(No Model.)

C. W. & S. D. ROBISON.

ELECTRIC OIL WELL HEATER.

No. 457,457. Patented Aug. 11, 1891.

Fig. 1.

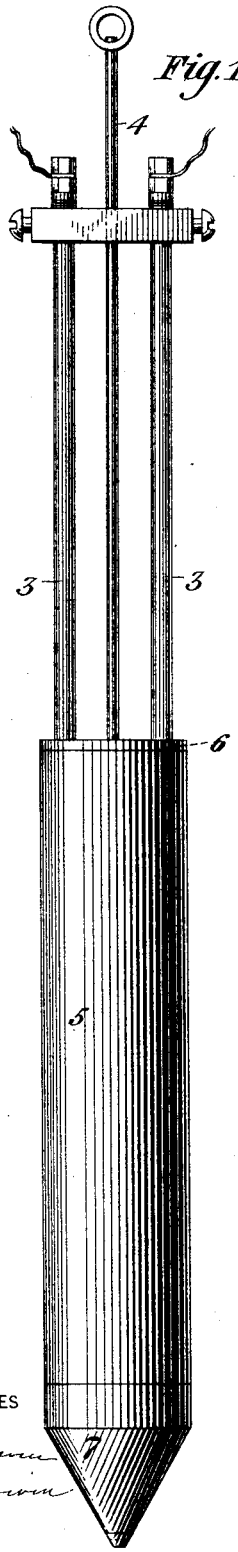


Fig. 2.

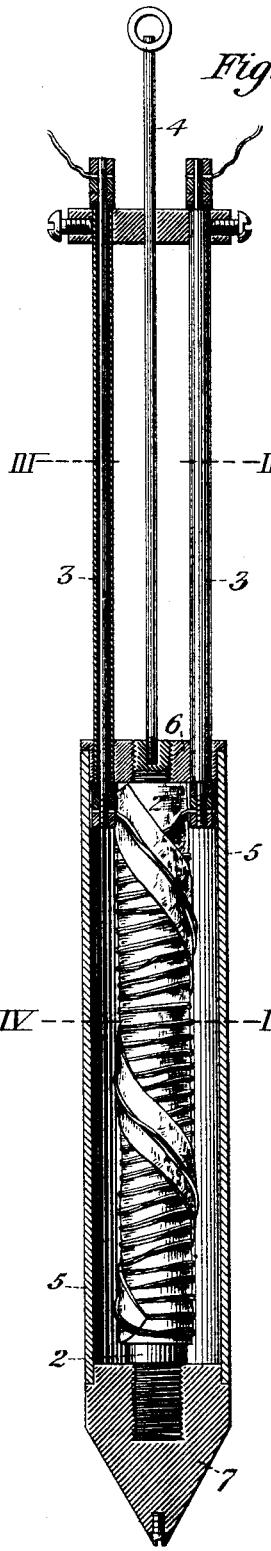


Fig. 3.

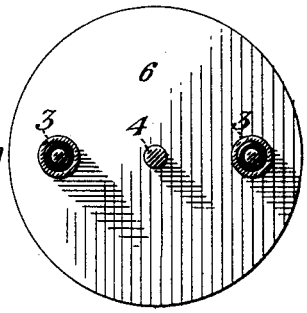
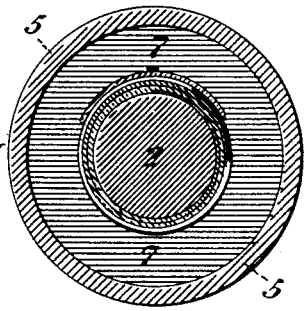


Fig. 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

CHARLES W. ROBISON AND SAMUEL D. ROBISON, OF ALLEGHENY, PENNSYLVANIA, ASSIGNORS OF TWO-THIRDS TO ROBERT B. ROBISON AND JOHN G. LUCOCK, OF SAME PLACE, JOHN A. GARTLAN, OF PITTSBURG, AND THOMAS D. WILLIAMS, OF BELLEVUE, PENNSYLVANIA.

ELECTRIC OIL-WELL HEATER.

SPECIFICATION forming part of Letters Patent No. 457,457, dated August 11, 1891.

Application filed February 18, 1891. Serial No. 381,902. (No model.)

To all whom it may concern:

Be it known that we, CHARLES W. ROBISON and SAMUEL D. ROBISON, of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Oil-Well Heaters, of which the following is a full, clear, and exact description.

It is well known that oil-wells are apt to become clogged by an accumulation of paraffine, &c., and to diminish in productiveness. A method was discovered and patented by one Roberts for increasing the productiveness of wells by exploding therein a charge of nitro-glycerine, which acts by loosening the oil-bearing fissures and dispersing the obstruction. A more effective and surer mode of effecting the desired result and of obtaining from the well its maximum yield consists in applying to the oil-bearing strata of the well the heating action of an electric current, the effect of which is to melt the fusible obstructing matter—such as paraffine—and by the action of the heat to open and clear the fissures and to permit the oil to flow freely.

Our invention is practiced by inserting into the well an electrical heating-coil or high-resistance conductor, as hereinafter described, and, when it is at the oil-bearing strata, passing through it a current of electricity, by which it is heated, so that it may communicate its heat to the well. The nature of the heating-coil and of the electric current supplied thereto should at least be such that sufficient heat is generated to fuse paraffine.

The apparatus employed in the practice of our invention may be constructed in various ways. The form which we have illustrated and which we intend to claim specifically is a very convenient form for use and is remarkably efficient in furnishing the electrical action for the purposes above described.

The apparatus is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation, and Fig. 2 is a vertical axial section, thereof. Figs. 3 and 4 are cross-sectional plan views on the lines III III and IV IV of Fig. 2.

In the drawings, 2 represents a core by which the electrical conductor is supported, and which is preferably fixed to the upper end of a supporting-frame having upright standards 3, through which the electrical conductors may be led to the heating-coil, and having a rod 4 by which the apparatus may be suspended and let into the well. The electrical conductor forming the coil consists of wire of low electrical conductivity (fine German-silver wire will answer the purpose) wrapped around the core 2, the wire being insulated from the core and each convolution being separated or insulated from the adjoining convolutions. We prefer to use asbestus paper as the insulating medium. In order to protect the heating-coil from damage by abrasion and to prevent it from being short-circuited by contact with the fluids of the well, we inclose it in a cylindrical casing 5, which at the top fits upon a head 6, forming part of the frame of the apparatus, and at the lower end is closed by a plug 7, which may be screwed upon the core and is preferably made conical at its lower end. This casing is made water-tight by packing in a suitable manner.

In using the apparatus we attach thereto the electrical conductors, as shown, and by means of a supporting-rope we lower it into the well. When the apparatus has reached the part of the well containing the paraffine, the electric current is supplied by a dynamo or other source of electrical energy situate at the surface of the ground, and passing through the coil rapidly heats the same to a red heat. This heat is communicated by radiation to the casing and by the casing to the oil-well, thus melting the clogging matter and clearing and opening the fissures, but without danger of injury to the well, as when an explosive charge is used. The operation is thus performed very rapidly and easily.

The shape of the apparatus adapts it to be let into the well conveniently, and as it is not of undue weight it is easy to manipulate.

The apparatus may be left in the well as long as may be desired, even during the pumping or flowing of the well, and the electric current may be supplied constantly or whenever it is wished to clear the well to in-

crease its flow, or the apparatus may be inserted and removed intermittently.

We claim—

In apparatus for removing paraffine from oil-wells, the combination of a water-tight case, an electrical heating-coil therein, a supporting-rod, and two hollow rods containing the conductors and attached to the upper part of the case, substantially as described.

In testimony whereof we have hereunto set our hands this 16th day of February, A. D. 1891.

CHARLES W. ROBISON.
SAMUEL D. ROBISON.

Witnesses:
W. B. CORWIN,
H. M. CORWIN.