May 15, 1951 E. L. CONDRA 2,552,939

WIRE LINE CLEANOUT TOOL FOR OIL WELLS

Filed June 5, 1948

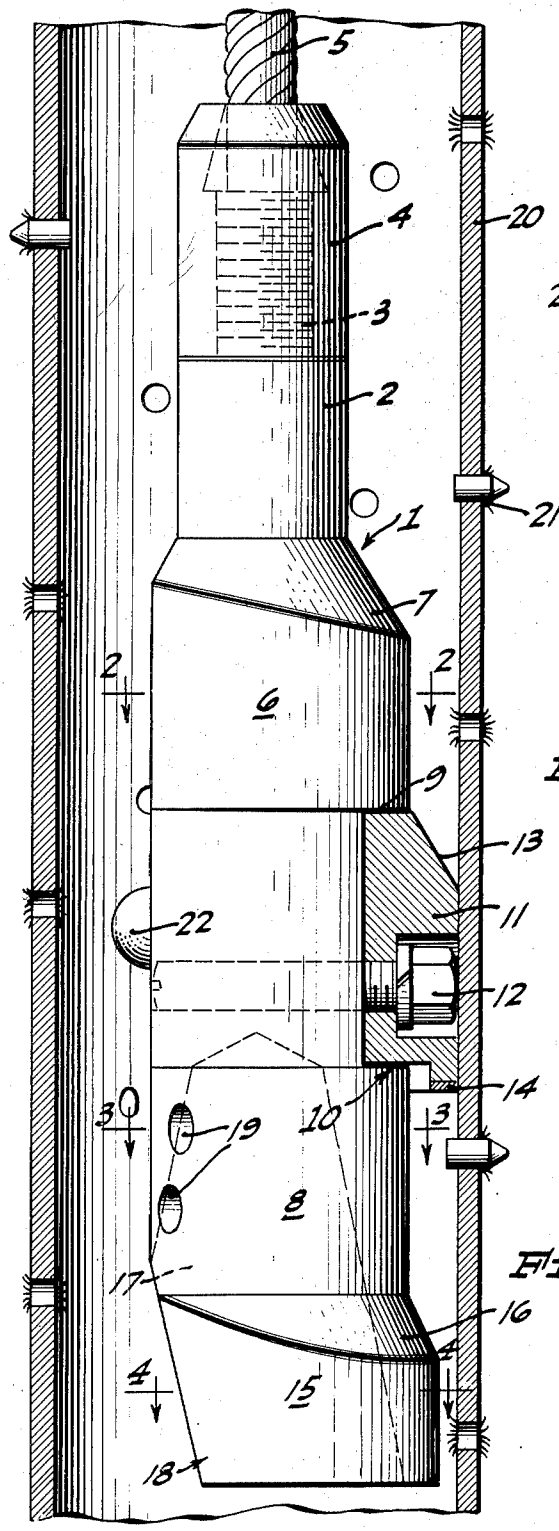


FIG. 1.

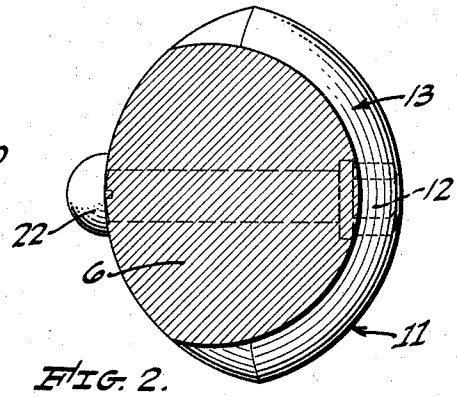


FIG. 2.

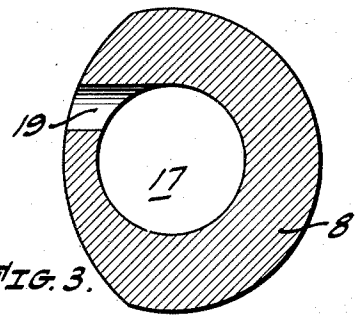


FIG. 3.

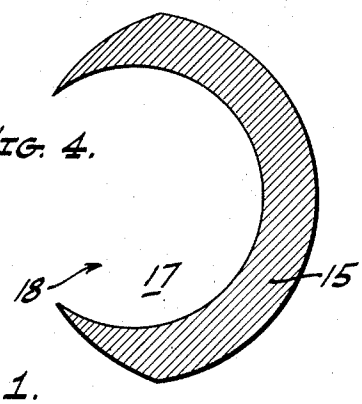


FIG. 4.

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WIRE LINE CLEANOUT TOOL FOR OIL WELLS

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3 Claims. (Cl. 90—24)

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This invention relates to a cleanout tool which is operated on a cable or wire line, and which is dropped into a well for the purpose of removing obstructions and projections on the casing.

An object of my invention is to provide a novel wire line cleanout tool which can be lowered into an oil well containing fluid and which will remove various projections on the casing such as projecting bullets, burrs on the perforations, etc.

Another object of my invention is to provide a novel tool of the character stated, which will automatically rotate in the oil well as the tool is reciprocated on its supporting cable.

A feature of my invention is to provide a novel wire line cleanout tool which can be quickly and easily run into an oil well and which will save considerable time in this cleaning operation.

Other objects, advantages and features of invention may appear from the accompanying drawing, the subjoined detailed description, and the appended claims.

In the drawing:

Figure 1 is a side elevation of my tool in position in a casing, and with parts of the tool broken away to show interior construction.

Figure 2 is a sectional view taken on line 2—2 of Figure 1.

Figure 3 is a sectional view taken on line 3—3 of Figure 1.

Figure 4 is a sectional view taken on line 4—4 of Figure 1.

Referring more particularly to the drawing, my cleanout tool 1, is formed with an elongated mandrel 2, which has a threaded pin 3, on its upper end, this pin being threaded into the cable socket 4. The cable 5, is fixedly secured in the socket 4, in the usual and well known manner. The mandrel 2, is formed with an eccentric ring 6, the center line of this ring being eccentric to the longitudinal center line of the tool. An inclined shoulder 7, is formed on the ring 6, and this shoulder tapers to the diameter of the mandrel 2, as shown in Figure 1. The purpose of this shoulder will be further described.

A second eccentric ring 8, is formed on the mandrel 2, below the ring 6, and the rings 6 and 8, are formed with shoulders 9 and 10, respectively, which serve to hold the arcuate cutter 11. This cutter is held onto the mandrel 2, by means of the heavy bolt 12, and the stresses are transmitted from the cutter to the mandrel through the shoulders 9 and 10. The upper face of the cutter is also inclined as shown at 13, and the lower face of the cutter is formed as a cutter ring shown at 14. At the lower end of the mandrel 2,

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I provide a third eccentric ring 15, which is also formed with an inclined upper face 16, this face tapering upwardly to conform with the surface of the ring 8.

A counter bore 17, is formed in the bottom of the mandrel 2, and this counter bore is concentric with the center line of the mandrel. One face of the counter bore 17, will be open as shown at 18, and adjacent the upper end of this counter bore I provide one or more eccentric holes 19, which extend into the counter bore 17. As previously stated, the casing 20, is filled with a fluid, and throughout the perforated area of this casing there are rough, inclined extending projections such as the bullets 21, or the roughened edges of the perforations. To remove these projections the tool is dropped into the well on the cable 5, and is moved rapidly upwardly and downwardly. As the tool drops, its weight is sufficient to cause the cutting edge 14, to shear off the inwardly projecting bullets or rough edges of the holes. The entire tool will tend to rotate due to the twist of the cable 5. However, to additionally induce rotation the counter bore 17, is provided with its eccentric holes 19.

As the tool is dropped, the fluid is forced into the counter bore and out through the holes 19, thus imparting a rotative force to the tool. The jetting of the fluid through the holes 19, also tends to hold the tool against the side of the casing in the position shown in Figure 1. On upward movement of the tool, the fluid impinges on the inclined shoulders 7, 13, and 16, which tends to move the tool against the other face of the casing and to protect the longitudinal edge of the tool, I provide a bumper 22, which strikes against the casing 20, and has some benefit due to its peening action. Since one side of the counter bore 17, is cut away due to the eccentric shape of the body of the tool, this open side of the counter bore will also serve somewhat as a jet opening tending to force the tool against the side of the casing, as the tool is dropped.

Having described my invention, I claim:

1. A wire line cleanout tool for oil wells comprising an elongated mandrel, a cable attached to the upper end of said mandrel, a cutter mounted on said mandrel, said mandrel having jet holes therein through which fluid passes to impart rotation to said tool, and faces on said mandrel inclined from the vertical and against which fluid in the well impinges to move the tool to one side of the well, on upward movement of the tool.

2. A wire line cleanout tool for oil wells comprising an elongated mandrel, a cable secured to

the upper end of said mandrel, an arcuate cutter removably mounted on said mandrel, said mandrel having a counter bore in the bottom thereof, and jet holes extending into said counter bore through the sides of said mandrel said jet holes being arranged to impart a rotative force to the tool, and eccentric inclined faces on said mandrel, against which fluid in the well impinges to move the tool to one side of the well on upward movement of the tool.

3. A wire line cleanout tool for oil wells comprising a mandrel, a cable secured to the upper end of the mandrel, a pair of spaced rings formed on the mandrel, a cutter mounted between said rings and bearing against the same, means securing said cutter to the mandrel, said mandrel having a counter bore in the bottom thereof, and holes extending into said counter bore through the sides of said mandrel said holes being arranged to impart a rotative force to the tool, and eccentric tapered faces on each of said rings, against which fluid in the well impinges to move the tool to one side of the well on upward movement of the tool.

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