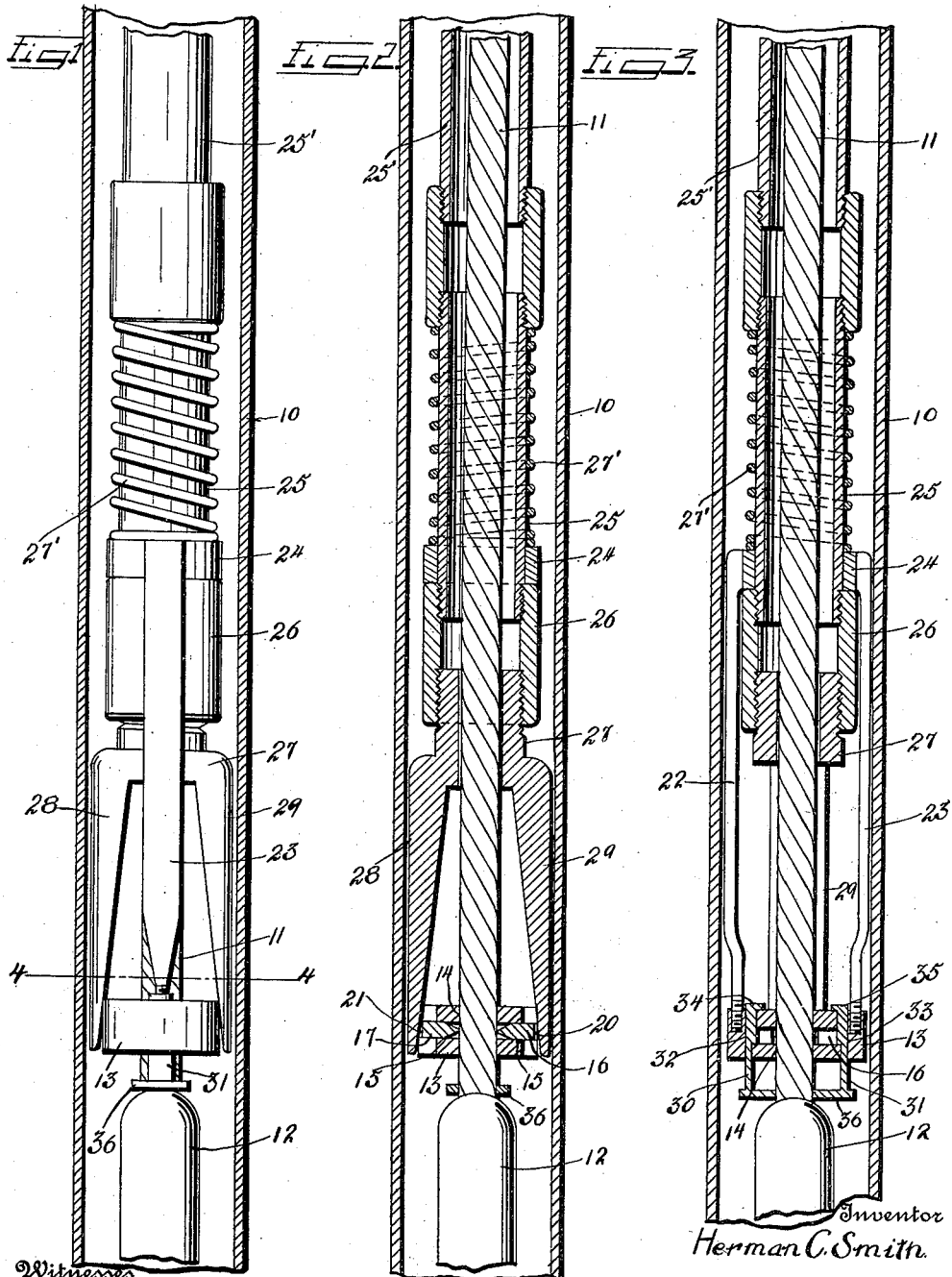


H. C. SMITH.
CABLE CUTTING DEVICE.
APPLICATION FILED JULY 27, 1911.

1,027,918.

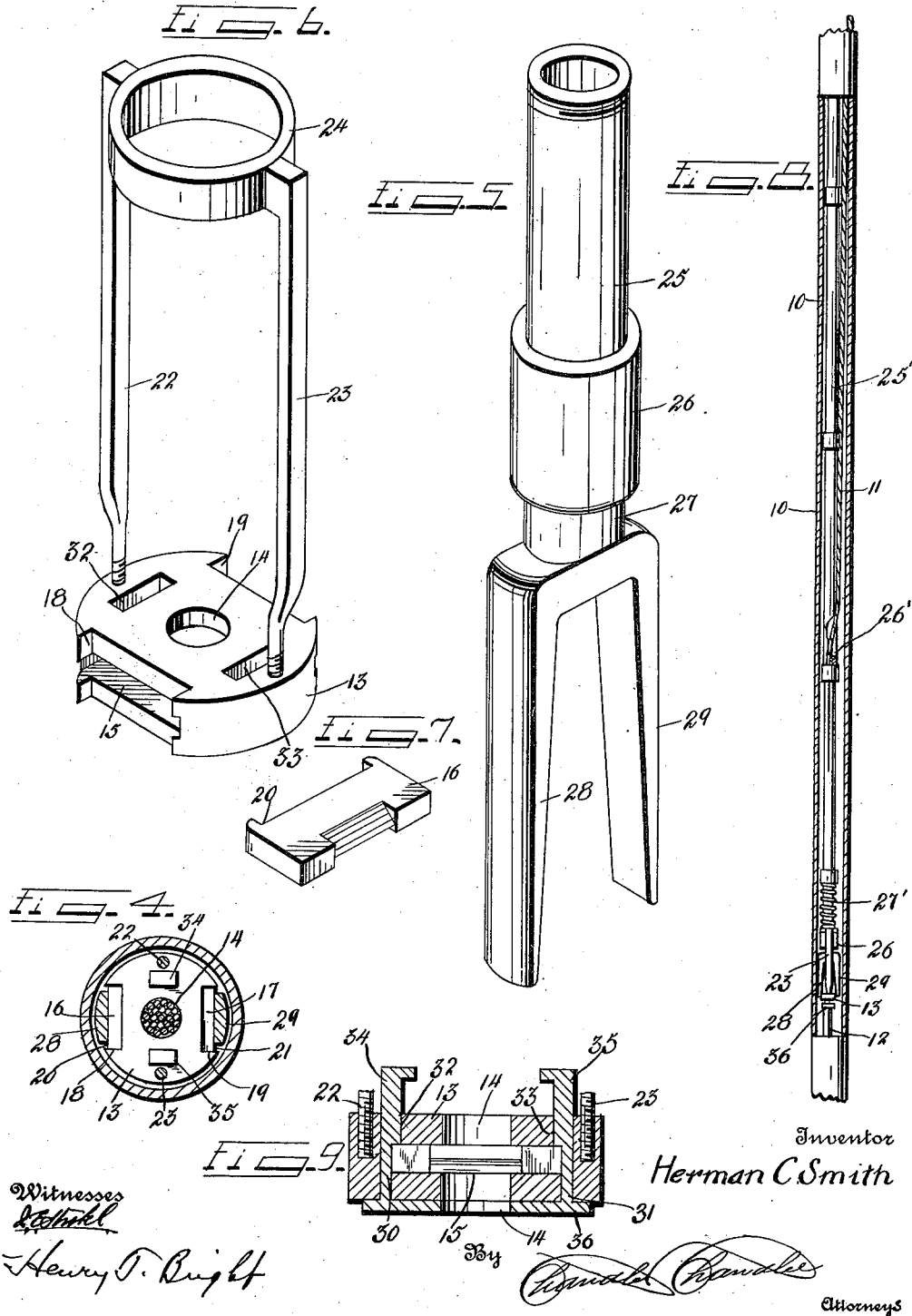
Patented May 28, 1912.

2 SHEETS—SHEET 1.



Witnesses
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Inventor
Herman C. Smith.
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UNITED STATES PATENT OFFICE.

HERMAN C. SMITH, OF WHITTIER, CALIFORNIA.

CABLE-CUTTING DEVICE.

1,027,918.

Specification of Letters Patent.

Patented May 28, 1912.

Application filed July 27, 1911. Serial No. 640,846.

To all whom it may concern:

Be it known that I, HERMAN C. SMITH, a citizen of the United States, residing at Whittier, in the county of Los Angeles, State of California, have invented certain new and useful Improvements in Cable-Cutting Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to cable cutting devices, and particularly to that type employed in cutting the operating cable of an oil well at a point adjacent the connection of said cable with the tool or socket.

The object of the invention resides in the provision of a device of the character named which can be easily lowered within the tubing of the well until same reaches a point adjacent the connection of the cable with the tool or socket and then operated to effectively sever the cable.

A further object of the invention resides in the provision of a device of this character which will be simple in construction, efficient in operation and which may be manufactured at an exceedingly small cost.

With these and other objects in view, the invention consists in the details of construction and arrangement and combination of parts to be hereinafter more fully described and particularly pointed out in the appended claim.

In describing the invention in detail, reference will be had to the accompanying drawings, wherein like characters of reference denote corresponding parts in the several views, and in which—

Figure 1, is a vertical longitudinal section of a fragment of the tubing of an oil well showing the operating cable and the cutting device disposed therein in elevation. Fig. 2, a view similar to Fig. 1 with the cutting device in section, Fig. 3, a vertical longitudinal section of the well tubing and cutting device taken at right angles to that shown in Fig. 2. Fig. 4, a section on the line 4—4 of Fig. 1, Fig. 5, a detail perspective view of the cutter actuator employed in the device, Fig. 6, a detail perspective view of the cutter head and the guide frame carried thereby which maintains the cutter actuator in operative relation to the cutter head and cutters, Fig. 7, a detail perspective view of one of the cutters. Fig. 8, a

vertical section of a considerable extent of well tubing showing the device in elevation therein and also a considerable portion of the tubing by which the device is lowered and the manner of directing the operating cable into the last named tubing adjacent its lower end, and Fig. 9, a vertical section through the cutter head showing the parts thereof in the position they would occupy during the operation of cutting.

Referring to the drawings, 10 indicates the well tubing, 11 the operating cable, and 12 the socket carried by the lower end of the operating cable.

The cutting device comprises a cutter head 13 which is provided with a longitudinal bore 14 wherethrough passes the operating cable 11. This cutter head is provided with a transverse passage 15 disposed at right angles to the bore 14. Mounted in this passage 15 in opposition to each other are corresponding slidably arranged cutters 16 and 17, the movement of said cutters when the cable 11 is disposed in the bore 14 serving to sever said cable. The cutter head 13 is provided in its outer face at diametrically opposite points with vertical grooves 18 and 19 respectively which are intersected by the passage 15. The outer sides of the cutters 16 and 17 are likewise provided with grooves 20 and 21 respectively, said grooves 18, 20 and 19, 21 forming guides for the cutter actuator to be presently described.

Secured to the upper end of the cutter head 13 are parallel bars 22 and 23 which are connected together at their upper ends by means of a ring 24. This ring is slidably arranged around the cable 11 and encircles the cable 11 and has its lower end threaded into the upper end of a coupling 26 which latter is adapted to engage the ring 24 and limit the independent upward movement of said stem with respect to said ring. The coupling 26 has threaded into its lower end a forked member 27 including arms 28 and 29. These arms are constructed with their inner faces diverging toward the cutter head 13 and are positioned for movement in the grooves 18 and 19 respectively, while they also extend into the grooves 20 and 21 respectively of the cutters and engage the outer faces of the latter. The device is lowered into the tubing 10 to the position shown in Fig. 8 by securing the upper end of the stem 25 to a sectional

tubing 25' of the required length. This sectional tubing 25' is provided at a desired point with a longitudinal slot 26' through which the operating cable 11 is directed exteriorly of the tubing 25'. The guide ring 24 is held in place while the device is being lowered by a spring 27' mounted on the stem 25 and bearing at its lower end against the coupling 26 and at its upper end against the coupling which secures the lower most section of the tubing 25' to the upper end of the stem 25.

The cutters 16 and 17 are maintained against movement during the transportation and positioning of the device by means of locking members 30 and 31 which are slidably mounted for vertical movement in slots 32 and 33 respectively formed in the head 13 on opposite sides of the bore 14. These locking members 30 and 31 are provided at their upper ends with enlarged portions 34 and 35 which in the lowered or normal position of the locking members lie in the path of movement of the cutters 16 and 17 and thus serve to lock the latter. The lower end of the locking members 30 and 31 are mutually connected by a plate 36. This plate, when the device is lowered, engages the socket 12 and links the locking members 30 and 31 to the position shown in Fig. 9, which will raise the enlarged portion 34 and 35 of the locking members clear of the cutters so as to allow them to move inwardly toward each other when operated upon.

In use the device with one or two sections of the tubing 25' coupled to it is slipped over the cable 11 and lowered into the well

by securing additional sections of the tubing 25' together in the usual manner, the cable having been previously directed exteriorly of the tubing 25' through the slot 26'. When the device reaches the socket 12 the plate 36 is raised and elevates the locking members 30 and 31 to a position clear of the cutters, leaving the latter free to be forced inwardly toward each other by the engagement of the arms 28 and 29 therewith respectively during the downward movement of said arm under the influence of the weight of the tubing 25'. If necessary further pressure can be brought to bear on the tubing 25' at the top of the well.

What is claimed is:

In a device of the class described, the combination of a tubular cutter head having a transverse passage therethrough, cutters mounted in said passage, a pair of parallel arms secured to one end of the cutter head and extending longitudinally of the latter, a ring connecting the outer ends of said arms, a stem slidably mounted in said ring and provided with a forked terminal adjacent the cutter head, said forked terminal having wedge shaped arms embracing the cutter head and engaging the outer edges of the cutters to drive the latter inwardly of the cutter head during the longitudinal movement of said stem and forked terminals in one direction.

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

HERMAN C. SMITH.

Witnesses:

ARTHUR WILSHUSEN,
J. M. SMITH.