

No. 785,433.

PATENTED MAR. 21, 1905.

C. R. PHILLIPS.

ROPE KNIFE.

APPLICATION FILED JUNE 24, 1904.

2 SHEETS—SHEET 1.

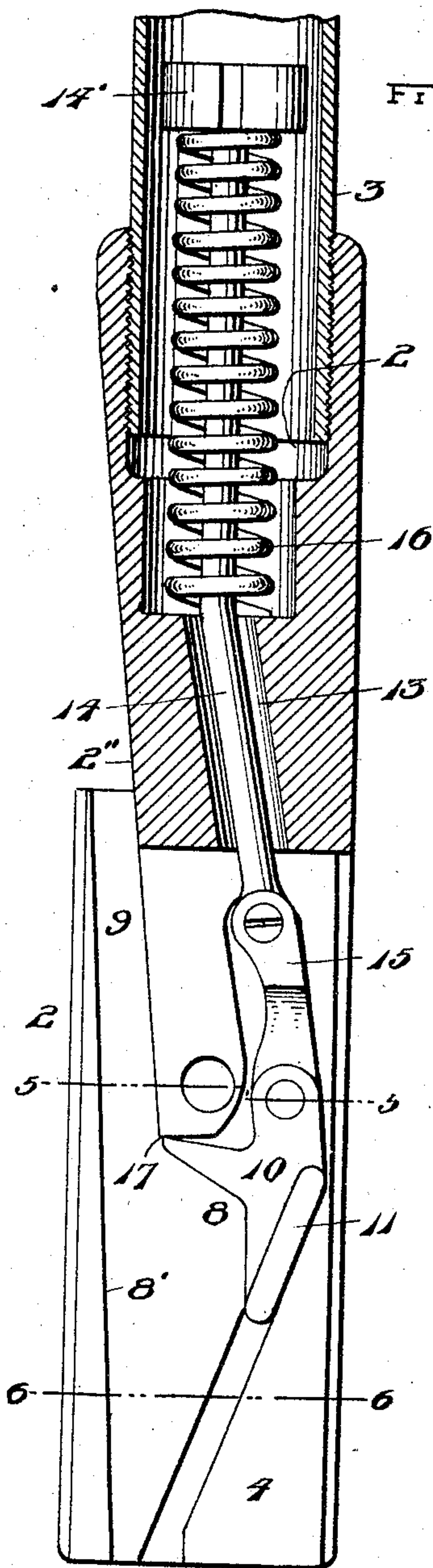
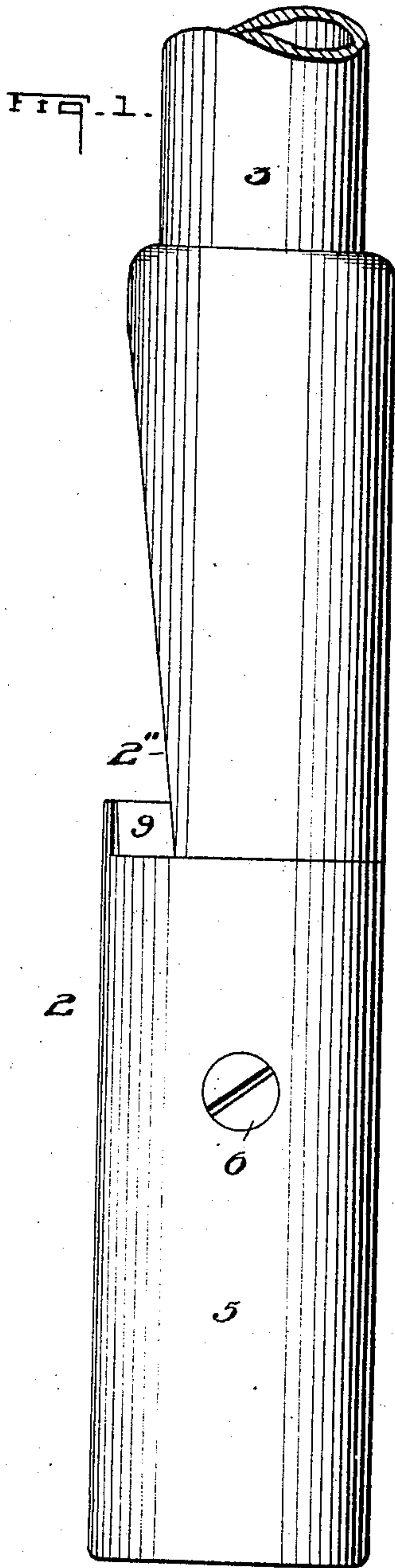
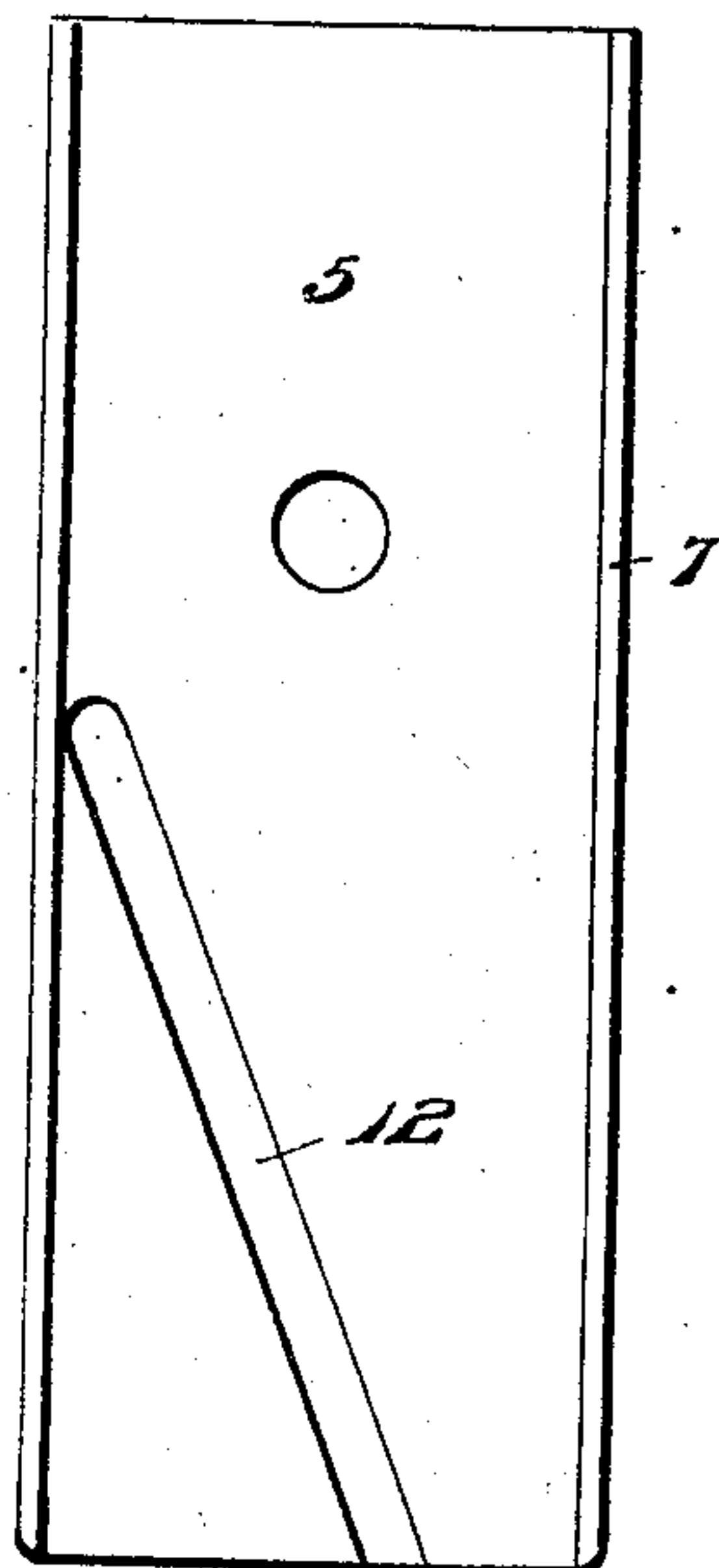


FIG. 3.



WITNESSES:

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Charles R. Phillips,
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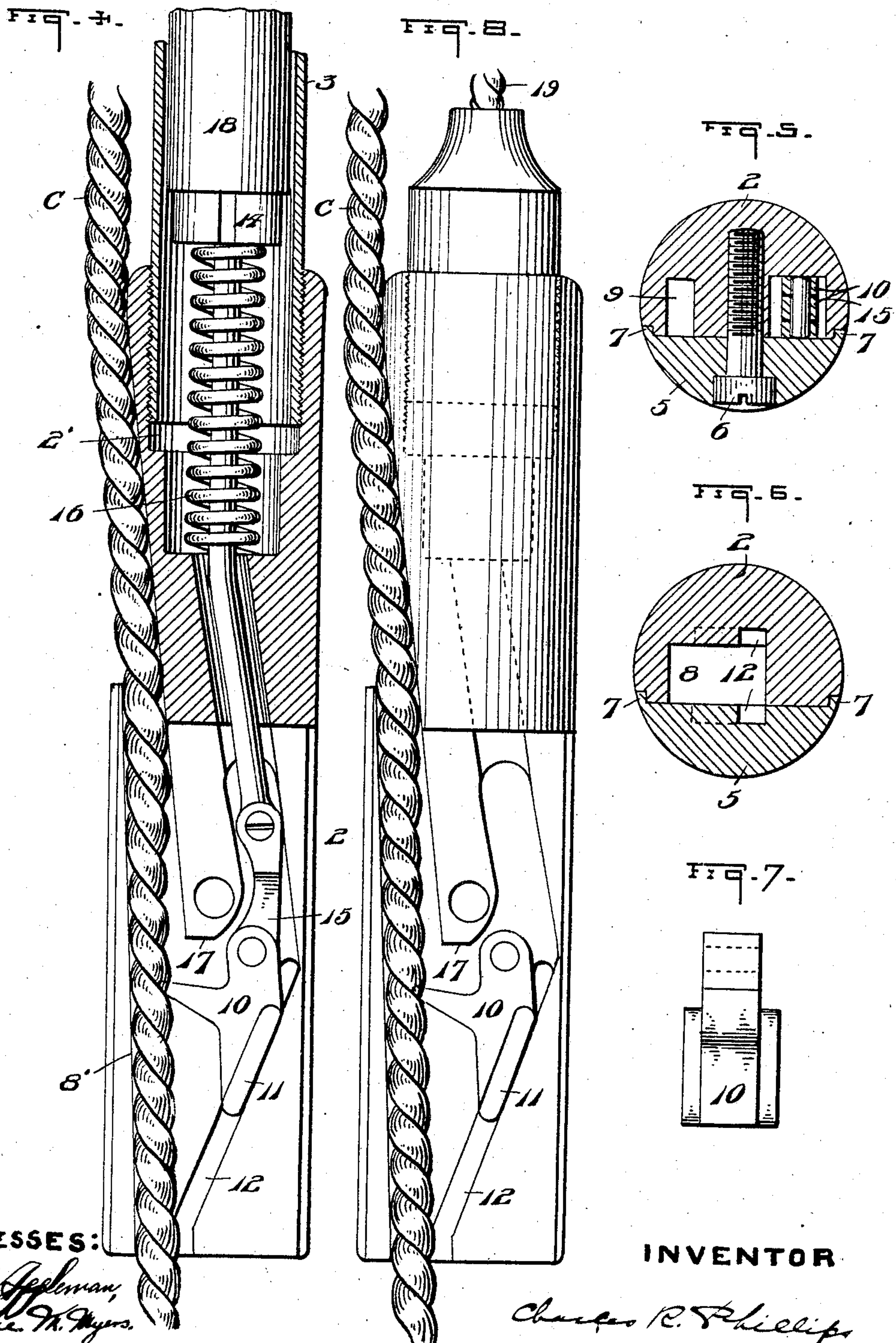
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UNITED STATES PATENT OFFICE.

CHARLES R. PHILLIPS, OF MANNINGTON, WEST VIRGINIA.

ROPE-KNIFE.

SPECIFICATION forming part of Letters Patent No. 785,433, dated March 21, 1905.

Application filed June 24, 1904. Serial No. 213,921.

To all whom it may concern:

Be it known that I, CHARLES R. PHILLIPS, a citizen of the United States, residing at Mannington, in the county of Marion and State of West Virginia, have invented certain new and useful Improvements in Rope - Knives, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to an appliance for cutting well-drilling cables, so that the latter may be removed in case the drilling-tools become stuck in the well, thus saving the cables and clearing the way for the insertion and operation of fishing-tools.

The primary object is to provide a tool which is at all times under the control of the operator, the cutting element remaining inactive until moved to cutting position by action on the part of the operator.

A further object is to inclose all operating parts within the tool-body and to dispense with trips and other projecting elements common in this class of tools, thereby avoiding danger of derangement and injury incident to inserting the tool in the well and removing the same.

Still a further object is to improve the construction of the tool-body with reference to inserting the cable therein, also with reference to the operation of the cutter.

In the accompanying drawings, Figure 1 is a side elevation of a rope-knife constructed in accordance with my invention. Fig. 2 is a similar view, the upper portion of the tool being shown in section and the detachable lower portion of the body removed; and Fig. 3 is an inner face view of the detachable part. Fig. 4 is a view similar to Fig. 3, illustrating the operation of the tool. Figs. 5 and 6 are cross-sectional views on lines 5 5 and 6 6, respectively, of Fig. 2. Fig. 7 is a detail view of the knife. Fig. 8 is a view similar to Fig. 2, illustrating a modification.

Referring to the drawings, 2 designates the body of the tool, having its upper portion recessed at 2' and threaded to unite with tubing 3. One side of the lower portion of body 2

is reduced and flattened on its inner face, as indicated at 4, and fitting this flat face and completing the circular contour of the body is side member 5, which is secured to body 2 by screw 6, the longitudinal edges of body 2 and side 5 interlocking at 7 to insure and maintain a tight fit.

Face 4 is recessed at 8 to form a space for the cable and knife, said recess opening through the lower end of the tool and extended at its upper end at 9 and opening through the reduced side portion 2' of body 2, thus forming a throughway for cable C. The outer wall 8' of recess 8, against which the cable bears, is inclined inwardly from its upper to its lower end, as shown. Operative in recess 8 is the barb-like knife or cutter 10, having side flanges 11, which move in the complementary grooves 12 in adjacent faces of body 2 and side 5, said grooves being inclined toward their lower ends and intersecting recess 8 for directing the knife to the rope.

Extending upward through the body from recess 8 to recessed portion 2' is passage 13, and operative therein is rod 14, connected at its lower end by link 15 to knife 10. A coiled spring 16 is confined on the upper portion of the rod between head 14' and the bottom of recess 2' and operates to hold the rod and knife normally raised with the cutting portion of the latter bearing upwardly against and protected by shoulder 17 at the upper end of recess 8.

In operation the tool is placed on the cable to be cut, side 5 being removed to admit the cable and then replaced to confine the tool thereon. The appliance is then lowered by means of the string of tubing 3, and when its descent has been stopped by contact with the rope - socket, cave, or other obstruction or when lowered as far as desired without encountering an obstruction an elongated weight 18 on the end of a wire or other line (not shown) is lowered through tubing 3 and strikes head 14' of rod 14 and depresses the latter, as in Fig. 4, thereby forcing the knife downward and laterally against the cable, and with the knife and cable thus engaged an upward pull

on tubing 3 and body 2 operates to wedge the knife through the cable and sever the same. The action of the knife is certain and positive and a clean cut is effected.

5 With the construction herein shown the knife is held by a spring in inactive position and can be made operative only by overcoming the pressure of the spring.

10 All of the operating mechanism is inclosed within the tool-body, and hence protected against injury or accidental derangement. Furthermore, the tool is under the complete control of the operator, who may cut the cable at any desired point, it being unnecessary
15 to encounter an obstruction in order to release the cutter, as is the case with tools of this character now in general use; nor is it possible to prematurely trip the knife, and even though the tool has been lowered into
20 engagement with the rope-socket it may be withdrawn without cutting the rope should it be desired to do so. The string of tubing forms a rigid operating connection with the tool, by means of which force may be applied,
25 if necessary, in lowering the tool, an operation impossible with a cable-suspended tool.

If the cutter should from any cause fail to penetrate the rope, the tool may be lowered either by its own weight or pressure from
30 tubing 3, thereby disengaging the cutter and permitting it to move upward to inoperative position in response to the pressure of spring 16, when the tool may be drawn upward over the cable and removed from the well. The
35 tool may, however, be raised and lowered by a cable 19, dispensing with tubing 3 and spring-held rod 14, as shown in Fig. 8. When thus arranged, the knife bears against the cable at all times, moving freely thereover as
40 long as the downward movement continues; but as soon as the tool is drawn upward the knife impinges and cuts the cable. The knife is thus out of the control of the operator, it being impossible to raise the tool without sev-
45 ering the cable.

While the improved appliance is designed primarily for cutting wire cable, its use is not restricted thereto, and it will be understood that the same may be changed or modified in
50 numerous particulars without departing from the spirit of the invention as defined by the appended claims.

I claim—

55 1. A rope-knife comprising a body having a ropeway, a movable cutter, a spring for holding the cutter normally withdrawn from the ropeway, and operating means constructed and arranged to move the cutter into the ropeway by overcoming the pressure of said
60 spring.

2. A rope-knife comprising a body having a ropeway, means for raising and lowering the body, cutter mechanism operative within the

body, means for holding the cutter mechanism normally inactive, and an independently-
65 movable device adapted to be directed by the body raising and lowering means for moving the cutter to operative position.

3. A rope-knife comprising a body having a ropeway, tubing for raising and lowering the
70 body, cutter mechanism operative within the body, means for holding the cutter mechanism normally inactive, and an independently-movable cutter-actuating device operative in said tubing.
75

4. A rope-knife comprising a body having a ropeway, a cutter, a carrier for the cutter projecting upwardly in the body, a spring for holding the carrier normally elevated, and a
80 weight operative through the tubing for depressing the carrier against said spring and moving the cutter to operative position.

5. A rope-knife comprising a body having a ropeway, the body being recessed adjacent
85 said way and formed with guideways inclined downwardly toward the ropeway, a cutter movable in the body-recess and adapted to be directed by the guideways toward and from the ropeway, means for holding the cutter in elevated and inoperative position, and means
90 for depressing the cutter into engagement with the rope.

6. A rope-knife comprising a body having a ropeway, the body being recessed adjacent the
95 way and formed with guideways inclined downwardly toward the ropeway, a laterally-projecting barb-like cutter projecting laterally within the body-recess and adapted to be directed by the guideways into engagement with the cable, means for holding the cutter nor-
100 mally elevated and in inoperative position, and means for depressing the cutter.

7. A rope-knife comprising a body having a ropeway, the body being recessed adjacent
105 the way and formed with guideways inclined downwardly toward the ropeway, and a cutter operative within the body-recess and adapted to be directed by said guideways into engagement with the rope.

8. A rope-knife comprising a vertically-
110 movable body having a ropeway and a guideway downwardly inclined toward the ropeway, and a cutter device movable in the guideway with its cutting edge disposed toward and adapted to traverse the ropeway, whereby the
115 upward movement of the body on the rope operates to force the cutting edge into and through the rope.

9. A rope-knife comprising a body having its lower portion reduced on one side and
120 formed on said side with a vertical ropeway, said side also being recessed to form an operating-space, a cutter operative in said space, and a body-section removably secured to said reduced portion of the body for inclosing the
125 ropeway and the cutter mechanism.

10. A rope-knife comprising a body having
its lower portion reduced on one side and on
said side formed with a vertical ropeway, said
side also being formed with an operating-re-
5 cess adjacent the ropeway, a cutter operative
within the recess, a body portion removably
secured to the reduced portion of the body
and inclosing the ropeway and cutter mech-
anism, the adjacent faces of the body and re-
10 movable body portion being formed with

grooves inclined downwardly toward the rope-
way and operating to direct the cutter
thereto.

In testimony whereof I affix my signature in
presence of two witnesses.

CHARLES R. PHILLIPS.

Witnesses:

S. F. SHEAKLY,

MARY E. PHILLIPS.