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(54) **FLAT KNITTING MACHINE INCLUDING FIXED SINKERS**

FLACHSTRICKMASCHINE MIT FESTEN PLATINEN

MACHINE À TRICOTER RECTILIGNE COMPRENANT DES PLATINES FIXES

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(73) Proprietor: **SHIMA SEIKI MFG., LTD.**
Wakayama 641-0003 (JP)

(72) Inventors:
- **MIYAI, Takuya**
  Wakayama, 641-0003 (JP)
- **TOGUCHI, Hisatoshi**
  Wakayama, 641-0003 (JP)

(74) Representative: **Wagner, Karl H. et al**
Wagner & Geyer Partnerschaft mbB
Patent- und Rechtsanwälte
Gewürzmühlstrasse 5
80538 München (DE)

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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates to a flat knitting machine including fixed sinkers, and in particular, to measures for improving the accuracy of attaching the fixed sinkers.

2. Description of the Related Art

[0002] Fig. 3 illustrates an existing flat knitting machine 1 including a plurality of fixed sinkers 2 that are arranged side by side at a front end portion of a needle bed 11. Each of the fixed sinkers 2 includes a body 21 and a head 22. The body 21 includes a fitting portion 23 at a rear end thereof and a curved portion 24, which is curved in a height direction, at a middle part thereof in the longitudinal direction. The head 22 protrudes from a sinker-front-end support portion 25, which is located at a front end of the body 21, toward a needle-bed gap G (see Patent Literature 1). The needle bed 11 includes a needle-bed-front-end support portion 12 and a snap-fit recess 13 in the front end portion thereof. The needle-bed-front-end support portion 12 supports the sinker-front-end support portion 25 around an axis m of a wire 31, which extends in a direction in which the bodies 21 are arranged side by side, and allows the head 22 to swing in directions toward and away from a needle-bed gap center Ga. The snap-fit recess 13 allows the fitting portion 23 at the rear end of the body 21 to be snap fitted thereto by using a spring force generated when the curved portion 24 of the body 21 is bent in the height direction in a state in which the sinker-front-end support portion 25 is supported around the axis m of the wire 31. In this case, the height direction, in which the curved portion 24 at a middle part of the body 21 in the longitudinal direction is curved, coincides with a direction in which the fitting portion 23 is snap fitted to the snap-fit recess 13.

[0003] Patent Literature 1: Japanese Patent No. 4348286

[0004] The snap-fit recess 13 is formed in the lower surface of the front end portion of the needle bed 11. The snap-fit recess 13 allows the fitting portion 23 to be in contact with a bottom surface 131 and a front-end side surface 132 of the snap-fit recess 13 by using a spring force generated when the curved portion 24 of the body 21 is bent. In this case, even if the machining accuracies of the needle bed 11 and the fixed sinkers 2 are each within tolerance, the degree of contact between the fitting portion 23 and the front-end side surface 132 varies.

[0005] Depending on the degree of contact between the fitting portion 23 and the front-end side surface 132, the position of the head 22 may deviate from a reference position that has been determined in design. Higher accuracy is required for the position of the head 22 of the fixed sinker 2, because the position serves as a reference when attaching the front and rear needle beds 11.

SUMMARY OF THE INVENTION

[0006] Prior art document DE 195 05 099 A1 discloses a flat knitting machine comprising needle beds with fixed sinkers and, additionally, with moveable holding boards of at least one needle bed which are controllable via control feet which are controlled by cams.

[0007] The flat knitting machine according to prior art document DE 11 2005 003021 T5 comprises fixed sinkers.

[0008] An object of the present invention is to provide a flat knitting machine that includes fixed sinkers and that allows the position of a head of each of the fixed sinkers, which serves as a reference when attaching front and rear needle beds, to be located close to a reference position with high accuracy.

[0009] To achieve the object, a flat knitting machine according to the present invention is based on a flat knitting machine that includes fixed sinkers that are arranged side by side at a front end portion of a needle bed, each of the fixed sinkers including a body including a fitting portion at a rear end thereof and a curved portion at a middle part thereof in a longitudinal direction, and a head protruding from a front end of the body toward a needle-bed gap. A needle-bed-front-end support portion is formed in the front end portion of the needle bed. The needle-bed-front-end support portion supports a sinker-front-end support portion of each of the bodies around an axis of a wire, which extends in a direction in which the bodies are arranged side by side, and allows the head to swing around the axis of the wire in directions toward and away from a needle-bed gap center. A snap-fit recess is formed in a lower surface of the front end portion of the needle bed. The snap-fit recess allows the fitting portion at the rear end each of the bodies to be snap fitted to a bottom surface and a front-end side surface of the snap-fit recess by using a spring force generated when the curved portion of the body is bent in a state in which the sinker-front-end support portion is supported by the needle-bed-front-end support portion. The flat knitting machine according to the present invention is characterized in that a linear-member support portion is formed in the front end portion of the needle bed, and the linear-member support portion opens toward the bodies and supports a linear member that is inserted in the direction in which the bodies are arranged side by side; and a contact portion of each of the bodies, which is located between the curved portion and a front end of the body and which contacts the linear member when the linear member is inserted into the linear-member support portion, is pressed toward the needle-bed gap center to swing the head around the axis of the wire in the direction away from the needle-bed gap center.

[0010] Preferably, the linear-member support portion and the needle-bed-front-end support portion each open

toward the needle-bed gap in the front end portion of the needle bed, and support surfaces of the support portions are parallel to each other.

[0011] Preferably, the fitting portion includes an arc-shaped portion that makes point-contact with each of the bottom surface and the front-end side surface of the snap-fit recess.

[0012] Preferably, a part of the body between the curved portion and the fitting portion is tapered so that a thickness of the part in an up-down direction decreases from the curved portion toward the fitting portion.

[0013] By pressing the contact portion of the body, which contacts the linear member that is inserted into the linear-member support portion of the needle bed, toward the needle-bed gap center by using the linear member, the head swings in the direction away from the needle-bed gap center and the position of the head relative to a reference position is stabilized. Thus, the position of the head, which serves as a reference when attaching the front and rear needle beds, can be made close to the reference position with high accuracy.

[0014] In the case where the linear-member support portion and the needle-bed-front-end support portion each open toward the needle-bed gap in the front end portion of the needle bed and support surfaces of the support portions are parallel to each other, the linear-member support portion and needle-bed-front-end support portion can be machined along the support surfaces from the needle-bed gap side. Therefore, the machining accuracies of the linear-member support portion and the needle-bed-front-end support portion can be improved.

[0015] In the case where the fitting portion includes the arc-shaped portion that makes point-contact with each of the bottom surface and the front-end side surface of the snap-fit recess, the fitting portion can make contact with each of the bottom surface and the front-end side surface of the snap-fit recess with high accuracy.

[0016] In the case where a part of the body between the curved portion and the fitting portion is tapered so that a thickness of the part in the up-down direction decreases from the curved portion toward the fitting portion, a stress that acts on the curved portion is dispersed to the part between the curved portion and the fitting portion of the body. Therefore, stress concentration on the curved portion can be avoided.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017]

Fig. 1 is a side sectional view of a front end portion of one of needle beds of a flat knitting machine including fixed sinkers according to an embodiment of the present invention, in a state in which the direction of back-and-forth movement of knitting needles is substantially horizontal;

Fig. 2 is a side view illustrating a state before a fixed sinker shown in Fig. 1 is snap fitted to a snap-fit recess; and

Fig. 3 is a side sectional view of a front end portion of one of needle beds of a flat knitting machine including fixed sinkers according to the related art, in a state in which the direction of back-and-forth movement of knitting needles is substantially horizontal.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0018] Hereinafter, an embodiment of the present invention will be described with reference to the drawings.

[0019] Fig. 1 is a side sectional view of a front end portion of one of needle beds of a flat knitting machine including fixed sinkers according to an embodiment of the present invention, in a state in which the direction of back-and-forth movement of knitting needles is substantially horizontal. Fig. 2 is a side view illustrating a state before a fixed sinker is snap fitted to a snap-fit recess.

[0020] Referring to Figs. 1 and 2, a flat knitting machine 1 includes a pair of front and rear needle beds 11 (only one of which is shown in the figures), so that transfer of knitted loops between the front and rear needle beds 11 can be performed. At a front end portion of the needle bed 11, a plurality of fixed sinkers 2 (only one of which is shown in the figures) are arranged side by side. Each of the fixed sinkers 2 includes a body 21 and a head 22 protruding from a front end of the body 21. The body includes a curved portion 24, which is curved in a height direction, at a middle part thereof in the longitudinal direction. The body 21 of each of the fixed sinkers 2 includes a fitting portion 23, which has a substantially rectangular shape, at a rear end thereof. In this case, a needle-bed gap center Ga extends in the vertical direction through the midpoint between the front and rear needle beds 11.

[0021] A needle-bed-front-end support portion 12, which supports the front end of the body 21 of each of the fixed sinkers 2, is formed in the front end portion of the needle bed 11. The needle-bed-front-end support portion 12 is a cut that has a substantially L-shaped cross section and that opens upward and toward the needle-bed gap G. The needle-bed-front-end support portion 12 has a support surface 121, which extends toward the needle-bed gap G in a direction substantially parallel to a bottom surface of the needle bed 11 in the front end portion of the needle bed 11. At the front end of the body 21, a sinker-front-end support portion 25, whose cross-sectional shape opens toward the rear side (the left side in Figs. 1 and 2), is formed. A first wire 31, which has a circular cross section and which extends in a direction in which the bodies 21 of the fixed sinkers 2 are arranged side by side (direction perpendicular to the sheet of the figure), is inserted into the needle-bed-front-end support portion 12. The sinker-front-end support portion 25 is supported by the needle-bed-front-end support portion 12 around the axis m of the first wire 31 so that the head 22 can swing in directions toward and away from the needle-bed gap center Ga. In this case, the head 22 is

allowed to swing around the axis m of the first wire 31 in directions toward and away from the needle-bed gap center Ga in a state in which a second wire 32, which has a circular cross section and which extends in the direction in which the bodies 21 of the fixed sinkers 2 are arranged side by side, is inserted into the head 22.

[0022] A snap-fit recess 13 is formed in a lower surface of the front end portion of the needle bed 11. The fitting portion 23 of the body 21 is snap fitted to the snap-fit recess 13 in a state in which the sinker-front-end support portion 25 of the body 21 is supported by the needle-bed-front-end support portion 12 via the first wire 31. The snap-fit recess 13 has a bottom surface 131, a front-end side surface 132, and a rear-end side surface 133. The side surfaces 132 and 133 are respectively continuous with the front and the rear end of the bottom surface 131. The fitting portion 23 is snap fitted to the bottom surface 131 and the front-end side surface 132 of the snap-fit recess 13 by using a spring force that is generated when the curved portion 24 is bent in a state in which the sinker-front-end support portion 25 is supported by the needle-bed-front-end support portion 12 via the first wire 31. A third wire 33, which has a circular cross section and which extends in the direction in which the bodies 21 of the fixed sinkers 2 are arranged side by side, is inserted into a substantially central part of the fitting portion 23.

[0023] A linear-member support portion 14 is formed in a part of lower surface of the front end portion of the needle bed 11 located between the curved portion 24 and the sinker-front-end support portion 25 of the body 21. The linear-member support portion 14 supports a linear member 34, which has a circular cross section and which is inserted in the direction in which the bodies 21 are arranged side by side. The linear-member support portion 14 is a cut that has a substantially L-shaped cross section and that opens downward and toward the needle-bed gap G so as to open toward the body 21. In this case, the first to third wires 31 to 33 and the linear member 34 may be made of steel, a high-strength resin, or a fiber-reinforced composite material.

[0024] The linear-member support portion 14 has a support surface 141, which extends toward the needle-bed gap G in a direction substantially parallel to the bottom surface of the needle bed 11 in the front end portion of the needle bed 11. The support surface 141 and the support surface 121 of the needle-bed-front-end support portion 12 are parallel to each other. Thus, the needle-bed-front-end support portion 12 and the linear-member support portion 14 can be simultaneously or independently machined respectively along the support surfaces 121 and 141 from the needle-bed gap G side, so that the accuracy of machining the needle-bed-front-end support portion 12 and the linear-member support portion 14 can be improved.

[0025] A contact portion 27 is a part of the body 21 that is located between the curved portion 24 of the body 21 and the sinker-front-end support portion 25 and that contacts the linear member 34 when the linear member 34 is inserted into a corner of the linear-member support portion 14. The contact portion 27 is pressed toward the needle-bed gap center Ga (in a direction indicated by a solid-line arrow in Fig. 1) to suppress bending of the curved portion 24 and to swing the head 22 around the axis m of the first wire 31 in the direction away from the needle-bed gap center Ga (in a direction indicated by a solid-line arrow in Fig. 1). Thus, the position of the head 22 relative to a reference position is stabilized. Therefore, the position of the head 22, which serves as a reference when attaching the front and rear needle beds 11, can be made close to a reference position with high accuracy.

[0026] In this case, a plurality of types of linear members 34, which have, for example, diameters of $0.9 \pm 0.02 \times n$ mm (where n is a non-negative integer), are prepared. When the fitting portion 23 is snap fitted, the head 22 tilts around the axis m of the first wire 31 and becomes closer to the needle-bed gap center Ga than the reference position is. The linear member 34 is selected from the plurality of types so that the contact portion 27 can be pressed toward the needle-bed gap center Ga to swing the head 22 around the axis m of the first wire 31 in the direction away from the needle-bed gap center Ga so as to move the head 22 closer to the reference position.

[0027] The fitting portion 23 includes an arc-shaped portion 26, which protrudes from a corner corresponding to a corner between the bottom surface 131 and the front-end side surface 132 of the snap-fit recess 13 and which makes point-contact with each of the bottom surface 131 and the front-end side surface 132 when the fitting portion 23 is snap-fitted into the snap-fit recess 13. Thus, the fitting portion 23 can be in contact with each of the bottom surface 131 and the front-end side surface 132 of the snap-fit recess 13 with high accuracy.

[0028] An upper surface of a part of the body 21 between the curved portion 24 of the body 21 and the fitting portion 23 is slightly inclined so that the part of the body 21 is tapered in such a way that the thickness of the part in the up-down direction slightly decreases from the curved portion 24 toward the fitting portion 23. The taper ratio of the part of the body 21 from the curved portion 24 to the fitting portion 23 is, for example, about 1/50 to 2/50, that is, the dimension of the part in the height direction decreases by 1 to 2 mm per 50 mm. Thus, a stress that acts on the curved portion 24 when the curved portion 24 is bent is dispersed to the part of the body 21 between the curved portion 24 and the fitting portion 23, and stress concentration on the curved portion 24 can be avoided. Instead of only the upper surface, only the lower surface or both of the upper and lower surfaces of a part of the body 21 between the curved portion 24 and the fitting portion 23 may be slightly inclined so that the part of the body 21 is tapered in such a way that the thickness of the part in the up-down direction slightly decreases toward the fitting portion 23 (the rear end). The taper ratio of the body 21 from the curved portion 24 to the fitting portion 23 is not limited to about 1/50 to 2/50. The taper

ratio may be appropriately set in accordance with the material of the fixed sinker or the value of stress that acts on the curved portion.

[0029] It may be set beforehand so that the fitting portion 23 tends to strongly contact the front-end side surface 132 even when the machining accuracies of the needle bed 11 and the fixed sinker 2 are both within tolerance. In this case, due to the strong contact between the fitting portion 23 and the front-end side surface 132, the body 21 is strongly pulled toward the rear end, and the head 22 tends to tilt around the axis m of the first wire 31 so as to become closer to the needle-bed gap center Ga than the reference position is. Therefore, by inserting the linear member 34 into the corner of the linear-member support portion 14, the head 22, which tends to move closer to the needle-bed gap center Ga, can be smoothly swung in the direction away from the needle-bed gap center Ga around the axis m of the first wire 31, and the position of the head 22 can be made close to the reference position with higher accuracy.

[0030] In the embodiment described above, the fixed sinker 2 is used for the flat knitting machine 1 including the pair of front and rear needle beds 11. However, the embodiment may be applied to a fixed sinker that is used for a flat knitting machine including upper and lower needle beds in at least one of a front portion and a rear portion thereof. The embodiment may be applied to a plurality of fixed sinkers that are arranged side by side between knitting needles in a front end portion of a needle bed together with movable sinkers.

Claims

1. A flat knitting machine (1) comprising:

fixed sinkers (2) that are arranged side by side at a front end portion of a needle bed (11), each of the fixed sinkers (2) including

a body (21) including a fitting portion (23) at a rear end thereof and a curved portion (24) at a middle part thereof in a longitudinal direction, and
a head (22) protruding from a front end of the body (21) toward a needle-bed gap (G),

wherein a needle-bed-front-end support portion (12) is formed in the front end portion of the needle bed (11), the needle-bed-front-end support portion (12) supporting a sinker-front-end support portion (25) of each of the bodies (21) around an axis (m) of a wire (31), which extends in a direction in which the bodies (21) are arranged side by side, and allowing the head (22) to swing around the axis (m) of the wire (31) in directions toward and away from a needle-bed gap center (Ga), and

wherein a snap-fit recess (13) is formed in a lower surface of the front end portion of the needle bed (11), the snap-fit recess (13) allowing the fitting portion (23), which is at the rear end each of the bodies (21), to be snap fitted to a bottom surface (131) and a front-end side surface (132) of the snap-fit recess (13) by using a spring force generated when the curved portion (24) of the body (21) is bent in a state in which the sinker-front-end support portion (25) is supported by the needle-bed-front-end support portion (12),

the flat knitting machine (1) being **characterized in that**

a linear-member support portion (14) is formed in the front end portion of the needle bed (11), the linear-member support portion (14) opening toward the bodies (21) and supporting a linear member (34) that is inserted in the direction in which the bodies (21) are arranged side by side; and

a contact portion (27) of each of the bodies (21), which is located between the curved portion (24) and a front end of the body (21) and which contacts the linear member (34) when the linear member (34) is inserted into the linear-member support portion (14), is pressed toward the needle-bed gap center (Ga) to swing the head (22) around the axis (m) of the wire (31) in the direction away from the needle-bed gap center (Ga).

2. The flat knitting machine (1) according to Claim 1, wherein the linear-member support portion (14) and the needle-bed-front-end support portion (12) each open toward the needle-bed gap (G) in the front end portion of the needle bed (11), and support surfaces (141, 121) of the support portions (14, 12) are parallel to each other.

3. The flat knitting machine (1) according to Claim 1 or 2,
wherein the fitting portion (23) includes an arc-shaped portion (26) that makes point-contact with each of the bottom surface (131) and the front-end side surface (132) of the snap-fit recess (13).

4. The flat knitting machine (1) according to any one of Claims 1 to 3,
wherein a part of the body (21) between the curved portion (24) and the fitting portion (23) is tapered so that a thickness of the part in an up-down direction decreases from the curved portion (24) toward the fitting portion (23).

Patentansprüche

1. Flachstrickmaschine (1), umfassend:

fixierte Platinen (2), die nebeneinander an einem vorderen Endteil eines Nadelbetts (11) angeordnet sind, wobei jede der fixierten Platinen (2) umfasst:

einen Körper (21) einschließlich eines Passteils (23) an einem hinteren Ende und einem gekrümmten Teil (24) an einem mittleren Teil in einer Längsrichtung, und
einen Kopf (22), der von einem vorderen Ende des Körpers (21) zu einem Nadelbettspalt (G) vorsteht,

wobei ein Nadelbett-Vorderende-Halteteil (12) in dem vorderen Endteil des Nadelbetts (11) ausgebildet ist, wobei der Nadelbett-Vorderende-Halteteil (12) einen Platinen-Vorderende-Halteteil (25) jedes der Körper (21) um eine Achse (m) eines Drahts (31), der sich in einer Richtung erstreckt, in welcher die Körper (21) nebeneinander angeordnet sind, hält und gestattet, dass der Kopf (22) um die Achse (m) des Drahts (31) in Richtungen zu und weg von einer Nadelbettmitte (Ga) schwenkt, und
wobei eine Schnapppassvertiefung (13) in einer unteren Fläche des vorderen Endteils des Nadelbetts (11) ausgebildet ist, wobei die Schnapppassvertiefung (13) erlaubt, dass der Passteil (23), der sich an dem hinteren Ende jedes der Körper (21) befindet, zu einer Bodenfläche (131) und einer Vorderendseitenfläche (132) der Schnapppassvertiefung (13) schnappt, wobei eine Federkraft genutzt wird, die erzeugt wird, wenn der gekrümmte Teil (24) des Körpers (21) in einem Zustand gebogen wird, in dem der Platinen-Vorderende-Halteteil (25) durch den Nadelbett-Vorderende-Halteteil (12) gehalten wird,
wobei die Flachstrickmaschine (1) **dadurch gekennzeichnet ist, dass**:

ein Linearglied-Halteteil (14) in dem vorderen Endteil des Nadelbetts (11) ausgebildet ist, wobei sich der Linearglied-Halteteil (14) zu den Körpern (21) öffnet und ein Linearglied (34) hält, das in der Richtung eingesteckt ist, in welcher die Körper (21) nebeneinander angeordnet sind, und
ein Kontaktteil (27) jedes der Körper (21), der zwischen dem gekrümmten Teil (24) und einem vorderen Ende des Körpers (21) angeordnet ist und das Linearglied (34) kontaktiert, wenn das Linearglied (34) in den Linearglied-Halteteil (14) eingesteckt wird, zu der Nadelbettmitte (Ga) gedrückt wird, um den Kopf (22) um die Achse (m) des Drahts (31) in der Richtung weg von der Nadelbettmitte (Ga) zu schwenken.

2. Flachstrickmaschine (1) nach Anspruch 1, wobei sich der Linearglied-Halteteil (14) und der Nadelbett-vorderende-Halteteil (12) jeweils zu dem Nadelbettspalt (G) in dem vorderen Endteil des Nadelbetts (11) öffnen und Flächen (141, 121) der Halteteile (14, 12) parallel zueinander sind.

3. Flachstrickmaschine (1) nach Anspruch 1 oder 2, wobei der Passteil (23) einen bogenförmigen Teil (26) enthält, der einen Punktkontakt mit jeweils der Bodenfläche (131) und der Vorderendseitenfläche (132) der Schnapppassvertiefung (13) herstellt.

4. Flachstrickmaschine (1) nach einem der Ansprüche 1 bis 3, wobei sich ein Teil des Körpers (21) zwischen dem gekrümmten Teil (24) und dem Passteil (23) verjüngt, sodass die Dicke des Teils in der Oben-Unten-Richtung von dem gekrümmten Teil (24) zu dem Passteil (23) vermindert.

Revendications

1. Machine à tricoter à plat (1) comprenant :

des platines fixes (2) qui sont agencées côte à côte au niveau d'une partie d'extrémité avant d'un lit d'aiguilles (11), chacune des platines fixes (2) comportant

un corps (21) comportant une partie d'ajustement (23) au niveau de son extrémité arrière et une partie incurvée (24) au niveau de sa partie médiane dans une direction longitudinale, et
une tête (22) faisant saillie depuis une extrémité avant du corps (21) vers un espace du lit d'aiguilles (G),

dans laquelle une partie de support d'extrémité avant du lit d'aiguilles (12) est formée dans la partie d'extrémité avant du lit d'aiguilles (11), la partie de support d'extrémité avant du lit d'aiguilles (12) supportant une partie de support d'extrémité avant de platine (25) de chacun des corps (21) autour d'un axe (m) d'un fil (31), qui s'étend dans une direction dans laquelle les corps (21) sont agencés côte à côte, et permettant à la tête (22) d'osciller autour de l'axe (m) du fil (31) dans des directions avant et s'éloignant du centre de l'espace du lit d'aiguilles (Ga), et
dans laquelle un évidement d'ajustement par pression (13) est formé dans une surface inférieure de la partie avant du lit d'aiguilles (11), l'évidement d'ajustement par pression (13) permettant à la partie d'ajustement (23), qui est à l'extrémité arrière de chacun des corps (21),

d'être ajustée par pression à une surface inférieure (131) et à une surface latérale d'extrémité avant (132) de l'évidement d'ajustement par pression (13) en utilisant une force de ressort générée quand la partie incurvée (24) du corps (21) est pliée dans un état dans lequel la partie de support d'extrémité avant de platine (25) est supportée par la partie de support d'extrémité avant du lit d'aiguilles (12),
la machine à tricoter à plat (1) étant **caractérisée en ce que**
une partie de support d'élément linéaire (14) est formée dans la partie d'extrémité avant du lit d'aiguilles (11), la partie de support d'élément linéaire (14) s'ouvrant vers les corps (21) et supportant un élément linéaire (34) qui est inséré dans la direction dans laquelle les corps (21) sont agencés côte à côte ; et
une partie de contact (27) de chacun des corps (21), qui est située entre la partie incurvée (24) et une extrémité avant du corps (21) et qui est en contact avec l'élément linéaire (34) quand l'élément linéaire (34) est inséré dans la partie de support d'élément linéaire (14), est pressée vers le centre de l'espace du lit d'aiguilles (Ga) pour faire osciller la tête (22) autour de l'axe (m) du fil (31) dans la direction opposée au centre de la fente de l'espace du lit d'aiguilles (Ga).

2. Machine à tricoter à plat (1) selon la revendication 1, dans laquelle la partie de support d'élément linéaire (14) et la partie de support d'extrémité avant du lit d'aiguilles (12) s'ouvrent chacune vers l'espace du lit d'aiguilles (G) dans la partie d'extrémité avant du lit d'aiguilles (11), et les surfaces de support (141, 121) des parties de support (14, 12) sont parallèles les unes aux autres.

3. Machine à tricoter à plat (1) selon la revendication 1 ou 2,
dans laquelle la partie d'ajustement (23) comporte une partie en forme d'arc (26) qui établit un contact ponctuel avec chacune de la surface inférieure (131) et de la surface du côté d'extrémité avant (132) de l'évidement d'ajustement par pression (13) .

4. Machine à tricoter à plat (1) selon l'une quelconque des revendications 1 à 3,
dans laquelle une partie du corps (21) entre la partie incurvée (24) et la partie d'ajustement (23) est effilée de sorte qu'une épaisseur de la partie dans une direction de haut en bas diminue à partir de la partie incurvée (24) vers la partie d'ajustement (23).

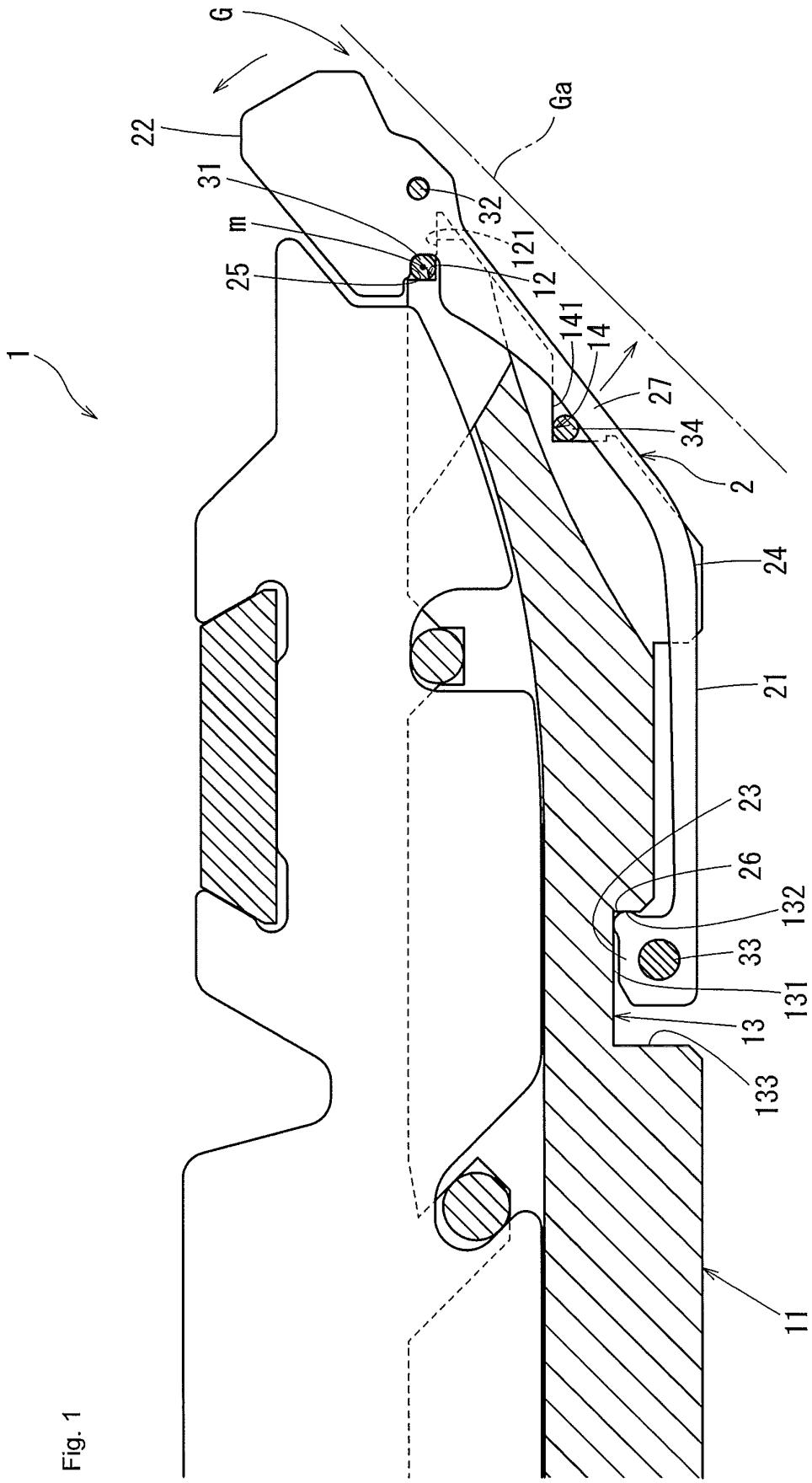
G
Ga
22
31
32
m
121
12
25
141
14
27
34
2
1
24
21
23
26
132
33
131
13
133
11

Fig. 1

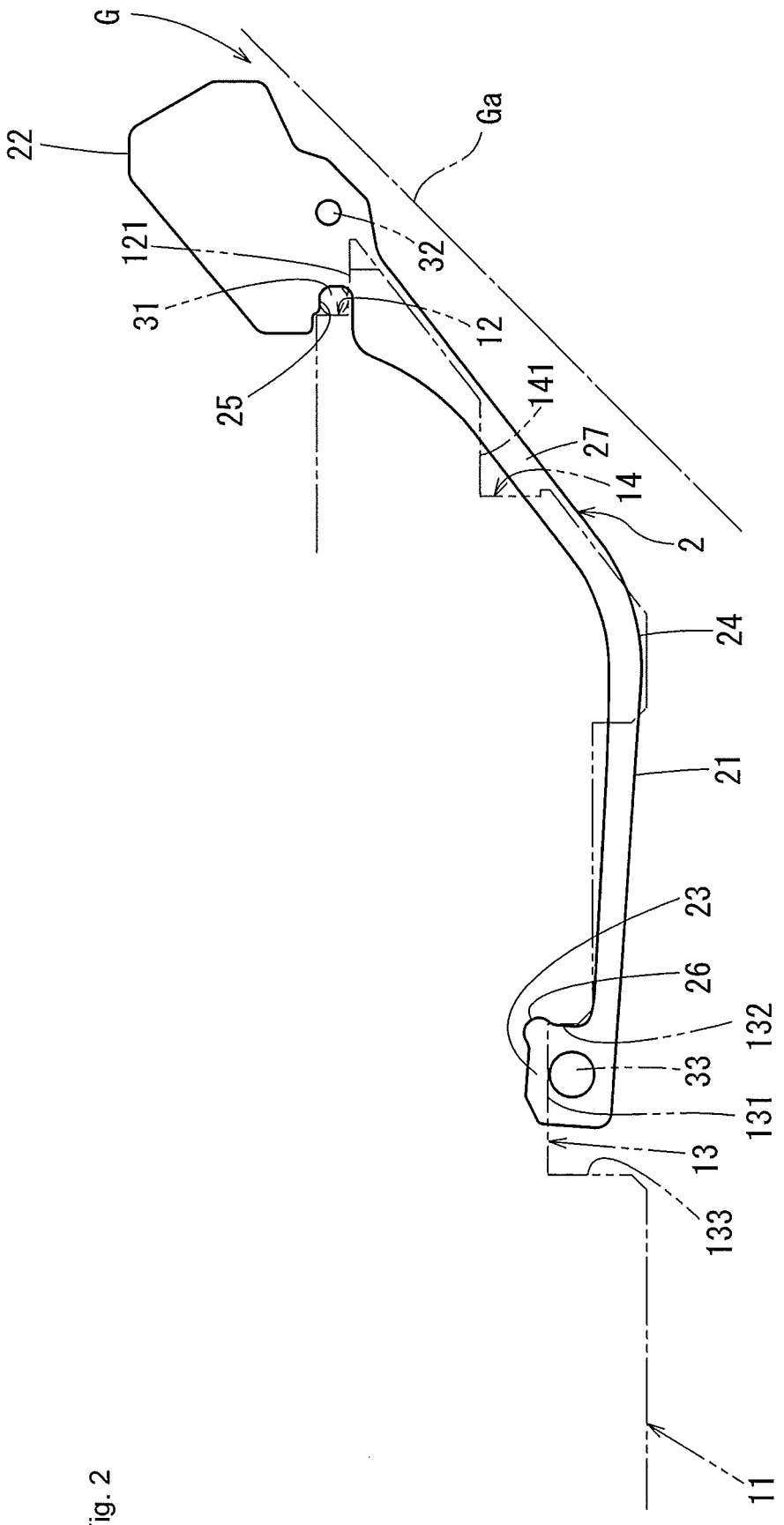

Fig. 2

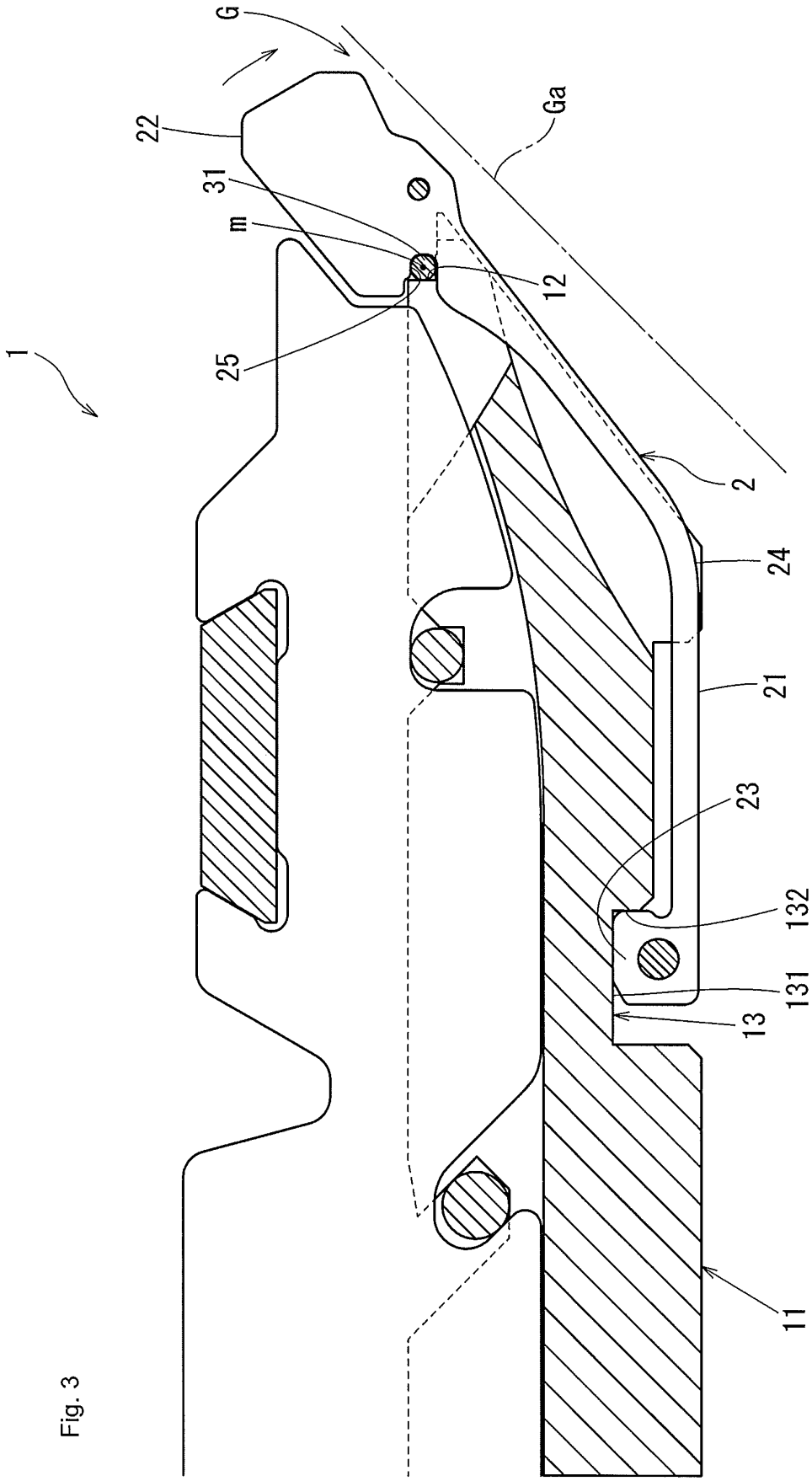

Fig. 3

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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