

Nov. 18, 1924.

1,515,780

R. C. LEWIS

UNDERCUTTING REAMER FOR OIL WELLS

Filed Dec. 16, 1922

3 Sheets-Sheet 1

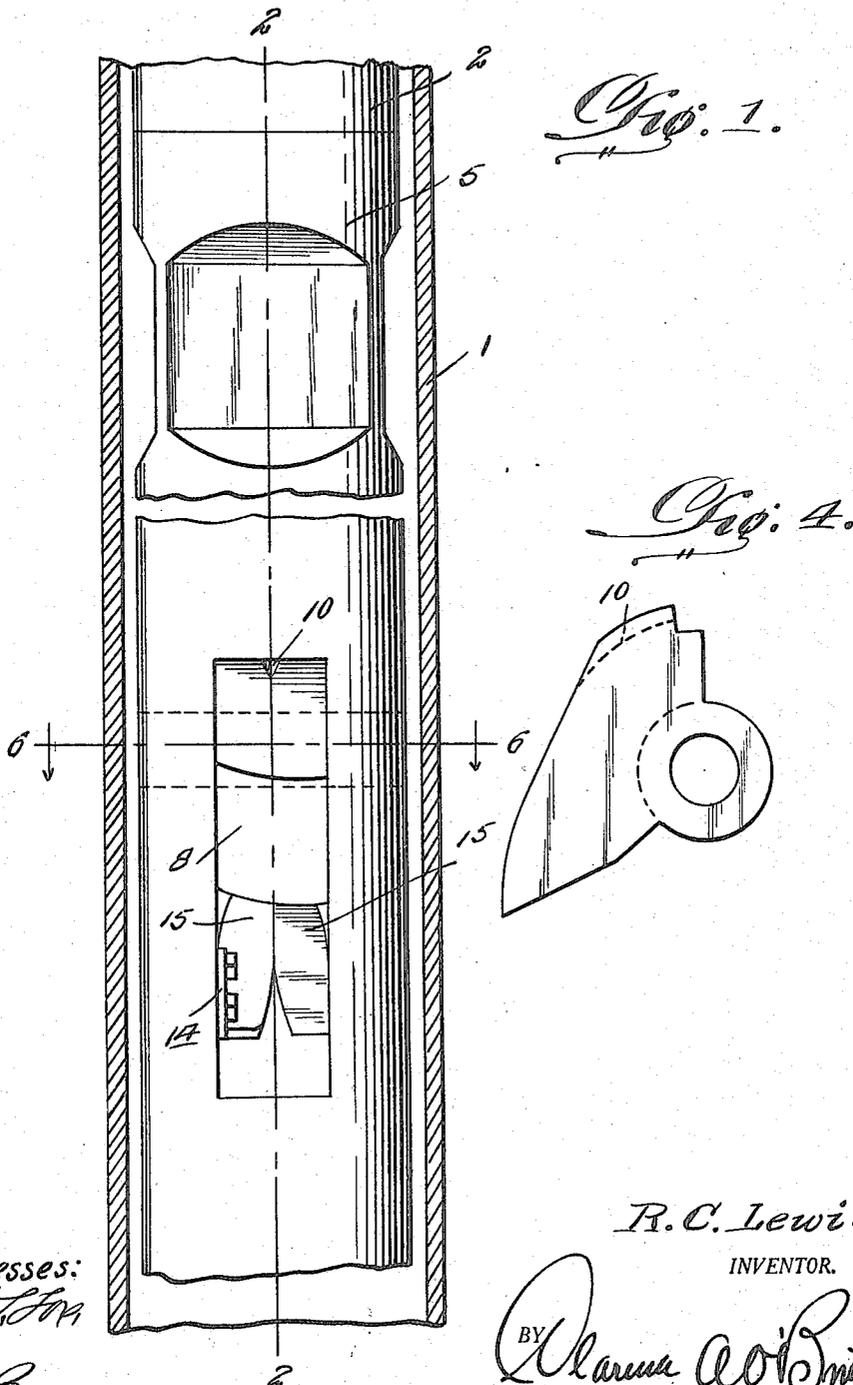


Fig. 1.

Fig. 4.

Witnesses:

J. L. ...

A. Berman

R. C. Lewis,

INVENTOR.

BY *Charles A. ...*

ATTORNEY.

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3 Sheets-Sheet 2

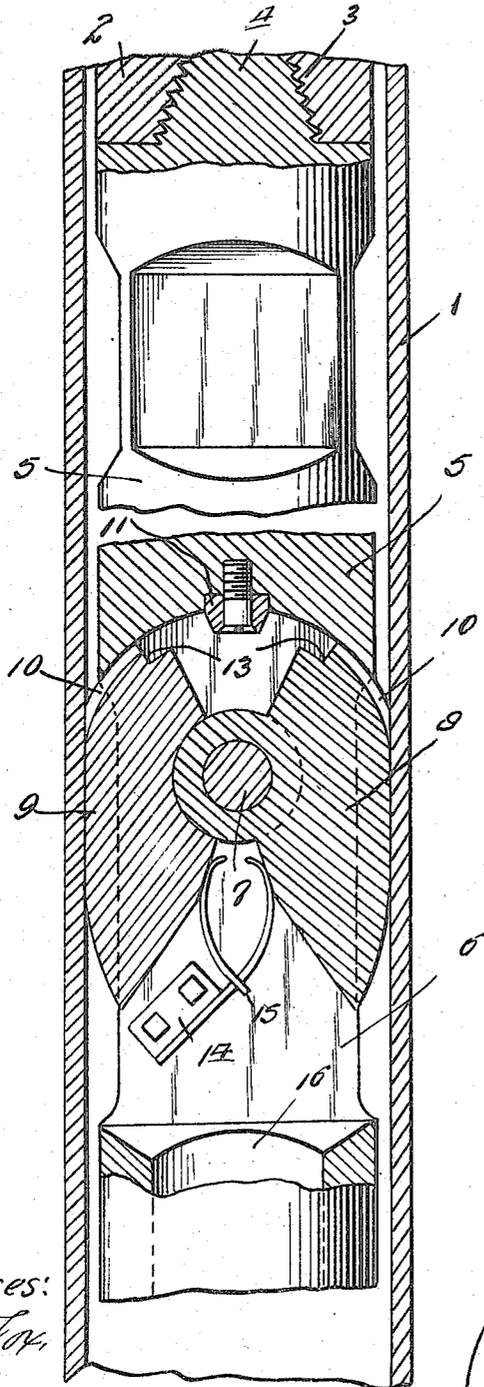
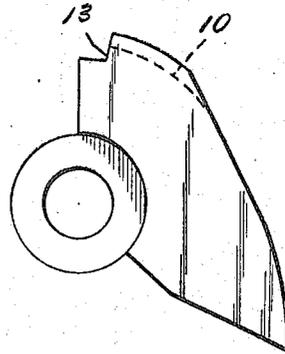


Fig. 2.

Fig. 5.



Witnesses:

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3 Sheets-Sheet 3

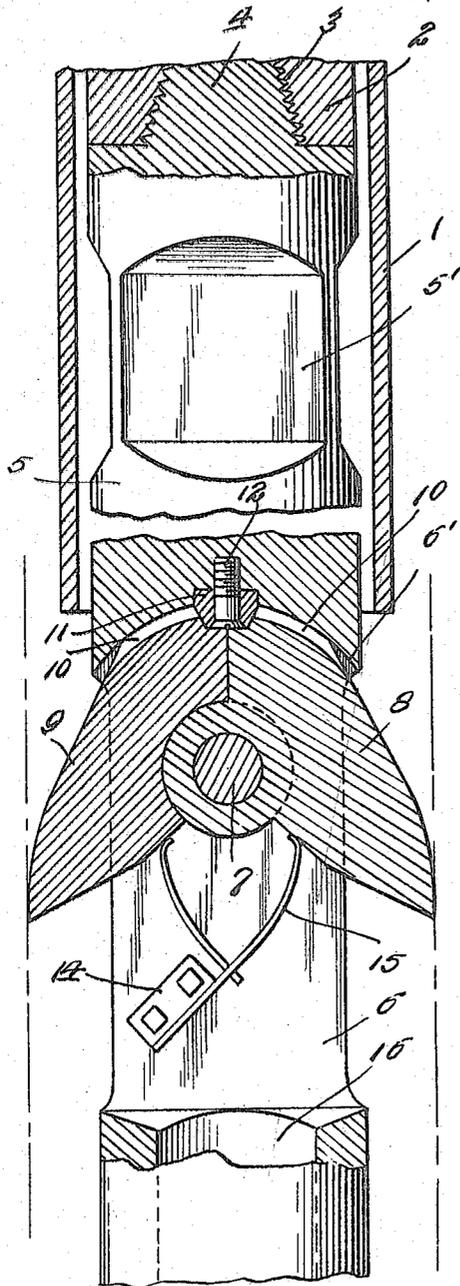


Fig. 3.

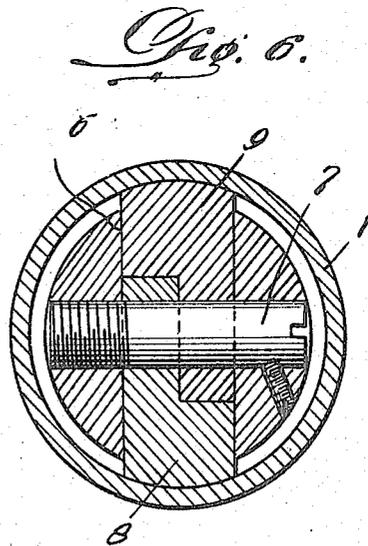


Fig. 6.

Witnesses:

J. L. Loy
N. Berman

R. C. Lewis,
INVENTOR.

BY *Warren A. Berman*
ATTORNEY.

UNITED STATES PATENT OFFICE.

RUSH C. LEWIS, OF ABILENE, TEXAS.

UNDERCUTTING REAMER FOR OIL WELLS.

Application filed December 16, 1922. Serial No. 607,273.

To all whom it may concern:

Be it known that I, RUSH C. LEWIS, a citizen of the United States, residing at Abilene, in the county of Taylor and State of Texas, have invented certain new and useful Improvements in Undercutting Reamers for Oil Wells, of which the following is a specification.

My invention relates to improvements in reamers for oil wells, whereby these wells may be reamed out from time to time in a simple and expeditious manner and further, wherein there is little if any liability of the cutting bits breaking or being knocked off the holder, and the construction of the present device is such that should these bits become disengaged from the holder, the same will be removed from the casing together with the tool, when the same is brought up out of the well.

With these general objects in view and others that will appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawings, and pointed out in the appended claim.

In the drawings forming a part of this application, like numerals of reference indicate similar parts in the several views, and wherein:—

Figure 1 is a fragmentary side elevational view of a device constructed in accordance with the present invention, and being shown within a casing, the casing being in cross section.

Figure 2 is a vertical transverse sectional view on the line 2—2 of Figure 1, the cutting bits of the tool being shown as positioned within the casing.

Figure 3 is a view similar to Figure 2, but disclosing a portion of the holder externally of the casing, and the cutting bits being extended as to engage the side wall of the well for adequately undercutting the same when the tool is actuated.

Figure 4 is a plan view of one side of the type of cutting bit employed by me, in connection with the present invention.

Figure 5 is a view similar to Figure 4 of the opposite side of the bit, and

Figure 6 is a transverse cross sectional view on the line 6—6 of Figure 1, and looking downwardly in the direction of the arrows.

Referring particularly to the drawings, there is shown a tubular casing 1, adapted to be positioned within the well for receiving the usual drill stem 2, therein. The stem 2 may be of standard construction, and is not a part of my present invention. As is well-known, these standards are adapted for free rectilinear movement within the casing, and are provided at their lower end with the usual screw threaded socket 3. Adapted for screw threaded engagement within the socket 3 is the reduced screw threaded upper end 4 of my improved form of holder 5. This holder 5 is in the form of a rod section, and is provided with a relatively long transverse slot 6 at a desirable point thereon. Pivotaly secured within the slot 6 of the holder 5 by a pivot rod 7 are a pair of co-acting oppositely extending wing bits 8 and 9. These bits may be and preferably are, of the usual reamer bit construction, and are provided at their upper ends with mud channels 10.

I have shown the holder 5 as being provided with but a single pair of cutting bits, but it is to be understood that any desirable number of pairs of bits may be employed by me. The upper wall 6' of the cross slot 6 in the holder 5 is suitably arced as shown in Figures 2 and 3, for allowing a free swinging movement of the bits 8 and 9 upon their pivot 7 within the slot. This arced wall 6' is centrally provided with a suitable lug 11 retained therein, by a set screw 12. The upper end of each bit is shouldered at 13 for engagement with the stop lug 11 for limiting the swinging movement of the bits in an outward direction.

Upon one side wall of the slotted portion 6 of the holder 5 is a bracket 14, which carries band springs 15, the upper ends of which are curved as shown for engaging beneath the bits 8 and 9 and normally tending to force the same outwardly into a position as shown in Figure 3.

Adjacent the upper end of the holder 5, the same is provided with plane surfaces 5' for permitting the holder to be attached to or removed from the drill stem 2. Further, the holder 5 beneath the bits 8 and 9 is provided with a central vertical bore 16 for allowing the earth cut by the bits 8 and 9 to pass therethrough.

In view of the above description, it will be understood that the holder 5 may be lowered within the casing 1, at which time, the

cutting bits 8 and 9 are forced into the slot 6 due to their contacting with the interior of the said casing. As soon as the portion of the holder carrying the bits project 5 through the lower end of the casing 1, the said cutting bits will swing outwardly through the instrumentality of the springs 15 for engaging the cutting edges of these bits, with the wall of the well, at which time, 10 the tool may be so actuated, as to adequately undercut the walls of the well.

While I have herein shown and described the preferred embodiment of the present invention, it is nevertheless to be understood 15 that minor changes may be made therein, without departing from the spirit and scope of the invention as claimed.

What I claim as new is:—

An undercutting reamer including a body 20 having an elongated slot formed therein, the upper end terminating in an arcuate wall, a pin extending transversely through said slotted portion, a pair of cutter members rotatably mounted on said pins having arcuate 25 ate end portions for slidably fitting the arcuate

ate end of the slot, the opposite end portions being adapted for projection beyond the body and having cutting edges, the lower portions of the member inclining upwardly 30 from the cutting edges so that the members will be held in extended position by the cutting action and engagement thereof with the work, a pair of leaf springs mounted in the slot of the body engaging between the 35 members below the pivot and normally forcing them apart into operative position, mud passages formed in the arcuate ends of the members for permitting mud or foreign matter collecting between the upper ends of 40 said members to be forced outwardly through said passages in the outward movement of the members into operative position, and a limiting element removably mounted in the 45 central portion of the arcuate wall of said slot for limiting the movement of said members on their pivots and for engaging the relative operative position thereof.

In testimony whereof I affix my signature.

R. C. LEWIS.