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(54) **Mattress and machine for its production**

(57) A mattress (1) comprising an outer case (3) made of a material substantially of the textile type for an internal block (4) made of deformable material.

The mattress (1) comprises, along at least one portion of the perimetric lateral band (5) of the case (3), at least one ribbon (6), which is stably associated with the

respective portion, along connecting lines (7) which are not parallel to the longitudinal axis (8) of the ribbon (6).

Between the ribbon (6), the portion of the perimetric lateral band (5) of the case (3) and the connecting lines (7) there is at least one seat (9) which is adapted to accommodate respective grip means, including the fingers of an operator, during the transport of the mattress (1).

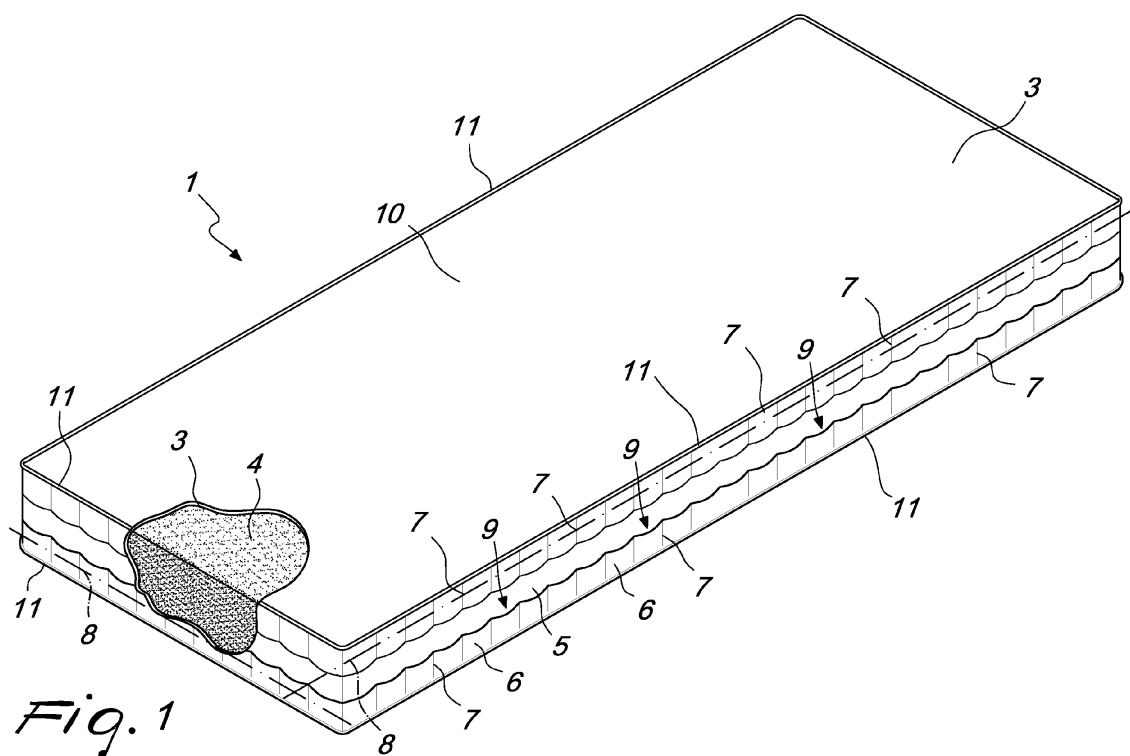


Fig. 1

Description

[0001] The present invention relates to a mattress, which is adapted to better achieve some aims and objects which are exhaustively explained below. The invention moreover relates to defining the characteristics of the machine by way of which it is possible to produce the improved mattress.

[0002] Mattresses are currently produced in a plurality of different manners by using different materials.

[0003] Generally their movement is always complex since the considerable encumbrance, combined with a weight which, in many cases, is equally high, makes manipulation by the designated operators difficult.

[0004] In particular each mattress is generally provided with handles, fixed on its lateral edge, the purpose of which is to facilitate gripping by operators.

[0005] These handles are arranged in predefined positions, thus requiring the mattress to be held at that specific point. However, this is not always feasible, since, during transport, it happens that one has to pass through narrow entrances or orient the mattress in order to adapt it to narrow passages, and in all these cases the operator generally cannot hold the mattress by one of these handles.

[0006] The number of handles provided on each mattress, moreover, is comprised between 2 and 4 so as to simplify its production, at the same time preventing its aesthetic appearance from being compromised.

[0007] In fact the handles degrade the appearance of the mattress and constitute a stress center for possible breakage because they localize the mechanical stresses, to which the mattress will be subjected, around themselves.

[0008] The aim of the present invention is to solve the above-mentioned problems by providing a mattress that ensures an easy and secure grip for the operator charged with its transport.

[0009] Within this aim, an object of the invention is to provide a mattress that has the same appearance as a conventional mattress without handles.

[0010] Another object of the invention is to provide a machine for the production of a mattress which makes it possible to industrially produce a mattress.

[0011] Another object of the present invention is to provide a mattress and a machine for its production which are low-cost, relatively easily and practically implemented and safe in application.

[0012] This aim and these objects are achieved by a mattress of the type comprising an outer case made of a material substantially of the textile type for an internal block made of deformable material, **characterized in that** it comprises, along at least one portion of the perimetric lateral band of said case, at least one ribbon, which is firmly associated with said respective portion along connecting lines which are not parallel to the longitudinal axis of said ribbon, between said ribbon, said portion of the perimetric lateral band of said case and said connect-

ing lines at least one seat being defined which is adapted to accommodate respective gripping means, including the fingers of an operator, during the transport of said mattress.

[0013] This aim and these objects are also achieved by a machine for the production of a mattress of the type comprising a fixed frame designed to support a sliding surface for portions of laminar material to be sewn together, **characterized in that** it comprises at least two sewing heads which are integral with a respective support, arranged substantially in a cantilever manner on said sliding surface and integral with said fixed frame, the active tab, provided with at least one element of the type of a needle, of each head being translationally moveable on command along at least one predefined direction with respect to said sliding surface.

[0014] Further characteristics and advantages of the invention will become more apparent from the description of a preferred, but not exclusive, embodiment of the mattress and of the machine for its production according to the invention, which are illustrated by way of non-limiting example in the accompanying drawings wherein:

Figure 1 is a perspective schematic view of a mattress according to the invention;

Figure 1a is a perspective schematic view of an enlarged detail of the mattress in Figure 1;

Figure 1b is a perspective schematic view of an enlarged detail of an alternative embodiment of the mattress according to the invention;

Figure 2 is a perspective schematic view of a first version of a machine for providing a mattress according to the invention;

Figure 2a is a perspective schematic view of the version in Figure 1 with a different feeder assembly;

Figure 3 is a perspective schematic view of a second version of the machine for providing a mattress according to the invention in a schematic diagram with no feeder assemblies;

Figure 4 is a perspective schematic view of a third version of the machine for providing a mattress according to the invention in a schematic diagram with no feeder assemblies.

[0015] With particular reference to the Figures, a mattress is generally designated with the reference numeral 1 and a machine for its production is generally designated with the reference numeral 2.

[0016] The mattress 1 comprises an outer case 3 made of a material substantially of the textile type for an internal block 4 made of deformable material.

[0017] The outer case 3 can be any element designed to cover the internal block 4. The case thus can have the form of a containment envelope for the block 4 or it can be constituted by a plurality of components (generally of the textile type) which are mutually associated by means of removable connections and/or stitching to delimit an inner space of a shape and size which are complemen-

tary to the shape and size of the block 4 so as to stably accommodate it.

[0018] The internal block 4 is generally made of polymeric foam, latex, or successive layers of springs and sheets of different materials. The possibility is not excluded of adopting panels constituted exclusively by natural materials such as fibers, wool, cotton and the like.

[0019] The mattress 1 according to the invention comprises, along at least a portion of the perimetric lateral band 5 of the case 4 (which in such case is constituted by a plurality of components (generally of the textile type) which are mutually associated by means of removable connections and/or stitching to delimit an inner space of a shape and size which are complementary to the shape and size of the block 4 so as to stably accommodate it), at least one ribbon 6 which is stably associated with the corresponding portion of the band 5.

[0020] The association of the ribbon 6 with the portion of band 5 is obtainable along connecting lines 7 which are generally not parallel to the longitudinal axis 8 of the ribbon 6.

[0021] Between the ribbon 6, the portion of the perimetric lateral band 5 of the case 4 and the connecting lines 7 there is at least one seat 9 which is adapted to accommodate respective grip means, including the fingers of an operator, during the transport of the mattress 1.

[0022] According to a particular embodiment, the ribbons 6 are two in number, arranged substantially along the edges of the perimetric lateral band 5, substantially proximate to the edges of the case 3 at which there is the connection between the perimetric lateral band 5 and one of the two larger faces 10 of the mattress 1 (the face 10 is generally, but not exclusively, constituted by a quilted cloth or by a set of sheets made of a textile and/or fibrous and/or polymeric material).

[0023] It is convenient to note that, advantageously, the connecting lines 7, which are not parallel to the longitudinal axis 8 of the ribbon 6, delimit each seat 9 laterally.

[0024] It is thus very clear that by adopting connecting lines 7 which are substantially perpendicular to the axis 8 it will be possible to also provide a plurality of contiguous trapezoid cavities (in general the possibility is not excluded of using the shape of a rectangle, of a square or of any other irregular polygon, including those which have at least one curvilinear side).

[0025] If however the connecting lines 7 are curved it will be possible to provide seats 9 with any shape, curvilinear or mixed. This will also make it possible to obtain a decoration of the mattresses 1 by the arrangement of the ribbon 6 (or ribbons 6) and its successive coupling with the band 5 along the most suitable connecting lines 7.

[0026] The ribbon 6, according to an embodiment of undoubted applicative interest, is stably coupled to the perimetric lateral band 5 of the case 3 by means of a further auxiliary connecting line 11, the orientation and direction of which are substantially parallel to the longitudinal axis 8 of the ribbon 6.

tudinal axis 8 of the ribbon 6.

[0027] In such case, between the ribbon 6, the portion of the perimetric lateral band 5 of the case 3, the connecting lines 7, which are not parallel to the longitudinal axis 8 of the ribbon 6, and the auxiliary connecting line 11 there is the at least one seat 9 with a shape of the type of a pocket, which has a single opening adapted for the insertion and accommodation of respective grip means during the transport of the mattress 1.

[0028] The presence of the auxiliary connecting line 11 ensures that the seat 7 is not a through seat but is closed on the bottom to delimit a sort of pocket.

[0029] It is evident that the present invention relates to both solutions, relating to the open seats 9 and to the closed, pocket-shaped seats 9.

[0030] For providing a mattress 1 that is particularly convenient to transport, the pocket-shaped seats 9 of the two ribbons 6 that face each other and are each stably associated with the perimetric lateral band 5 of the outer case 3 are mutually aligned and arranged so that the respective openings and inner cavities face each other.

[0031] Such arrangement gives the mattress 1 a particularly pleasing appearance and, at the same time, facilitates transport operations since the perfect correspondence of the seats 9 arranged proximate to mutually opposite edges enables the operator charged with the transport to rapidly identify the position of each seat 9 even if he or she cannot see it (he or she can in fact estimate its position as a function of the position of the seats proximate to it and/or facing it which are in his or her field of view, and this will enable him or her to insert his or her fingers in the seat 9 quickly and intuitively, obtaining an optimal grip).

[0032] It is convenient to note that, according to a possible application that is particularly advantageous in terms of practicality and implementation, the connecting lines 7, which are not parallel to the longitudinal axis 8 of the ribbon 6, and the additional auxiliary connecting line 11 are lines of stitches.

[0033] Such lines of stitches can have a pattern selected from linear, curvilinear, mixed, zigzag and according to a particular decorative design, to best meet the aesthetic and functional requirements.

[0034] During transport, the operators can thus use the seats 9 as grips in which to insert their fingers in order to stably hold the mattress 1.

[0035] The facing arrangement of the mutually opposite seats 9 of the two ribbons 6 will facilitate the transport operations in narrow places since the operator does not necessarily have to see the seat 9 into which he or she inserts his or her fingers. It will be sufficient to see the opposite ribbon 6 in order to estimate exactly the position of the corresponding seat 9 in the ribbon 6 in which the seat 9 of interest is provided.

[0036] The distribution of the seats 9 along all the perimetric edges of the mattress 1 moreover enables the operator to firmly grip the mattress 1 independently of his or her position with respect to the mattress 1, thus

allowing the transport and also the easy passage in inconvenient and tight paths.

[0037] The machine 1 for the production of the mattress 1 comprises a fixed frame 12 designed to support a sliding surface 13 for portions of laminar material to be sewn together.

[0038] Such machine 2 comprises at least two sewing heads 14 which are integral with a respective support 15, which is arranged substantially in a cantilever manner on the sliding surface 13 and is integral with the fixed frame 12.

[0039] The active tab 16, which is provided with at least one element of the type of a needle, of each head 14 is translationally moveable on command along at least one predefined direction with respect to the sliding surface 13.

[0040] The translational movements of the tab 16 make it possible to provide linear (or curved or mixed or zigzag) lines of stitching for the mutual connection of the ribbon 6 to the band 5.

[0041] According to an embodiment shown by way of example in the enclosed Figure 2, the two heads 14 are identical, arranged parallel to each other and mounted on respective supports 15 of different lengths (or with supports 15 coupled to the frame 12 in different positions).

[0042] Such supports 15 are in any case connected to the same side of the frame 12 with respect to the sliding surface 13, for the substantial alignment of the respective active tabs 16 with a portion of the sliding surface at the lateral edges thereof.

[0043] This arrangement is certainly the simplest and most intuitive from a design point of view.

[0044] The limitation of this is that the center distance between two consecutive seats 9 of the band 5 (once finished) is necessarily identical with the center distance between the active tabs 16 of the two heads 14. This is naturally the case if it is desired to arrange seats 9 mutually aligned and facing each other.

[0045] According to an alternative embodiment, shown by way of non-limiting example in the enclosed Figure 3, the two heads 14 are identical, arranged along incident directions and mounted on respective supports 15 which are connected to opposite sides of the frame 12 with respect to the sliding surface 13.

[0046] This ensures the substantial alignment of the respective active tabs 16 with a portion of the sliding surface 13 that is proximate to lateral edges thereof.

[0047] With particular reference to the embodiment in Figure 3, one head 14 is mounted in an inclined position, whereas the other head is perpendicular to the direction of advancement of the fabrics to be sewn on the surface 13.

[0048] In such case the function of the inclined head 14 is to make it possible to obtain a line of stitching along the standard direction of advancement of the fabrics to be coupled (forward stitching). In fact the perpendicularity to the direction of advancement also of the second head 14 would result in having to make the second head 14

operate in reverse ("backward stitching"): such operation is very complex and often inapplicable (especially with high stitching speeds).

[0049] According to a third further embodiment, shown by way of example in the enclosed Figure 4, the two heads 14 are symmetrical to each other with particular reference to a symmetry with respect to a longitudinal plane.

[0050] The two heads 14 (which for convenience can be called a "right" head and a "left" head in order to highlight their different and mutually symmetrical shapes) will be mutually aligned with respect to the longitudinal plane of symmetry and will be mounted on respective supports 15 which are associated with opposite sides of the frame 12 with respect to the sliding surface 13.

[0051] This ensures the substantial alignment of the respective active tabs 16 with a portion of the sliding surface 13 that is proximate to lateral edges thereof.

[0052] This embodiment, although it allows a corresponding simplicity of production and is very compact, involves the difficulty of sourcing heads 14 that are symmetrical to each other and adapted to ensure optimal operation and good reliability, especially in relation to low sourcing costs ("left" heads 14 are normally very expensive).

[0053] Advantageously the improved mattress 1 according to the invention has the same appearance as a conventional mattress without handles and for this reason it meets all the aesthetic needs that limit the possibilities of this type of product, while still ensuring a considerable increase in convenience of transport.

[0054] Conveniently the machine for the production of the mattress 1 makes it possible to industrially produce the mattress 1 in a simple and intuitive manner.

[0055] Positively the mattress 1 and the machine 2 for its production are low-cost, relatively easily and practically implemented and safe in application.

[0056] The invention, thus conceived, is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims. Moreover, all the details may be substituted by other, technically equivalent elements.

[0057] In the embodiments illustrated, individual characteristics shown in relation to specific examples may in reality be interchanged with other, different characteristics, existing in other embodiments.

[0058] In practice, the materials employed, as well as the dimensions, may be any according to requirements and to the state of the art.

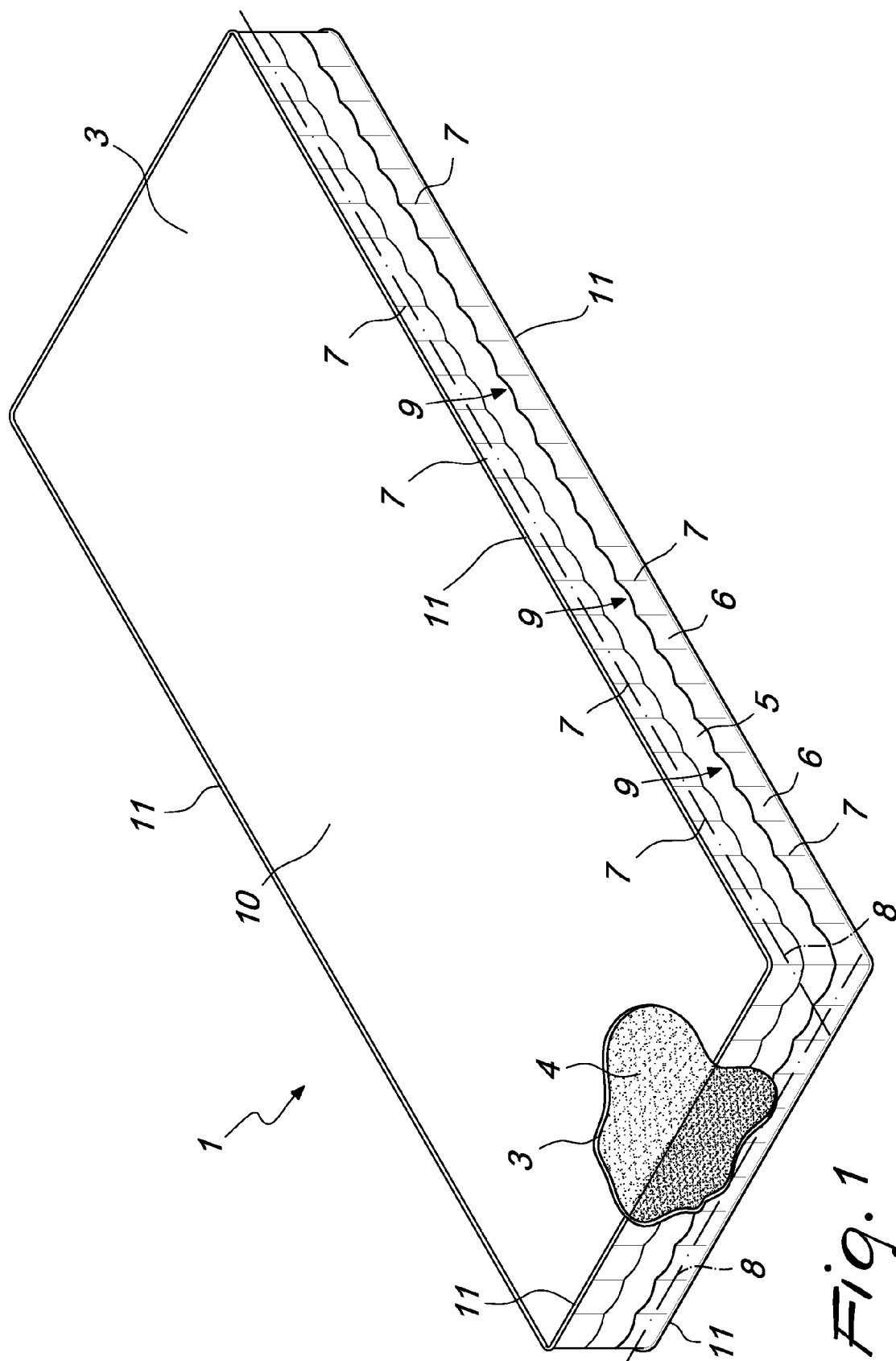
[0059] The disclosures in Italian Patent Application No. BO2011A000276 from which this application claims priority are incorporated herein by reference.

[0060] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of exam-

ple by such reference signs.

Claims

1. A mattress of the type comprising an outer case (3) made of a material substantially of the textile type for an internal block (4) made of deformable material, **characterized in that** it comprises, along at least one portion of the perimetric lateral band (5) of said case (3), at least one ribbon (6), which is stably associated with said respective portion along connecting lines (7) which are not parallel to the longitudinal axis (8) of said ribbon (6), between said ribbon (6), said portion of the perimetric lateral band (5) of said case (3) and said connecting lines (7) at least one seat (9) being defined which is adapted to accommodate respective gripping means, including the fingers of an operator, during the transport of said mattress (1). 5
2. The mattress according to claim 1, **characterized in that** said ribbons (6) are two in number, arranged substantially along the edges of said perimetric lateral band (5), substantially proximate to the edges of the case (3) at which there is the connection between said perimetric lateral band (5) and one of the two larger faces (10) of said mattress (1). 10
3. The mattress according to claim 1, **characterized in that** the connecting lines (7) that are not parallel to the longitudinal axis (8) of said ribbon (6) delimit said seat (9) laterally. 15
4. The mattress according to claim 3, **characterized in that** said ribbon (6) is stably coupled to said perimetric lateral band (5) of said case (3) by means of a further auxiliary connecting line (11), the orientation and direction of which are substantially parallel to the longitudinal axis (8) of said ribbon (6), between said ribbon (6), said portion of the perimetric lateral band (5) of said case (3), said connecting lines (7) which are not parallel to the longitudinal axis (8) of said ribbon (6) and said auxiliary connecting line (11) said at least one seat (9) being defined with a shape of the type of a pocket which has a single opening adapted for the insertion and accommodation of respective grip means during the transport of said mattress (1). 20
5. The mattress according to the preceding claims, **characterized in that** the pocket-shaped seats (9) of the two ribbons (6) that face each other and are stably associated with said perimetric lateral band (5) of said outer case (3) are mutually aligned and arranged so that the respective openings and inner cavities face each other. 25
6. The mattress according to claim 1, **characterized in that** said connecting lines (7) that are not parallel to the longitudinal axis (8) of said ribbon (6) and said additional auxiliary connecting line (11) are lines of stitches, said lines of stitches having a pattern selected from linear, curvilinear, mixed, zigzag and according to a particular decorative design. 30
7. A machine for providing a mattress, of the type comprising a fixed frame (12) designed to support a sliding surface (13) for portions of laminar material to be sewn together, **characterized in that** it comprises at least two sewing heads (14) which are integral with a respective support (15), arranged substantially in a cantilever manner on said sliding surface (13) and integral with said fixed frame (12), the active tab (16), provided with at least one element of the type of a needle, of each head (14) being translationally moveable on command along at least one predefined direction with respect to said sliding surface (13). 35
8. The machine according to claim 7, **characterized in that** said two heads (14) are identical, are arranged parallel to each other and are mounted on respective supports (15) of different lengths, which are connected to the same side of the frame (12) with respect to said sliding surface (13), for the substantial transverse alignment of the respective active tabs (16) with a portion of said sliding surface (13) that is proximate to its lateral edges, with a longitudinal offset equal to the center distance between the two heads (14). 40
9. The machine according to claim 7, **characterized in that** said heads (14) are identical, are arranged along incident directions and are mounted on respective supports (15) which are connected to opposite sides of the frame (12) with respect to said sliding surface (13), for the substantial alignment of the respective active tabs (16) with a portion of said sliding surface (13) that is proximate to the lateral edges thereof. 45
10. The machine according to claim 7, **characterized in that** said two heads (14) are symmetrical with respect to a longitudinal plane, are mutually aligned with respect to said longitudinal plane and are mounted on respective supports (15), which are associated with opposite sides of the frame (12) with respect to said sliding surface (13), for the substantial alignment of the respective active tabs (16) with a portion of said sliding surface (13) that is proximate to the lateral edges thereof. 50



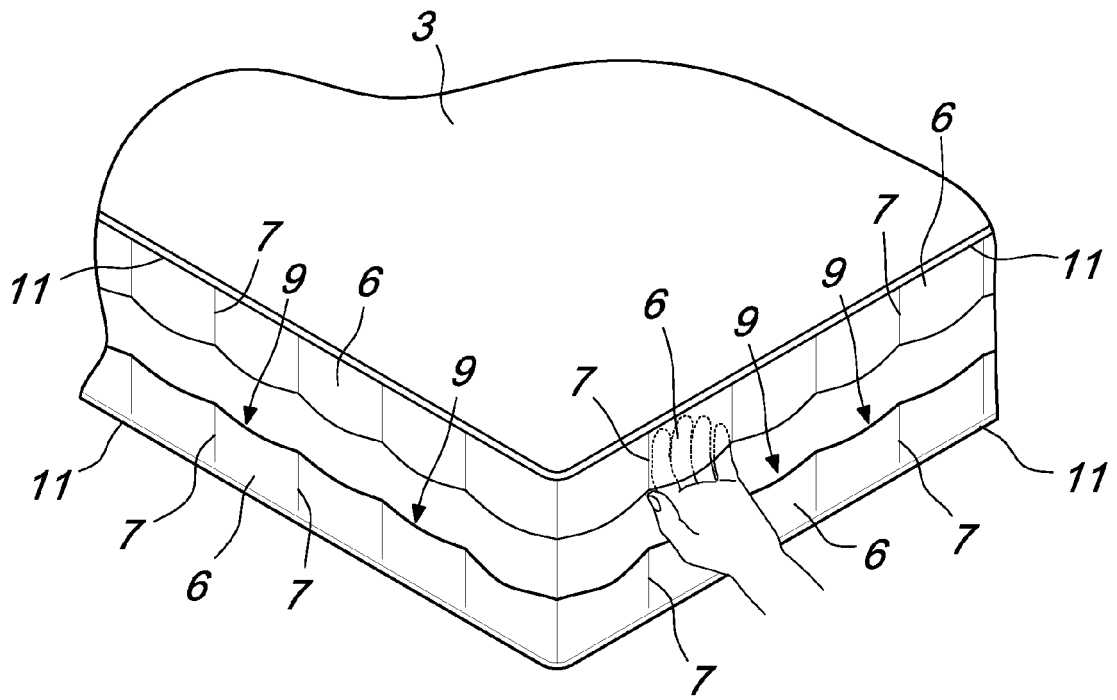


Fig. 1A

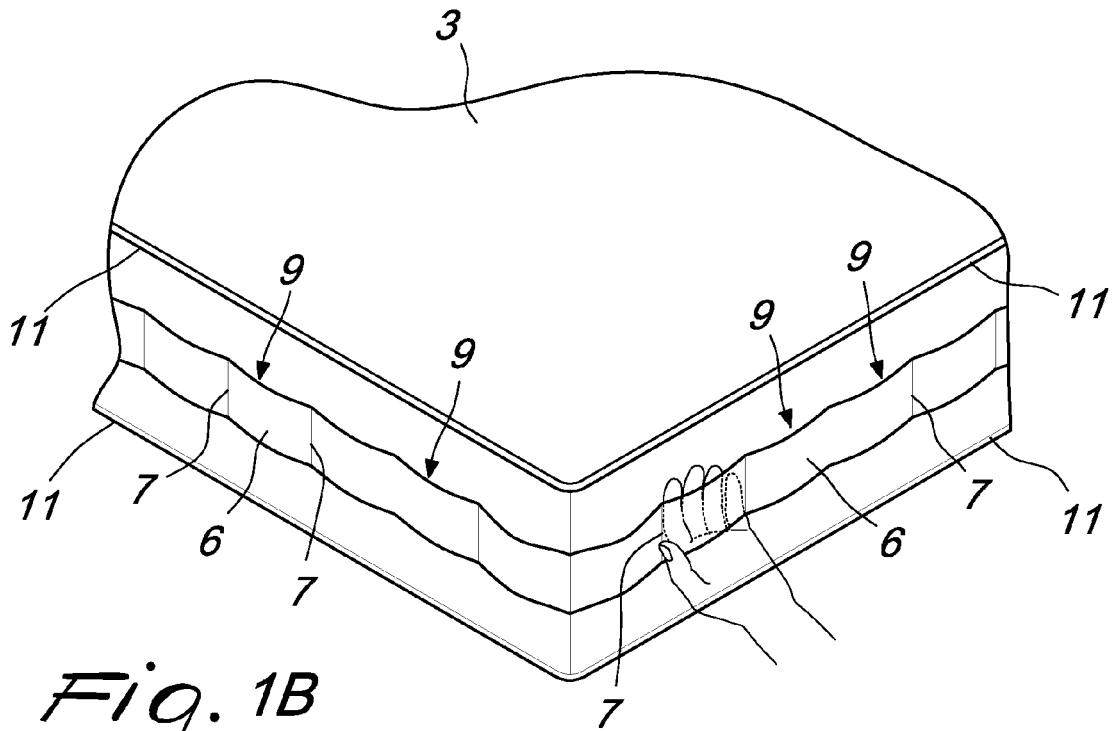
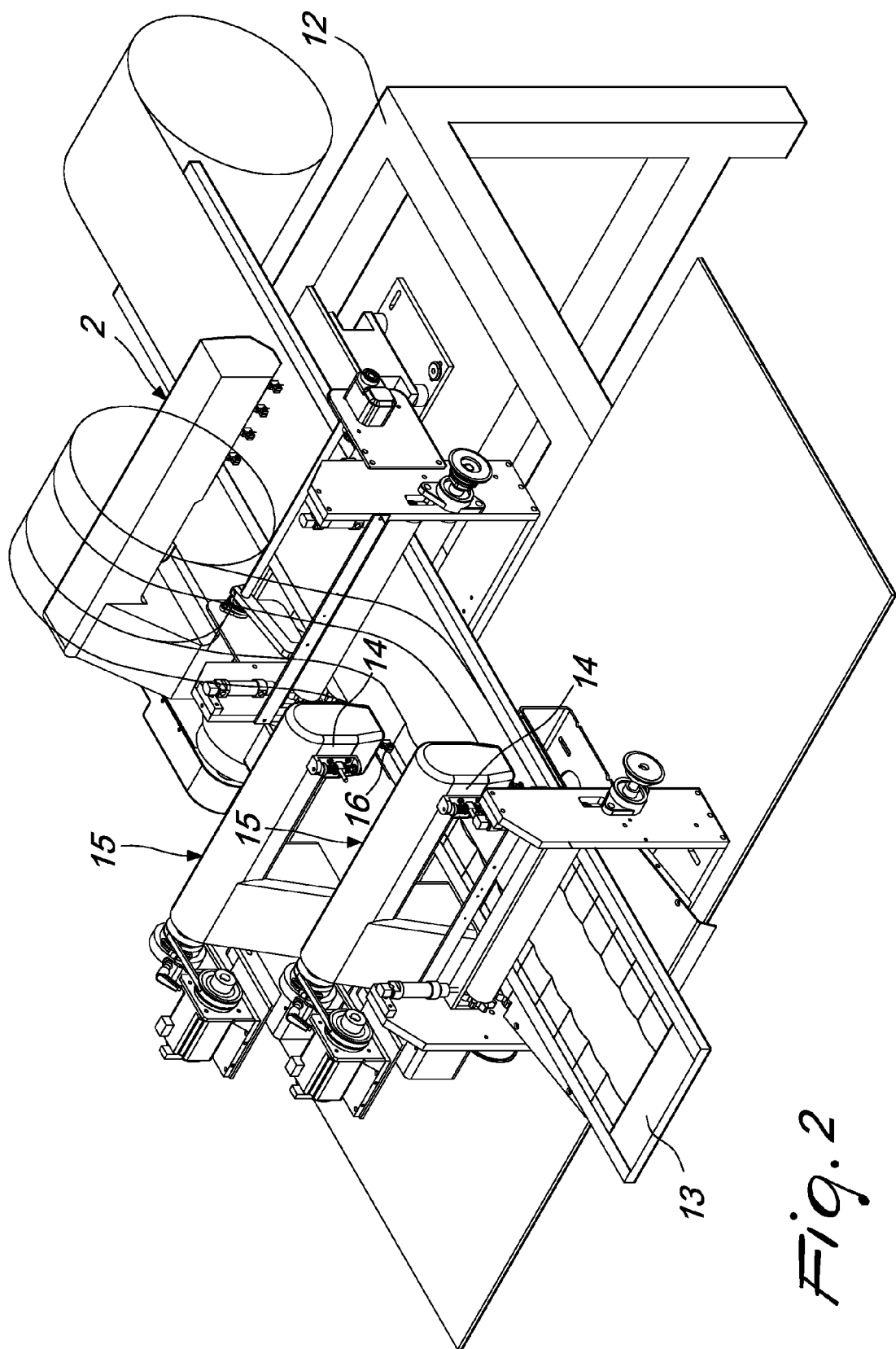
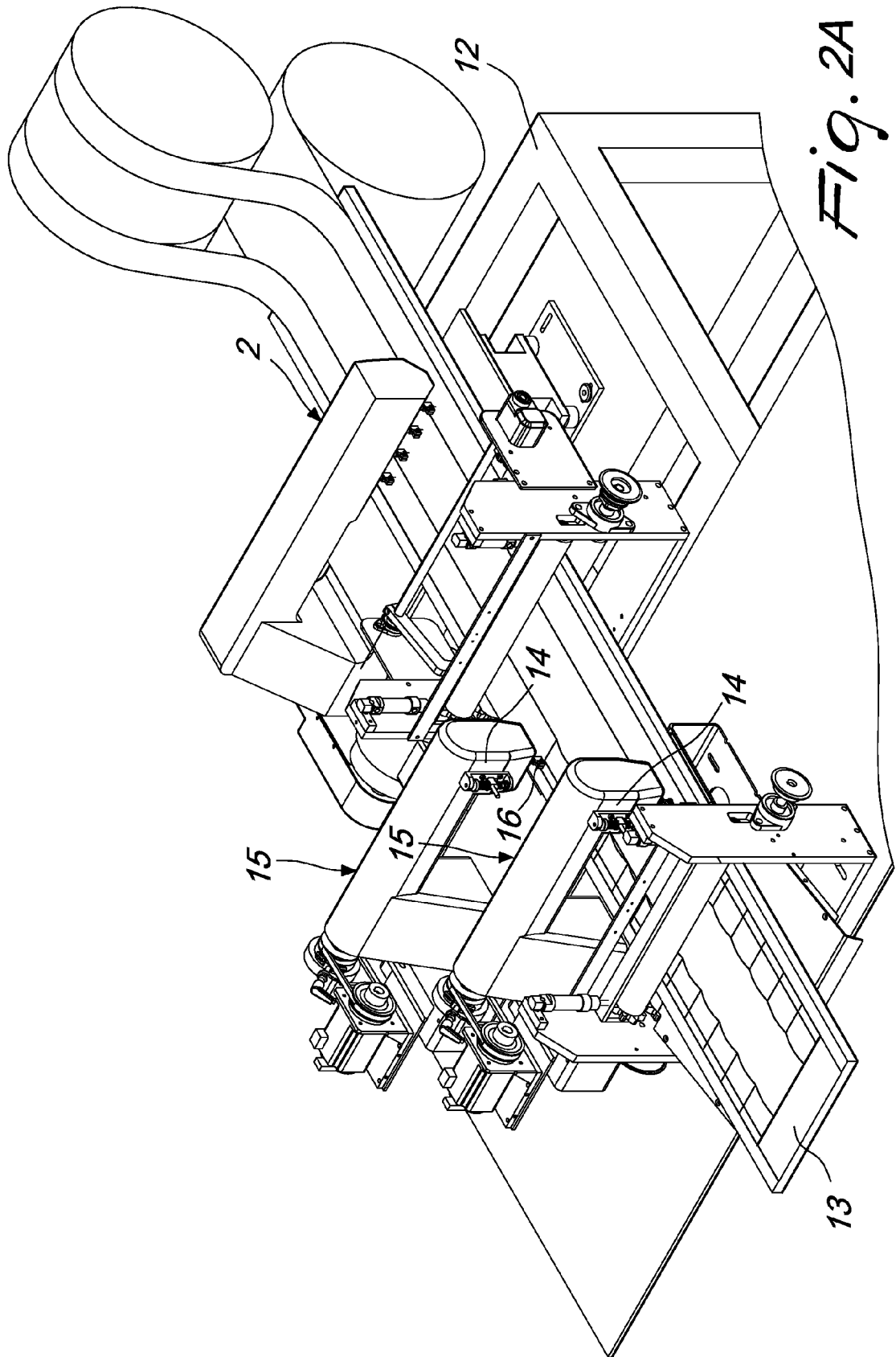
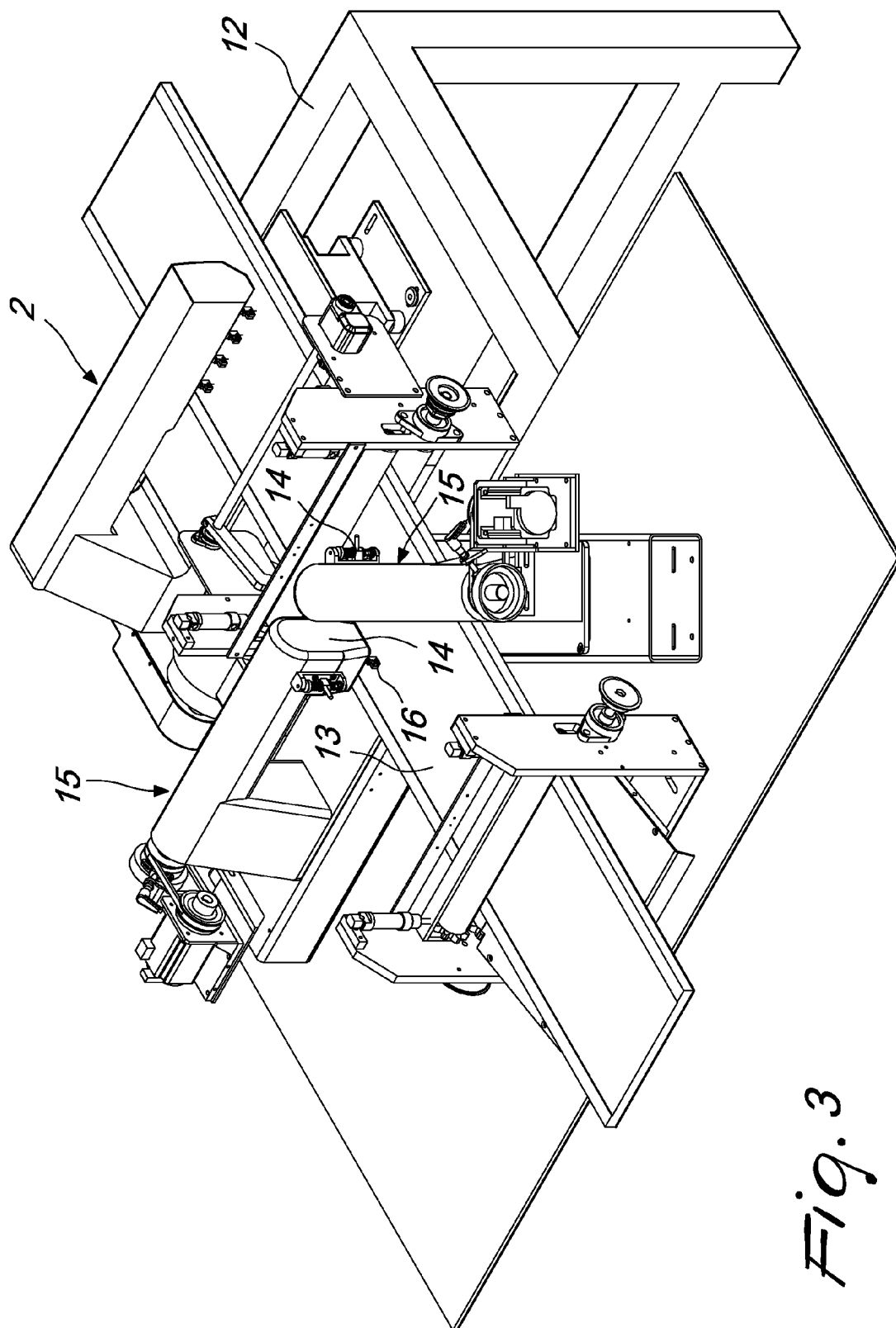


Fig. 1B







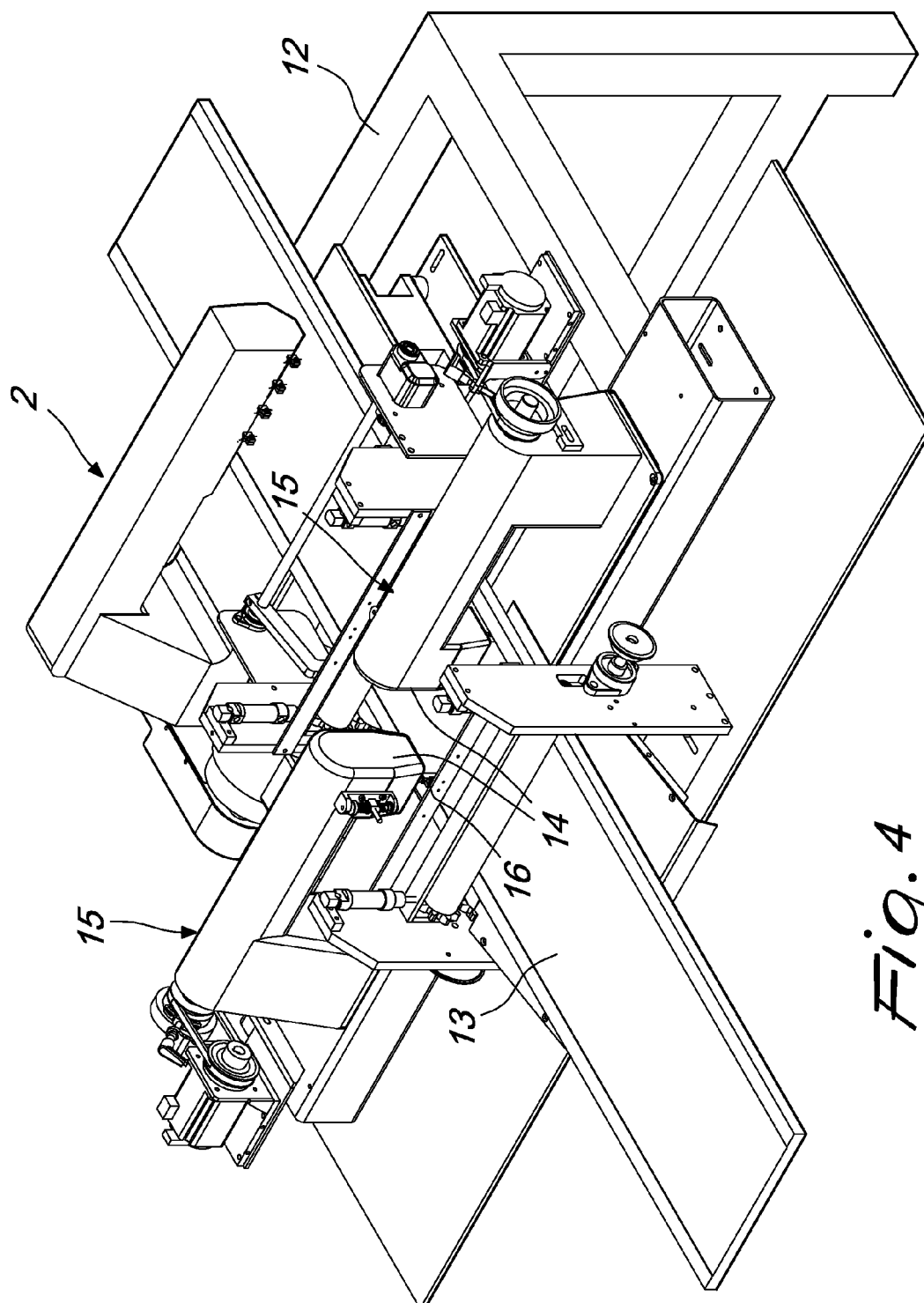


Fig. 4

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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