(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 790 345 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
20.08.1997 Bulletin 1997/34

(51) Int. Cl.[6]: **D06F 57/12**

(21) Application number: **96402796.5**

(22) Date of filing: **18.12.1996**

(84) Designated Contracting States:
DE FR GB IT

(30) Priority: **15.02.1996 JP 28308/96**

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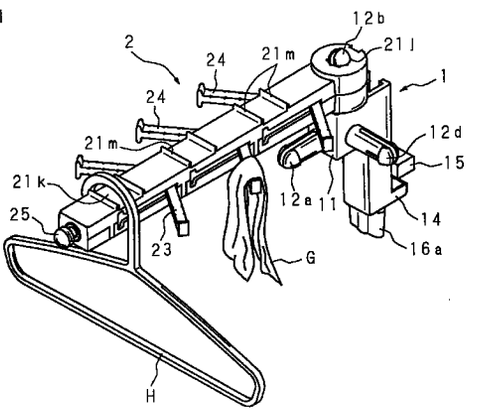
(54) Suspending equipment

(57) A suspending equipment having an arm provided with engaging members for suspending washed clothes or the like such that the arm can be connected to a selected position corresponding to the attachment attitude of an attaching member and the engaging members can be ejected/retracted to and from the arm so that the size of the suspending equipment is reduced to be suitable for use in a room and the suspending equipment can be easily and compactly accommodated without a necessity of a large space when the same is not used.

FIG. 1



EP 0 790 345 A2

Description

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to a suspending equipment for mainly use as an equipment for drying washed clothes in a room.

Description of Related Art

A variety of suspending equipments of the foregoing type have been suggested. However, there has been no equipment for indoor use for drying washed clothes of a type hesitated to be dried outside, such as a brassiere and the like. Therefore, an equipment for outdoor uses is brought into the room to dry such clothes. As a result, the equipment of the aforesaid type is too bulky when used and the equipment is obstructive when it is not used, thus arising a problem because the equipment must be brought to outdoors when it is not used.

SUMMARY OF THE INVENTION

In view of such circumstances, the present invention has been devised, and an object thereof is to provide a suspending equipment shich has a small size suitable for use in a room, and can be accommodated when it is not used and can suspend easily and smoothly a plurality of articles, such as washed clothes.

A suspending equipment according to the present invention comprises an arm having linking portions at an end thereof; an attaching member having a plurality of receiving portions for rotatably receiving the linking portions of the arm and attaching portions for detachably attaching the suspending equipment on a attaching portion; and a plurality of engaging members disposed apart from one another in the lengitudinal direction of the arm so as to suspend required articles.

Therefore, the provided plural engaging members enable a plurality of washed clothes to smoothly and easily be suspended so as to be dried. Moreover, the arm can be connected to a receiving portion selected from the plural receiving portions to have an appropriate attitude with respect to the attaching member. Since the arm can be rotated with respect to the attaching member, the arm can be brought to a direction in which the arm is not obstructive when the suspending equipment is not used.

The suspending equipment according to the present invention is characterized in that the plural receiving portions of the attaching member are disposed in different directions.

Therefore, the arm can be connected to a selected receiving portion of the attaching member corresponding to the attitude of the attaching member so that the arm is attached to the attaching member to always have appropriate attitude.

The suspending equipment according to the present invention is characterized in that one of the linking portions and the receiving portions are projections and the residual portions are recesses for receiving the projections.

Since one of the linking portions and the receiving portions are projections and the residual portions are recesses for receiving the projections, reliable connection/disconnection can be performed while requiring only a simple structure.

The suspending equipment according to the present invention is characterized in that the engaging members are disposed along the both sides of the arm.

Since the engaging members are provided along the both sides of the arm, many engaging members can be provided so that a plurality of articles, such as washed clothes, are suspended at a time.

The suspending equipment according to the present invention is characterized in that the engaging members are disposed on the both sides of the arm in such a manner that the positions are shifted in the longitudinal direction of the arm.

Since the engaging members are provided on the both sides while shifting their positions, the distances among articles to be suspended can be elongated and therefore mutual contact of the suspended articles can be prevented. In the case where the articles are washed clothes, the washed clothes can therefore quickly be dried.

The suspending equipment according to the present invention is characterized in that a catching recess for catching the hook of a hanger is formed at the top surface of the arm.

Since an engaging recess is formed at the top surface of the arm, the hook of a hanger or the like can be engaged so as to suspend various kinds of washed clothes to be dried, as well as small articles.

The suspending equipment according to the present invention is characterized in that the engaging members are able to move to positions for use at which the engaging members projecting sidewards from the arm and to positions for non-use at which the engaging members are taken in the arm.

Since the engaging members are ejected/retracted to and from the arm, the engaging members are not obstructive when the suspending equipment is not used. Thus, the suspending equipment can easily be accommodated.

The suspending equipment according to the present invention is characterized in that the arm has an operating rod for moving the engaging members to the positions for use and the positions for non-use.

Therefore, all of the engaging members can simultaneously be moved to the positions for use or positions for non-use by operating the operating rod.

The suspending equipment according to the present invention is characterized in that the operating rod is received in the arm slidably in the longitudinal

direction of the arm, and a knob portion of the operating rod projects outwardly from the leading end of the arm.

Since the operating rod is disposed in the arm and only the knob portion projects outwardly, the overall size of the suspending equipment can be reduced.

The suspending equipment according to the present invention is characterized in that one of the outer surface of the operating rod and the base portion of each of the engaging members has engaging recesses and the residual member has engaging projections so that the operating rod and the engaging members are connected to each other.

Since the operating rod and each of the engaging members are connected to each other through the engaging recess and the engaging projection, the connection structure can be simplified and the overall size of the suspending equipment can be reduced.

The above and further objects and features of the invention will more fully be apparent from the following detailed description with accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view showing a state where a suspending equipment according to the present invention is being used;
FIG. 2 is a front view of the same;
FIG. 3 is a plan view of the same;
FIG. 4 is a right side view of the same;
FIG. 5 is a left side view of the same;
FIG. 6 is a bottom view of the same;
FIG. 7 is a rear view of the same;
FIG. 8 is a front view showing a state where the suspending equipment shown in FIG. 1 is not used;
FIG. 9 is a plan view of the same;
FIG. 10 is a right side view of the same;
FIG. 11 is a left side view of the same;
FIG. 12 is a bottom view of the same;
FIG. 13 is a rear view of the same;
FIG. 14 is a front view of the attaching member shown in FIG. 1;
FIG. 15 is a plan view of the same;
FIG. 16 is a right side view of the same;
FIG. 17 is a bottom view of the same;
FIG. 18 is a rear view of the same;
FIG. 19 is a right side view of the movable holding member shown in FIG. 1;
FIG. 20 is a plan view of the same;
FIG. 21 is a rear view of the same;
FIG. 22 is a front view of the arm shown in FIG. 1;
FIG. 23 is a plan view of the same;
FIG. 24 is a left side view of the same;
FIG. 25 is a bottom view of the same;
FIG. 26 is a rear view of the same;
FIG. 27 is an enlarged cross sectional view taken along line a-a shown in FIG. 23;
FIG. 28 is an exploded perspective view of the arm shown in FIG. 1; and
FIGS. 29A and 29B are explanatory views showing a state where the engaging member and the operating rod are connected to each other.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Preferred embodiments of the present invention will now be described with reference to the drawings.

FIG. 1 is a perspective view showing a state where a suspending equipment according to the present invention is being used. FIG. 2 is a front view showing the foregoing state, FIG. 3 is a plan view of the same, FIG. 4 is a right side view of the same, FIG. 5 is a left side view of the same, FIG. 6 is a bottom view of the same, FIG. 7 is a rear view of the same, FIG. 8 is a front view showing a state where the equipment according to the present invention is not used, FIG. 9 is a plan view of the same, FIG. 10 is a right side view of the same, FIG. 11 is a left side view of the same, FIG. 12 is a bottom view of the same and FIG. 13 is a rear view of the same. The suspending equipment according to the present invention comprises an attaching member 1 for securing the suspending equipment to a required portion, such as a window frame or a desk, and an arm 2 detachably mounted on the attaching member 1. The attaching member 1 and the arm 2 are made of synthetic resin.

FIG. 14 is a front view of the attaching member 1, FIG. 15 is a plan view of the same, FIG. 16 is a right side view of the same (a left side view is symmetrical to the right side view), FIG. 17 is a bottom view of the same, and FIG. 18 is a rear view of the same. The attaching member 1 has a base 10 in the form of a hollow rectangular parallelpiped, and a head portion 11 in the form of hollow cube projecting forwards, the head portion 11 being formed in the upper front portion of the base 10. Supporting rods 12a to 12d respectively serving as receiving portions for attaching the arm 2 are projected from the front surface, the top surface, the right surface and the left surface of the head portion 11 at a right angle.

The supporting rods 12a to 12d have almost the same shape and size and each comprises a rod portion 12e having a base portion secured to each of the surface of the head portion 11 at a right angle, a stopper portion 12f formed in a spherical shape at the leading end of the rod portion 12e, an expanding slot 12g formed from the leading end of each stopper portion 12f to a position near the base end of the rod portion 12e, and two projections 12h formed on the outer surface of the rod portion 12e of each of the supporting rods 12a to 12d in a direction perpendicular to the direction of the expanding slot 12g, the projections 12h being provided to prevent free rotation of the arm 2.

The attaching member 1 has, from the top end to a position near the lower end on the rear side thereof, a guide groove 13 having substantially C-shape cross section. A rectangular fixed block 14 is formed at the lower end of the guide groove 13 so as to project rear-

wards. A movable holder 15 similarly having a rectangular shape is interposed within the guide groove 13 to be opposite to the fixed block 14 in such a manner that the movable holder 15 is able to move vertically.

FIG. 19 shows a right side view of the movable holder 15, FIG. 20 is a plan view of the same, and FIG. 21 is a rear view of the same. The movable holder 15 has a rectangular parallelpiped slide block 15a through a shoulder portion 15b at the base portion thereof. The slide block 15a has, on the lower end surface thereof, a cylindrical stopper 15c arranged to be brought into contact with the top surface of the fixed block 14 so as to determine the downward movement limit of the movable holder 15.

A thread hole 15e is, as shown in FIG. 20, formed to penetrate the slide block 15a and the stopper 15c. A leading end of an operating thread rod 16 having a fixed block 14, as shown in FIG. 18, screwed to be inserted is screwed to be inserted into the thread hole 15e. The operating thread rod 16 has a knob 16a at the base end thereof. By rotating the operating thread rod 16 forward/reward by the knob 16a, the movable holder 15 is moved to be close apart to and from the fixed block 14 so as to hold a window frame or a desk edge, which is the subject of attachment, and to remove of the suspending equipment from the subject.

Rubber plates 14d and 15d are bonded to the facing surfaces of the fixed block 14 and the movable holder 15 in order to prevent slippage.

FIG. 22 is a front view of the arm, FIG. 23 is a plan view of the same, FIG. 24 is a left side view of the same, FIG. 25 is a bottom view of the same, FIG. 26 is a rear view of the same, FIG. 27 is an enlarged cross sectional view taken along line a-a of FIG. 23, and FIG. 28 is an exploded perspective view of the arm. FIGS. 29A and 29B are explanatory views showing a state of connection between the operating rod and the engaging member.

The arm 2 is vertically divided into an upper member 21 and a lower member 22. A plurality of engaging members 23 and 24 and an operating rod 25 for moving the engaging members 23 and 24 to the positions for use shown in FIGS. 1 and 3 and to the positions shown in FIG. 9 when the suspending equipment is not used are disposed between the upper and lower members 21 and 22.

As shown in FIG. 28, the lower member 22 has, at the base end thereof, a cylindrical portion 22a forming a portion of a linking portion and having a large wall thickness. Moreover, the lower member 22 has a semi-cylindrical guide groove 22b formed in the central portion of the surface facing the upper member 21 so as to receive the operating rod 25. Moreover, a plurality of receiving grooves 22c and 22d for receiving securing claws 21c and 21d of the upper member 21 are formed in the right and left outer walls at predetermined intervals in the longitudinal direction of the lower member 22 so as to receive securing claws 21c and 21d of the upper member 21. Empty portions 22e and 22f for accommodating the lower half portions of the engaging members 23 and 24 are formed between the receiving grooves 22c and between receiving grooves 22d respectively. At the leading end of the guide groove 22b of the lower member 22, there is formed a stepped portion 22i for holding a shoulder portion 25c of the operating rod 25 to be described later.

The empty portions 22e and 22f have shapes corresponding to the shapes of the lower half portions of the engaging members 23 and 24 so as to receive the engaging members 23 and 24. Each of the empty portions 22e and 22f has a recess hole 22g in the lower wall surface thereof at a position adjacent to the base end of the arm 2 in order to receive shaft portions 23b and 24b of the engaging members 23 and 24. Reference numeral 22h represents a securing claw for integrating the cylindrical portion 22a with a cylindrical portion 21a of the upper member 21.

The upper member 21 has, at the base end thereof, a cylindrical portion 21a similarly forming a portion of the linking portion and having a large wall thickness. Moreover, the lower member 21 has a semi-cylindrical guide groove 21b formed in the central portion of the lower surface facing the upper member 22 so as to receive the operating rod 25, as shown in FIG. 27. The upper member 21 has, on the both sides thereof, a plurality of securing claws 21c and 21d at predetermined intervals in the longitudinal direction thereof, the securing claws 21c and 21d being received by the corresponding receiving grooves 22c and 22d. Empty portions 21e and 21f for accommodating the upper half portions of the engaging members 23 and 24 are formed between the securing claws 21c and between securing claws 21d at positions corresponding to the empty portions 22e and 22f, the empty portions 21e and 21f having shapes corresponding to the shapes of the engaging members 23 and 24. The wall of each of the empty portions 21e and 21f has a recess hole 21g at a position corresponding to the recess hole 22g of the each of the empty portions 22e and 22f of the lower member 22.

The cylindrical portion 21a has a receiving hole 21h for receiving the projecting securing claw 22h of the cylindrical portion 22a of the lower member 22. The cylindrical portion 22a has, in the inner surface thereof, a plurality of recess lines 21j for receiving the projections 12h formed on the outer surface of each of the supporting rods 12a to 12d, as shown in FIG. 3.

The upper member 21 has, at the top surface thereof, a plurality of recesses 21k at predetermined intervals in the longitudinal direction thereof, as shown in FIGS. 3 and 4. Moreover, projections 21m are formed in front of the recesses 21k and in the rear of the same, the projections 21m being formed to cover the overall width of the upper member 21 to enable a hook or the like of a hanger H (see FIG. 1) to be suspended.

The empty portions 21e and 21f and those 22e and 22f disposed horizontally are formed to be shifted for an appropriate length in the longitudinal direction of the

arm 2. Also the positions of the engaging members 23 and 24, to be disposed in the aforesaid empty portions, are shifted in the longitudinal direction of the arm 2.

Each of the engaging members 23 and 24 is formed in a rod shape having a rectangular cross sectional shape and has, at the base end portion thereof, projecting shaft portions 23a, 23b, 24a and 24b at the upper and lower portions thereof, as shown in FIGS. 28, 29A and 29B. Moreover, spherical projections 23c and 24c for establishing the connection with the operating rod 25 are, in a diagonally rearward direction, formed at the base end of each of the engaging members 23 and 24. In addition, engaging portions 23d and 24d for preventing slippage and fall of suspended articles are formed at the leading ends of the engaging members 23 and 24.

The operating rod 25 is formed in a rod shape having a circular cross sectional shape, as shown in FIGS. 27 and 28 and has a plurality of pairs of recess grooves 25a and 25b at substantially the same intervals in the longitudinal direction of the operating rod 25. Moreover, a knob portion 25d is formed at the base end of the operating rod 25 at an interval of a shoulder portion 25c.

As shown in FIGS. 29A and 29B, the spherical projection 23c of the engaging member 23 is engaged to the recess groove 25a, while the spherical projection 24c of the engaging member 24 is engaged to the recess groove 25b. By moving the operating rod 25 forward/rearward, the engaging members 23 and 24 are rotated to the positions for use shown in FIG. 29B and to the positions shown in FIG. 29A and corresponding to a state where the suspending equipment is not used. The shoulder portion 25c of the operating rod 25 is engaged by the stepped portions 21i and 22i formed at the leading end of the arm 2 and in the inner surface of the guide grooves 21b and 22b so that separation of the operating rod 25 is prevented.

The arm 2 is assembled such that the operating rod 25 is placed on the guide groove 22b of the lower member 22 in such a manner that the shoulder portion 25c of the operating rod 25 is brought into contact with the stepped portion 22i of the guide groove 22b. Then, the engaging members 23 and 24 are set in the empty portions 22e and 22f of the lower member 22.

That is, the lower shaft portions 23b and 24b of the corresponding engaging members 23 and 24 are received by the recess holes 22g of the lower member 22. Moreover, the spherical projections 23c and 24c of the corresponding engaging members 23 and 24 are received by the recess grooves 25a and 25b of the operating rod 25.

In the above-mentioned state, the securing claws 21c and 21d of the upper member 21 are engaged to the corresponding receiving grooves 22c and 22d of the lower member 22. Simultaneously, the securing claw 22h of the lower member 22 is received by the receiving hole 21h of the upper member 21 so that separation is prevented. As a result, the operating rod 25 is slidably held by the guide grooves 21b and 22b of the upper and lower members 21 and 22. Moreover, the shoulder portion 25c of the operating rod 25 is slidably held between the stepped portions 21i and 22i of the guide grooves 21b and 22b. Also the shaft portions 23a and 24a of the engaging members 23 and 24 respectively are engaged into the recess hole 21g of the upper member 21 so that the engaging members 23 and 24 are rotatably supported by the recesses 21g and 22g of the engaging members 23 and 24.

The operation and method of using the suspending equipment having the aforementioned structure will now be described.

Referring to FIG. 1, the knob 16a of the operating thread rod 16 of the attaching member 1 is rotated so that the movable holder 15 is vertically moved to lengthen the distance from the fixed block 14 in order to hold a required attaching portion so that the attaching member 1 is secured to the attaching portion. The attaching portion may be an edge of a desk, the back of a chair, a table, a cupboard or the like.

At this time, it is preferable that the attaching member 1 be attached in such a manner that any one of the supporting rods 12a to 12d provided for the head portion 11 and serving as the linking portions faces upwards. Then, any one of the supporting rods 12a to 12d allowed to face upwards is received by the cylindrical portions 21a and 22a formed at the base end portion of the arm 2. As a result, the projections 12h formed on the outer surface of the rod portion 12e of the supporting rods 12a to 12d is received by the recess lines 21j formed in the inner surface of the cylindrical portion 21a so that free rotation of the arm 2 is prevented. As a matter of course, when the arm 2 is pushed and rotated with strong force around the supporting rods 12a to 12d, the projections 12h of the supporting rods 12a to 12d is engaged to the other recess lines 21j provided at the cylindrical portion 21a of the arm 2. Thus, the arm 2 can be rotated by each predetermined angular degree.

When the knob portion 25d of the operating rod 25 is pulled in this state, the operating rod 25 is pulled forwards from the position shown in FIG. 29A to the position shown in FIG. 29B, thus causing each of the engaging members 23 and 24 having the spherical projections 23c and 24c engaged to each of the recess grooves 25a and 25b to be rotated around the shaft portions 23a, 23b, 24a and 24b and swung outwards from the non-use accommodation position shown in FIG. 29A to the position for use. By engaging laundries G to each of the engaging members 23 and 24 as shown in FIG. 1, the laundries can be suspended.

As a matter of course, the laundry suspended by the other hanger H or the like can be suspended by engaging the hook of the hanger H to the recesses 21k of the projections 21m provided for the upper member 21 of the arm 2.

When the suspending equipment is not used, the operating rod 25 is pushed into the arm 2. Thus, the operating rod 25 is retracted into the arm 2 so that each of the engaging member 23, to be engaged to the operating rod 25, is taken in each of the empty portions 21e,

22e, 21f and 22f. The arm 2 may be rotated around the supporting rods 12a to 12d so as to be accommodated adjacent to, for example, the wall surface so that the arm 2 is brought to a non-obstructive position. The arm 2 may temporarily be drawn from the supporting rods 12a to 12d of the attaching member 1 and received by a supporting rod facing another direction so that a state where the arm 2 is not obstructive is realized.

The overall body including the attaching member 1 may, of course, be removed from the attaching portion so as to be accommodated.

In the present invention, the arm connection position can be selected corresponding to the attaching attitude of the attaching member with respect to the attaching portion so that the arm is connected to the attaching member with an appropriate attitude. Therefore, the attaching portion can widely be selected. By rotating the arm having the engaging member with respect to the attaching member, the arm can be rotated into a direction in which the clothes can be dried more effectively. When the suspending equipment is not used, the arm can be rotated to a position at which the arm is not obstructive.

Since the direction of the arm can be changed by shifting the position at which the arm is connected to the attaching member, the arm can be connected in an appropriate direction with the attribute corresponding to the attaching attitude of the attaching member with respect to the attaching portion.

Moreover, the corresponding linking portions are made to be a combination of a projection and a recess so that the arm is engaged/removed to and from the attaching member with a simple structure.

Since the engaging members are provided on both sides of the arm, the suspending equipment according to the present invention has many engaging members so that many articles can be suspended.

Since the positions at which the engaging members are attached on the both sides of the arm are shifted in the longitudinal direction of the arm, the distance between the suspended articles can be elongated. Therefore, the contact of the articles can be prevented and, if the articles are clothes intended to be dried, the clothes can quickly be dried.

The hooks of other hangers or the like can be hooked to the upper surface of the arm so that a plurality of variable articles are suspended as well as small articles.

Since the engaging member can be objected/retracted to and from the arm, the suspending equipment is not bulky when it is not used and accommodated easily in a small space.

Moreover, the operation of the operating rod enables the engaging member to be shifted to the position for use and the position for non-use by one hand. Therefore, clothes or the like can smoothly be dried and accommodated.

Since the operating rod and each engaging member is connected to each other by establishing the engagement between the engaging projection and the engaging recess, the connecting structure can be simplified and the size of the same can be reduced.

As this invention may be embodied in several forms without departing from the spirit of essential characteristics thereof, the present embodiment is therefore illustrative and not restrictive, since the scope of the invention is defined by the appended claims rather than by the description preceding them, and all changes that fall within metes and bounds of the claims or equivalence of such metes and bounds thereof are therefore intended to be embraced by the claims.

Claims

1. A suspending equipment, comprising:

   an arm (2) having a linking portion (21, 22) at an end thereof;
   an attaching member (1) having a plurality of receiving portions (12a, 12b, 12c, 12d) for rotatably receiving said linking portion (21, 22) of said arm (2) and a attaching portion (14, 15) for detachably attaching an object on which said suspending equipment is attached; and
   a plurality of engaging (23, 24) members disposed apart from one another in the longitudinal direction of said arm (2) to suspend required articles.

2. The suspending equipment according to claim 1, wherein said plural receiving portions (12a, 12b, 12c, 12d) of said attaching member (1) are disposed in different directions.

3. The suspending equipment according to claim 1, wherein either of said linking portions (12, 22) and said receiving portions (12a, 12b, 12c, 12d) are projections and the residual portions are recesses for receiving said projections.

4. The suspending equipment according to claim 1, wherein said engaging members (23, 24) are disposed along the both sides of said arm (2).

5. The suspending equipment according to claim 1, wherein said engaging members (23, 24) are disposed on the both sides of said arm (2) in such a manner that the positions are shifted in the longitudinal direction of said arm (2).

6. The suspending equipment according to claim 1, wherein said arm (2) has a catching recess (21k) for catching a hook of a hanger at the top surface thereof.

7. The suspending equipment according to claim 1, wherein said engaging members (23, 24) are able to move to positions for use at which said engaging

members (23, 24) extends in a direction sidewards from said arm (2) and positions for non-use at which said engaging members (23, 24) are taken in said arm (2).

8. The suspending equipment according to claim 7, wherein said arm (2) has an operating rod (25) for moving said engaging members (23, 24) to the positions for use and the positions for non-use.

9. The suspending equipment according to claim 8, wherein said operating rod (25) is taken in said arm (2) slidably in the longitudinal direction of said arm (2), and a knob portion (25d) of said operating rod (25) outwardly projects from the leading end of said arm (2).

10. The suspending equipment according to claim 8, wherein one of the outer surface of said operating rod (25) and the base portion of each of said engaging members (23, 24) has engaging recesses (25a, 25b) and the other has engaging projections (23c, 24c) so that said operating rod (25) and said engaging members (23, 24) are connected to each other.

11. The suspending equipment according to claim 9, wherein one of the outer surface of said operating rod (25) and the base portion of each of said engaging members (23, 24) has engaging recesses (25a, 25b) and the other has engaging projections (23c, 24c) so that said operating rod (25) and said engaging members (23, 24) are connected to each other.

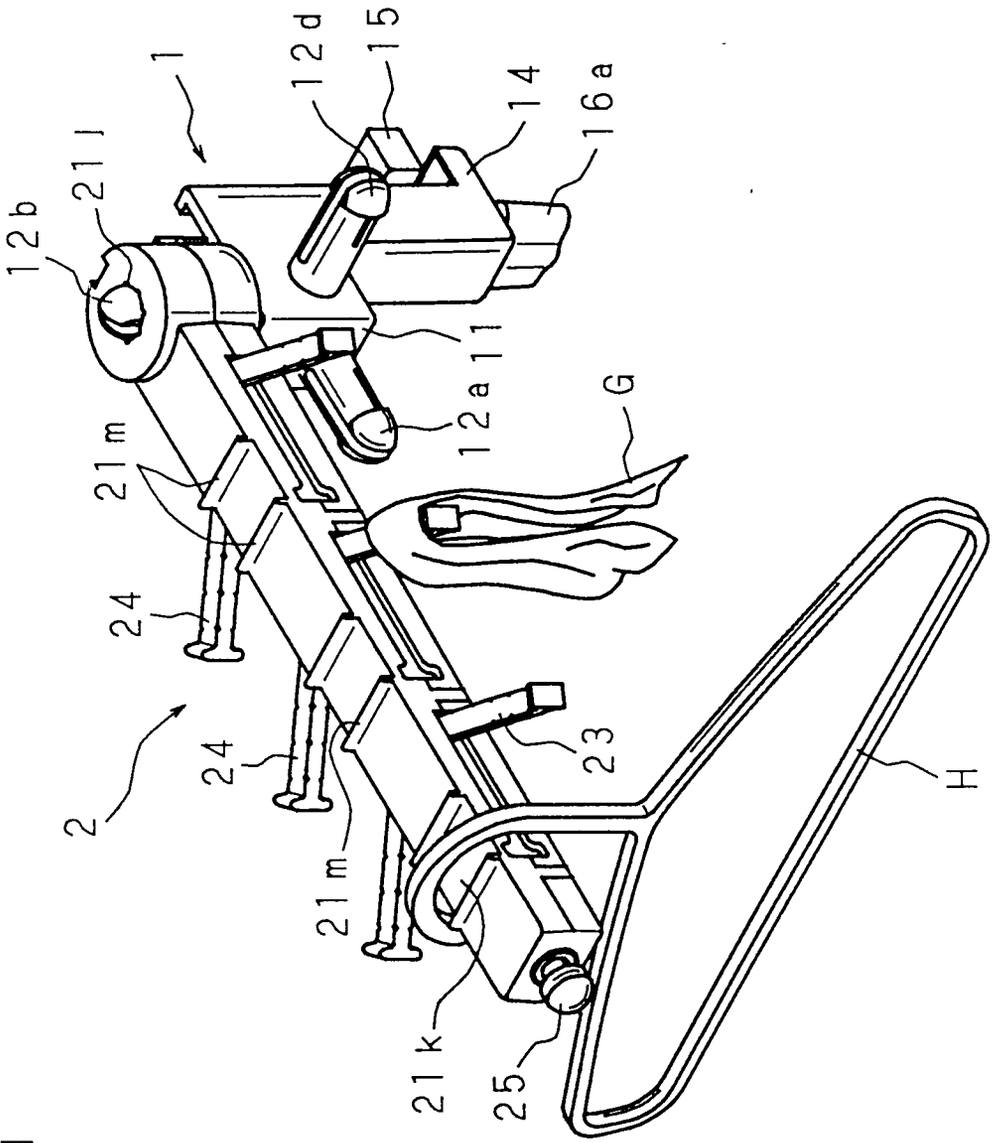


FIG. 1

FIG. 2

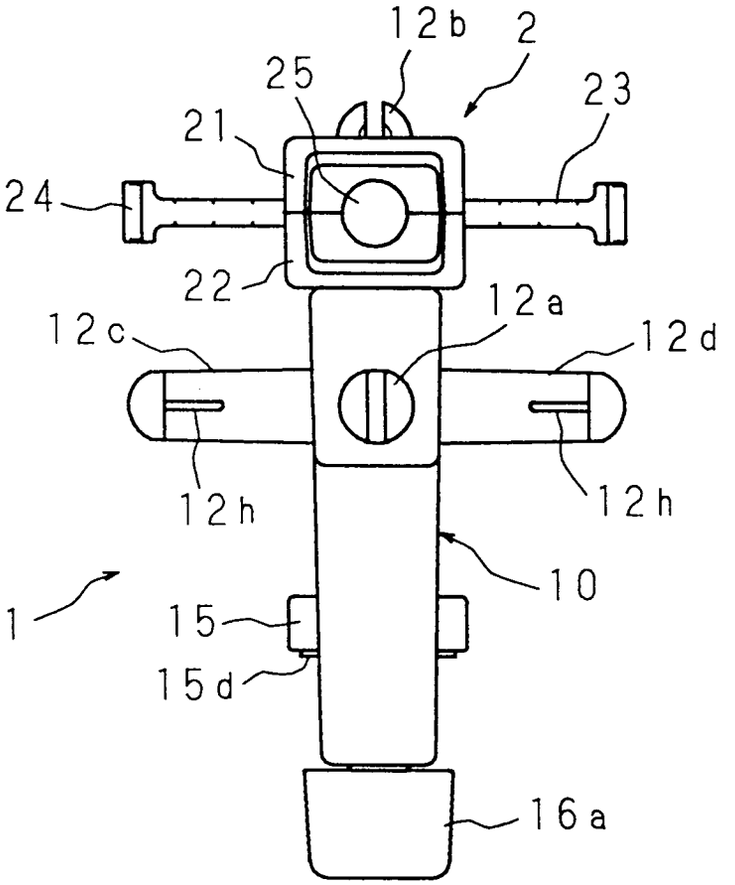


FIG. 3

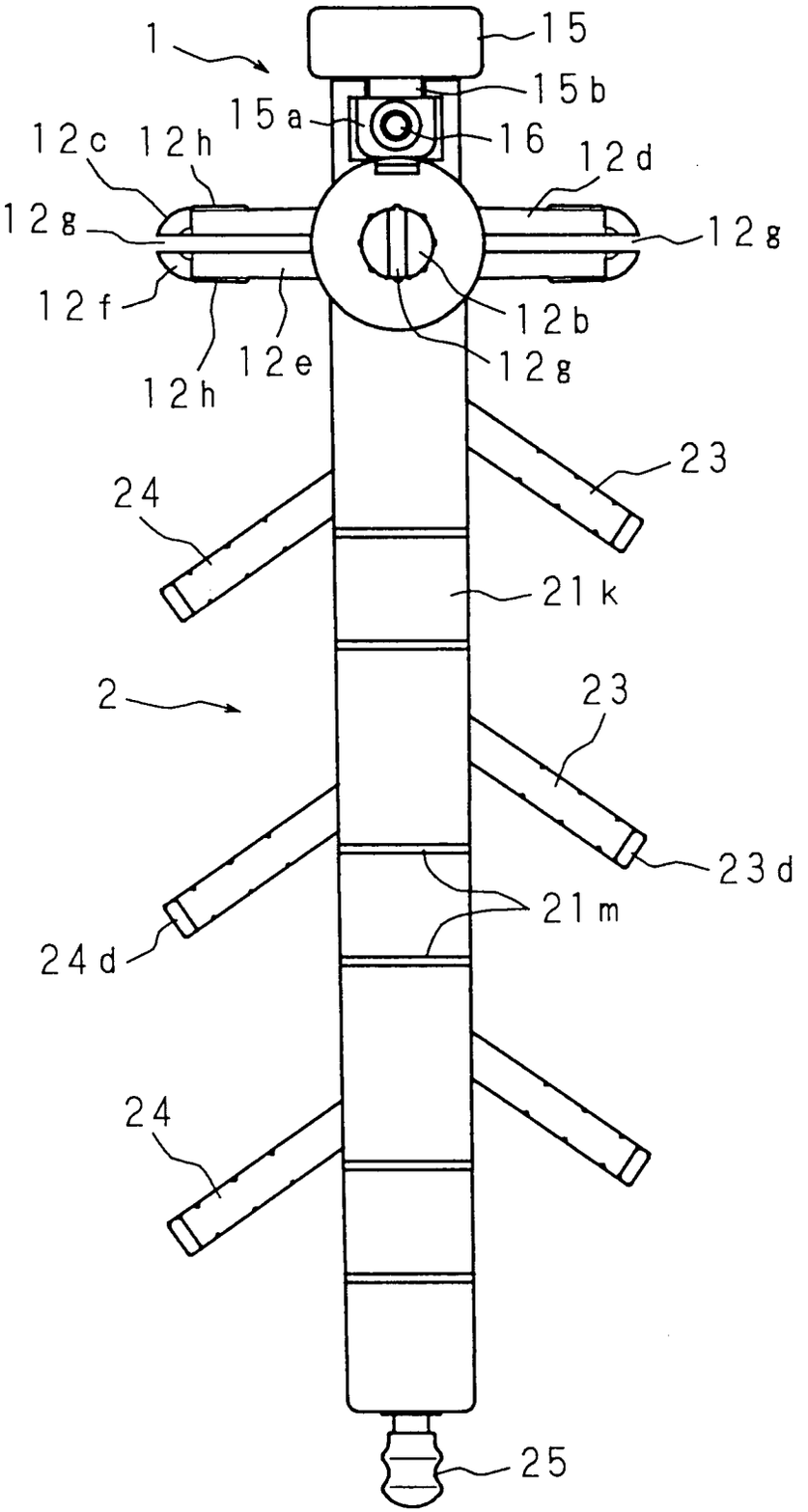

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FIG. 4

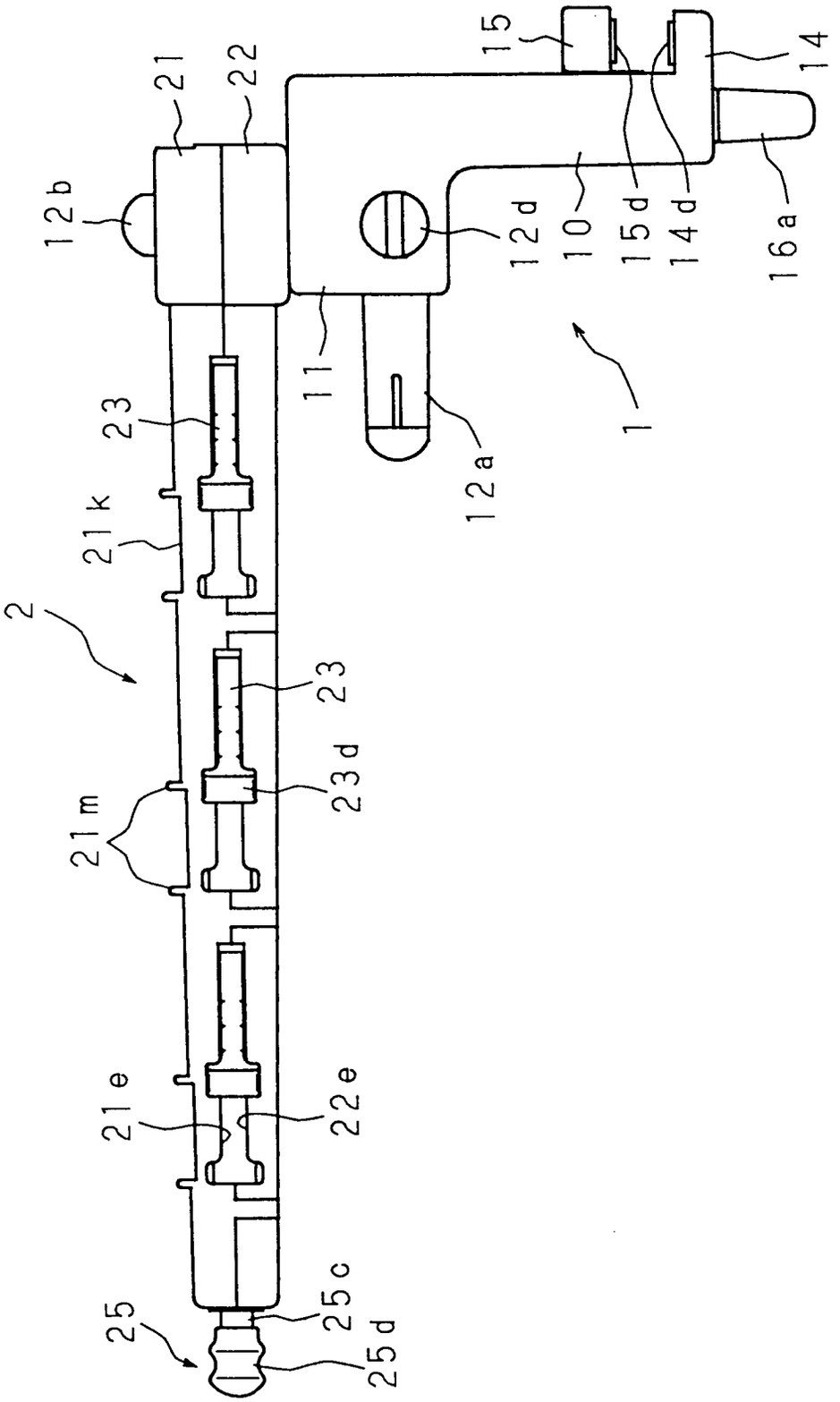
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FIG. 5

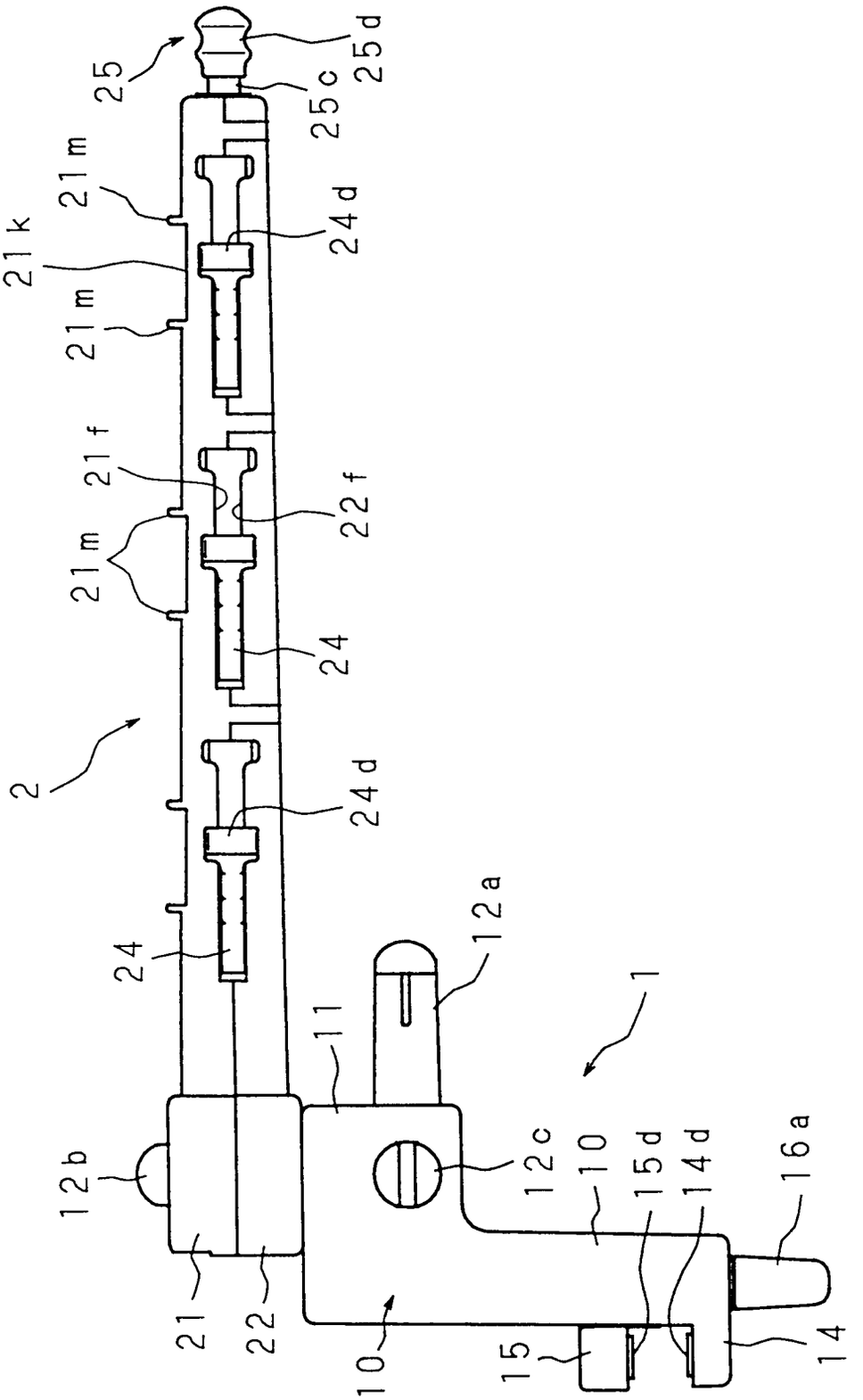
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FIG. 6

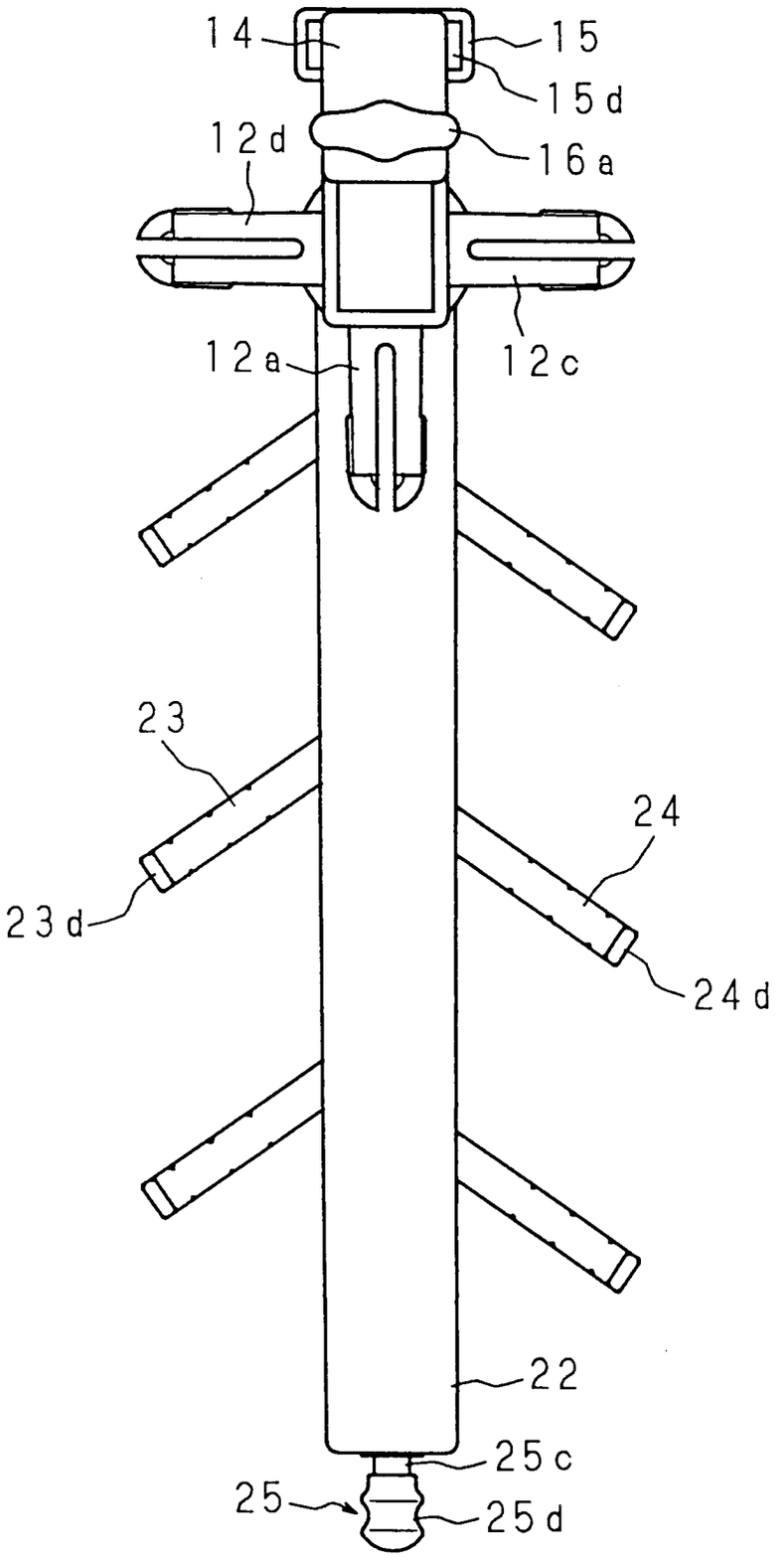


FIG. 7

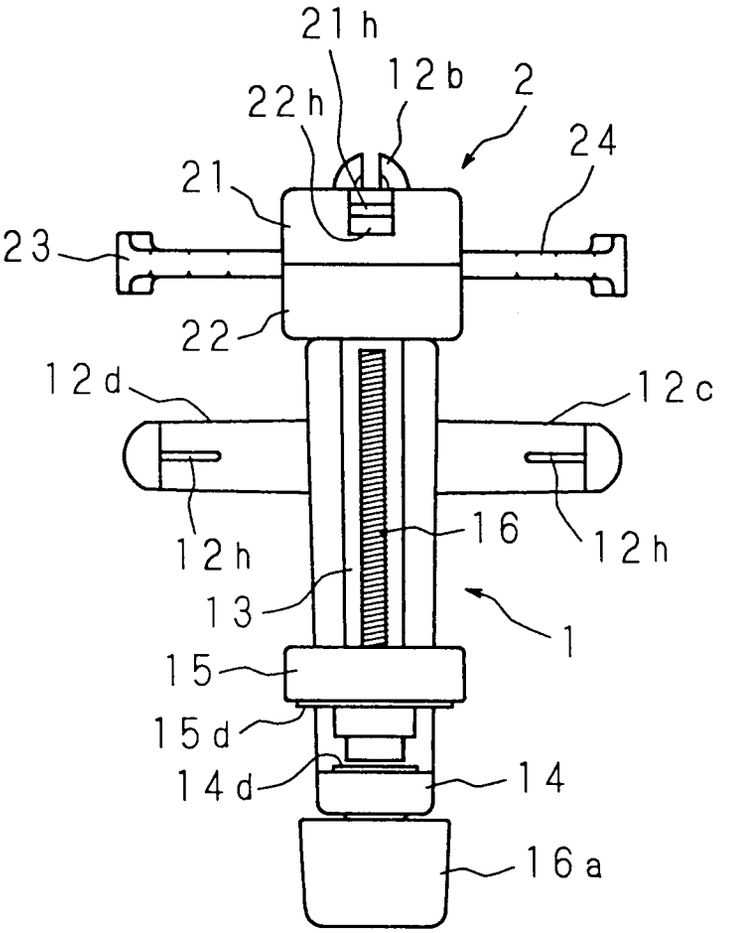


FIG. 8

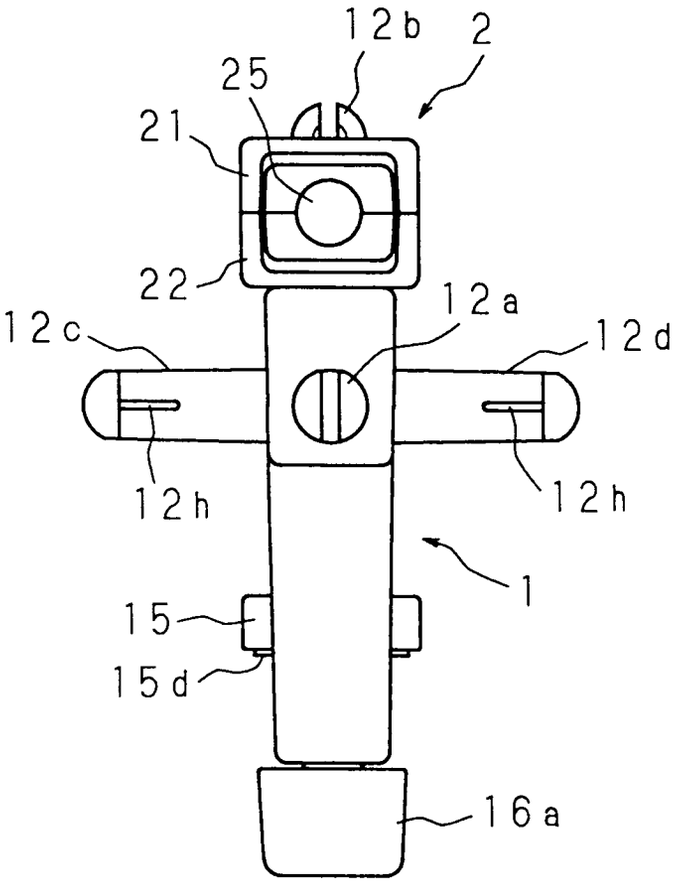
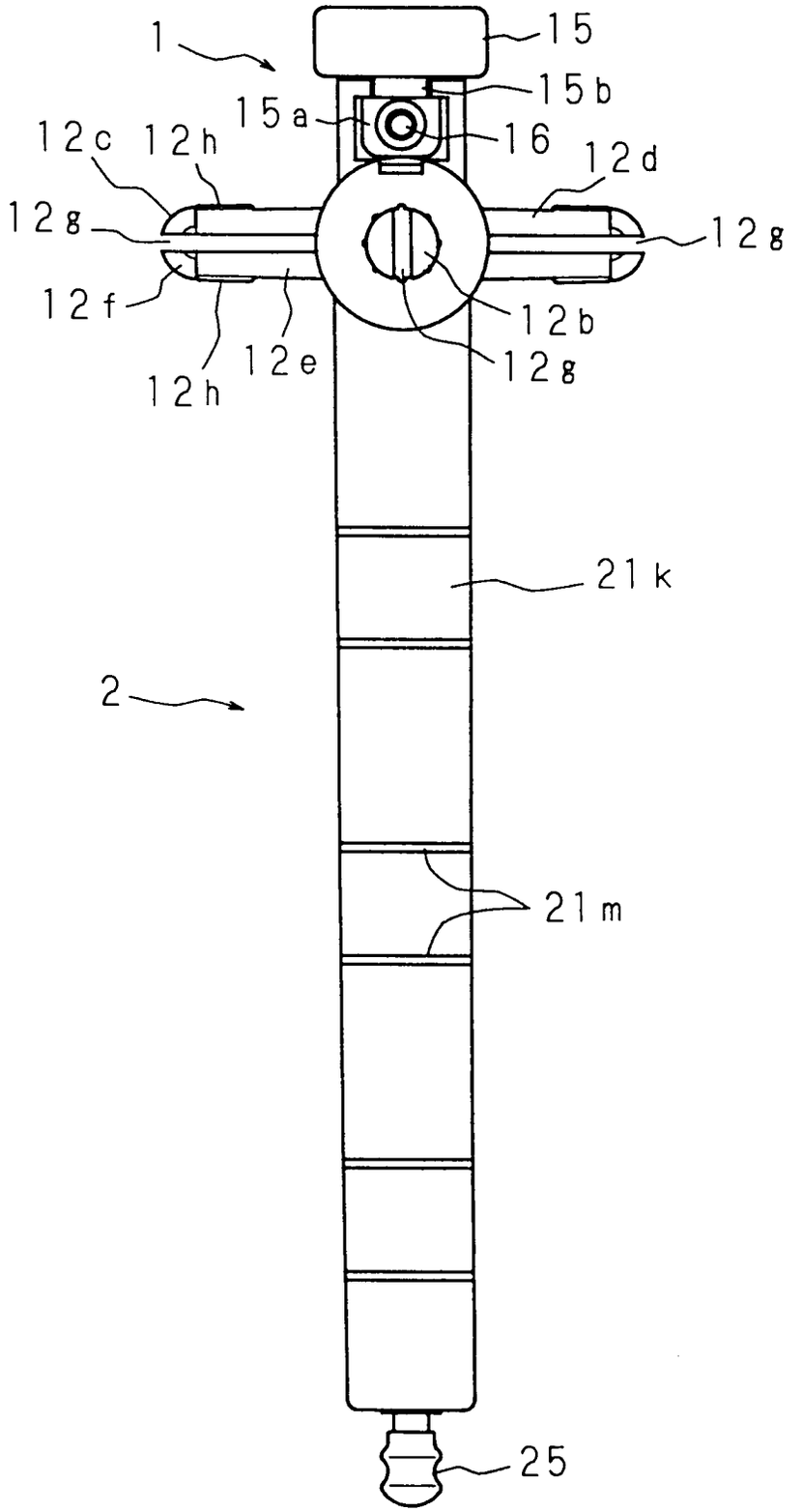


FIG. 9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15a
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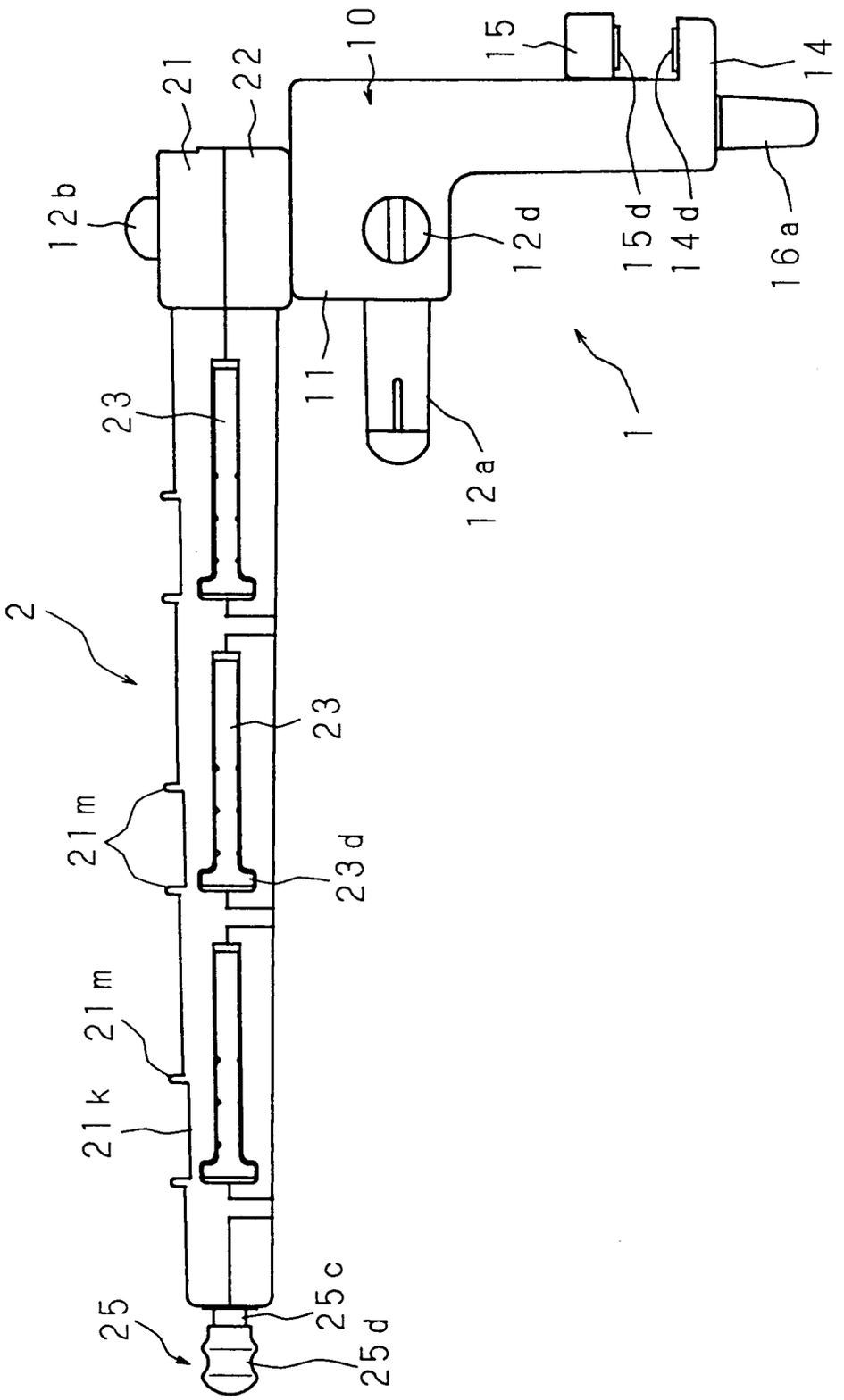
12g
12g
12f
12b
12h
12e
12g
21k
2
21m
25

FIG. 10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14
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16a
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23
12a
1
2
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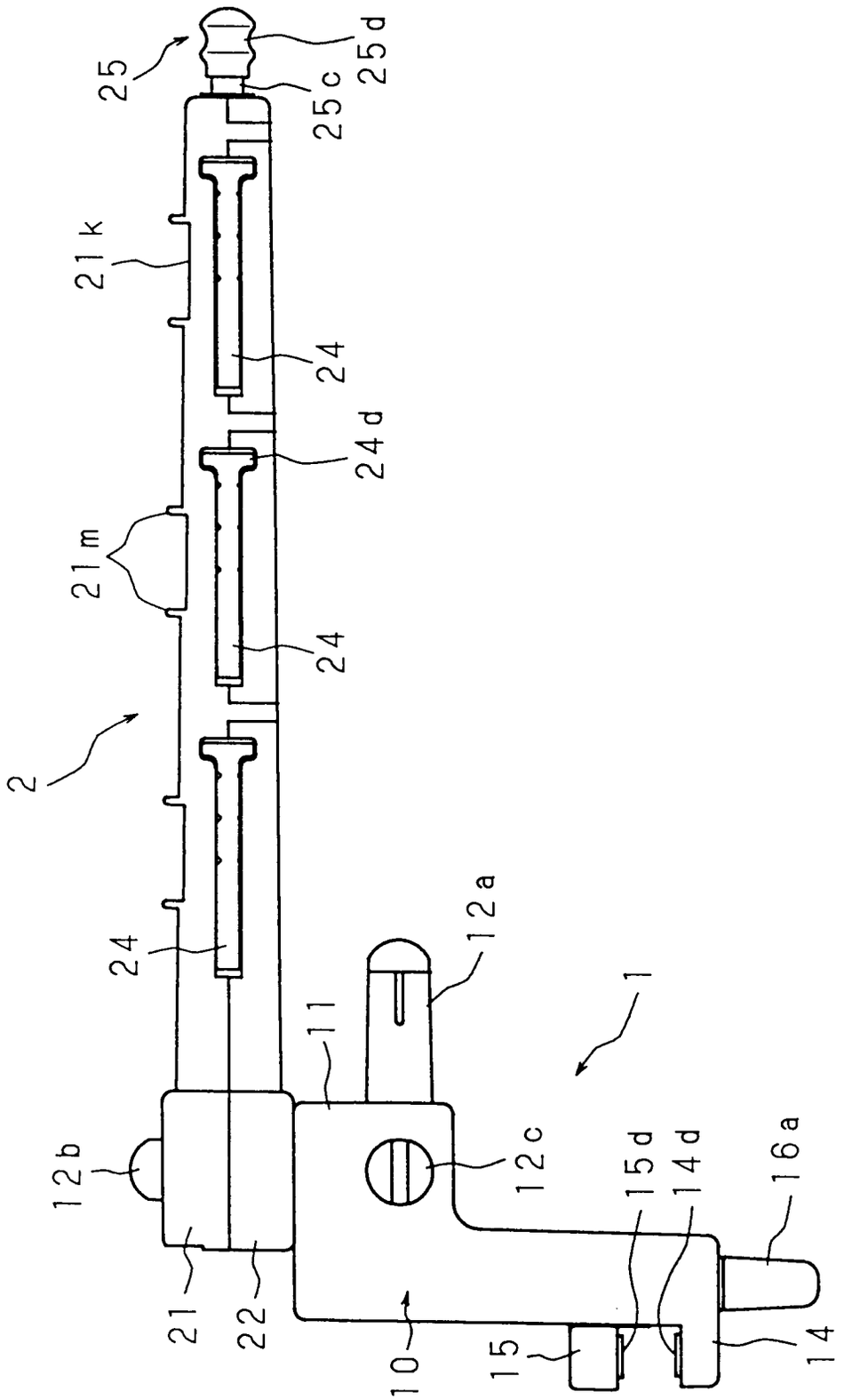
21m
23d
21m
21k
25
25c
25d

FIG. 11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25c
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24
24d
21m
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12a
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1
12b
12c
15d
14d
16a
21
22
10
15
14

FIG. 12

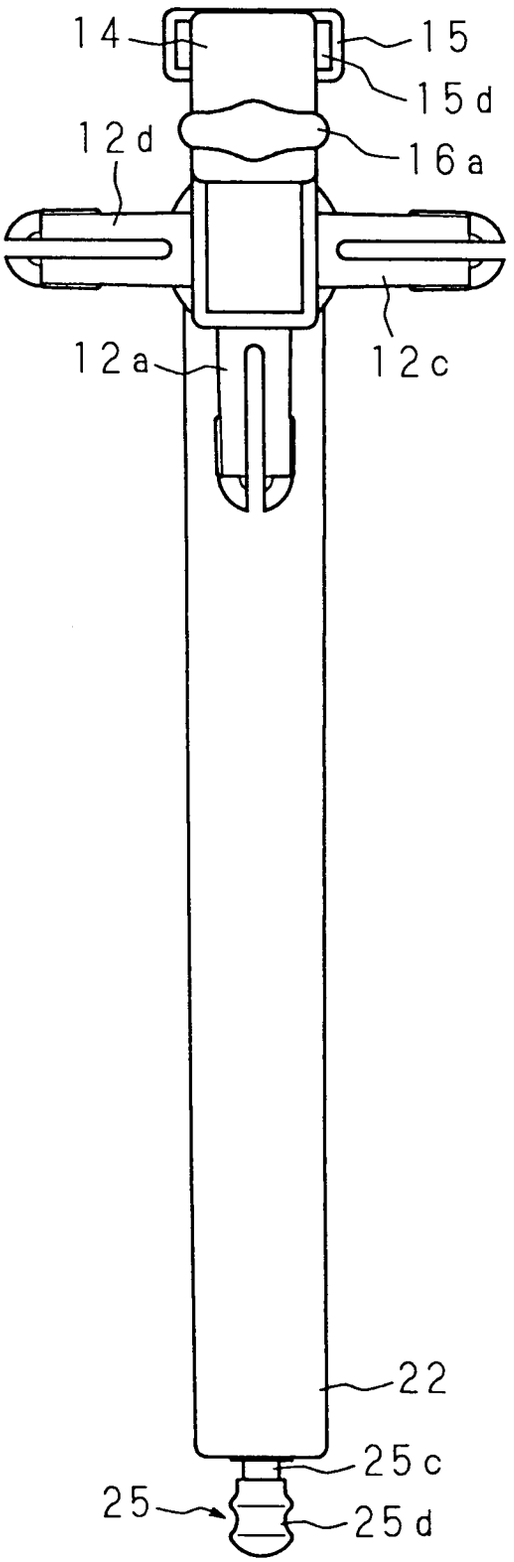


FIG. 13

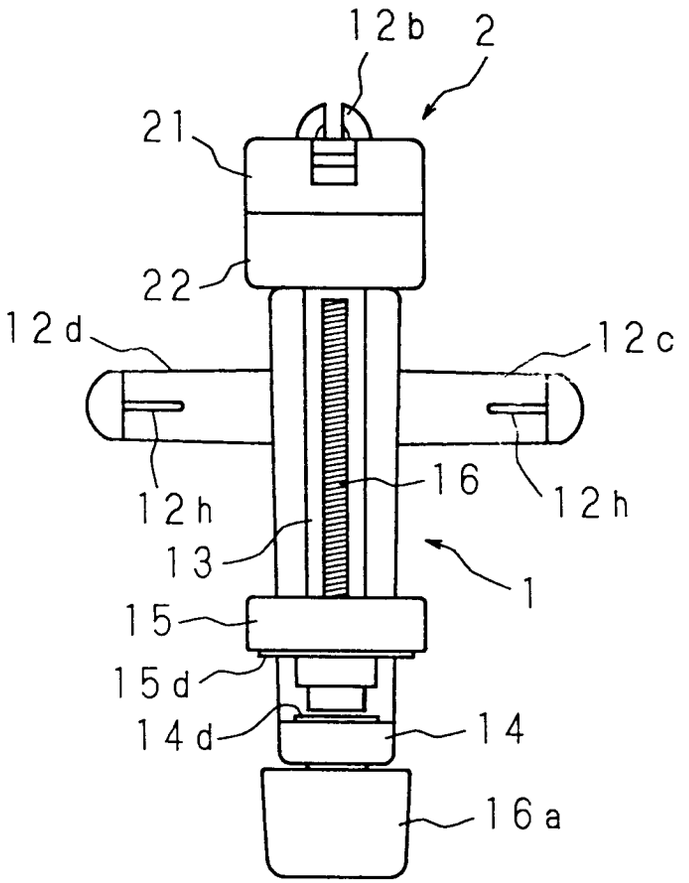


FIG. 14

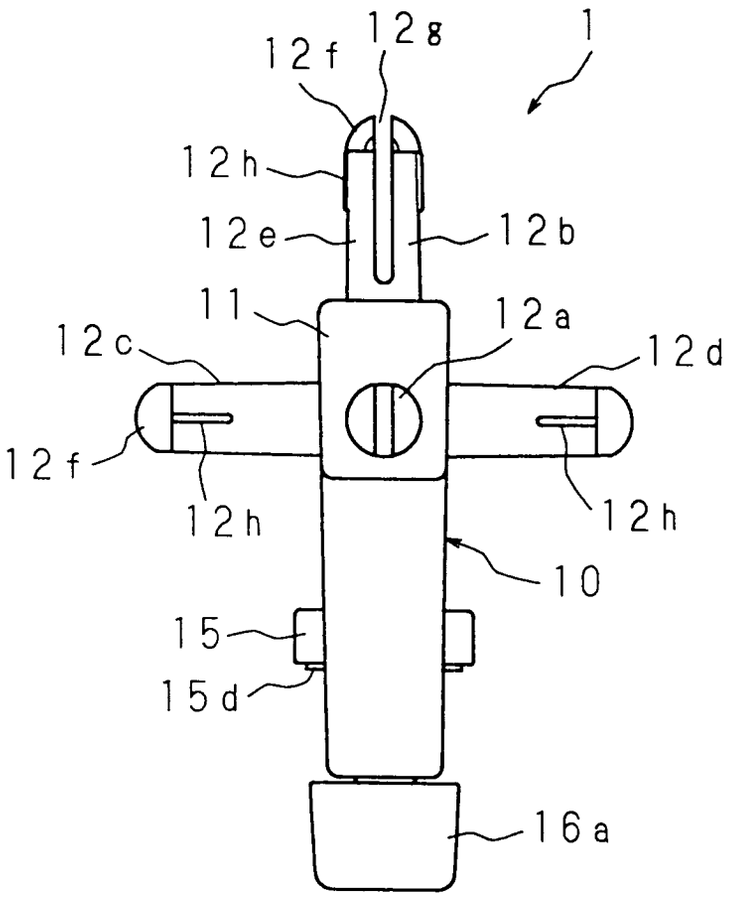


FIG. 15

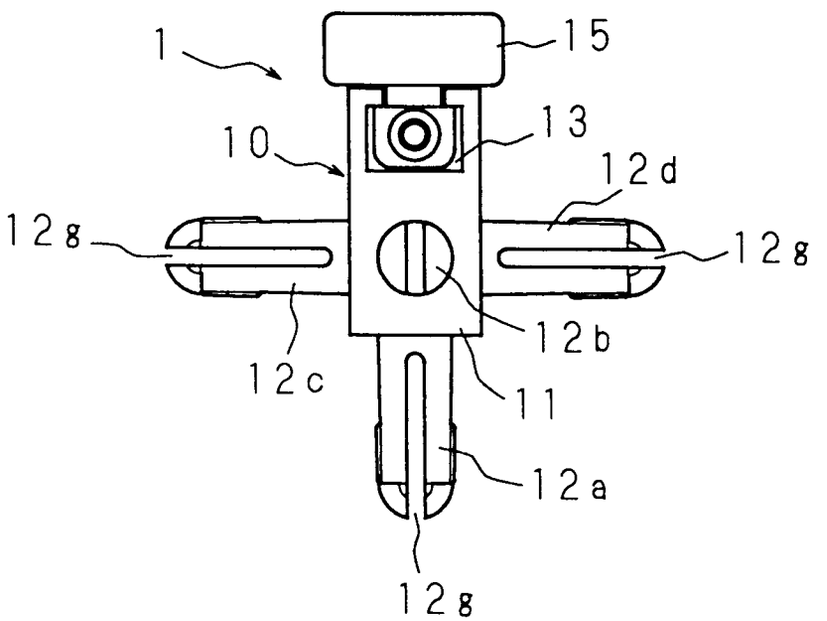


FIG. 16

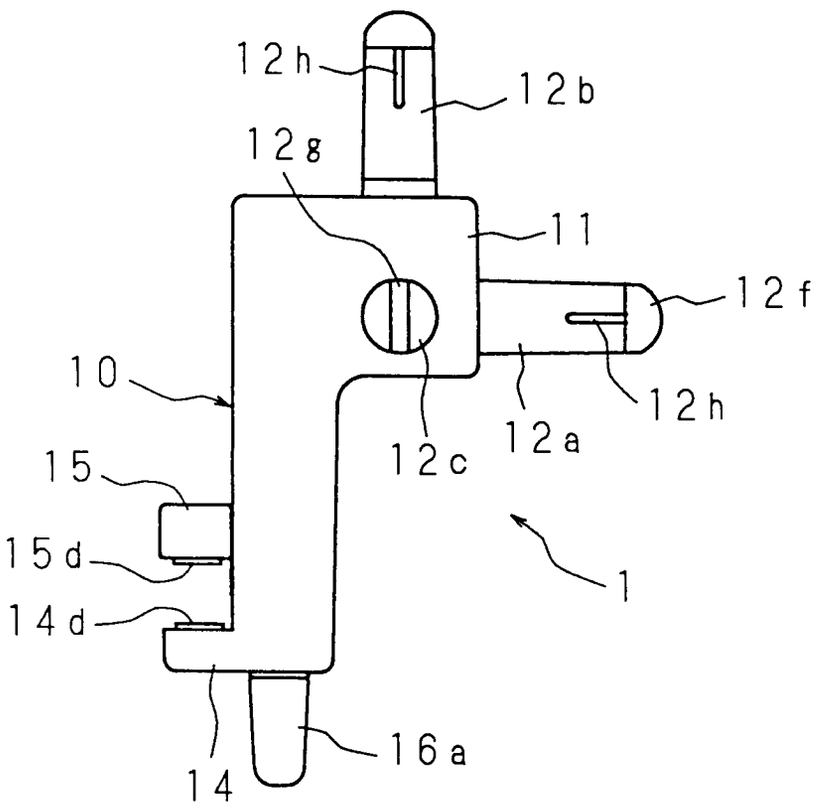


FIG. 17

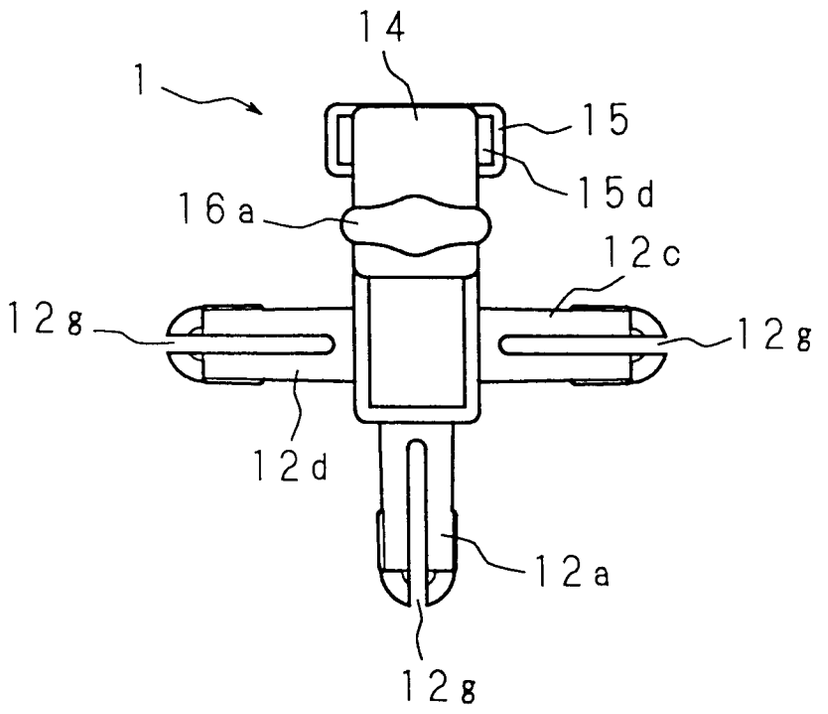


FIG. 18

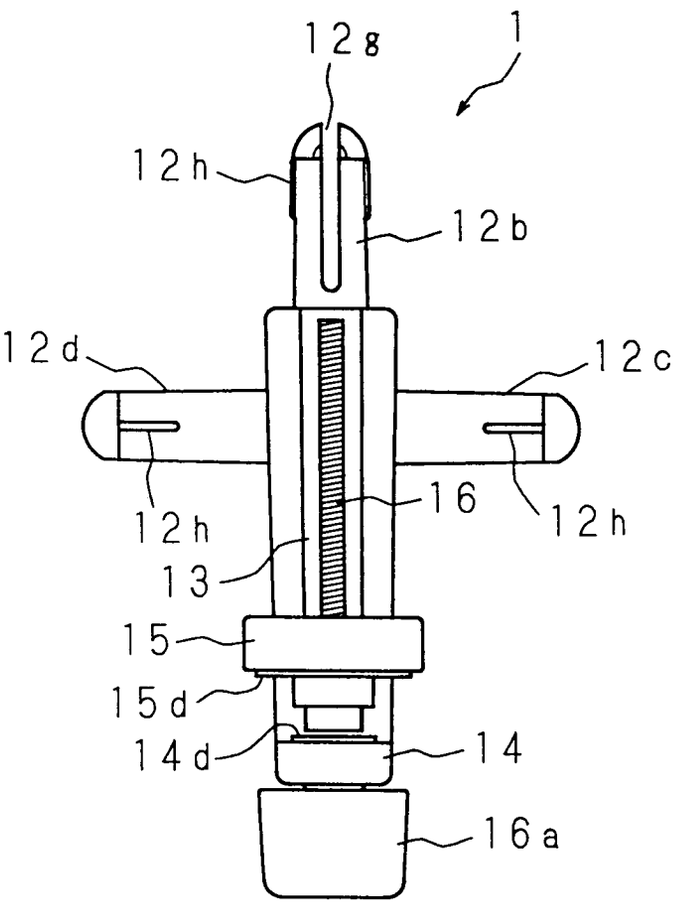


FIG. 19

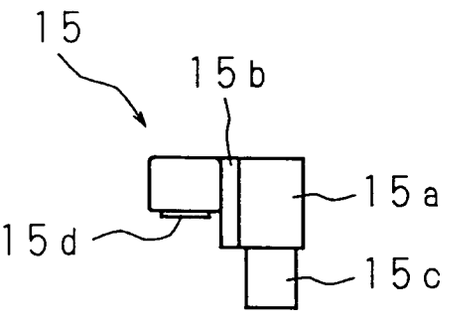


FIG. 20

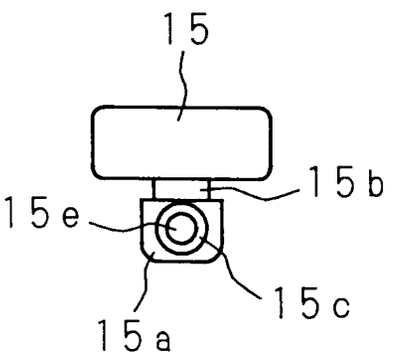


FIG. 21

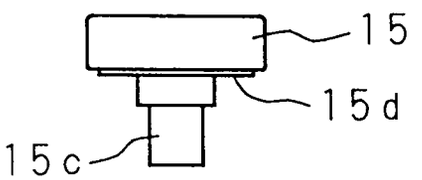


FIG. 22

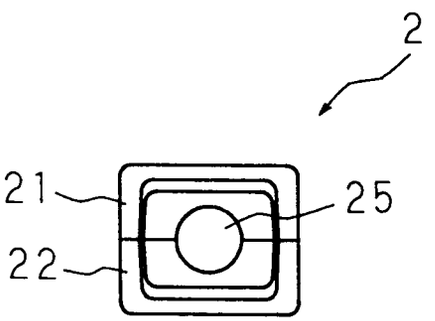


FIG. 23

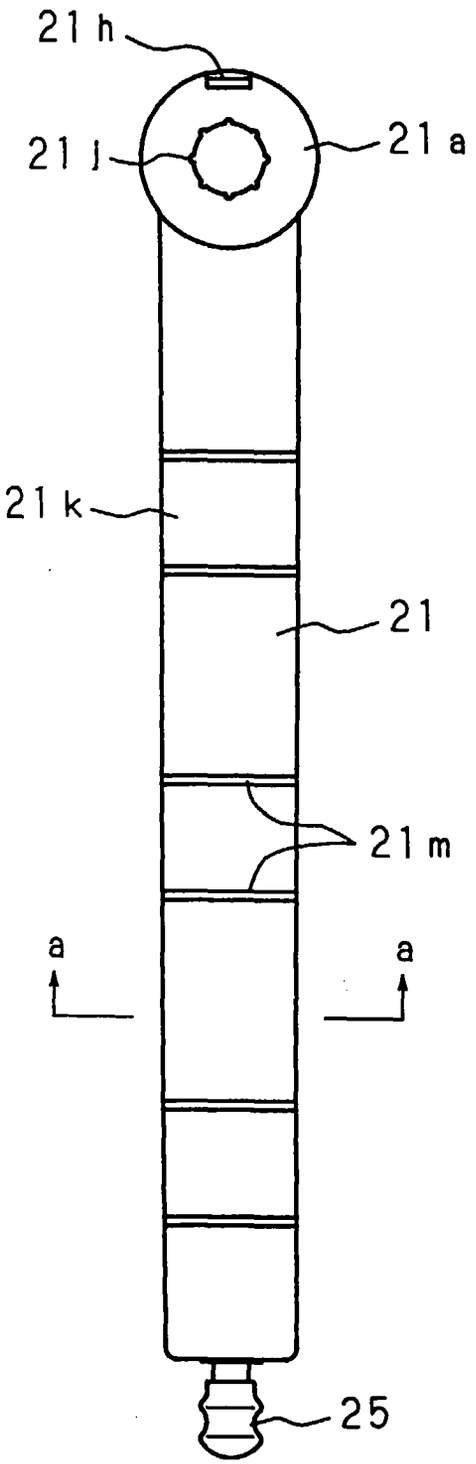


FIG. 24

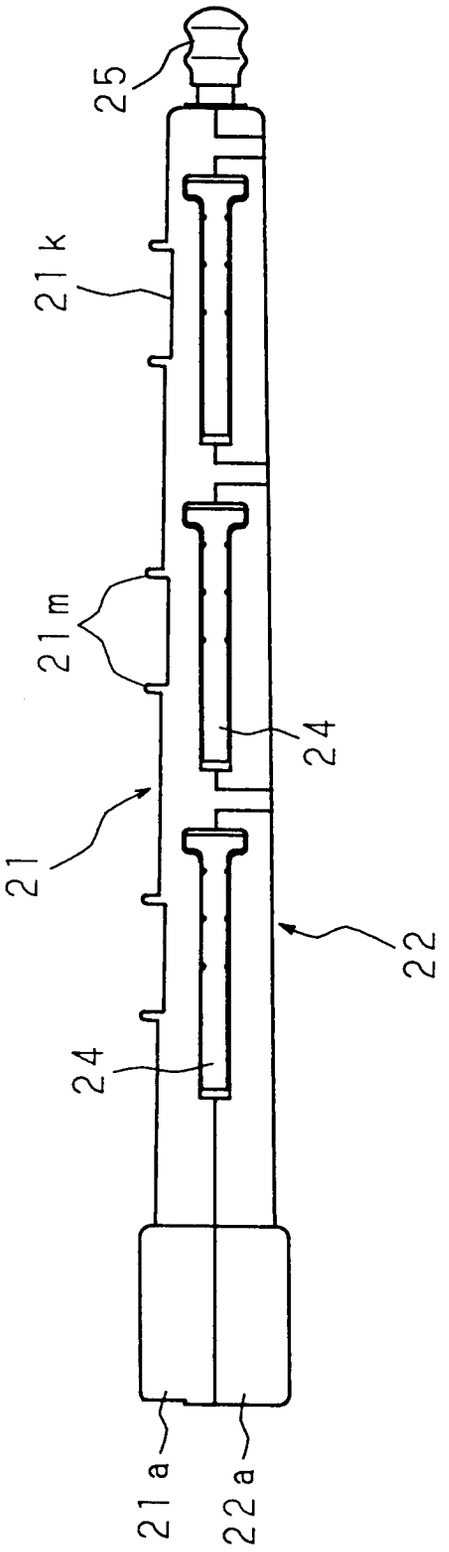


FIG. 25

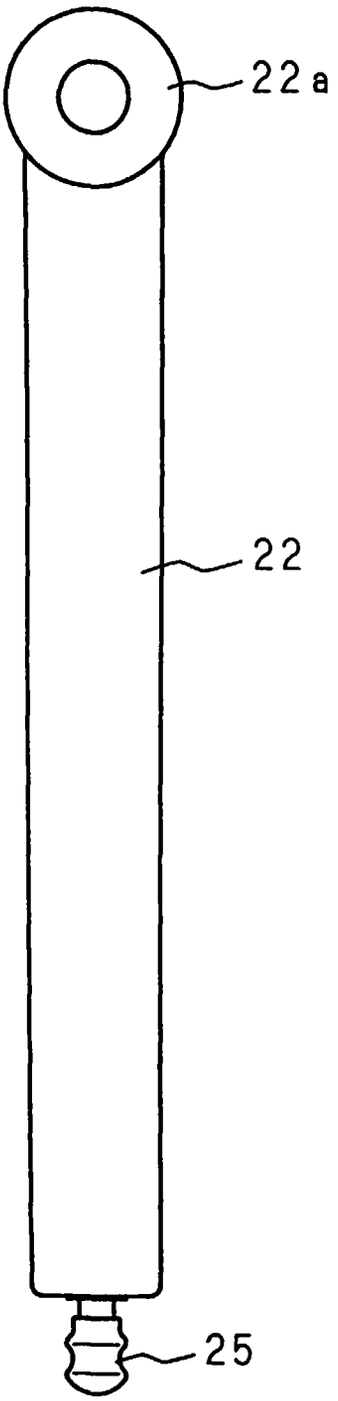


FIG. 26

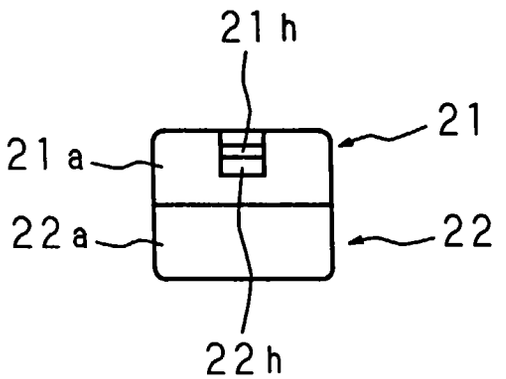


FIG. 27

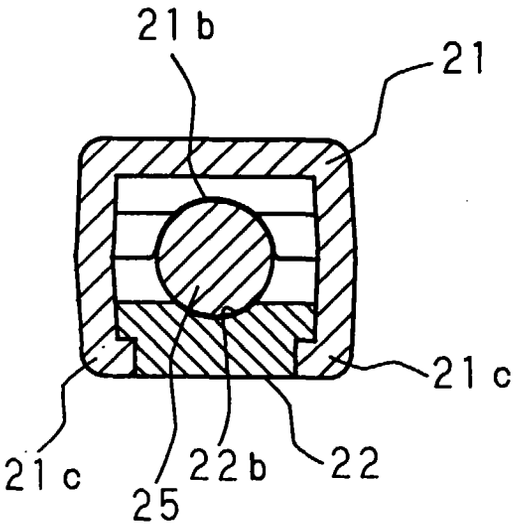
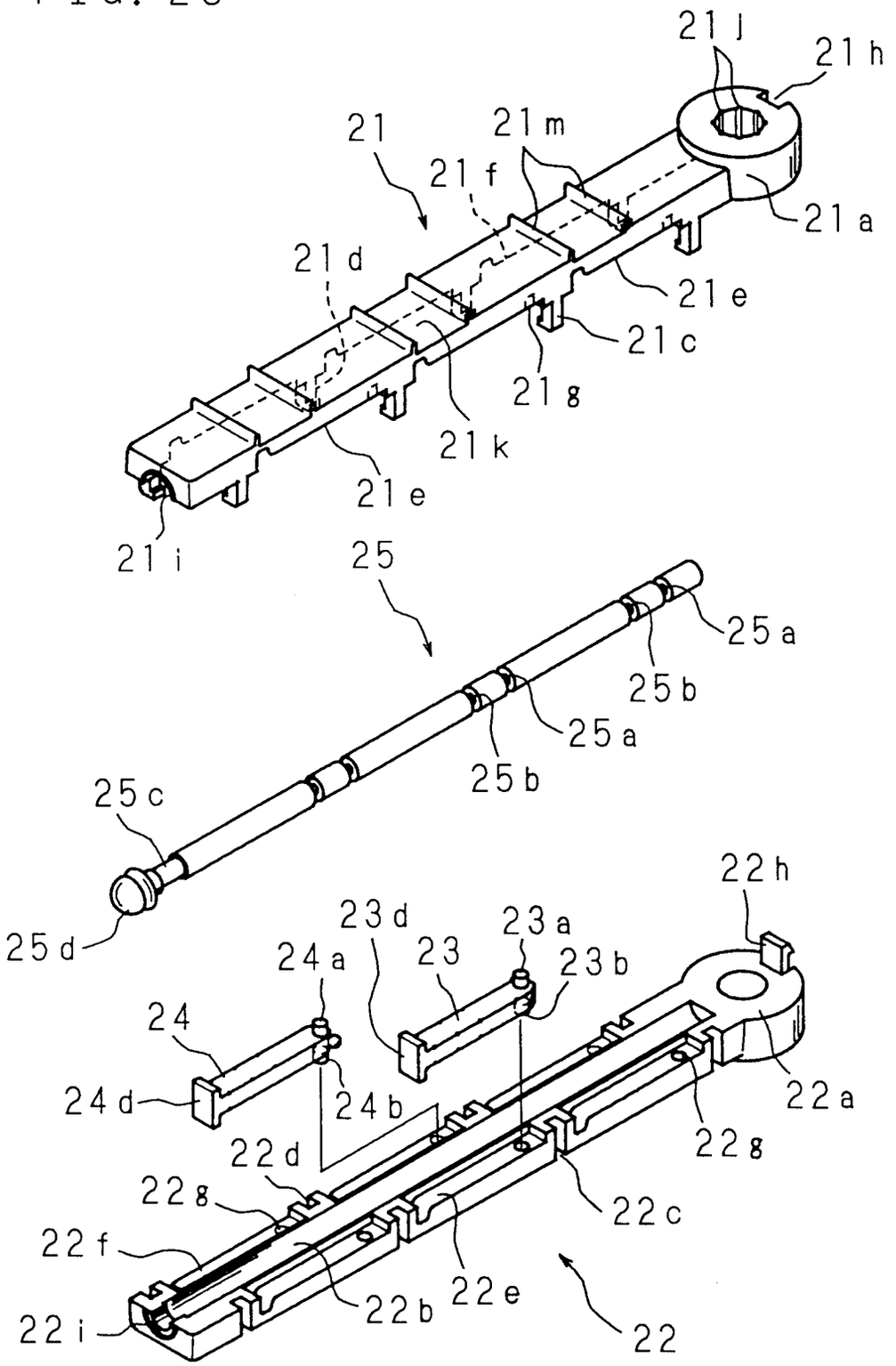


FIG. 28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22 f
22 b
22 e
22 i
22

FIG. 29A

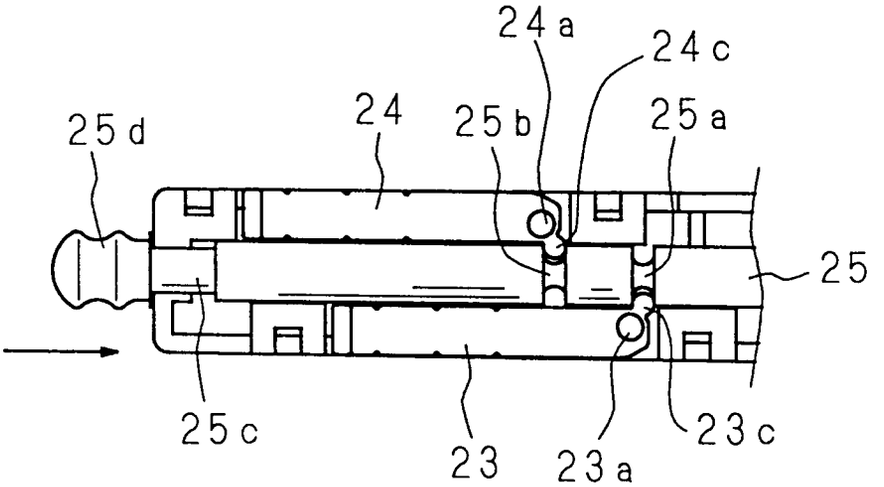

FIG. 29B