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(54) **BASE FOR SEWING MACHINES AND SEWING MACHINE COMPRISING SAID BASE**
BASIS FÜR NÄHMASCHINEN UND NÄHMASCHINE BESTEHEND AUS DER BASIS
SOCLE POUR MACHINES À COUDRE ET MACHINE À COUDRE COMPRENANT LEDIT SOCLE

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Description

[0001] The present invention refers in general to a base for sewing machines and to a sewing machine comprising said base.

[0002] More in particular, the present invention refers to a particularly shaped base, which is adapted to ensure a greater flexibility of use, and to a sewing machine, preferably of the industrial type, comprising said base.

[0003] As is known, the sewing machines operating a mechanical sewing, at industrial level, of two or more pieces of fabric, are usually formed by a lower base on which the pieces of fabric to be sewn are arranged, an upright that protrudes vertically from the base and that contains the handling devices moving the needle bar and the thread tightener. Besides, the upright serves to support an arm arranged above the base. The free end of the arm ends with a head that supports the needle bar, the presser foot and other devices that determine the thread tension of an upper sewing thread. In the base, precisely below the plane of the base, other devices, such as the looper and the spools, are provided which serve to the formation of the stitch by means of a second lower thread.

[0004] According to the known art, as represented in Figures 1 and 2, a base 100 of a sewing machine usually comprises an upper plate 102 of flat shape on which the pieces of fabric to be sewn are placed, the sewing being done by devices that are arranged on the upper part and the lower part and cooperate with one another, the upper devices being represented schematically and denoted by reference number 104.

[0005] In particular, the case illustrated by way of an example refers to the sewing on a pocket T that has been already fixed to a trouser leg P, for example to sew a label on the pocket or to perform other operations on the same pocket.

[0006] Usually, for the realization of a pair of trousers, the seams to be made on a pocket are made before the same pocket is fixed to the trouser leg so that it is possible to work the piece of fabric corresponding to the pocket freely and without constraints.

[0007] However, in the case the trousers have to be washed and have to undergo voluntary wear treatments according to the trend of fashion, it is preferable that the label or other desired seams are not worn.

[0008] Accordingly, the above operations have to be performed only after the voluntary wear treatments, when the pocket has been already joined to the trouser leg.

[0009] According to the known art, as shown in Figures 1 and 2, in order to make the seam, the base 100 is inserted in the space included between the trouser leg P and the fabric corresponding to the pocket T which comes into abutment on the plate 102.

[0010] However, this arrangement determines a rather uncomfortable sewing on the fabric of the pocket since the side seams C1, C2 of the pocket on the trouser leg P substantially constitute a limit to the handling of the

same pocket T with respect to the sewing devices 104 or make difficult a complete displacement of each portion of the pocket fabric in correspondence with the sewing devices 104.

[0011] Naturally, these limits are due to the ratio between the size of the pocket T and the size of the plate 102. In the case illustrated, the pocket T can be freely moved on the plate 102 for a portion of fabric equal to the side portion near the left seam C1 and indicated by T1 in Figure 1, or equal to the side portion near the right seam C2 and indicated by T2 in Figure 2.

[0012] There may be completely analogous problems in the realization of the sewing processing on a trouser or sleeve already sewn and, therefore, already closed. The word "closed" means that if the garment portion to be further sewn would be ideally sectioned transversely, the same portion would have a closed continuous edge in correspondence of the section.

[0013] In these cases, the sewing to be performed is rather uncomfortable since the trouser or sleeve have to be rotated around the base so that the width of the plate forces the operator to perform difficult movements of the fabric.

[0014] Sewing machines comprising movable plates on their base are disclosed by the patent documents JP S53 68361 U, US 3 946 682 A and FR 2 651 515 A1.

[0015] An aim and function of the invention is to remove the above drawbacks and still others, through the realization of a base for sewing machines which enables to move fabric pieces already sewn and therefore closed, such as pockets, trousers, sleeves, in order to perform seams on a portion of fabric that is as large as possible.

[0016] Another aim of the invention is to obtain a base for sewing machines, and also sewing machines equipped with said base, which enables to perform comfortable seams also on closed portions of garments, such as pockets, trousers, sleeves and others.

[0017] Another aim of the invention is to provide a base for sewing machines which is flexible in its use and ensures comfortable sewing operations for closed portions of garments, as specified previously, and at the same time, in case of necessity, ensures to have also an extended surface on which the material to be sewn is placed.

[0018] These and other objects are achieved according to the invention through a base for sewing machines comprising a support structure capable of supporting the fabric to be sewn and comprising a polygon-shaped main plate on which the fabric is placed.

[0019] The base comprises a first wing adjacent to the main plate and pivoted in a first side of the main plate, and first moving means of the first wing so that the first wing is rotatable about an axis which is coplanar to the main plate.

[0020] In this way, the first wing may be disposed in a first position which is coplanar to the main plate providing continuity of support to the main plate, or in a second position which is orthogonal to the main plate.

[0021] In particular, the base is characterized by the fact that, in order to make even easier the sewing of a "closed" fabric, it comprises a second wing which is adjacent to the main plate and is pivoted in a second side of the main plate.

[0022] Through a so-shaped base, it is possible to increase or decrease, according to the requirements, the bearing surface of the fabric to sew. This aspect is particularly useful in the case it is necessary to sew a closed garment portion such as a pocket, a trouser, a sleeve.

[0023] Advantageously, the first moving means may comprise a first toothed wheel fixed rigidly to the first wing and engaged by a toothed element adapted to be put in motion so that a motion of the toothed element involves a rotation of the first wing.

[0024] In this way, through a simple movement of a gear, it is possible to change the position of the first wing according to the requirements.

[0025] Advantageously, the toothed element may comprise a first rack connected to a first actuator capable to translate the first rack so as to rotate the first toothed wheel and the first wing.

[0026] Through this configuration, with a simple actuation of an actuator, it is possible to rotate the first wing.

[0027] In this way, through the presence of two wings it is possible to have a bearing surface of variable extension according to the requirements, in which the maximum extension and the minimum extension have a significant difference.

[0028] Besides, the main plate may have a plan of rectangular shape and the first side to which the first wing is adjacent may be opposite to the second side to which the second wing is adjacent. In this way, it is possible to obtain a bearing surface of minimum extension that is narrow enough to enable a comfortable sewing on closed "fabrics" such as pockets already sewn to the garment, trousers or sleeves.

[0029] Advantageously, second moving means of the second wing may be comprised so that the second wing may be rotated about an axis which is coplanar to the main plate so that the second wing may be disposed in a first position which is coplanar to the main plate providing continuity of support to the main plate, or in a second position which is orthogonal to the main plate.

[0030] Besides, the first moving means and the second moving means may be independent of one another so as to position the first wing and the second wing in any position regardless of the position of a wing compared to that of the other wing.

[0031] Advantageously, the first wing and/or the second wing may have an extension in length equal to that of the main plate so that when one wing or both wings are coplanar to the same main plate, a uniform bearing surface is formed.

[0032] The objects and advantages of the invention are also achieved by a sewing machine, characterized by the fact of comprising a base such as previously defined.

[0033] Further features and details of the invention will be better understood from the following specification which is provided by way of a non-limiting example as well as from the annexed tables of drawing, wherein:

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Figure 1 is a schematic side view in section of a base according to the prior art of a sewing machine, in action on fabrics in a first sewing phase;

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Figure 2 is a schematic side view in section of a base according to the prior art of a sewing machine, in action on fabrics in a second sewing phase;

Figure 3 is an axonometric top view of a base, subject of the invention, for sewing machines;

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Figure 4 is an axonometric top view of the terminal portion of the base in Figure 3;

Figure 5 is an axonometric top view of the terminal portion in Figure 4 in operation according to a first configuration;

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Figure 6 is a schematic side view in section of the terminal portion in Figure 5 in machining on a fabric;

Figure 7 is an axonometric top view of the terminal portion in Figure 4 in operation according to a second configuration;

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Figure 8 is a schematic side view in section of the terminal portion of Figure 7 in machining on the same fabric in Figure 6.

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[0034] With reference to the annexed drawings, in particular Figure 3, number 10 denotes a base for sewing machines, comprising a main structure 12 and a support structure 14. The main structure 12 includes some devices for the operation of the sewing machine while the support structure 14 acts as a support for the fabric to be sewn in correspondence of the one or more needles.

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[0035] The support structure 14 includes a main plate 16 below which known devices for the sewing are arranged and covered by a casing 18, such as one or more crochets and means for cutting the thread, actuated by a shaft 20 and a system of levers 22, respectively. Both the shaft 20 and the system of levers 22 are included in the main structure 12.

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[0036] A first wing 24 and a second wing 26 are coupled with the main plate 16 which has a substantially rectangular shape. The first wing 24 is pivoted in correspondence of a first long side of the main plate 16 while the second wing 26 is specularly pivoted in correspondence of a second long side, opposite to the first long side, of the main plate 16.

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[0037] The first wing 24 comprises a first pivot, not visible in the figures, constrained in a rotatable manner to a bar 28, fixed to the free end of the main plate 16, in correspondence of one of its short sides. Likewise, the second wing 26 includes a first pivot, also not visible in the figures, constrained in a rotatable manner to the bar 28.

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[0038] A first partially toothed wheel 30 is fixed rigidly to the first wing 24, on the opposite side with respect to the first pivot. A second pivot, not visible in the figures,

protrudes axially from the first partially toothed wheel 30 and is engaged in a first projecting portion 32 of the main plate 16.

[0039] Likewise, a second partially toothed wheel 34 is fixed rigidly to the second wing 26, on the opposite side with respect to the first pivot. A second pivot, not visible in the figures, protrudes axially from the second partially toothed wheel 34 and is engaged in a second projecting portion 36 of the main plate 16.

[0040] The first projecting portion 32 and the second projecting portion 36 are disposed on the short side of the main plate 16, opposite to the short side to which the bar 28 is fixed, and protrude from the main plate 16, on the long sides opposite to each other, of the same main plate 16, respectively.

[0041] The teeth of the first partially toothed wheel 30 engage a first rack 38, moved by a first pneumatic or hydraulic actuator 40.

[0042] Likewise, the teeth of the second partially toothed wheel 34 engage a second rack 42, moved by a second pneumatic or hydraulic actuator 44.

[0043] Naturally, the movement of the first rack 38 and second rack 42 may be accomplished also by means of other devices, such as electric motors.

[0044] The particular conformation of the support structure 14 allows to obtain a variable bearing surface for the fabric. Indeed, the bearing surface can vary its extension through the presence or absence of the first wing 24 and/or second wing 26 which are positioned on the same plane of the main plate 16.

[0045] As it appears from Figures 3 and 4, when the first wheel 30 and the second wheel 34 are at and end of the first rack 38 and second rack 42, respectively, the first wing 24 and the second wing 26 are coplanar to the main plate 16 so as to form an extended bearing surface.

[0046] In the case the bearing surface of the support structure 14 has to be reduced for a better handling of the fabric placed on it, the operator can rotate the first wing 24 or the second wing 26 or both wings 24, 26.

[0047] For example, as illustrated in Figures 5, 6, while the first wing 24 remains in its horizontal position, the second rack 42 is advanced so as to rotate the second wheel 34 and the second wing 26, fixed to it, in order to bring the second wing 26 in its vertical position with respect to the main plate 16.

[0048] Through this configuration, as it appears from Figure 6, in the case it is necessary to make a seam on a pocket T that has been already fixed to a trouser leg P, the fabric of the pocket T can be easily moved to the left on the main plate 16 according to the arrow S because the seam C2, which is positioned more to the right, can be comfortably approached to the main plate 16.

[0049] Likewise, it is possible to accomplish a more comfortable wide displacement of the pocket T to the right in comparison with the prior art.

[0050] As shown in the Figures 7 and 8, while the second wing 26 is arranged in its horizontal position, the first rack 38 is advanced so as to rotate the first wheel 30 and

the first wing 24 fixed to it so as to bring the first wing 24 in its vertical position with respect to the main plate 16.

[0051] Through this configuration, as shown in Figure 8, the fabric of the pocket T can be easily moved to the right on the main plate 16 according to the arrow D because the seam C1, which is positioned more to the left, can be comfortably approached to the main plate 16.

[0052] If necessary, it is possible to accomplish the rotation and, consequently, the lowering of both wings 24, 26 by further reducing the bearing surface of the support structure 14.

[0053] By lowering the first wing 24 or the second wing 26 or both wings 24, 26 and reducing the bearing surface at the desired side, it is possible to increase the surface of sewable fabric in a more comfortable and easy way.

[0054] As a proof of the improvement achieved in comparison with the known art described above, - the surface of the fabric to be sewn being the same (in the illustrated case, the pocket T) -, the lateral portions T1 and T2 that protrude from the horizontal plate 102 have a smaller extension than the corresponding lateral portions T11 and T12 that protrude from the main plate 16 in a base according to the present invention.

[0055] A technician of the sector can provide changes or variants which are to be considered as included in the scope of protection of the present invention. For example, one or more wings may be disposed also in front of the main plate.

[0056] Besides, each lateral wing may be divided into more portions that may be rotated independently.

Claims

1. Base (10) for sewing machines comprising a support structure (14) capable of supporting the fabric to be sewn and comprising a polygon-shaped main plate (16) on which the fabric is placed, said base (10) comprising a first wing (24) adjacent to the main plate (16) and pivoted in a first side of the main plate (16), and first moving means (30, 38, 40) of the first wing (24) so that the first wing (24) is rotatable about an axis which is coplanar to the main plate (16), and the first wing (24) may be disposed in a first position which is coplanar to the main plate (16) providing continuity of support to the main plate (16), or in a second position which is orthogonal to the main plate (16); **characterized by the fact that** a second wing (26) is comprised and is adjacent to the main plate (16) and is pivoted in a second side of the main plate (16).
2. Base (10) according to claim 1, wherein the first moving means comprise a first toothed wheel (30) fixed rigidly to the first wing (24) and engaged by a toothed element (38) adapted to be put in motion so that a motion of the toothed element (38) involves a rotation of the first wing (24).

3. Base (10) according to claim 2, wherein the toothed element comprises a first rack (38) connected to a first actuator (40) capable to translate the first rack (38) so as to rotate the first toothed wheel (30) and the first wing (24).
4. Base (10) according to one of the preceding claims, wherein the main plate (16) is rectangular in shape and the first side to which the first wing (24) is adjacent is opposite to the second side to which the second wing (26) is adjacent.
5. Base (10) according to one of the preceding claims, wherein second moving means (34, 42, 44) of the second wing (26) are comprised so that the second wing (26) is rotatable about an axis which is coplanar to the main plate (16), and the second wing (26) may be disposed in a first position which is coplanar to the main plate (16) providing continuity of support to the main plate (16), or in a second position which is orthogonal to the main plate (16).
6. Base (10) according to the preceding claim, wherein the first moving means (30, 38, 40) and the second moving means (34, 42, 44) are independent among them.
7. Base (10) according to one of the preceding claims, wherein the first wing (24) and / or the second wing (26) have an extension in length equal to that of the main plate (16).
8. Sewing machine, **characterized by** the fact of comprising a base (10) according to one of the preceding claims.

Patentansprüche

1. Basis (10) für Nähmaschinen, umfassend eine Stützstruktur (14), die in der Lage ist, das zu nähende Gewebe zu stützen und eine polygonalförmige Hauptplatte (16) aufweist, auf der das Gewebe angeordnet ist, wobei die besagte Basis (10) einen ersten Flügel (24) aufweist, die angrenzend an die Hauptplatte (16) ist und auf einer ersten Seite der Hauptplatte (16) gedreht wird, und erste Verschiebungsmittel (30, 38, 40) des ersten Flügels (24) derart aufweist, dass der erste Flügel (24) um eine Achse drehen kann, die koplanar mit der Hauptplatte (24) ist, und der erste Flügel (24) entweder in einer ersten Position angeordnet werden kann, die koplanar mit der Hauptplatte (16) ist und eine Kontinuität der Unterstützung mit der Hauptplatte (16) bildet, oder in einer zweiten Position, die orthogonal zu der Hauptplatte (16) ist;
dadurch gekennzeichnet, dass
ein zweiter Flügel (26) ist vorgesehen und an die

Hauptplatte (16) angrenzend in einer zweiten Seite der Hauptplatte (16) gedreht wird.

2. Basis (10) nach Anspruch 1, wobei die ersten Verschiebungsmittel ein erstes Zahnrad (30) umfassen, das starr an dem ersten Flügel (24) befestigt und durch ein Zahnelement (38) gekoppelt ist, das derart angepasst wird, dass es in eine Bewegung gesetzt werden kann, derart, dass eine Bewegung des Zahnelements (38) eine Drehung des ersten Flügels (24) bewirkt.
3. Basis (10) nach Anspruch 2, wobei das Zahnelement eine erste Zahnstange (38) aufweist, die mit einem ersten Stellglied (40) verbunden ist, das in der Lage ist, die erste Zahnstange (38) derart zu bewegen, dass das erste Zahnrad (30) und der erste Flügel (24) gedreht werden.
4. Basis (10) nach einem der vorhergehenden Ansprüche, wobei die Hauptplatte (16) eine rechteckige Gestalt aufweist und die erste Seite, an die der erste Flügel (24) angrenzt, der zweiten Seite angrenzend ist, an die der zweite Flügel (26) angrenzt.
5. Basis (10) nach einem der vorhergehenden Ansprüche, wobei zweite Verschiebungsmittel (34, 42, 44) des zweiten Flügels (26) derart enthalten sind, dass sich der zweite Flügel (26) um eine Achse drehen kann, die koplanar mit der Hauptplatte (16) ist, und der zweite Flügel (26) entweder in einer ersten Position angeordnet werden kann, die koplanar mit der Hauptplatte (16) ist, indem sie eine Kontinuität der Abstützung in Bezug auf die Hauptplatte (16) bildet, oder in einer zweiten Position, die orthogonal zu der Hauptplatte (16) ist.

6. Basis (10) nach dem vorhergehenden Anspruch, wobei die ersten Verschiebungsmittel (30, 38, 40) und die zweiten Verschiebungsmittel (34, 42, 44) voneinander unabhängig sind.
7. Basis (10) nach einem der vorhergehenden Ansprüche, wobei der erste Flügel (24) und/oder der zweite Flügel (26) eine Erstreckung aufweisen, deren Länge gleich der Hauptplatte (16) ist.
8. Nähmaschine, **dadurch gekennzeichnet, dass** sie eine Basis (10) nach einem der vorhergehenden Ansprüche aufweist.

Revendications

1. Base (10) pour des machines à coudre comprenant une structure de support (14) capable de supporter le tissu à coudre et comprenant une plaque principale (16) de forme polygonale sur laquelle le tissu

est placé, ladite base (10) comprenant une première aile (24) adjacente à la plaque principale (16) et tournée sur un premier côté de la plaque principale (16), et des premiers moyen de déplacement (30, 38, 40) de la première aile (24), la première aile (24) pouvant tourner autour d'un axe coplanaire avec la plaque principale (16), et la première aile (24) pouvant être disposée dans une première position coplanaire avec la plaque principale (16), en réalisant une continuité de support avec la plaque principale (16), ou dans une deuxième position orthogonale à la plaque principale (16);

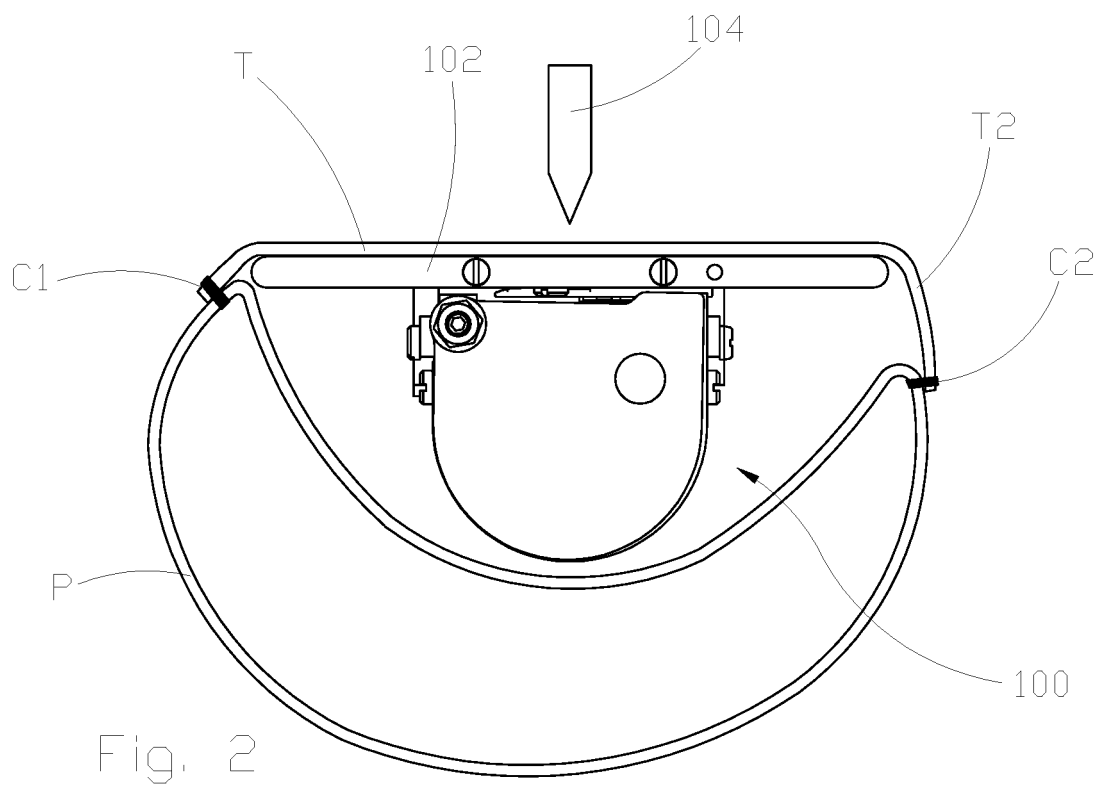
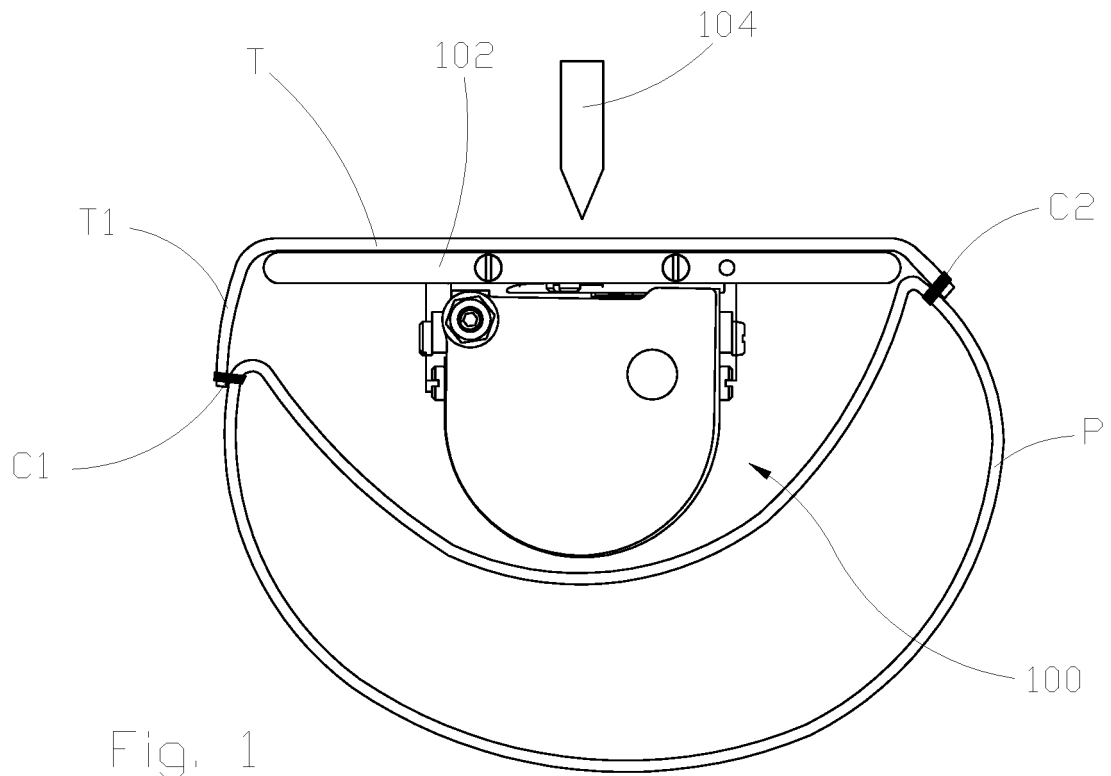
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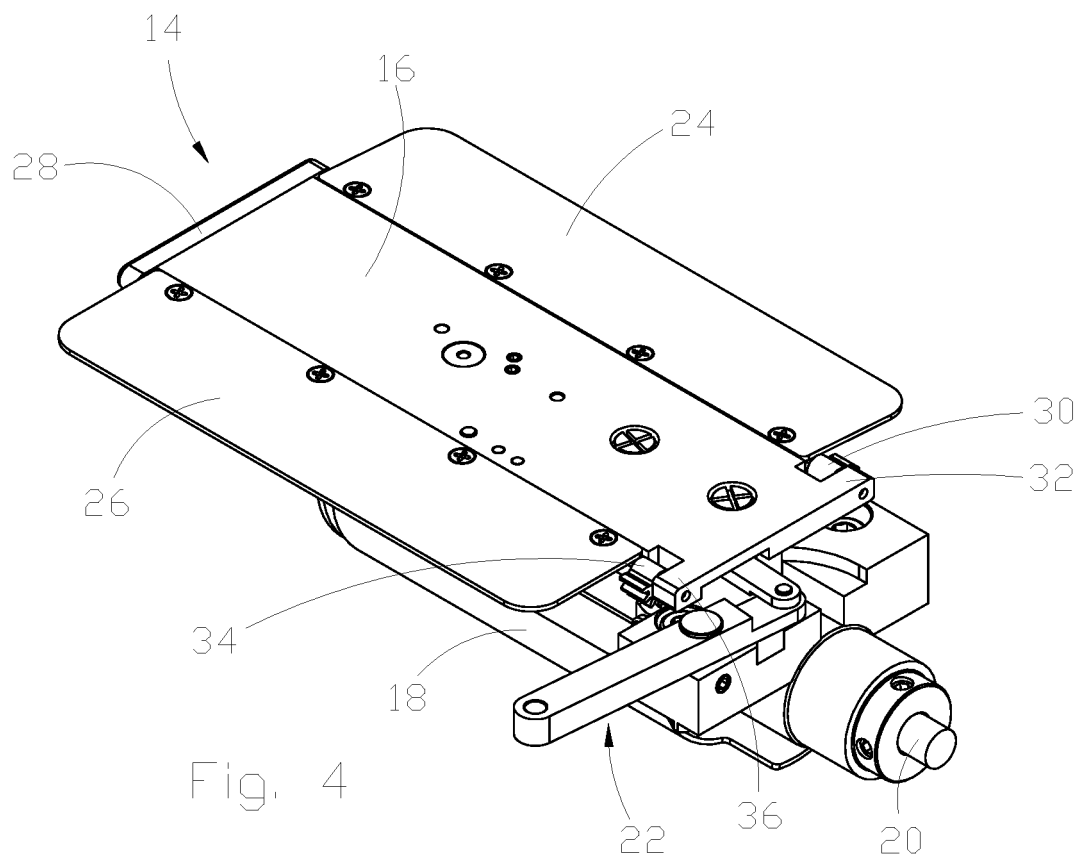
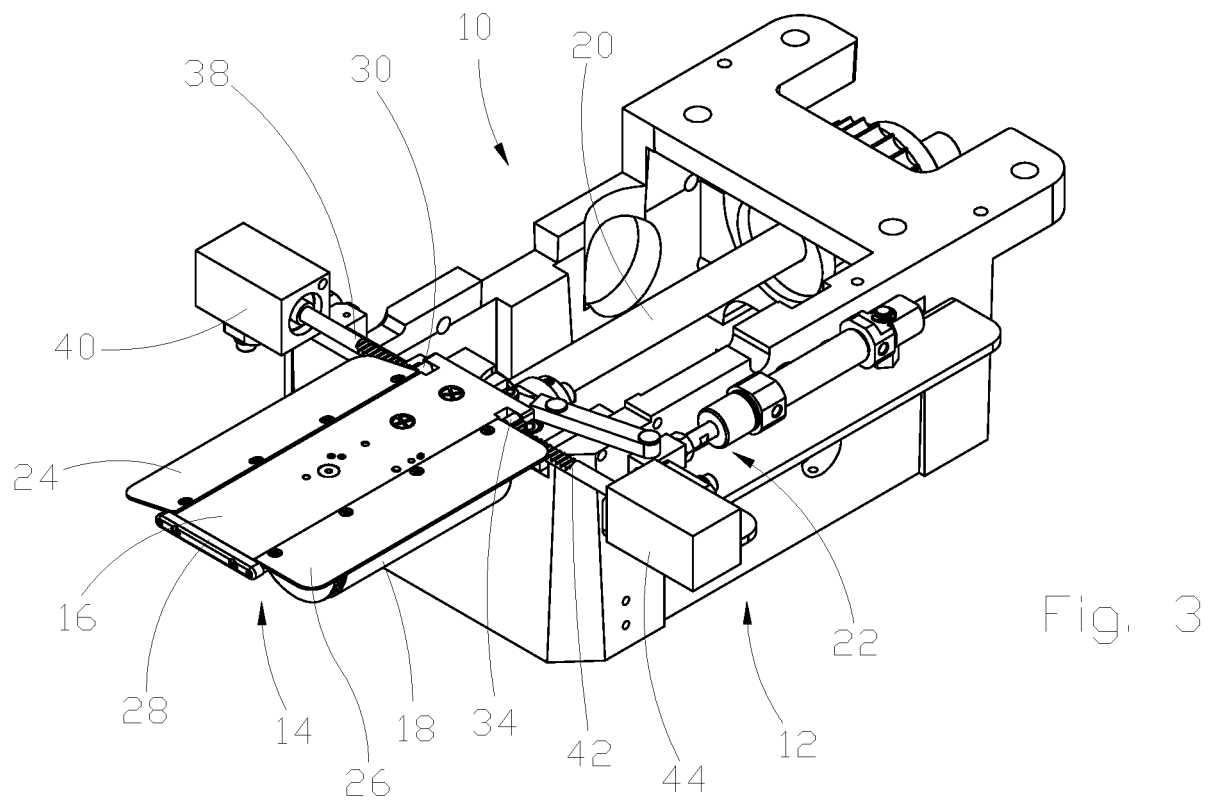
une deuxième aile (26) est incluse et est adjacente à la plaque principale (16) et est entraînée en rotation dans un second côté de la plaque principale (16).

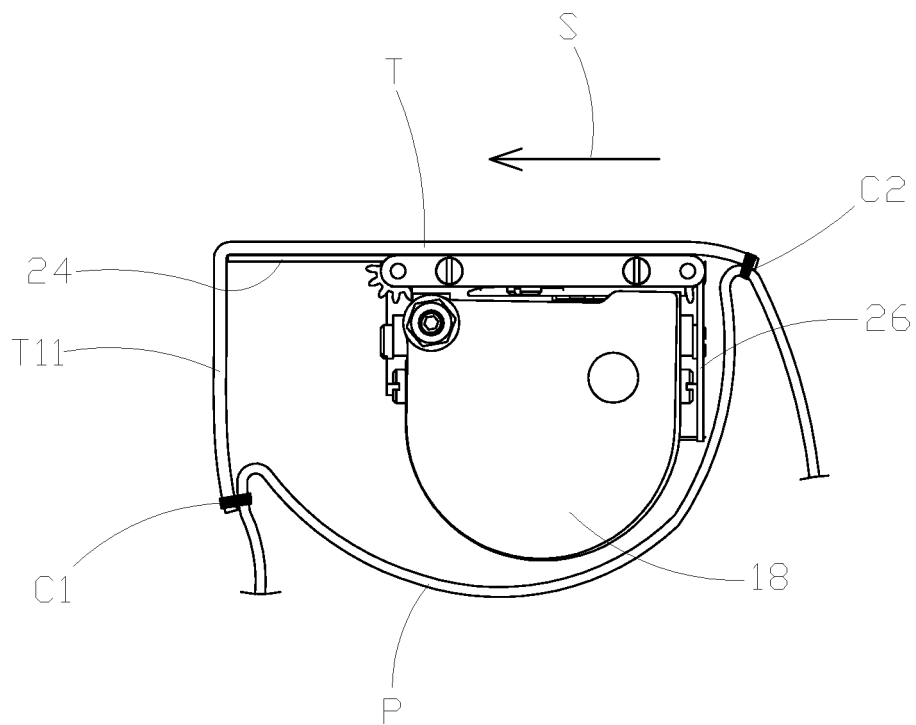
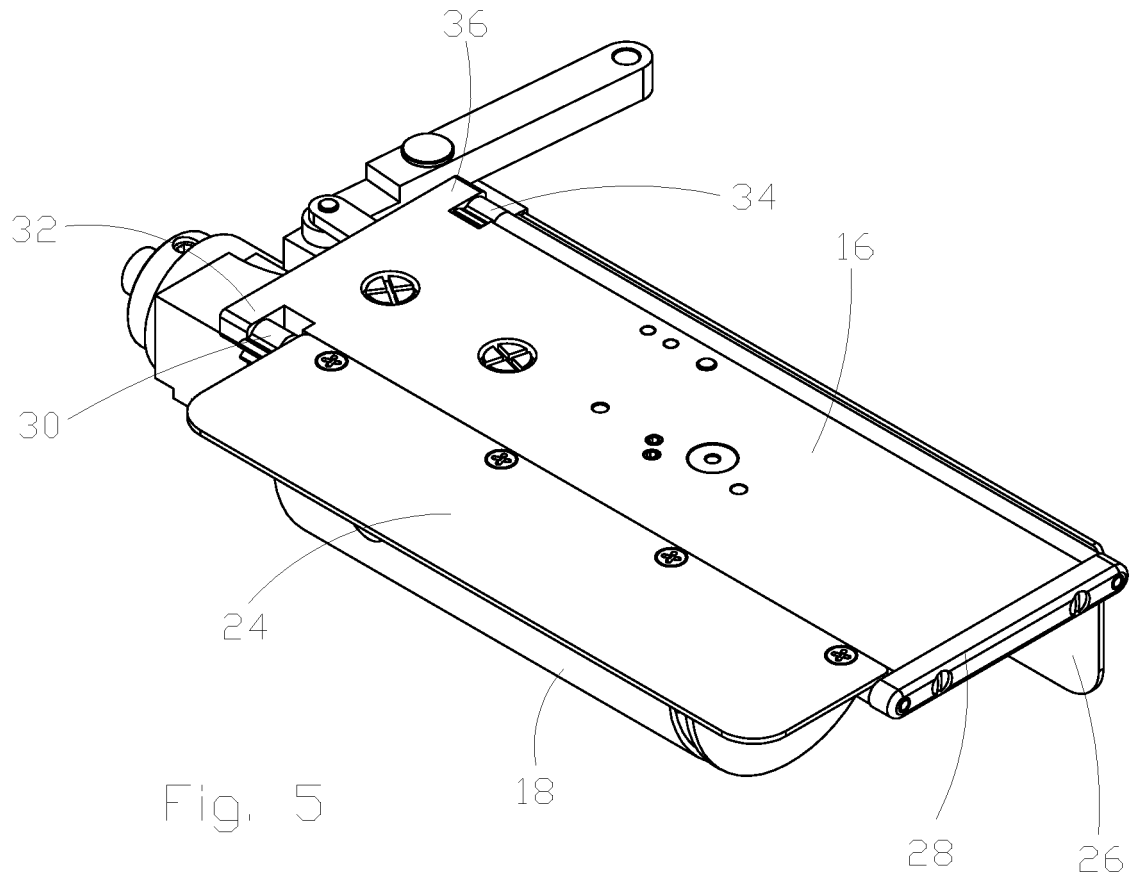
2. Base (10) selon la revendication 1, dans laquelle les premiers moyens de déplacement comprennent une première roue dentée (30) solidaire de la première aile (24) et accouplée par un élément denté (38) apte à être mis en mouvement, de sorte qu'un mouvement de l'élément denté (38) provoque une rotation du première aile (24) .
3. Base (10) selon la revendication 2, dans laquelle l'élément denté comprend une première crémaillère (38) reliée à un premier actuateur (40) apte à déplacer la première crémaillère (38) de manière à faire tourner la première roue dentée (30) et la première aile (24).
4. Base (10) selon l'une des revendications précédentes, dans laquelle la plaque principale (16) a une forme rectangulaire et le premier côté auquel la première aile (24) est adjacente est opposé au second côté auquel la deuxième aile (26) est adjacente.
5. Base (10) selon l'une des revendications précédentes, dans laquelle sont inclus des deuxièmes moyens de déplacement (34, 42, 44) de la deuxième aile (26), de sorte que la deuxième aile (26) peut tourner autour d'un axe coplanaire avec la plaque principale (16), et la deuxième aile (26) peut être disposée dans une première position qui est coplanaire avec la plaque principale (16) de manière à assurer une continuité de support par rapport à la plaque principale (16), ou dans une deuxième position orthogonale à la plaque principale (16).
6. Base (10) selon la revendication précédente, dans laquelle les premiers moyens de déplacement (30, 38, 40) et les deuxièmes moyens de déplacement (34, 42, 44) sont mutuellement indépendants.
7. Base (10) selon l'une des revendications précédentes, dans laquelle la première aile (24) et/ou la deuxième aile (26) ont une extension en longueur

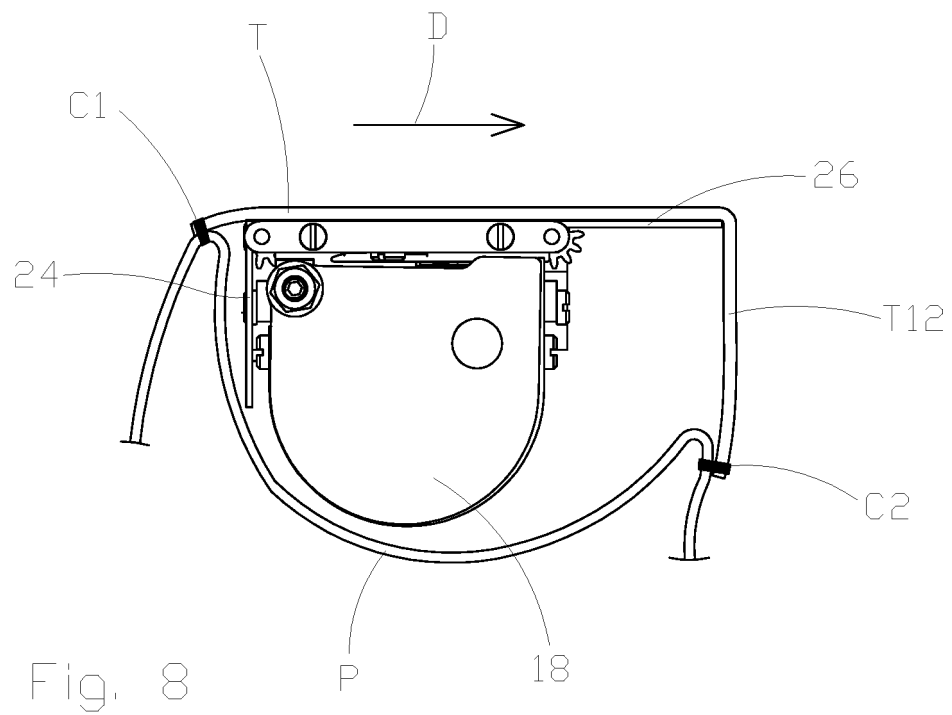
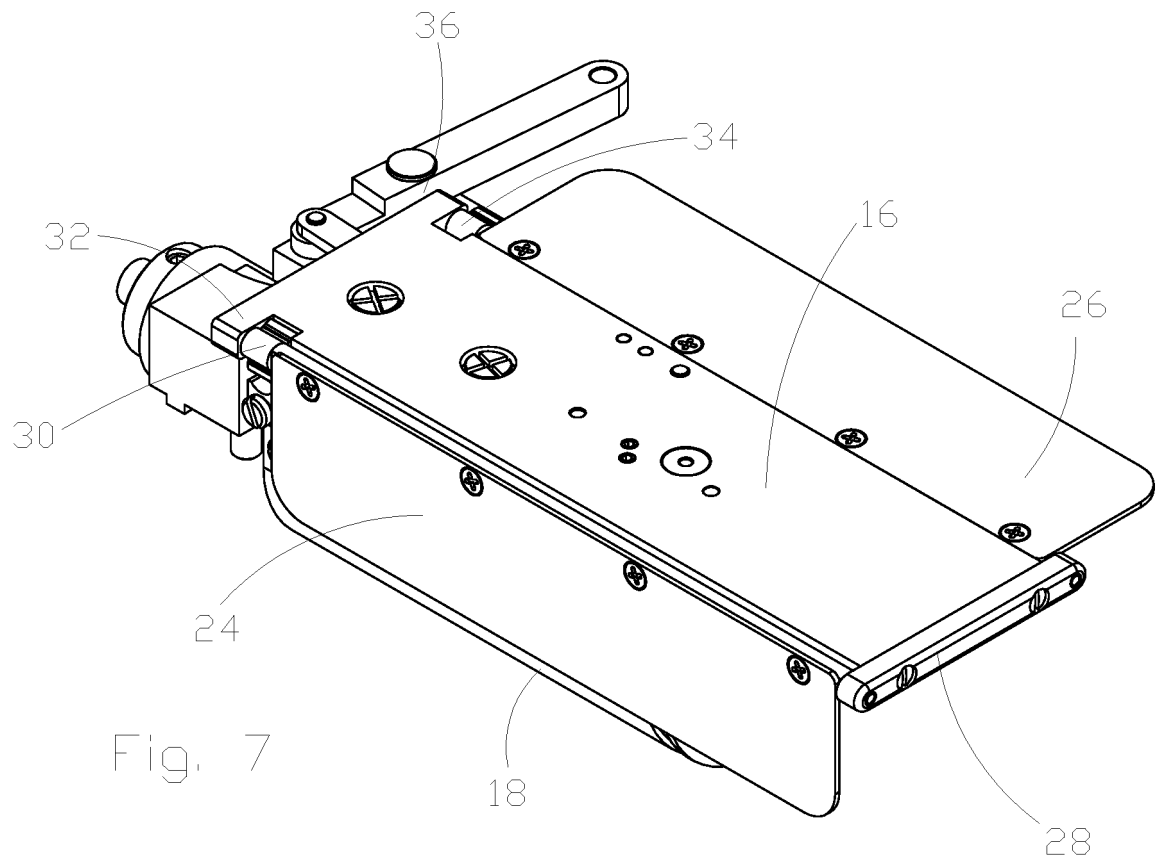
égale à celle de la plaque principale (16) .

8. Machine à coudre, **caractérisée en ce qu'elle** comprend une base (10) selon l'une des revendications précédentes.









REFERENCES CITED IN THE DESCRIPTION

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