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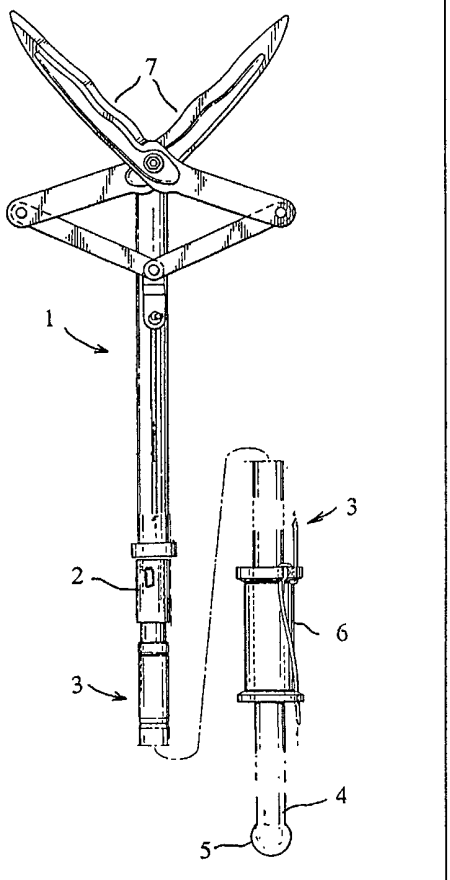
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(54) Title: MANUALLY-OPERABLE TOOLS

(57) Abstract

The open shear-blades (7) of a shears-head (1) that is detachably mounted on a telescopically-extendable pole (3), are closed against the action of a spring (15) by downward pull on a tubular hand-grip (6). The hand-grip (6), which enables the pole (3) to be steadied using both hands, slides coaxially on the pole (3) and is coupled to the blades (7) via a line (16) which is secured frictionally to the hand-grip (6) by winding through notches (26, 27). A modified hand-grip (30) includes a mechanism (31) in which a spindle (32), guided by slots (35), lifts with tensioning of the line (16) to jam the line (16) within an upwardly-narrowing throat (33) for securing it to the hand-grip (30).



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Manually-Operable Tools

This invention relates to manually-operable tools, and is concerned particularly with tools of a kind that afford an extended reach for operation of a manually-operable tool-head. Tools of this kind are especially, though not exclusively, applicable in the context of a garden for tending trees and bushes.

Garden shears for cutting tree- and bush-foliage are known in which a tool-head of scissors-form has telescopically-extendable operating handles. The telescopically-extendable handles can be used to extend the user's reach with the shears by up to about 1m, but provision for a larger extension of the handles than this is not generally possible without making the shears too unwieldy for the user to hold and operate.

It is common to mount pruning shears used for cutting through individual branches or shoots of a tree or bush, on an extension pole that is capable of extending the user's reach by some 3m or more. The shears in this case however, are not of scissors-form but have a head in which a single cutter-blade pivots onto a counter-blade or against an anvil for the cutting operation, the pivotal movement being effected by the user pulling on a line that is attached to the cutter-blade and extends lengthwise of the pole. The counter-blade or anvil often has the form of a hook to enable the branch or shoot that is to be pruned to be engaged within it for the cutting operation, and such engagement has the effect of steadying the pole sufficiently to enable the user to hold the pole with one hand while pulling on the line with the other.

The use of an extension pole with operating line is not, however, readily applicable generally, and in particular is not applicable where the benefit of external steadying of the tool-head during its operation is unavailable or cannot be relied upon. More especially, the reach of shears of the scissors-form cannot be satisfactorily extended in this way, since they are used for cutting thin, insubstantial shoots and foliage, and in normal circumstances these do not provide material support or engagement for the shear-blades during the severing operation. Support for the tool in these circumstances is required to be exercised almost solely from the lower, user end of the pole, and it is not normally possible to do this without using both hands, thereby effectively precluding use of the line to operate the tool-head.

It is one of the objects of the present invention to widen the range of tools for which use of an extension pole with operating line is a practical possibility.

According to one aspect of the present invention there is provided a manually-operable tool having a tool-head mounted on the upper end of an extension pole and a line for pull-operation of the tool-head extending lengthwise of the pole, wherein a hand-grip is mounted on the pole for sliding movement back and forth in the lengthwise-direction of the pole, the line and hand-grip being engageable with one another such that the tool-head is operated by pull of the hand-grip along the pole away from the tool-head.

The slidable hand-grip makes it possible for both hands to be used for steadying the pole before, during and after the tool-head is operated. With one hand grasping the pole (usually at or near the lower end of the pole), the other hand grasps the hand-grip ready to pull it

along the pole for operating the tool-head whilst at the same time being effective to steady the pole laterally.

The hand-grip may be of tubular form mounted for sliding coaxially on the pole, and may be notched and/or have holes therein to provide surfaces with which the line is engageable frictionally for securing it to the hand-grip. As an alternative, the hand-grip may include a mechanism having a throat through which the line runs, the mechanism being operative to secure the line to the hand-grip by jamming the line within the throat.

The tool-head may incorporate shears of scissors-form, and in this case may include means for providing a resilient bias urging the shears open such that pull on the hand-grip acts via the line to close the shears against the action of the resilient bias. Furthermore, the tool-head may be fixedly mounted on the upper end of the pole, but in the alternative may be selectively detachable from it. The pole itself may be in one piece, or may comprise a plurality of sections that interlock with one another or slide one within the other telescopically, for varying the pole-length.

A manually-operable tool in accordance with the present invention, incorporating a shears-head of scissors-form, will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is illustrative of the tool of the invention in front elevation;

Figure 2 is an enlarged front elevation of part of the shears-head of the tool of Figure 1;

Figure 3 is a sectional side-elevation on the line III-III of Figure 2;

Figure 4 shows spaced portions of an extension pole of the tool of Figure 1, and illustrates engagement of the shears-head with the extension pole and the mounting on the pole of a hand-grip of the tool;

Figures 5 and 6 are views taken on the lines V-V and VI-VI respectively of Figure 4; and

Figure 7 is a sectional view of a modified form of hand-grip of the tool of Figure 1.

Referring to Figure 1, the shears-head 1 of the tool is detachably mounted on the upper end 2 of a telescopic extension pole 3 of light alloy. The pole 3 has a fully-extended length of some 2.5m to 3m, and is terminated at its lower end 4 in a bung 5 that enables the end 4 to be easily gripped by one hand. A tubular grip 6 for the other hand is threaded onto the pole 3 over the bung 5 and is freely slidable coaxially back and forth in the lengthwise-direction on the pole 3.

Referring to Figure 2, the shears-head 1 incorporates a pair of shear-blades 7 that are pivoted together in scissors form on a common pivot 8 at the head of a tube 9. Each blade 7 extends rearwardly of the pivot 8 in an arm 10 that is coupled via an individual pivoted-link 11 to a further, common pivot 12. As illustrated in Figure 3, the pivot 12 projects through a slot 13 in the wall of the tube 9 into a block 14 that is slidable downwardly within the tube 9 against the action of a spring 15. In the normal, rest position of the block 14, and therefore of the pivot 12, the spring 15 holds the blades 7 open as illustrated.

The blades 7 are closed upon one another for the cutting operation of the shears, by pulling the pivot 12 downwardly within the slot 13 against the action of the

spring 15. This is effected by means of a nylon line 16 which is knotted to a tag 17 secured to the pivot 12, and which is long enough to extend at least to the lower end 4 of the fully-extended pole 3. As illustrated in Figures 4 and 5, the line 16 in extending from the head 1 to run the length of the pole 3 is threaded loosely through a hole 18 (Figure 5) of a flange 19 of the tube 9 where the head 1 couples to the upper end 2 of the pole 3.

Referring to Figure 4, the coupling between the head 1 and pole 3 involves a spigot 20 that enters a socket 21 at the upper end 2 of the pole 3. A releasable latch 22 of the socket 21 is operative resiliently to retain the spigot 20 within the upper end 2 and thereby hold the head 1 firmly to the pole 3. With the head 1 held in this way, the line 16 extends lengthwise of the pole 3 and for operation of the head 1 is engaged with the hand-grip 6.

The tubular hand-grip 6 has upper and lower flanges 23 and 24 respectively, and although this is not shown in the drawings, may be contoured between the flanges 23 and 24 to facilitate grasp of it with the palm and individual fingers of the hand. A hole 25 extends through the upper flange 23 as shown in Figure 6, and the line 16 is threaded loosely through this; a corresponding hole for the line 16 may be provided in the lower flange 24 also. Notches 26 and 27 are also provided in the upper flange 23 these being used for securing the line 16 to the hand-grip 6 frictionally, ready for use of the tool.

When the tool is to be used, the user adjusts the length of the telescopic pole 3 as appropriate to provide comfortable reach of the head 1 to the foliage or other material to be cut (a twist-lock action to release the pole and then secure it with the correct extension may be

involved in the adjustment). The hand-grip 6 is now slid up the pole 3 to a distance of, say, about 0.5m to 0.75m above the bung 5. The line 16 is tensioned gently through the hole 25 before being wound through the notches 26 and 27 (as shown in Figures 4 and 6) to secure it firmly to the positioned hand-grip 6. The user now lifts the pole 3 with one hand on its lower end 4 and the other grasping the hand-grip 6 above, to present the open blades 7 to the foliage or other material to be cut; the free end of the line 16 below the notches 26 and 27 may be allowed to run out under the palm of the hand on the hand-grip 6.

Operation of the head 1 to effect cutting simply requires the user to pull the hand-grip 6 downwardly towards his/her lower hand on the pole 3. Once the cut has been made, release of the downward pull on the hand-grip 6 allows the hand-grip 6 to return up the pole 3 and the blades 7 to open, under the restoring action of the spring 15. The tool is now ready for further use, without need for the user to remove his/her hands from it in locating the tool for the next cut, or during and after the cutting. The user can therefore exert steady two-hand control over the tool throughout each session of use. More especially, the user is able to provide adequate lateral control of the tool with the hand on the hand-grip 6 even though this hand is also used for operating the head 1 via the line 16.

The hand-grip 6 of the tool may be modified as illustrated in Figure 7, to include provision for more-readily locking the line 16 to it. In this regard, and referring to Figure 7, the modified, tubular hand-grip 30 incorporates a locking mechanism 31 at its upper end, which includes a spindle 32 that is loosely captive within an upwardly-narrowing throat 33 of the mechanism 31. The line 16 from the head 1 extends down into the

throat 33 to pass round under the spindle 32 and then upwardly within the mechanism 31 to pass out through a side-passage 34.

Once the hand-grip 30 has been slid coaxially to an appropriate location on the pole 3, the line 16 can be tensioned and locked to the grip 30 simply by pulling gently on it below where it emerges from the passage 34. This takes up the slack in the line 16 and pulls the spindle 32 upwardly within the throat 33. The spindle 32, which is guided in this upward movement by engagement of its two ends within respective key-hole slots 35 (only one shown) of the mechanism 31, accordingly jams the line 16 tightly within the constricted throat 33, ready for downward sliding of the hand-grip 30 to operate the head 1. The frictional engagement in this way of the line 16 within the mechanism 31, is enhanced by surface roughening of the spindle 32 and throat 33.

As a further modification of the tool, the compression spring 15 located below the pivot 12 may be replaced by a tension spring located in the head 1, above it. The action of this latter spring is essentially the same as that of the spring 15 in providing a resilient return action for opening the blades 7.

Although the invention has been described above in the context of a tool with a shears-head of scissors form, it is applicable to tools with other forms of shears-head as well as to tools generally with different functions.

Claims:

1. A manually-operable tool having a tool-head mounted on the upper end of an extension pole and a line for pull-operation of the tool-head extending lengthwise of the pole, wherein a hand-grip is mounted on the pole for sliding movement back and forth in the lengthwise-direction of the pole, the line and hand-grip being engageable with one another such that the tool-head is operated by pull of the hand-grip along the pole away from the tool-head.

2. A manually-operable tool according to Claim 1 wherein the hand-grip is of tubular form mounted for sliding coaxially on the pole.

3. A manually-operable tool according to Claim 1 or Claim 2 wherein the tool-head incorporates shears of scissors-form.

4. A manually-operable tool according to Claim 3 including means for providing a resilient bias urging the shears open, pull on the hand-grip acting via the line to close the shears against the action of the resilient bias.

5. A manually-operable tool according to any one of Claims 1 to 4 wherein the tool-head is selectively detachable from the upper end of the pole.

6. A manually-operable tool according to any one of Claims 1 to 5 wherein the pole is selectively variable in length.

7. A manually-operable tool according to Claim 6 wherein the pole is variable in length telescopically.

8. A manually-operable tool according to any one of Claims 1 to 7 wherein the hand-grip is notched and/or has holes therein to provide surfaces with which the line is engageable frictionally for securing it to the hand-grip.

9. A manually-operable tool according to any one of Claims 1 to 7 wherein the hand-grip includes a mechanism having a throat through which the line runs, the mechanism being operative to secure the line to the hand-grip by jamming the line within the throat.

10. A manually-operable tool according to Claim 9 wherein the line runs under a moveable part of the mechanism within the throat, such that tensioning of the line results in this part jamming the line within the throat.

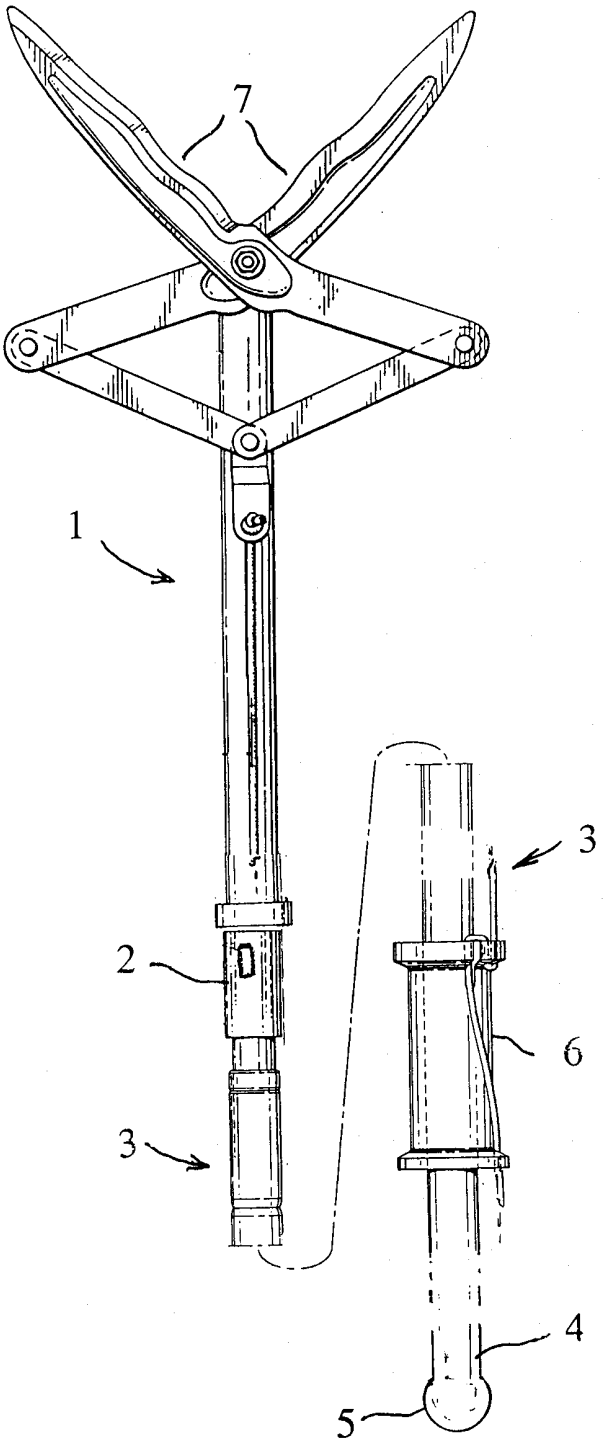


Fig. 1

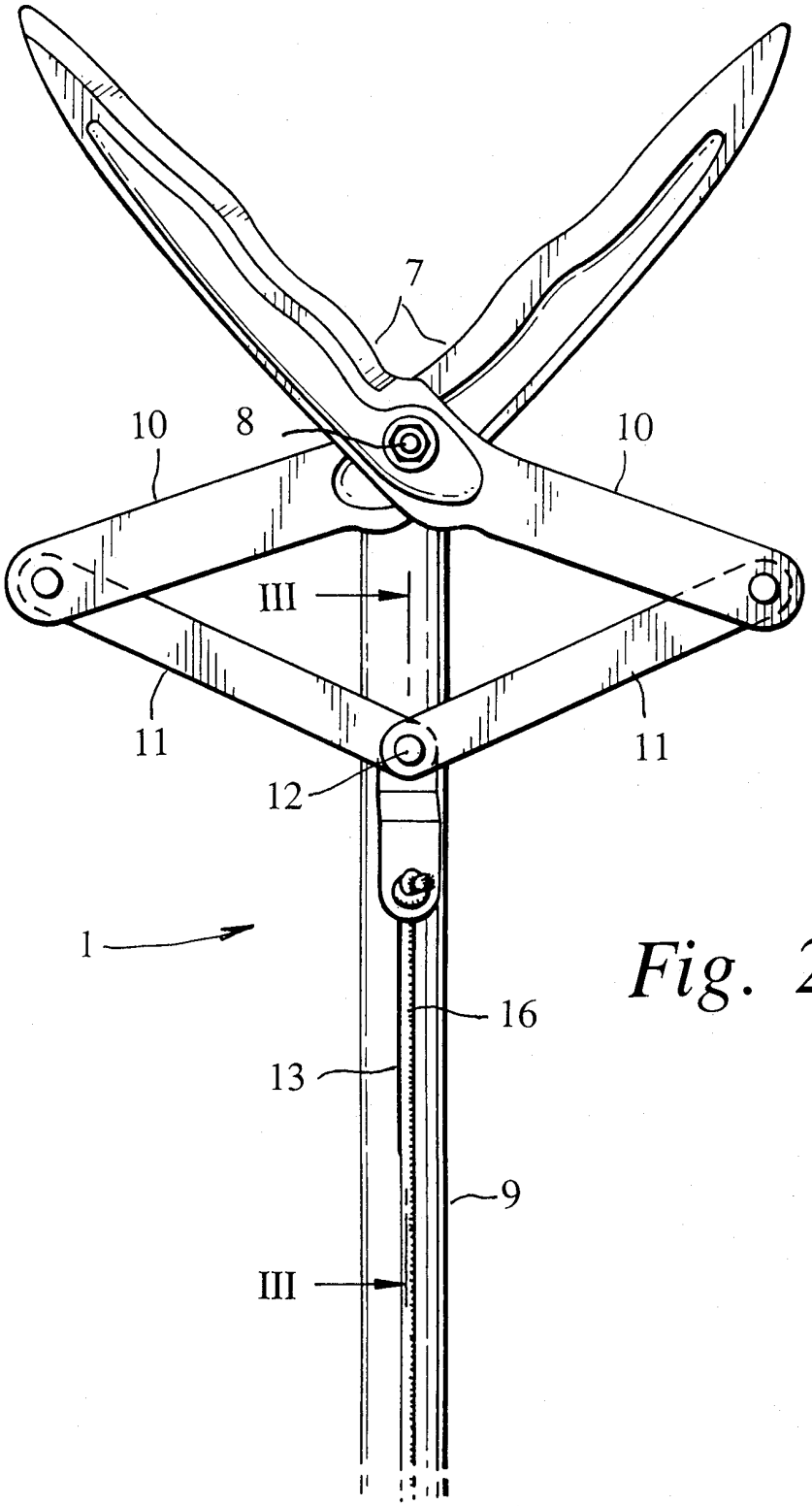


Fig. 2

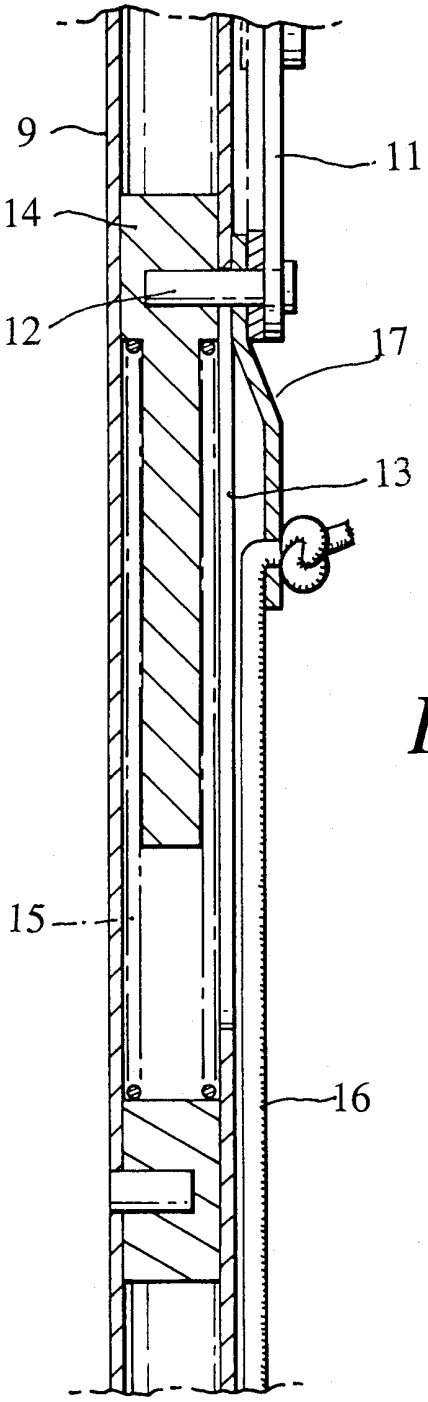
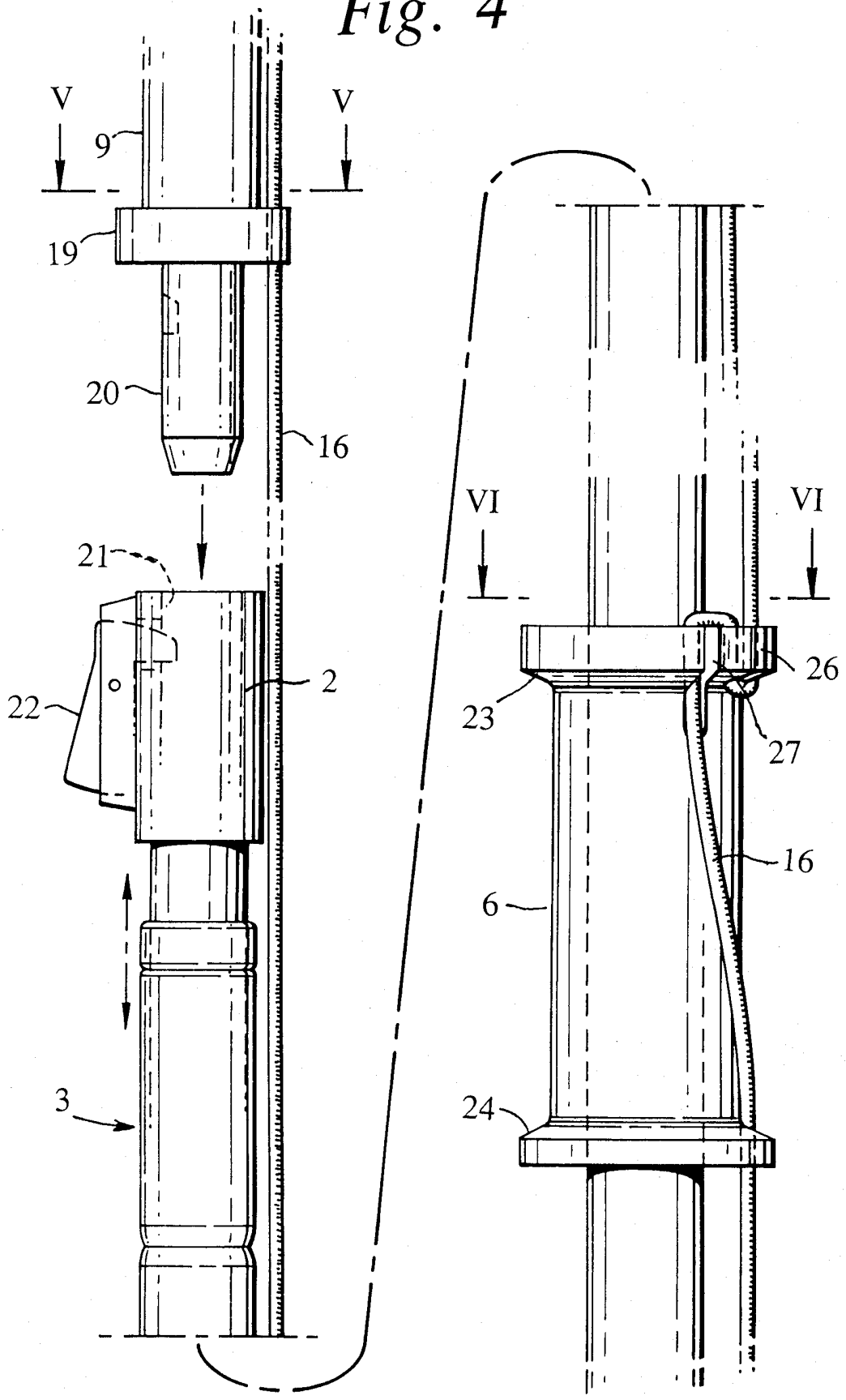


Fig. 3

Fig. 4



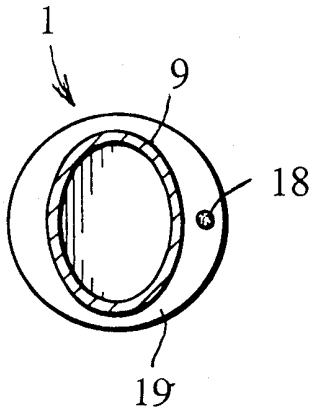


Fig. 5

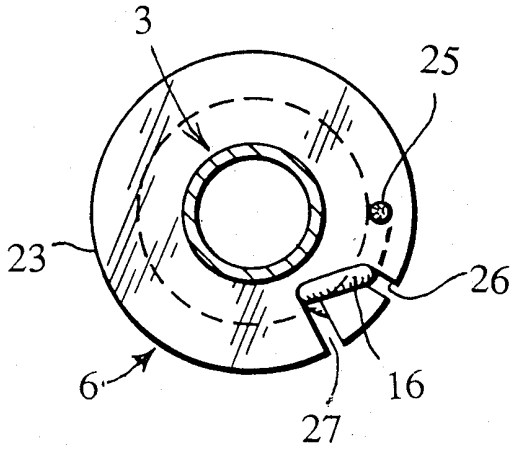


Fig. 6

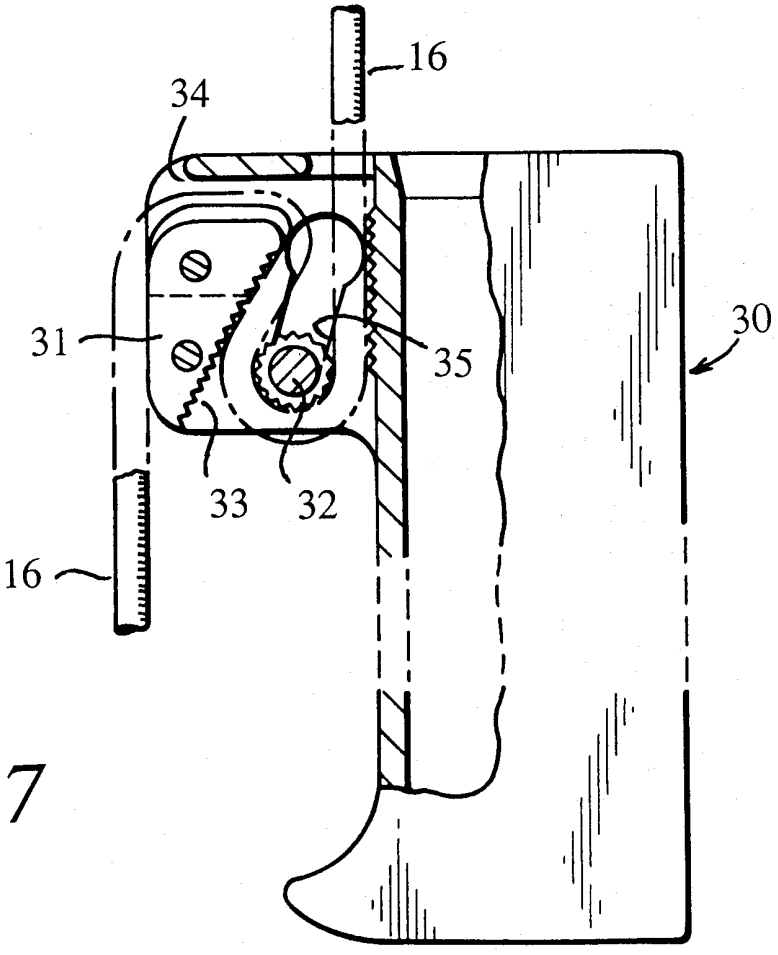


Fig. 7

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A. CLASSIFICATION OF SUBJECT MATTER
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C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Y	abstract & US 5 933 965 A (LINDEN ET AL) 10 August 1999 (1999-08-10) column 3, line 23 -column 4, line 32; figures 1,4,4B,5A-C	5-7
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A	column 4, line 45-54 column 5, line 44-52; figures 1,14	5-10

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