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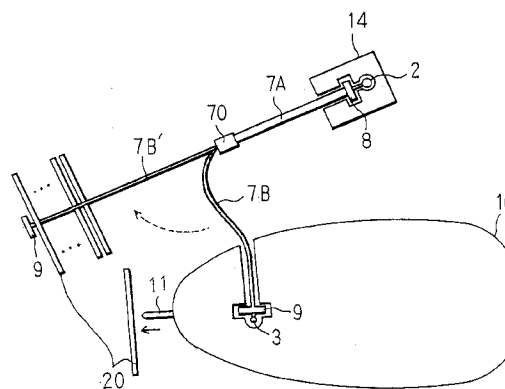
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(54) **Label hanger magazine, and device for attaching labels to same.**

(57) The present invention provides a label hanger magazine (1) of which the entire is integrally molded from an elastic plastic material, comprising a plurality of label hangers (6) connected between two parallel common supports (2,3) by means of a plurality of joint pieces (4,5). Each of the label hangers consists of a filament (7) having bar-like portions (8,9) formed at both end portions thereof and perpendicular to the common supports, the filament and joint pieces being in line with each other while the bar-like portions at both the end portions of the label hanger are so formed as to be separable from their respective associated joint pieces by a label attaching device (10) having a guide needle (11) which is to be pierced through a fabric and label or the like, the label (20) being attached to each label hanger with the guide needle (11) of the label attaching device inserted through the label when the bar-like portion (9) at one end portion of the label hanger is separated from the joint piece by the device, and the label hanger with the label being fixed to the fabric or the like with the guide needle of the device pierced through the fabric when the bar-like portion (8) at the other end of the label hanger is separated from the joint piece by the device.

FIG.5



BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a label hanger magazine consisting of a plurality of label hangers, assembled together, for fixing price tags, hangtags, manufacturer nameplates, trademark tags, etc. (will be generically referred to as "label" hereinbelow) to fabrics and other similar goods, and to a device for automatically attaching such a label to each label hanger included in the label hanger magazine.

2. Description of the Prior Art

Heretofore, various label hanger magazines and label attaching devices have been proposed. Typical ones are known from the disclosure in the U.S. Pat. No. 867,409 filed on January 6, 1978 (will be referred to as "conventional example A" hereafter), U.S. Pat. No. 3,652,004 (as "conventional example B") and U.S. Pat. No. 3,924,788 ("conventional example C").

Generally, a conventional filament-type label hanger made of a thermoplastic material, such as polypropylene, nylon or the like, of which the molecular orientation is adjusted by elongation, consists, as shown in Fig. 34, of an anchoring body 200 formed at one end of the filament and which is to be pierced through a fabric or the like, and a wide spatula or button 201 formed at the other end. When the anchoring body 200 is pierced through a fabric, for example, a label is attached to the anchoring body 200. Once the label hanger is thus pierced, the label will not be disengaged from the fabric.

As shown in Figs. 35 through 37, a label hanger 100 in the conventional example A consists of a thin rod 101, label 102 connected to the first end of the thin rod 101, crossbar 103 connected to the second end of the thin rod 101, and a gate 104. The gates 104 of the label hangers 100 are connected to a runner 105, so that the label hangers 100 are connected together to form a label hanger magazine. The thin rod 101 has formed at the first end thereof a nipple 106 to which a taper thin rod head 107 is connected by means of another thin rod 108. The thin rod head 107 has a base 109 which is designed larger in sectional area than the thin rod 101. The label 102 has a thin rod catcher comprising a thin rod receiving sleeve 111 having formed therein a thin rod receiving hole 110 dimensioned to receive the thin rod 108 but of which the diameter is smaller than that of the base 109 of the thin rod head 107, and a head receiving concavity 112 which receives and cooperates with the thin rod head 107. When the taper thin rod head 107 is inserted into the head receiving concavity 112 through the thin rod receiving hole 110, it can be passed by the thin rod receiving sleeve 111 due to the elasticity of the sleeve 111 and thin rod head 107 itself. Once the thin rod

head 107 is inserted there, the base 109 thereof is engaged on a lower end face 113 of the sleeve 111, thereby preventing the thin rod 101 from being disengaged from the label 102. To fix each label hanger 100 included in such a label hanger magazine to a fabric, a label fixing device known from the disclosure in the conventional example C is used. The crossbar 103 is inserted into the slot of a hollow needle of the device, the gate 104 is cut off from the crossbar 103, the crossbar 103 is led out of the hollow needle pierced through a fabric, and thus the crossbar 103 is fixed to the fabric.

The label 102 proposed in the disclosure of the conventional example A must have a receiving portion of a special shape and structure for receiving the thin rod end, which would cause the manufacturing cost of the label itself to be increased. Many of the labels recently used are paper-made ones on which bar codes carrying various kinds of information are printed, and it is difficult to form them similarly to the one proposed in the conventional example A. Moreover, there have been such needs for fixing to a many different goods various labels suitable for the respective goods and carrying thereon printed bar codes particular to the goods. The label hanger proposed in the disclosure of the conventional example A could not meet such needs.

Furthermore, fixation of a label to each label hanger included in a label hanger magazine consisting of label hangers each having a crossbar formed at one end thereof and a button or spatula formed at the other end, is done manually by using a label attaching device such as disclosed in the conventional examples B and C.

More specifically, the worker applies, as held in one hand, a label on a fabric or the like while operating the device with the other hand to pierce the crossbar of the label hanger through both the label and fabric. Such a conventional manner can successfully fix only about 200 labels per hour and is not successful frequently. The label hangers each with a label as in the conventional example A can be fixed with an improved efficiency, but it is necessary to attach a label to each label hanger before fixing the label hanger to a fabric or the like. As mentioned above, this label is of a special shape and structure and expensive. Furthermore, recent labels have printed thereon information such as color, size, price and so forth in the form of a bar code and it is required there days that various particular kinds of labels should be fixed to a small quantity and many kinds of goods. It is difficult, however, to use for this purpose the label hangers each with a label as disclosed in the conventional example A. Use of such conventional label hangers for this purpose will require a great cost. For fixing labels to many different goods, label fixation by piercing a label hanger through both a label applied to a fabric and the fabric itself is advantageous in respect of costs

over that using a label hanger with label as in the conventional example A. However, the former label fixation cannot be done efficiently as described in the foregoing. The fixation of labels by piercing a label hanger with a label through a fabric or the like can be done 4 to 5 times more efficiently than that by piercing a label hanger through both a label applied to a fabric and the fabric itself.

SUMMARY OF THE INVENTION

Accordingly, the present invention has an object to provide a label hanger magazine consisting of label hangers assembled together and which permits to easily attach a label, of any kind, to each of the label hangers and efficiently fix the label hanger to a fabric or the like.

The present invention has another object to provide a device for attaching a label automatically and efficiently to each label hanger included in a label hanger magazine.

The one of the above objects is accomplished by providing a label hanger magazine comprising, according to the present invention, a plurality of label hangers connected between two parallel common supports by means of a plurality of joint pieces, the label hanger consisting of a filament having bar-like portions formed at both end portions thereof and perpendicular to the common supports; the filament and joint pieces being in line with each other while the bar-like portions at both the end portions of the label hanger are so formed as to be separable from their respective associated joint pieces by a label attaching device having a guide needle which is to be pierced through a fabric and label or the like; the label being attached to each label hanger with the guide needle of the label attaching device inserted through the label when the bar-like portion at one end portion of the label hanger is separated from the joint piece by the device, and the label hanger with the label being fixed to the fabric or the like with the guide needle of the device pierced through the fabric when the bar-like portion at the other end of the label hanger is separated from the joint piece by the device.

Also the other object is accomplished by providing a device for attaching labels to a label hanger magazine according to the present invention, comprising a main body; a hollow guide needle; a label case having an opening and in which a plurality of labels each having a fitting hole formed therein is accommodated as stacked; a support mechanism which receives and supports labels one by one from the opening of the label case and positions the supported label so that the fitting hole in the label faces the guide needle, the support mechanism being reciprocally movable between a position where it faces the opening of the label case and a position where it faces the guide needle; a positioning mechanism provided at the base of

the guide needle to provide a passage for the common support of the label hanger magazine formed by an assembly of label hangers each having a bar-like portion formed at either end portion of a filament and connected between two parallel common supports by means of a plurality of joint pieces and also to bring the bar-like portions at the other end portions of the label hanger one by one into alignment with the slot of the guide needle; a push-out pin provided to be inserted from the base end side while the end portion of the guide needle is inserted through the fitting hole in the label, push the bar-like portion at one of the end portions of the label hanger into the slot of the guide needle and separate it from the joint piece and to bring the separated bar-like portion and a part of the filament to the rear side of the fitting hole in the label; and a feeding mechanism adapted to bring the other bar-like portions of the label hanger magazine one by one into alignment with the slot of the guide needle, whereby, after the one bar-like portion and a part of the filament are positioned by the push-out pin at the rear side of the fitting hole in the label, the push-out pin is returned to its initial position and the guide needle is extracted from the fitting hole and the label is attached to one of the label hangers included in the label hanger magazine.

In case a label hanger is fixed to a fabric or the like by operating a device disclosed in the conventional example B or C as held in one hand while the label and fabric are being held in the other hand, a fixation rate of about 200 label hangers per hour can only be attained. With the label hanger magazine according to the present invention, however, the above-mentioned device is used to manually attach the labels to the label hangers before fixing the label hangers to a fabric or the like. But an attaching rate of about 1,000 label hangers per hour can be attained even by a person not skilled in this field. Automation of this attaching operation will attain a higher attaching rate. the label hangers each having a label thus previously attached can be quickly fixed to the fabric or the like. With the label hanger magazine according to the present invention, a variety of labels can be fixed to many different goods and the labels themselves may not be expensive.

Furthermore, using the aforementioned label attaching device according to the present invention, labels can be quickly attached to the label hangers included in the aforementioned label hanger magazine according to the present invention. So the label hangers each with the label thus attached can be fixed to fabrics or the like with an extremely high efficiency and with no special skill as compared with the conventional manner of label fixation in which a label is fixed to a fabric with the label held as applied to the latter. Also, the device according to the present invention can be used to fix various kinds of labels to different kinds of goods, respectively.

These and other advantages and objects of the present invention will be more apparent from the description made by way of example with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a front view of a preferred embodiment of the label hanger magazine according to the present invention;
 Fig. 2 is a fragmentary view, enlarged in scale, of the essential portion of the label hanger in Fig. 1;
 Fig. 3 is a sectional view taken along the line II-II in Fig. 1;
 Fig. 4 is a front view showing the attaching of a label;
 Fig. 5 is a plan view showing the filament during attaching of the label;
 Fig. 6 is a front view showing the label hanger magazine after attaching the label;
 Fig. 7 is a front view of a preferred embodiment of the label attaching device according to the present invention;
 Fig. 8 is a side elevation of the device in Fig. 7;
 Fig. 9 is a schematic drawing of the insertion post of the positioning mechanism;
 Fig. 10 is a schematic drawing of the feeding mechanism;
 Fig. 11 is a front view showing the label attached to the label hanger by the label attaching device according to the present invention;
 Fig. 12 is a front view showing the fixation of each label hanger of the label hanger magazine with a label to a fabric or the like by the label fixing device;
 Fig. 13 is a sectional side elevation of a variant of the label hanger magazine case;
 Fig. 14 is a plan view of the label hanger case in Fig. 13;
 Fig. 15 is a sectional view of the label feeding roller;
 Fig. 16 is a sectional view of the width-directional adjusting means for the magazine case;
 Fig. 17 is a sectional view of the racks and pinion in Fig. 16;
 Fig. 18 is a sectional view of the bellows-hose fitted in the suction hole of the supporting mechanism;
 Fig. 19 shows the front side of the supporting mechanism provided with a pin;
 Fig. 20 is an axial-sectional view of the supporting mechanism in Fig. 19;
 Fig. 21 is a sectional view showing the relation between the pin in Fig. 20 and the push-out pin;
 Fig. 22 is a sectional view of a variant of the pin;
 Fig. 23 is a plan view of another variant of the means of reciprocating the supporting mechanism;

Fig. 24 is a plan view of the shutter which opens and closes the opening of the magazine case;
 Fig. 25 is a schematic plan view of a magazine case adapted for receiving one end of the label hanger magazine;
 Fig. 26 is a plan view of still another variant of the label hanger;
 Fig. 27 is a schematic side elevation of another embodiment;
 Fig. 28 is a fragmentary sectional view of the engagement between the stay base and threaded rod;
 Fig. 29 is a side elevation of the fixation of the moving plate to the stay;
 Fig. 30 shows the fixation of the sensor to the front face of the magazine case;
 Fig. 31 is a plan view of still another variant of the means of reciprocating the supporting mechanism;
 Fig. 32 is a plan view showing a variant of the supporting mechanism;
 Fig. 33 is an axial sectional view showing a portion of the supporting mechanism in Fig. 32;
 Fig. 34 is a perspective view of the conventional label hanger;
 Fig. 35 is a front view of the label hanger magazine formed from the conventional label hangers, assembled together;
 Fig. 36 is a side elevation of the label hanger magazine in Fig. 35; and
 Fig. 37 is a sectional view of the connection between the label and label hanger.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to Fig. 1, the label hanger magazine generically indicated by the reference numeral 1 is an assembly of a plurality of label hangers 6 connected between two common parallel supports 2 and 3, respectively, by means of joint pieces 4 and 5, all these elements being formed as molded integrally from an elastic plastic material.

Each of the label hangers 6 comprises a filament 7 having formed at opposite ends thereof bar-like portions 8 and 9 perpendicular to the common supports 2 and 3, respectively. The filament 7 is in line with the joint pieces 4 and 5. The bar-like portions 8 and 9 provided at the opposite ends of the filament 7 are so formed as to be separable from the joint pieces 4 and 5, respectively, by means of a label attaching device 10 having a guide needle 11 which is pierced through a label and a fabric or the like. The connections 4A and 5A between the joint pieces 4 and 5 and bar-like portions 8 and 9 are so thinned that the bar-like portions 8 and 9 can be easily separated from the joint pieces 4 and 5, respectively. The filament 7 is swollen (at 70) at the intermediate position thereof. The fila-

ment portion 7A above this swollen portion 70 and the filament portion 7B below the swollen portion 70 may be so formed as to be different in sectional size from each other. Of course, the filament portions 7A and 7B may have a same thickness.

As shown in Fig. 2, the swollen portions 70 are connected in an easily separable manner to each other at thinned portions 70A so that labels (not shown) once attached to the filament portions 7B at one end thereof can be prevented from being directed differently. The thinned portions 70A are very effective particularly in case the filament is long, for example, more than 6 cm. However, if the filament is as short as 3 to 5 cm, such thinned portions 70A are not required.

Fig. 3 is a fragmentary sectional view, enlarged in scale, taken along the line II-II of Fig. 1. The bar-like portion 8 is perpendicular to the common support 2. This Figure clearly shows the thinned portion 4A formed at the joint piece 4. In this embodiment, the label hanger magazine 1 is formed vertically symmetrically with respect to the swollen (middle) portions 70 of the filaments 7. However, the present invention is not limited to this feature. Any one of the joint pieces 4 may be longer than the other and the bar-like portions 8 and 9 may have any forms and sizes other than specified herein.

To form a plurality of label hangers 6 connected to the common supports 4 and 5 by means of joint pieces 4 and 5, respectively, all these elements may be formed by an injection molding of a synthetic resin such as nylon, polypropylene or the like.

Fig. 4 shows a similar label attaching device 10 to the conventional one. For label attaching, the common support 2 and bar-like portion 8, being the base end of the filament portion 7A, are first set into a magazine holder 14 fixed in place as shown in Fig. 5. The other common support 3 is set into the label attaching device 10. Thus, the bar-like portion 9 is set into a hollow guide needle 11 with a longitudinal slot. When a trigger 13 is pulled, a push-out rod 12 shown in Fig. 4 is moved forward. When the push-out rod 12 pushes the bar-like portion 9 toward the front end of the needle 11, the thinned portion 5A is cut by a cutting blade (not shown) provided in the label attaching device 10. However, the thinned portion 70A remains connected to the filament 7, not cut off.

The needle 11 is pierced or penetrated through a label 20. When the bar-like portion 9 is pushed out by the push-out rod 12, the filament portion 7B is brought into parallelism with the bar-like portion 9 and moved through the longitudinal slot of the hollow needle 11 toward the front end thereof. One of the bar-like portions (9) of the separated label hanger 6 is thus pierced through the label 20 to the opposite side thereof.

The bar-like portion 9 is held in the label attaching device 10 until the label 20 is attached to the label

hanger 6 as shown in Fig. 9, that is, until the thinned portion 5A is cut by the label attaching device 10. After the thinned portion 5A is cut off, the filament portion 7B' is caused due to its own resilience to go back to the position in line with the filament portion 7A. Therefore, after the label 20 is attached to the label hanger 6, the filament portion 7B' will not interfere with the attaching of a label 20 to a next label hanger 6.

The labels 20 can be easily attached to all the filament portions 7B of the label hangers 6. In the foregoing, an example has been described in which a conventional label attaching device 10 is used to attach such a label 20 to the label hanger 6. Also, by using a device which automatically moves a label 20 onto the needle 11 and automatically actuating the push-out rod 12, the attaching of the label 20 to the label hanger 6 of the label hanger magazine 1 can be easily automated.

Labels 20 of a single kind for fabrics of \$40 in price, red in color and L in size, for example, may be attached to a label hanger magazine 1. Otherwise, some different kinds of labels 20 may be attached to a single label hanger magazine 1. In the latter case, 2 to 3 label hangers 6 are to be broken off the magazine 1 to make a discontinuity from one to another group of the label hangers 6 for the respective different kinds of labels 20. Thus, a required number of labels 20 is set in each of different groups. The labels 20 can be attached in each group to the label hanger magazine 1. Next, the other common support 2 is set into the label attaching device 10 and then the needle 11 is pierced into a fabric or the like to fix the label hanger 6 with the label 20 to the fabric. Therefore, the fixation of the label hanger 6 to which the label 20 has already been attached is easier and quicker than the conventional fixation by piercing the needle 11 through both the label and fabric.

More particularly, in case the swollen portions 70 adjacent to each other are connected together by the thinned portion 70A between them before the label hanger 6 is fixed to a fabric, the labels 20 are attached on the filaments 7B without being entangled with each other, so the label hangers 6 can be extremely easily fixed to the fabric or the like.

This will be further described below. Fig. 6 shows the fixation of the label 20 to one end of the label hanger 6 by the method shown in Fig. 4. As seen, when the common support 2 is set in the label attaching device 1, the labels 20 will be laid together, not directed differently. Namely, since the labels 20 can only move in the range of L in length in Fig. 6, it is possible to easily fix the label hanger 6 to a fabric or the like without being interfered with by the labels 20. When the label 20 is attached to the label hanger 6, the common support 3 and joint piece 5 are discarded. Also the thinned portion 70A is torn off, when the label hanger 6 is separated at the joint piece 4 from

the common support 2. The swollen portion 70 formed at the intermediate position of the filament 7 serves as a stopper for the label 20. The swollen portion 70 may be shaped in a similar form to that of the bar-like portions 8 and 9. Otherwise, it may be shaped in any other appropriate forms. If the thinned portion 70A is provided, the swollen portion 70 is not always necessary. However, the swollen portion 70 should desirably be provided to prevent the label 20 from interfering with the fixation of the label hanger to a fabric or the like.

As having been described in the foregoing, according to the present invention, it is possible to attach all kinds of label to the label hangers easily and quickly and also to fix the label hangers each with the label to a fabric or the like easily and quickly without any special skill.

In case of a label hanger magazine in which a plurality of label hangers each having a T-shaped bar-like portion formed at either end of a filament is connected as regularly spaced and in a separable manner to each other between a pair of common supports, all these elements are formed as integrally molded from a flexible plastic material into that magazine and the label hangers adjacent to each other are connected to each other at the intermediate portions thereof by means of readily separable thinned portions, the labels can be laid together, not directed differently until the label hanger is separated from the label hanger magazine. Therefore, the label hanger with a label can be fixed to a fabric without being interfered with by the labels on the other label hangers. So the label hanger can be fixed to the fabric with a considerably improved efficiency. The fixation of label hanger can be done at a rate of more than 1,000 pieces per hour.

Furthermore, in case of a label hanger magazine in which, of the filament portions formed on both sides of a readily separable thinned portion at the middle of the label hanger, the one on which a label is to be attached is shaped so thinner than the other which is to be fixed to a fabric or the like after the label is attached to the label hanger as to have a larger flexibility, the label carrying filament portion, when bent largely, will restore its initial position due to its own resilience, that is, it will retreat itself from the label attaching work area, thus the work can be considerably improved.

Next, the device for automatic attaching of the label 20 to the label hanger 6 will be explained below with reference to Fig. 7 and subsequent drawings:

As shown in Fig. 7, the label attaching device includes a label case 21 having an opening 22 and in which a plurality of labels 20 can be set as stacked and a support mechanism 23 which receives and supports the labels 20 fed one after another through the opening 22 from the label case 21. The support mechanism 23 is so constructed as to be reciprocally mov-

able over a predetermined distance. A spring member 24 at the opening 22 of the label case 21 and a weight 25 is provided on the top one of the stacked labels 20. The spring member 24 is of such a strength that the weight 25 itself will not force the labels 20 down through the opening 22. The support mechanism 23 has a suction unit 26 provided at the opposite side to the label case 21, a suction hole 27 formed therein and a rubber packing 28 provided opposing the label case 21. When the support mechanism 23 is moved to a position where it faces the opening 22 of the label case 21, the suction unit 26 is activated to suck air through the suction port 27 so that a single label 20 is attracted to the rubber packing 28. When the label 20 is held as attracted by the support mechanism 23, the upper end portion of the label 20 in which a fitting hole 20A is formed still stays high above the top of the support mechanism 23. A guide needle 30 which will be discussed later is moved over the support mechanism 23 and inserted into the fitting hole 20A in the label 20. Then, the support mechanism 23 holding the label 20 is moved leftward in the direction of arrow A. When the support mechanism 23 has moved to and stopped in a position indicated with a two-dash line, the label 20 is caught by a roller 29 provided there. The guide needle 30 is hollow and provided in a position where it faces the fitting hole 20A in the label 20. The guide needle 30 is reciprocally movable in the direction of arrow B. That is to say, the guide needle 30 is inserted into or drawn out of the fitting hole 20A in the label 20. There is provided at the base of the guide needle 30 a positioning mechanism 31 which supports the label hanger 6 and brings the bar-like portions 9 one by one into alignment with the longitudinal slot of the hollow guide needle 30. Also, there is provided a push-out pin 32 which is passed through the positioning mechanism 31 and reciprocally movable through the hollow guide needle 30. The push-out pin 32 reciprocates in the direction of arrow C. When used for label attaching, the label hanger magazine 1 having previously been described is set at the common support 3 and bar-like portion 9 thereof into the positioning mechanism 31. When one bar-like portion 9 is brought into alignment with the guide needle 30, the push-out pin 32 is forced upward in the plane of the drawing. The bar-like portion 9 is separated (by a cutter 33 shown in Fig. 8) from the joint piece 5 (not shown in Fig. 7). The bar-like portion 9 thus separated and the filament 7 (not shown) are forced out to the end of the slot of the hollow guide needle 30. Thus, the end of the guide needle 30 is inserted through the fitting hole 20A in the label 20, and the bar-like portion 9 and filament 7 are positioned at the rear side of the label 20. Namely, the label 20 is attached on one end of the label hanger 6. Then, the guide needle 30 and push-out pin 32 are moved vertically in the plane of the drawing, and a next bar-like portion 9 is brought into alignment with the guide needle 30. That

is to say, the label hanger magazine 1 is moved progressively in the direction of arrow D. When the guide needle 30 is retreated, the support mechanism 23 is moved rightward in the plane of the drawing and attracts another label 20 from the label case 21. As this operation is repeatedly done, desired labels 20 are automatically attached on the label hangers 6 of the label hanger magazine 1.

Fig. 8 shows the label 20 having been moved as carried by the support mechanism 23 to a position where the fitting hole 20A in the label 20 is in alignment with the guide needle 30. As mentioned above, there is provided the cutter 33 inside the positioning mechanism 31. The cutter 33 may be adapted to cut off the joint piece 5 when the bar-like portion 9 is forced into the slot of the guide needle 30 by the push-out pin 32. As previously described, the label hanger magazine 1 has also a bar-like portion 8, joint piece 4 and common support 2 at the other end portion of the label hanger 6. When the labels 20 are attached onto the respective label hangers 6 with the label hanger magazine 1 set in the positioning mechanism 31, the filament should desirably be flexed as shown in Fig. 8.

Fig. 9 shows an insertion hole 31A formed in the positioning mechanism 31. The common support 3 is inserted into the upper portion of the insertion hole 31A while the joint piece 5 and bar-like portion 9 are inserted into the cross portion. And the filament 7 is inserted into the lower straight portion.

Fig. 10 shows an example of the feeding mechanism for the label hanger magazine 1. It consists of a gear 34 provided in the aforementioned positioning mechanism 31 and which is adapted to intermittently rotate as interlocked with the reciprocal movement of the push-out pin 32. The teeth of the gear 34 is in mesh with the joint pieces 5 to feed the label hanger magazine 1 downward in the plane of the drawing.

Fig. 11 shows the attaching of the label 20 to each of the label hanger 6 by the aforementioned device. The common support 3 and joint piece 5 at one side of the filament 7 are separated when the label 20 has been attached.

The label hanger magazine 1 to which the labels 20 are already attached as shown in Fig. 11 is set in a label hanger fixing device 35 shown in Fig. 35. A label 20 is actually attached to each of the label hangers 6, but it is omitted in Fig. 12 for the simplicity of illustration. The label hanger fixing device 35 has a guide needle 36 with a slot. The bar-like portion 8 of the label hanger 6 is pushed into the slot of the guide needle 36 by a push-out pin 37. The bar-like portion 8 thus forced into the needle slot is further pushed in parallel with the filament 7 out of the end of the guide needle 36. When the push-out pin 37 is moved outwardly with the needle 36 pierced through a fabric or the like, the label hanger 6 with the label 20 can be fixed to the fabric. The push-out pin 37 can be forwarded as a trigger

38 is pulled. A similar insertion hole to that 31A shown in Fig. 9 is formed in a portion of the label hanger fixing device 35 where the label hanger magazine 1 is to be set, and also a similar cutter to the cutter 33 is provided in the device 35. In addition, a similar gear to the aforementioned one 34 is provided which is intermittently rotated as the push-out pin 34 is forwarded or retreated. When the gear 34 is rotated intermittently in a single direction, the bar-like portions 8 of the label hanger magazine 1 can be brought one by one into alignment with the guide needle 36.

In the previously-mentioned support mechanism 23, the label 20 is supported as attracted by the suction unit 26. However, the label 20 may be supported as caught by any other means such as pawls or the like, or it may be moved as caught between two belts. Any other well-known means may be adopted for this purpose. The support mechanism 23 is reciprocally moved between 2 positions. It may be moved by a rod of any of various types of cylinders. Any other well-known moving means may be used for this purpose. The guide needle 30 and positioning mechanism 31 are illustrated separately from each other, but they may be disposed together in a single case. The motions in the directions of arrows B and C can be easily done by adopting a cylinder or the like. The feeding mechanism is not limited only to the illustrated one. Also, it may not always be provided in the positioning mechanism 31. Various kinds of means are available which can feed directly the label hanger magazine 1 intermittently in the direction of arrow D independently of the positioning mechanism 31. In addition to labels 20 of a same kind, those of many kinds can be attached one after another to the label hanger magazine 1. In this case, after labels 20 of a kind are attached to the label hanger magazine 1, a skip is made over some label hangers 6 before attaching labels 20 of another kind, that is, the labels 20 are not attached to the label hangers 6 in question or the label hangers considered are removed from the label hanger magazine 1 by cutting the opposite ends thereof.

Fig. 13 shows a variant of the label case 21 and thus the opening 22 tilted with respect to the horizontal. The tilt angle α of the label case 21 should desirably be about 45 degrees. To stabilize the labels 20 housed in the label case 21, a stabilizing needle 38 is penetrated through the fitting holes A in the labels 20. The stabilizing needle 38 is terminated by a U-shaped base 39. The free end of the stabilizing needle 38 is not extended to the fitting hole 20A in the label 20 facing the opening 22 of the label case 21 but to that in the second lowest label 20. Because the label case 21 is tilted, the label 20 slides down to the opening 22 of the label case 21.

Fig. 14 shows a roller 40 provided on the stabilizing needle 38 to feed the last label 20 to the opening in case the label case 21 is provided as tilted. The roller 40 is made of a material such as rubber, plastic or

the like, and has a recess 40A axially formed in the middle thereof as shown in Fig. 15. The stabilizing needle 38 is positioned correspondingly to the axial recess 40A.

Fig. 16 shows another variant of the label case 21, comprising a bottom plate 21B on either side of which side plates 21C are provided. Each of the side plates 21C is bent at one end thereof in the form of "L" letter. There is provided at the bent portion a shaft 21D to which a rack plate 21E is provided. A pinion 21F is provided between the rack plates 21E as shown in Fig. 17. The pinion 21F has a shaft 21G which is rotatably fitted at one end thereof in a hole formed in a base plate 41. The hole is located correspondingly to the middle of the bottom plate 21B in the direction of the width of the bottom plate 21B. The pinion 21F has a knob 21H fixed to the other end of the shaft 21G thereof. When the knob 21H is turned, the side plates 21C are moved toward or away from each other. This configuration of the label case 21 permits to accommodate labels 20 of different sizes.

Fig. 18 shows a variant of the support mechanism 23, having a bellows-hose 42 provided in the suction hole 27. The hose 42 has the free end thereof protruded to a length L outwardly. When the suction unit 26 is activated, the protruding end of the hose 42 is retracted into the suction hole 27. The length L is on the order of 5 mm.

Fig. 19 shows another variant of the support mechanism 23. In this support mechanism 23, a pin 43 is provided in a position opposite to the fitting hole 20A in the label 20 and inserted into the fitting hole 20A in the label 20. Thus the support mechanism 23 can stably support the label 20. A spring 44 is provided at the back of the pin 43. The pin 43 is protruded outwardly by the spring 44 as shown in Fig. 20, and when a force is applied to the pin 43, the spring 44 is depressed and the pin 43 itself is retracted into the support mechanism 23. When the bar-like portion 9 of the label hanger 6 is fed by the push-out pin 32 to the back of the label 20, the pin 43 is pushed back by the bar-like portion 9 as shown in Fig. 21. In this variant, the pin 43 and push-out pin 32 are rounded at the ends thereof. However, the pin 43 may be cut obliquely as shown in Fig. 22. The end of the pin 43 may be designed to have various shapes which would prevent the bar-like portion 9 once positioned at the back of the fitting hole 20A in the label 20 from returning to the front side of the label 20 when the push-out pin 32 goes back. The diameter of the hole in which the pin 43 is provided is larger than the length of the bar-like portion 9.

Fig. 23 shows a variant of the means of moving the support mechanism 23 reciprocally. The means uses a linkage 45 which moves semicircularly about two fulcrums 45A.

Fig. 24 shows a further variant of the support mechanism 23. This support mechanism 23 has a

shutter 46 and is designed to move straight. When the support mechanism 23 moves from the front of the opening 22 of the label case 21, the shutter 46 covers the front of the opening 22 of the label case 21. When the support mechanism 23 is returned to the front of the opening 22 of the label case 21, the shutter 46 is pushed by the support mechanism 23 and retreated from the front of the opening 22.

Fig. 25 shows an embodiment in which a case 47 accommodating the joint piece 4 and bar-like portion 8 is provided not in parallel to the positioning mechanism 31 in which the joint piece 5 and bar-like portion 9 are set, but in such a position that the filament 7 will be bent. If the joint piece 4 with the filament 7 bent is set in the case 47 as in this case, the bar-like portion 9 with the label 20 can be retreated from the position of the guide needle 30 without interfering with a next work step.

When the case 47 shown in Fig. 25 is used, the filament portion 7 (7A) to be flexed as shown in Fig. 26 is so thicker than the filament portion 7 (7B) to which the label 10 is to be attached that the label hanger 6 to which the label hanger 6 has been attached can be quickly moved to the case 47. More particularly, the thicker filament portion 7A is so rigid that it will not easily be flexible, namely, it is to be fixed to a fabric or the like, while the thinner filament portion 7B is largely flexed with respect to the filament portion 7A when the label 20 is attached to the label hanger 6 by the label attaching device. The filament portion 7B is 2 to 3 times smaller in section than the filament portion 7B. Of course, the filament portions 7A and 7B may have a same thickness.

Fig. 27 shows another embodiment in which the guide needle 30 is provided at the upper position on a slant plate 48 tilted about 45 degrees and the label case 21 is at the lower position on the slant plate 48. The guide needle 30 may be disposed at the lower position while the label case 21 be at the upper position. In this embodiment, a mechanism is needed to feed the label 20 obliquely upward since the label case 21 is disposed at the lower position. The support mechanism 23 shown in Fig. 18 is suitably usable in this embodiment. As an example, the label feeding mechanism comprises a motor 49, gear box 50, threaded rod 51, stay 52 and a moving plate 53. The revolution of the motor 49 is conveyed to the threaded rod 51 via the gear box 50. The stay 52 has a generally L-shape and is in mesh at a part of the base thereof with the thread of the threaded rod 51. The stay 52 itself is provided at the back of the moving plate 53. As the threaded rod 51 is rotated, the stay 52 is moved upward on the slant plate 48 and thus raises the moving plate 53. Thus the label 20 is also fed to the opening 20A.

As shown in Fig. 28, the stay 52 is in mesh at the base thereof with the threaded rod 51 and moved in the direction of arrow as the threaded rod 51 is rotat-

ed. The stay base has an internally threaded half hole for engagement with the thread of the rod 51. The stay 52 is forced by a spring 54 in the direction of arrow as shown in Fig. 29 so that the base thereof is pressed to the threaded rod 51. When a lever 52A is turned clockwise against the force of the spring 54, the stay base leaves the threaded rod 51, thus the moving plate 51 can be returned downward. The bend of the stay 52 where the lever 52A is formed is installed pivotably to the moving plate 53.

As shown in Fig. 30, there is provided near the opening 22 of the label case 21 a sensor 55 (e.g., microswitch) to detect that no label 20 exists over a predetermined distance from the opening 22. This detection signal is fed to the motor 49 which in turn will be put into operation to rotate the threaded rod 51.

To reciprocally move the support mechanism 23 in the embodiment shown in Fig. 27, two levers 56 and 57 are provided, the lever 57 being fixed to the support mechanism 23. When the label 20 is supported by the support mechanism 23 at a position indicated with a solid line, the lever 57 is moved in the direction of arrow (1) until it comes onto the lever 56. Then the levers 56 and 57 are moved as they are in the direction of arrow (2).

Fig. 32 shows a still another variant of the support mechanism 23. This support mechanism 23 consists of two separate parts. The pin 43 is provided in one (58) of the parts while the hose 42 is in the other part. The part 58 with the pin 43 is vertically slidable so that the pin 43 can face the fitting hole 20A in the label 20. Furthermore, the part 58 has a screw 59 driven therein as shown in Fig. 33. The one and other parts of the support mechanism 23 are joined to each other by a dovetail structure of which the dovetail is formed in the part 58 and the dovetail groove is formed at the other part. When a knob 60 formed at the end of the screw 59 is rotated in one direction, the part 58 is raised. Rotating in the other direction will cause the part 58 to fall. In some kinds of labels 20, the fitting hole 20A is not equidistant from both sides of the label 20 but nearer to one side. In such case, the position of the label 20 (namely, the fitting hole 20A) must be adjusted by raising or falling the part 58.

As having been described in the foregoing, the improved label attaching device according to the present invention can be used to quickly and easily attach a label to each of the label hanger included in the improved label hanger magazine according to the present invention. Therefore, the label hanger with the label can be fixed to a fabric or the like extremely efficiently without the necessity of any special skill as compared with the conventional manner in which a label is first applied to such fabric and then a label hanger is pierced through the label and fabric to fix the label to fabric. Also, the device according to the present invention can be used to fix various kinds of labels to different kinds of goods, respectively.

Claims

1. A label hanger magazine of which the entire is integrally molded from an elastic plastic material, comprising:
 - a plurality of label hangers connected between two parallel common supports by means of a plurality of joint pieces, the label hanger consisting of a filament having bar-like portions formed at both end portions thereof and perpendicular to the common supports;
 - the filament and joint pieces being in line with each other while the bar-like portions at both the end portions of the label hanger are so formed as to be separable from their respective associated joint pieces by a label attaching device having a guide needle which is to be pierced through a fabric and label or the like;
 - the label being attached to each label hanger with the guide needle of the label attaching device inserted through the label when the bar-like portion at one end portion of the label hanger is separated from the joint piece by the device; and
 - the label hanger with the label being fixed to the fabric or the like with the guide needle of the device pierced through the fabric when the bar-like portion at the other end of the label hanger is separated from the joint piece by the device.
2. A label hanger magazine according to Claim 1, wherein the filaments of label hangers are connected at the adjacent longitudinal intermediate portions thereof to each other by means of thinned portions which are easily separable.
3. A label hanger magazine according to Claim 1, wherein a filament portion of the filament of each label hanger, extending in one direction from the longitudinal intermediate point of the filament, is designed thick while a filament portion extending from the other direction and on which a label is to be attached is made thin.
4. A label hanger magazine according to Claim 1, wherein the filament of each label hanger has formed at the longitudinal intermediate point thereof a swollen portion thicker than the filament.
5. A device for attaching labels to a label hanger magazine, comprising:
 - a main body;
 - a hollow guide needle;
 - a label case having an opening and in which a plurality of labels each having a fitting hole formed therein is accommodated as stacked;

a support mechanism which receives and supports labels one by one from the opening of the label case and positions the supported label so that the the fitting hole in the label faces the guide needle, the support mechanism being reciprocally movable between a position where it faces the opening of the label case and a position where it faces the guide needle;

a positioning mechanism provided at the base of the guide needle to provide a passage for the common support of the label hanger magazine formed by an assembly of label hangers each having a bar-like portion formed at either end portion of a filament and connected between two parallel common supports by means of a plurality of joint pieces and also to bring the bar-like portions at the other end portions of the label hanger one by one into alignment with the slot of the guide needle;

a push-out pin provided to be inserted from the base end side while the end portion of the guide needle is inserted through the fitting hole in the label, push the bar-like portion at one of the end portions of the label hanger into the slot of the guide needle and separate it from the joint piece and to bring the separated bar-like portion and a part of the filament to the rear side of the fitting hole in the label; and

a feeding mechanism adapted to bring the other bar-like portions of the label hanger magazine one by one into alignment with the slot of the guide needle, whereby, after the one bar-like portion and a part of the filament are positioned by the push-out pin at the rear side of the fitting hole in the label, the push-out pin is returned to its initial position and the guide needle is extracted from the fitting hole and the label is attached to one of the label hangers included in the label hanger magazine.

6. A device according to Claim 5, wherein the support mechanism is provided with a suction unit which, when put into operation, attracts a label.

7. A device according to Claim 5, adapted for use with a label hanger magazine in which the filaments of label hangers are connected at the adjacent longitudinal intermediate portions thereof to each other by means of thinned portions which are easily separable.

8. A device according to Claim 5, adapted for use with a label hanger magazine in which a filament portion of the filament of each label hanger, extending in one direction from the longitudinal intermediate point of the filament, is designed thick while a filament portion extending from the other direction and on which a label is to be attached

is made thin.

9. A device according to Claim 5, adapted for use with a label hanger magazine in which the filament of each label hanger has formed at the longitudinal intermediate point thereof a swollen portion thicker than the filament.

FIG.1

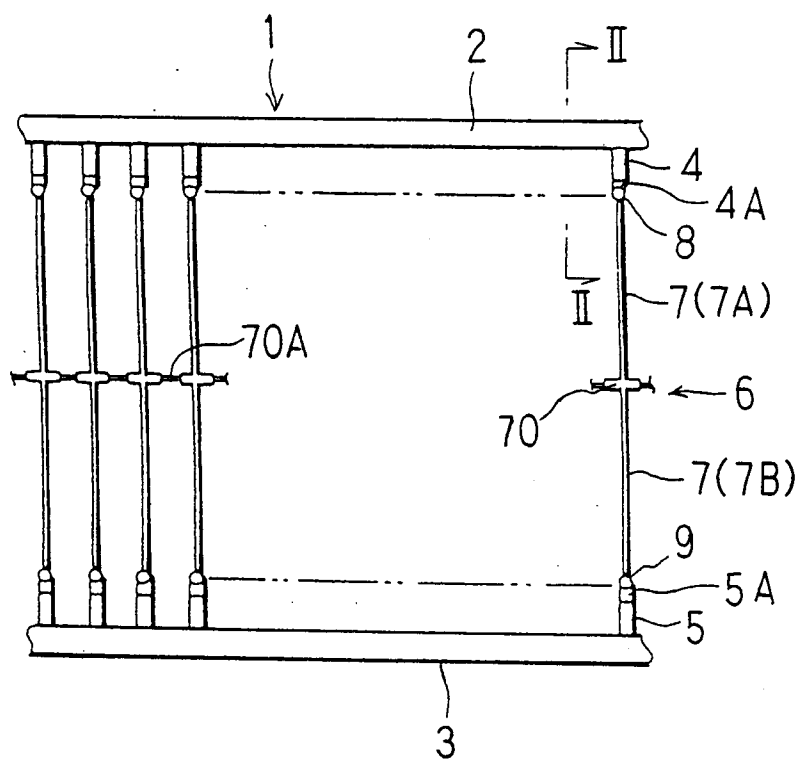


FIG.2

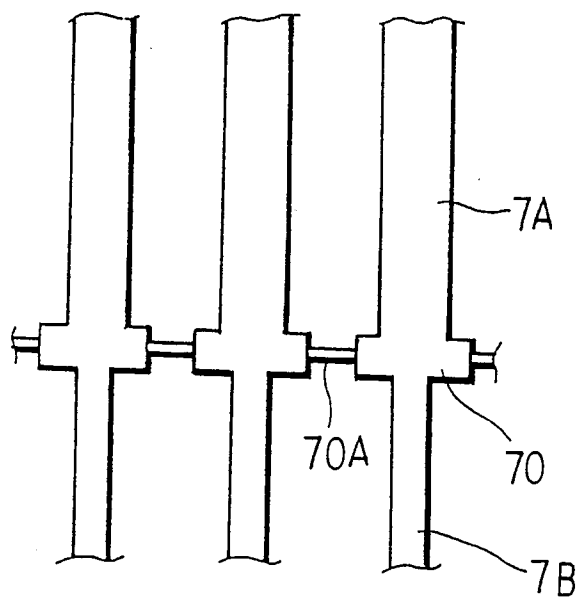


FIG.3

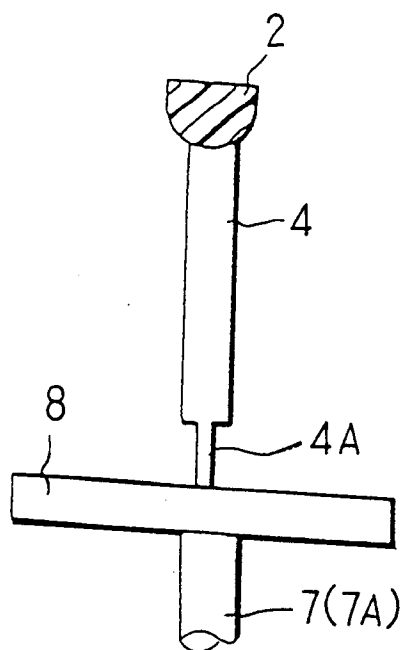


FIG. 4

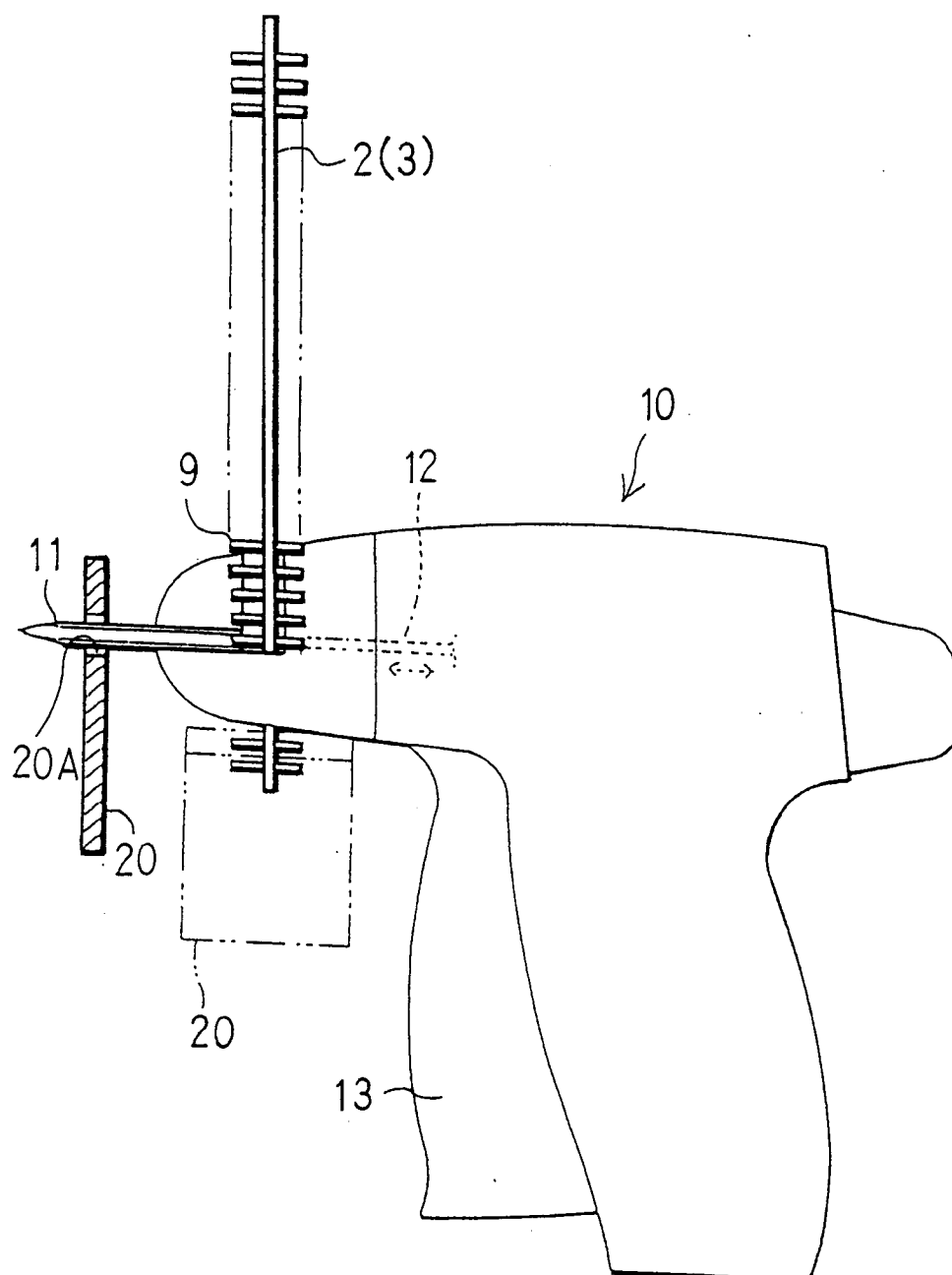


FIG.5

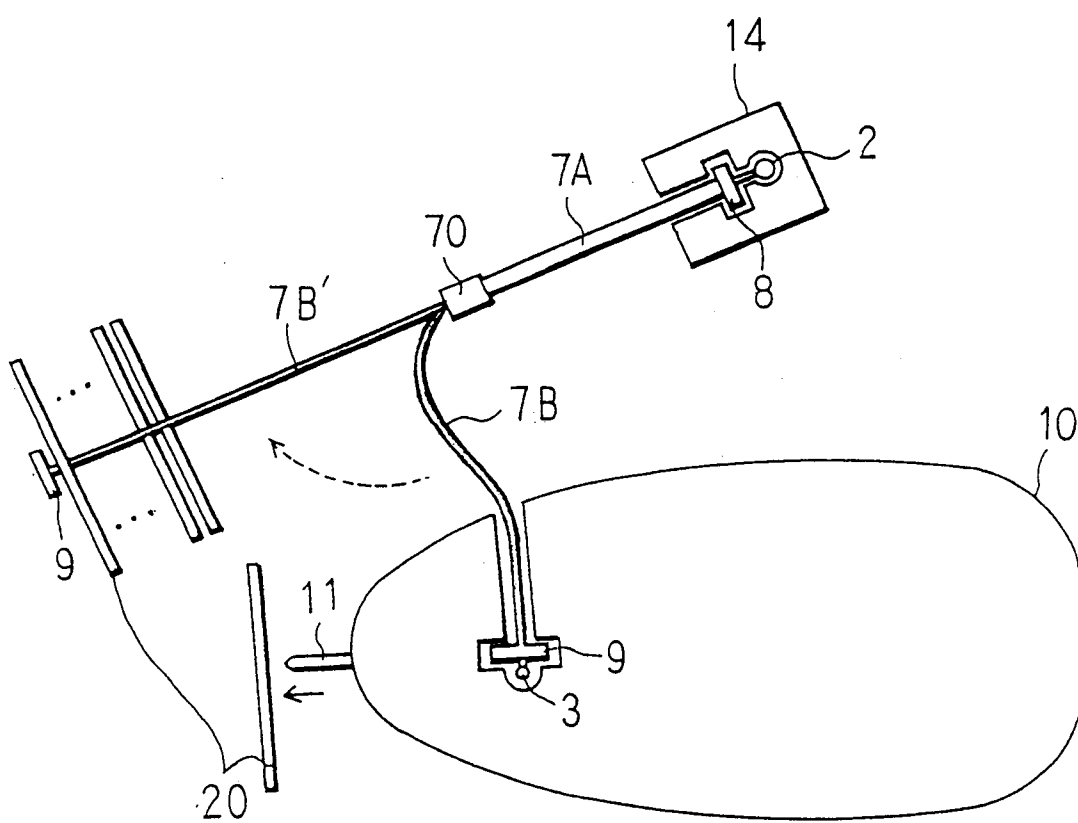


FIG.6

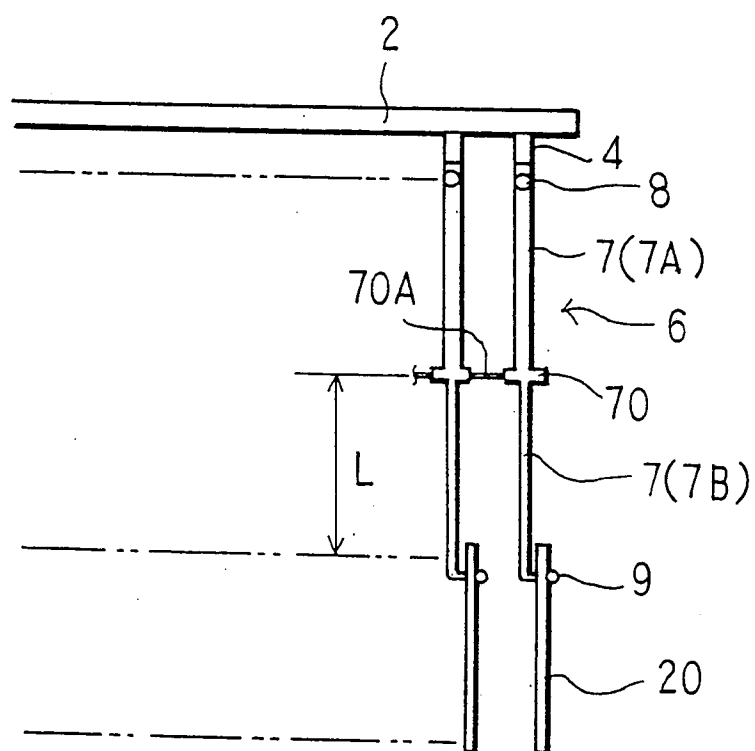


FIG.7

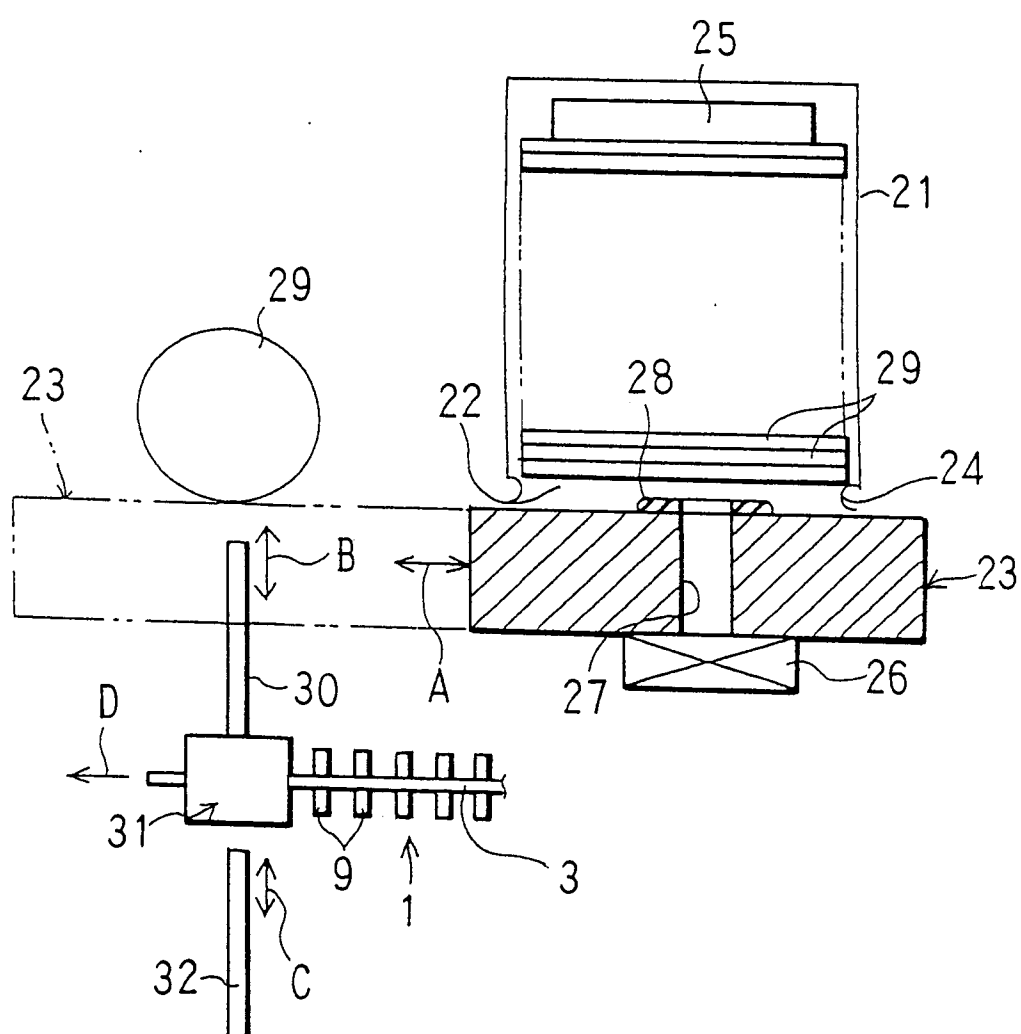


FIG. 8

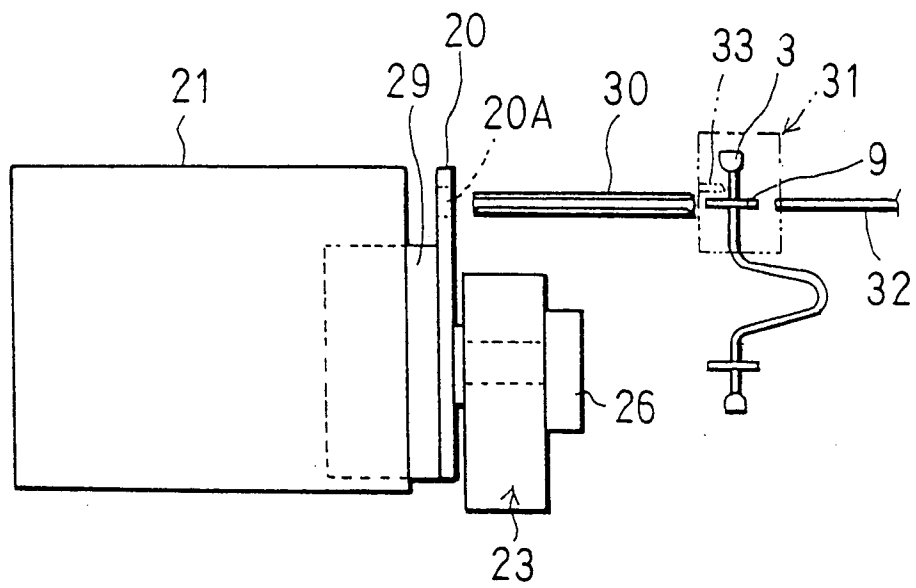


FIG. 9

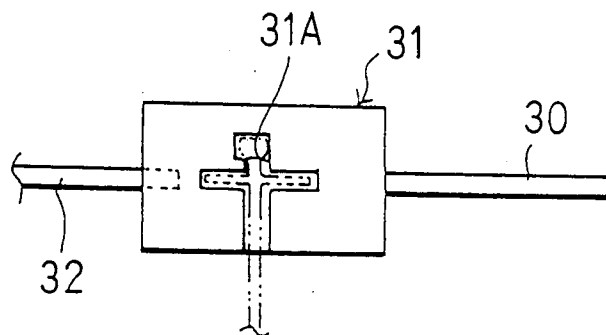


FIG. 10

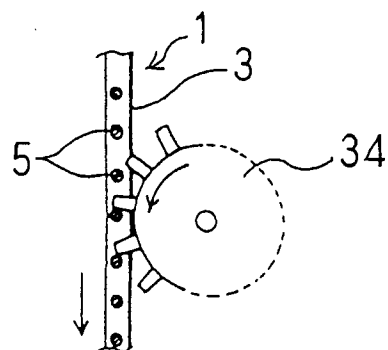


FIG.11

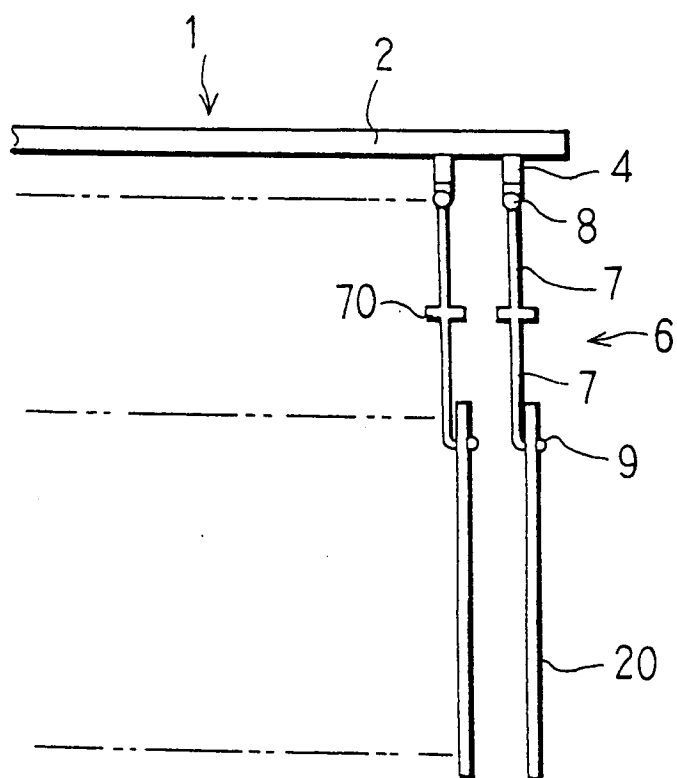


FIG.12

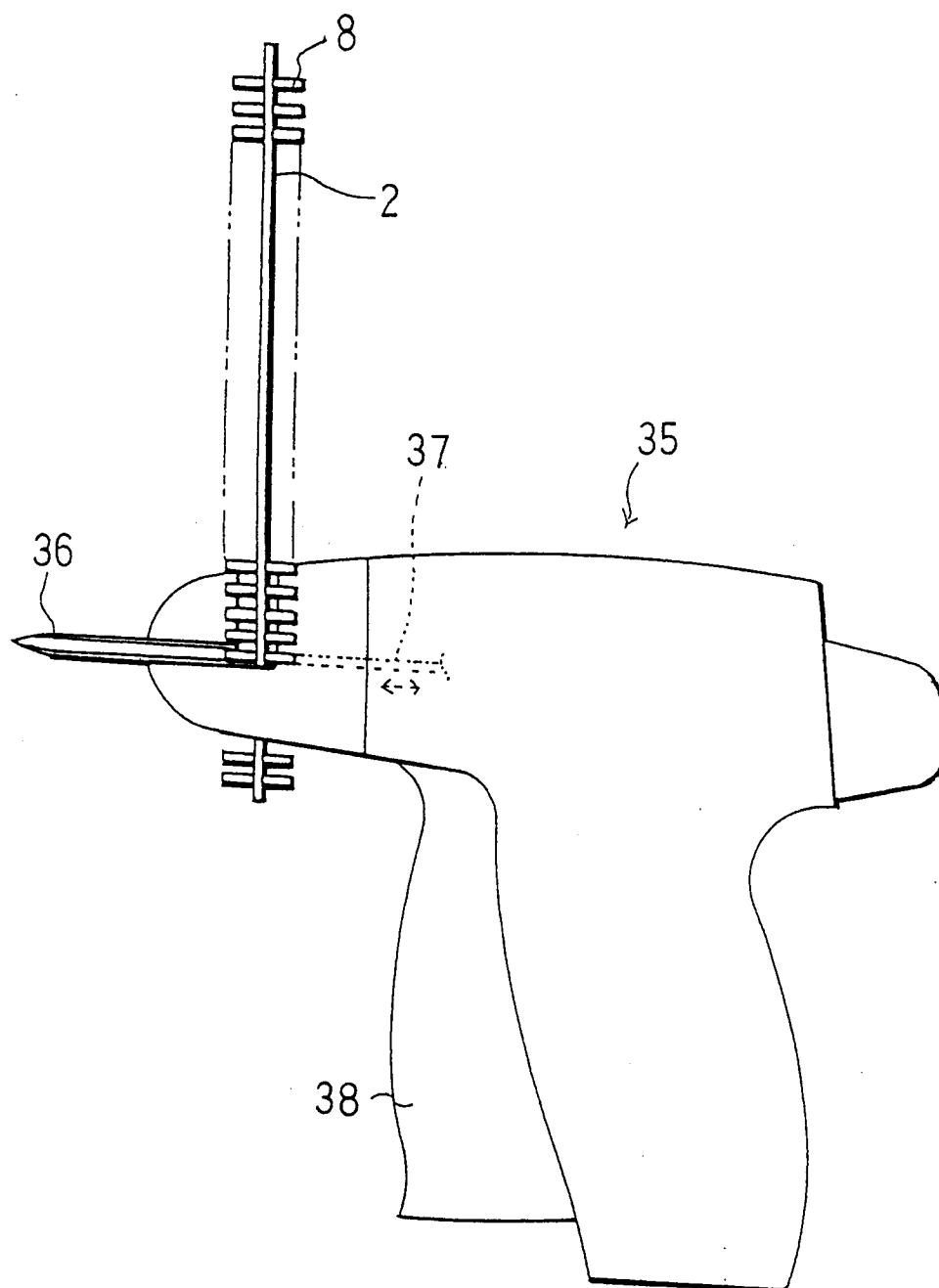


FIG.13

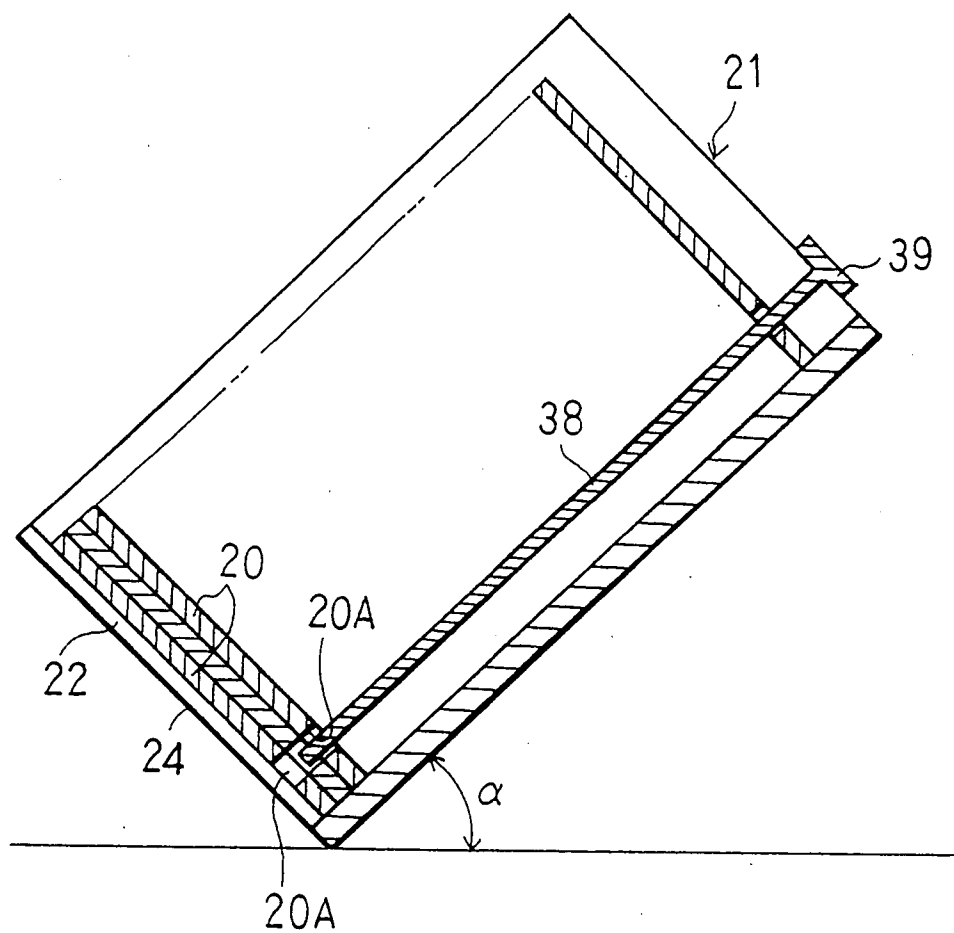


FIG.14

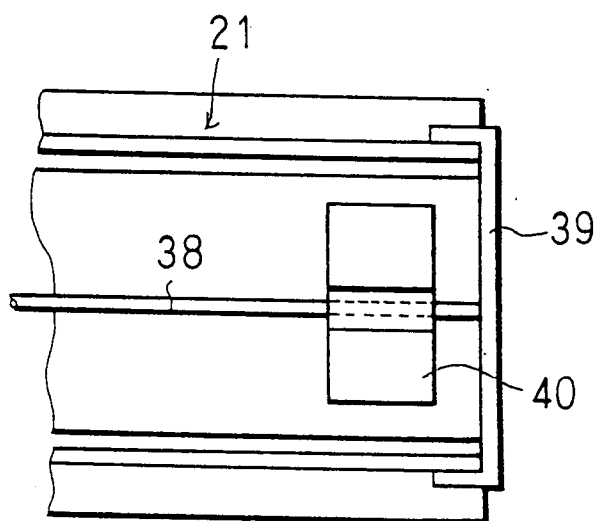


FIG.15

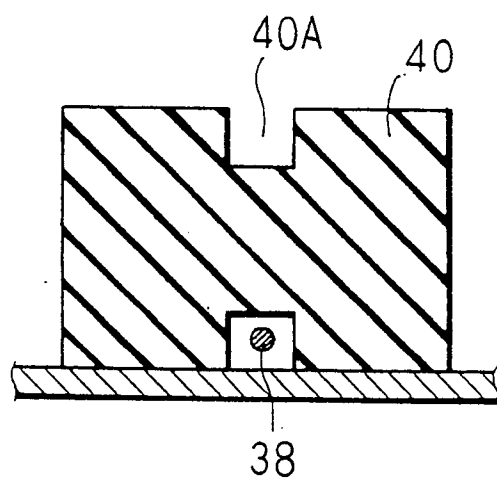


FIG.16

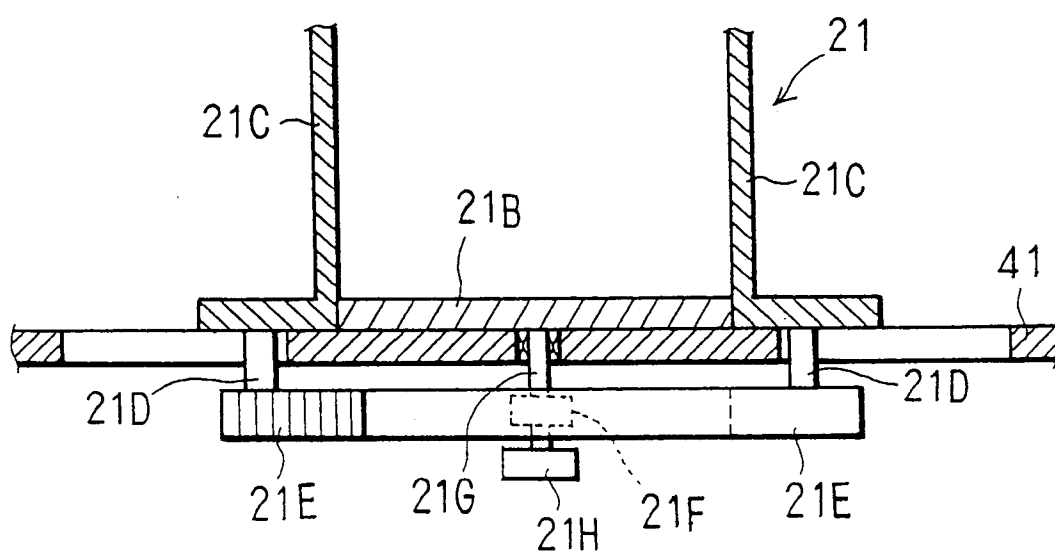


FIG.17

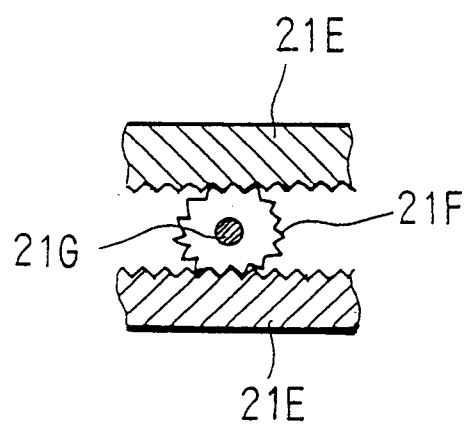


FIG.18

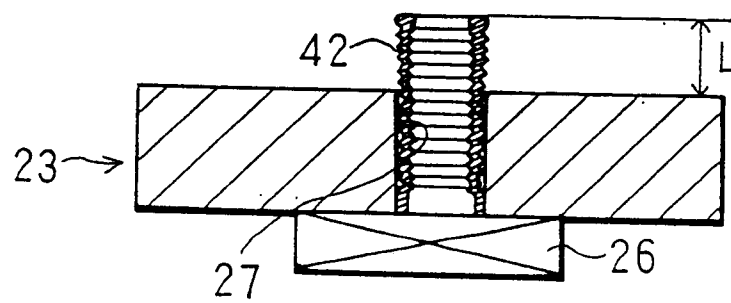


FIG.19

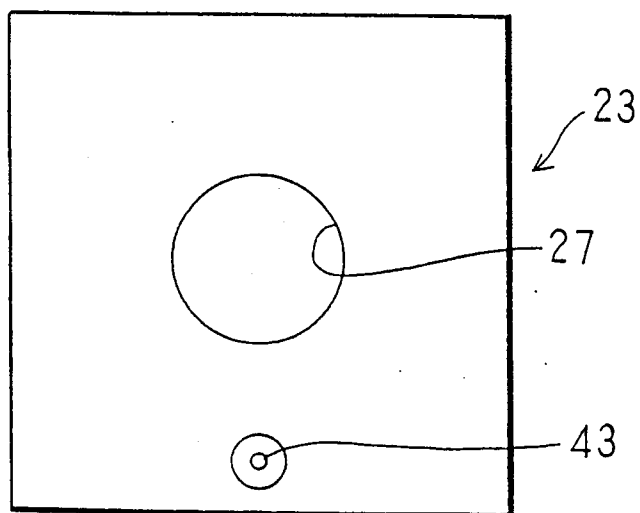


FIG.20

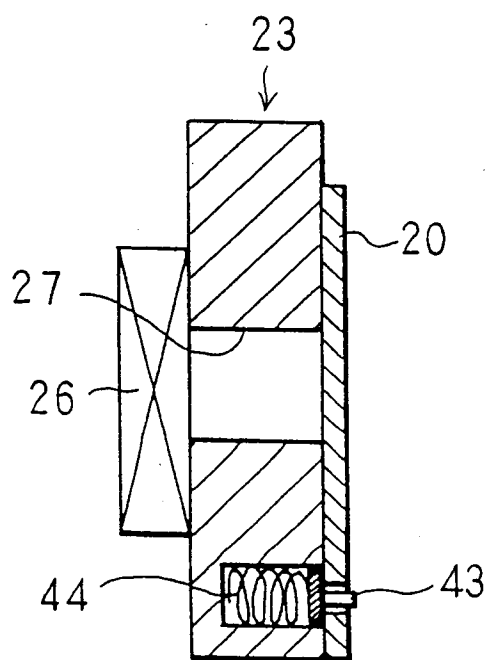


FIG.21

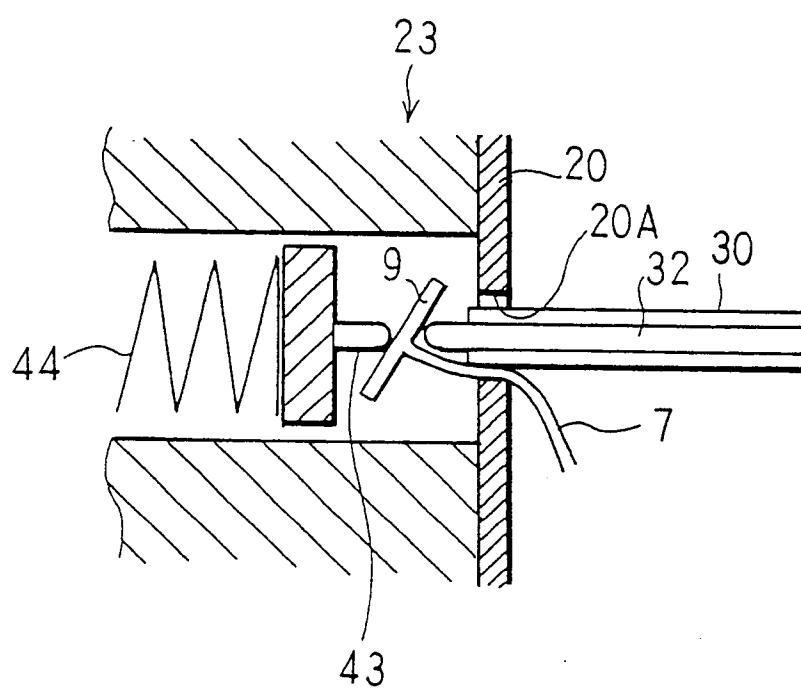


FIG.22

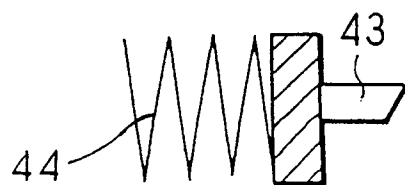


FIG. 23

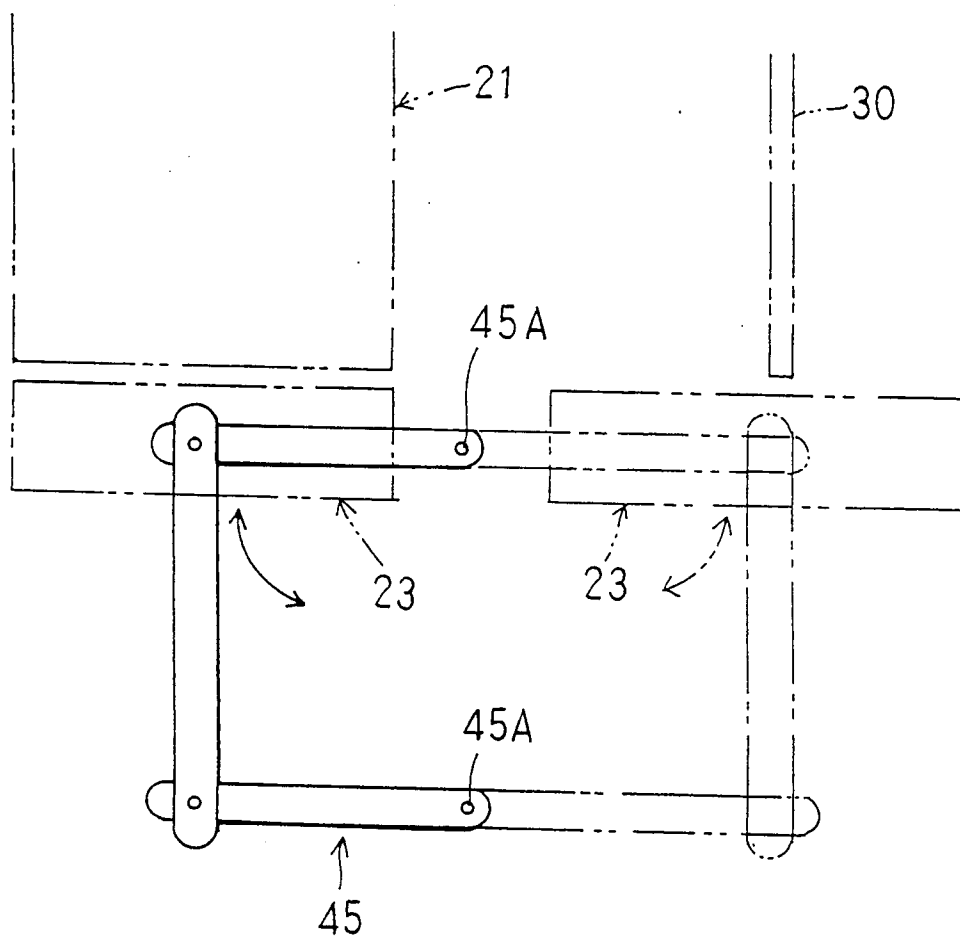


FIG. 24

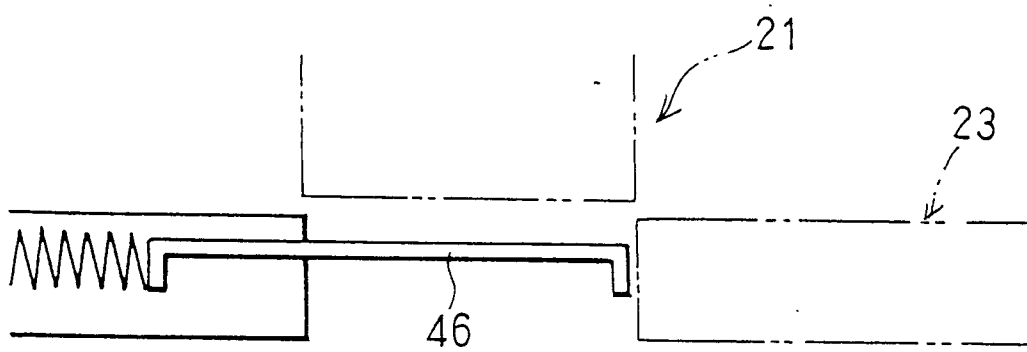


FIG.25

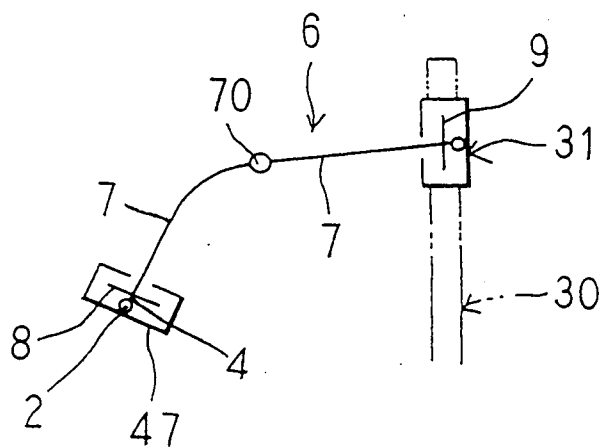


FIG.26

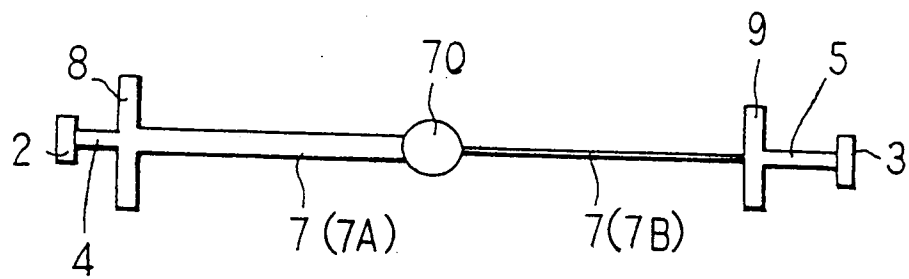


FIG.27

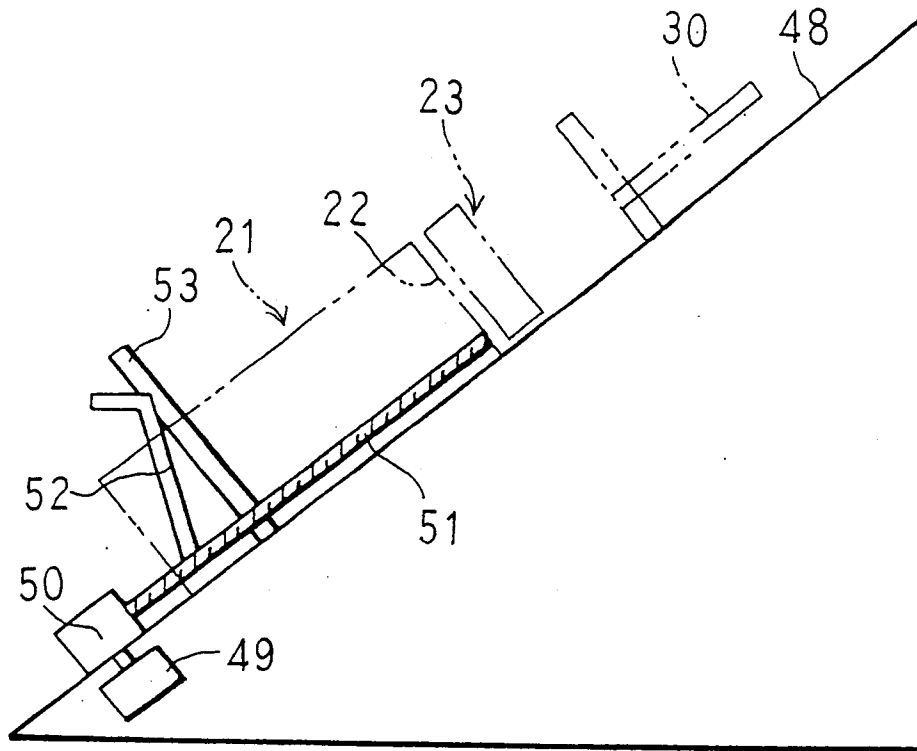


FIG.28

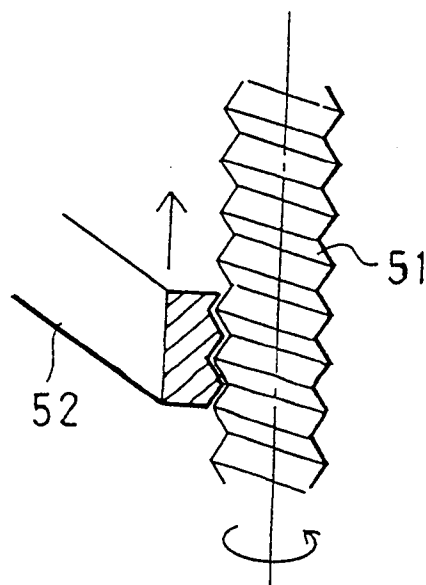


FIG.29

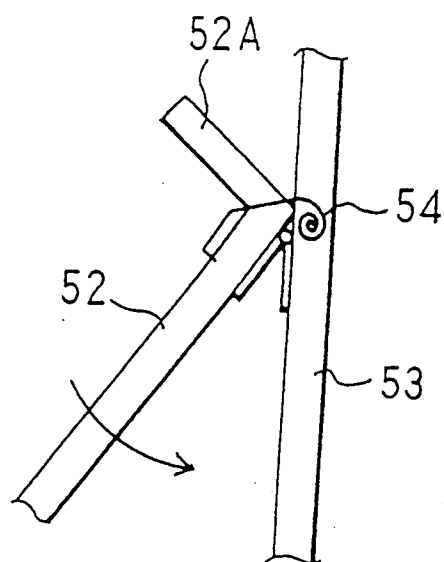


FIG.30

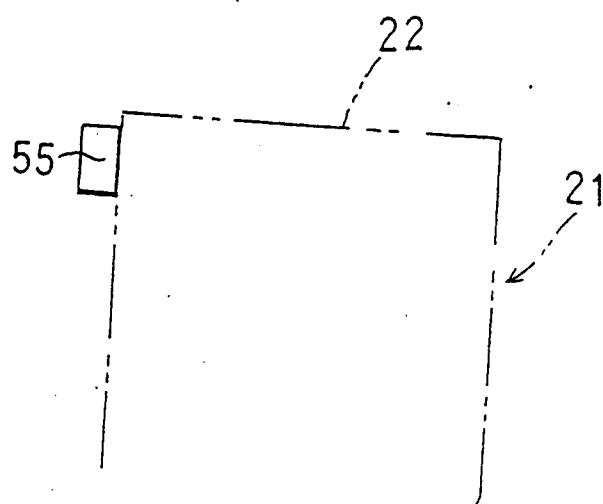


FIG.31

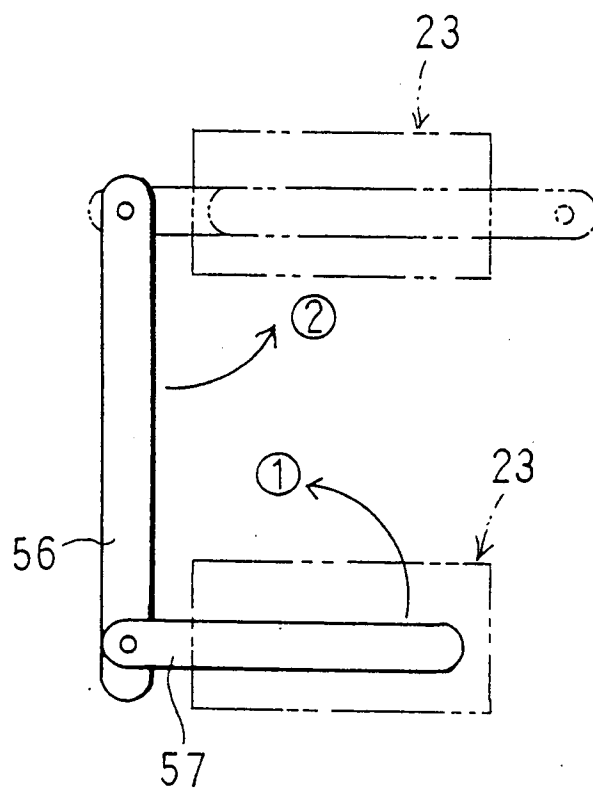


FIG.32

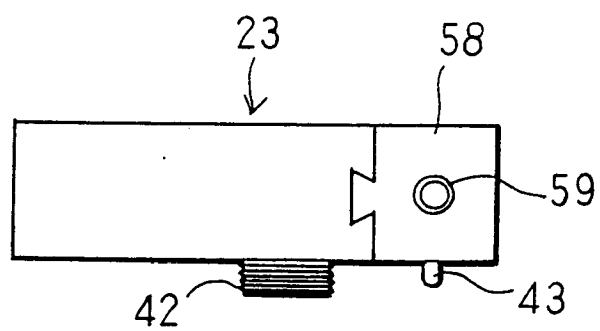


FIG.33

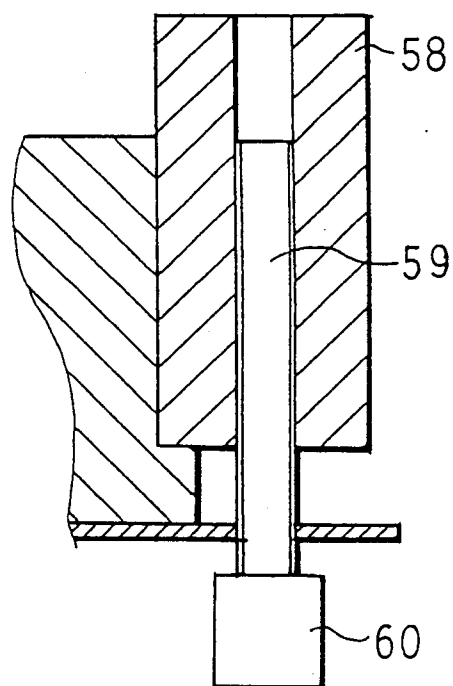


FIG.34 (PRIOR ART)

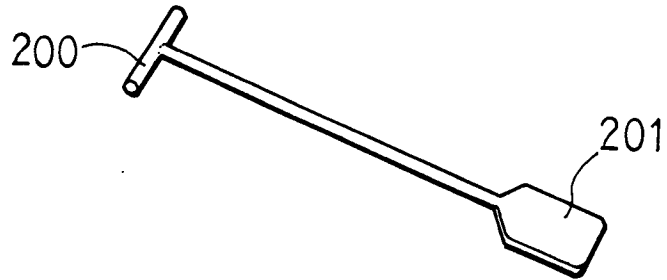


FIG.35 (PRIOR ART)

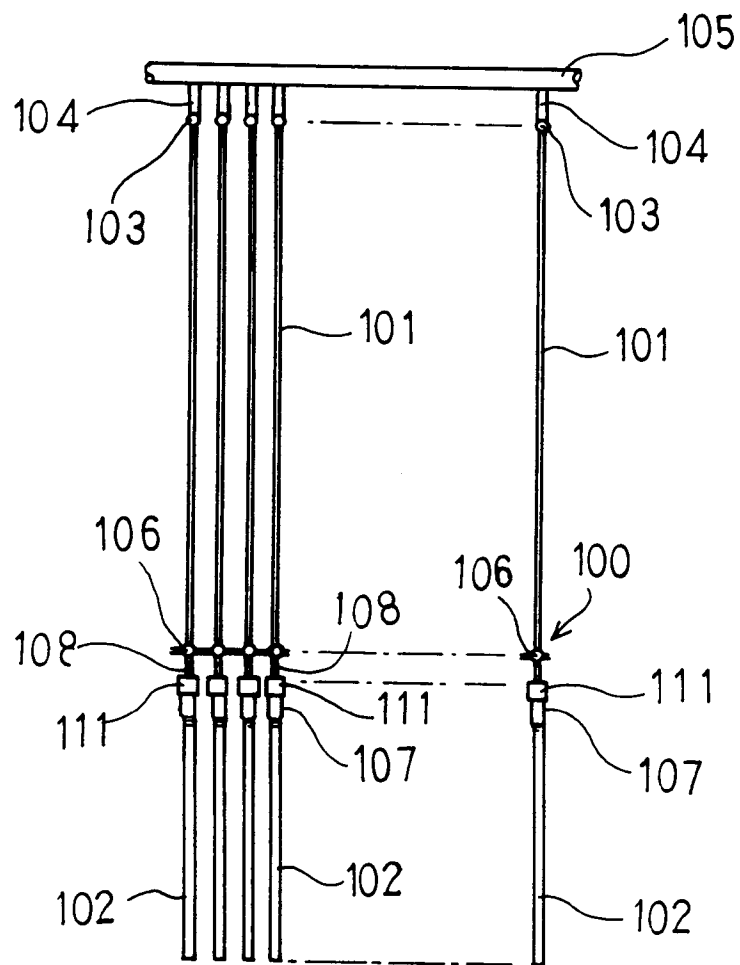


FIG.36 (PRIOR ART)

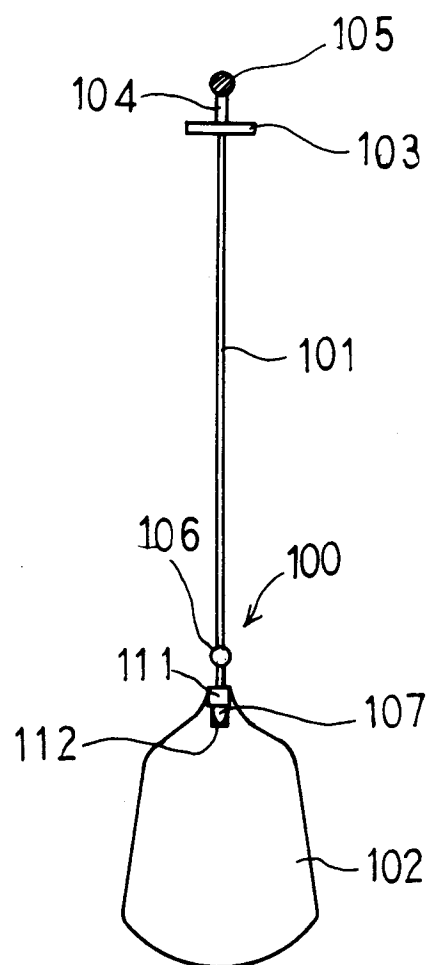
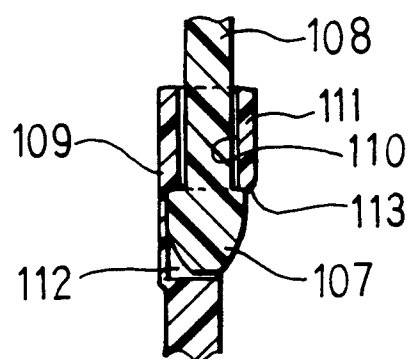


FIG.37 (PRIOR ART)





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 94 30 1978

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
X	EP-A-0 474 938 (KUNREUTHER)	1	B65C7/00 G09F3/14
Y	* figure 9 *	2-4	

Y	WO-A-90 03633 (DENNISON MANUFACTURING COMPANY) * figure 3 *	2,3	

Y	FR-A-2 225 342 (DENNISON MANUFACTURING COMPANY) * figure 6 *	4	

X	US-A-4 183 894 (PARADIS) * figure 5 *	1,4	

X	US-A-3 896 713 (MATO) * abstract; figures 1,2,6 *	5-9	

X	US-A-4 781 318 (MEYERS) * abstract; figures 6,7 *	5-9	

X	US-A-4 323 183 (DUCHIN) * figure 2 *	5,7-9	TECHNICAL FIELDS SEARCHED (Int.Cl.5) B65C G09F

The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		21 June 1994	Martinez Navarro, A
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.82 (P04/C01)