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(54) **Height adjustable crutch**

Höhenverstellbare Krücke

Béquille à hauteur réglable

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(56) References cited:  
**FR-A1- 2 879 438 US-A1- 2002 020 438**  
**US-A1- 2003 079 767 US-A1- 2004 025 925**  
**US-A1- 2009 114 257**

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## Description

### OBJECT OF THE INVENTION

**[0001]** The present invention as expressed in the statement of this specification, relates to a height adjustable crutch manufactured entirely in plastic material, so that the manufacturing costs are substantially reduced, besides improving the lightness of the assembly, thereby without undermining the necessary characteristics of robustness, resistance, and maneuverability that this type of products should provide to the user.

**[0002]** On the other hand, the crutch of the invention is also susceptible to be manufactured with other materials.

**[0003]** Starting from this premise, the object of the invention are some characteristic means for adjusting the height of the crutch, also the object of the invention being the characteristic structure represented by the assembly of the crutch.

### BACKGROUND OF THE INVENTION

**[0004]** Nowadays, height adjustable crutches manufactured with metallic material are known, so that they generally comprise a structure formed by two tubes, bottom and top, with a telescopic coupling, so that in order to adapt the height of the crutch to the user, the telescopic tubes incorporate facing holes whereby a pin or similar element is introduced in order to secure the height length of the crutch.

**[0005]** The top tube includes a handle which the user holds with the hand, and a cuff that is conformed to the forearm of the user in order to achieve a better maneuverability.

**[0006]** An example of this type of crutch known in the state of the art is disclosed in the US2004/025925 A1, which further discloses external reinforcing ribs.

**[0007]** Another type of adjustable crutch that could be made not only from metal but also from wood is disclosed in the US 2002/0020438 A1, which discloses a crutch in two "U"-shaped principal bodies, both principal bodies being detachably joined at the point where the handle is arranged.

### DESCRIPTION OF THE INVENTION

**[0008]** The height adjustable crutch constituting the object of the invention as claimed is determined as of a first bottom elongated body provided with an internal ribbing imparting sufficient rigidity and resistance to said elongated body, with a top part over which a second top body is inserted which makes up the support of the hand and forearm of the user.

**[0009]** For that purpose, this top body incorporates a handle which the user holds with his/her hand, and an end cuff that conforms to the forearm of that same user.

**[0010]** The top body possesses at least two through

holes which can be aligned or facing with as many other holes that the bottom body possesses, so that the height adjustment of the crutch is allowed, and hence its adaptation to different heights of the users.

**[0011]** In order to secure the regulated attachment at the point that the user wishes, it has been envisaged the utilization of some means of attachment of the position of the top body with respect to the bottom body, or vice versa. Said means consist of a fixation support with at least two crossbars that are introduced through facing holes of the two bodies, bottom and top, of the crutch, the attachment of the fixation support being secured by means of a flatbar which is linked with the free ends of the crossbars by means of a bayonet-type coupling.

**[0012]** On the other hand, the fixation support also fulfills the function of securing the assembling of the crutch.

**[0013]** It should also be noted that the top body comprises a triangular structure with internal reinforcement ribs providing a great solidity to said top body.

**[0014]** Another characteristic of the invention is that the linking between the principal bodies, top and bottom, of the crutch, is an open coupling which facilitates the assembly and disassembly of the crutch.

**[0015]** Next, to facilitate a better understanding of this specification, and forming an integral part thereof, some figures are attached in which the object of the invention has been depicted in an illustrative and not limitative manner.

### BRIEF DESCRIPTION OF THE DRAWINGS

#### **[0016]**

Figure 1.- Shows a perspective view of the height adjustable crutch, object of the invention.

Figure 2.- Shows another perspective view of the crutch from another angle different to the one depicted in figure 1.

Figure 3.- Shows a section view according to the A-B cut of the previous figure.

### DESCRIPTION OF THE PREFERRED EMBODIMENT

**[0017]** Considering the numbering adopted in the figures, the height adjustable crutch is determined from two principal bodies made of plastic material: a more elongated bottom one 1 and another top one 2, both detachably joined by means of a guided and open coupling through a fixation support 3, with an attachment carried out by means of a retention flatbar 4 with a bayonet-type coupling, these two pieces also being manufactured with plastic material.

**[0018]** The bottom body 1 comprises a "U"-shaped section with an internal reinforcing ribbing 5 at the same time that it finishes at a terminal narrowing 6 for support on the floor.

**[0019]** In turn, the bottom body 1 incorporates a set of through holes 7 leading to the branches of that "U"-

shaped bottom body 1, at the same time that such through holes 7 are defined by small tubular portions 8 forming an integral part of the cited bottom body 1 and interrupting the internal reinforcing ribbing 5.

[0020] The top body 2 comprises a resistant structure including, in principle, a handle 9 and an end cuff 10 in order to respectively support the hand and the forearm of the user.

[0021] The top body 2 comprises an enveloping triangular structure 11 having a succession of flat reinforcing ribs 12, triangular structure from which the handle 9 and the cuff 10 start at, as well as a "U"-shaped bottom extension 13 inside of which a top part of the bottom body 1 is adjusted, the branches of said bottom extension 13 having facing holes 14 which in turn are facing other holes 7 of the bottom body 1 to be able to introduce some crossbars 15 that form part of the fixation support 3 so as to secure the joining between both principal bodies 1 and 2.

[0022] The free ends of the cited crossbars 15 have some small cuts 16 to be able to couple the retention flatbar 4 in concordance with some short grooves 17, interrupted by some small longitudinal ribs 18 which engage on the cuts 16 of the crossbars 15 of the fixation support 3 by means of a small longitudinal movement in a direction of such retention flatbar 4. To be able to release the fixation support 3, the retention flatbar 4 should be displaced first in opposite direction to the aforementioned one for later extracting the fixation support 3.

[0023] The top body 2 incorporates some facing scores 19 wherein a base 20 of the fixation support 3 and the retention flatbar 4 are adjusted. Said top body 2 also has a succession of top flaps 21 facing the cuff 10, as well as a bottom flap 22 which associates the enveloping triangular structure 11 and the "U"-shaped bottom extension 13.

[0024] The triangular enveloping structure 11 allows the upwards guided displacement of the bottom body 1 when needed, thanks to the flat ribs 12 not reaching the free edges of such enveloping triangular structure 11, so that the guidance provided by the "U"-shaped bottom extension 13 is continued in the enveloping triangular structure 11.

## Claims

1. HEIGHT ADJUSTABLE CRUTCH including a handle and a cuff in order to respectively support a hand and a forearm of a user, is **characterized in that** it comprises two principal bodies made of plastic material: an elongated bottom one (1) with the incorporation of an internal reinforcing ribbing (5), and another top one (2) incorporating other internal reinforcing ribs (12), both principal bodies (1, 2) being detachably joined to each other by means of a guided and open coupling; said two principal bodies (1, 2) are coupled by means of a fixation support (3), with an attachment carried out by means of a retention

flatbar (4); wherein the guided and open coupling between both principal bodies (1, 2) comprises a "U"-shaped bottom extension (13) forming part of the top body (2), at the same time that on said "U"-shaped extension (13) a segment of the bottom body (1) is adjusted, having through holes (7) facing other holes (14) established on the branches of the "U"-shaped bottom extension (13), being adjusted in said facing holes (7, 14) some crossbars (15) forming part of the fixation support (3).

2. HEIGHT ADJUSTABLE CRUTCH, according to claim 1, **characterized in that** the overhanging end segments of the crossbars (15) of the fixation support (3) have some small cuts (16) wherein they are engaged, in a bayonet manner, with some longitudinal short ribs (18) which interrupt the continuity of some grooves (17) established on the retention flatbar (4) and which are facing the cited crossbars (15) made integral with a front base (20) forming part of the fixation support (3).

3. HEIGHT ADJUSTABLE CRUTCH, according to any one of claims 1 or 2, **characterized in that** the bottom body (1) comprises a "U"-shaped structure with an internal reinforcing ribbing (5) that is interrupted by tubular portions (8) that define the through holes (7).

4. HEIGHT ADJUSTABLE CRUTCH, according to any one of claims 1 to 3, **characterized in that** the top body (2) comprises an enveloping triangular structure (11) incorporating the succession of flat reinforcing ribs (12), enveloping triangular structure (11) from which the handle (9) and the cuff (10) start at, as well as the "U"-shaped bottom extension (13), the enveloping triangular structure (11) further including a succession of flaps (21) facing the cuff (10).

5. HEIGHT ADJUSTABLE CRUTCH, according to claim 4, **characterized in that** the enveloping triangular structure (11) defines a guidance which is a continuation of the guidance of the bottom extension (13) of the top body (2).

6. HEIGHT ADJUSTABLE CRUTCH, according to claims 1 and 2, **characterized in that** the bottom extension (13) of the top body (2) incorporates some facing scores (19) in contraposition wherein the front base (20) of the fixation support (3) and the retention flatbar (4) are adjusted.

7. HEIGHT ADJUSTABLE CRUTCH, according to any one of claims 1 to 6, **characterized in that** the top body (2) incorporates a bottom flap (22) which associates the enveloping triangular structure and the "U"-shaped bottom extension (13).

## Patentansprüche

1. Höhenverstellbare Krücke mit einem Handgriff und einer Manschette, um jeweils eine Hand und einen Unterarm eines Benutzers zu stützen, **dadurch gekennzeichnet, dass** sie zwei Hauptkörper umfasst, die aus Kunststoff bestehen: einen lang gestreckten unteren Körper (1), in den innere Verstärkungsrippen (5) integriert sind, und einen weiteren oberen Körper (2), in den andere innere Verstärkungsrippen (12) integriert sind, wobei beide Hauptkörper (1, 2) lösbar mithilfe einer geführten und offenen Kupplung miteinander verbunden sind; wobei die zwei Hauptkörper (1, 2) mithilfe einer Fixierungshilfe (3) gekoppelt werden, wobei die Befestigung mittels einer Halteplatte (4) erfolgt; wobei die geführte und offene Kupplung zwischen den beiden Hauptkörpern (1, 2) eine "U"-förmige Bodenerweiterung (13) umfasst, die einen Teil des oberen Körpers (2) bildet, wobei gleichzeitig an der "U"-förmigen Erweiterung (13) ein Segment des unteren Körpers (1) justiert wird, das Durchgangsbohrungen (7) aufweist, die zu anderen Bohrungen (14) ausgerichtet sind, welche an den Armen der "U"-förmigen Bodenerweiterung (13) ausgebildet sind, wobei, wenn die Justierung in den zueinander ausgerichteten Bohrungen (7, 14) erfolgt, einige Querstangen (15) einen Teil der Fixierungshilfe (3) bilden.
2. Höhenverstellbare Krücke nach Anspruch 1, **dadurch gekennzeichnet, dass** die überstehenden Endsegmente der Querstangen (15) der Fixierungshilfe (3) einige kleine Einschnitte (16) aufweisen, die bajonettartig mit einigen kurzen Längsrippen (18) in Eingriff kommen, welche einige durchlaufende Nuten (17) unterbrechen, die an der Halteplatte (4) ausgebildet sind, und die zu den genannten Querstangen (15) ausgerichtet sind und integral mit einem Teil ausgebildet sind, der eine vordere Basis (20) der Fixierungshilfe (3) bildet.
3. Höhenverstellbare Krücke nach einem der Ansprüche 1 oder 2, **dadurch gekennzeichnet, dass** der untere Körper (1) eine "U"-förmige Struktur mit internen Verstärkungsrippen (5) umfasst, die durch röhrenförmige Abschnitte (8) unterbrochen ist, welche die Durchgangsbohrungen (7) bilden.
4. Höhenverstellbare Krücke nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** der obere Körper (2) eine umhüllende dreieckige Struktur (11) mit einer Folge von flachen Verstärkungsrippen (12) umfasst, wobei an der umhüllenden dreieckigen Struktur (11) der Griff (9), die Manschette (10) sowie auch die "U"-förmige Bodenerweiterung (13) beginnen, wobei die umhüllende dreieckige Struktur (11) des Weiteren eine Folge von Klappen (21) aufweist, die zu der Manschette (10) ausgerich-

tet sind.

5. Höhenverstellbare Krücke nach Anspruch 4, **dadurch gekennzeichnet, dass** die Umhüllende dreieckige Struktur (11) eine Führung definiert, welche eine Fortsetzung der Führung der Bodenerweiterung (13) des oberen Körpers (2) ist.
6. Höhenverstellbare Krücke nach Anspruch 1 und 2, **dadurch gekennzeichnet, dass** die Bodenerweiterung (13) des oberen Körpers (2) einige Einkerbungen (19) aufweist, die sich in Gegenposition dazu befinden, wo die vordere Basis (20) der Fixierungshilfe (3) und die Halteplatte (4) justiert werden.
7. Höhenverstellbare Krücke nach einem der Ansprüche 1 bis 6, **dadurch gekennzeichnet, dass** der obere Körper (2) eine Bodenklappe (22) aufweist, welche an die umhüllende dreieckige Struktur und die "U"-förmige Bodenerweiterung (13) anschließt.

## Revendications

1. Béquille réglable en hauteur comprenant une poignée et une manchette afin de supporter une main et un avant-bras d'un utilisateur, **caractérisée en ce qu'elle** comprend deux corps principaux réalisés en matière plastique : un inférieur allongé (1) avec l'incorporation d'un nervurage de renforcement interne (5) et un autre supérieur (2) incorporant d'autres nervures de renforcement internes (12), les deux corps principaux (1, 2) étant assemblés de manière détachable entre eux au moyen d'un couplage guidé et ouvert ; lesdits deux corps principaux (1, 2) étant couplés au moyen d'un support de fixation (3) avec une fixation réalisée au moyen d'une plaque plate de retenue (4) ; dans laquelle le couplage guidé et ouvert entre les deux corps principaux (1, 2) comprend une extension inférieure en forme de « U » (13) faisant partie du corps supérieur (2), en même temps que sur ladite extension en forme de « U » (13), on ajuste un segment du corps inférieur (1) ayant des trous débouchants (7) faisant face à d'autres trous (14) établis sur les branches de l'extension inférieure en forme de « U » (13), certaines traverses (15) qui font partie du support de fixation (3) étant ajustées dans lesdits trous en vis-à-vis (7, 14).
2. Béquille réglable en hauteur selon la revendication 1, **caractérisée en ce que** des segments d'extrémité en saillie des traverses (15) du support de fixation (3) ont quelques petites découpes (16) dans lesquelles ils sont mis en prise, à la manière d'une baïonnette avec certaines courtes nervures longitudinales (18) qui interrompent la continuité de certaines rainures (17) établies sur la barre plate de retenue (4)

et qui font face aux traverses (15) mentionnées, solidaires avec une base avant (20) faisant partie du support de fixation (3).

- 3.** Béquille réglable en hauteur selon l'une quelconque des revendications 1 ou 2, **caractérisée en ce que** le corps inférieur (1) comprend une structure en forme de « U » avec un nervurage de renforcement interne (5) qui est interrompu par des parties tubulaires (8) qui définissent les trous débouchants (7).

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- 4.** Béquille réglable en hauteur selon l'une quelconque des revendications 1 à 3, **caractérisée en ce que** le corps supérieur (2) comprend une structure triangulaire enveloppante (11) comprenant la succession de nervures de renforcement plates (12), la structure triangulaire enveloppante (11) à partir de laquelle la poignée (9) et la manchette (10) commencent, ainsi que l'extension inférieure en forme de « U » (13), la structure triangulaire enveloppante (11) comprenant en outre une succession de rabats (21) faisant face à la manchette (10).

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- 5.** Béquille réglable en hauteur selon la revendication 4, **caractérisée en ce que** la structure triangulaire enveloppante (11) définit un guidage qui est une continuation du guidage de l'extension inférieure (13) du corps supérieur (2).

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- 6.** Béquille réglable en hauteur selon les revendications 1 et 2, **caractérisée en ce que** l'extension inférieure (13) du corps supérieur (2) comprend certaines stries en vis-à-vis (19) opposées, dans lesquelles la base avant (20) du support de fixation (3) et la barre plate de retenue (4) sont ajustées.

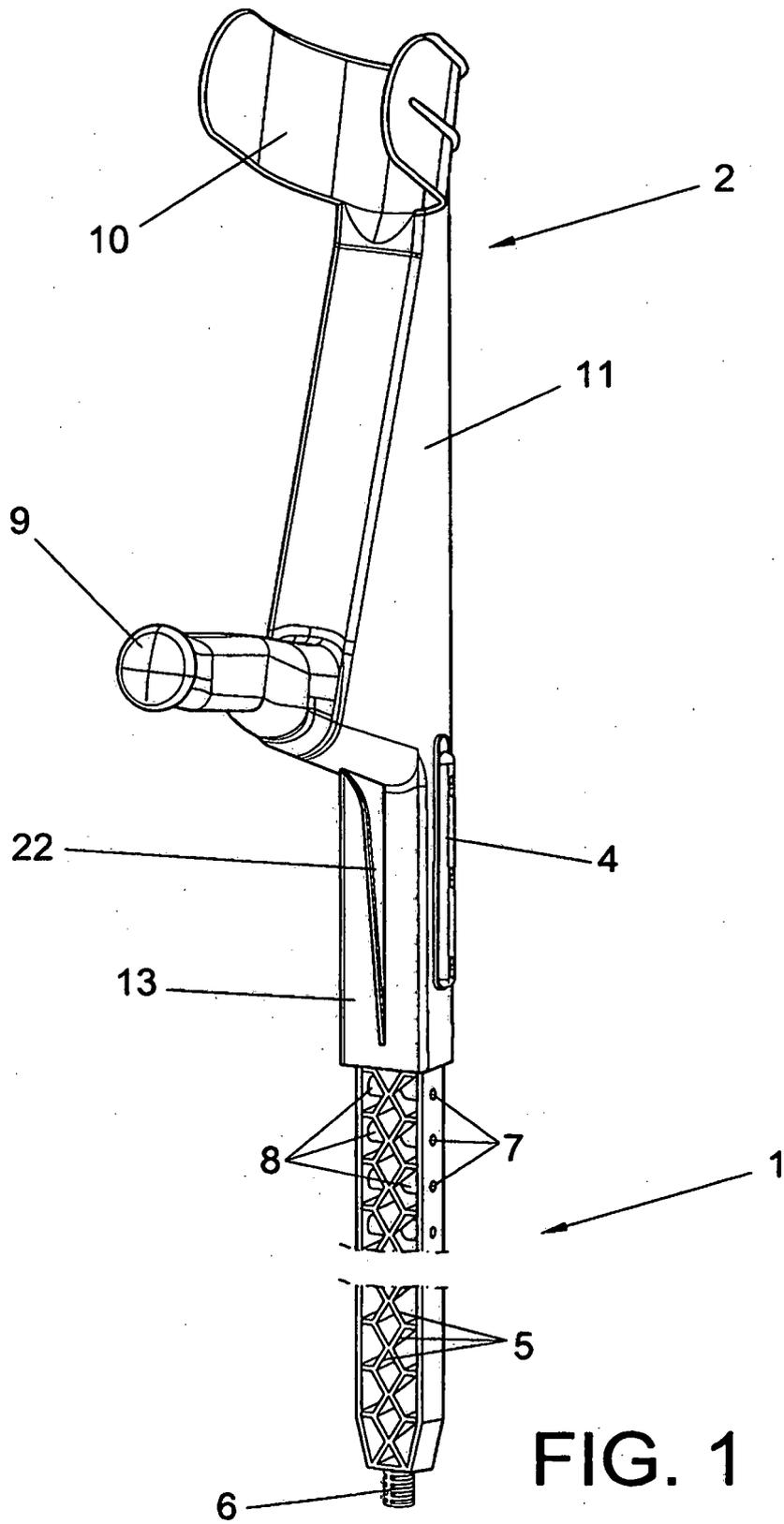
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- 7.** Béquille réglable en hauteur selon l'une quelconque des revendications 1 à 6, **caractérisée en ce que** le corps supérieur (2) comprend un rabat inférieur (22) qui associe la structure triangulaire enveloppante et l'extension inférieure en forme de « U » (13).

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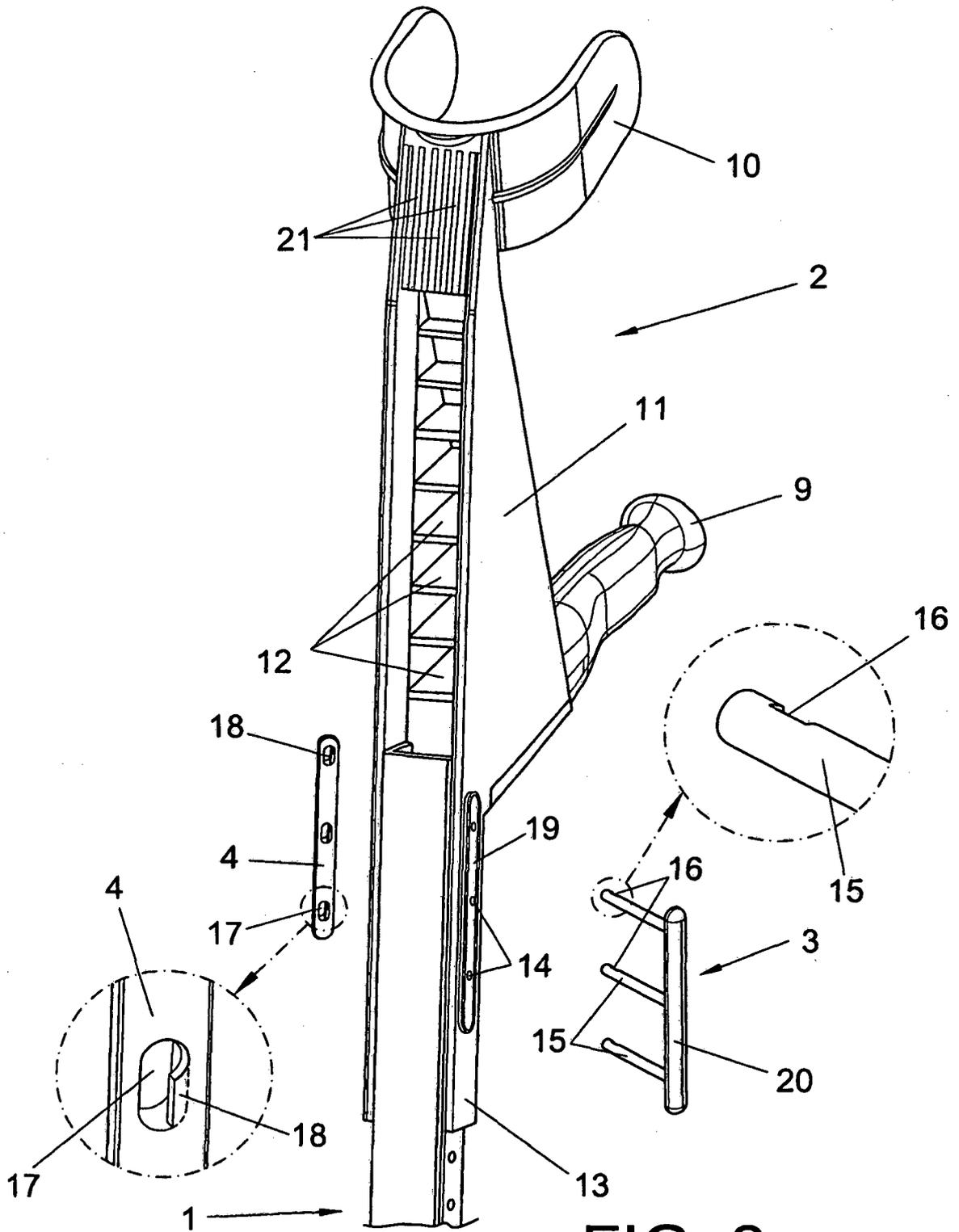


FIG. 2

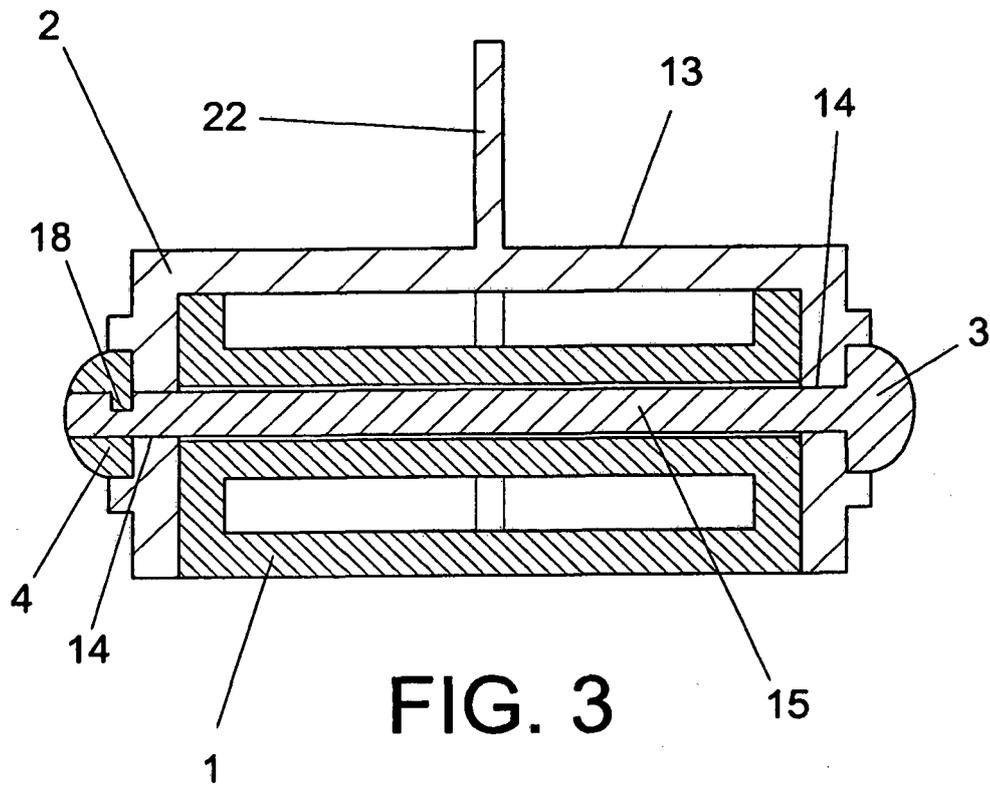


FIG. 3

**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

- US 2004025925 A1 [0006]
- US 20020020438 A1 [0007]