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(54) Fastener conveying apparatus for fastener assembling machine.

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EP-A- 0 148 508
US-A- 2 096 881
US-A- 2 292 223
US-A- 3 815 805
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US-A- 4 569 470

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EP 0 257 492 B1

Description

The present invention relates to a machine for assembling a pair of fastener members of a garment fastener, such as a snap fastener, a button and an ornament, with a garment fabric disposed between the two fastener members. More particularly, the invention relates to an apparatus for conveying the fastener members to the fastener assembling machine in accordance with the preamble of claim 1.

A fastener conveying apparatus of this type is disclosed in EP-A-0 148 508. In the case of this conventional conveying apparatus the glide comprises front and rear parallel guide blocks which are fixed to the base, as well as an auxiliary guide detachably mounted on one of said parallel guide blocks. Strictly speaking, said auxiliary guide is positioned in the guide block facing the upper unit. The auxiliary guide is held in position by a spring which is supported on a cover screwed up with the guide block. When the cover is detached after loosening of the screw the auxiliary guide may be withdrawn for removal of a fastener member that has got jammed at the junction between the first and second passageway. The circumstance that the auxiliary guide is positioned at the side facing the upper unit and, therefore, at the side averted from the first passageway, however, makes it difficult to overcome jammings in the area of the mouth of the first passageway and in the area of the second passageway, respectively.

The present invention is based on the object of improving the apparatus according to EP-A-0 148 508 in such a manner that jammings appearing adjacent to the mouth of the first passageway and in the area of the second passageway, respectively, can be removed more easily.

This object is realized by the basic concept of the invention set forth in the characterizing portion of claim 1.

Further developments of the invention are set forth in the depending claims.

The invention will now be described in more detail with reference to an exemplifying, non-limiting embodiment thereof illustrated in the accompanying drawings, in which:

Figure 1 is a fragmentary front elevational view of an apparatus embodying the present invention;

Figure 2 is an enlarged cross-sectional view taken along line II-II of Figure 1;

Figure 3 is an enlarged cross-sectional view taken along line III-III of Figure 2;

Figure 4 is an enlarged cross-sectional view taken along line IV-IV of Figure 1;

Figure 5 is an enlarged cross-sectional view taken along line V-V of Figure 1;

Figure 6 is an enlarged cross-sectional view taken along line VI-VI of Figure 1; and

Figure 7 is an enlarged cross-sectional view taken along line VII-VII of Figure 6.

Figure 1 shows an apparatus for conveying upper fastener members A one at a time to an upper or punch unit 3 of an automatic fastener-assembling machine for joining the upper fastener member A with a companion lower fastener member (not shown), with a garment fabric (not shown) disposed between the upper and lower fastener members. In the illustrated embodiment, the upper fastener member A is a button that is to be joined with a tack (not shown). As best shown in Figure 2, the button A has a head a1 and a hollow shank a2 projecting centrally therefrom.

The apparatus generally comprises a base 2 fixed to a frame 1 of the fastener-assembling machine, a chute 5 fixed to the frame 1 for conveying a succession of button A downwardly from a non-illustrated hopper, and a horizontal guide (described below) supported on the base 2 and extending between the lower end portion of the chute 5 and the upper unit 3 for conveying the buttons A one at a time from the chute 5 to the upper unit 3.

As shown in Figures 1 through 3, the chute 5 includes a chute body 23 of generally C-shaped cross section, and a pair of parallel cover plates 24, 25 extending on and along the chute body 23 with a constant gap between their confronting inner edges. Thus the chute body 23 and the two cover plates 24, 25 jointly define a first passageway 22 of generally T-shaped cross section through which a succession of buttons A is slidably received. One of the cover plates 24, which is remote from the upper unit 3, has a projection 27 extending from its lower end portion toward the other cover plate 25. The other cover plate 25 has a cutout 28 (Figures 1, 3, 6, 7) at its lower end portion in which cutout an auxiliary cover 32 (Figures 1, 6 and 7) is detachably received for a purpose described below.

As shown in Figures 1 and 4, the guide includes front and rear parallel guide blocks 9, 10 fixed to the base 2, a rear guide part 18 fixed to the underside of the rear guide block 10, and a front guide part 31 detachably mounted on the underside of the front guide block 9. The base 2, the front and rear guide blocks 9, 10, and the front and rear guide parts 31, 18 jointly define a longitudinal guide channel of a T-shaped cross section in which a reciprocating elongated pusher 11 is slidably received. This guide channel includes a second passageway 4 communicating with the first passageway 22. As the pusher 11 reciprocates in the guide channel, the buttons A are received one at a time from the first passageway 22 into the second passageway 4 and then guided through the second passageway 4. The rear guide part 18 has

in its inner surface a first groove 19, while the front guide block 9 and the front guide part 31 jointly define in their combined inner surface a second groove 14; the first and second grooves 19, 14 jointly serve to guide the head a1 of a button A.

As best shown in Figure 4, the front guide part 31 has a generally C-shaped cross section having inwardly directed first and second longitudinal projections 33, 34 defining therebetween a first longitudinal recess 35. The front guide block 9 also has a generally C-shaped cross section having an outwardly directed third longitudinal projection 13 and a second longitudinal recess 12. As the front guide part 31 is coupled with the front guide block 9, the first longitudinal projection 33 of the front guide part 31 is received in the second longitudinal recess 12 of the front guide block 9, and the third longitudinal projection 13 of the front guide block 9 is received in the first longitudinal recess 35 of the front guide part 31. A knob 36 is fixed to a front or outer surface of the front guide part 31, facilitating removal of the front guide part 31 from the front guide block 9.

The front guide part 31 has a V-shaped groove 37 (Figures 1 and 4) extending in its top surface along the entire length thereof, and a central channel-shaped groove 38 (Figures 1 and 5) extending transversely acoss the top surface. A pair of ball plungers 39, 39 is fixed to the front guide block 9; a ball 40 resiliently projects from a lower end of each ball plunger 39 into the V-shaped groove 37 of the front guide part 31 to thereby prevent accidental removal of the front guide part 31.

A threaded pin 41 is fixed to the front guide block 9 and projects into the central channel-shaped groove 38 of the front guide part 38, facilitating positioning of the front guide part 38.

As shown in Figure 2, a fastener catcher 15 is transversely slidably supported by the rear guide block 10 in confronting relation to the lower end of the first passageway 22 of the chute 5. The fastener catcher 15 has in its inner surface a recess 17 receptive of a part of the head al of a button A from the chute 5. The fastener catcher 15 is normally urged by a leaf spring 16 inwardly so as to normally project into the T-shaped guide channel through which the pusher 11 is reciprocably received. As the pusher 11 is moved forwardly (rightwardly in Figure 1) past the fastener catcher 15, the fastener catcher 15 is retracted from the T-shaped guide channel against the bias of the spring 16. When the pusher 11 is returned to its fully retracted position upstream of the fastener catcher 15 after having pushed a button A to the upper unit 3, the fastener catcher 15 is also returned under the bias of the spring 16 to project into the guide channel for receiving a succeeding button A from the chute 5.

The chute body 23 has in its lower end portion a recess 26 (Figures 2, 3 and 7) horizontally communicating with the second groove 14 (Figures 4 and 5). This recess 26 of the chute body 23 and the recess 17 of the fastener catcher 15 jointly serve to receive the head a1 of a button A in horizontal posture.

As shown in Figures 1 and 6, the auxiliary cover 32 is complementary in shape to the cutout 28 of the lower end portion of the chute 5. The cover 32 has on its upper side a curved surface 43 contactable with a lower surface of the chute body 23 and a horizontal surface 44 contactable with a lower end surface of the cover plate 25. The curved surface 44 of the auxiliary cover 32 and an inner surface of the cover plate 24 jointly serve to support the head a1 of a button A, as shown in Figure 7. The auxiliary cover 32 is fixed to one end of the front guide part 31 by means of a screw 42.

With the apparatus thus constructed, a button A that is jammed in the guide or at the junction between the guide and the chute 5, can be removed in the following manner:

In the case where a button A is jammed anywhere in the guide, the front guide port 31 is removed from the front guide block 9 by pulling the knob 36, thus making the entire length of the second passageway 4 open or exposed. With the removed front guide part 31 placed aside, the jammed button A is removed out of the second passageway 4 by using both hands.

In the case where a button A is jammed at the junction between the chute 5 and the guide, the front guide part 31 is removed from the front guide block 9 by pulling the knob 36, thus making the entire length of the second passageway 4 open or exposed. At that time, since it is fixed to the front guide part 31, the auxiliary cover 32 is removed from the chute 5 together with the front guide part 31, thus making the junction between the chute 5 and the guide open or exposed. With the removed front guide part 31 and the auxiliary cover 32 placed aside, the jammed button A is removed from the junction between the chute 5 and the guide through the cutout 28 by using both hands.

Alternatively, the auxiliary cover 32 may be separated from the front guide part 31 so that the auxiliary cover 32 and the front guide part 31 can be removed independently of each other.

According to the present invention, since a front part of the guide is detachable to make the second passageway open or exposed along its entire length, a button jammed anywhere in the second passageway can be removed by both hands. Further, since a lower front part of the chute is detachable to make the junction between the first and second passageways open or exposed, a but-

ton jammed at the junction can be removed by both hands.

Claims

1. A fastener conveying apparatus for an automatic fastener assembling machine having an upper unit (3), comprising: a base (2); a chute (5) fixed to said base (2) and defining a first passageway (22) for guiding therethrough a plurality of fastener members (A) in succession; a guide supported on said base (2) and defining a second passageway (4) extending between a lower end portion of said first passageway (22) and the upper unit (3) of the fastener assembling machine for receiving from said first passageway (22) the fastener members (A) one at a time and for guiding the individual fastener member (A) through said second passageway (4); and a pusher (11) reciprocable in said guide for pushing the fastener member (A) in said second passageway (4) toward the upper unit (3) of the fastener assembling machine; said guide including front and rear parallel guide blocks (9), (10) fixed to said base (2), and an auxiliary guide (31) detachably mounted on one (9) of said parallel guide blocks, **characterized in that** said auxiliary guide is a front guide part (31) detachably mounted on the underside of the front guide block (9) remote from said upper unit (3) and that said chute (5) has a cutout (28) in a front cover plate (25) remote from said upper unit (3) at a lower end thereof, and an auxiliary cover (32) detachably received in said cutout (28) and fixed to said front guide part (31).

2. A fastener conveying apparatus according to one of the preceding claims, characterized in that said front guide part (31) has a generally C-shaped cross section having inwardly directed first and second longitudinal projections (33), (34) defining therebetween a first longitudinal recess (35), and that first guide block (9) has a generally C-shaped cross section having an outwardly directed third longitudinal projection (13) engageable in said first longitudinal recess (35) and a second longitudinal recess (12) in which said first longitudinal projection (33) is engageable.

3. A fastener conveying apparatus according to claim 2, characterized in that said front guide part (31) has in its top surface a longitudinal V-shaped groove (37) into which balls (40) of at least two ball plungers (39) fixed to said front guide block (9) normally resiliently project.

4. A fastener conveying apparatus according to claim 3, characterized in that said front guide part (31) has in its top surface a transverse channel-shaped groove (38) into which a pin (41) fixed to said front guide block (9) projects.

5. A fastener conveying apparatus according to one of the preceding claims, characterized in that said front guide part (31) has a knob (36) fixed to the front surface thereof.

Revendications

1. Dispositif transporteur de fermetures pour machine automati-que à assembler ces fermetures comportant une unité supérieure (3), comprenant : un socle (2); un conduit (5) fixé à ce socle (2) et formant un premier passage (22) pour guider une pluralité d'éléments (A) de fermeture se suivant; un guide supporté par ce socle (2) et formant un deuxième passage (4) reliant la partie d'extrémité inférieure du premier passage (22) à l'unité supérieure (3) de la machine à assembler les fermetures pour recevoir un par un les éléments (A) de fermeture venant de ce premier passage (22) et pour guider un élément individuel (A) de fermeture dans le deuxième passage (4); et un poussoir (11) pouvant coulisser par un mouvement de va-et-vient dans ce guide afin de pousser l'élément (A) de fermeture dans ce deuxième passage (4) vers l'unité supérieure (3) de la machine à assembler les fermetures; ce guide comprenant des patins parallèles avant et arrière (9, 10) fixés au socle (2), et un guide auxiliaire (31) monté de manière amovible sur l'un (9) de ces patins parallèles, caractérisé en ce que ce guide auxi-liaire est une pièce avant de guidage (31) montée de manière amovible sur la face inférieure du patin avant (9) éloignée de cette unité supérieure (3) et en ce que ce conduit (5) comporte une découpure (28) dans une plaque avant de recouvrement (25) éloignée de cette unité supérieure (3) à son extrémité inférieure, et un couvercle auxiliaire (32) reçu de manière amovible dans cette découpure (28) et fixé dans la pièce avant de guidage (31).

2. Dispositif transporteur de fermetures suivant la revendica-tion 1, caractérisé en ce que cette pièce avant de guidage (31) pré-sente, en coupe transversale, la forme d'ensemble d'un C comportant un premier et un deuxième prolongements longitudinaux (33, 34) dirigés vers

l'intérieur et formant entre eux un premier évidement longitudinal (35), et en ce que le premier patin (9) présente, en coupe transversale, la forme d'ensemble d'un C comportant un troisième prolongement longitudinal (13) dirigé vers l'extérieur et Pouvant s'engager dans le premier évidement longitudinal (35), et un deuxième évidement longitudinal (12) dans lequel peut s'engager le premier prolongement longitudinal (33).

3. Dispositif transporteur de fermetures suivant la revendication 2, caractérisé en ce que cette pièce avant de guidage (31) comporte dans sa face supérieure une rainure longitudinale (37) en V dans laquelle font saillie normalement de manière élastique les billes (40) d'au moins deux plongeurs (39) à billes fixés dans le patin avant (9).

4. Dispositif transporteur de fermetures suivant la revendication 3, caractérisé en ce que cette pièce avant de guidage (31) comporte dans sa face supérieure une rainure transversale (38) en forme de canal dans laquelle se prolonge un goujon (41) fixé dans le patin avant (9).

5. Dispositif transporteur de fermetures suivant l'une des revendications précédentes, caractérisé en ce que cette pièce avant de guidage (31) est munie d'un bouton de manoeuvre (36) fixé sur sa face avant.

Ansprüche

1. Vorrichtung zum Zuführen von Verschlußteilen für eine automatische Verschlußteil-Ansetzmaschine, die eine obere Einheit (3) aufweist, umfassend: eine Basis (2) ; eine Rutsche (5), die an der Basis befestigt ist und einen ersten Kanal (22) zum aufeinanderfolgenden Hindurchführen einer Vielzahl von Verschlußteilen (A) begrenzt; eine Führung, die auf der Basis (2) abgestützt ist und einen zweiten Kanal (4) begrenzt, der sich zwischen einem unteren Endbereich des ersten Kanals (22) und der oberen Einheit (3) der Ansetzmaschine erstreckt, um von dem ersten Kanal (22) jeweils ein Verschlußteil (A) aufzunehmen und um das einzelne Verschlußteil (A) durch diesen zweiten Kanal (4) zu führen; und einen Schieber (11), der in dieser Führung hin- und herbewegbar ist, um das Verschlußteil (A) in dieser zweiten Führung (4) zu der oberen Einheit (3) der Ansetzmaschine hin zu verschieben; wobei diese Führung vordere und hintere parallele Führungsblöcke (9,10), die an der Basis (2) befestigt sind, und eine Hilfsführung (31) aufweist, die an einem (9) der parallelen Führungsblöcke befestigt ist, **dadurch gekennzeichnet,** daß die Hilfsführung ein vorderes Führungsteil (31) ist, das an der von der oberen Einheit (3) abliegenden Unterseite des vorderen Führungsblocks (9) lösbar angebracht ist und daß die Rutsche (5) am unteren Ende einer von der oberen Einheit (3) abliegenden vorderen Abdeckplatte (25) einen Ausschnitt (28) hat und daß eine Hilfsabdeckung (32) in den Ausschnitt (28) abnehmbar eingesetzt und an dem vorderen Führungsteil (31) befestigt ist.

2. Vorrichtung nach einem der vorhergehenden Ansprüche, dadurch **gekennzeichnet**, daß das vordere Führungsteil (31) einen im allgemeinen C-förmigen Querschnitt mit nach innen gerichteten ersten und zweiten Längsvorsprüngen (33,34) hat, die dazwischen eine erste längliche Ausnehmung (35) begrenzen, und daß der erste Führungsblock (9) einen im allgemeinen C-förmigen Querschnitt hat, der einen mit der ersten länglichen Ausnehmung (35) in Eingriff bringbaren dritten Längsvorsprung (13) und eine zweite längliche Ausnehmung (12) aufweist, mit der der erste Längsvorsprung (33) in Eingriff bringbar ist.

3. Vorrichtung nach Anspruch 2, dadurch **gekennzeichnet**, daß das vordere Führungsteil (31) an seiner Oberseite eine längliche V-förmige Nut (37) aufweist, in die die Kugeln (40) von mindestens zwei Rastbolzen (39) federnd hineinragen, die am vorderen Führungsblock (9) befestigt sind.

4. Vorrichtung nach Anspruch 3, dadurch **gekennzeichnet**, daß das vordere Führungsteil (31) an seiner Oberseite eine Quernut (38) aufweist, in die ein am vorderen Führungsblock (9) befestigter Stift (41) hineinragt.

5. Vorrichtung nach einem der vorhergehenden Ansprüche, dadurch **gekennzeichnet**, daß das vordere Führungsteil (31) einen an seiner Vorderseite befestigten Griff (36) hat.

FIG.1

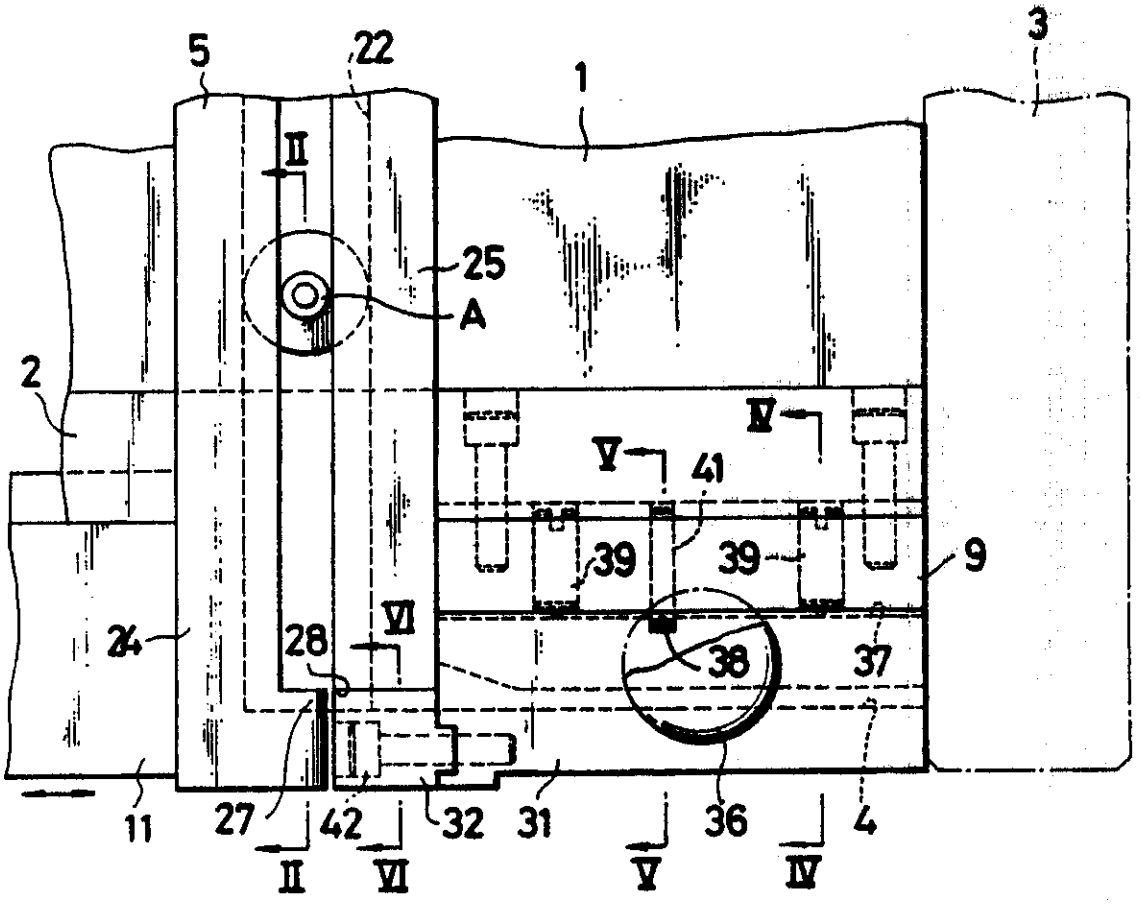

5
22
1
3
II
25
A
2
IV
V
41
39
39
9
24
28
VI
38
37
11
27
42
32
31
36
4
II
VI
V
IV

FIG. 2

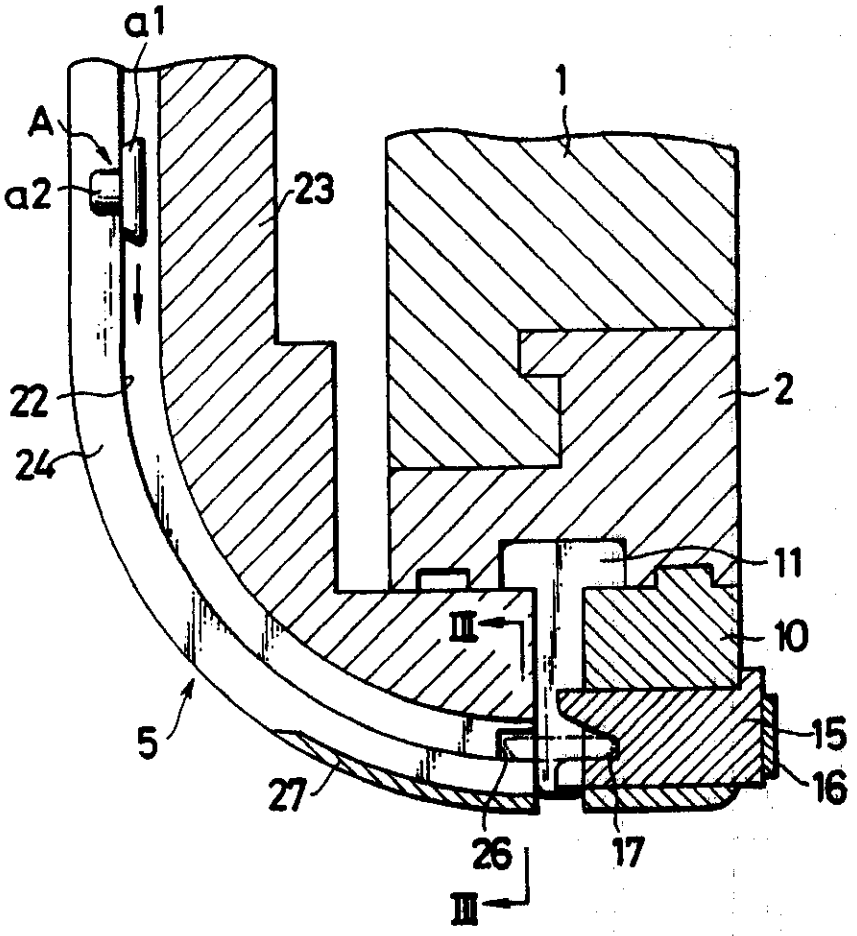


FIG. 3

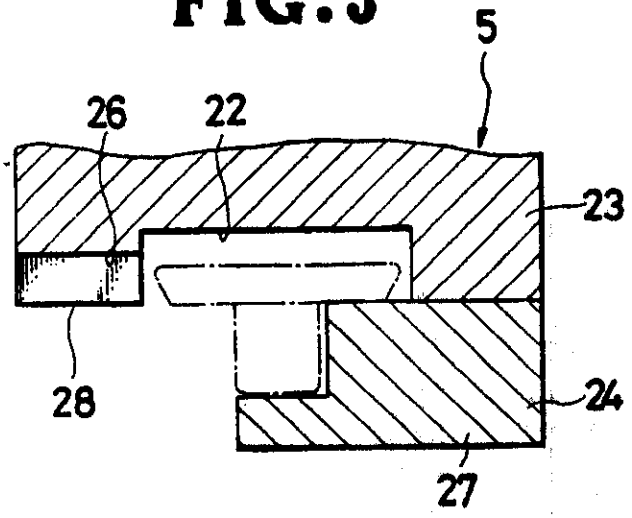


FIG.4

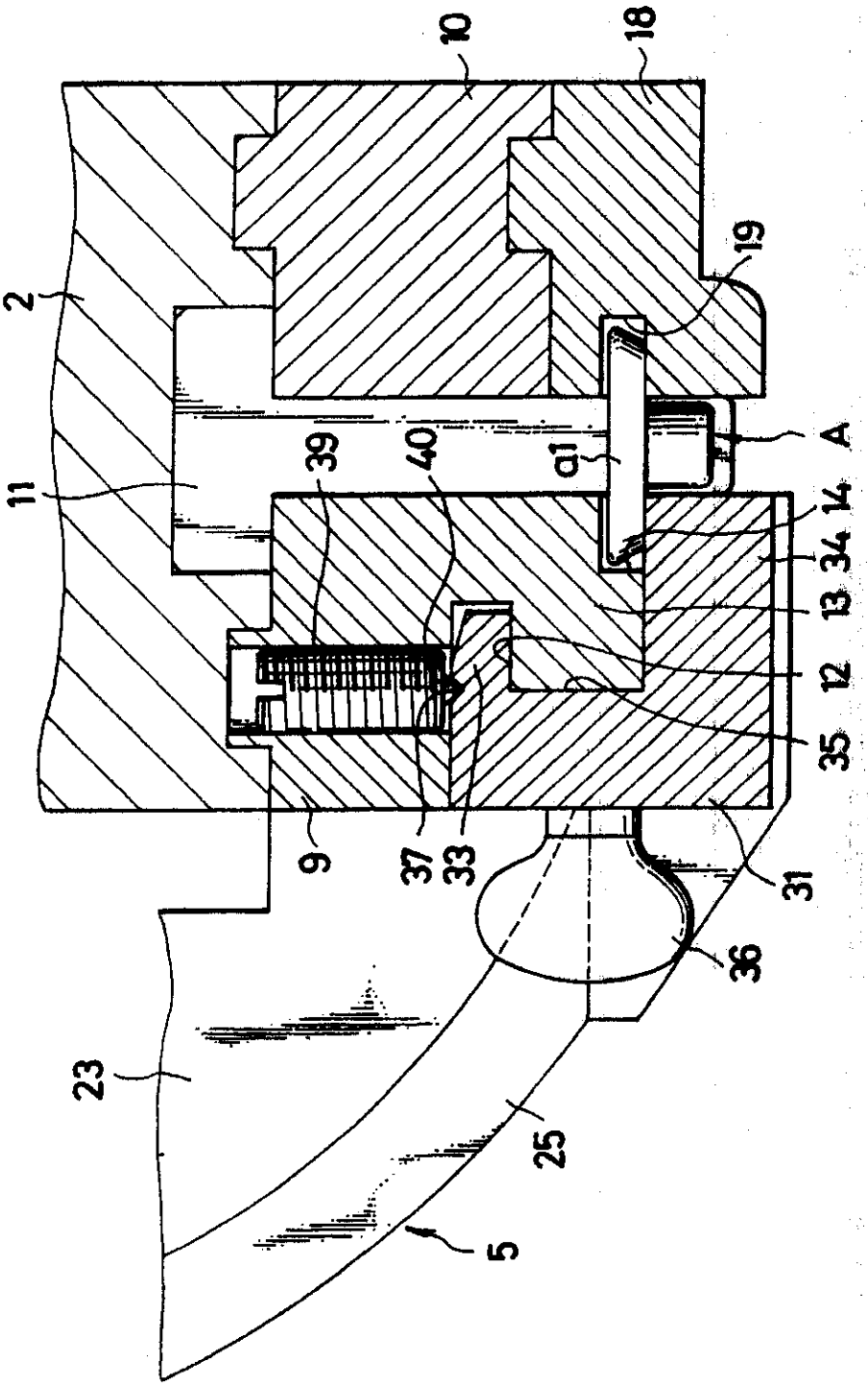


FIG. 5

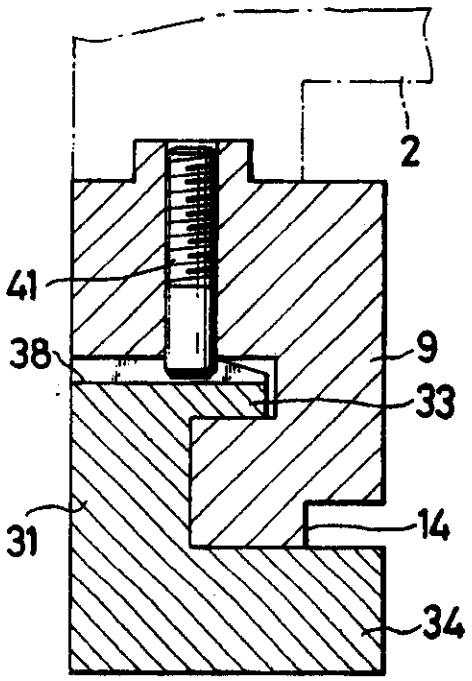


FIG. 7

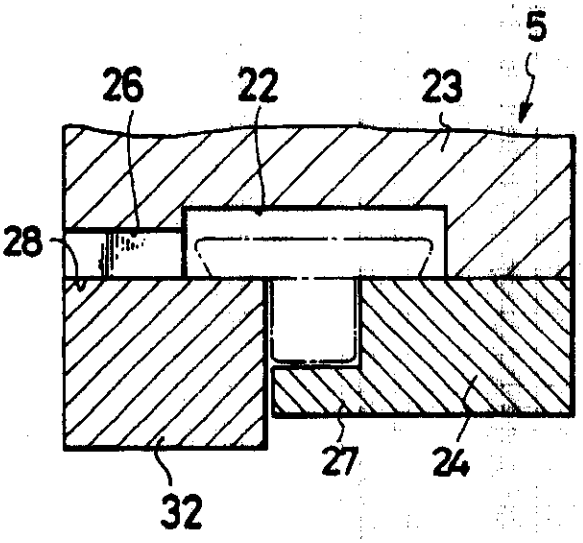


FIG. 6

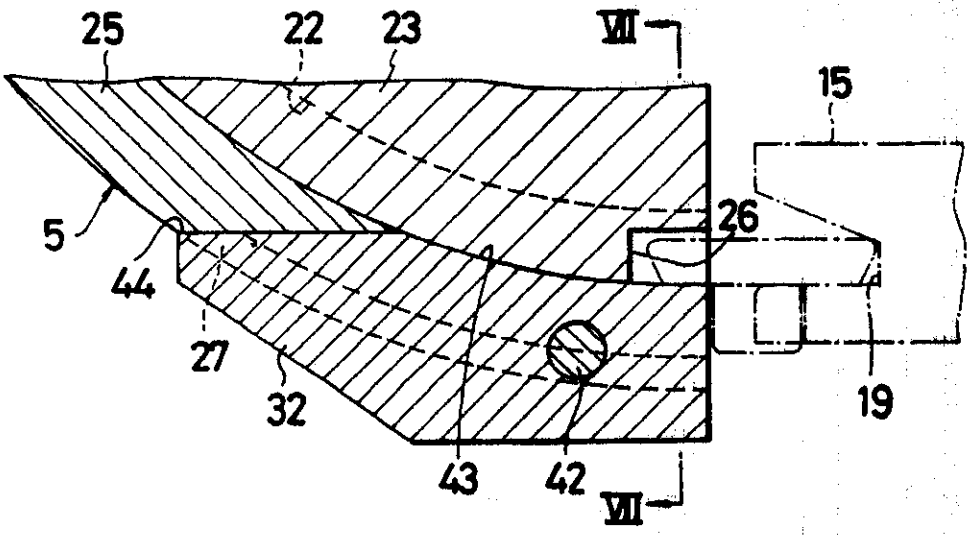
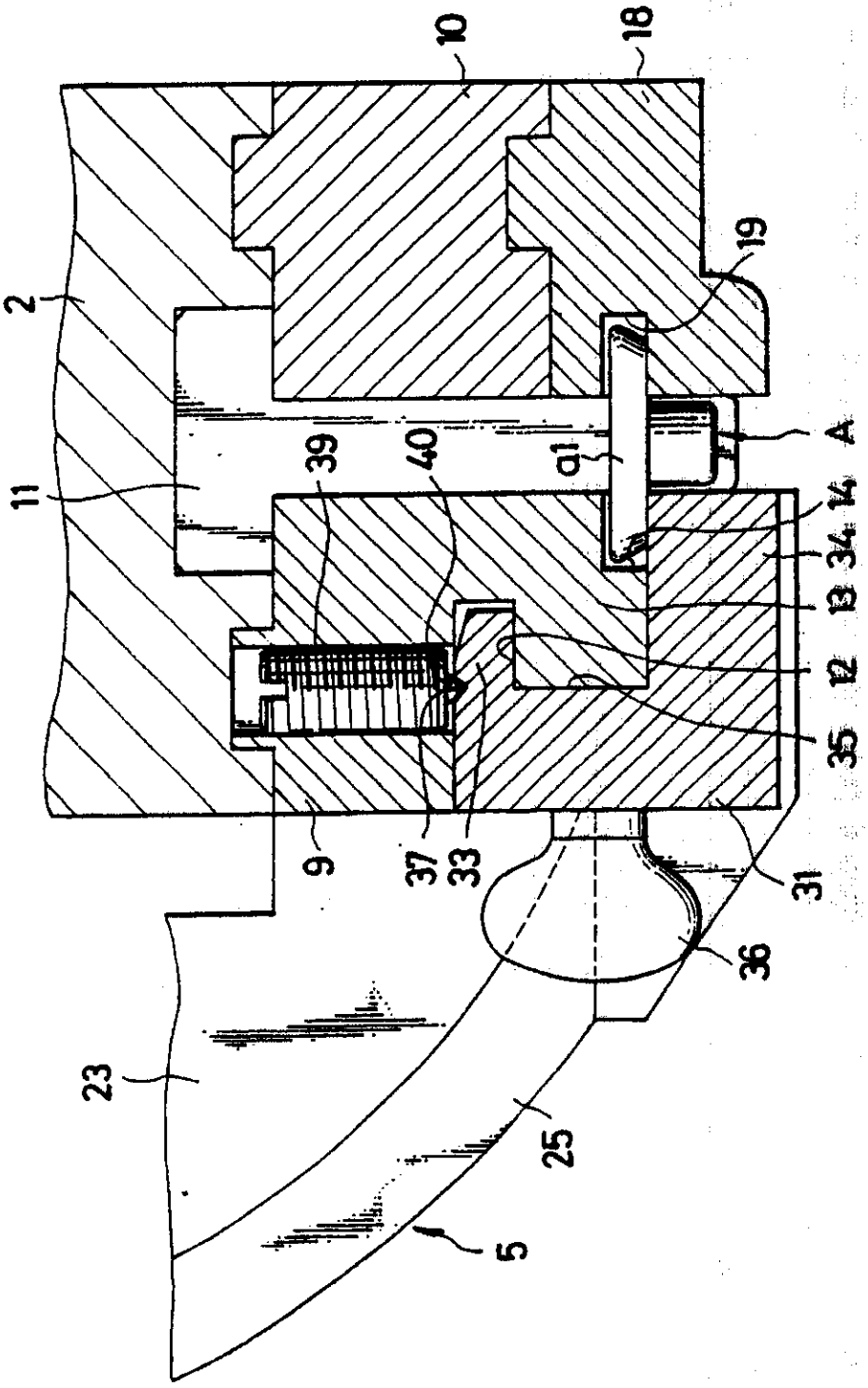


FIG.4



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