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PATENTED FEB. 14, 1905.

B. F. GARDNER.

PROCESS OF INDUCING A FLOW OF OIL FROM OIL WELLS.

APPLICATION FILED MAY 9, 1904.

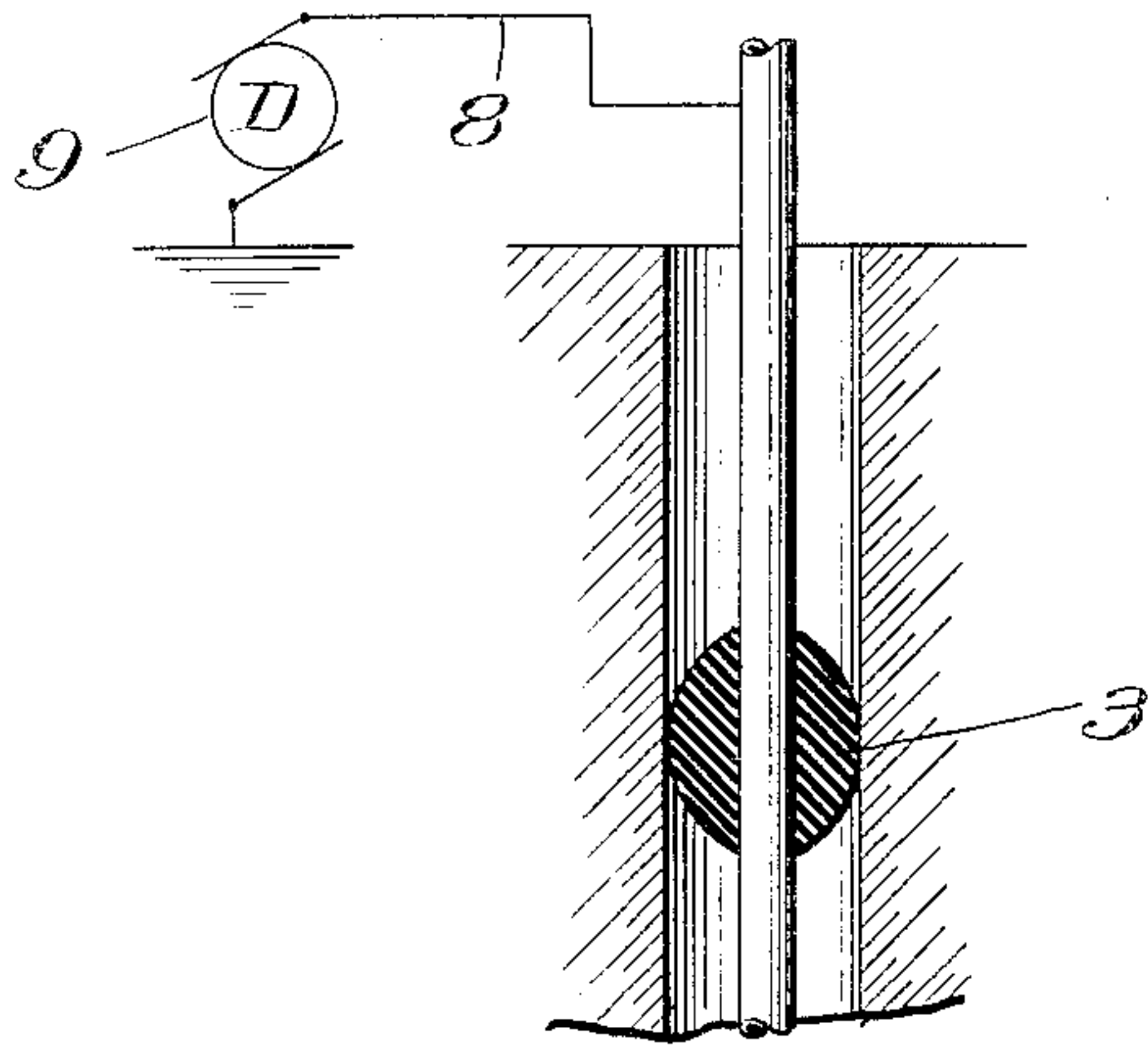
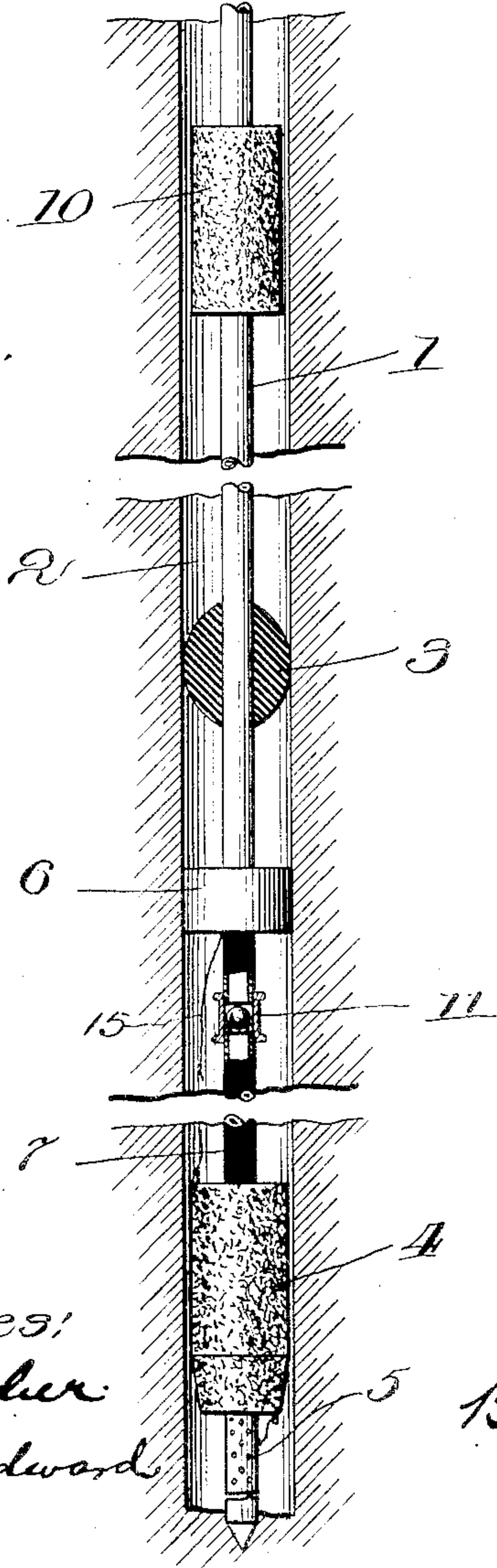
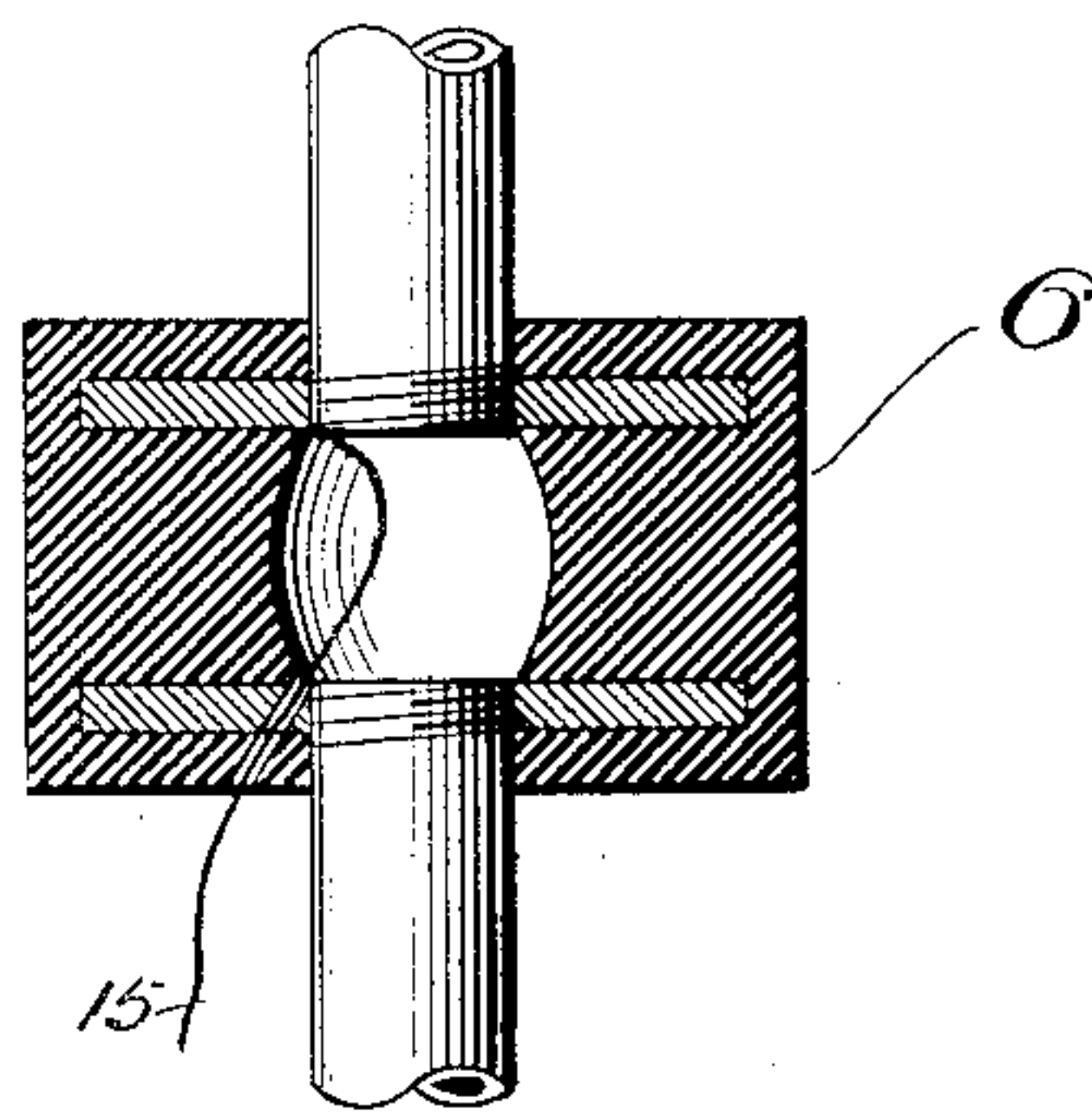


Fig. 1.

Fig. 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

BENJAMIN FULTON GARDNER, OF CHICAGO, ILLINOIS, ASSIGNOR OF
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PROCESS OF INDUCING A FLOW OF OIL FROM OIL-WELLS.

SPECIFICATION forming part of Letters Patent No. 782,233, dated February 14, 1905.

Application filed May 9, 1904. Serial No. 207,112.

To all whom it may concern:

Be it known that I, BENJAMIN FULTON GARDNER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Processes of Inducing a Flow of Oil from Oil-Wells, of which the following is a specification.

This invention relates to a novel process of inducing the flow of oil from oil-wells; and it is equally adapted for old as well as new wells.

The process consists, essentially, in producing a pressure at the bottom of the well by means of heat, and it can be carried out conveniently by the apparatus illustrated in the accompanying drawings, in which—

Figure 1 is a diagrammatic view showing the apparatus in a well. Fig. 2 is a sectional view of the packer.

Referring to the drawings, an oil-tube 1 is supported in a well 2 by any suitable means, insulated from the wall of the well. For this purpose I may use wooden blocks 3, impregnated with some insulating material. An electric heater 4 of suitable character is located above the bottom of the well and adjacent to the oil-bearing strata, and the tube is perforated below the heater at 5 to permit the inflow of oil. A packer 6 of suitable character closes the well above the oil-bearing strata, and between this packer and the heater the tube 1 is covered with insulating material 7. An electric conductor 8, leading from a dynamo 9 or other source of electric energy, carries the current to the tube 1, which acts as the electric conductor as far as the packer, and an insulated wire 15 completes the circuit to the heater 4. From the heater the circuit is completed through the lower end of the tube and the ground.

In practice the heat radiated from the heater

will convert whatever water may be located at the bottom of the well into steam, or in the absence of water it will vaporize the oil, and the pressure thereby created at the bottom of the well below the packer will be sufficient to force the oil into the tube through the perforations 5 and out at the top of the tube. In deep wells it may be desirable to provide one or more additional heaters at suitable intervals to act as a booster for the oil, and I may provide one or more check-valves 11 in the tube to hold the column of oil.

My heater will also prevent the formation of solid paraffin at the bottom of the well, and hence the flow of oil will not be thereby shut off or retarded.

I do not limit myself to the particular means herein shown and described for working my process, and while I make no claim for the apparatus in this application I do reserve the right to cover the same in a separate application.

Without limiting myself to the exact construction and arrangement of parts herein shown and described, what I claim, and desire to secure by Letters Patent, is—

1. The herein-described process for inducing a flow of oil from an oil-well which consists in producing a pressure by heat at the bottom of the well.

2. The herein-described process for inducing a flow of oil from an oil-well which consists in vaporizing the oil or converting the water into steam at the bottom of the well by the application of heat to produce sufficient pressure to cause the oil to flow up from the bottom of the well.

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