Feb. 12, 1929. 1,701,884

J. E. HOGLE

OIL WELL HEATER

Filed Sept. 30, 1927

Fig. 1.

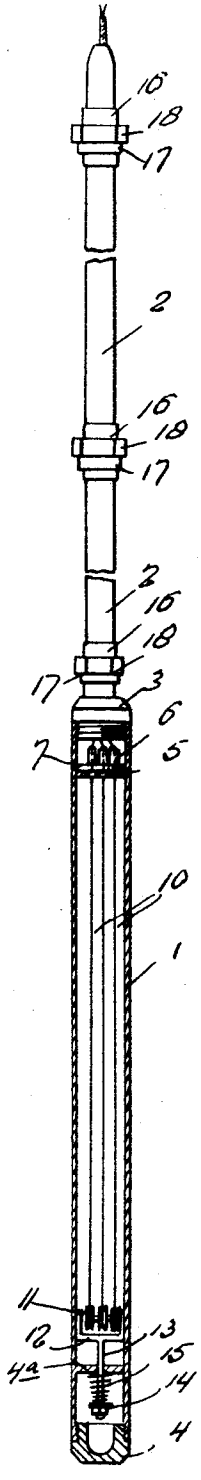
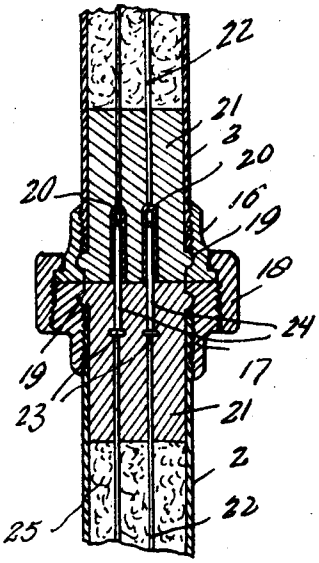


Fig. 2.



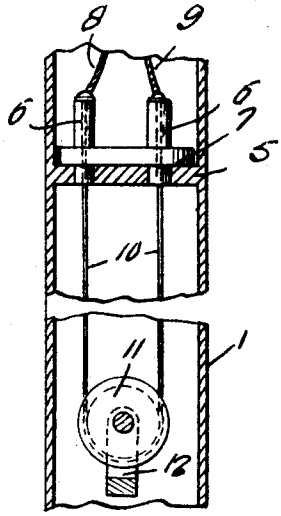


Fig. 3.

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UNITED STATES PATENT OFFICE.

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OIL-WELL HEATER.

Application filed September 30, 1927. Serial No. 223,073.

My invention relates to improvements in oil well heaters, and it is to be seen that the same is adapted more particularly to a means for electrically heating oil wells.

The numerous oil well heaters heretofore employed have been impractical for one or more reasons.

Well heaters have been attempted where a grounded electrical heater has been employed, but this has proven unsatisfactory in the electrolytic condition set up with a resultant destructive effect upon the heating element insulation.

As a consequence of this, metallic circuits have been adopted with more merit than the grounded circuit, but however, the proper insulation of the terminals of the heating elements have always been a problem to be solved.

The purpose of my improved electrical oil well heater is to remedy this situation by providing such a means for heating oil wells for electrical current in which a proper insulation of the various elements is a paramount feature.

An object therefore, is to provide an electrical oil well heater conduit constructed for effectively ejecting the conductor wires through the electrical heating units.

Another object resides in the novel support and tension which I employ in association with the electrical resistance wire of the heating element.

Other very important objects and advantages will become apparent as my invention is better understood from the specification and claims to follow.

In the drawing:—

Figure 1 is a partial sectional view of my complete heater showing the barrel enclosing the electrical resistance wire in longitudinal sectional view.

Fig. 2 is a fragmentary view of the conduit pipe illustrating my improved electrical joint construction, and

Fig. 3 is a fragmentary view of the upper end of the wire portion of the heating unit barrel disclosing the novel means for properly maintaining the electrical resistance wire therein.

For a more detailed explanation of my drawings, I now refer to the same in which like numerals designate like parts of the same.

The protective casing for my heater comprises a lower barrel 1 in which the electrical heating element is adapted to be disposed, and if necessary a plurality of sections 2 of the conductor wire conduit pipe line, are attached thereto by a suitable reduction coupling 3.

The barrel 1 is provided with a plug 4, threaded into the lower end thereof. A partition 4^a is formed within the barrel a substantial distance above the plugged end of same. Adjacent the upper interior of the barerl, a partition 5, is transversely secured and formed with a suitable number of openings therethrough into which is adapted to be threaded an elongated insulating plug member 6.

A disk-shaped plate 7 of a suitable insulating material, but preferably of mica is adapted for superimposed position upon the partition 5, and is formed with a plurality of openings therethrough in registrating respect with the opening in the partition 5, and through which the insulating plugs 6 are adapted to project within the opening of the partition 5.

The lead and return wires 8 and 9 respectively, are adapted to be connected to the electrical elements 10 by suitable means at the top of the insulating plugs 6, from where the electrical resistance elements depend through the plug and is adapted to be trained around pulley wheels 11 at the lower end of the barrel.

The plurality of pulley wheels may be employed at the bottom of said barrel, the resistance elements returning in each instance through an independent plug 6 to return through still another plug to still another pulley wheel. These pulley wheels are freely rotatable upon a shaft supported upon a U-shaped member 12. The check 13 depending from the U-shaped member is adapted to project through an opening in the partition bore 4^a.

A suitable construction 14 is provided at the lower end of the check against which the reduced end portion of a conical pulley coiled spring 15 is adapted to bear. The opposite end of said screw spring is adapted to bear against the under side of the partition 4^a.

Threaded into the top open end of the barrel 1, is a reduction coupling 3, into which the conductor conduit pipe 2 is adapted to be threaded. This conduit pipe is constructed in sections, these constructions being secured together by the coupling means disclosed in Fig. 2 of the drawings. One end of each

pipe section is provided with the flanged collar 16 threaded thereto and formed with an annular groove 19 on the inner surface thereof.

The next downwardly threaded collar 17 is threaded also internally, and is formed with an annular groove 19 on the interior surface thereof, said collar 17 adapted to be threaded upon the end of a complementary pipe section. These complementary section ends are adapted to be brought into abutting relation, and an internally threaded flanged ring 18 is adapted to connect these section ends together, as is clearly shown in Fig. 2 of the drawing.

For a substantial distance inwardly from the respective ends of the sections, are insulating material deposits 21, said deposits being adapted to be securely retained in position, due to the material filling in at the groove 19 on the inner side of the collars 16 and 17 respectively.

A pair of preferably copper lined sockets extend inwardly within the deposit 21 from the end of one of said sections. Conductor wires 22 in connection with the metallic lined socket 20 are preferably embedded for a portion of their length in the insulating deposit. The conductor wires 22 of the complementary sections are adapted to have a portion of their length embedded within the insulated deposit. Anchor members 23 are embedded with the deposits, and from which project plug members 24 adapted for insertion within the copper-lined sockets in the abutting end of a complementary conductor section.

Insulating material 25 composed of asbestos, is adapted to have embedded therein, the conductor wires 22 throughout the remaining length of the conductor pipe sections.

In positioning my heater in an oil well, the barrel 1 is placed within the well and lowered as additional sections of the electrical conduit pipes are added. After a sufficient number of these sections have been attached so that the top of the uppermost section will be above the surface of the fluid in the well, the barrel is then allowed to rest upon the bottom of the well. Every electrical element being securely closed and cearly insulated, no short circuit will result.

To prevent the electrical resistance element 10, tendency to contract and expand during the varying temperatures, I provide the novel tensioning means including the pulley case 11 mounted upon the U-shaped member 12. This U-shaped member is spring retracted and intended to normally maintain the resistance wires 10 taut in spaced relation with each other.

Having thus described my invention, what I claim as new is:—

1. In an electrical oil well heater comprising a barrel, said barrel being closed at its lower end, means for supporting a heating element within said barrel, a conduit pipe secured to the barrel at its upper end and through which an electrical conductor wire is trained, said conduit pipe being constructed of a plurality of sections, means for electrically connecting said pipe sections together, said means comprising an insulating body located within the end of each section and having a metallic lined socket at the outer end thereof, and a plug construction at the opposite end of each section whereby the sections may be electrically connected together.

2. In an electrical oil well heater comprising a barrel closed at one end, a conduit pipe secured to the barrel at its upper end and through which an electrical conductor wire is trained, said conduit pipe being constructed in sections, means securing said pipe sections together, an insulating body located within each section, the body at one end of each section being provided with metallic lined sockets, a plug construction at the opposite end of each section, whereby the sections may be electrically connected together, and means for normally maintaining the electrical heating element in taut position within the barrel.

In testimony whereof I affix my signature.

JOHN E. HOGLE.