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(54) **PACKING METHOD AND MACHINE FOR PRODUCING A PACKET OF CIGARETTES WITH A SPACER INSIDE THE GROUP OF CIGARETTES**

VERPACKUNGSVERFAHREN UND MASCHINE ZUR HERSTELLUNG EINER
ZIGARETTENPACKUNG MIT ABSTANDSHALTER INNERHALB DER GRUPPE VON ZIGARETTEN
PROCÉDÉ ET MACHINE D'EMBALLAGE POUR LA PRODUCTION D'UN PAQUET DE CIGARETTES
COMPRENANT UN ÉLÉMENT D'ESPACEMENT À L'INTÉRIEUR DU GROUPE DE CIGARETTES

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Description

TECHNICAL FIELD

[0001] The present invention relates to a packing method and machine for producing a packet of cigarettes according to the preamble of claims 1,2 respectively.

[0002] In the following description, reference is made, for the sake of simplicity and purely by way of a non-limiting example, to a rigid, hinged-lid packet of cigarettes.

BACKGROUND ART

[0003] A rigid, hinged-lid packet of cigarettes normally comprises an inner package enclosing a group of cigarettes; and a rigid outer container housing the inner package.

[0004] The inner package is initially fully closed, and has a pull-off top portion which is removed the first time the packet is opened, to enable withdrawal of the cigarettes from the inner package.

[0005] A filter-tipped cigarette comprises a tobacco portion with an inner end and an outer end; and a filter which is fitted end-to-end to the inner end of the tobacco portion, and is secured to it by a band wound around the filter and around part of the tobacco portion.

[0006] Currently used filters are made of 10-35 mm long cylindrical portions of cellulose acetate, with a 4-9 mm diameter, identical to that of the corresponding tobacco portion. And the band wound about the filter also covers a 2-3 mm long portion of the tobacco portion.

[0007] The inner package and the outer container often exert a certain amount of lateral compression on the group of cigarettes inside the inner package. In the case of a new packet, i.e. containing a full group of cigarettes, the lateral compression exerted by the inner package and outer container on the group of cigarettes may be severe enough to make it difficult to withdraw the first cigarette from the group, due to friction between the first and adjacent cigarettes. To simplify withdrawal of the first cigarette from the group, it has been proposed to fit at least one cigarette in the group with a pull-up tape, which has a grip end projecting from the top wall of the group of cigarettes, and which is pulled to lift the cigarette up.

[0008] Known pull-up tapes, however, require that the inner end of the tape, opposite the grip end, be glued to a wall of the inner package. This constitutes a serious drawback, in that, because glue in contact or close proximity with the cigarettes may release volatile substances that are absorbed by the cigarettes and alter the aroma and/or taste of the cigarette tobacco, the inner packages of packets of cigarettes have traditionally always been left free of glue.

[0009] On standard packing machines, it is also difficult to insert a gumming device capable of applying glue to the inner surface of the inner package.

[0010] Patent Application US5433318A1 describes a

packet of cigarettes comprising: a two-row group of cigarettes; a package enclosing the group of cigarettes; and a spacer fitted to the group of cigarettes and interposed between, to separate, the two rows of cigarettes.

[0011] Patent Application GB516097A describes a cigarette packing machine, in which a group of cigarettes, as soon as it is withdrawn from a hopper, is divided in the middle into two halves, between which a spacer, formed by folding a flat blank, is inserted.

DESCRIPTION OF THE INVENTION

[0012] It is an object of the present invention to provide a packing method and machine for producing a packet of cigarettes, designed to eliminate the above drawbacks, and which at the same time are cheap and easy to implement. It is a further object of the present invention to provide a packet of cigarettes designed to eliminate the above drawbacks.

[0013] According to the present invention, there are provided a packing method and a packing machine, according to claims 1,2 respectively.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] A non-limiting embodiment 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 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 4 shows a longitudinal section of an inner package of the Figure 1 packet of cigarettes;

Figure 5 shows a cross section of the Figure 4 inner package;

Figure 6 shows a view in perspective of a group of cigarettes contained in the Figure 4 inner package; Figure 7 shows an exploded view in perspective of the Figure 6 group of cigarettes;

Figure 8 shows a spread-out blank, which is folded to form a spacer of the Figure 6 group of cigarettes; Figure 9 shows a schematic of a packing machine for producing the Figure 1 packet of cigarettes;

Figure 10 shows a schematic of a group-forming unit of the Figure 9 packing machine, for forming the Figure 6 group of cigarettes.

PREFERRED EMBODIMENTS OF THE INVENTION

[0015] 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, hinged-lid, cardboard outer

container 2 which houses an inner package 3 (shown partly in Figure 2).

[0016] As shown in Figures 4 to 7, inner package 3 encloses a parallelepiped-shaped group 4 of cigarettes. Group 4 of cigarettes comprises two rows 5 of cigarettes; and a spacer 6 fitted to group 4 of cigarettes and interposed between, to separate, the two rows 5 of cigarettes.

[0017] Spacer 6 is inserted between the two rows 5 of cigarettes to space rows 5 apart, and so make it much easier to grip and withdraw the cigarettes from group 4, by virtue of rows 5 of cigarettes contacting spacer 6, as opposed to being pressed contacting each other.

[0018] In a preferred embodiment, spacer 6 is shorter than the cigarettes in group 4, and is positioned a given distance D from a top portion of inner package 3, through which the cigarettes are withdrawn from inner package 3.

[0019] This way, and as shown clearly in Figures 4 and 6, the tops of the cigarettes (typically the filters) that are gripped with the fingers to withdraw the cigarettes from inner package 3 are completely free inwardly, i.e. in the top centre portion of group 4 of cigarettes, a cavity as deep as given distance D is formed, thus making it much easier to grip (with the thumb and fingers) the tops of the cigarettes (typically the filters) to withdraw the cigarettes from inner package 3.

[0020] In a preferred non-limiting embodiment shown in the attached drawings, spacer 6 is in the form of a box (i.e. hollow) body. Alternatively, spacer 6 may be in the form of a solid (i.e. non-hollow) body, possibly made of sponge material, solid foam material (e.g. polystyrene foam) or similar. Spacer 6 may even be in the form of a piece of corrugated cardboard, a piece of pleated thin cardboard, or an insert of deformed plastic material.

[0021] Spacer 6 has a top end 7, which must be located facing the filters of the cigarettes in rows 5 - and not the tobacco portions underneath, which, being more fragile than the filters, could be damaged - so given distance D is less than the length of the filters.

[0022] More specifically, given distance D between the top portion of inner package 3 and the top end 7 of spacer 6, to enable the cigarettes to be gripped with the fingers, ranges between 50% and 80% of the length of the filters, i.e. between 5 mm and 28 mm, and preferably ranges between 8 mm and 15 mm.

[0023] In a preferred non-limiting embodiment shown in the attached drawings, spacer 6 is parallelepiped-shaped, and has an open top end 7 facing a top portion of inner package 3, through which the cigarettes are withdrawn from inner package 3. Spacer 6 also has a bottom wall opposite open top end 7; two opposite parallel major lateral walls which rest against the cigarettes in the two rows 5; and two opposite parallel minor lateral walls which rest against the corresponding minor lateral walls of inner package 3. As such, spacer 6 may also be used as a container, either for items inserted when producing packet 1 of cigarettes (e.g. a free gift inside packet 1 of cigarettes), or for items inserted later, after packet 1 of cigarettes is opened (e.g. a lighter or, when necessary, cig-

arette ash or stubs).

[0024] Alternatively, spacer 6 may be closed on all sides, i.e. may have a top wall opposite and parallel to the bottom wall and closing open top end 7 (in this case, too, spacer 6 may be used as a container for a free gift inside packet 1 of cigarettes, and which is accessed by tearing open spacer 6).

[0025] In a preferred non-limiting embodiment shown in Figure 7, spacer 6 is formed by folding and gluing a flat blank 8.

[0026] Figure 8 shows a spread-out blank 8 from which to form a spacer 6 closed on all sides (Figure 8 clearly shows all the walls of spacer 6).

[0027] In the preferred non-limiting embodiment shown in the attached drawings, group 4 of cigarettes comprises two rows 5 of cigarettes, between which spacer 6 is inserted. In other embodiments not shown, group 4 of cigarettes may comprise three rows 5, between which one spacer 6 is inserted (i.e. between one row 5 and two contiguous rows 5 of cigarettes), or between which two separate spacers 6 are inserted, each between two adjacent rows 5 of cigarettes. Generally speaking, group 4 of cigarettes may comprise a number of rows 5 of cigarettes alternating with one or more spacers 6.

[0028] In actual practice, however, only the cigarettes in a first row 5 (typically, the first row 5 of cigarettes facing the front of packet 1 of cigarettes) need be withdrawn from packet 1 of cigarettes to remove the lateral compression on group 4 of cigarettes in inner package 3, and so eliminate the need for spacer 6, which may even be removed from group 4 of cigarettes. In other words, removal of the first row 5 of cigarettes eliminates lateral compression on group 4 of cigarettes and the frictional resistance between the cigarette being withdrawn and the adjacent cigarettes. So, obviously, to simplify withdrawal of the first cigarette, one spacer 6 in group 4 of cigarettes, between the first row 5 and other rows 5 of cigarettes in inner package 3, is sufficient.

[0029] In a non-limiting embodiment, spacer 6 is fixed to inner package 3 by spots or coatings of cold glue, or, preferably, flat blank 8 may have areas gummed with hotmelt adhesive, to avoid even only partly extracting spacer 6 together with the first cigarette, due to friction in the full group 4 of cigarettes. With reference to the attached drawings, the parallelepiped-shaped spacer 6 is fixed to the bottom end and/or to at least one minor lateral wall of inner package 3.

[0030] Figure 9 shows a schematic of a packing machine 9 for producing packet 1 of cigarettes described above.

[0031] As shown in Figure 9, packing machine 9 comprises a folding unit 10 for forming spacer 6 by folding and gluing a corresponding blank 8; a group-forming unit 11 for forming group 4 of cigarettes; and a packing unit 12 for forming inner package 3 by folding a sheet of soft packing material about group 4 of cigarettes, and then forming outer container 2 by folding a rigid blank about inner package 3.

[0032] Alternatively, folding unit 10 corrugates a piece of cardboard or pleats a piece of thin cardboard to form spacer 6.

[0033] As shown in Figure 10, group-forming unit 11 comprises a group-forming belt conveyor 13 supporting a number of group-forming pockets 14, each for receiving and conveying a respective group 4 of cigarettes. Group-forming conveyor 13 moves anticlockwise in steps to feed each group-forming pocket 14 along a straight group-forming path P. Two cigarette hoppers 15 and a spacer hopper 16, located between cigarette hoppers 15, are located along group-forming path P.

[0034] Each cigarette hopper 15 comprises three identical outlets in series along group-forming path P. In the Figure 10 embodiment, cigarette hoppers 15 share the same feed source, i.e. are both fed with cigarettes from one top container 17.

[0035] In a different but perfectly equivalent embodiment not shown, each cigarette hopper 15 comprises two outlets in series along group-forming path P, or only one outlet. Similarly, spacer hopper 16 comprises three identical outlets in series along group-forming path P. In a different but perfectly equivalent embodiment not shown, spacer hopper 16 comprises two outlets in series along group-forming path P, or only one outlet. It is important to note that spacer hopper 16 may have a different number of outlets from cigarette hoppers 15.

[0036] In other words, straight group-forming path P extends successively past hoppers 15 and 16.

[0037] Group-forming unit 11 comprises a number of transfer members 18, each fitted to a corresponding outlet of a cigarette hopper 15. When a group-forming pocket 14 stops in front of an outlet of a cigarette hopper 15, the corresponding transfer member 18 expels a row 5 of cigarettes from the outlet into group-forming pocket 14.

[0038] Group-forming unit 11 comprises a number of transfer members 19, each fitted to a corresponding outlet of spacer hopper 16. When a group-forming pocket 14 stops in front of an outlet of spacer hopper 16, the corresponding transfer member 19 expels a spacer 6 from the outlet into group-forming pocket 14.

[0039] Spacer 6 has a bottom end facing a bottom portion of inner package 3, opposite the top portion through which the cigarettes are withdrawn from inner package 3. More specifically, the bottom end of spacer 6 is closed and is designed to be engaged by transfer member 19 of group-forming unit 11, i.e. flat blank 8 has a panel at said bottom end.

[0040] In other words, each group 4 of cigarettes is formed in layers inside a respective group-forming pocket 14, i.e. by first inserting a row 5 of cigarettes, then a spacer 6, and finally another row 5 of cigarettes into group-forming pocket 14.

[0041] As shown in Figure 9, folding unit 10 forms spacers 6 by folding blanks 8 in known manner about tubular folding spindles, and then feeds spacers 6 to spacer hopper 16. Once a group 4 of cigarettes is formed on group-forming unit 11, it is transferred from group-forming unit

11 to packing unit 12 to form a corresponding packet 1 of cigarettes in known manner.

[0042] Packet 1 of cigarettes described has numerous advantages.

[0043] Firstly, packet 1 of cigarettes described permits easy withdrawal of the cigarettes from inner package 3, by virtue of the tops (typically the filters) - which are gripped by the fingers - of the cigarettes in each row 5 being completely free inwards, and therefore easily gripped with the fingers to withdraw the cigarettes from inner package 3.

[0044] Secondly, packet 1 of cigarettes described can be produced easily on a substantially standard packing machine (requiring only a few minor alterations) as opposed to requiring a high-cost special-purpose packing machine (i.e. specially designed for this type of packet 1 of cigarettes).

Claims

1. A packing method for producing a packet (1) of cigarettes comprising a group (4) of cigarettes having at least two rows (5) of cigarettes; and an inner package (3) enclosing the group (4) of cigarettes; the packing method comprising the steps of:

feeding a group-forming pocket (14), designed to house the group (4) of cigarettes, along a group-forming path (P) extending past a succession of first cigarette hoppers (15);

forming the group (4) of cigarettes by expelling each row (5) of cigarettes from a corresponding first hopper (15) into the group-forming pocket (14); and

folding a sheet of packing material about the group (4) of cigarettes to form the inner package (3) enclosing the group (4) of cigarettes; the packing method being **characterized in that:**

a second hopper (16) is located along the group-forming path (P), between two first hoppers (15), and contains a spacer (6), which is inserted between, to separate, two rows (5) of cigarettes; and

the spacer (6) is transferred from the second hopper (16) to the group-forming pocket (14) by feeding first one row (5) of cigarettes, then the spacer (6), and finally the other row (5) of cigarettes into the group-forming pocket (14).

2. A packing machine (9) for producing a packet (1) of cigarettes comprising a group (4) of cigarettes having at least two rows (5) of cigarettes; and an inner package (3) enclosing the group (4) of cigarettes; the packing machine (9) comprising:

a succession of first cigarette hoppers (15);
 a group-forming pocket (14) for housing the group (4) of cigarettes;
 a group-forming conveyor (13) for feeding the group-forming pocket (14) along a group-forming path (P) extending past the succession of first hoppers (15);
 first transfer members (18) for forming the group (4) of cigarettes by expelling each row (5) of cigarettes from a corresponding first hopper (15) into the group-forming pocket (14); and
 a packing unit (12) for folding a sheet of packing material about the group (4) of cigarettes to form the inner package (3) enclosing the group (4) of cigarettes;
 the packing machine (9) being **characterized by** comprising:

a second hopper (16) located along the group-forming path (P), between two first hoppers (15), and containing a spacer (6), which is inserted between, to separate, two rows (5) of cigarettes; and
 second transfer members (19) for transferring the spacer (6) from the second hopper (16) to the group-forming pocket (14) by feeding first one row (5) of cigarettes, then the spacer (6), and finally the other row (5) of cigarettes into the group-forming pocket (14).

Patentansprüche

1. Verpackungsverfahren zur Herstellung einer Zigarettenverpackung (1), die umfasst: eine Gruppe (4) von Zigaretten mit wenigstens zwei Reihen (5) von Zigaretten; und eine Innenverpackung (3), die die Gruppe (4) von Zigaretten umschließt; wobei das Verpackungsverfahren die folgenden Schritte umfasst:

Zuführen eines gruppenbildenden Fachs (14), das konzipiert ist, um die Gruppe (4) von Zigaretten aufzunehmen, entlang eines Gruppenbildungswegs (P), der sich über eine Abfolge erster Zigarettenmäschchen (15) hinaus erstreckt;
 Ausbilden der Gruppe (4) von Zigaretten durch Auswerfen jeder Reihe (5) von Zigaretten aus einem entsprechenden ersten Schacht (15) in das gruppenbildende Fach (14); und
 Falten eines Bogens aus Verpackungsmaterial um die Gruppe (4) von Zigaretten, um die Innenverpackung (3), die die Gruppe (4) von Zigaretten umschließt, zu bilden;
 wobei das Verpackungsverfahren **dadurch gekennzeichnet ist, dass**:

ein zweiter Schacht (16) entlang des Gruppenbildungswegs (P) zwischen zwei ersten Schächten (15) angeordnet ist und einen Abstandshalter (6) enthält, der dazwischen eingefügt ist, um zwei Reihen (5) von Zigaretten zu trennen; und
 der Abstandshalter (6) von dem zweiten Schacht (16) zu dem gruppenausbildenden Fach (14) überführt wird, indem zuerst eine Reihe (5) von Zigaretten, dann der Abstandshalter (6) und schließlich die andere Reihe (5) von Zigaretten in das gruppenbildende Fach (14) zugeführt werden.

2. Verpackungsmaschine (9) zur Herstellung einer Zigarettenverpackung (1), die umfasst: eine Gruppe (4) von Zigaretten mit wenigstens zwei Reihen (5) von Zigaretten; und eine Innenverpackung (3), die die Gruppe (4) von Zigaretten umschließt; wobei die Verpackungsmaschine (9) umfasst:

eine Abfolge erster Zigarettenmäschchen (15);
 ein gruppenbildendes Fach (14) zum Aufnehmen der Gruppe (4) von Zigaretten;
 einen gruppenbildenden Förderer (13) zum Zuführen des gruppenbildenden Fachs (14) entlang eines Gruppenbildungswegs (P), der sich über die Abfolge erster Schächte (15) hinaus erstreckt;
 erste Überführungselemente (18) zum Ausbilden der Gruppe (4) von Zigaretten durch Auswerfen jeder Reihe (5) von Zigaretten aus einem entsprechenden ersten Schacht (15) in das gruppenbildende Fach (14); und
 eine Verpackungseinheit (12) zum Falten eines Bogens von Verpackungsmaterial um die Gruppe (4) von Zigaretten, um die Innenverpackung (3), die die Gruppe (4) von Zigaretten umschließt, auszubilden;
 wobei die Verpackungsmaschine (9) **dadurch gekennzeichnet ist, dass** sie umfasst:

einen zweiten Schacht (16), der entlang des Gruppenbildungswegs (P) zwischen zwei ersten Schächten (15) angeordnet ist und einen Abstandshalter (6) enthält, der dazwischen eingefügt ist, um zwei Reihen (5) von Zigaretten zu trennen; und
 zweite Überführungselemente (19) zum Überführen des Abstandshalters (6) von dem zweiten Schacht (16) zu dem gruppenausbildenden Fach (14), indem zuerst eine Reihe (5) von Zigaretten, dann der Abstandshalter (6) und schließlich die andere Reihe (5) von Zigaretten in das gruppenbildende Fach (14) zugeführt werden.

Revendications

1. Procédé d'emballage pour produire un paquet (1) de cigarettes comprenant un groupe (4) de cigarettes ayant au moins deux rangées (5) de cigarettes ; et un emballage intérieur (3) renfermant le groupe (4) de cigarettes ; le procédé d'emballage comprenant les étapes :

d'amenee d'une poche de formation de groupe (14), conçue pour loger le groupe (4) de cigarettes, le long d'un chemin de formation de groupe (P) s'étendant au-delà d'une succession de premières trémies de cigarettes (15) ;
de formation du groupe (4) de cigarettes en expulsant chaque rangée (5) de cigarettes d'une première trémie (15) correspondante dans la poche de formation de groupe (14) ; et
de pliage d'une feuille de matériau d'emballage autour du groupe (4) de cigarettes pour former l'emballage intérieur (3) renfermant le groupe (4) de cigarettes ;
le procédé d'emballage étant **caractérisé en ce que :**

une seconde trémie (16) est située le long du chemin de formation de groupe (P), entre deux premières trémies (15), et contient un élément d'écartement (6), qui est inséré entre deux rangées (5) de cigarettes pour les séparer ; et
l'élément d'écartement (6) est transféré de la seconde trémie (16) à la poche de formation de groupe (14) en amenant d'abord une rangée (5) de cigarettes, puis l'élément d'écartement (6), et enfin l'autre rangée (5) de cigarettes dans la poche de formation de groupe (14).

2. Machine d'emballage (9) pour produire un paquet (1) de cigarettes comprenant un groupe (4) de cigarettes ayant au moins deux rangées (5) de cigarettes ; et un emballage intérieur (3) renfermant le groupe (4) de cigarettes ; la machine d'emballage (9) comprenant :

une succession de premières trémies de cigarettes (15) ;
une poche de formation de groupe (14) pour loger le groupe (4) de cigarettes ;
un convoyeur de formation de groupe (13) pour amener la poche de formation de groupe (14) le long d'un chemin de formation de groupe (P) s'étendant au-delà de la succession de premières trémies (15) ;
des premiers organes de transfert (18) pour former le groupe (4) de cigarettes en expulsant chaque rangée (5) de cigarettes d'une première

trémie (15) correspondante dans la poche de formation de groupe (14) ; et
une unité d'emballage (12) pour plier une feuille de matériau d'emballage autour du groupe (4) de cigarettes pour former l'emballage intérieur (3) renfermant le groupe (4) de cigarettes ;
la machine d'emballage (9) étant **caractérisée en ce qu'elle comprend :**

une seconde trémie (16) située le long du chemin de formation de groupe (P), entre deux premières trémies (15), et contenant un élément d'écartement (6), qui est inséré entre deux rangées (5) de cigarettes pour les séparer ; et
des seconds organes de transfert (19) pour transférer l'élément d'écartement (6) de la seconde trémie (16) à la poche de formation de groupe (14) en amenant d'abord une rangée (5) de cigarettes, puis l'élément d'écartement (6), et enfin l'autre rangée (5) de cigarettes dans la poche de formation de groupe (14).

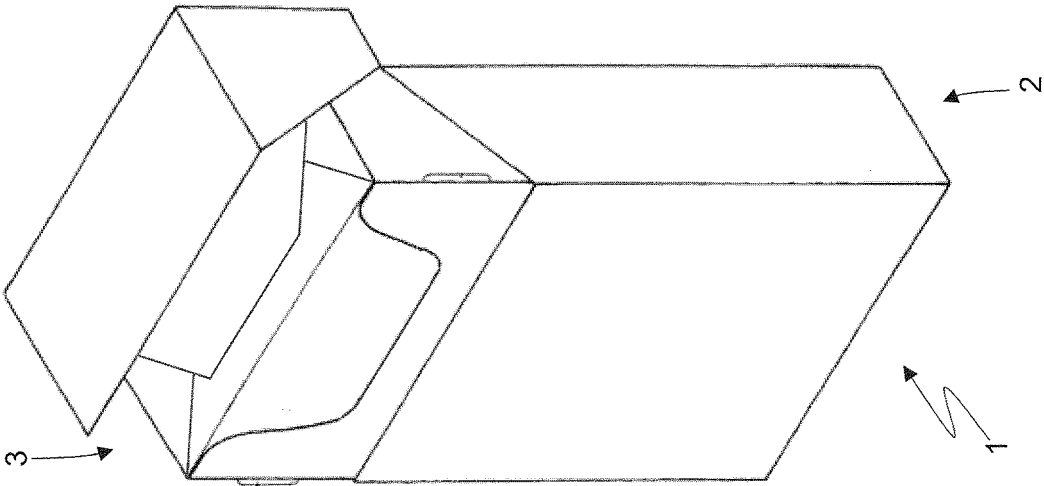


Fig. 2

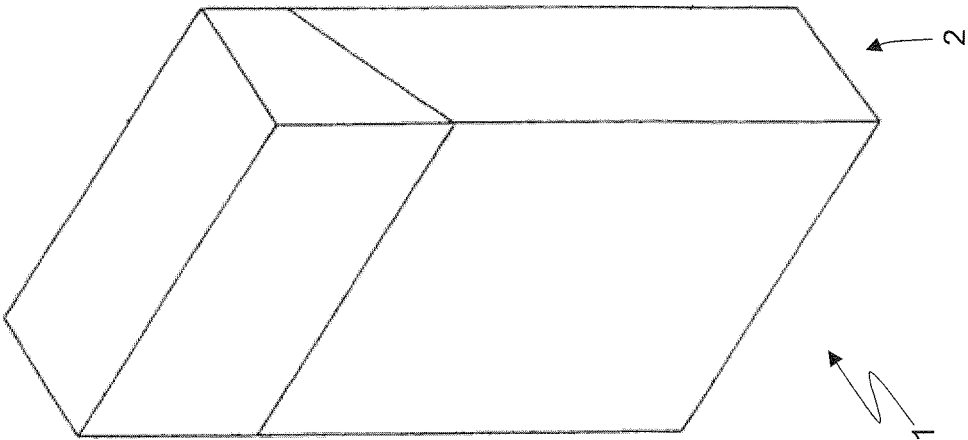


Fig. 1

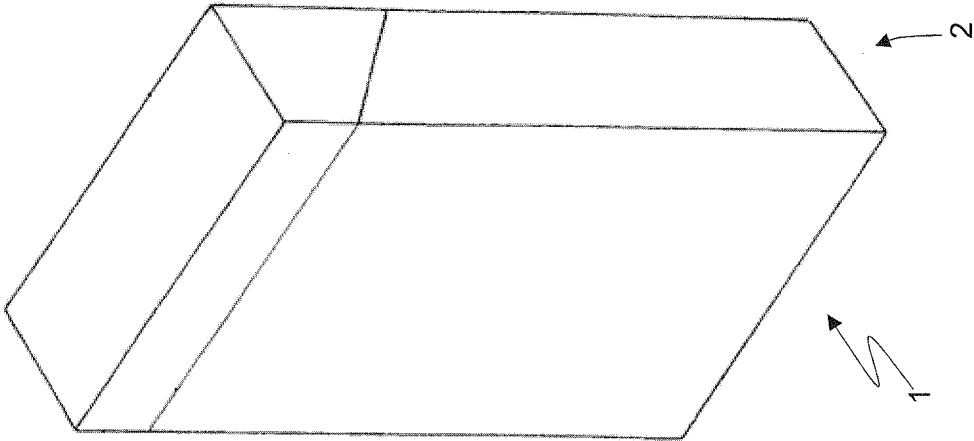
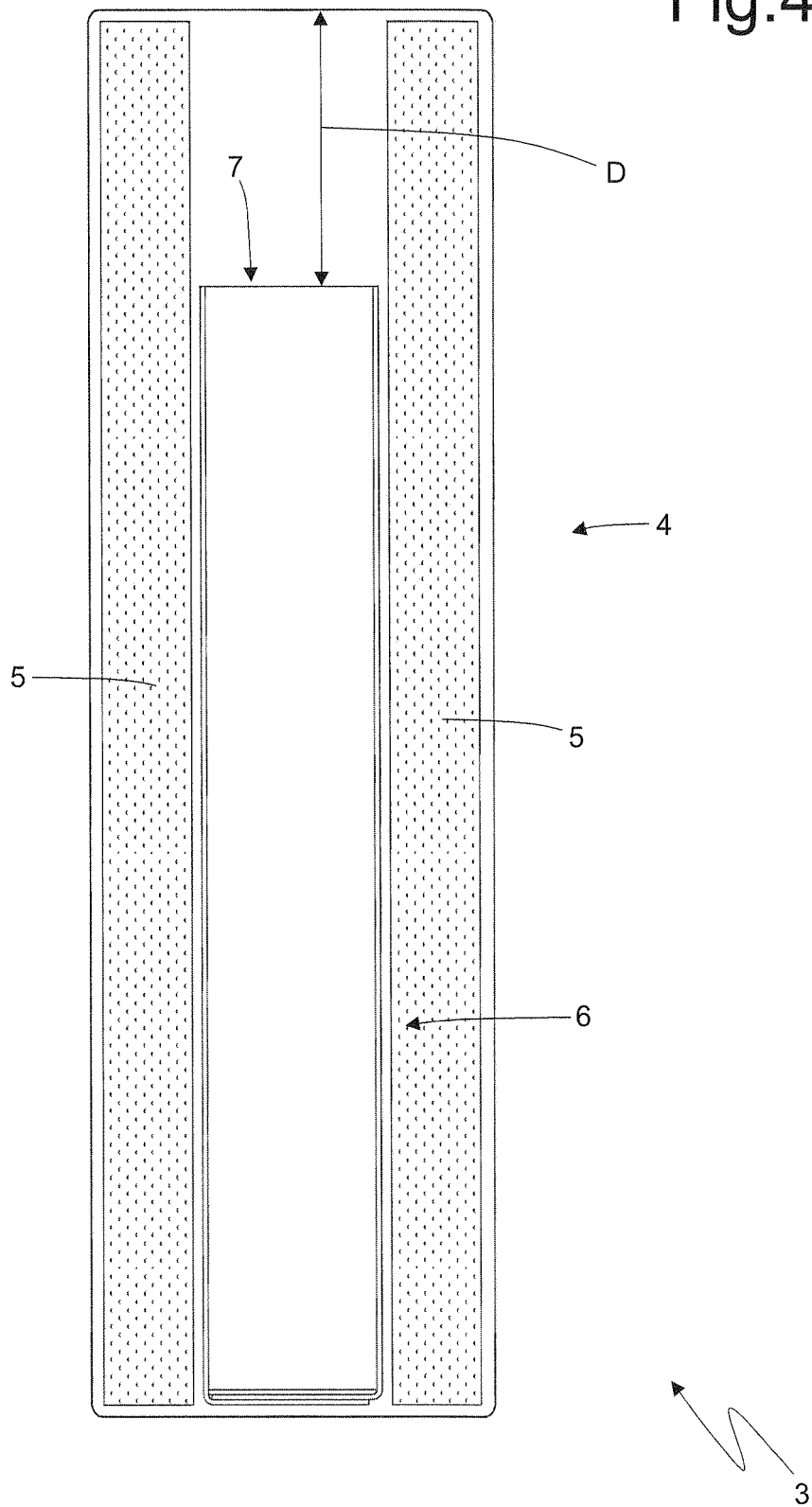


Fig. 3

Fig.4



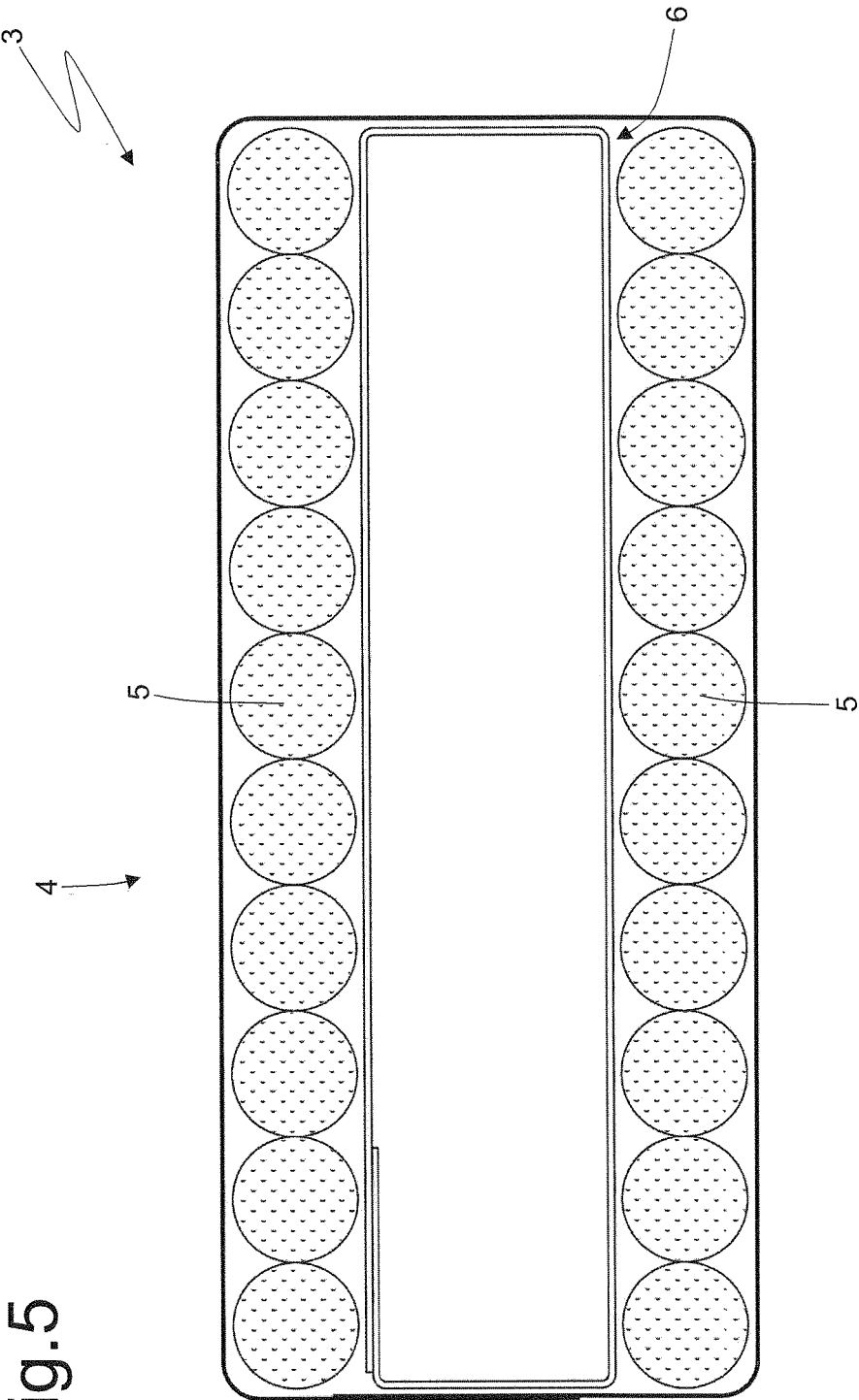


Fig. 5

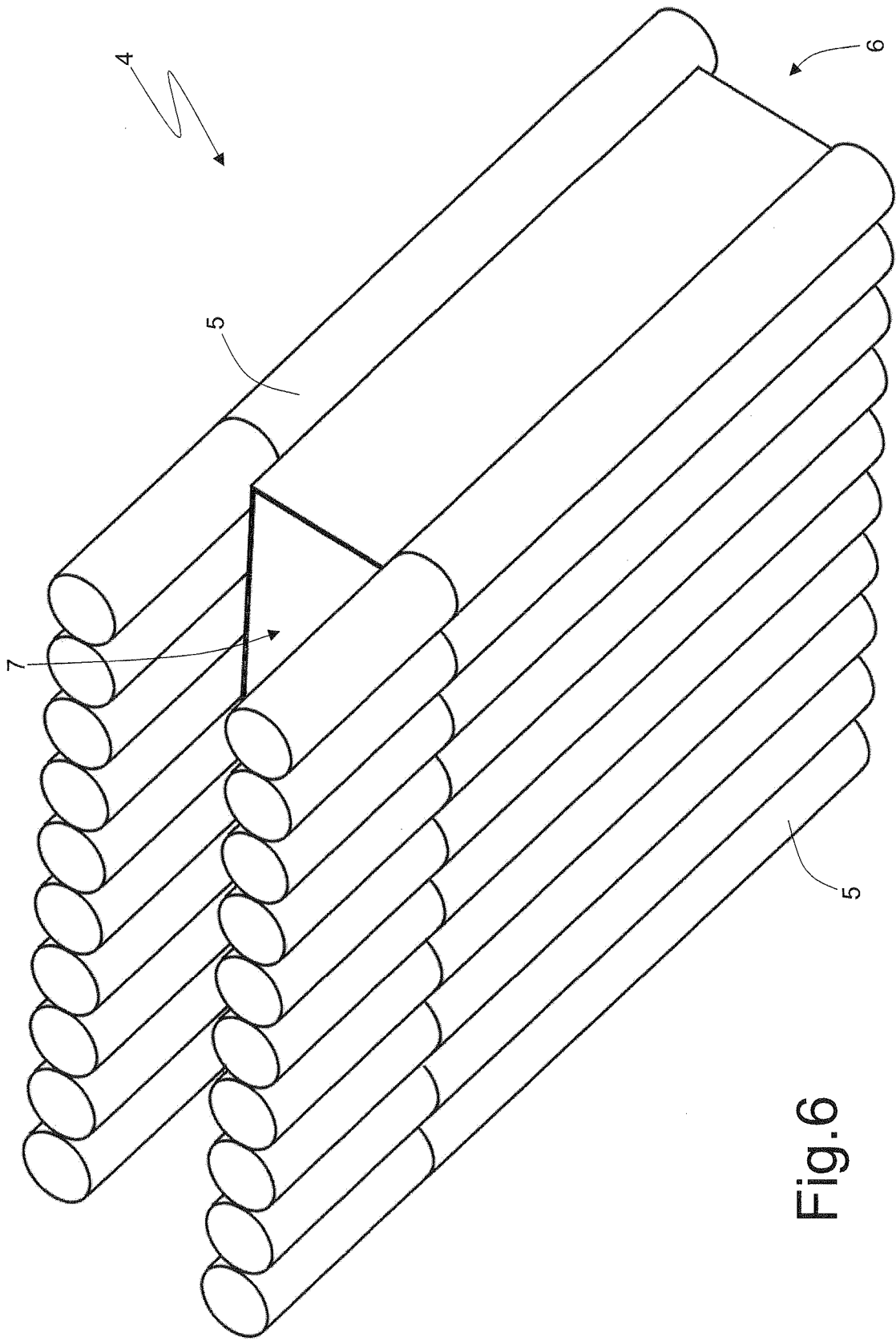


Fig.6

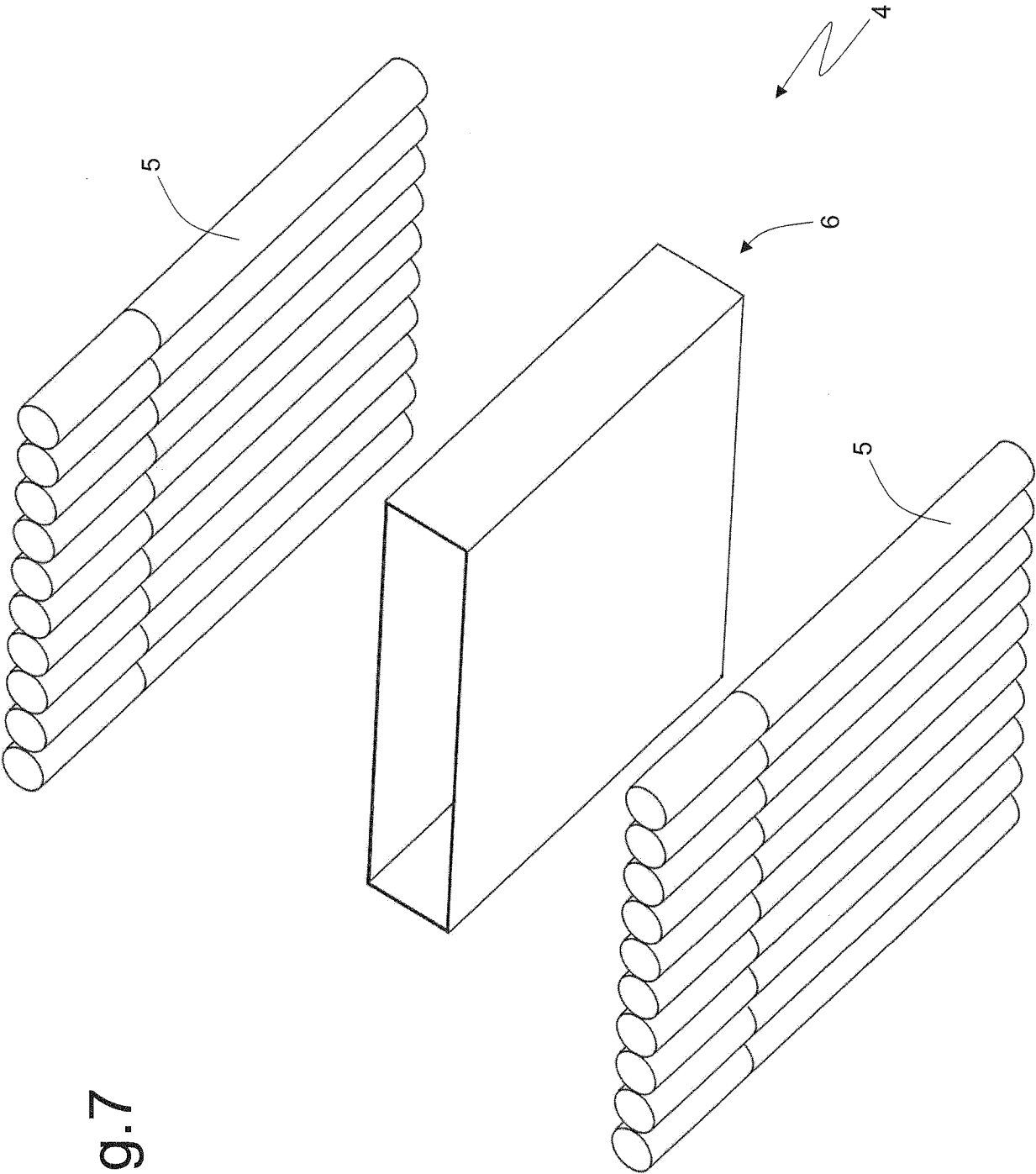


Fig. 7

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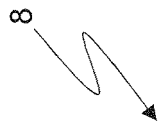
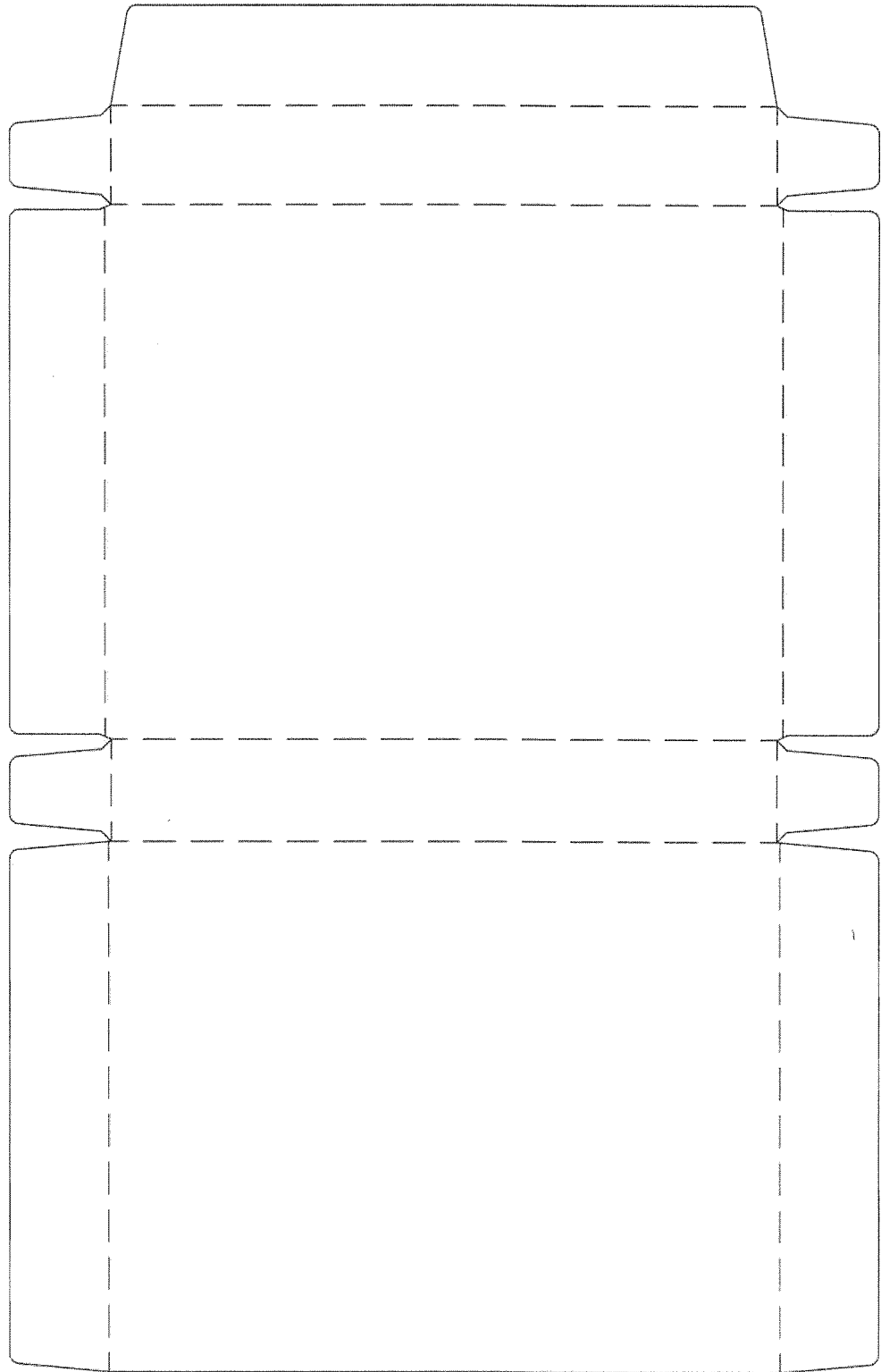


Fig.8



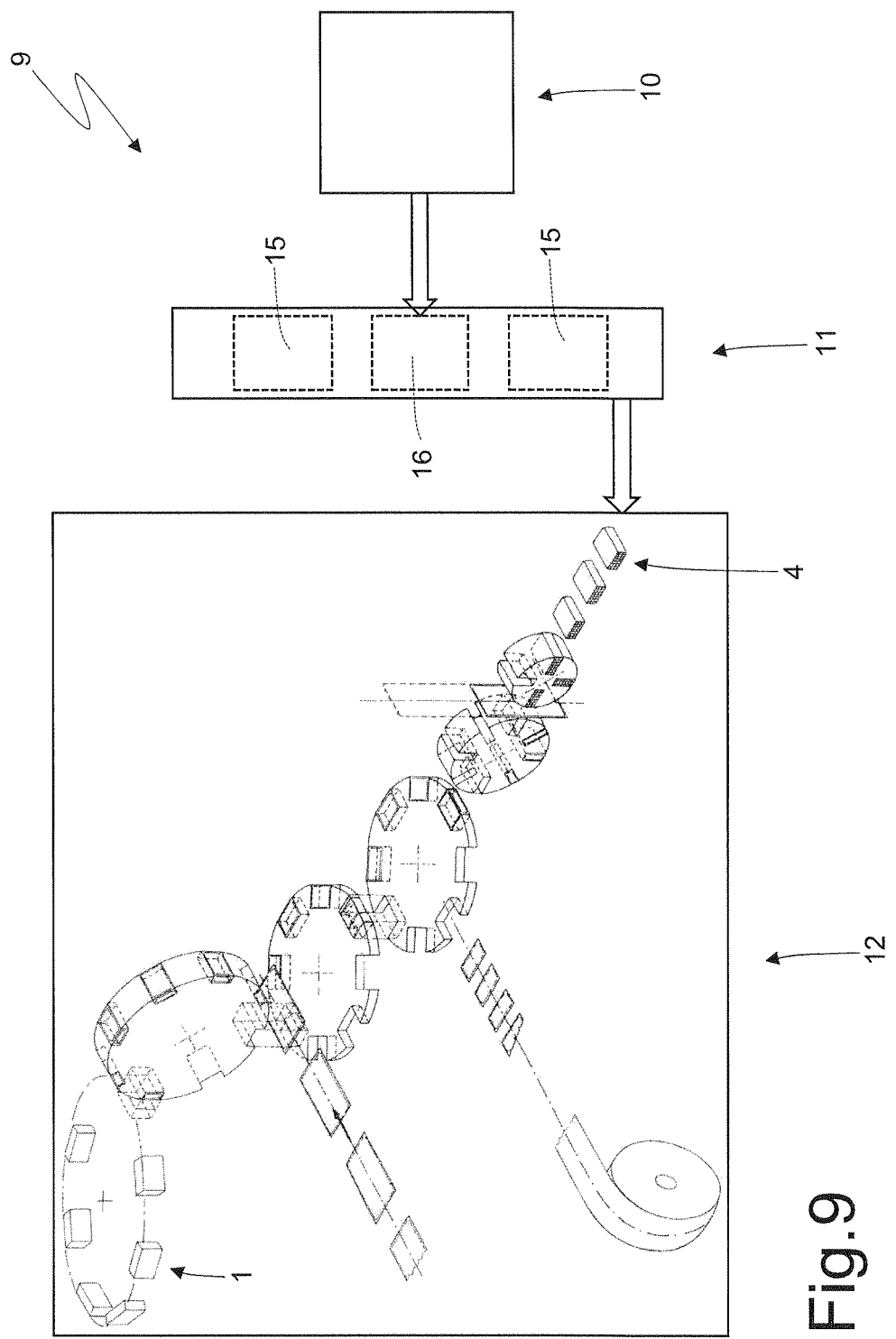


Fig. 9

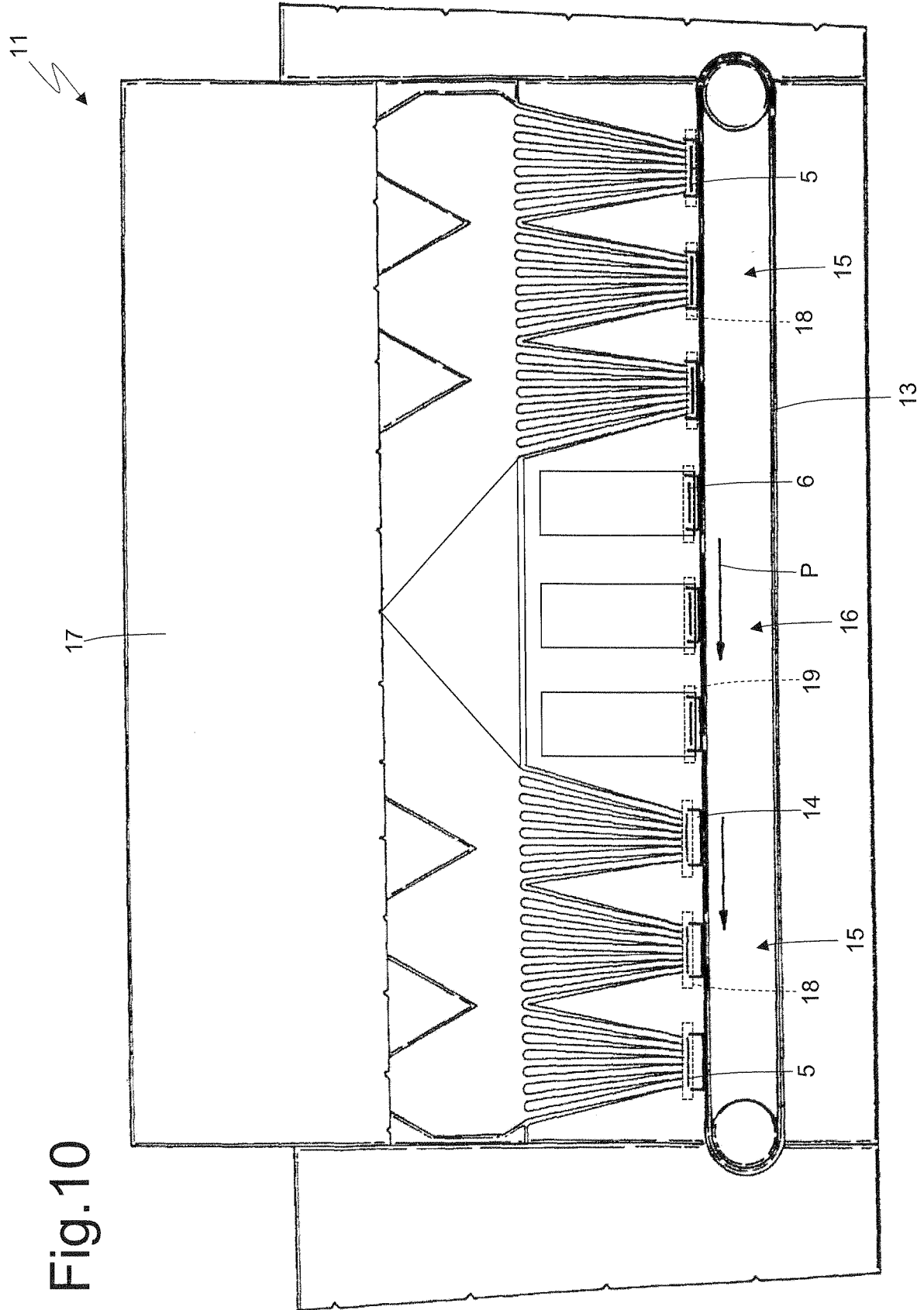


Fig. 10

REFERENCES CITED IN THE DESCRIPTION

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