten Einwickelmittel (25, 26) eine einzige Einwickeleinheit (25) mit zwei Linien umfasst, die die zwei Schachteln (6) gleichzeitig anfertigt.

13. Verpackungsmaschine (24) nach einem der Ansprüche 9 bis 12 und umfassend ein Magazin (40), das zwischen der Einwickeleinheit (25) und der Kopplungseinheit (26) angeordnet ist und die gefertigten Schachteln (6) von der Einwickeleinheit (25) zur Kopplungseinheit (26) transferiert, und/oder ein Magazin, das zwischen den ersten Einwickelmitteln (25, 26) und den zweiten Einwickelmitteln (27) angeordnet ist und die Behälter (3) von den ersten Einwickelmitteln (25, 26) zu den zweiten Einwickelmitteln (27) transferiert.

Revendications

1. Paquet (1) d'articles à fumer avec une ouverture coulissante et comprenant :

au moins une enveloppe (2) contenant un groupe d'articles à fumer ;
un contenant (3) rigide qui est pourvu de deux compartiments (4), agencés côte à côte, dont l'un loge l'enveloppe (2) ; et
un boîtier tubulaire (5), qui loge le contenant (3) de manière coulissante de façon à permettre au contenant (3) de coulisser par rapport au boîtier tubulaire (5) afin de se déplacer, d'un mouvement linéaire, entre une position fermée, dans laquelle le contenant (3) est complètement inséré à l'intérieur du boîtier tubulaire (5), une première position ouverte, dans laquelle le conte-

nant (3) est partiellement extrait du boîtier tubulaire (5) de façon à exposer un premier compartiment (4), et une seconde position ouverte, qui est opposée à la première position ouverte dans laquelle le contenant (3) est partiellement extrait du boîtier tubulaire (5) de façon à exposer un second compartiment (4) ;
le paquet (1) d'articles à fumer est **caractérisé en ce que** le contenant (3) est formé de deux boîtes (6) qui, sont initialement séparées et indépendantes l'une de l'autre, définissent les deux compartiments (4), et sont collées l'une à l'autre uniquement au moyen d'une colle (7).

2. Paquet (1) d'articles à fumer selon la revendication 1, dans lequel les deux boîtes (6) ont des parois latérales (18) respectives, qui reposent l'une contre l'autre et sont collées l'une à l'autre au moyen de la colle (7).

3. Paquet (1) d'articles à fumer selon la revendication 2, dans lequel les deux boîtes (6) ont des parois latérales (18) respectives, qui reposent l'une contre l'autre, et la colle (7) relie fermement la paroi latérale (18) d'une boîte (6) à la paroi latérale (18) de l'autre boîte (6) .

4. Paquet (1) d'articles à fumer selon la revendication 1, 2 ou 3 et comprenant deux enveloppes (2), qui contiennent des groupes respectifs d'articles à fumer et sont logées dans les deux compartiments (4) du contenant (3).

5. Paquet (1) d'articles à fumer selon la revendication 1, 2 ou 3 et comprenant une seule enveloppe (2), qui est logée dans un compartiment (4), tandis que l'autre compartiment (4) est disponible.

6. Procédé d'enveloppage pour produire un paquet (1) d'articles à fumer avec une ouverture coulissante ; le procédé d'enveloppage comprenant les étapes de :

fabrication d'au moins une enveloppe (2) contenant un groupe d'articles à fumer ;
fabrication d'un contenant (3) rigide qui est pourvu de deux compartiments (4), agencés côte à côte, dont l'un loge l'enveloppe (2) ; et
fabrication d'un boîtier tubulaire (5), qui loge le contenant (3) de manière coulissante de façon à permettre au contenant (3) de coulisser par rapport au boîtier tubulaire (5) afin de se déplacer, d'un mouvement linéaire, entre une position fermée, dans laquelle le contenant (3) est complètement inséré à l'intérieur du boîtier tubulaire (5), une première position ouverte, dans laquelle le contenant (3) est partiellement extrait du boîtier tubulaire (5) de façon à exposer un premier compartiment (4), et une seconde position ouverte, qui est opposée à la première position ouverte et dans laquelle le contenant (3) est partiellement extrait du boîtier tubulaire (5) de façon à exposer un second compartiment (4) ;
le procédé d'enveloppage est **caractérisé en ce que** l'étape de fabrication du contenant (3) comprend les étapes supplémentaires de :

fabrication séparée de deux boîtes (6) qui, sont initialement séparées et indépendantes l'une de l'autre et, définissent les deux compartiments (4), dont au moins l'un loge l'enveloppe (2) ; et
collage des deux boîtes (6) l'une à l'autre uniquement au moyen d'une colle (7) de façon à obtenir le contenant (3).

7. Procédé d'enveloppage selon la revendication 6, dans lequel les deux boîtes (6) ont des parois latérales (18) respectives, qui reposent l'une contre l'autre et sont collées l'une à l'autre au moyen de la colle (7).

8. Procédé d'enveloppage selon la revendication 6 ou 7, dans lequel :

une première boîte (6) contenant l'enveloppe (2) est fabriquée en pliant une découpe (21) autour du groupe d'articles à fumer ; et
une seconde boîte (6) vide est fabriquée en pliant une découpe (21) autour d'un fuseau.

9. Empaqueteuse (24) pour produire un paquet (1) d'articles à fumer avec une ouverture coulissante ; l'empaqueteuse (24) comprend :

des premiers moyens d'enveloppage (25, 26) pour fabriquer un contenant (3) rigide qui est pourvu de deux compartiments (4), agencés côte à côte, dont au moins l'un loge une enveloppe (2) contenant un groupe d'articles à fumer ; et
des seconds moyens d'enveloppage (27) pour fabriquer un boîtier tubulaire (5), qui loge le contenant (3) de manière coulissante de façon à permettre au contenant (3) de coulisser par rapport au boîtier tubulaire (5) afin de se déplacer, d'un mouvement linéaire, entre une position fermée, dans laquelle le contenant (3) est complètement inséré à l'intérieur du boîtier tubulaire (5), une première position ouverte, dans laquelle le contenant (3) est partiellement extrait du boîtier tubulaire (5) de façon à exposer un premier compartiment (4), et une seconde position ouverte, qui est opposée à la première position ouverte et dans laquelle le contenant (1) est partiellement extrait du boîtier tubulaire (5) de façon à exposer un second compartiment (4) ;

l'empaqueteuse (24) est **caractérisée en ce que** les premiers moyens d'enveloppage (25, 26) comprennent :

au moins une unité d'enveloppage (25) qui fabrique séparément deux boîtes (6) qui, sont initialement séparées et indépendantes l'une de l'autre, définissent les deux compartiments (4), et logent l'enveloppe (2) ; et
une unité de couplage (26), qui colle les deux boîtes (6) l'une à l'autre uniquement au moyen d'une colle (7) de façon à obtenir le contenant (3).

10. Empaqueteuse (24) selon la revendication 9, dans laquelle les premiers moyens d'enveloppage (25, 26) comprennent deux unités d'enveloppage (25) distinctes qui fabriquent simultanément les deux boîtes (6).

11. Empaqueteuse (24) selon la revendication 9, dans laquelle les premiers moyens d'enveloppage (25, 26) comprennent une seule unité d'enveloppage (25) qui fabrique les deux boîtes (6) à la suite.

12. Empaqueteuse (24) selon la revendication 9, dans laquelle les premiers moyens d'enveloppage (25, 26) comprennent une seule unité d'enveloppage (25) à double ligne qui fabrique simultanément les deux boîtes (6).

13. Empaqueteuse (24) selon l'une des revendications 9 à 12 et comprenant un magasin (40), qui est interposé entre l'unité d'enveloppage (25) et l'unité de couplage (26) et transfère les boîtes (6) fabriquées de l'unité d'enveloppage (25) à l'unité de couplage (26), et/ou un magasin, qui est interposé entre les premiers moyens d'enveloppage (25, 26) et les seconds moyens d'enveloppage (27) et transfère les contenants (3) des premiers moyens d'enveloppage (25, 26) aux seconds moyens d'enveloppage (27).

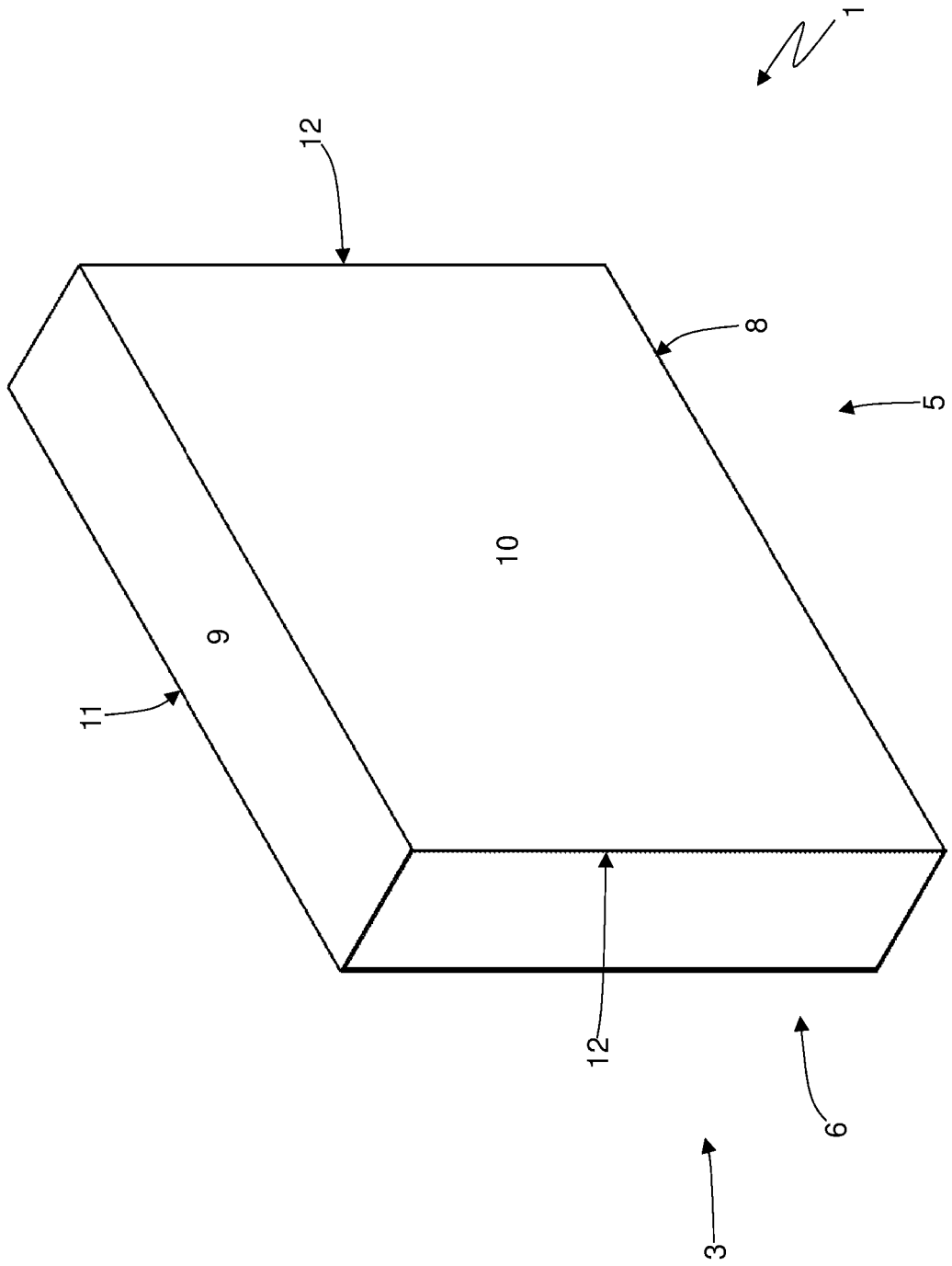


Fig.1

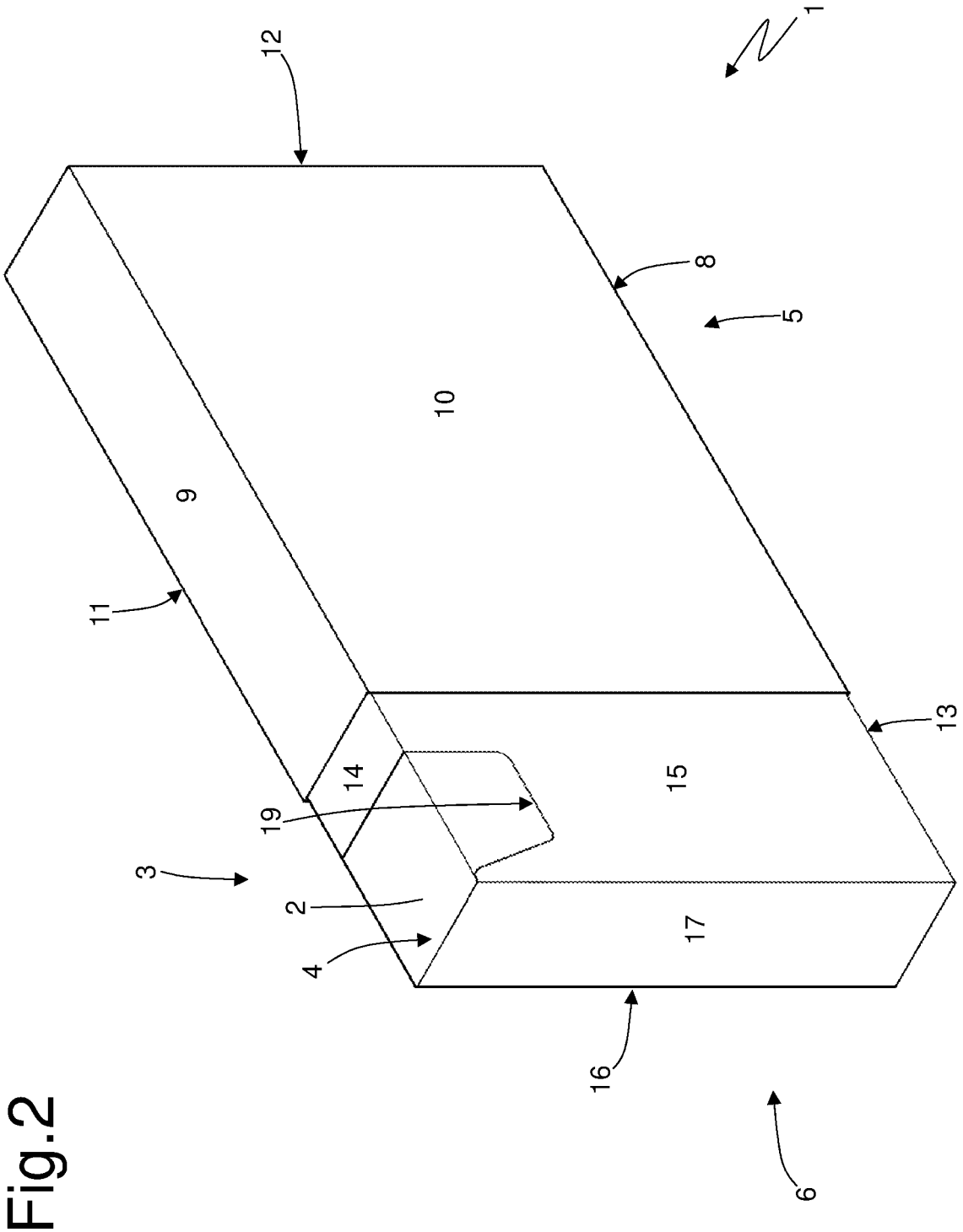


Fig.2

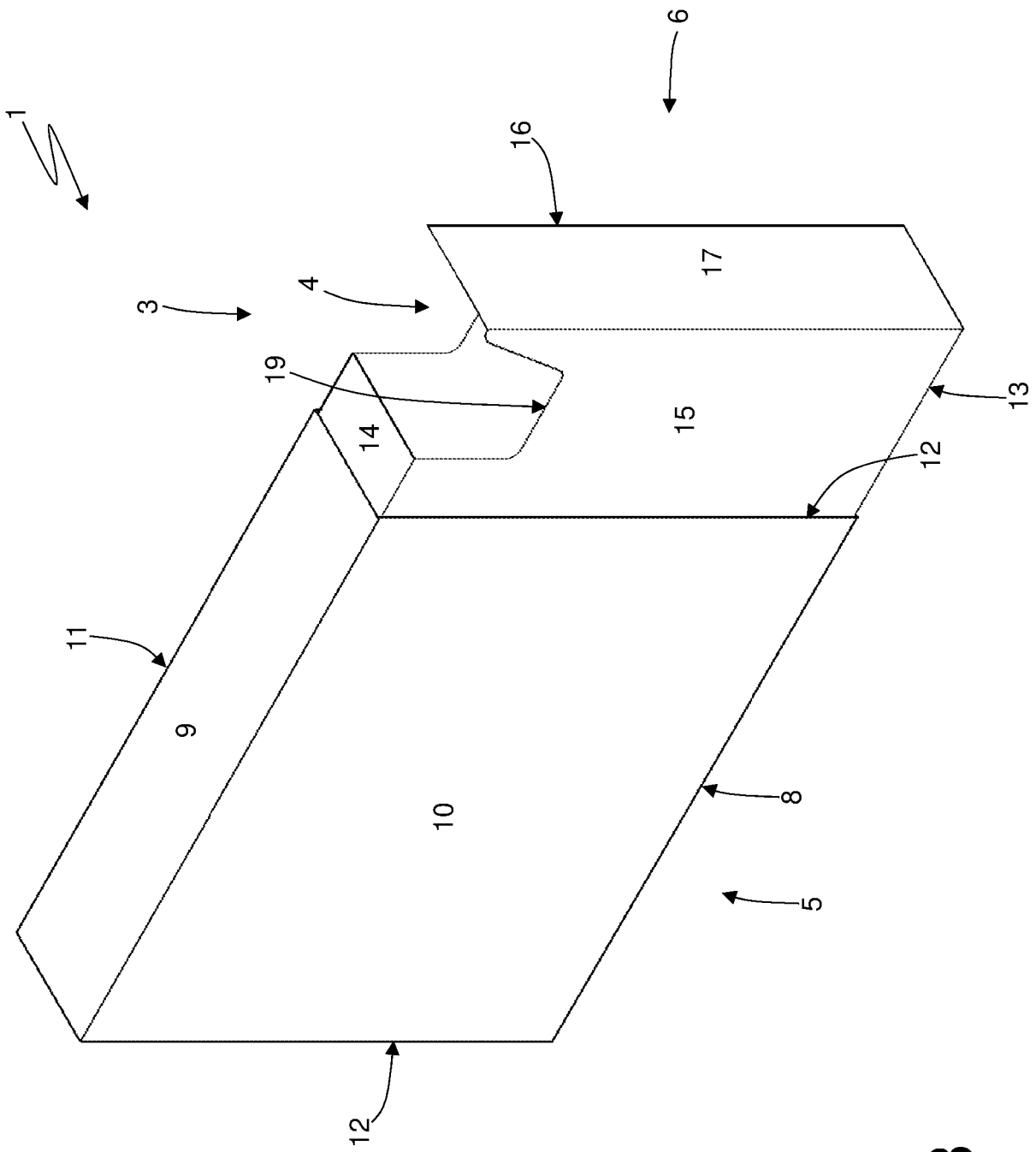


Fig.3

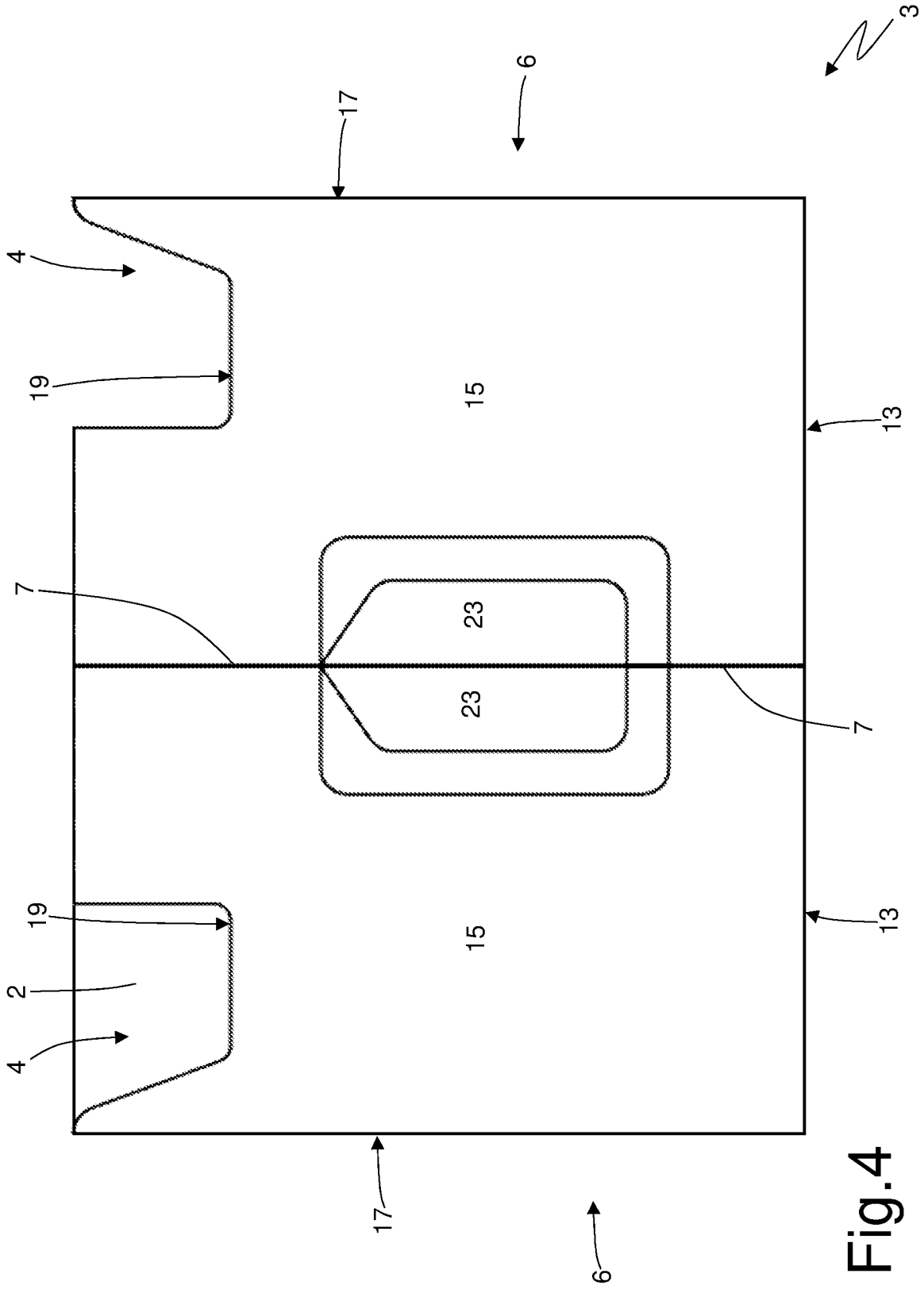


Fig.4

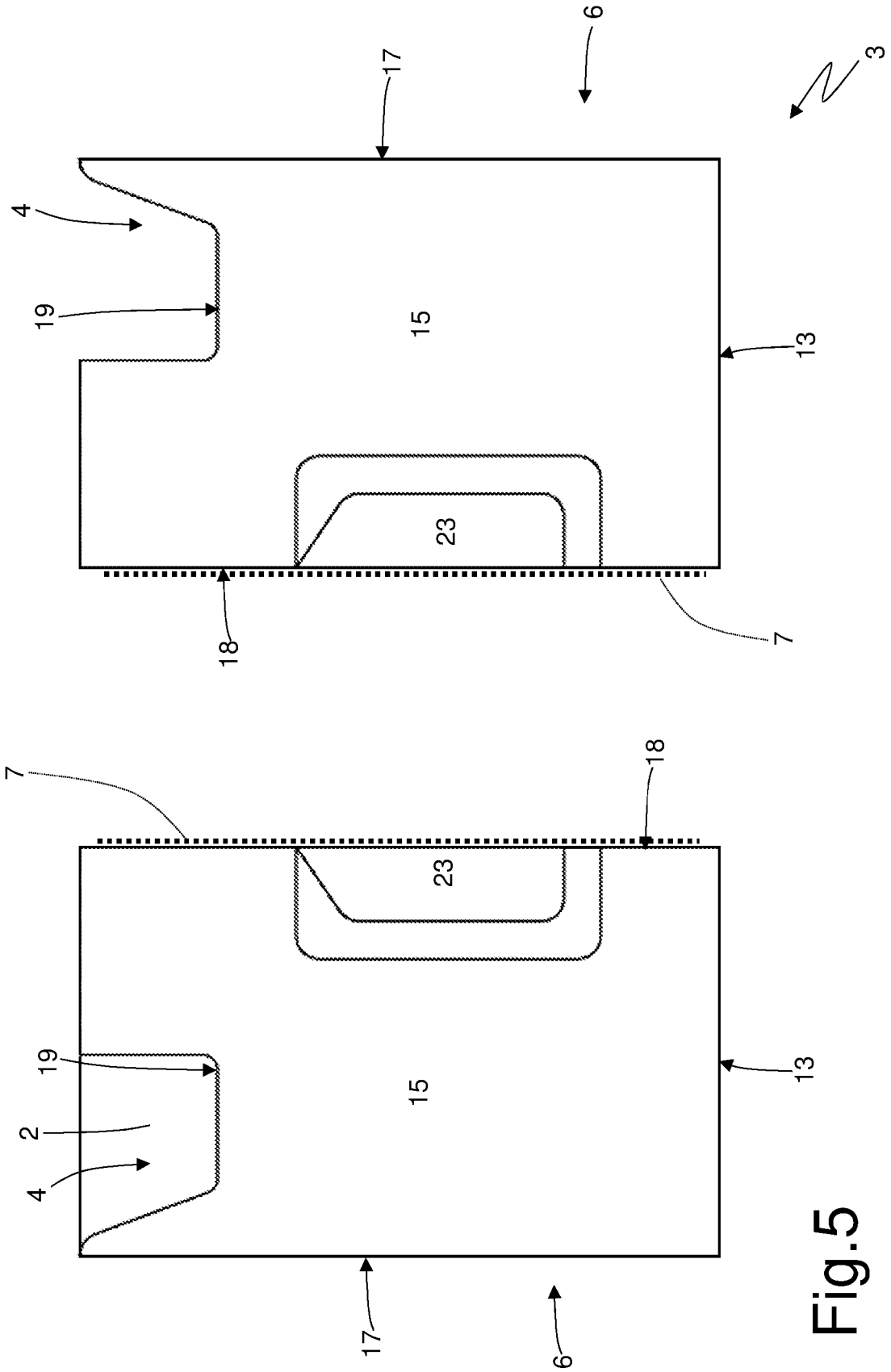


Fig.5

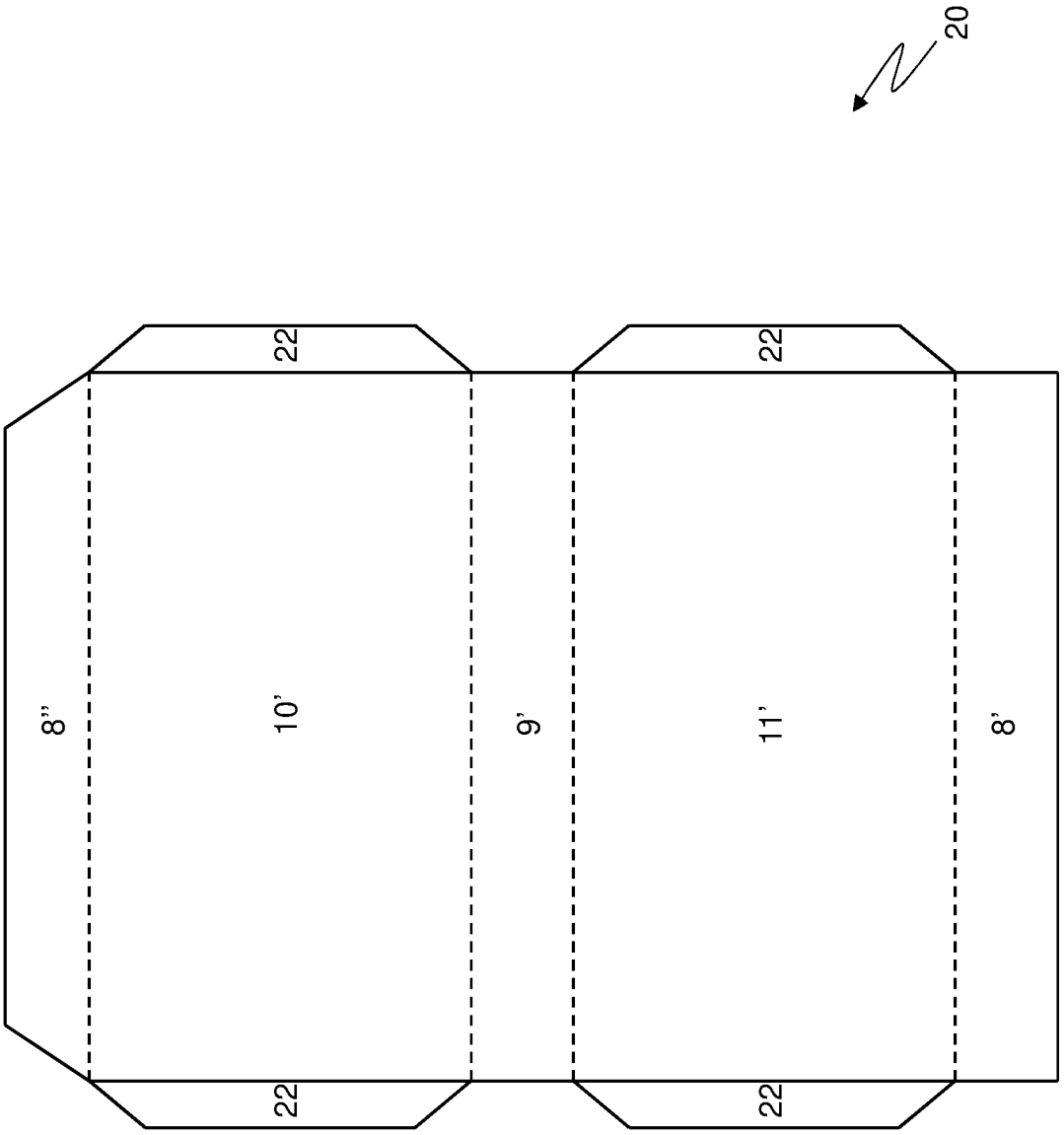


Fig.6

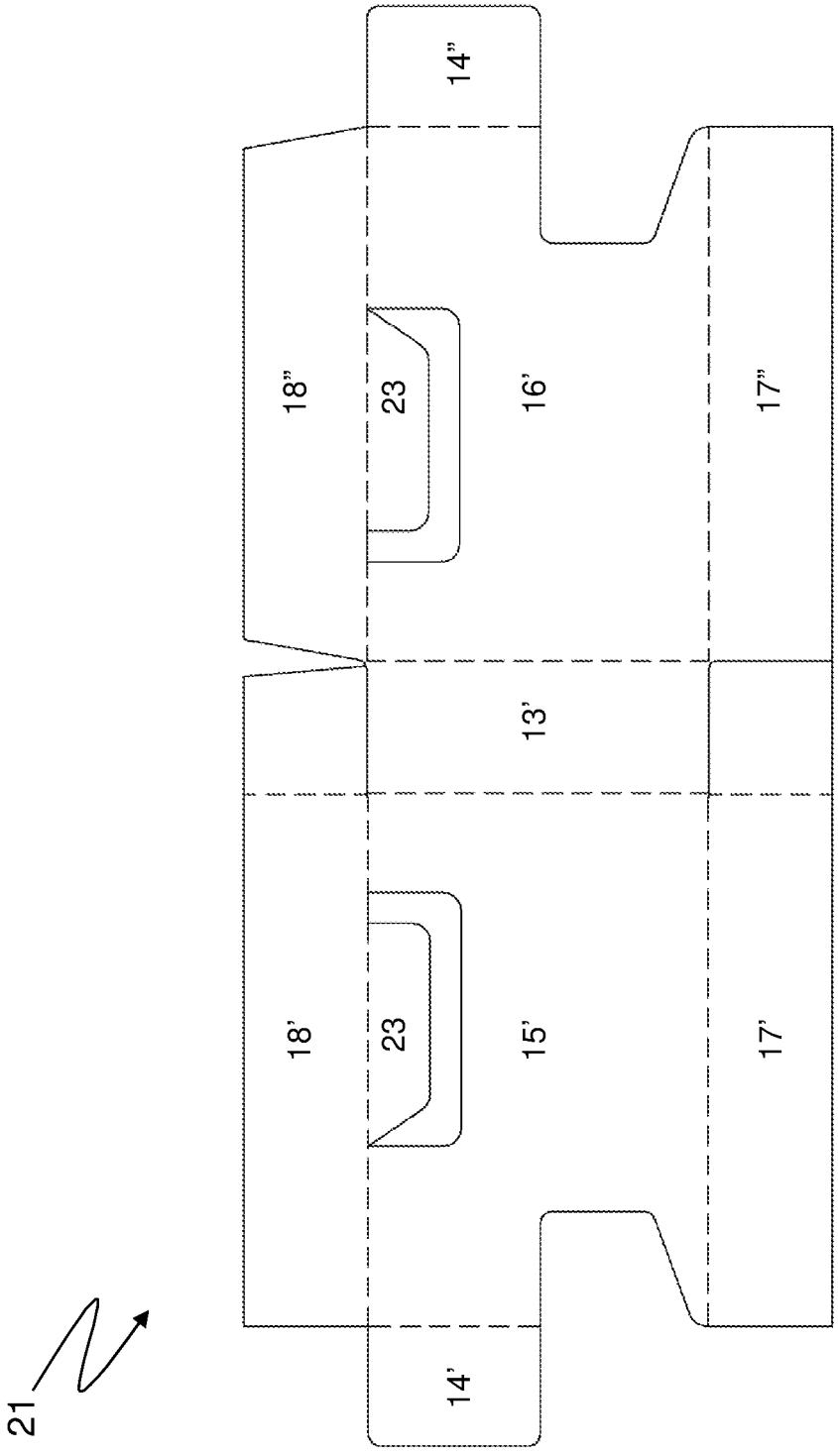


Fig.7

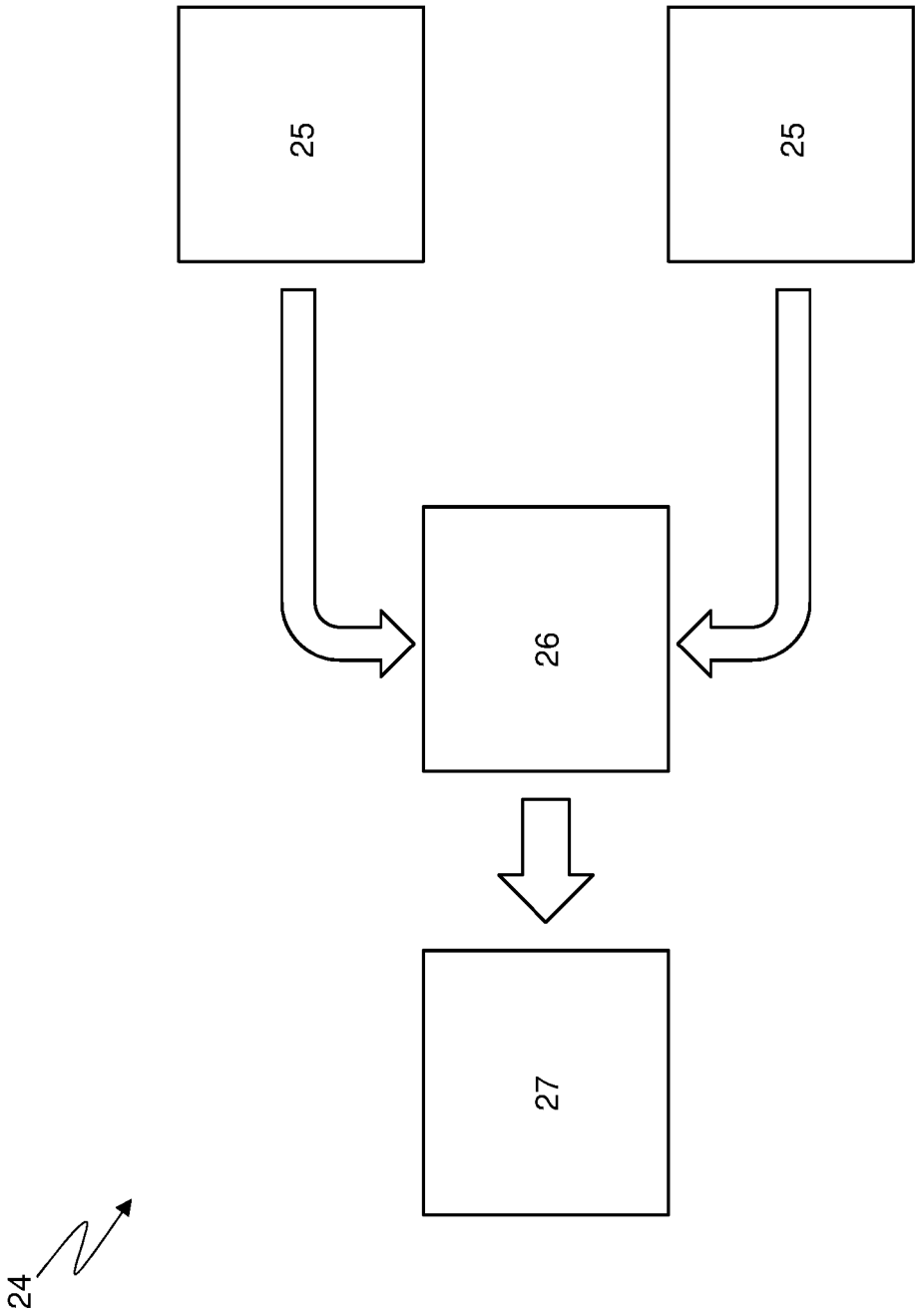


Fig.8

Fig.9

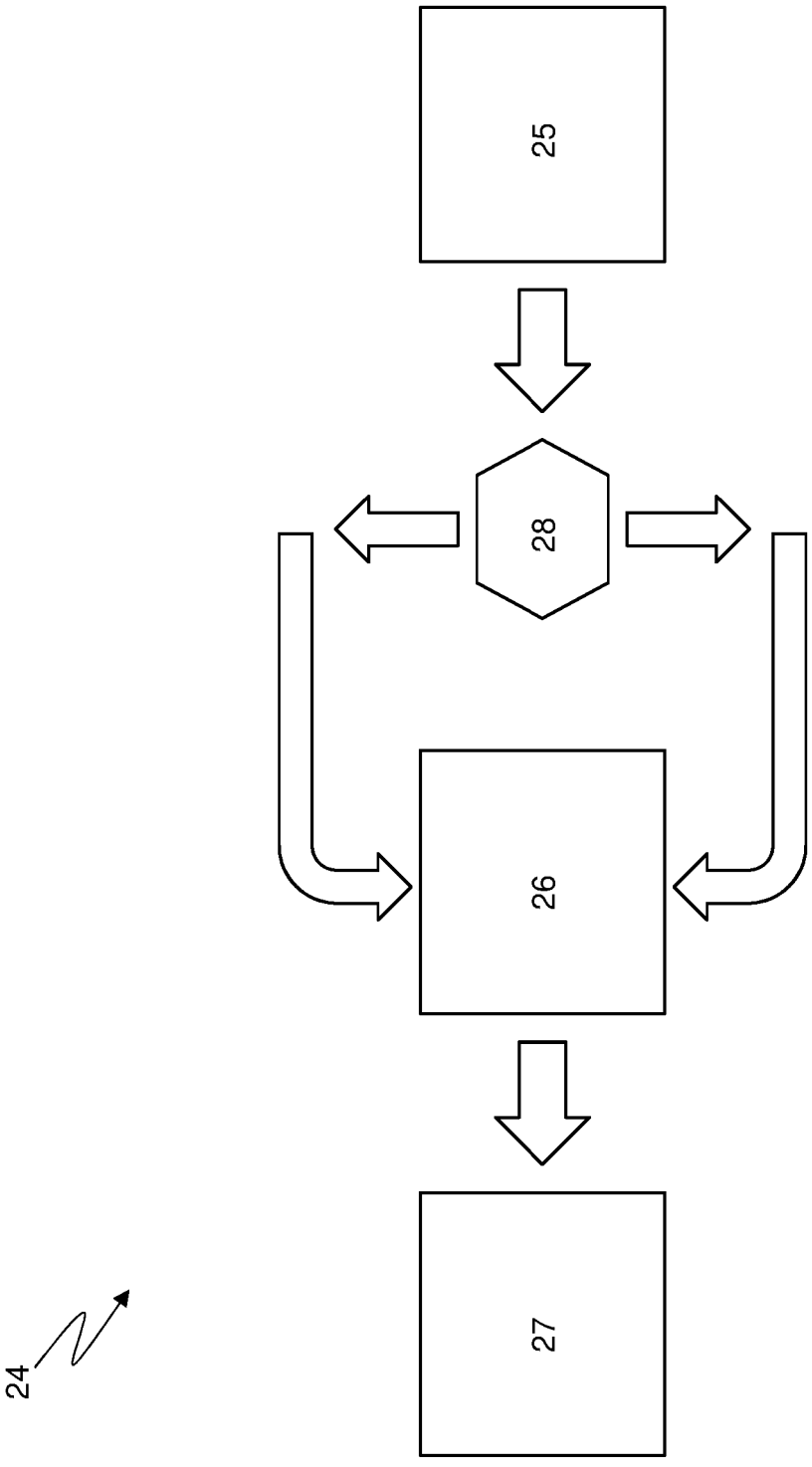
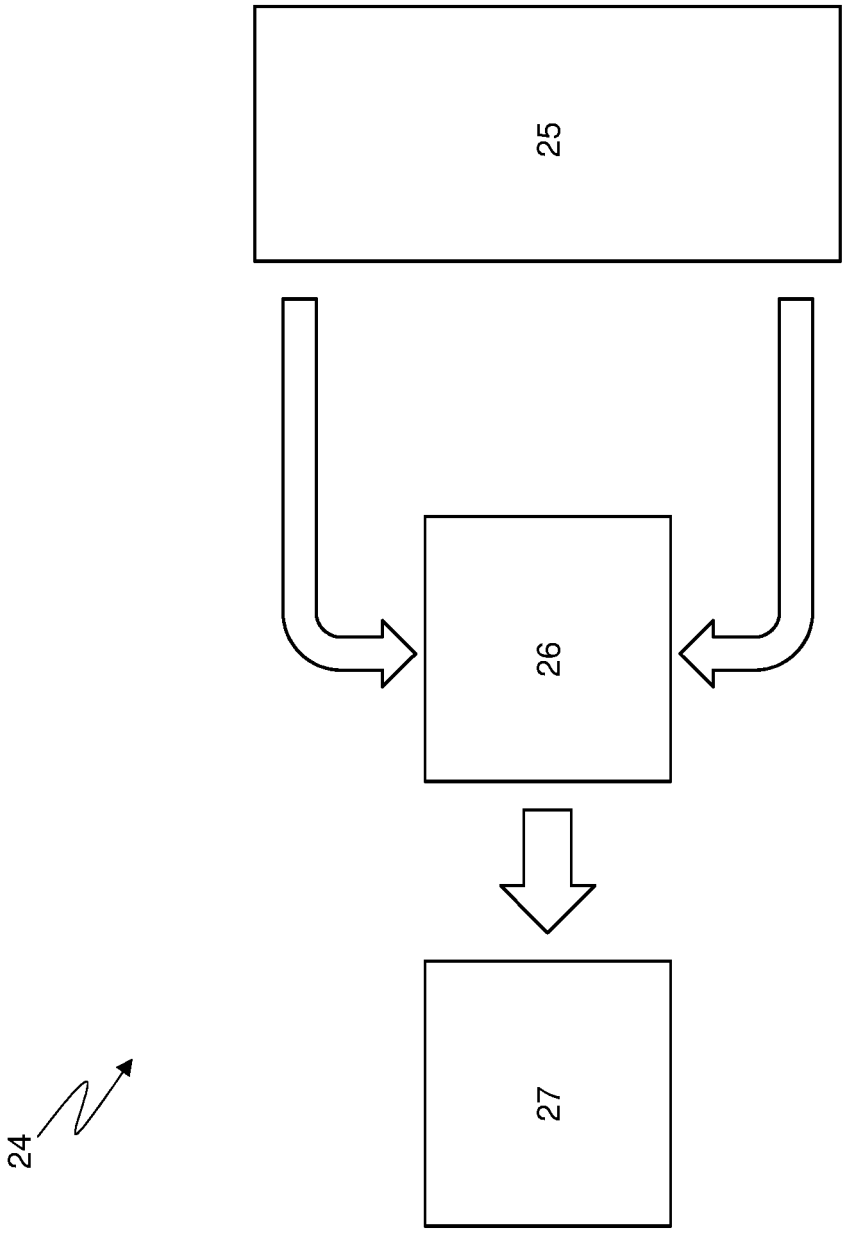


Fig.10



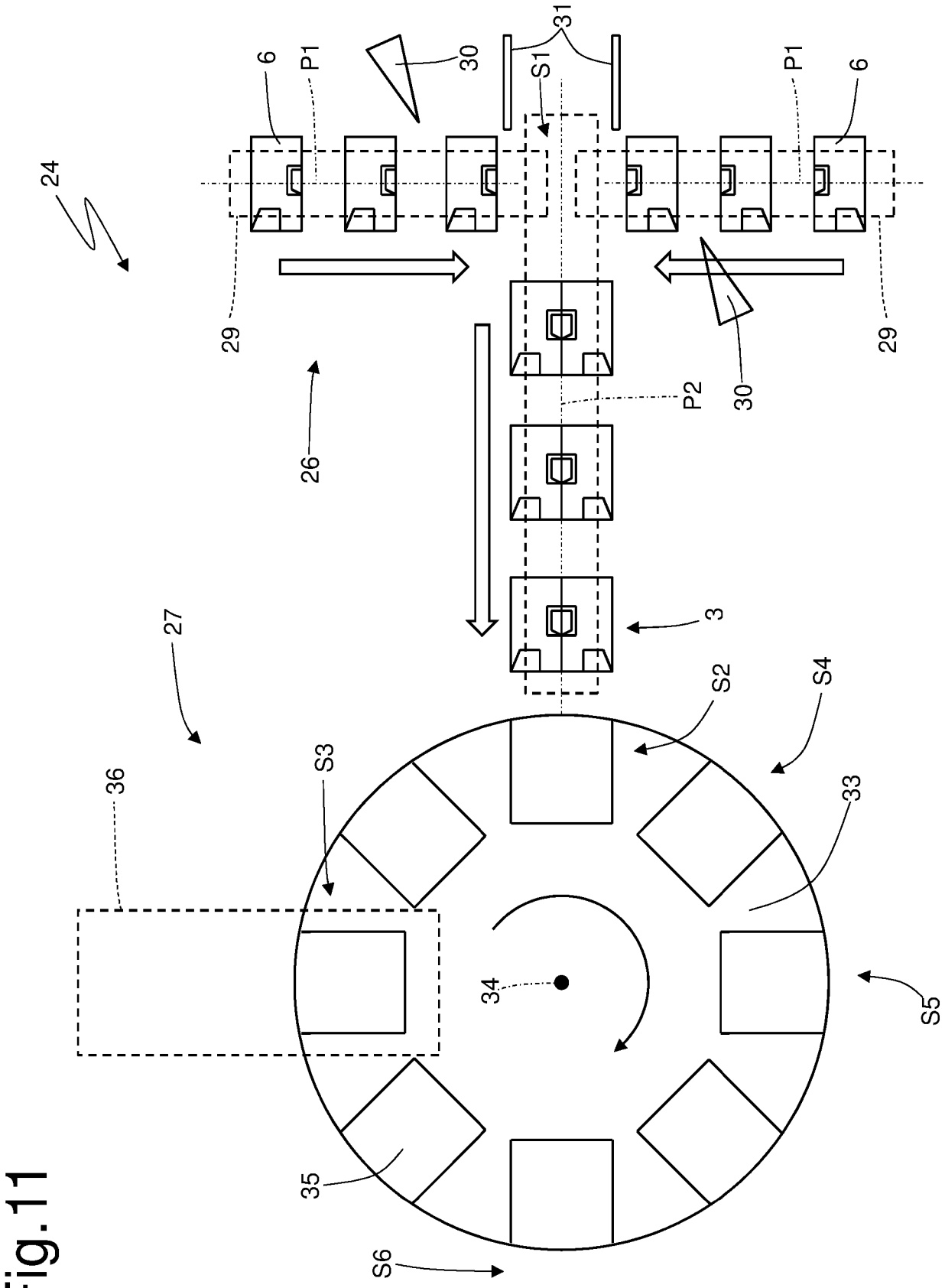


Fig.11

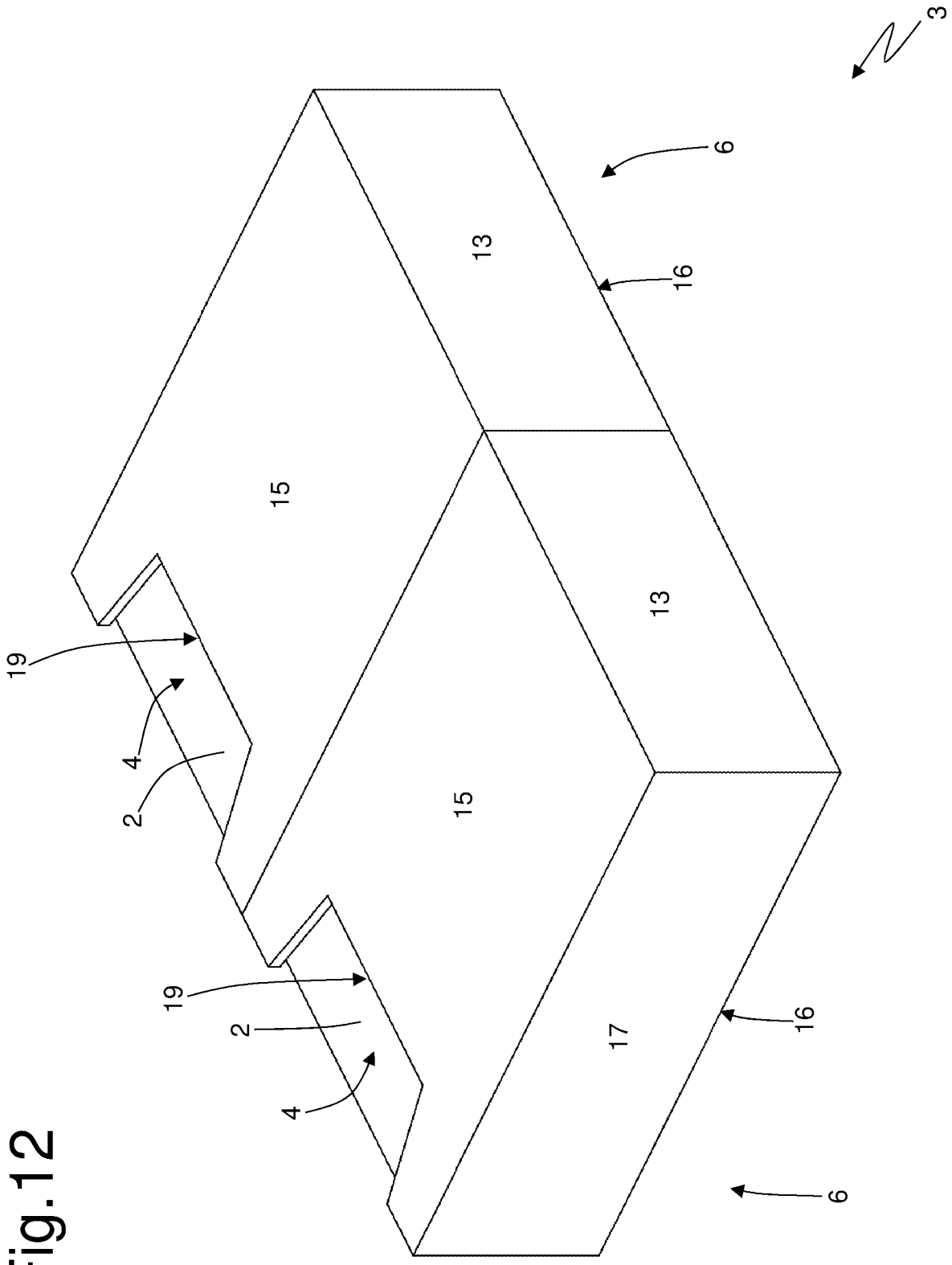


Fig.12

Fig.13

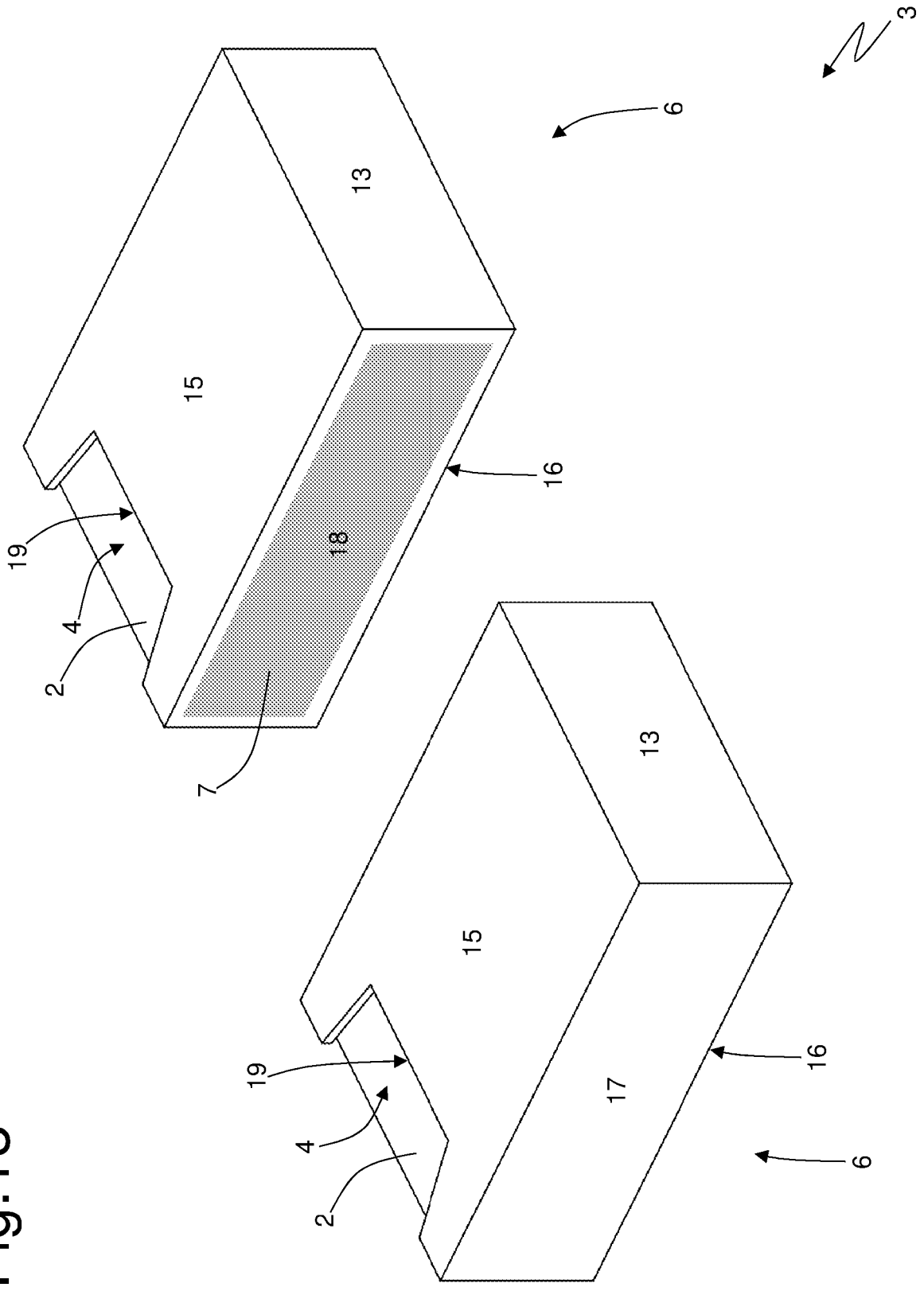
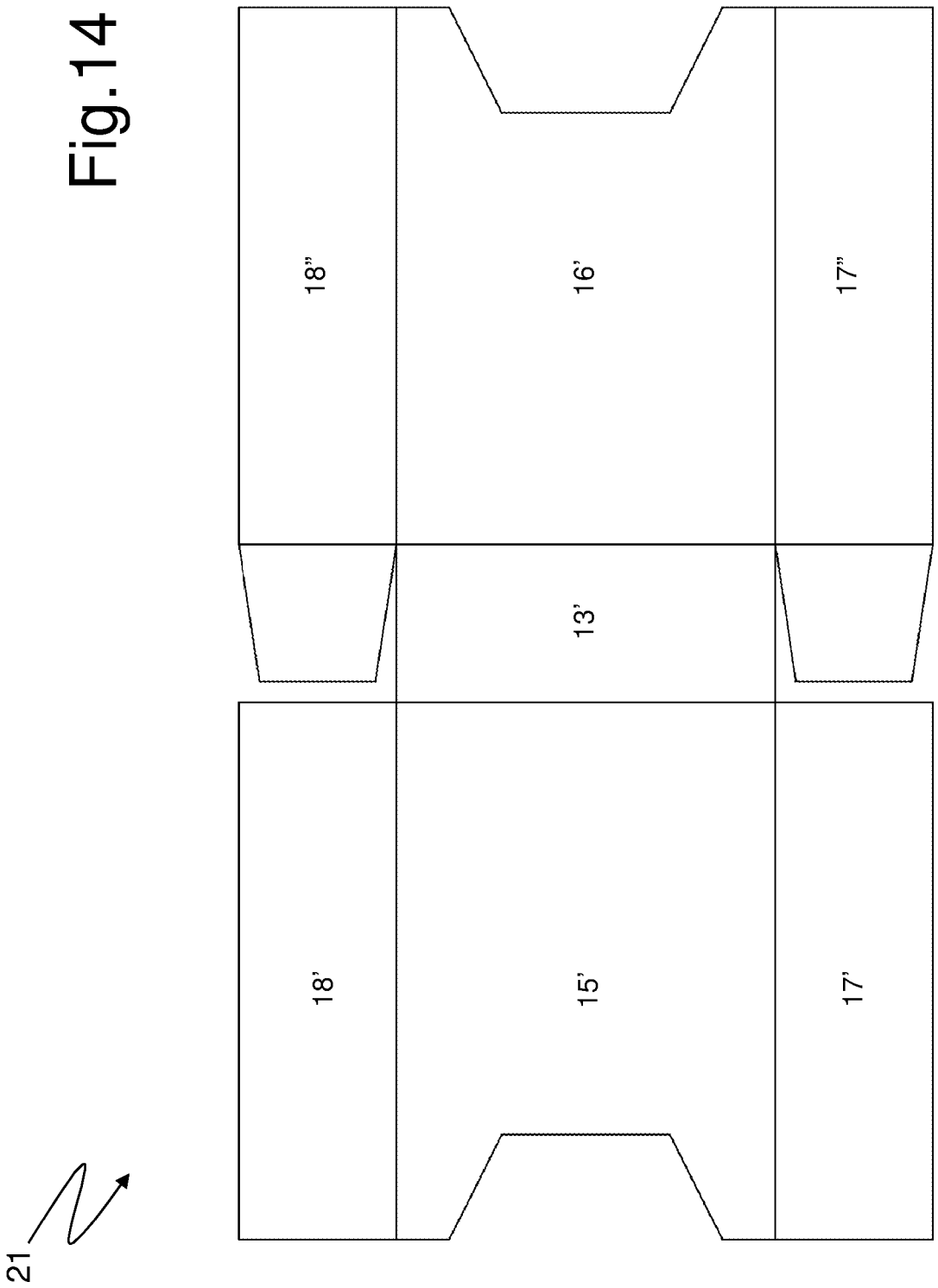


Fig.14



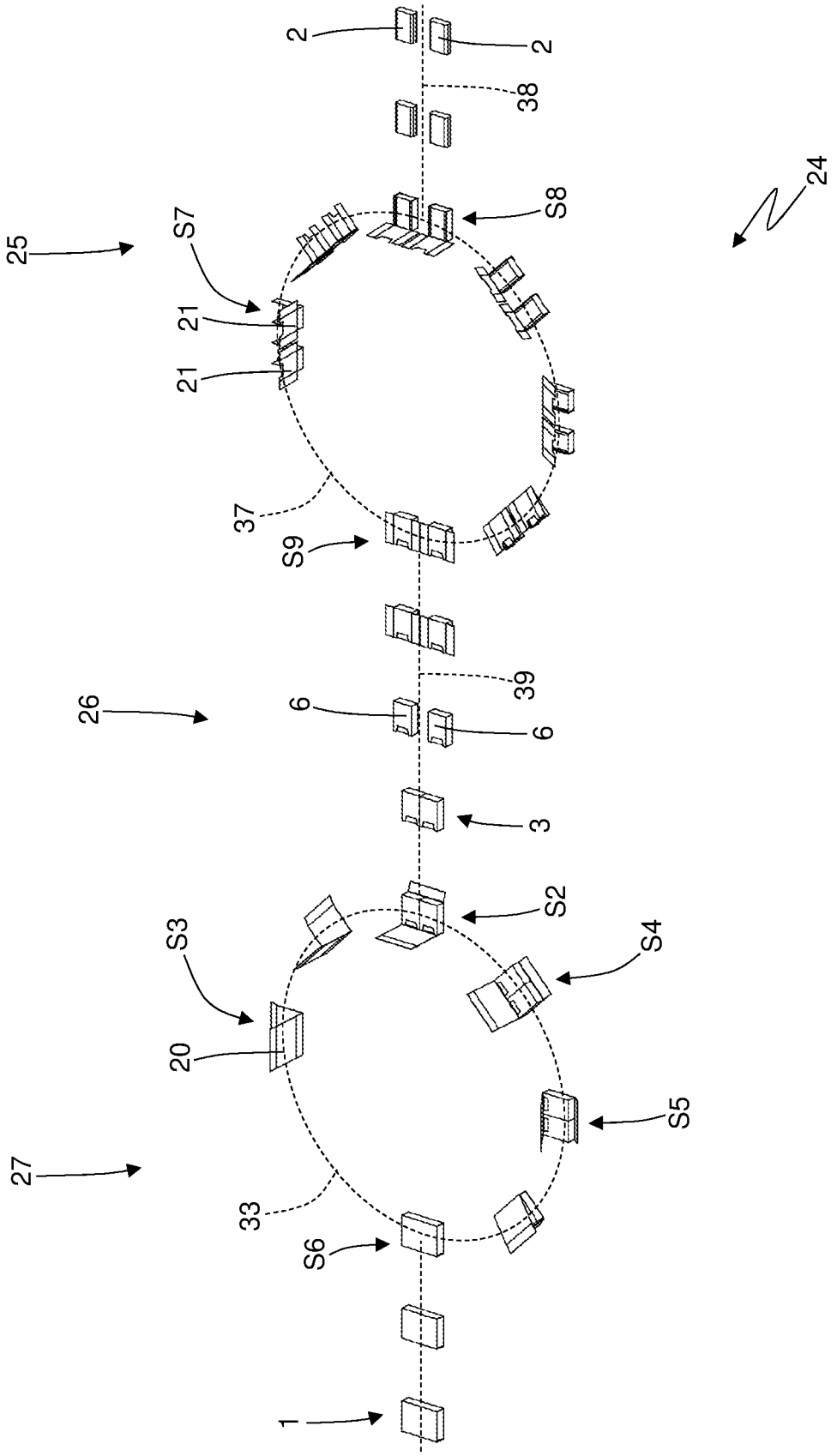
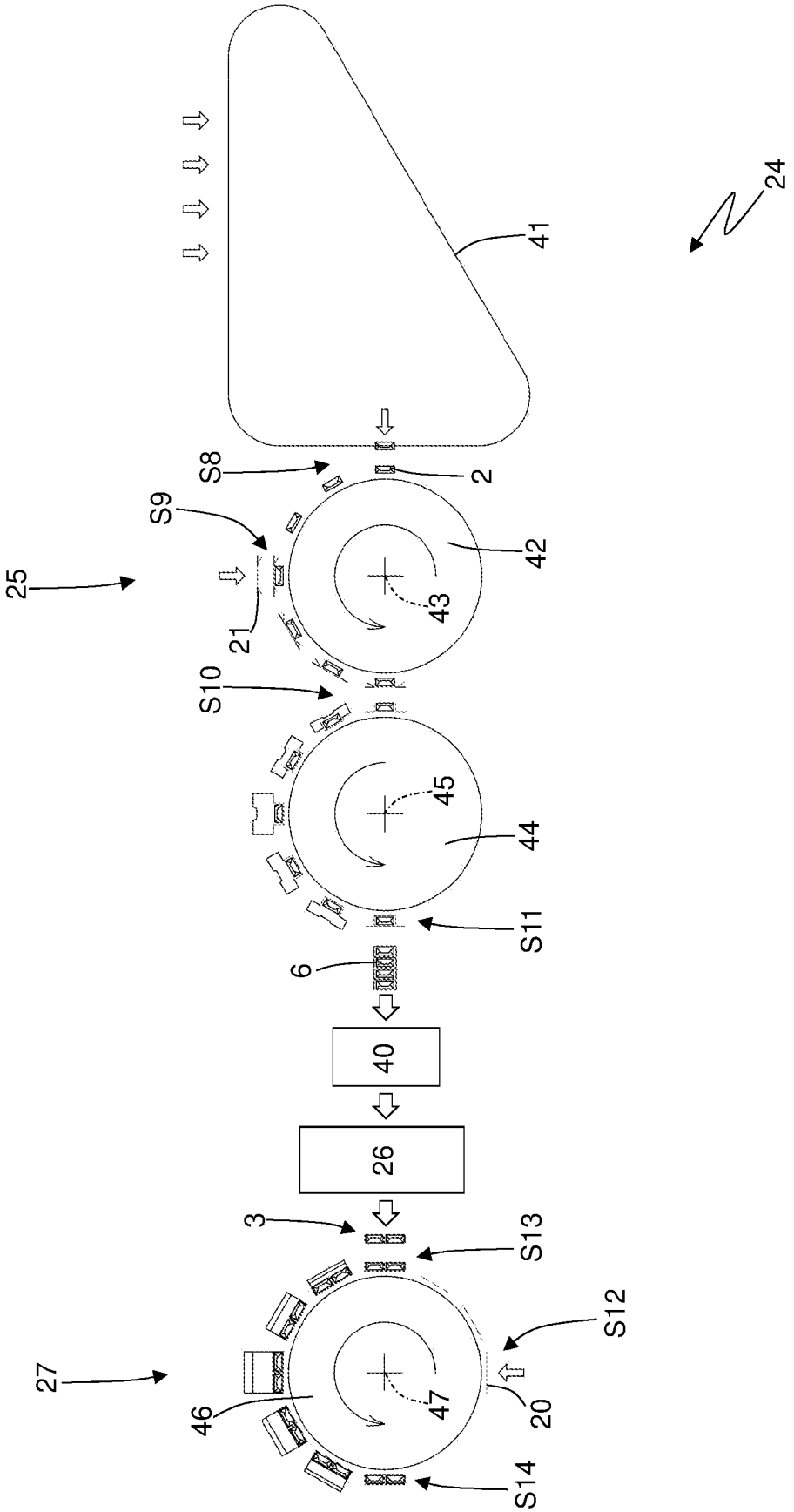


Fig.15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S9
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S14

Fig.16

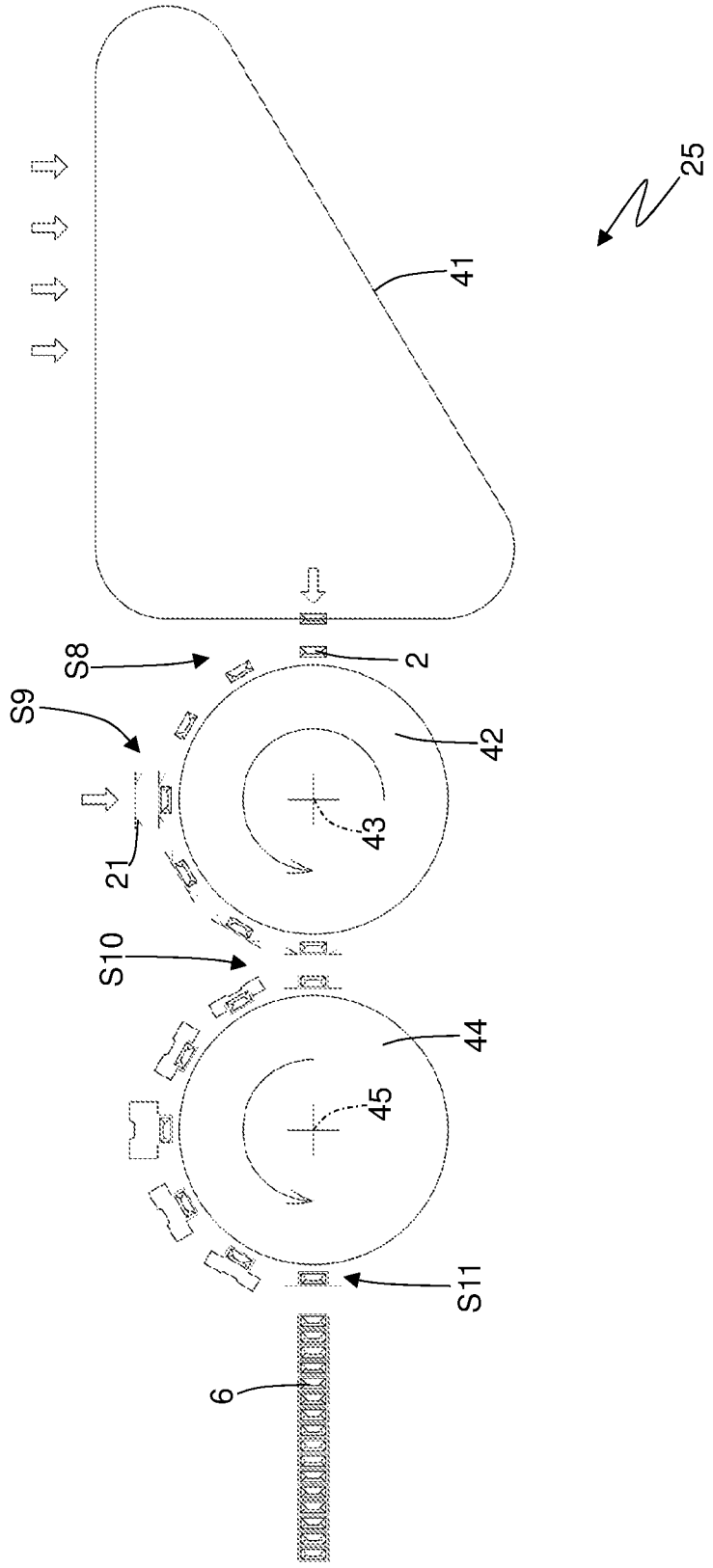

Fig.17

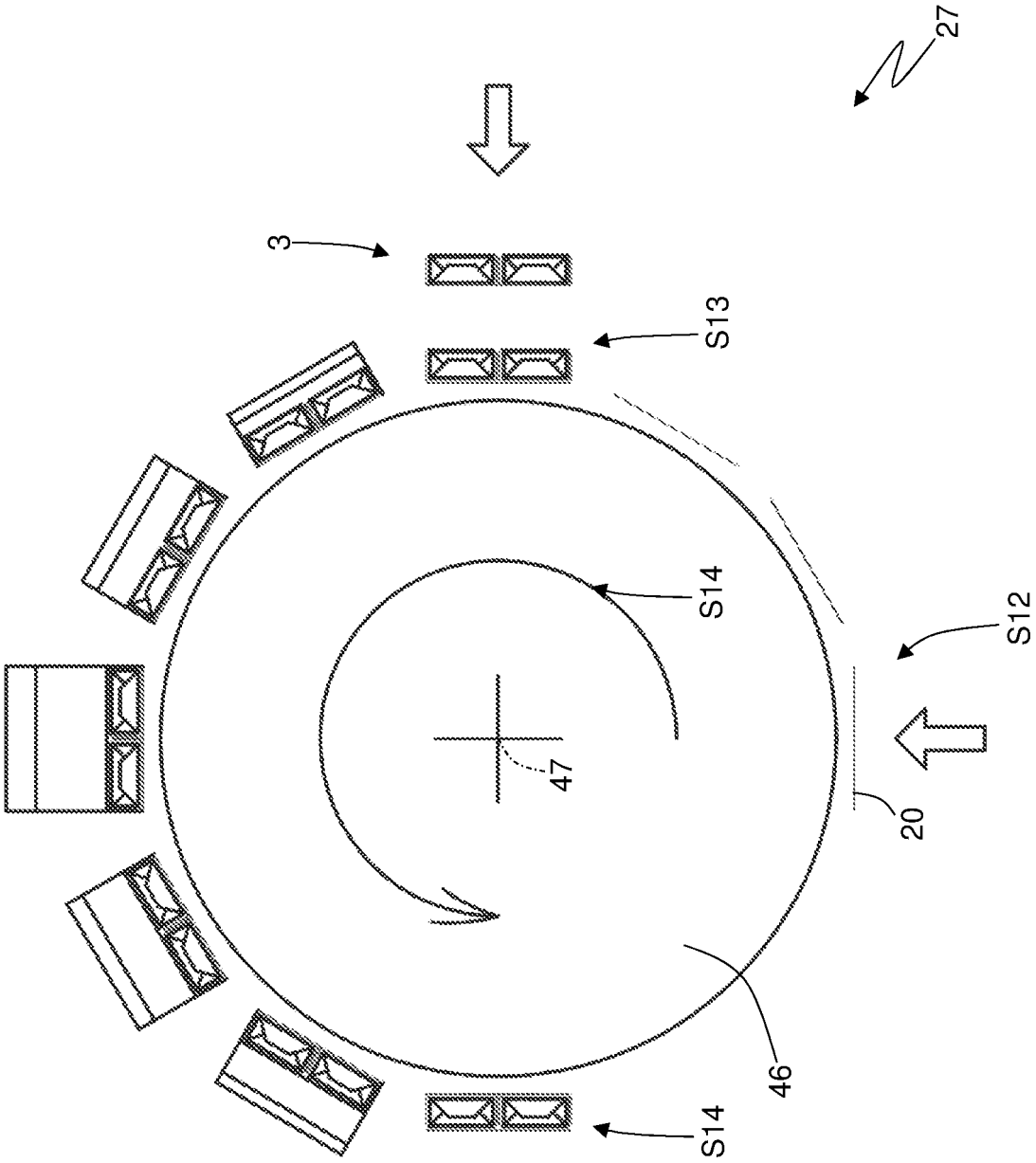

Fig.18

REFERENCES CITED IN THE DESCRIPTION

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