

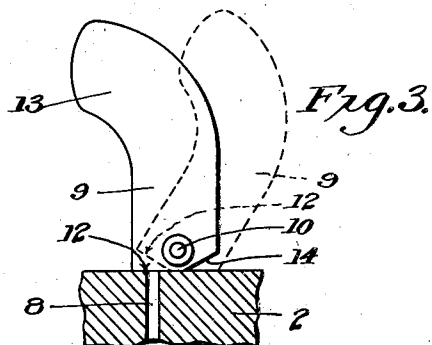
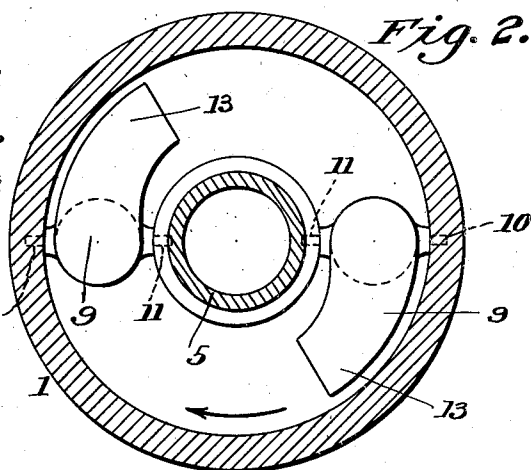
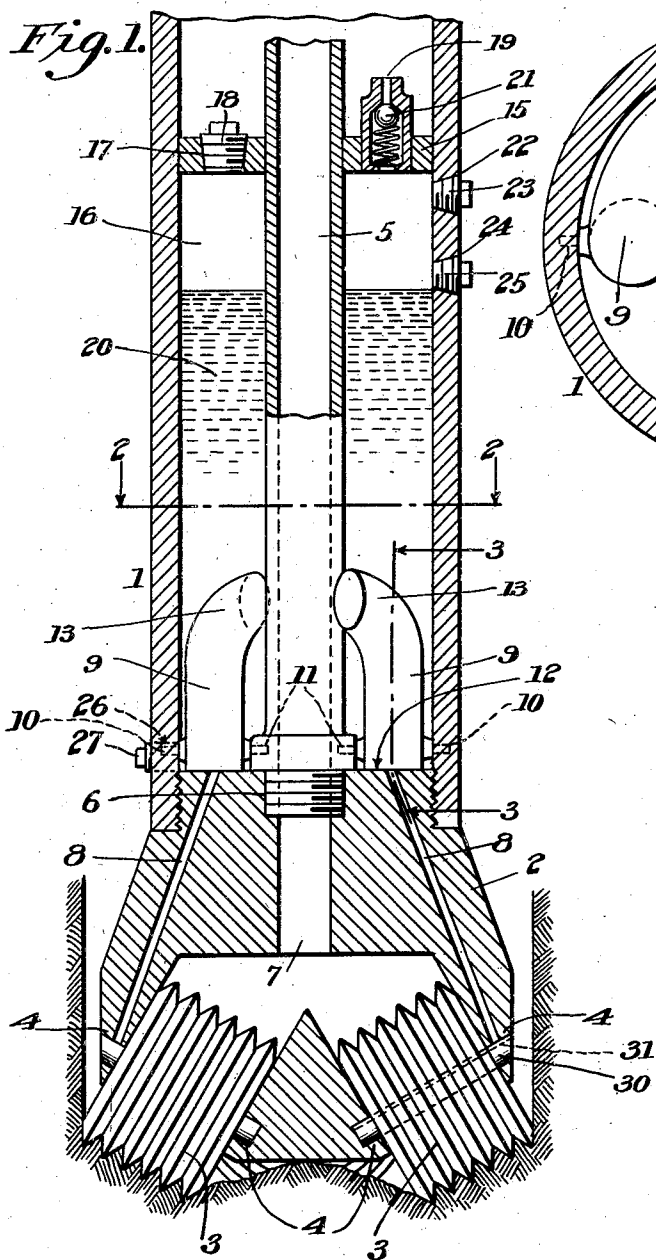
Aug. 25, 1925.

1,551,366

A. E. CARLSON

OILING DEVICE

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UNITED STATES PATENT OFFICE.

ANTHONY E. CARLSON, OF LOS ANGELES, CALIFORNIA.

OILING DEVICE.

Application filed July 2, 1924. Serial No. 723,744.

To all whom it may concern:

Be it known that I, ANTHONY E. CARLSON, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Oiling Devices, of which the following is a specification.

My invention relates to an oiling device, particularly useful for oiling the bearings of the rotary cutters of deep well rotary drills, and the general object of my invention is to provide a simple oiling device of the character stated which will be positive and highly efficient in operation.

Other objects and advantages will be made manifest in the following specification for an embodiment of the invention illustrated in the accompanying drawings.

Referring to the drawing:

Figure 1 is a vertical longitudinal section of a rotary deep well drill equipment with my oiling device.

Figure 2 is a horizontal section of said drill taken on line 2—2 of Figure 1.

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

My oiling device is shown in the drawing as applied to a rotary deep well drill, comprising the usual drill pipe 1, a drill head 2 screw seated in the lower end of said pipe, rotary cutters 3 journaled in bearings 4 in said head, and a water pipe 5 leading through the drill pipe and screw seated at its lower end in the upper end of said head as indicated at 6 in communication with a port 7 leading axially through the head.

Oil ducts 8 are provided in the head 2 leading from the upper end thereof to the cutter bearings 4, the upper ends of which ducts are controlled by weighted valves 9 pivoted in the lower end of the drill pipe 1 by pivots 10 and 11 journaled in said drill pipe and in the water pipe 5 respectively. Each of the valves 9 is formed with a closer face 12 at its lower end at one side of its pivots, for resting over and closing the upper end of a duct 8, and the upper portion 13 of the valve is curved outwardly beyond said closure face so as normally to hold the valve upright with the closure face 12, closing the upper end of a duct 8. Each valve 9 is also formed with an angle face 14 extending upwardly from the closure face 12 at the other side of the valve pivots 10 and

11 to permit the valve to swing rearwardly during the rotation of the drill so that the closure face will be raised above the upper end of the oil duct 8 to open said end of the duct.

A head 15 is fitted in the lower portion of the drill pipe 1 above the valves 9, the water pipe 5 extending through said head, thus forming an oil reservoir 16 in the lower portion of the drill pipe between said head and the drill head 2. An oil inlet 17 is provided in the head 15 through which inlet oil is introduced into the reservoir 16, the inlet being normally closed by a screw plug 18.

An air inlet 19 is provided in the head 15 to admit air under pressure into the top of the reservoir 16 above the oil 20 therein, said inlet being controlled by a check valve 21 which opens under pressure to admit air into the reservoir but closes to prevent the escape of air therefrom.

An oil inlet opening 22 is also provided in the drill pipe 1 just below the head 15 which inlet is normally closed by a screw 23. An oil drain outlet 24 is provided in the drill pipe 1 below the inlet 22 at a predetermined level through which oil in the top of the reservoir 16 may be drained down to said level, above which level the reservoir is filled with a definite volume of air under a predetermined pressure. Said outlet 24 is normally closed by a screw plug 25. A drain outlet 26 is also provided in the lower end of the drill pipe 1 leading from the bottom of the reservoir which outlet is normally closed by a screw plug 27.

When the drill is at rest the weighted parts 13 of the valves 9 hold the valves upright with the closure faces 12 over the upper ends of the ducts 8, closing said ducts so that no oil from the reservoir may escape through the ducts 8. Upon rotation of the drill the valves 9 swing rearwardly, the faces 14 permitting such movement, so that the faces 12 rise above the upper ends of the ducts 8 and open said ducts whereupon oil flows from the reservoir through said ducts to the cutter bearings 4, thus lubricating said bearings.

The journal 30 of each cutter 3 is provided with a longitudinal groove 31 through which oil runs from the upper bearing 4, with which the oil duct 8 communicates, into the lower bearing 4.

Having thus described my invention what I claim is:

1. An oiling device for rotary drills comprising an oil reservoir in the lower portion of the drill pipe, the drill head being provided with oil ducts leading from the reservoir to the drill cutter bearings, valves for controlling said oil ducts, pivoted in the lower portion of said reservoir, closure faces on said valves, the valves being weighted so that they hold said closure faces over the upper ends of said oil ducts when the drill is at rest, but permit the valves to swing on their pivots so that said closure faces will rise above the ends of said ducts and open the same when the drill is rotated.

2. An oiling device for rotary drills comprising an oil reservoir in the lower portion of the drill pipe, the drill head being provided with oil ducts leading from the reservoir to the drill cutter bearings, and valves for closing said ducts when the drill is at rest and for opening said ducts when the drill is rotated, means for admitting air under pressure into the top of the reservoir, and a drain outlet in the upper portion of the reservoir to drain the oil from the reservoir to a predetermined level above which level air under pressure is admitted into the reservoir.

In testimony whereof I affix my signature.

ANTHONY E. CARLSON.