A. T. JERGINS.

HYDRAULIC OIL WELL WASHER.

APPLICATION FILED MAR. 14, 1918.

1,276,536. Patented Aug. 20, 1918.

Fig. 1.

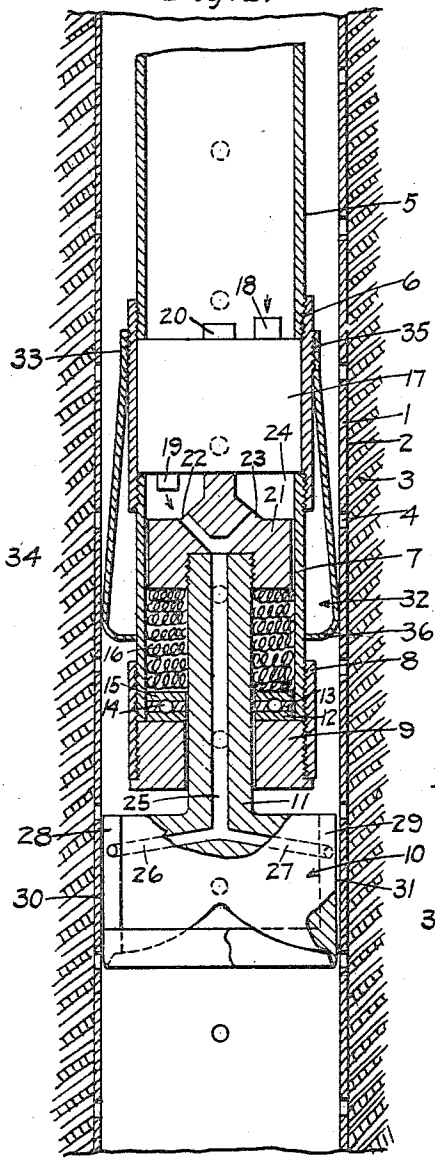


Fig. 2

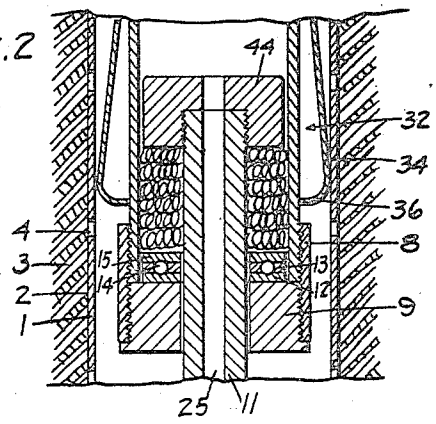


Fig. 3.

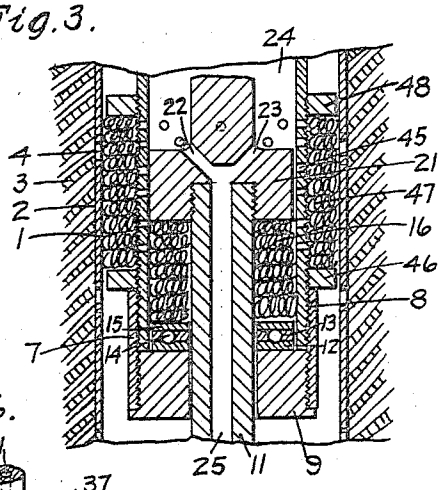


Fig. 6.

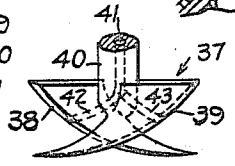


Fig. 4.

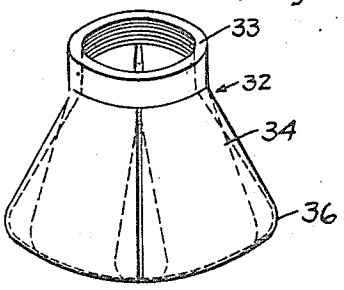
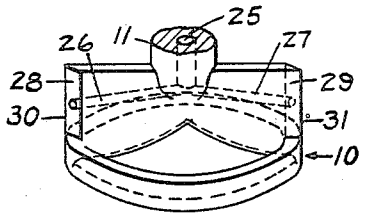


Fig. 5.



Inventor:
Andrew T. Jergins,
by Hazard and Miller
Attys.

UNITED STATES PATENT OFFICE.

ANDREW T. JERGINS, OF LOS ANGELES, CALIFORNIA.

HYDRAULIC OIL-WELL WASHER.

1,276,536. Specification of Letters Patent. Patented Aug. 20, 1918.

Application filed March 14, 1918. Serial No. 222,461.

To all whom it may concern:

Be it known that I, ANDREW T. JERGINS, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Hydraulic Oil-Well Washers, of which the following is a specification.

My object is to make an improved oil well washer and my invention consists in the novel features herein shown, described and claimed.

Figure 1 is a fragmentary diametrical vertical sectional detail showing an oil well washer embodying the principles of my invention in operation in an oil well.

Fig. 2 is a view analogous to Fig. 1 and showing a modified construction.

Fig. 3 is a view analogous to Fig. 1 and showing a modified form of packer.

Fig. 4 is a perspective of the packer shown in Figs. 1 and 2.

Fig. 5 is a perspective of the bit shown in Fig. 1.

Fig. 6 is a perspective of a modified form of bit.

The well casing 1 is sunk into the oil well bore 2, and at the point where the casing passes through the oil bearing sand 3 the casing has perforations 4 for admitting the oil from the sand 3 through the perforations into the casing. In actual practice the casing 1 becomes clogged with paraffin and asphalt until the oil will not flow readily through the perforations 4, and it is the object of my invention to provide a device for cleaning the casing and restoring the flow of oil.

The washer tubular stem 5 is considerably smaller in diameter than the casing 1. A pipe coupling 6 is fixed upon the lower end of the tube 5, a section 7 of tubing similar to the tube 5 is inserted into the lower end of the coupling 6, a second coupling 8 is placed upon the lower end of the section 7, and a bushing 9 is inserted into the lower end of the second coupling. A fish-tail bit 10 has a stem 11 extending upwardly loosely through the bushing 9. A bearing plate 12 is inserted downwardly through the tube section 7 against the bushing 9, a ball retainer 13 is placed upon the plate 12 and carries bearing balls 14, a second plate 15 is placed upon the balls 14, and packing 16 is inserted downwardly against the plate 15.

The coupling 6 is of considerable length and the water motor 17 is fixed in the coupling 6 between the ends of the stem 5 and section 7, said water motor having an intake 18 and an outlet 19. The rotating shaft 20 of the water motor extends some distance below the casing of the motor and a rotating head 21 is fixed or formed integral with the lower end of the shaft. The rotating head 21 is screwed upon the upper end of the stem 11 against the packing 16. Ports 22 and 23 lead from the chamber 24 between the motor 17 and the head 21 to the port 25 leading through the stem 11 and from the lower end of the port 25 ports 26 and 27 lead through the blades 28 and 29 of the bit 10, said ports discharging from the blades behind the cutting edges 30 and 31, so that the discharge of water assists in rotating the bit. The cutting edges 30 and 31 upon the bit 10 are vertical and parallel and fit closely within the casing 1.

The packer 32 comprises an internally screw-threaded band 33 and flexible overlapping segments 34 extending downwardly from the band. The band 33 is screw-seated upon external screw-threads 35 formed upon the coupling 6 and the flexible segments 34 press outwardly against the inner face of the casing 1 so as to form a tight joint between the washer and the casing. The lower edges 36 of the segments 34 are rounded inwardly so that the packer will slide up and down in the casing.

In the practical operation of the washer shown in Fig. 1 water is forced downwardly through the tubular stem 5 and passes through the water motor 17, thereby rotating the stem 20 and the bit 10 is correspondingly rotated. As the washer moves downwardly in the casing 1 the bit 10 will scrape the paraffin, asphalt and the like from the inner face of the casing 1. The water which passes through the motor 17 will pass downwardly and ultimately be discharged through the ports 26 and 27 to assist in rotating the bit, and this water will pass upwardly outside of the coupling 8 against the packer 32 and then will be forced outwardly through the perforations in the casing 1, and continued operation will force the water upwardly through the sand 3 around the plane of the packer 32 and then in through the perforations in the casing and upwardly outside of the stem 5. In this way the casing 1 may be cleaned, the perforations in the casing washed out, and the sand

outside of the casing cleaned to any desired extent.

In the modification shown in Fig. 6 the bit 37 may be substituted for the bit 10. This bit has winding cutters 38 and 39, a stem 40 for operating the cutters, a port 41 leading downwardly through the stem, and ports 42 and 43 leading from the lower end of the port 41 to the sides of the cutters 38 and 39 behind the cutting edges so as to assist in rotating the cutter by the passage of water under pressure downwardly through the port 41 and outwardly through the ports 42 and 43.

In the modification shown in Fig. 2 the water motor 17 is omitted and a head 44 is mounted upon the stem 11.

In the modification shown in Fig. 3 the packer 32 is omitted, the tubular section 7 is provided with perforations 45, a packing ring 46 is mounted upon the upper end of the coupling 8, packing 47 is placed around the tubular section 7 upon the ring 46, and a second packing ring 48 is mounted above the packing 47. The pressure of the water outwardly through the perforations 45 will hold the packing 47 against the casing 1 and serve the same purpose as the packer 32.

Various changes may be made in the details of construction without departing from the spirit of my invention as claimed.

I claim:

1. An oil well washer comprising a tubular washer stem, a packer around the lower end of the stem, a water motor fixed in the lower end of the stem, and a bit below the packer and connected to be operated by the motor.

2. An oil well washer comprising a tubular washer stem, a packer around the lower end of the stem, and bit connected to the stem below the packer; there being ports discharging from the bit behind its edges, said ports being connected to the chamber in the tubular stem; so that by forcing water downwardly through the stem the bit will be rotated.

3. An oil well washer comprising a tubular washer stem, a packer around the lower end of the stem, a water motor fixed in the lower end of the stem, a bit connected to the lower end of the stem, and an outlet from the lower end of the stem through the bit.

In testimony whereof I have signed my name to this specification.

ANDREW T. JERGINS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."