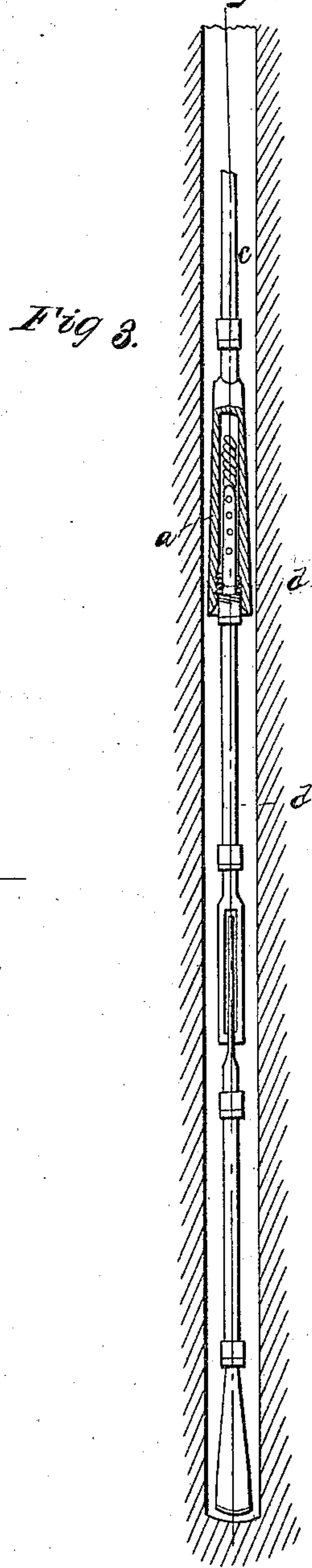
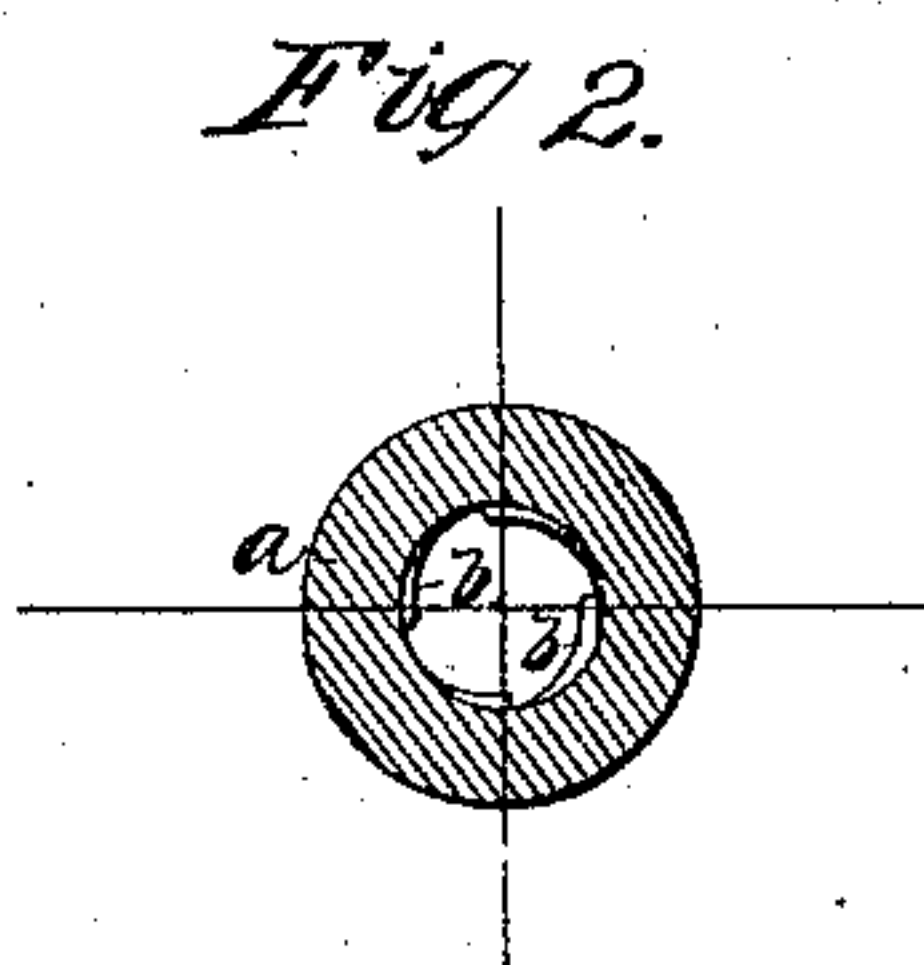
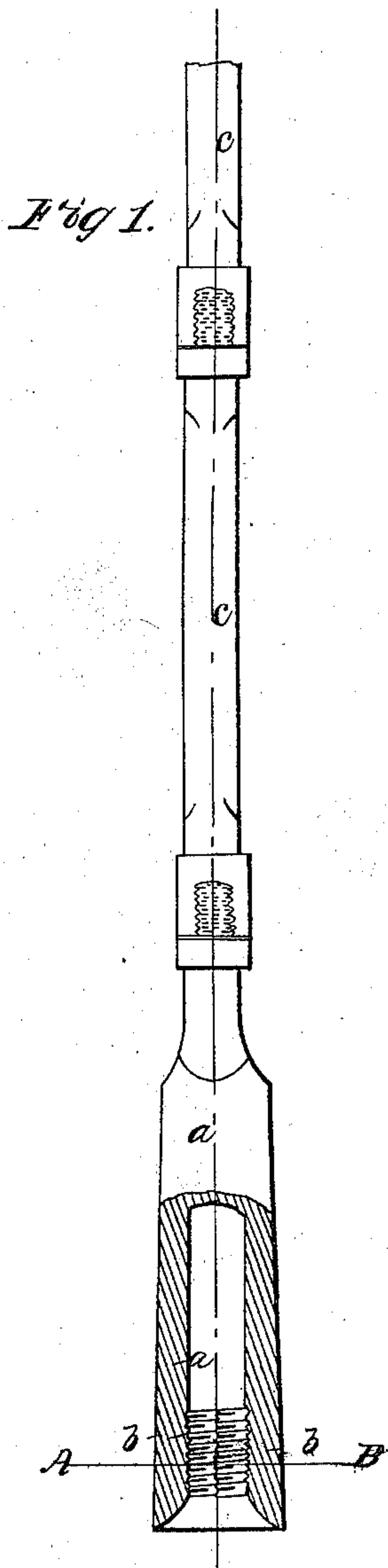


T. M. Patterson,
Drill Rod Grab.

No 81,530.

Patented Aug. 25, 1868.



Witness.

Andrew Browland

Inventor.

Thomas M. Patterson

UNITED STATES PATENT OFFICE.

THOMAS M. PATTERSON, OF TARR FARM, PENNSYLVANIA.

IMPROVED TOOL-EXTRACTOR FOR WELLS.

Specification forming part of Letters Patent No. 81,530, dated August 25, 1868.

To all whom it may concern:

Be it known that I, THOMAS M. PATTERSON, of Tarr Farm, county of Venango and State of Pennsylvania, have invented a certain new and Improved Method of Extracting Tools from Artesian Wells; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification, and in which similar letters represent similar parts in all the views.

In drilling or boring artesian wells, and especially when penetrating at great depths, as in the case of oil-wells, the drilling-tools frequently become fast in the well, from various causes, and both well and tools are necessarily abandoned, at great loss of time and money.

Several methods are resorted to for loosening tools when fast. If the difficulty is occasioned by the falling in of loose rock, sand, or bits of iron, the usual manner of loosening is by spearing around them until the impediment is broken up, or driven past them, but when embedded in the peculiar mud or clay frequently met with in veins near the oil-producing rock, and which is by far the most frequent cause of trouble, the only means in use is to cut the cable above the tools, and lower a grab or valve-socket, arranged to pass over and catch upon any projection thereon, provided with a pair of jars, and the tools are extracted (if at all) by pulling or jarring, the amount of strain brought to bear upon them being limited by the strength of the cable and machinery. This process fails in so large a proportion of cases, that about the worst accident which an operator has to contend with is a set of tools fast in a mud-vein.

The sets of tools used in drilling oil-wells are generally made in five or more pieces, attached firmly together by right-hand screw-threads, and, to prevent them from coming apart when drilling, they are screwed together and tightened by leverage power, equal to the united strength of four men, applied at the end of a wrench about three feet long, and they cannot by any ordinary means be detached when in the well. As it is the lower portion of the tools which usually gets fast, my object

is to provide a method and means for detaching and removing the tools, piece by piece, without straining or essentially injuring them.

In the accompanying drawings, Figure 1 represents a side view of the device used by me, the lower portion being shown in section. Fig. 2 is a horizontal section of the same on line A B. Fig. 3 represents a set of tools in the well, with my device, and manner of grappling them, as hereinafter explained.

My method of operation is substantially as follows: I construct a long hollow socket, *a*, which I term a "screw-socket," provided with left-hand female-die threads *b b*. For the purpose intended, these die-threads should be made of steel. I also provide a series of strong iron poles, *c c*, sufficient in number to reach from top to bottom of the well, each with left-hand male and female screw threads, as shown. When a set of tools becomes fast, I first cut and remove the cable from the well, then lower the screw-socket *a* into the well, screwing it and the iron poles *c c* together until the socket *a* passes over the upper end of the tools *d*, as seen in Fig. 3.

Bearing in mind that the tools are connected by right-hand threads, and the socket and poles by left-hand threads, I turn the socket and poles to the left until the steel die *b* cuts a thread upon the part of the tools with which it comes in contact. Continuing to turn to the left, as soon as the friction or resistance at the die-threads *b* becomes greater than the friction of the threads connecting the tools, the latter are unscrewed and separated, and may be thus removed from the well piece by piece. By this process, I take apart and remove them, until I come to the piece which is fast, usually the center-bit or reamer. I cut a thread, and attach my socket strongly to this piece, as to the others, and, by the use of an intervening pair of jars, can jar it loose, or, by the application of leverage-power, or of a hydraulic jack, to the iron poles at the top of the well, can remove it entire, or break and remove it in pieces.

In case tools are broken, and pieces left in the well, I pursue the same method, as I can cut a thread upon and attach my socket to any

piece of iron over which it will pass, the size or form of the socket being, of course, arranged to suit the peculiarities of the case.

In case it should happen that the tools were connected by left-hand screw-threads, the threads upon the socket and poles should be right hand, or opposite to that upon the tools.

Having thus described my improvement, what I claim as my invention, and desire to secure by Letters Patent, is—

The within-described apparatus for grappling tools, consisting substantially of the hollow die or screw-socket *a*, in combination with the

iron poles *c c*, when said die-socket and poles are provided with and connected by means of left-hand screw-threads, or threads cut in an opposite direction from the threads upon the tools, substantially as and for the purpose herein set forth.

Dated at Tarr Farm, Venango county, Pennsylvania, this 31st day of October, A. D. 1867.

THOMAS M. PATTERSON.

Witnesses:

ANDREW B. HOWLAND,

THOMAS DONAGHY.