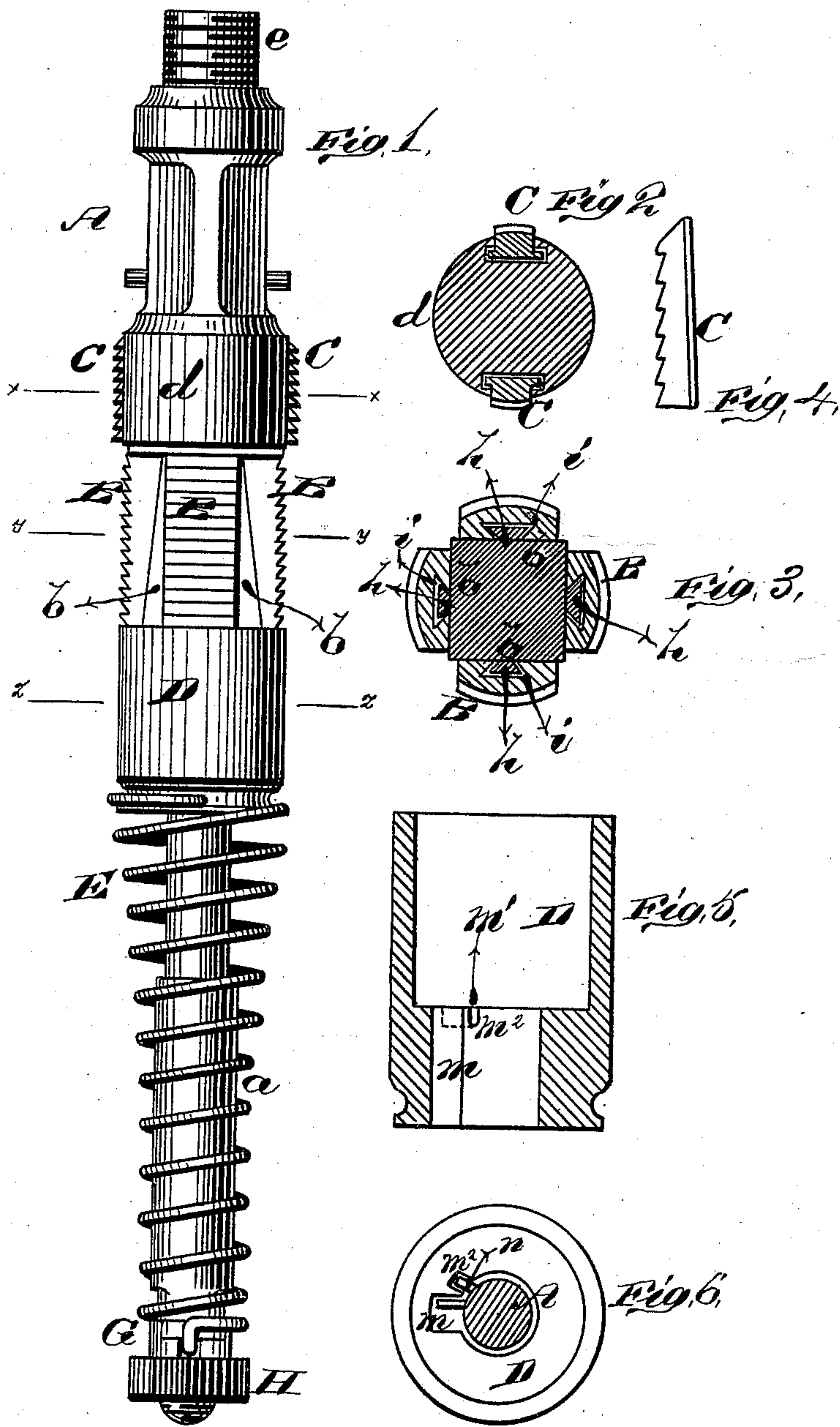


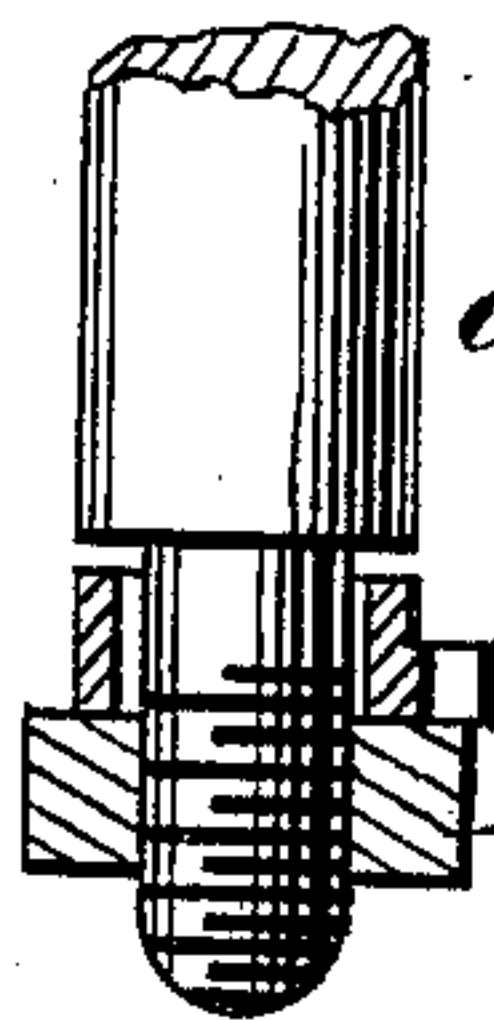
F. J. FOX.
Automatic Casing-Spear for Oil-Well.

No. 197,841.

Patented Dec. 4, 1877.



WITNESSES
E. H. Bates
B. H. Morse



a Fig. 7

INVENTOR.
Francis J. Fox.
Gilmore, Smith & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

FRANCIS J. FOX, OF MONROEVILLE, PENNSYLVANIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO CARSON BROTHERS, OF SAME PLACE.

IMPROVEMENT IN AUTOMATIC CASING-SPEARS FOR OIL-WELLS.

Specification forming part of Letters Patent No. **197,841**, dated December 4, 1877; application filed October 20, 1877.

To all whom it may concern:

Be it known that I, FRANCIS J. FOX, of Monroeville, in the county of Allegheny and State of Pennsylvania, have invented a new and valuable Improvement in Automatic Casing-Spears; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a side view of my automatic casing-spear. Figs. 2 and 3 are transverse sectional views. Fig. 4 is a detail, and Figs. 5, 6, and 7 are sectional details thereof.

The nature of my invention consists in certain improvements in casing-spears for removing the casing from Artesian or oil wells, the object being to provide a safe means for drawing the casing.

The annexed drawings, to which reference is made, fully illustrate my invention.

A represents the stem of the casing-spear, having its lower portion *a* in the form of a round rod. Above this round portion the stem is made with four equal sides, *b*, which are made slightly tapering upward, their upper ends being a trifle narrower across than their lower ends. Above these sides is a cylindrical portion, *d*, and above the same the stem may be in any suitable form and terminating in a screw, *e*.

In each of the four sides *b* of the stem are inserted two pins, *h h*, the projecting ends of which are beveled to fit in a longitudinal dovetailed slot, *i*, in the under side of a toothed segmental plate, B.

In the cylindrical part *d* of the stem are made two or more vertical tapering and dovetailed grooves, in each of which is placed a wedge-shaped slide, C, toothed on its outer side. The teeth on the slides C point downward, while those on the segments B point upward.

Below the segments B is a sleeve, D, which is pressed upward by means of a spiral spring, E, surrounding the part *a* of the stem. The upper end of this spring is made fast in the lower end of the sleeve D, and the lower end of the spring is held in a tension-foot, G, held upon the extreme lower end of the stem by a nut, H.

In the inner surface of the sleeve D is made a vertical groove, *m*, extending from the lower end upward for a suitable distance. Another groove, *m*¹, leads at right angles from the upper end of the groove *m*, and in the end of the groove *m*¹ is a downward notch or step, *m*². These grooves are intended to work over a pin, *n*, in the stem.

With my present invention the sleeve D is drawn down and turned to one side, so as to be caught on the pin *n*, the spring E being thereby more twisted. When the sleeve is in this position the toothed segments B are free to act by impinging against the inside of the casing in pulling up the spear, so as to pull the casing also; but in case the spear should become loose and start to go down, the jar will release the sleeve from the pin *n*, and the spring at once raises the sleeve, which forces up the segments B on the tapering sides *b*, and these segments raise the slides C. These slides, being placed in tapering grooves, move outward as well as upward, and their teeth take hold of the casing, and prevent the spear from going any farther down. It can then be fished out or drawn with the casing by another spear.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a casing-spear, the stem A, constructed, as described, with round part *a*, and tapering part *b*, and cylindrical grooved part *d*, substantially as and for the purposes herein set forth.

2. The combination of the coiled spring E, sleeve D, and toothed segments B, all constructed substantially as and for the purposes herein set forth.

3. The combination of the spear A, spring E, sleeve D, segments B, and slides C, all constructed substantially as and for the purposes set forth.

4. The tenon-foot G, in combination with the stem, spring, sleeve, and nut, as and for the purposes herein set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

FRANCIS J. FOX.

Witnesses:

JAMES J. CARSON,
H. J. HAMMOND.