Feb. 9, 1932. S. B. MERRICK 1,844,780

NONCORRODIBLE DEEP WELL PUMP

Filed May 31, 1930

Fig. 1.

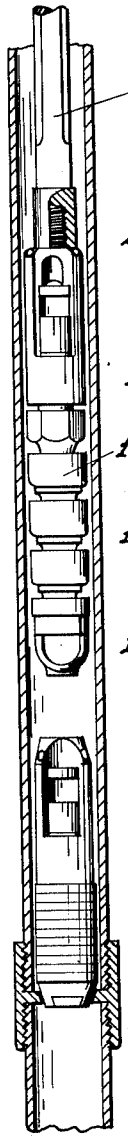


Fig. 2.

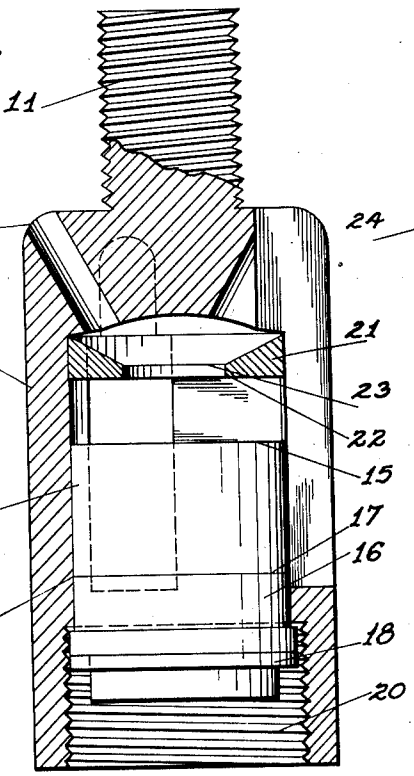
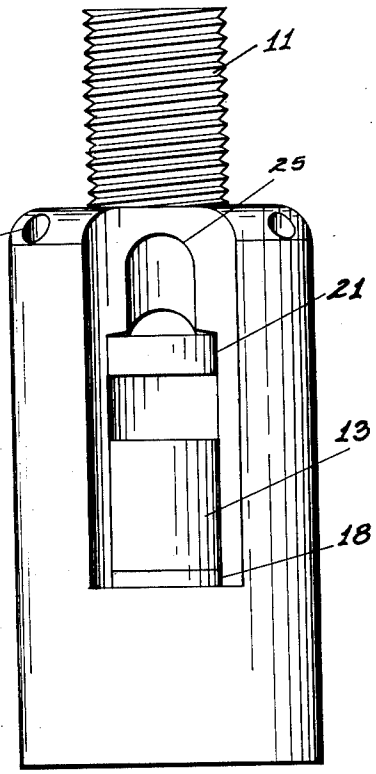


Fig. 3.



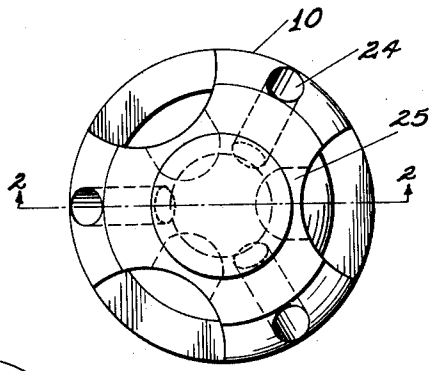


Fig. 4.

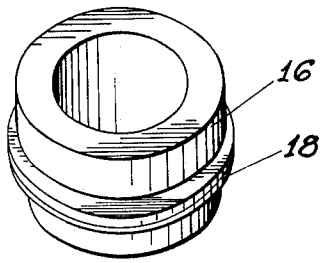


Fig. 5.

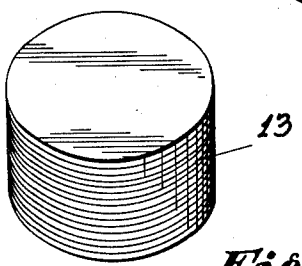


Fig. 6.

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1,844,780

UNITED STATES PATENT OFFICE

SUMNER B. MERRICK, OF FORT WORTH, TEXAS, ASSIGNOR TO WASHINGTON LOAN & TRUST COMPANY, AS TRUSTEE, OF WASHINGTON, DISTRICT OF COLUMBIA

NONCORRODIBLE DEEP WELL PUMP

Application filed May 31, 1930. Serial No. 458,685.

This invention relates to pump valves for oil wells and the like, and more particularly to high pressure valves which are used in pumping oil containing corrosive substances, such as salts of metals, acids, alkalis, or other substances having an injurious effect upon metal valve parts.

One of the objects of this invention is to provide a reversible valve drop which is both durable and non-corrodible.

Another object is to provide a valve seat and guide or housing means which will insure maximum useful life and efficiency of said drop.

Other objects and advantages of the invention are the elimination of leakage through or around the valve, ready accessibility of the parts requiring renewal or cleaning, and freedom from choking.

A preferred embodiment of the invention is shown in the accompanying drawings and explained in the following description in which

Fig. 1 is an assembly showing the invention applied to the standing and working valves of an oil well pump;

Fig. 2 is a vertical section taken on line 2—2 of Fig. 4, showing the drop, its stop, the valve seat, and the openings in the valve casing;

Fig. 3 is an elevation of the assembled valve member;

Fig. 4 is a top plan view of the same;

Fig. 5 is a perspective view of the valve seat; and

Fig. 6 is a perspective view of the improved valve drop.

Referring to the drawings, the valve casing 10 is provided with the usual threaded stem 11, which is threaded into the socketed pump rod 12. The drop 13 is composed of layers of fabric and bakelite or similar phenolic resinoid, pressed and baked to form a hard, durable disc or cylinder adapted to resist corrosion. Preferably the cylindrical surface is coated with bakelite varnish and baked to prevent absorption of moisture between the laminations. The drop has two flat working surfaces 14 and 15, thus providing a reversible unit.

The tubular seat 16 is preferably made of stainless steel or other non-corrodible metal, and is hardened and polished on its upper surface 17 to increase the efficiency of the valve and to lessen wear on the drop 13. A vulcanized fibre gasket 18, which expands when left in a liquid, is placed on the under side of the seat to maintain a tight joint between it and the working valve 19. The seat 16 is held in place by the hollow plunger of the working valve 19 (Fig. 1) which engages against the gasket 18 in the threaded portion 20 of the valve casing 10. This plunger carries the working valve packing as is commonly known in the art.

Means are provided, in the form of an annular stop or ring 21 having a flat surface 22, for limiting the upward movement of the drop 13 and for protecting the unused surface 15 of the drop. A funnel shaped opening 23 in the stop connects with openings 24 and 25 in the casing to introduce liquid to the top of the drop 13 and facilitate downward movement of said drop by overcoming the retarding effect of suction that otherwise might be created between the drop and the upper inside surface of the casing 10.

The use of bakelite or similar condensation product for the drop in combination with the seat of hardened stainless steel, adapts the valve for many working conditions that rapidly pit or wear other valve materials and is an important improvement in this type of valve.

Advantages of the invention are durability of the working parts, elimination of leaks through and around the valve seat, quick action of the drop, reversibility of the drop and ready replacement of the gasket.

I claim the following as my invention:

1. In a deep well pump valve, a cylindrical drop composed of layers of fabric united by a phenolic resinoid, said layers being at right angles to the normal direction of movement of said drop.

2. A deep well pump valve having a reciprocating cylindrical drop composed of united layers of fabric impregnated with phenolic resinoid or the like, said layers lying across the line of movement of the drop.

3. In a deep well pump valve having a casing, seat and reciprocating drop, a stop for limiting upward movement of said drop, said stop having a flattened lower face and a concave upper face having an opening therethrough providing means to facilitate downward movement of said drop.

4. A cylindrical drop for a deep well pump valve having a flat annular seat, said drop consisting of circular laminations of fabric and bakelite or the like, pressed and baked, and having its cylindrical surface coated with bakelite varnish baked on to protect the exposed edges of said laminations.

5. In a deep well pump valve having a cylindrical drop, the combination of a casing having downwardly converging openings therein and an upper stop for said drop of annular form having a counter-sunk top positioned below said openings.

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

SUMNER B. MERRICK.