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71 Applicant: **PRODUCTIE- EN EXPLOITATIE
MAATSCHAPPIJ "DE BUCK" B.V.**
Gijzenveld 6
NL-4817 ZE Breda(NL)

72 Inventor: **De Buck, Dirk**
Laan 25
NL-4901 LP Oosterhout(NL)

74 Representative: **Hoorweg, Petrus Nicolaas et
al**
OCTROOIBUREAU ARNOLD & SIEDSMA
Sweelinckplein 1
NL-2517 GK The Hague(NL)

54 **Stretcher.**

57 A stretcher comprising two parallel longitudinal bars (1, 2), a cross connecting system (3) holding these bars (1, 2) at a distance, a cover (4) extending between these bars (1, 2), a handle (5) arranged in and outwardly slidable in each bar end of hollow form, in each handle (5) being arranged a locking mechanism (20), wherein each bar (1, 2) is embodied as a hollow profile wherein a standing wall portion (10) of the profile displays in cross section a substantially standing rectangular shape in order to

enlarge the vertical bending stiffness of the bar (1, 2), the outer periphery of said handle (5) being preferably complementary with respect to the inner periphery of the bar (1, 2), giving flat surface (11) on the handle whereby the non-rotatability of said handle (5) relative to the bar (1, 2) can be ensured and the hand-grip portion of the handle (5) remains as thick as possible, whereby the maneuverability is improved.

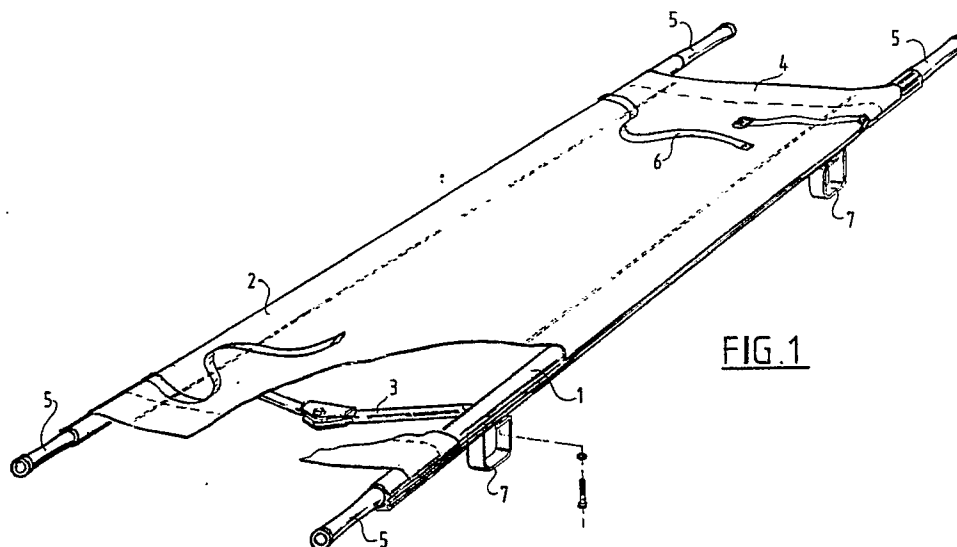


FIG. 1

The invention relates to a stretcher consisting substantially of two parallel longitudinal bars, a cross connecting system holding these bars at a distance, a cover extending between these bars, a handle arranged in and outwardly slidable in each bar end of hollow form, wherein in each handle is arranged a locking mechanism.

A stretcher must satisfy a number of conflicting requirements, among which may be included easy maneuverability, particularly where folding stretchers are concerned, together with a great stiffness and strength, wherein the weight of the stretcher must be as light as possible. The dimensions thereof must also be limited, to which end the stretcher is preferably provided with inwardly slidable handles in order to be able to reduce the length of the stretcher in storage or during use.

The invention has for its object to provide a stretcher of the type described in the preamble which can satisfy these requirements and provides to this end a stretcher which is distinguished in that each bar is embodied as a hollow profile wherein a standing wall portion of the profile displays in cross section a substantially standing rectangular shape in order to enlarge the vertical bending stiffness of the bar.

In preference this standing rectangular wall portion is located on the outside of the stretcher in order to protect the stretcher against shocks.

The rectangular cross sectional portion of the stretcher lends itself according to the invention in excellent manner to the arranging of at least one open channel wherein the bulb border of the carrying cover can be arranged. Thus ensured is that the carrying cover extends over the bar to the other parallel bar whereby the top side of the bars is covered. In particular cases of use, such as in the armed forces, the cover can be arranged in a subdued colour, while the bar can nevertheless be embodied of random material and colour, for instance aluminium, which contributes to the lower weight.

The remaining cross sectional part of each bar preferably has a round form, for example circular or elliptical, wherewith sharp edges and possible injuries can thereby be avoided.

Since according to the invention the handle is preferably complementary with respect to outer periphery to the inner periphery of the bar, by arranging a flat surface on the handle the non-rotatability of this handle relative to the bar can be ensured. The hand-grip portion of the handle thereby remains as thick as possible, whereby the maneuverability is improved.

Such a non-rotatable guiding of the handle in the bar is of advantage if the handle is provided with a locking mechanism wherewith the handle can be locked in both the extended and pushed-in

positions.

In order to increase user comfort it is recommended according to the invention to place the handle under spring loading, which spring is incorporated in the bar as a pressure spring which supports against a stop surface arranged therein.

A manually operated embodiment is ensured by arranging an operating member in the handle itself for operating the locking device which, together with the spring loading, provides the very easy operation for the user by either just pressing in the operating member to bring out the handle or pressing in the handle counter to the pressure action of the spring.

In a preferred embodiment the stop surface is arranged in the bar on a counter-member for the fixing means for a support for the stretcher as well as for the cross connecting system.

Mentioned and other features of the stretcher according to the invention will become apparent from the figure description hereinbelow of an embodiment. In the drawing:

Fig. 1 shows a perspective top view of a stretcher according to the invention with partly broken away cover to reveal the cross connecting system,

fig. 2 is a perspective top view of a portion of the longitudinal bar with the handle of the stretcher of fig. 1,

fig. 3 shows a lengthwise section in perspective view of a longitudinal bar with slidable handle arranged therein,

fig. 4 shows a standing cross section of the bar with handle from fig. 3 on enlarged scale,

fig. 5 shows a standing cross section corresponding to fig. 4 of the bar with handle with pressed-in operating member of the locking mechanism,

fig. 6 shows a standing view in cross section corresponding with fig. 4 of the bar with pressed-in handle,

fig. 7 is a perspective view corresponding with fig. 1 on enlarged scale.

The stretcher according to the invention consists of two parallel longitudinal bars 1, 2 which are held at a mutual distance by a cross connecting system 3. It is noted that the cross connecting system 3 here takes a pivoting form in order to be able to collapse the stretcher by carrying the longitudinal bars 1 and 2 towards each other. This is further elucidated below.

The stretcher consists further of a cover 4 extending between the longitudinal bars 1 and 2, wherein at either end of each longitudinal bar 1 is arranged a handle 5. According to the invention this handle can be carried into the bar 1 so that the total length of the stretcher can be reduced.

In addition straps 6 are arranged in order to be

able to fasten a body onto the stretcher.

Finally, the bars are provided with supports 7 to hold the stretcher at some height above the bearing surface.

According to the main characteristic of the invention the cross section of each bar 1, 2 is embodied such that a standing wall portion 10 thereof is substantially rectangular in form, wherein the larger rectangular side stands vertical ly. The remaining part of the cross section takes a round form, for instance elliptical, wherein it is noted that the outer periphery of the handle 5 adapts close-fittingly into the inner space of the bar 1. The handle is therein provided with a flat surface 11 which can slide along the inward facing rectangular surface of the portion 10. Ensured therewith is the non-rotatability of the handle 5 relative to the bar 1. The rectangular wall portion 10 of the bar 1 displays two lengthwise channels 12 and 13 arranged one above the other, wherein the channel 12 is suitable for receiving the bulb border of the cover 4, see also fig. 7. To this end the bulb border 14 of the cover is provided with a rod 15 such that this fits into the channel 12 which narrows towards the outside and therefore holds in the rod 15 with the bulb border 14 placed around it. By spreading the bars 1, 2 the cover 4 can thus be stretched tightly.

The second channel 13 serves to receive a bracket 16 to which are attached the fastening straps 6. These can slide to a random position along the length of the bar 1 and therefore be arranged at the optimal point with respect to the patient.

The bracket 16 is such that the inner face thereof will not touch the bulb border 14 of the cover, which prevents damage thereto. For this purpose the standing outer face 17 of the rectangular wall portion 10 for instance is slightly protruding relative to the flange of at least the channel part 12 so that this outer face 17 serves as protection against shocks and chafing of the bulb border 14 of the cover 4, see also fig. 7.

The channels 12, 13 can be provided at either end with stoppers 18 whereby sliding out of the brackets 16 and the bulb border 14 of the cover is prevented.

According to another characteristic of the invention the handle 5 is arranged slidably relative to the bar 1, see fig. 3. The handle is embodied for this purpose with a locking mechanism 20 consisting of a pin 21 which can fall into an opening 22 on the underside of the bar and opening 23. The pin 21 is arranged slidably in vertical direction in the body of the handle 5 and stands under downward directed spring pressure of a spring 24. The spring supports against the inner wall portion of a blind hole in the handle 5. The movement of the pin 21 is such that it can be pulled entirely out of the hole

22, 23.

This movement is brought about by an operating member 25 which extends in axial sense in the handle 5. To this end the handle 5 is given a hollow form and can receive the operating member 25 which is rectangular in cross section and provided at one end with a sloping surface 26 that co-acts with a likewise sloping surface 27 of the pin 21. This sloping face 27 is formed by a recess in the pin the height whereof is at least as great as the height of the member 25. The member is provided with a push-button 28, the outer periphery of which fits precisely into a chamber 29 of the handle 5. Arranged in this chamber is a pressure spring 30. In addition the member 25 is provided on the underside with a slot-like hole 31 for receiving a stop pin 32 arranged fixedly in the handle 5.

Locking of the handle takes place as follows. By pressing in the push-button 28, see fig. 5, the member 25 will move to the right in fig. 5 counter to the pressure action of the spring 30, whereby the sloping face 26 comes into contact with the face 27 of the pin 21. This will move upward against the action of the spring 24 and the bottom end of the pin is released from the hole 22. The inward movement of the member 25 is bounded by the pin 32. In this position of the pin 21 the handle 5 can be pushed into the bar 1, 2 until the pin 22 comes to lie above the hole 23 and, through release of the push-button 28 and carrying back of the member 25 as a consequence of the spring action 30, the pin 21 is released into the hole 23 whereby the handle 5 is locked in the bar 1.

Unlocking of the hand-grip 5 can take place by again pressing in the button 28, wherein the hand-grip 5 can be pulled outward manually. Re-locking takes place by again guiding the pin 21 into the hole 22. Because of the non-rotatability of the handle 5 this movement takes place without disturbance.

Maneuverability can be increased by placing the handle 5 under pressure of a pressure spring 35 arranged in the bar 1, 2. This pressure spring 35 presses against the inward facing end face 36 of the handle 5 and supports against a stop surface 37 of a counter-screw member 38 to be described further. It will be apparent that when the pin 21 is released from hole 23 the pressure spring 35 carries the handle 5 outward.

In order to bound the outward movement of the handle 5 it is provided with a bounding element 40 which hooks with an eye-shaped end 41 around a cross pin 42 which is fixed in the body of the handle 5. The other end of the bounding element 40 is provided with a slot-like opening in the end portion which co-acts with a cross pin 43 attached fixedly in the bar 1, 2. The length of the slot-like opening which is formed by an end of the rod-

shaped bounding element 40 being bent round in hairpin shape is at least equal to the stroke length of the handle 5.

The above mentioned counter-screw member 38 serves as counter-member for fixing of the support 7. The support 7 is substantially trapezium-shaped and is a sawn-off product of an extruded profile. Arranged on the end of the support 7 situated by the bar 1, 2 is a slot-like opening 45 which serves to receive the end of the cross connecting arms 3. The pin 43 is provided with a screw thread which co-acts with a threaded hole in the screw body 38. This pin 43 extends through the support 7 and ends in a screw head or bolt 46. The pin 43 also serves as spindle for the pivoting of arm 3 relative to the bars 2, which is further elucidated below.

The counter-screw member 38 has a peripheral shape complementary to the inside wall of the bar 1, 2, see also fig. 7, and is therefore non-rotatably slidable in the bar as a result of the flat inner surface of the rectangular portion 10. The screw member 38 is provided with a chamber 47 into which fits a pin 48 that is outwardly loaded by a pressure spring 49. The pin 48 falls into a series of aligned holes in the bottom wall of the bar 1, 2, a filler element 50 arranged between the bar and the support and the support 7. Ensured with this construction together with the pin 43 is that the support 7 can be attached non-rotatably to the bar 1, 2. Fitting takes place in particularly simple manner due to the resilient pin 48 which, by sliding the body 38 in the bar 1, falls automatically into the aligned holes and positions the different parts on each other. After arranging the bounding element 40 and the pin 42 the whole spring-tensioned handle with locking mechanism can be pushed simultaneously into the bars 1 and fixed in place with pin 43.

As previously stated above the cross connecting system according to the embodiment shown is constructed from two mutually pivoting arms 3. In the middle of the stretcher the ends of each arm 3 facing one another are coupled to a connecting piece 50 which is arranged such that it functions as stop over the extended idle point of the arms 3. The pivot point of the arms lies at the pin 51 and is dimensioned relative to the stop part 50 such that the arms 3 are pressed through the position straight opposite one another, whereby together with the tension in the cover 4 the desired locking is effected, which is indicated by the arrow P1 in fig. 7. The operation of the stretcher can therefore be performed without additional tools, since the user only needs to fold out the arms 3 of the cross connecting system, whereby the bars 1, 2 move away from one another. When the part 50 is pressed through, the arms 3 are automatically

locked and the stretcher is ready for use. In the reverse direction of movement wherein the user has to exert an opposing pressure on the body 50 the stretcher can be folded up. Thus realized is a particularly robust, strong and easily operated stretcher.

The invention is not limited to the above described embodiments.

Claims

1. Stretcher consisting substantially of two parallel longitudinal bars, a cross connecting system holding these bars at a distance, a cover extending between these bars, a handle arranged in and outwardly slidable in each bar end of hollow form, wherein in each handle is arranged a locking mechanism, **characterized in that** each bar is embodied as a hollow profile wherein a standing wall portion of the profile displays in cross section a substantially standing rectangular shape in order to enlarge the vertical bending stiffness of the bar.

2. Stretcher as claimed in claim 1, **characterized in that** the rectangular cross sectional portion of the bars (1, 2) faces to the outside.

3. Stretcher as claimed in claims 1 and 2, **characterized in that** the standing wall portion of the bars (1, 2) is provided with at least one open longitudinal channel for receiving the bulb border of the covers and a hook for a strap.

4. Stretcher as claimed in any of the foregoing claims, **characterized in that** the cross section outside the rectangular cross sectional part has a round form.

5. Stretcher as claimed in any of the foregoing claims, wherein each bar is embodied as hollow extrusion profile, **characterized in that** the outer periphery of the handle is complementary to the inner surface of the hollow profile bar.

6. Stretcher as claimed in claim 5, **characterized in that** the handle is provided with a locking mechanism for both the extended and pushed-in positions thereof.

7. Stretcher as claimed in claim 6, **characterized in that** the handle stands under a pressure force of a pressure spring incorporated in the bar, which spring supports against a stop surface arranged in the bar.

8. Stretcher as claimed in claim 7, **characterized in that** the stop surface is a part of a counter-member arranged in the bar for fixing the support of the stretcher.

9. Device as claimed in claims 5-8, **characterized in that** between the handle member and the counter-member a bounding element acts to bound the sliding movement of the handle.

10. Stretcher as claimed in any of the fore-

going claims, **characterized in that** the handle is provided with an operating member for the locking mechanism extending in axial direction therein.

11. Stretcher as claimed in any of the foregoing claims, **characterized in that** the support is fixed by means of a screw element which also serves as pivot for pivot arms of the cross connecting system.

12. Stretcher as claimed in claim 11, **characterized in that** the pivot pin is formed by the fixing bolt for the support for screwing in the counter-screw member in the bar, which bolt also serves as stop pin for the bounding element between handle and counter-member.

13. Stretcher as claimed in any of the foregoing claims, **characterized in that** the outward facing surface between the open channels of the rectangular standing cross sectional portion of each bar is displaced outward relative to the outer bounding flanges of the open channels.

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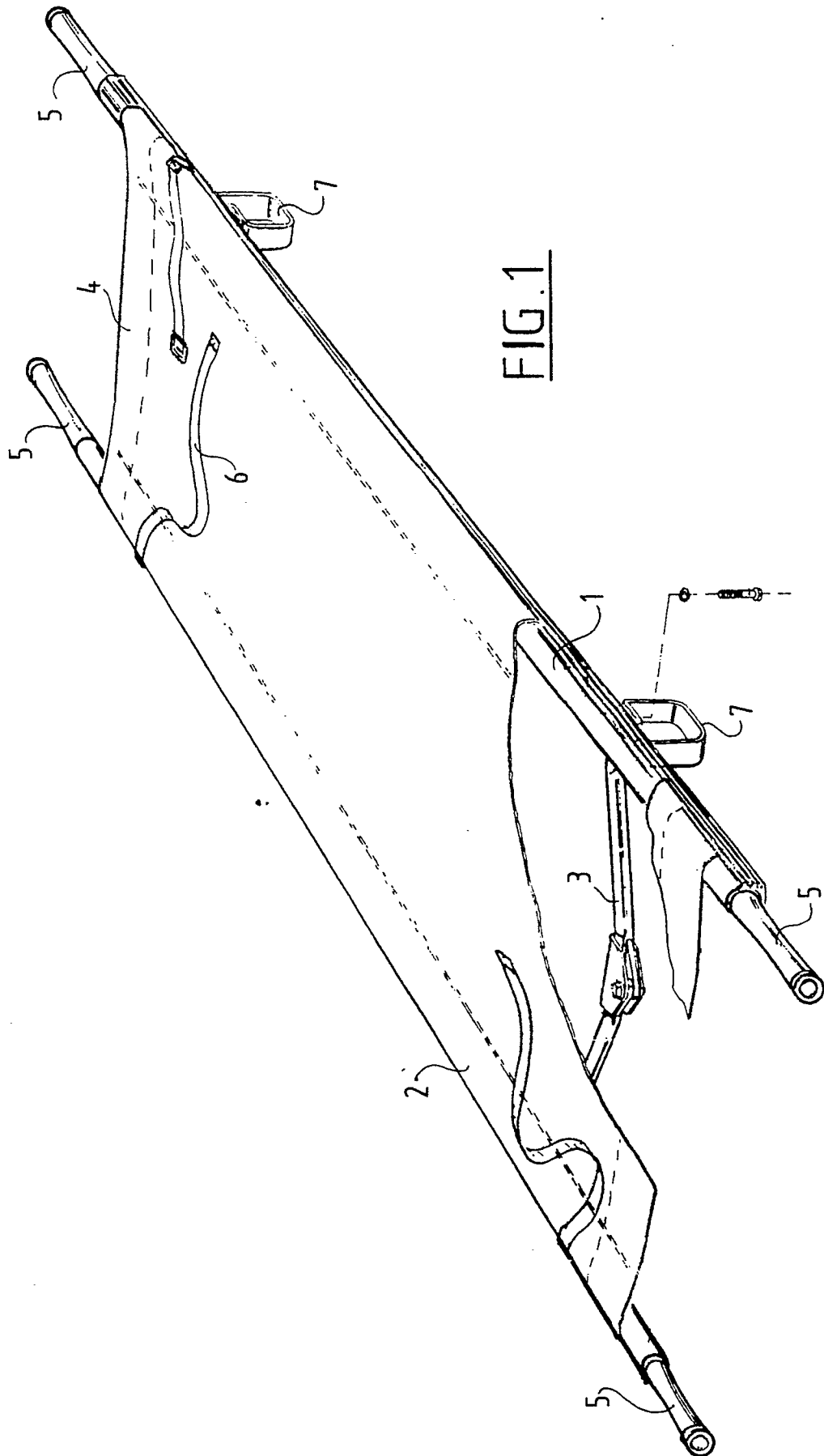
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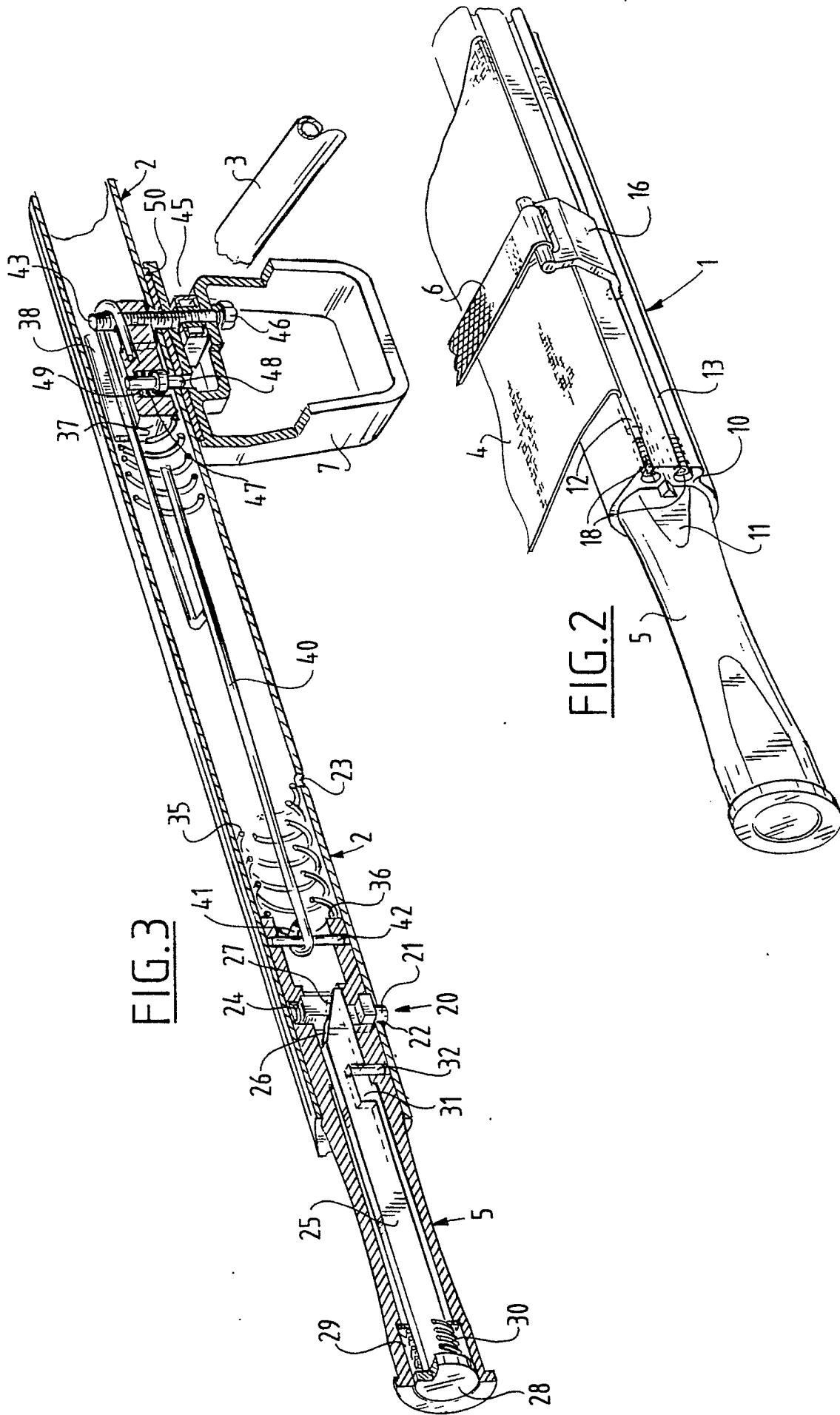
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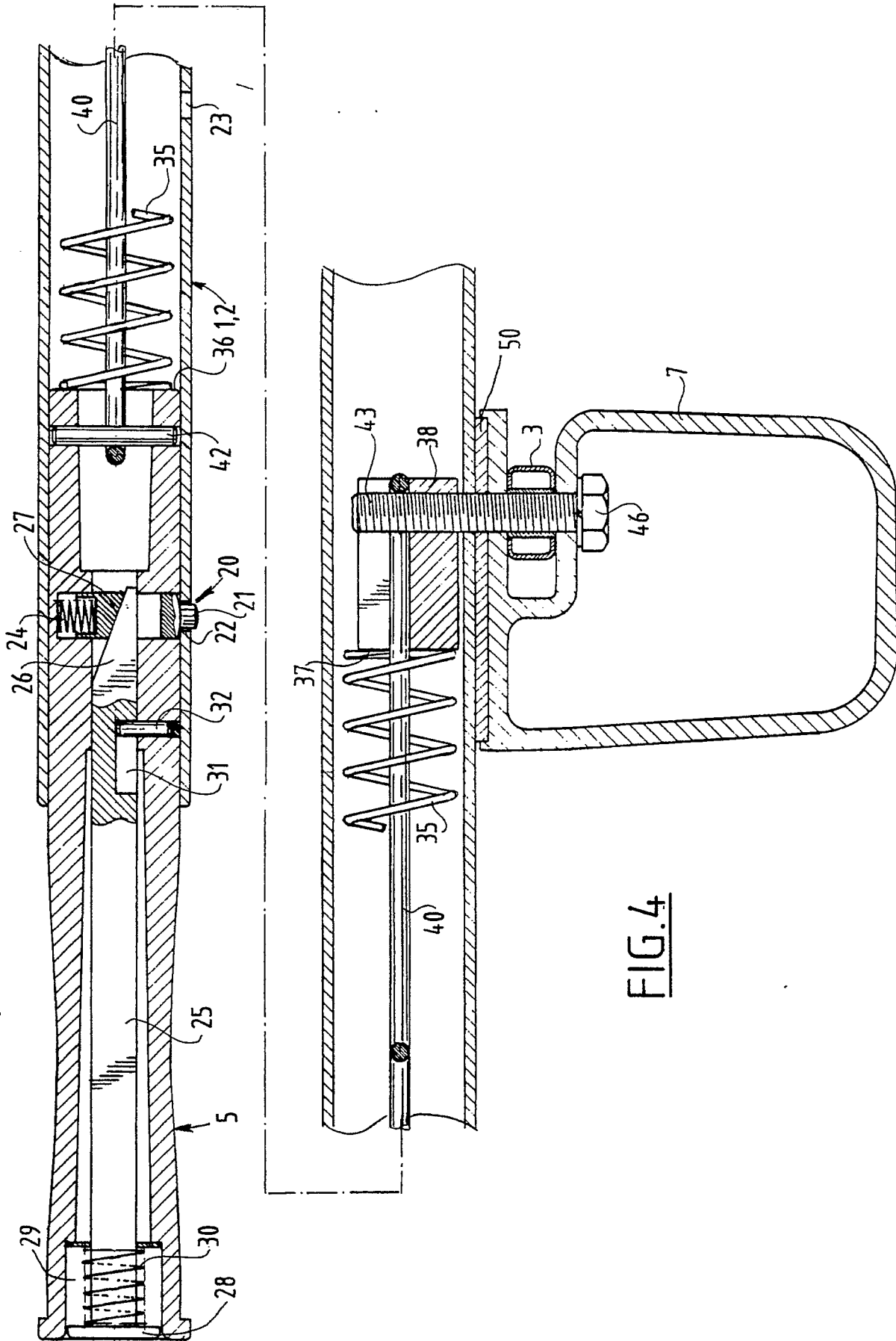
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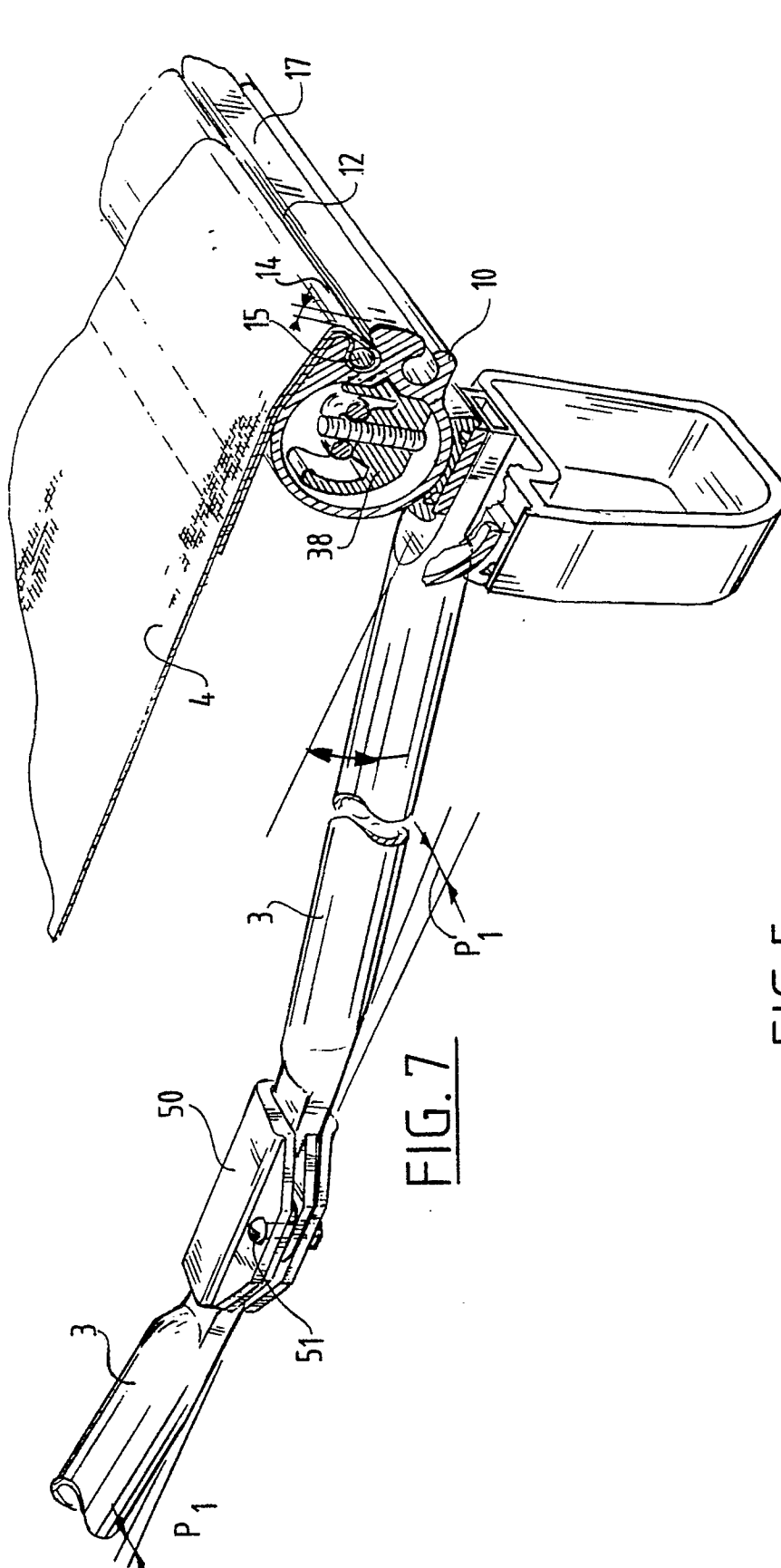
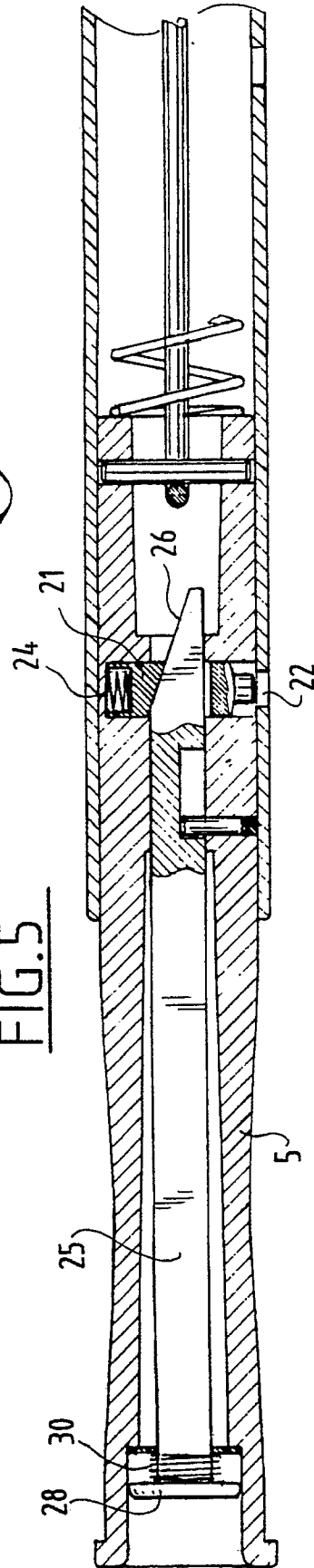
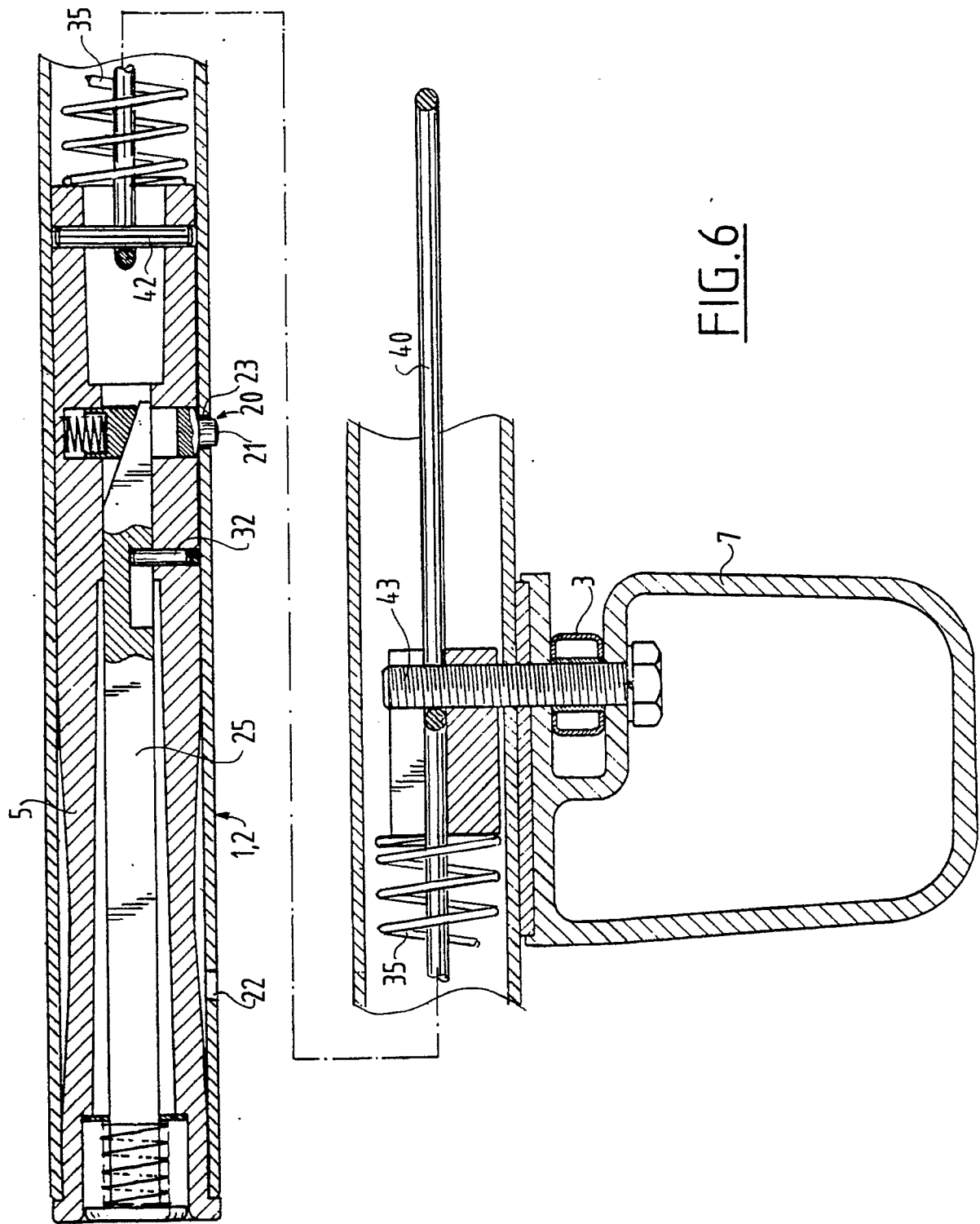


FIG. 5







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	NL-A- 289 722 (STOLLENWERK) * Page 1, lines 1-3; page 2, lines 5-11; page 3, lines 3-21; figure *	1-3	A 61 G 1/00
X	DE-A-3 524 279 (STOLLENWERK) * Whole document *	1,2,4-6	
A	---	3,10,13	
X	NL-A-6 907 750 (STOLLENWERK) * Page 1, lines 3-6; claims; figures *	1,2	
A	---	1,3	
A	GB-A- 820 713 (STOLLENWERK) * page 2, lines 66-101; figures *	5,6,8,9	
A	FR-A-1 494 826 (ROUSSEAU & CO.) * Whole document *	5,6	
A	DE-A-3 245 842 (UTILA GERATEBAU) * Whole document *	7	TECHNICAL FIELDS SEARCHED (Int. Cl.5)
A	CH-A- 239 806 (MANI) * Page 2, lines 50-70; figure 4 *	11,12	A 61 G
A	US-A-2 305 980 (MOLLENHOUR) * Page 2, right-hand column, Lines 6-47; figures *		
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 03-09-1990	Examiner BAERT F.G.
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			