Feb. 10, 1925. 1,525,520

J. M. SPITLER

PIPE PULLER

Filed July 28, 1924

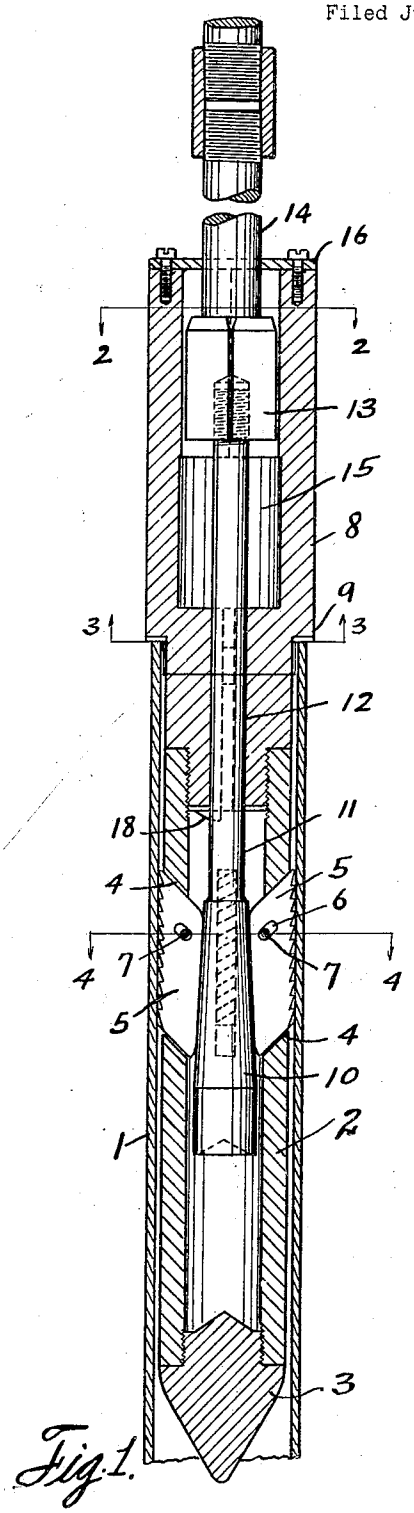


Fig. 1.

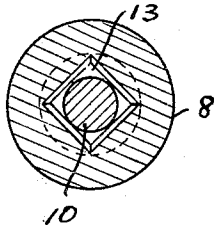


Fig. 2.

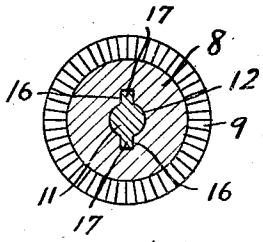


Fig. 3.

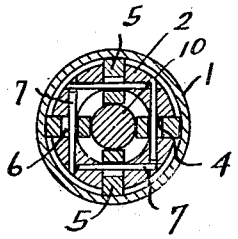


Fig. 4.

Joseph M. Spitler INVENTOR.

BY

Hardway & Cathey ATTORNEYS.

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UNITED STATES PATENT OFFICE.

JOSEPH M. SPITLER, OF HOUSTON, TEXAS.

PIPE PULLER.

Application filed July 28, 1924. Serial No. 728,619.

To all whom it may concern:

Be it known that I, JOSEPH M. SPITLER, a citizen of the United States, residing at Houston, in the county of Harris and State of Texas, have invented certain new and useful Improvements in a Pipe Puller, of which the following is a specification.

This invention relates to new and useful improvements in a pipe puller.

One object of the invention is to provide a device of the character described, whereby stuck pipe may be removed from a well bore.

Another object is to provide a pipe puller whereby the entire string of pipe may be removed at one time, or if this cannot be accomplished, whereby the pipe may be broken up and removed a section at a time.

A further feature of the invention resides in the provision of a pipe puller which can easily be released from the pipe and withdrawn in case the stuck pipe cannot be removed.

A still further feature of the invention resides in the provision of a pipe puller so constructed that the torsional strain incident to the unscrewing or breaking up of the stuck pipe will not be sustained by the jaw expanding mandrel but will be transmitted to the engaging jaws through the body of the puller.

With the above and other objects in view, this invention has particular relation to certain novel features of construction, operation and arrangement of parts, an example of which is given in this specification and illustrated in the accompanying drawings, wherein:—

Figure 1 shows a vertical sectional view of the device.

Figure 2 shows a cross sectional view, taken on the line 2—2 of Figure 1.

Figure 3 shows a cross sectional view taken on the line 3—3 of Figure 1; and,

Figure 4 shows a cross sectional view taken on the line 4—4 of Figure 1.

Referring now more particularly to the drawings, the numeral 1 designates the pipe sought to be recovered. The numeral 2 designates the tubular body whose lower end is closed by an inverted conical shaped plug 3, forming a guide.

The body 2 forms a jaw holder, being provided with radial slots, as 4, whose upper and lower ends taper inwardly and downwardly, and form bearings for the jaws 5. These jaws have the inwardly declining transverse slots 6, and bearing pins 7 extend through these slots and have their ends anchored in the body 2, as shown in Figure 4. The outer edges of these jaws have teeth, spiralled, or inclined in the direction of left hand threads. There is a nipple 8 whose lower end is reduced and threaded, with left hand threads, into the upper end of the body 2, and this nipple has an external annular shoulder 9, which is serrated, and adapted to rest on the upper end of the pipe 1.

There is a mandrel 10 whose lower end is flared and adapted to wedge between, and expand, the jaws 5. The shank 11, of this mandrel extends up through the central bore 12, of the nipple 8, and is connected by right hand threads into a square head 13 formed on the lower end of the stem 14 by which the device is operated. This head 13 works in the enlarged socket 15 in the upper end of the nipple 8. The upper end of this socket is closed by means of the cap plate 16, which is fastened to the nipple 8, and has a central bearing through which the stem 14 works. The lower end of the socket 15 is round and its upper end square, in cross section, for a purpose hereinafter explained.

The bore 12 has the vertical side grooves 16, 16, and the shank of the mandrel has corresponding ribs 17, 17, adapted to work in said grooves.

When assembled to lower into the bore, the mandrel is lowered and turned, relative to the body 2, until the upper ends of the ribs 17 are out of alignment with the grooves 16, with the lower end of the nipple 8 resting on the upper ends of said ribs. The jaws 5 will move inwardly, by gravity, out of engaging position. When the shoulder 9 rests upon the pipe 1, the mandrel is turned until the upper ends of the ribs strike the stops 18, depending from the lower end of the nipple 8. The head 13 is now located in the round lower end of the socket 15, and permits the relative turning of the mandrel. The mandrel is now elevated, the ribs 17 moving upwardly in the grooves 16, and the flared portion 10 wedges between, and expands, the jaws into engagement with the pipe and an upward pull, in many cases, will dislodge the stuck pipe and it may be withdrawn.

In case the pipe cannot be pulled it may

be unscrewed, a section at a time, and in that manner recovered. In order to unscrew and break up the stuck pipe the stem is turned to the left and the head 13, now fitting in the square upper end of the socket 15 will transmit the torque of the stem to the nipple 8, and the body 2, and relieve the mandrel of all of the strain, thus preventing the breakage of said mandrel.

As the device is turned to the left, the angular or spiralled teeth on the outer edges of the jaws 5 will tend to pull the device downwardly into the pipe causing the serrated shoulder 9 to engage more securely with the upper end of the joint to be unscrewed.

If the stuck pipe cannot be thus broken up the mandrel is again lowered and turned to carry the ribs 17 out of alignment with the grooves 16, and to release the jaws 10. An upward pull will thus release the pipe puller from the pipe and said puller may thus be withdrawn from the bore.

What I claim is:—

1. A pipe puller including a body, an outwardly movable pipe engaging jaw mounted therein, a flared mandrel within the body, movable in one direction into engagement with the jaw to force the same outwardly into engagement with the pipe and in the other direction to release said jaw, a nipple threaded into the upper end of the body, means carried by the mandrel and nipple respectively, and adapted to lock said mandrel in the last named position, a stem connected to the mandrel, and other interlocking means through which the stem and nipple are interlocked to rotate as a unit when the mandrel is in jaw engaging position, said interlocking means being released when the mandrel is moved into released position.

2. A pipe puller including a tubular body, radially movable pipe engaging jaws mounted therein, an operating stem, a nipple threaded into the upper end of the body, interlocking means carried by the stem and nipple through which they, and the body, may be interlocked to rotate as a unit when the stem is in one position, relative to the body, said stem being released to rotate independent of the body when moved to another position, means for holding the stem against lengthwise movement in the body, when in said released position, a jaw expanding means connected to the stem and movable by it to expand the jaws when the stem is in the first named position and to release the jaws when in the last named position, said interlocking means being adapted to interlock the stem and body when the jaws are in expanded position.

3. A pipe puller including a tubular body, a radially movable jaw, mounted therein, and capable of outward movement to engage with a pipe in which the device is located, a nipple having a threaded connection with the body, an operating stem capable of limited lengthwise movement relative to the nipple and body, said stem being rotatable independent of the body when in one position relative thereto, means locking the stem against lengthwise movement, relative to the nipple when in said last named position, interlocking means carried by the nipple and stem respectively, which interlock when the stem is moved to another position, relative to the body, to prevent independent rotation of the stem relative to the nipple and body, a mandrel attached to the stem and disposed to force the jaw outwardly when the stem is moved to its last named position and to release said jaw when said stem is moved to the first named position, said jaw being mounted to move inwardly by gravity when released.

4. A pipe puller including a tubular body, a radially movable jaw, mounted therein, and capable of outward movement to engage with a pipe in which the device is located, an operating stem capable of limited lengthwise movement relative to the body, a nipple connected to the body through which the stem operates, said stem being rotatable independent of the body and nipple when in one position relative thereto, interlocking means carried by the nipple and stem respectively, which interlock when the stem is moved to another position, relative to the body, to prevent independent rotation of the stem relative to the nipple and the body, a mandrel attached to the stem and disposed to force the jaw outwardly when the stem is moved to its last named position and to release said jaw when said stem is moved to the first named position, and a locking device carried by the mandrel adapted to lock said mandrel in jaw releasing position.

5. A pipe puller including a tubular body, a radially movable jaw, mounted therein, and capable of outward movement to engage with a pipe in which the device is located, an operating stem capable of limited lengthwise movement relative to the body, a nipple connected to the body by left hand threads, through which the stem operates, said stem being rotatable independent of the body and nipple when in one position relative thereto, interlocking means carried by the nipple and stem respectively, which interlock when the stem is moved to another position, relative to the body, to prevent independent rotation of the stem relative to the nipple and body, a mandrel attached to the stem and disposed to force the jaw outwardly when the stem is moved to its last named position and to release said jaw when said stem is moved to the first named position, said jaw being mounted to move inwardly, by gravity,

when released, and a locking device carried by the mandrel and nipple, respectively, adapted to lock said mandrel in jaw releasing position.

6. A pipe puller including a tubular body, a radially movable jaw mounted therein and capable of outward movement to engage with a pipe in which the device is located, a nipple having a threaded connection with the upper end of the body, an operating stem capable of limited lengthwise movement relative to the nipple and the body, said stem being rotatable independent of the body when in one position relative thereto, a mandrel attached to the stem and disposed to force the jaw outwardly when in one position and to release the jaw when in another position, means through which the stem may be locked with the nipple to impart rotation to the nipple and body when the mandrel is in active position relative to the jaw and means to interlock the mandrel and nipple, to prevent the relative lengthwise movement of the mandrel when the jaw is in released position.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOSEPH M. SPITLER.

Witnesses:
WM. A. CATHEY,
E. V. HARDWAY.