

No. 126,403.

Patented May 7, 1872.

Fig. 1. A perspective view of a mechanical device, likely a pump or valve. It features a central vertical shaft labeled 'D' that passes through a main body labeled 'A'. The main body has a flared base and two side ports labeled 'B' on opposite sides. The shaft 'D' is shown with a textured, possibly threaded, upper section.

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IMPROVEMENT IN CASING-CUTTERS FOR REMOVING CASINGS FROM ARTESIAN WELLS.

Specification forming part of Letters Patent No. 126,403, dated May 7, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that we, PERLEY H. LAWRENCE and JAMES H. LUTHER, of Petroleum Center, in the county of Venango and State of Pennsylvania, have invented certain new and useful Improvements in a Casing-Cutter for Removing Casings from Artesian Wells; and the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 represents an external view of our improved casing-cutter. Fig. 2 is a vertical section through the same, showing the construction and interior arrangement of the parts operating on the casing. Fig. 3 shows an end view of the ratchet, square-hole socket, and female-screw socket, for connecting with the rod, to extend to the top of the well to operate the cutters. Fig. 4 shows a horizontal cross-section through the rack, cutter-holders, and the pinion that operates the same. Fig. 5 is a view of the tool with both ends broken off, and a broken-out section, showing the ratchet and spring dog, for holding out the cutters for lifting the casing by them. Fig. 6 shows the stem-pinion for working the rack-cutter holders, detached.

The object and nature of our invention is to cut the casings in artesian wells, and remove or draw out the sections cut with the same tool and fixtures with which the cutting-off is done, thus saving the time and labor of taking out the cutting-tool and putting in the grappling-tools and fastening them in the sections cut, which is a very difficult matter to perform at the depth of several hundred feet. Our invention consists in the combination of the internal mechanism, whereby the cutters are forced out to cut the casing, and there held firmly to draw the cut section and remove it from the well, in the manner hereinafter more fully described.

Referring to the drawing, and the letters thereon, A is the metal block or head, provided with a screw-socket, *a a*, in the upper end, into which the pipe B is secured for turning the head to cut the casing C, and also to lift the section C' after it is cut, and remove it from the well. The socket *a a* also receives the

ratchet-key or square-hole socket-plug D, it having a female screw-thread in its upper end to receive a tube or rod, E, which extends inside of the pipe B to the top of the well, to operate the cutters *e e*, which are circular revolving chisel-edges fitted into the sliding stocks or bars *d d*, and secured by the strong pivots *c c*. The sliding stocks *d d* are made with cogs *f f* facing each other, leaving an elongated space, *g*, between them of sufficient size to admit the stem-pinion F, by which means the cutters *e e* are forced out to cut the casing C, and are held out firmly under the edge cut by the dog-pin *h* on the ratchet *i i*, which is made on the lower end of the plug-key or socket D. The dog *h* is fitted in a hole drilled in one side of the bottom of the recess *a a*, and is operated by a spiral spring, *j*, under its lower end. The casing being severed, and the cutters held out, the lifting power is applied to the pipe B, and the cut section C' of the casing is started up, if sufficiently loose, and taken out; but if it is found on trial that the casing is too firmly packed in by the sediment that surrounds it, and the pipe B is liable to be severed by the lifting on the tool, the sliding stocks *d d* are drawn in, so as to relieve the cutters *e e* from the casing C by lifting on the rod E sufficient to raise the socket D off the dog *h* and turn the pinion-stem F backward, when the whole head and cutters can be drawn up to any desired point in the casing, and the before-described process repeated; and so on in like manner until a section can be removed, after which the tool is let down to the cut next below, and the lifting tried, and the process of lifting and cutting repeated section after section, until the casing is all removed, thus saving in abandoned oil-wells from six hundred to one thousand dollars worth of the iron casing, at the cost of only a few dollars.

The advantages our improvements are, that the apparatus above described combine both the cutting and grappling devices in one mechanism, and are operated as such, the cutters being in position to lift on the section of the casing after it is severed from the portion remaining below it, thereby effecting a great saving of time in changing tools; and, moreover, the hold taken on the cut section of casing is

much more efficient than with the grapples in use.

What we claim is—

1. The sliding rack-bars *d d*, the rolling cutters *e e*, and the stem-pinion F for operating the same, in combination with the key-socket D, ratchet *i i*, and dog *h*, all constructed and arranged to operate substantially as herein shown and described.

2. In combination with the above, we claim

the rod E, pipe B, and stock A, to be operated at any required depth from the top of the well, as specified.

In testimony whereof we jointly and severally subscribe our names.

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Witnesses:

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