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(54) **APPARATUS AND METHOD FOR FEEDING AND FORMING DIFFERENT ORGANIZED GROUPS OF SMOKING ARTICLES**

VORRICHTUNG UND VERFAHREN ZUM ZUFÜHREN UND ZUM BILDEN VON UNTERSCHIEDLICHEN GRUPPEN VON RAUCHARTIKELN

DISPOSITIF ET MÉTHODE POUR ALIMENTER ET FORMER DIFFÉRENTS GROUPES ORGANISÉS D'ARTICLES À FUMER

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Description

FIELD OF THE INVENTION

[0001] Embodiments described here concern an apparatus and method to feed and form organized groups of smoking articles, advantageously of different types, such as for example cigarettes, cigars, cigarillos or such-like, to make packets of smoking articles, to obtain organized groups of smoking articles, advantageously of different types, inside a single packet; it also concerns packets of smoking articles thus obtained and machines to obtain said packets.

BACKGROUND OF THE INVENTION

[0002] Apparatuses are known, for feeding smoking articles that supply organized groups of smoking articles to packet-making machines.

[0003] Known feeding apparatuses comprise a feed unit, generally a loading hopper, in which the smoking articles to be disposed in organized groups are conveyed, and a thruster unit to transfer the organized groups in suitable drawers positioned on the periphery of a transfer wheel to transfer them to subsequent packaging machines to make the packets.

[0004] Known apparatuses can generally comprise two or more conveyor compartments that respectively form two or more organized groups of smoking articles with every functioning cycle of the thruster device. The organized groups of smoking articles are inserted in suitable drawers from which they are subsequently removed to be packed in a packet.

[0005] In known apparatuses, the organized groups generally consist of smoking articles of the same type.

[0006] In certain markets, among smokers there is a growing need to be able to have different types of smoking articles inside a single packet, so as to be able to choose, for example, among smoking articles containing different quantities of tobacco. This allows smokers to choose whether to smoke, for example, a lighter or stronger smoking article, depending on the specific moment.

[0007] There are machines that produce cigarette packets with two types of smoking articles. These machines are not only slow, but also cause problems in the organized conveying of the smoking articles.

[0008] Moreover, these known machines are generally traditional machines that have been modified, which makes them complicated and slow and also difficult to manage and maintain.

[0009] Document US-A-2005/0061828 describes a known packaging device for smoking articles.

[0010] Document WO-A-2014/015940 describes an apparatus and a method for collating bar-shaped articles, in particular smoking articles.

[0011] There is therefore a need to obtain an apparatus and corresponding method to feed and form organized

groups of smoking articles, of different types, which can overcome at least some of the disadvantages of the state of the art.

[0012] In particular, one purpose of the present invention is to obtain an apparatus to feed and form organized groups of smoking articles of different types, which allows to feed at least two organized groups of different smoking articles in a single drawer and hence to obtain a packet with at least two different types of smoking articles.

[0013] Another purpose of the present invention is to obtain an apparatus to feed and form organized groups of smoking articles, of different types, to feed at least two organized groups of different smoking articles in a single packet, maintaining high productivity comparable to known apparatuses, which feed a single type of smoking article.

[0014] Another purpose is to perfect a method to feed and form at least two organized groups of smoking articles of different types, in a single drawer, to obtain a packet with at least two different types of smoking articles.

[0015] Another purpose is to obtain an apparatus which is simple to manage.

[0016] Another purpose is to obtain an apparatus that is quick in organizing the groups of smoking articles autonomously and hence in filling the packets.

[0017] Another purpose is to obtain an apparatus that is easy to control during working and is easy and quick to intervene in restoration and maintenance.

[0018] Another purpose is to obtain an apparatus that is easy to manage and program, and simple to modify the components and results.

[0019] Another purpose is to obtain a method and device that are both suitable to be adopted easily in new machines, and also suitable to convert, simply and without losing productivity, machines already in use.

[0020] The Applicant has devised, tested and embodied the present invention to overcome the shortcomings of the state of the art and to obtain these and other purposes and advantages.

SUMMARY OF THE INVENTION

[0021] The present invention is set forth and characterized in the independent claims, while the dependent claims describe other characteristics of the invention or variants to the main inventive idea.

[0022] Embodiments described here concern an apparatus to feed and form organized groups of smoking articles of different types. The apparatus comprises a feed unit configured to receive at least two streams of smoking articles of at least a first type and a second type different from each other and suitable to feed the smoking articles toward an introduction unit configured to introduce organized groups of smoking articles into receiver members or drawers, each suitable to contain an overall quantity N of smoking articles, of a transfer mean.

[0023] In accordance with one embodiment, the feed

unit comprises at least a feed hopper configured to receive the streams of smoking articles at least of a first type and a second type.

[0024] The differences between the first type and the second type can be very diverse: by way of example they can affect the external sizes of the article, the longitudinal composition of the article, the type of content, in particular the type or flavor of the tobacco, the presence or absence of a filter, the different type of filter etc. These differences can be combined with each other.

[0025] In accordance with one embodiment, the feed hopper has at least two adjacent sectors, each suitable to receive and contain one type of smoking article. The sectors cooperate directly with compartments each suitable to select on exit a desired number, eventually to be selected, of smoking articles organized into groups.

[0026] A possible embodiment provides that said at least one hopper is divided into at least two sectors that each cooperate with at least two compartments.

[0027] It is also a possible embodiment that said sectors and said compartments lie substantially on the same vertical plane, obtaining the feed by gravity.

[0028] It is also a possible embodiment that the sectors are adjacent so that at least two compartments with different types of smoking articles are adjacent so as to constitute a single compartment with two different types of smoking articles. Hereafter, this double compartment will be called intermediate compartment.

[0029] Each sector can have, as well as the two adjacent compartments, or as well as the intermediate compartment, two or more autonomous compartments specialized in one specific type of smoking article

[0030] The presence of one or more autonomous compartments per sector, according to the invention, conditions only the movement of the receiver member, or drawer.

[0031] For example, if each sector has one autonomous compartment, the receiver member, or drawer, moves two steps between one introduction and the next. Instead, if there are two autonomous compartments, the receiver member, or drawer, moves three steps, and so on.

[0032] Hereafter, by way of example, we will describe only the case of two adjacent compartments, both with different types, that is one intermediate compartment, and only one further autonomous compartment per sector.

[0033] In accordance with the example embodiment selected above, a first compartment is therefore provided, configured to feed organized groups of smoking articles only of the first type, an intermediate compartment, configured to feed organized and separate groups of smoking articles of the first type and the second type, and a second compartment, configured to feed only organized groups of smoking articles of the second type.

[0034] In accordance with other embodiments, the groups of smoking articles of the first type and of the second type comprise respectively quantities N1 and N2

of smoking articles. Here and hereafter, by the term "group" we mean both a set of more than two smoking articles and also a set consisting of a single smoking article. Therefore, N1 and N2 can be whole numbers greater than or equal to one.

[0035] According to a first variant, N1 and N2 are equal numbers the total of which corresponds to the overall quantity N of smoking articles that can be introduced into a packet.

[0036] According to another variant, N1 and N2 are both even numbers.

[0037] According to another variant, N1 and N2 are both odd numbers.

[0038] According to a different variant, the number N1 and the number N2 are two different numbers, leaving the overall quantity N unvaried.

[0039] According to a variant, N1 is an even number and N2 is an odd number, or vice versa.

[0040] According to another variant, N1 and N2 represent organized groups of smoking articles positioned on parallel rows.

[0041] According to another variant, N1 and N2 also represent organized groups of smoking articles in groups which are separate but bordering, for example laterally or on different planes.

[0042] In accordance with one embodiment, the three compartments, first, intermediate and second, are positioned on the same vertical plane.

[0043] According to some embodiments, each first, intermediate and second compartment has conveying chambers suitable to selectively feed at least one unit of smoking articles so that at exit the number of chambers which have arrived on each occasion determines the quantity N1 and/or N2 that will be delivered into the respective drawer.

[0044] According to one embodiment, in the drawer in correspondence to the intermediate compartment, quantities N1 and N2 are fed at the same time with each introduction, and the drawer is therefore always filled.

[0045] According to another embodiment, in the drawers in correspondence to the first and second compartments, quantities N1 and N2 are respectively fed with each introduction, and the drawer that receives at the first introduction, for example, only the second quantity N2 of smoking articles of the second type, is completely filled only at the second introduction, when it receives the quantity N1 of smoking articles of the first type.

[0046] As indicated, as the three compartments in the hopper are adjacent in the sequence first lateral compartment, intermediate or central compartment, and second lateral compartment, the respective drawers, which have been identified as receiver members, move two steps with every work cycle.

[0047] Thus, at the second step:

- the drawer which was aligned with the second compartment and which contains an organized group of smoking articles of the second type is aligned with

the first compartment and is completely filled with an organized group of smoking articles of the first type;

- an empty drawer is aligned with the intermediate compartment and is completely filled with both organized groups of smoking articles of the first type and the second type;
- an empty drawer is aligned with the second compartment and is partly filled with only one organized group of smoking articles of the second type.

[0048] If N1 and/or N2 are organized in subsequent parallel layers, and one layer has a different number of articles, for example fewer, compared to the other layers, the corresponding compartment will have dividing means able to prevent, where necessary, a smoking article from descending. The dividing means can be fixed or temporary.

[0049] According to some embodiments, the introduction unit cooperates with each drawer, and is configured to introduce therein the organized groups of smoking articles, delivered in an organized way from the respective first, intermediate and second compartments.

[0050] According to another embodiment, the drawers are provided with a separator plate, configured to at least partly divide the drawer into a first section and a second section.

[0051] According to another embodiment, the separator plate has an undulating development mating with the profile of the smoking articles of the first type on one side and/or the smoking articles of the second type on the other side, in order to adapt to the profile of the different smoking articles, keeping them confined and separate in the respective drawer.

[0052] Embodiments described here also concern a method to feed smoking articles that provides to repeat in a cyclical manner the steps of:

- supplying streams of smoking articles of different types respectively to at least a first compartment and at least a second compartment of a feed hopper;
- supplying at least a stream of smoking articles of a first type and at least a stream of smoking articles of a second type to an intermediate compartment of the feed hopper;
- obtaining from the first compartment an organized group formed by a quantity N1 of smoking articles of the first type and from the second compartment an organized group formed by a quantity N2 of smoking articles of the second type;
- obtaining from the intermediate compartment an overall quantity N of smoking articles divided into an organized group formed by a quantity N1 of smoking articles of the first type and into an organized group formed by a quantity N2 of smoking articles of the second type;
- selectively introducing the organized groups of N1 smoking articles of the first type and N2 smoking articles of the second type obtained respectively

from the first compartment and from the second compartment into respective sections of distinct drawers associated respectively with the first compartment and the second compartment;

- 5 - introducing the overall quantity N of smoking articles, introducing the organized group formed by the quantity N1 of smoking articles of the first type into a first section and the organized group formed by the quantity N2 of smoking articles of the second type into a second section of the same drawer associated with the intermediate compartment, filling it;
- 10 - selectively displacing the drawers by moving, in this case, the transfer means by two steps to perform the subsequent introduction as described above.

[0053] The various aspects and characteristics described in the present description can be applied individually where possible. These individual aspects, for example aspects and characteristics described in the attached dependent claims, can be the object of divisional applications.

[0054] It is understood that any aspect or characteristic that is discovered, during the patenting process, to be already known, shall not be claimed and shall be the object of a disclaimer.

BRIEF DESCRIPTION OF THE DRAWINGS

[0055] These and other characteristics of the present invention will become apparent from the following description of some embodiments, given as a non-restrictive example with reference to the attached drawings wherein:

- 35 - fig. 1 is a front view of an apparatus to feed and form smoking articles in accordance with embodiments described here in a first feed step of organized groups of smoking articles of different types in one single drawer;
- 40 - fig. 2 is a schematic view from above of an apparatus to feed and form smoking articles according to embodiments described here;
- fig. 3 is a detail of fig. 1 in accordance with embodiments described here;
- 45 - fig. 4 shows embodiments of the apparatus in fig. 1 in a different feed step of organized groups of smoking articles of different types in one drawer;
- fig. 5 is a front view of an apparatus to feed and form smoking articles in accordance with other embodiments described here in a first feed step of organized groups of smoking articles of different types in one single drawer;
- 50 - fig. 6 is a schematic view from above of an apparatus to feed and form smoking articles according to other embodiments described here;
- 55 - fig. 7 is a detail of fig. 5 in accordance with embodiments described here;
- fig. 8 is another detail of fig. 5 in accordance with

embodiments described here;

- fig. 9 shows embodiments of the apparatus in fig. 5 in a different feed step of organized groups of smoking articles of different types in one drawer;

[0056] To facilitate comprehension, the same reference numbers have been used, where possible, to identify identical common elements in the drawings. It is understood that elements and characteristics of one embodiment can conveniently be incorporated into other embodiments without further clarifications.

DETAILED DESCRIPTION OF SOME EMBODIMENTS

[0057] We shall now refer in detail to the various embodiments of the present invention, of which one or more examples are shown in the attached drawing. Each example is supplied by way of illustration of the invention and shall not be understood as a limitation thereof. For example, the characteristics shown or described inasmuch as they are part of one embodiment can be adopted on, or in association with, other embodiments to produce another embodiment. It is understood that the present invention shall include all such modifications and variants.

[0058] Before describing these embodiments, we must also clarify that the present description is not limited in its application to details of the construction and disposition of the components as described in the following description using the attached drawings. The present description can provide other embodiments and can be obtained or executed in various other ways. We must also clarify that the phraseology and terminology used here is for the purposes of description only, and cannot be considered as limitative.

[0059] Embodiments described here concern an apparatus 10 to feed and form organized groups of smoking articles 12a, 12b of different types.

[0060] According to embodiments described using figs. 1, 2, 4, 5, 6 and 9, which show representative but not restrictive examples, the apparatus 10 comprises a feed unit 14 of smoking articles 12a, 12b configured to receive at least two streams of different smoking articles 12a, 12b and to feed and form organized groups of smoking articles 12a, 12b, a transfer mean 16, and an introduction unit 18 to introduce the organized groups of smoking articles 12a, 12b into suitable reception members or drawers 50, present on the transfer mean 16.

[0061] The transfer mean 16 can be a transfer wheel for example, or a transporter, in particular a linear transporter, such as for example a belt, band, chain or such-like. Hereafter in the description, as transfer mean 16 we will refer to a transfer wheel.

[0062] According to some embodiments, the characteristics of length of the smoking articles of the first type 12a and the second type 12b can, advantageously but not necessarily, be the same, so as to have an identical free compartment in the final packet. In the case of dif-

ferent lengths, the inventive idea can provide that there are access compartments of different length, or made of a different length, present in the packet.

[0063] According to some embodiments, the feed unit 14 comprises at least a feed hopper 20, configured to receive at least two streams of smoking articles 12a, 12b of different types.

[0064] According to some embodiments, the feed hopper 20 is advantageously vertical with respect to a horizontal support plane of the apparatus 10, and can be positioned downstream of the introduction unit 18 and upstream of the transfer mean 16, where there are the drawers 50, in a direction F parallel to the direction in which the longitudinal axes of the smoking articles 12a, 12b are aligned in the feed hopper 20.

[0065] In this way, the introduction unit 18 can translate on each occasion the organized groups of smoking articles of the first type 12a and the second type 12b fed by the feed unit 14 and can introduce them into the respective drawers 50 of the transfer mean 16.

[0066] According to embodiments described using figs. 1 and 4, 5 and 9, the feed hopper 20 comprises at least a first sector 24, able to receive and contain only a stream of smoking articles of the first type 12a, and a second sector 26, able to receive and contain only a stream of smoking articles of the second type 12b.

[0067] According to some embodiments, the first sector 24 and the second sector 26 are adjacent and separated from each other by a dividing wall 22.

[0068] According to some embodiments, the hopper 20 also comprises three compartments 28a, 28b, 28c lying substantially on the same vertical plane. The three compartments 28a, 28b, 28c are configured to cooperate with the first sector 24 and second sector 26. In this way, the stream of smoking articles 12a, 12b goes from sectors 24, 26 to compartments 28a, 28b, 28c and from here to the drawers 50.

[0069] The hopper 20 therefore is divided into these three compartments 28a, 28b, 28c, defined thus: a first lateral compartment 28a (on the left in fig. 1), able to receive only a stream of smoking articles of the first type 12a, an intermediate or central compartment 28b, able to receive, simultaneously and in a distinct and organized manner, both a stream of smoking articles of the first type 12a and the second type 12b, and a second lateral compartment 28c (on the right in fig. 1), able to receive only a stream of smoking articles of the second type 12b.

[0070] According to some embodiments, each compartment 28a, 28b, 28c is divided into a desired and selected plurality of conveying chambers 36, configured to convey the smoking articles of the first type 12a and the smoking articles of the second type 12b and oblige them to descend aligned and positioned on top of the other. In particular, the conveying chambers 36 are configured to each convey a respective single row of smoking articles of the type desired 12a, 12b. Each conveying chamber 36 is provided in its lower end with a discharge aperture 38 (see figs. 1 and 5 for example) through which the

smoking articles 12a, 12b exit from the respective compartments 28a, 28b, 28c. Possible implementations of the conveying chambers 36 can be conveying channels, also referred to as "conveying veins" in this technical field.

[0071] According to some embodiments, the first compartment 28a communicates only with the first sector 24, the intermediate compartment 28b communicates with the first sector 24 and the second sector 26, and the second compartment 28c communicates only with the second sector 26.

[0072] According to some embodiments, the dividing wall 22 can also be configured to separate the intermediate compartment 28b into a first portion 29a, communicating only with the first sector 24 and able to contain the smoking articles of the first type 12a, and a second portion 29b, communicating only with the second sector 26 and able to contain the smoking articles of the second type 12b so as to keep them strictly separated.

[0073] The compartments 28a, 28b, 28c are disposed aligned with each other on a vertical plane in a direction G perpendicular to the direction F in which the smoking articles 12a, 12b are ordered in the feed hopper 20 (fig. 1).

[0074] Both the first sector 24 and the second sector 26 have respective apertures 30, 32 to introduce respective smoking articles of the first type 12a and the second type 12b, which can be associated with feed members that remove them from suitable tanks or stores, not shown in the drawings.

[0075] According to embodiments described using figs. 1 and 4, the compartments 28a, 28b, 28c are configured to feed respectively quantities N1 or N2 of smoking articles, the sum of which corresponds to the overall quantity N of smoking articles 12a, 12b to be introduced into a drawer 50.

[0076] According to some embodiments, N, N1 and N2 are whole numbers, bigger than zero.

[0077] According to some embodiments, the compartments 28a, 28b, 28c each have a desired number of conveying chambers 36 which can be divided up as desired by obstruction elements 37 such as to prevent access by the smoking articles 12a, 12b to the conveying chambers 36, so as to allow only the quantities desired on each occasion to reach the discharge apertures 38.

[0078] According to a variant, the number of conveying chambers 36 in each compartment 28a, 28b, 28c is fixed in advance according to a determinate configuration of the packet to be produced.

[0079] According to some embodiments, the smoking articles of the first type 12a and the second type 12b descend toward the lower part of the compartments 28a, 28b, 28c along respective conveying chambers 36 due to the force of gravity, and settle in organized and desired groups of orderly rows on a support plane 40 under the discharge apertures 38.

[0080] In some embodiments, the compartments 28a, 28b, 28c can comprise or be associated with formation chambers, or housing seatings 41 (see figs. 2, 6 and 9), in which the organized groups of smoking articles of the

first type 12a and the second type 12b are defined, which subsequently are moved, by the introduction unit 18, into the respective drawers 50.

[0081] In particular, the formation chambers 41 can be provided, for example on the support plane 40, in cooperation with respective discharge apertures 38 of the corresponding first compartment 28a, intermediate compartment 28b and second compartment 28c, then receiving the smoking articles from the respective conveying chambers 36. According to some embodiments, downstream of a respective formation chamber 41, in said direction F, a compacting chamber 43 can be provided, configured to direct the smoking articles and compact them in organized groups of the first type 12a and the second type 12b in quantities N1 and N2, to a respective drawer 50. In possible implementations, the compacting chamber 43 can be defined by walls 45 converging, with respect to the axis defined by direction F, toward the drawer 50. In this way, it is possible to supply the drawers 50 with organized groups of smoking articles of the first type 12a and the second type 12b already compacted and optimized in terms of shape and volume and coordinated with the shape of the receiving drawer 50, and hence of the packet that will contain them, irrespective of their composition in terms of type, distribution and quantities N1, N2.

[0082] According to embodiments described using figs. 1 and 4, 5 and 9, organized groups of smoking articles 12a, 12b can be provided disposed on one, two or three ordered rows to obtain the desired number of N1 and/or N2 smoking articles so as to reach the overall quantity N of smoking articles to be introduced into the final packet.

[0083] According to some embodiments, each compartment 28a, 28b, 28c can comprise dividing means, configured to divide the transit of one smoking article 12a, 12b from another, for example so as to differentiate the quantities N1 and N2 of smoking articles that will be present in the final packet. The dividing means can be fixed or temporary. For example, the dividing means can be provided in the respective formation chambers 41. According to another variant, the dividing means can be configured to prevent, depending on requirements, the descent of a smoking article 12a, 12b from a respective conveying chamber 36, as for example if three rows of smoking articles of one type are provided, respectively of three, two and three smoking articles.

[0084] According to some embodiments, on the support plane 40 under the discharge apertures 38, the formation chambers or housing seatings 41 can be provided (figs. 2, 6 and 9), in which the smoking articles 12a, 12b can fall due to gravity as they arrive from the respective compartments 28a, 28b, 28c and from which they can subsequently be introduced by the introduction unit 18 into the transfer mean 16 in a desired manner.

[0085] According to some embodiments, the introduction unit 18 comprises a plurality of thruster elements 44a, 44b, 44c, as many as there are drawers 50 to be

filled on each occasion.

[0086] According to some embodiments, the introduction unit 18 can comprise a single thruster element which has thrust elements for each of the compartments 28a, 28b, 28c, that is, it can have thruster elements 44a, 44b, 44c for each compartment 28a, 28b, 28c.

[0087] The thruster elements 44a, 44b, 44c are configured to translate in direction F (fig. 1) the organized groups of smoking articles 12a, 12b in the drawers 50 of the transfer mean 16.

[0088] According to some embodiments, the introduction unit 18 comprises one or more actuation members, not shown in the drawings, configured to drive the translation of the thruster elements 44a, 44b, 44c in the desired manner, between a condition of non-interference with the organized groups of smoking articles 12a, 12b and a transfer condition where the thruster elements 44a, 44b, 44c transfer the organized groups of smoking articles 12a, 12b into the respective drawers 50 of the transfer mean 16 which are found in an entrance station 48 along a transfer path P.

[0089] According to some embodiments, the transfer mean 16 can be configured to move intermittently, that is, step-wise. In the embodiments where the transfer mean 16 is a transfer wheel, it can be configured to rotate with an intermittent motion, that is, step-wise, around an axis of rotation Z, for example in the direction indicated by the arrow associated with the transfer path P in figs. 1, 2, 5 and 6, to move the plurality of drawers 50 provided on the periphery thereof. In the embodiments where the transfer mean 16 is a linear transporter, it can be configured to obtain an analogous intermittent movement.

[0090] According to some embodiments, the drawers 50 have a containing chamber 58 and, in the variant where the transfer mean 16 is a transfer wheel, they can be disposed with their longitudinal development in a direction parallel to the axis of rotation Z, and can be fed in direction F parallel thereto (fig. 1).

[0091] According to some embodiments, the step-wise movement of the transfer mean 16 is conditioned by the number of first compartments 28a and second compartments 28c.

[0092] In embodiments described by way of example with reference to the attached drawings, where there is only one first compartment 28a and only one second compartment 28c, as well as the intermediate compartment 28b, the step-wise movement, which can be a rotation if the transfer mean 16 is a transfer wheel, will correspond to two compartments or two drawers.

[0093] If there are two first compartments 28a and two second compartments 28c, the step-wise movement, which can be a rotation if the transfer mean 16 is a transfer wheel, will correspond to three compartments, and so on.

[0094] The step-wise movement is therefore connected to the fact that the drawers partly filled in correspondence with specialized compartments which contain only specific smoking articles, in this specific case the first compartment 28a and the second compartment 28c, are

located in correspondence with compartments that contain only the other specific smoking articles.

[0095] According to embodiments described using figs. 3 and 7, each drawer 50 can comprise containing elements 60 disposed along the lateral walls 56 to modify the containing chamber 58 depending on the type of smoking articles 12a, 12b processed, and depending on the type of packets to be formed.

[0096] For example, according to embodiments described using figs. 3 and 7, it can be provided that the containing elements 60 define the containing chamber 58 in which the organized groups of smoking articles of the first type 12a and second type 12b can be disposed one next to the other, in respective sections 59a and 59b.

[0097] The containing elements 60 can be configured to reduce the space of the containing chamber 58 and to keep the smoking articles 12a, 12b introduced into the drawer 50 in order.

[0098] According to embodiments described using figs. 3 and 7, the drawer 50 can be provided with a separator plate 62, configured to at least partly divide the containing chamber 58 into the first section 59a and the second section 59b.

[0099] According to some embodiments, the separator plate 62 is shaped to mate with the profile of a plurality of smoking articles of the first type 12a on one side and smoking articles of the second type 12b on the other.

[0100] In embodiments described using figs. 3 and 7, the separator plate 62 has an undulating development, provided with a succession of convexities and concavities to accommodate on one side and/or the other of the separator plate 62 the smoking articles of the first type 12a and the second type 12b, keeping them confined in the respective first section 59a and/or second section 59b.

[0101] According to some embodiments, the separator plate 62 can be configured to keep in order an organized group of second smoking articles 12b in the second section 59b of the drawer 50 during the transfer of the latter from a position aligned with the second compartment 28c to a position aligned with the first compartment 28a, preventing the smoking articles, for example, of the second type 12b from moving from the second section 59b and occupying the first section 59a.

[0102] In this way it is possible to introduce, at a subsequent time, smoking articles of the second type 12b and smoking articles of the first type 12a into a drawer 50, or vice versa. In particular, the introduction of smoking articles of the second type 12b and smoking articles of the first type 12a can take place in a drawer 50 simultaneously, in the case of a drawer 50 aligned during the introduction with the intermediate compartment 28b, or in subsequent work cycles in the case of drawers 50 aligned during the introduction with the first compartment 28a and the second compartment 28c.

[0103] According to some embodiments, in correspondence with the entrance station 48, the transfer mean 16 comprises an end-of-travel member 64 config-

ured to define an abutment element for the organized groups of smoking articles of the first type 12a and smoking articles of the second type 12b during their translation to position them correctly in the containing chamber 58 of the drawer 50.

[0104] Embodiments of the method according to the present invention will be described in detail hereafter, by way of non-restrictive example, with reference to figs. 1 and 4, 5 and 9, which refer to the case of a single first compartment 28a and a single second compartment 28c, as well as the intermediate compartment 28b.

[0105] Embodiments of the method according to the present invention provide to repeat in a cyclical manner the steps of:

- supplying streams of smoking articles 12a, 12b of different types respectively to at least a first compartment 28a and at least a second compartment 28c of a feed hopper 20;
- supplying a stream of smoking articles both of a first type 12a and of a second type 12b to an intermediate compartment 28b;
- obtaining from the at least one first compartment 28a an organized group formed by a quantity N1 of smoking articles of the first type 12a and from the at least one second compartment 28c an organized group formed by a quantity N2 of smoking articles of the second type 12b;
- obtaining from the intermediate compartment 28b an overall quantity N of smoking articles 12a, 12b divided into an organized group formed by a quantity N1 of smoking articles of the first type 12a and into an organized group formed by a quantity N2 of smoking articles of the second type 12b;
- selectively introducing the organized groups of N1 smoking articles of the first type 12a and of the second type 12b obtained from the first compartment 28a and from the second compartment 28c into respective sections 59a, 59b of distinct and temporally respective drawers 50 aligned to the first compartment 28a and the second compartment 28c;
- introducing the overall quantity N of smoking articles 12a, 12b, introducing simultaneously or in sequence the organized group formed by the quantity N1 of smoking articles of the first type 12a into the first section 59a and the organized group formed by the quantity N2 of smoking articles of the second type 12b into the second section 59b of the same drawer 50 aligned with the intermediate compartment 28b, filling it;
- selectively displacing the drawers 50 by moving the transfer mean 16 to transfer the drawer 50 previously aligned with the second compartment 28c into alignment with the first compartment 28a to complete the filling of the drawer 50.

[0106] In particular, the drawer 50 which was in correspondence with the second compartment 28c finds itself

in correspondence with the first compartment 28a, so that the first section 59a can be filled with the quantity N1 of smoking articles of the first type 12a arriving from the first compartment 28a, while the drawer 50 that finds itself in correspondence with the second compartment 28c is partly filled with the quantity N2 of smoking articles of the second type 12b.

[0107] At startup, two drawers 50 are obtained, aligned respectively with the first compartment 28a and the second compartment 28c, identified in figs. 1, 4, 5 and 9 by the numbers I and III, partly filled with respective N1 and N2 smoking articles and a drawer 50, aligned with the intermediate compartment 28b, identified by the number II, completely filled with N1 plus N2 smoking articles.

[0108] After the first introduction, the transfer mean 16 is moved, for example made to rotate in the case of a transfer wheel, by a number of steps so as to transfer the drawer 50, number III, previously aligned with the second compartment 28c, and hence partly filled with N2 smoking articles of the second type 12b, into alignment with the first compartment 28a, so as to complete the filling thereof with the subsequent introduction, filling the first section 59a with N1 smoking articles of the first type 12a (figs. 4 and 9).

[0109] In this way, with every work cycle, two drawers 50 are obtained, completely filled and ready for the subsequent packaging steps, and one drawer 50 fed with a group of smoking articles of the second type 12b and positioned in correspondence with the first compartment 28a which supplies smoking articles of the first type 12a.

[0110] With the apparatus 10 driven according to the method described here, the smoking articles of the first type 12a and the smoking articles of the second type 12b have available the same time as that with which the transfer mean 16 is moved, for example rotated in the case of a transfer wheel, by two steps, to descend from the respective compartments 28a, 28b, 28c, and to dispose themselves in ordered organized groups of smoking articles of the first type 12a and smoking articles of the second type 12b.

[0111] According to the present description, figs. 1-9 are used to describe embodiments in which the number of conveying chambers 36 of the first portion 29a of the intermediate compartment 28b can be different from the number of conveying chambers 36 of the second portion 29b and the number of conveying chambers 36 of the first compartment 28a is different from the number of conveying chambers 36 of the second compartment 28c. By varying the number of conveying chambers 36 it is advantageously possible to modify the groupings of smoking articles of the first type 12a and smoking articles of the second type 12b, so as to vary the quantities N1 and N2 present in a packet.

[0112] In particular, in some embodiments, the number of conveying chambers 36 of the first portion 29a of the intermediate compartment 28b can be the same as the number of conveying chambers 36 of the first compartment 28a, while the number of conveying chambers 36

of the second portion 29b can be the same as the number of conveying chambers 36 of the second compartment 28c. In particular, therefore, it can be that the sum of the conveying chambers 36 of the first portion 29a and the second portion 29b of the intermediate compartment 28b is the same as the sum of the number of conveying chambers 36 of the first compartment 28a and the second compartment 28c.

[0113] For example, but without limiting the field of protection of the present invention, the number of conveying chambers 36 of the first portion 29a of the intermediate compartment 28b and the first compartment 28a can be four, and the number of conveying chambers 36 of the second portion 29b and the second compartment 28c can be three (figs. 1-4), or the number of conveying chambers 36 of the first portion 29a of the intermediate compartment 28b and the first compartment 28a can be five, and the number of conveying chambers 36 of the second portion 29b and the second compartment 28c can be three (figs. 5-9).

[0114] Figs. 1-4 are used to describe embodiments of the apparatus 10 and connected method, by means of which groups of smoking articles of different types are obtained, of the first type 12a and of the second type 12b, in quantities respectively N1 and N2, where N1 and N2 are two even numbers.

[0115] Figs. 5-9 are used to describe other embodiments of the apparatus 10 and connected method, by means of which groups of smoking articles of different types are obtained, of the first type 12a and of the second type 12b, in quantities respectively N1 and N2, where N1 and N2 are two odd numbers. In these embodiments, the number of conveying chambers 36 of the intermediate compartment 28b is different from the number of conveying chambers 36 of the intermediate compartment 28b in the embodiments described with reference to figs. 1-4, and hence the respective division into the first portion 29a and second portion 29b is different, so as to generate the desired numerical combinations of smoking articles of the first type 12a and smoking articles of the second type 12b in the drawers 50.

[0116] In possible variant embodiments, dividing means can be provided, analogous to those described above, also defined hereafter as stop means 35, 39, to condition the number of smoking articles that are introduced on each occasion into the drawers 50, for example so as to generate groups divided into different quantities N1 and N2 and/or layers with different numerical combinations of smoking articles. In this case, the stop means 35, 39 can be the fixed type. In other variants, the stop means 35, 39 can be mobile or adjustable, according to production needs. In possible implementations the stop means 35, 39 can be provided in the formation chambers 41, in a position coordinated with the combination of N1 and N2 smoking articles to be obtained. The stop means 35, 39, positioned in a desired and specific manner, block certain smoking articles, allowing others to pass, according to the numerical combination to be obtained.

[0117] In particular, fig. 8 is used to describe embodiments of the stop means 35, 39, for example defined by one or more stepped stop means or undercuts 35 and/or one or more stop means shaped as a protruding block 39, provided in the respective formation chambers 41.

[0118] According to possible implementations, the thruster elements 44a, 44b, 44c can be shaped mating with the stop means 35, 39, so as to maintain the thrust function on the smoking articles that have to be thrust from the formation chambers 41 toward the drawers 50, and not interfere with the stop means 35, 39 where they are present.

[0119] For example, without limiting the field of protection of the present invention, the embodiments described here can be used to obtain groups of smoking articles of different types in an overall quantity N=20, that is, to obtain packets each containing twenty smoking articles divided into two groups of different types.

[0120] For example, the twenty (N) smoking articles can be divided into two groups of twelve (N1) smoking articles of the first type 12a and eight (N2) smoking articles of the second type 12b organized in three overlapping layers (fig. 3), using for example the embodiments described with reference to figs. 1-4, or divided into two groups of thirteen (N1) smoking articles of the first type 12a and seven (N2) smoking articles of the second type 12b organized in three overlapping layers (fig. 7), using for example the embodiments described with reference to figs. 5-9.

[0121] In the embodiments described here, with reference to figs. 1-4 seven conveying chambers 36 can be provided for example in the intermediate compartment 28b, of which four in the first portion 29a and three in the second portion 29b, and in a coordinated manner four conveying chambers 36 in the first compartment 28a and three conveying chambers 36 in the second compartment 28c. Or, with reference to figs. 5-9, eight conveying chambers 36 can be provided for example in the intermediate compartment 28b, of which five in the first portion 29a and three in the second portion 29b, and in a coordinated manner five conveying chambers 36 in the first compartment 28a and three conveying chambers 36 in the second compartment 28c.

[0122] In another example, without limiting the field of protection of the present invention, some embodiments described here can be used to obtain groups of smoking articles of different types to an overall quantity of N=25, that is, to obtain packets each containing twenty-five smoking articles divided into two groups of different types.

[0123] To this end, for example, nine conveying chambers 36 can be provided in the intermediate compartment 28b of which six in the first portion 29a and three in the second portion 29b, and in a coordinated manner six conveying chambers 36 in the first compartment 28a and three conveying chambers 36 in the second compartment 28c. For example, these twenty-five (N) smoking articles can be divided into two groups of eighteen (N1)

smoking articles of the first type 12a and seven (N2) smoking articles of the second type 12b, organized in three overlapping layers.

[0124] According to some embodiments, combinable with all the embodiments described here, it can also be provided that there is only one smoking article of the first type 12a or of the second type 12b, and that the remaining smoking articles are the other type, respectively 12b or 12a, that is, it can be provided according to the present description that for example $N1=1$ and $N2=N-1$, with $N=N1+N2$.

[0125] It is clear that modifications and/or additions of parts may be made to the apparatus 10 and method to feed smoking articles as described heretofore, without departing from the field and scope of the present invention.

[0126] It is also clear that, although the present invention has been described with reference to some specific examples, a person of skill in the art shall certainly be able to achieve many other equivalent forms of apparatus and method to feed smoking articles, having the characteristics as set forth in the claims and hence all coming within the field of protection defined thereby.

[0127] In the following claims, the sole purpose of the references in brackets is to facilitate reading: they must not be considered as restrictive factors with regard to the field of protection claimed in the specific claims.

Claims

1. Apparatus to feed and form at least two different organized groups of smoking articles (12a, 12b), said apparatus comprising a feed unit (14) configured to receive respective smoking articles (12a, 12b) and to feed organized groups of said smoking articles (12a, 12b) separately toward an introduction unit (18) configured to introduce said organized groups of smoking articles (12a, 12b) into drawers (50), suitable to contain an overall quantity N of smoking articles (12a, 12b), of a transfer mean (16), wherein said feed unit (14) comprises a feed hopper (20) divided at least terminally into adjacent compartments (28a, 28b, 28c), each suitable to receive, in a selective and selected manner, respectively in at least one first compartment (28a) smoking articles of the first type (12a), to simultaneously receive in an intermediate compartment (28b), separate and in order, smoking articles of the first type (12a) and of the second type (12b), and to receive in at least a second compartment (28c) smoking articles of the second type (12b), wherein said at least one first compartment (28a) is configured to feed exclusively organized groups consisting of a desired quantity N1 of smoking articles of the first type (12a), said introduction unit (18) being configured to selectively cooperate with said compartments (28a, 28b,

28c) to introduce on each occasion said organized groups of smoking articles of the first type (12a) and of the second type (12b) into respective sections (59a, 59b) of each of the drawers (50) of the transfer mean (16) in order to complete the filling thereof,

characterized in that

said intermediate compartment (28b) is configured to feed said overall quantity N of smoking articles, divided into an organized group consisting of a desired quantity N1 of smoking articles of the first type (12a) and into an organized group consisting of a desired quantity N2 of smoking articles of the second type (12b) and

said at least one second compartment (28c) being configured to exclusively feed organized groups consisting of a desired quantity N2 of smoking articles of the second type (12b).

2. Apparatus as in claim 1, **characterized in that** said feed hopper (20) comprises at least a first sector (24) and an adjacent second sector (26), each suitable to exclusively receive one type of smoking article (12a, 12b) **and in that** said at least one first compartment (28a) communicates exclusively with said first sector (24), said intermediate compartment (28b) communicates separately with said first sector (24) and with said second sector (26) and said at least one second compartment (28c) communicates exclusively with said second sector (26).

3. Apparatus as in claim 1 or 2, **characterized in that** said quantities N1 and N2 are equal numbers, the sum of which is equal to said overall quantity N of smoking articles (12a, 12b) to be introduced into each drawer (50).

4. Apparatus as in claim 3, **characterized in that** said quantities N1 and N2 are both even numbers or both odd numbers.

5. Apparatus as in claim 1 or 2, **characterized in that** said quantities N1 and N2 are different numbers, the sum of which is equal to said overall quantity N of smoking articles (12a, 12b) to be introduced into each drawer (50).

6. Apparatus as in claim 5, **characterized in that** said quantities N1 and N2 are one an even number and the other an odd number.

7. Apparatus as in any of the claims from 1 to 6, **characterized in that** said drawers (50) are provided with a separator plate (62), configured to at least partly divide said drawer (50) into a first section (59a) and a second section (59b) to keep the smoking articles of the first type (12a) and/or of the second type (12b) separate, keeping them confined in the respective first section (59a) and/or second section (59b).

8. Apparatus as in claim 7, **characterized in that** said separator plate (62) has an undulating development, suitable or mating to the profile of said smoking articles of the first type (12a) and/or the second type (12b) present in the respective sections (59a, 59b). 5
9. Apparatus as in any claim hereinbefore, **characterized in that** it comprises one or more obstruction elements (37), configured so as to at least partly prevent access by the smoking articles (12a, 12b) to one or more conveying chambers (36) of one or more compartments (28a, 28b, 28c). 10
10. Apparatus as in any claim hereinbefore, **characterized in that** the exits of the individual compartments (28a, 28b, 28c) comprise elements to temporarily and selectively divide up the number of smoking articles (12a, 12b) to be supplied, in order to obtain the respective quantity groups N1 and/or N2 of smoking articles. 20
11. Apparatus as in any claim hereinbefore, **characterized in that** said compartments (28a, 28b, 28c) comprise or are configured to be associated with respective formation chambers (41), in which the organized groups of smoking articles of the first type (12a) and the second type (12b) are defined. 25
12. Apparatus as in claim 11, **characterized in that** it comprises compacting chambers (43) associated downstream of said formation chambers (41) and configured to direct the smoking articles and compact them in organized groups of the first type (12a) and the second type (12b) in quantities N1 and N2, to a respective drawer (50). 30
13. Apparatus as in claim 11 or 12, **characterized in that** said formation chambers (41) are provided with one or more dividing means, or stop means (35, 39). 40
14. Method to feed smoking articles that provides to repeat in a cyclical manner the steps of:
- supplying streams of at least two smoking articles (12a, 12b) of different types to respective first compartments (28a) and second compartments (28c) of a feed hopper (20); 45
 - supplying a stream of smoking articles of a first type (12a) and of a second type (12b) to an intermediate compartment (28b); 50
 - obtaining from said at least one first compartment (28a) an organized group formed by a quantity N1 of smoking articles of the first type (12a) and from said at least one second compartment (28c) an organized group formed by a quantity N2 of smoking articles of the second type (12b); 55
 - obtaining from said intermediate compartment (28b) an overall quantity N of smoking articles (12a, 12b) divided into an organized group formed by a quantity N1 of smoking articles of the first type (12a) and into an organized group formed by a quantity N2 of smoking articles of the second type (12b);
 - selectively introducing said organized groups of smoking articles of the first type (12a) and of the second type (12b) obtained from said at least one first compartment (28a) and from said at least one second compartment (28c) into respective sections (59a, 59b) of distinct and temporally respective drawers (50) aligned to said at least one first compartment (28a) and said at least one second compartment (28c);
 - selectively displacing the drawers (50) by moving said transfer mean (16) to transfer the drawer (50) previously aligned with said at least one second compartment (28c) into alignment with said at least one first compartment (28a) to complete the filling of said drawer (50),
- characterized by**
- introducing said overall quantity N of smoking articles (12a, 12b), introducing simultaneously or in sequence the organized group formed by the quantity N1 of smoking articles of the first type (12a) into the first section (59a) and the organized group formed by the quantity N2 of smoking articles of the second type (12b) into the second section (59b) of the same drawer (50) aligned with said intermediate compartment (28b), filling it.
15. Method as in claim 14, **characterized in that** it provides to keep in the desired position at least the quantity N1 of smoking articles of the first type (12a) and/or the quantity N2 of smoking articles of the second type (12b) at least during the introduction step by means of a separating plate (62). 35
16. Method as in claim 14 or 15, **characterized in that** said smoking articles of the first type (12a) and said smoking articles of the second type (12b) differ from each other by one or more characterizing components. 40
17. Machine to produce a packet of smoking articles, comprising an apparatus (10) in accordance with any of the claims from 1 to 13, to feed and form organized groups of smoking articles (12a, 12b) of different types. 45

Patentansprüche

1. Vorrichtung zum Zuführen und Ausbilden von zumindest zwei unterschiedlich organisierten Gruppen von Rauchartikeln (12a, 12b), wobei die Vorrichtung eine

Zuführeinheit (14) umfasst, die zum Aufnehmen von jeweiligen Rauchartikeln (12a, 12b) und zum Zuführen von organisierten Gruppen der Rauchartikel (12a, 12b) separat zu einer Einführungseinheit (18) hin konfiguriert ist, welche zum Einführen der organisierten Gruppen von Rauchartikeln (12a, 12b) in Schubladen (50), die zum Enthalten einer Gesamtmenge N von Rauchartikeln (12a, 12b) geeignet sind, eines Überführungsmittels (16) konfiguriert ist, wobei die Zuführeinheit (14) einen Zuführtrichter (20), der zumindest am Ende in benachbarte Fächer (28a, 28b, 28c) aufgeteilt ist, die jeweils geeignet sind, auf selektive und ausgewählte Art und Weise, jeweils in zumindest einem ersten Fach (28a) Rauchartikel der ersten Art (12a) aufzunehmen, gleichzeitig in einem zwischenliegenden Fach (28b), separat und in Reihenfolge, Rauchartikel der ersten Art (12a) und der zweiten Art (12b) aufzunehmen und in zumindest einem zweiten Fach (28c) Rauchartikel der zweiten Art (12b) aufzunehmen, wobei das zumindest eine erste Fach (28a) ausschließlich zum Zuführen von organisierten Gruppen konfiguriert ist, die aus einer gewünschten Menge N1 von Rauchartikeln der ersten Art (12a) besteht, wobei die Einführungseinheit (18) zum selektiven Zusammenwirken mit den Fächern (28a, 28b, 28c) zum Einführen der organisierten Gruppen von Rauchartikeln der ersten Art (12a) und der zweiten Art (12b) jedesmal in jeweilige Sektionen (59a, 59b) von jedem der Schubladen (50) des Überführungsmittels (16) konfiguriert ist, um die Füllung davon zu vervollständigen,

dadurch gekennzeichnet, dass

das zwischenliegende Fach (28b) zum Zuführen der Gesamtmenge N von Rauchartikeln, aufgeteilt in eine organisierte Gruppe, die aus einer gewünschten Menge N1 von Rauchartikeln der ersten Art (12a) besteht, und in eine organisierte Gruppe, die aus einer gewünschten Menge N2 von Rauchartikeln der zweiten Art (12b) besteht, konfiguriert ist, und das zumindest eine zweite Fach (28c) ausschließlich zum Zuführen von organisierten Gruppen konfiguriert ist, die aus einer gewünschten Menge N2 von Rauchartikeln der zweiten Art (12b) besteht.

2. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** der Zuführtrichter (20) zumindest einen ersten Sektor (24) und einen benachbarten zweiten Sektor (26) umfasst, die jeder zum ausschließlichen Aufnehmen von einer Art von Rauchartikeln (12a, 12b) geeignet sind, und dadurch, dass das zumindest eine erste Fach (28a) ausschließlich mit dem ersten Sektor (24) in Verbindung steht, das zwischenliegende Fach (28b) separat mit dem ersten Sektor (24) und mit dem zweiten Sektor (26) in Verbindung steht und das zumindest eine zweite Fach (28c) ausschließlich mit dem zweiten Sektor

(26) in Verbindung steht.

3. Vorrichtung nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die Mengen N1 und N2 gleiche Zahlen sind, deren Summe gleich der Gesamtmenge N von Rauchartikeln (12a, 12b) ist, die in jede Schublade (50) eingeführt werden soll.
4. Vorrichtung nach Anspruch 3, **dadurch gekennzeichnet, dass** die Mengen N1 und N2 beide gerade Zahlen oder beide ungerade Zahlen sind.
5. Vorrichtung nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die Mengen N1 und N2 unterschiedliche Zahlen sind, deren Summe gleich der Gesamtmenge N von Rauchartikeln (12a, 12b) ist, die in jede Schublade (50) eingeführt werden soll.
6. Vorrichtung nach Anspruch 5, **dadurch gekennzeichnet, dass** die Mengen N1 und N2 eine gerade Zahl und die andere eine ungerade Zahl ist.
7. Vorrichtung nach einem der Ansprüche 1 bis 6, **dadurch gekennzeichnet, dass** die Schubladen (50) mit einer Trennplatte (62) versehen sind, die zum zumindest teilweisen Aufteilen der Schublade (50) in eine erste Sektion (59a) und eine zweite Sektion (59b) zum Getrenthalten der Rauchartikel der ersten Art (12a) und/oder der zweiten Art (12b) konfiguriert ist, wodurch sie in der jeweiligen ersten Sektion (59a) und/oder zweiten Sektion (59b) abgegrenzt sind.
8. Vorrichtung nach Anspruch 7, **dadurch gekennzeichnet, dass** die Trennplatte (62) einen gewellten Verlauf aufweist, der für das Profil der Rauchartikel der ersten Art (12a) und/oder der zweiten Art (12b), welche in den jeweiligen Sektionen (59a, 59b) vorhanden sind, geeignet ist oder damit zusammenpasst.
9. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** sie ein oder mehr Hinderniselemente (37) umfasst, die derart konfiguriert sind, dass sie zumindest teilweise Zugang durch die Rauchartikel (12a, 12b) zu einer oder mehr Förderkammern (36) von einem oder mehr Fächern (28a, 28b, 28c) verhindern.
10. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Ausgänge der individuellen Fächer (28a, 28b, 28c) Elemente zum vorübergehenden und selektiven Aufteilen der Anzahl von Rauchartikeln (12a, 12b), die zugeführt werden sollen, umfassen, um die jeweiligen Mengengruppen N1 und/oder N2 von Rauchartikeln zu erhalten.

11. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Fächer (28a, 28b, 28c) jeweilige Ausbildungskammern (41) umfassen oder dazu konfiguriert sind, mit diesen assoziiert zu sein, in welchen die organisierten Gruppen von Rauchartikeln der ersten Art (12a) und der zweiten Art (12b) definiert werden.
12. Vorrichtung nach Anspruch 11, **dadurch gekennzeichnet, dass** sie Verdichtungskammern (43) umfasst, die stromabwärts von den Ausbildungskammern (41) assoziiert sind und zum Leiten der Rauchartikel, und Verdichten derselben in organisierten Gruppen der ersten Art (12a) und der zweiten Art (12b) in Mengen N1 und N2, zu einer jeweiligen Schublade (50) konfiguriert sind.
13. Vorrichtung nach Anspruch 11 oder 12, **dadurch gekennzeichnet, dass** die Ausbildungskammern (41) mit einem oder mehr Aufteilungsmitteln oder Anschlagmitteln (35, 39) versehen sind.
14. Verfahren zum Zuführen von Rauchartikeln, das zur zyklischen Wiederholung die folgenden Schritte vorsieht:
- Zuführen von Strömen von zumindest zwei Rauchartikeln (12a, 12b) verschiedener Arten zu jeweiligen ersten Fächern (28a) und zweiten Fächern (28c) eines Zuführtrichters (20);
 - Zuführen eines Stroms von Rauchartikeln einer ersten Art (12a) und einer zweiten Art (12b) zu einem zwischenliegenden Fach (28b);
 - Erhalten, vom zumindest einen ersten Fach (28a), einer organisierten Gruppe, die durch eine Menge N1 von Rauchartikeln der ersten Art (12a) ausgebildet ist, und, vom zumindest zweiten Fach (28c), einer organisierten Gruppe, die durch eine Menge N2 von Rauchartikeln der zweiten Art (12b) ausgebildet ist;
 - Erhalten, vom zwischenliegenden Fach (28b), einer Gesamtmenge N von Rauchartikeln (12a, 12b), die in eine organisierte Gruppe, welche durch eine Menge N1 von Rauchartikeln der ersten Art (12a) ausgebildet ist, und in eine organisierte Gruppe, die durch eine Menge N2 von Rauchartikeln der zweiten Art (12b) ausgebildet ist, aufgeteilt ist;
 - selektives Einführen der organisierten Gruppen von Rauchartikeln der ersten Art (12a) und der zweiten Art (12b), die vom zumindest einen ersten Fach (28a) und vom zumindest einen zweiten Fach (28c) erhalten werden, in jeweilige Sektionen (59a, 59b) von verschiedenen und vorübergehend jeweiligen Schubladen (50), die am zumindest einen ersten Fach (28a) und am zumindest einen zweiten Fach (28c) ausgerichtet sind;
 - selektives Verschieben der Schubladen (50) durch Bewegen des Überführungsmittels (16) zum Überführen der Schublade (50), der vorher am zumindest einen zweiten Fach (28c) ausgerichtet war, in Ausrichtung am zumindest einen ersten Fach (28a), um die Füllung der Schublade (50) zu vervollständigen, **gekennzeichnet durch**
 - Einführen der Gesamtmenge N von Rauchartikeln (12a, 12b), wobei gleichzeitig oder sequentiell die organisierte Gruppe, die durch die Menge N1 von Rauchartikeln der ersten Art (12a) ausgebildet ist, in die erste Sektion (59a) und die organisierte Gruppe, die durch die Menge N2 von Rauchartikeln der zweiten Art (12b) ausgebildet ist, in die zweite Sektion (59b) derselben Schublade (50), die am zwischenliegenden Fach (28b) ausgerichtet ist, eingeführt und gefüllt wird.
15. Verfahren nach Anspruch 14, **dadurch gekennzeichnet, dass** es das Beibehalten in der gewünschten Position von zumindest der Menge N1 von Rauchartikeln der ersten Art (12a) und/oder der Menge N2 der Rauchartikel der zweiten Art (12b) zumindest während des Einführungsschritts mittels einer Trennplatte (62) vorsieht.
16. Verfahren nach Anspruch 14 oder 15, **dadurch gekennzeichnet, dass** sich die Rauchartikel der ersten Art (12a) und die Rauchartikel der zweiten Art (12b) durch eine oder mehr kennzeichnende Komponenten voneinander unterscheiden.
17. Maschine zum Erzeugen einer Packung von Rauchartikeln, umfassend eine Vorrichtung (10) nach einem der Ansprüche 1 bis 13 zum Zuführen und Ausbilden von organisierten Gruppen von Rauchartikeln (12a, 12b) verschiedener Arten.

Revendications

1. Appareil pour alimenter et former au moins deux groupes organisés différents d'articles à fumer (12a, 12b), ledit appareil comprenant une unité d'alimentation (14) configurée pour recevoir des articles à fumer (12a, 12b) respectifs et pour alimenter des groupes organisés desdits articles à fumer (12a, 12b) séparément vers une unité d'introduction (18) configurée pour introduire lesdits groupes organisés d'articles à fumer (12a, 12b) dans des tiroirs (50), appropriés pour contenir une quantité totale N d'articles à fumer (12a, 12b), d'un moyen de transfert (16), dans lequel ladite unité d'alimentation (14) comprend une trémie d'alimentation (20) divisée au moins de façon terminale en compartiments adja-

cents (28a, 28b, 28c), chacun apte à recevoir, de manière sélective et sélectionnée, respectivement dans au moins un premier compartiment (28a) des articles à fumer du premier type (12a), à recevoir simultanément dans un compartiment intermédiaire (28b), séparés et en ordre, des articles à fumer du premier type (12a) et du second type (12b), et à recevoir dans au moins un second compartiment (28c) des articles à fumer du second type (12b), dans lequel ledit au moins un premier compartiment (28a) est configuré pour alimenter exclusivement des groupes organisés constitués d'une quantité souhaitée N1 d'articles à fumer du premier type (12a), ladite unité d'introduction (18) étant configurée pour coopérer sélectivement avec lesdits compartiments (28a, 28b, 28c) afin d'introduire à chaque occasion lesdits groupes organisés d'articles à fumer du premier type (12a) et du second type (12b) dans des sections respectives (59a, 59b) de chacun des tiroirs (50) du moyen de transfert (16) afin d'en achever le remplissage,

caractérisé en ce que

ledit compartiment intermédiaire (28b) est configuré pour alimenter ladite quantité totale N d'articles à fumer, divisée en un groupe organisé constitué d'une quantité souhaitée N1 d'articles à fumer du premier type (12a) et en un groupe organisé constitué d'une quantité souhaitée N2 d'articles à fumer du second type (12b) et

ledit au moins un second compartiment (28c) étant configuré pour alimenter exclusivement des groupes organisés constitués d'une quantité souhaitée N2 d'articles à fumer du second type (12b).

2. Appareil selon la revendication 1, **caractérisé en ce que** ladite trémie d'alimentation (20) comprend au moins un premier secteur (24) et un second secteur adjacent (26), chacun apte à recevoir exclusivement un type d'article à fumer (12a, 12b) **et en ce que** ledit au moins un premier compartiment (28a) communique exclusivement avec ledit premier secteur (24), ledit compartiment intermédiaire (28b) communique séparément avec ledit premier secteur (24) et avec ledit second secteur (26) et ledit au moins un second compartiment (28c) communique exclusivement avec ledit second secteur (26).
3. Appareil selon la revendication 1 ou 2, **caractérisé en ce que** lesdites quantités N1 et N2 sont des nombres égaux, dont la somme est égale à ladite quantité totale N d'articles à fumer (12a, 12b) à introduire dans chaque tiroir (50).
4. Appareil selon la revendication 3, **caractérisé en ce que** lesdites quantités N1 et N2 sont toutes deux des nombres pairs ou toutes deux des nombres impairs.

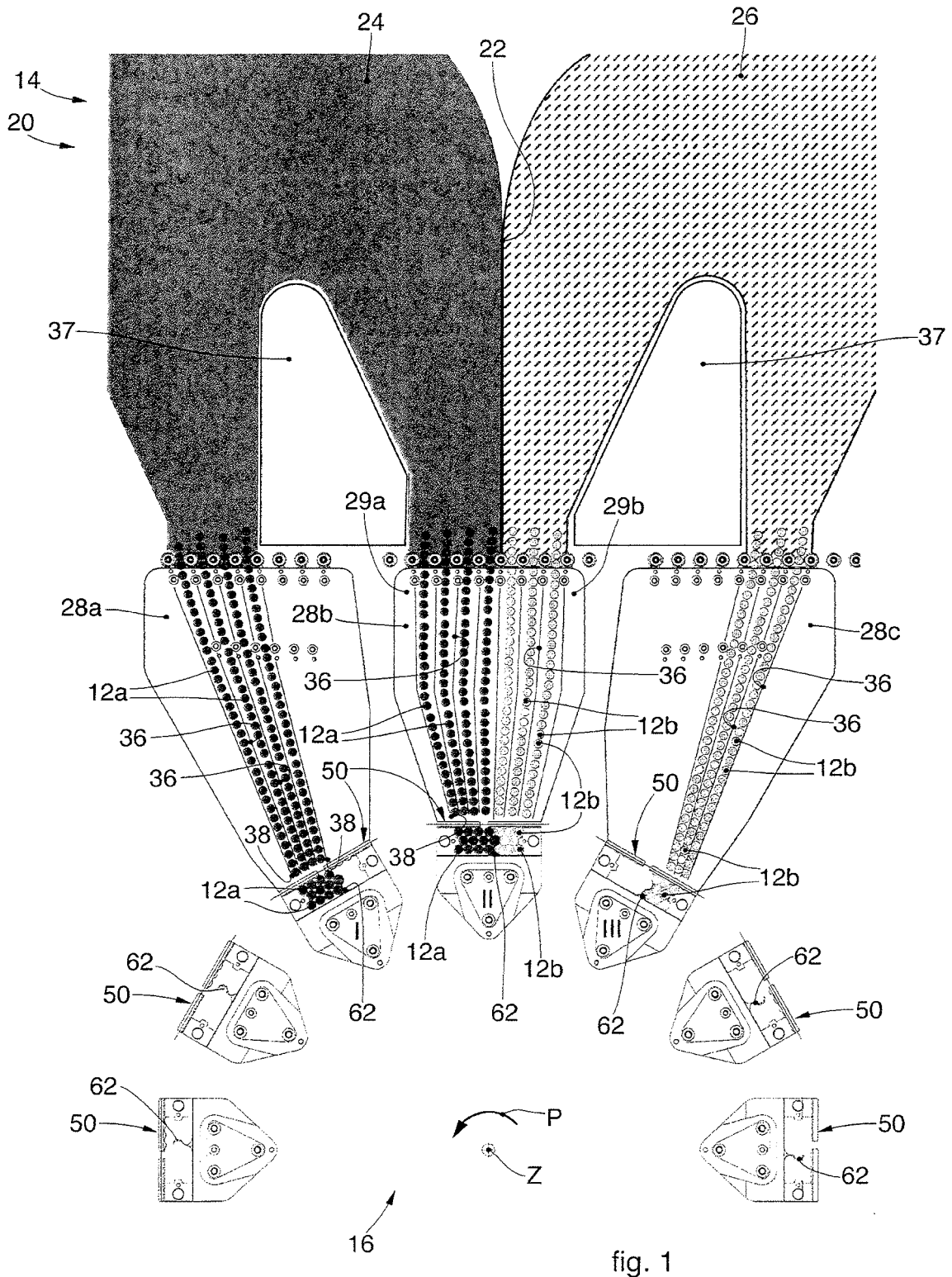
5. Appareil selon la revendication 1 ou 2, **caractérisé en ce que** lesdites quantités N1 et N2 sont des nombres différents, dont la somme est égale à ladite quantité totale N d'articles à fumer (12a, 12b) à introduire dans chaque tiroir (50).
6. Appareil selon la revendication 5, **caractérisé en ce que** lesdites quantités N1 et N2 sont l'une un nombre pair et l'autre un nombre impair.
7. Appareil selon l'une quelconque des revendications 1 à 6, **caractérisé en ce que** lesdits tiroirs (50) sont pourvus d'une plaque de séparation (62), configurée pour diviser au moins partiellement ledit tiroir (50) en une première section (59a) et une seconde section (59b) afin de maintenir les articles à fumer du premier type (12a) et/ou du second type (12b) séparés, en les maintenant confinés dans la première section (59a) respective et/ou la seconde section (59b) respective.
8. Appareil selon la revendication 7, **caractérisé en ce que** ladite plaque de séparation (62) a un développement ondulé, adapté ou s'appariant au profil desdits articles à fumer du premier type (12a) et/ou du second type (12b) présents dans les sections respectives (59a, 59b).
9. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'il** comprend un ou plusieurs éléments d'obstruction (37), configurés de manière à empêcher au moins partiellement un accès des articles à fumer (12a, 12b) à une ou plusieurs chambres de transport (36) d'un ou plusieurs compartiments (28a, 28b, 28c).
10. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** les sorties des compartiments individuels (28a, 28b, 28c) comprennent des éléments pour diviser temporairement et sélectivement le nombre d'articles à fumer (12a, 12b) à fournir, afin d'obtenir les groupes de quantité respective N1 et/ou N2 d'articles à fumer.
11. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** lesdits compartiments (28a, 28b, 28c) comprennent ou sont configurés pour être associés à des chambres de formation respectives (41), dans lesquelles les groupes organisés d'articles à fumer du premier type (12a) et du second type (12b) sont définis.
12. Appareil selon la revendication 11, **caractérisé en ce qu'il** comprend des chambres de compactage (43) associées en aval desdites chambres de formation (41) et configurées pour diriger les articles à fumer et les compacter en groupes organisés du premier type (12a) et du second type (12b) dans les

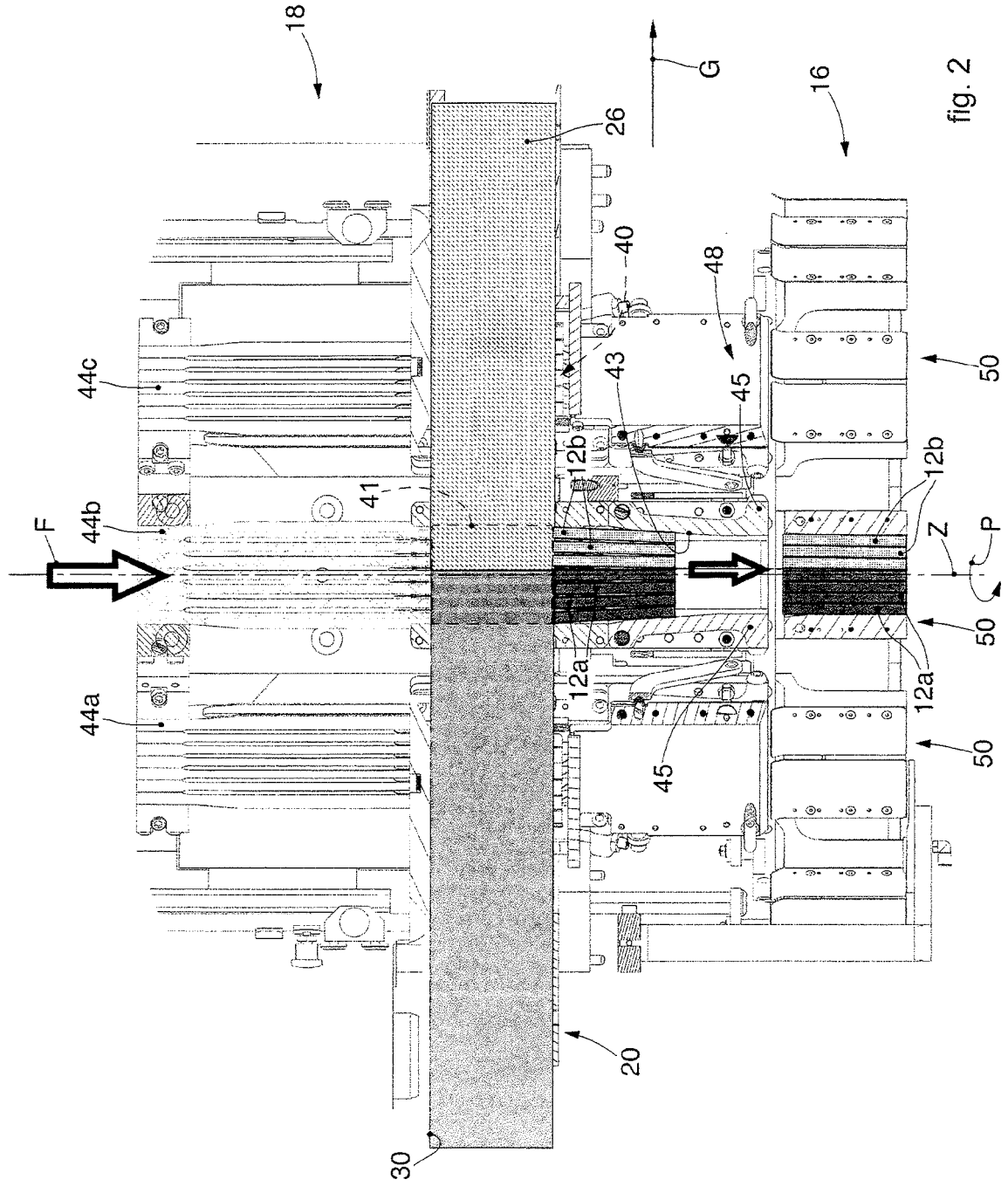
quantités N1 et N2, vers un tiroir respectif (50).

13. Appareil selon la revendication 11 ou 12, **caractérisé en ce que** lesdites chambres de formation (41) sont pourvues d'un ou plusieurs moyens de division, ou moyens d'arrêt (35, 39). 5
14. Méthode pour alimenter des articles à fumer qui prévoit de répéter de manière cyclique les étapes consistant à : 10
- alimenter des flux d'au moins deux articles à fumer (12a, 12b) de types différents vers des premiers compartiments respectifs (28a) et des seconds compartiments respectifs (28c) d'une trémie d'alimentation (20) ; 15
 - alimenter un flux d'articles à fumer d'un premier type (12a) et d'un second type (12b) vers un compartiment intermédiaire (28b) ; 20
 - obtenir dudit au moins un premier compartiment (28a) un groupe organisé formé par une quantité N1 d'articles à fumer du premier type (12a) et dudit au moins un second compartiment (28c) un groupe organisé formé par une quantité N2 d'articles à fumer du second type (12b), 25
 - obtenir dudit compartiment intermédiaire (28b) une quantité totale N d'articles à fumer (12a, 12b) divisée en un groupe organisé formé par une quantité N1 d'articles à fumer du premier type (12a) et en un groupe organisé formé par une quantité N2 d'articles à fumer du second type (12b) ; 30
 - introduire sélectivement lesdits groupes organisés d'articles à fumer du premier type (12a) et du second type (12b) obtenus à partir dudit au moins un premier compartiment (28a) et dudit au moins un second compartiment (28c) dans des sections respectives (59a, 59b) de tiroirs distincts et temporellement respectifs (50) alignés sur ledit au moins un premier compartiment (28a) et ledit au moins un second compartiment (28c) ; 35
 - déplacer sélectivement les tiroirs (50) en déplaçant ledit moyen de transfert (16) pour transférer le tiroir (50) précédemment aligné avec ledit au moins un second compartiment (28c) en alignement avec ledit au moins un premier compartiment (28a) pour compléter le remplissage dudit tiroir (50), 40
- caractérisée par les étapes consistant à** 50
- introduire ladite quantité totale N d'articles à fumer (12a, 12b), introduire simultanément ou en séquence le groupe organisé formé par la quantité N1 d'articles à fumer du premier type (12a) dans la première section (59a) et le groupe organisé formé par la quantité N2 d'articles à fumer du second type (12b) dans la seconde section (59b) du même tiroir (50) alignée avec ledit 55

compartiment intermédiaire (28b), en le remplissant.

15. Méthode selon la revendication 14, **caractérisée en ce qu'elle** permet de maintenir dans la position souhaitée au moins la quantité N1 d'articles à fumer du premier type (12a) et/ou la quantité N2 d'articles à fumer du second type (12b) au moins lors de l'étape d'introduction au moyen d'une plaque de séparation (62). 5
16. Méthode selon la revendication 14 ou 15, **caractérisée en ce que** lesdits articles à fumer du premier type (12a) et lesdits articles à fumer du second type (12b) diffèrent les uns des autres par un ou plusieurs composants caractérisant. 10
17. Machine pour produire un paquet d'articles à fumer, comprenant un appareil (10) selon l'une quelconque des revendications 1 à 13, pour alimenter et former des groupes organisés d'articles à fumer (12a, 12b) de différents types. 15





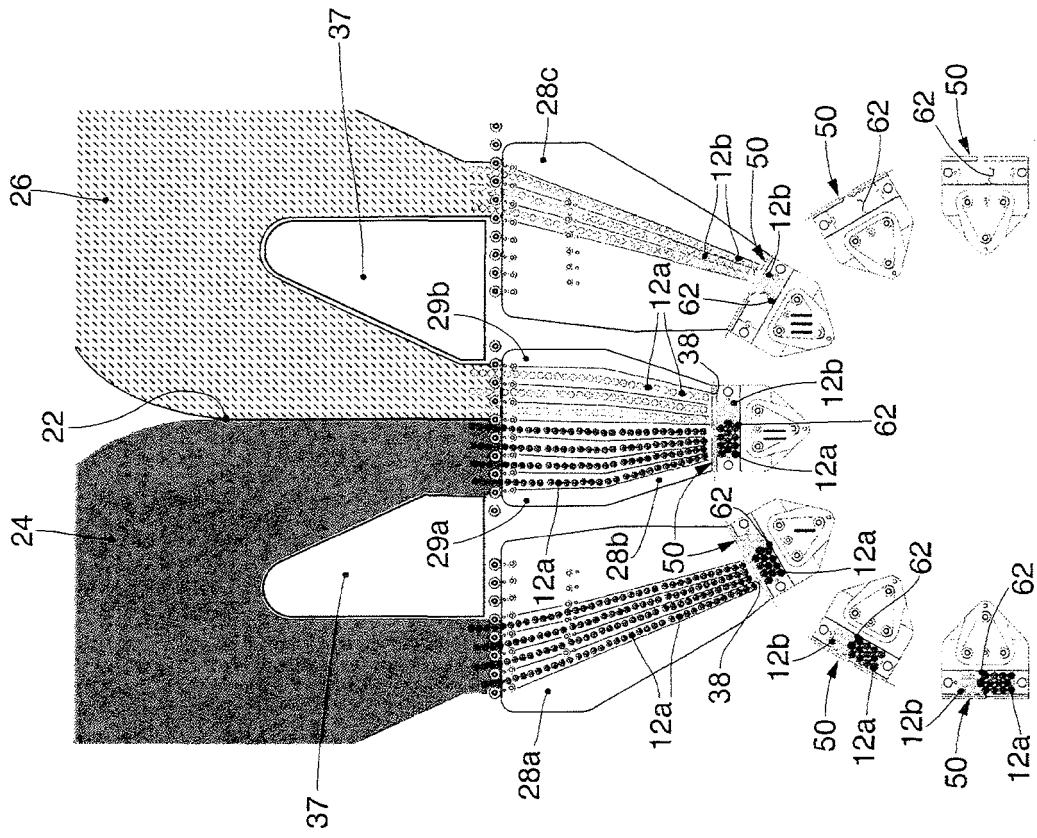


fig. 4

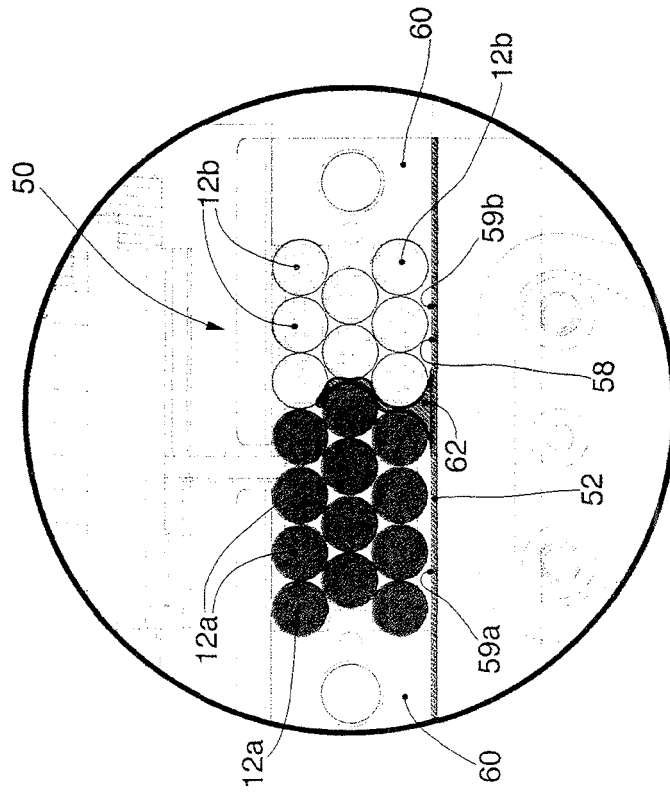
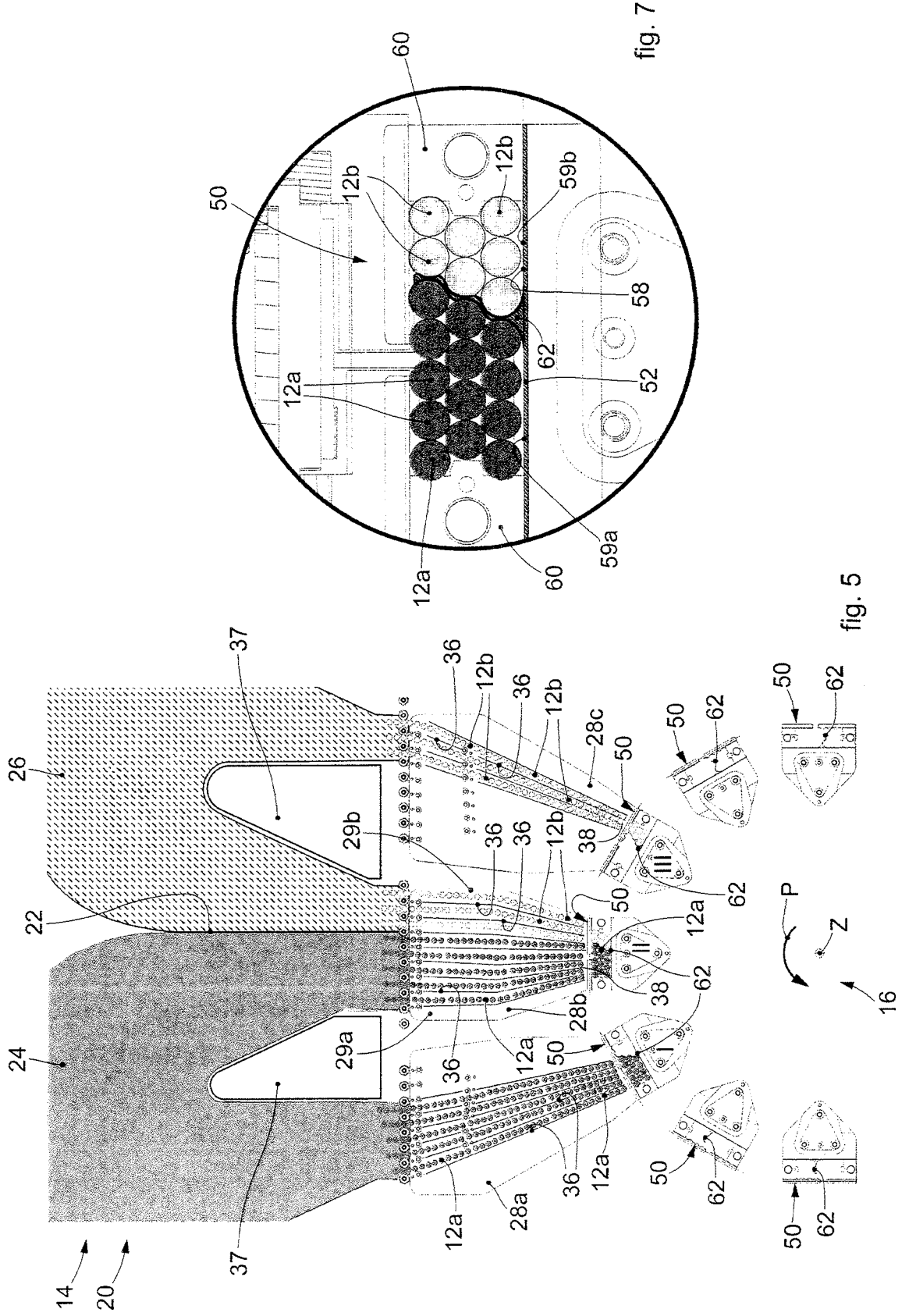
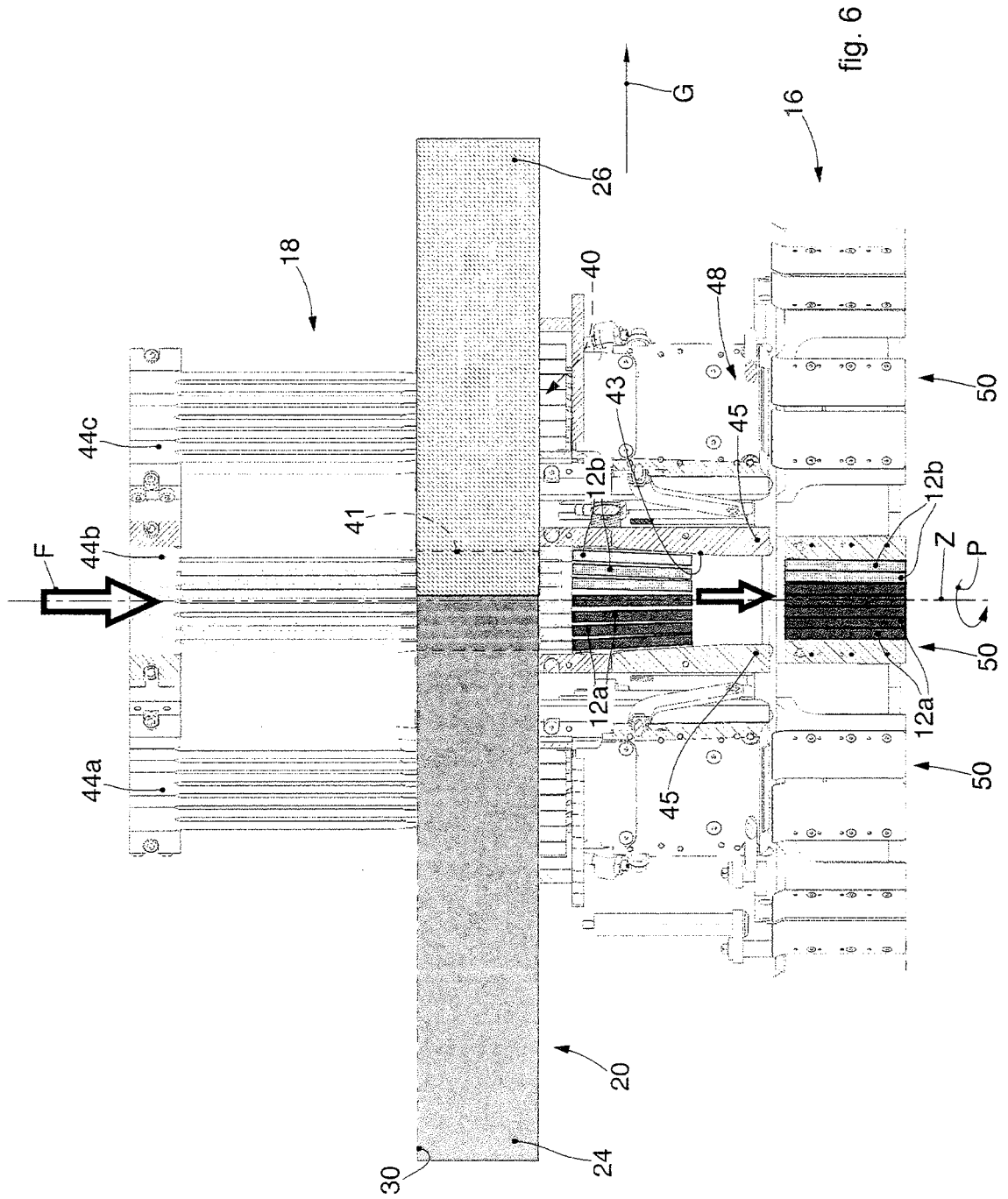


fig. 3





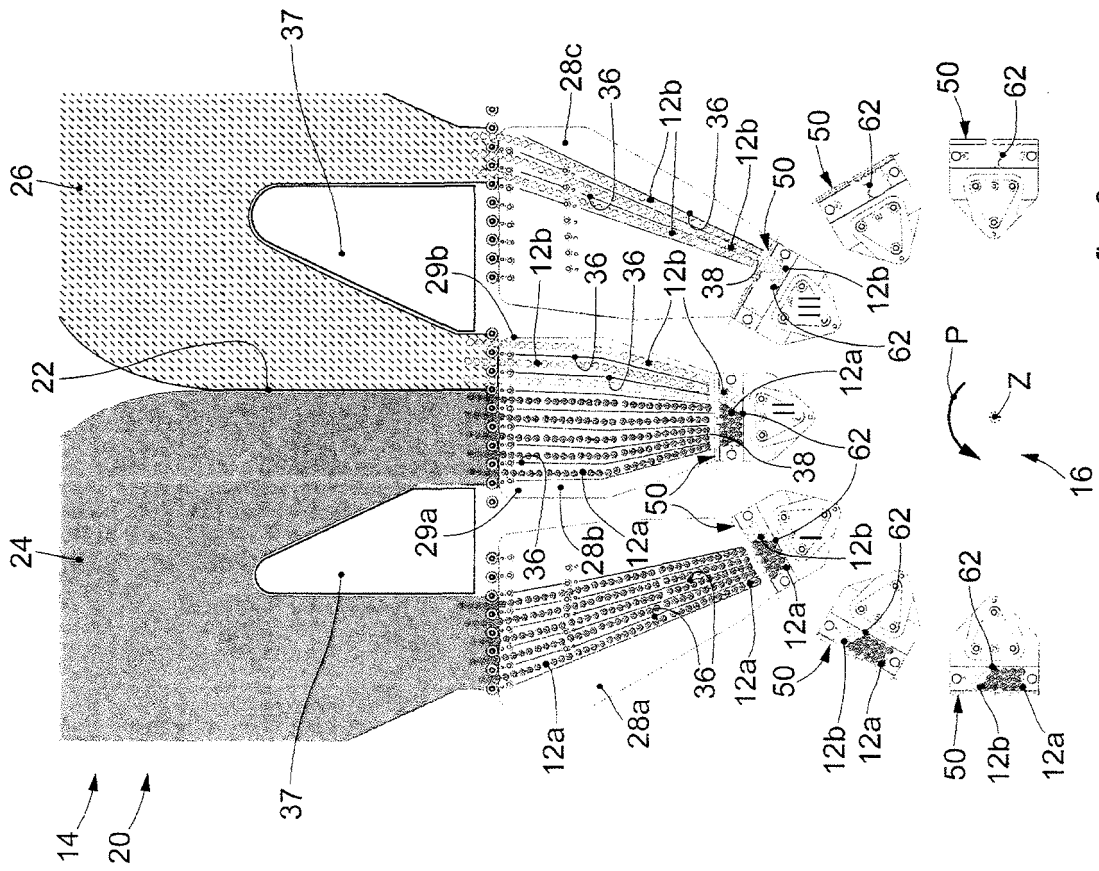


fig. 8

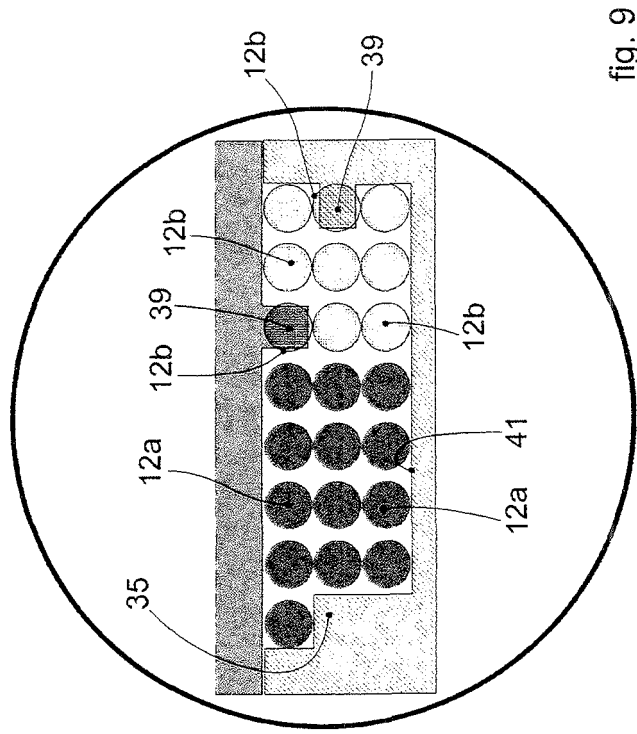


fig. 9

REFERENCES CITED IN THE DESCRIPTION

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