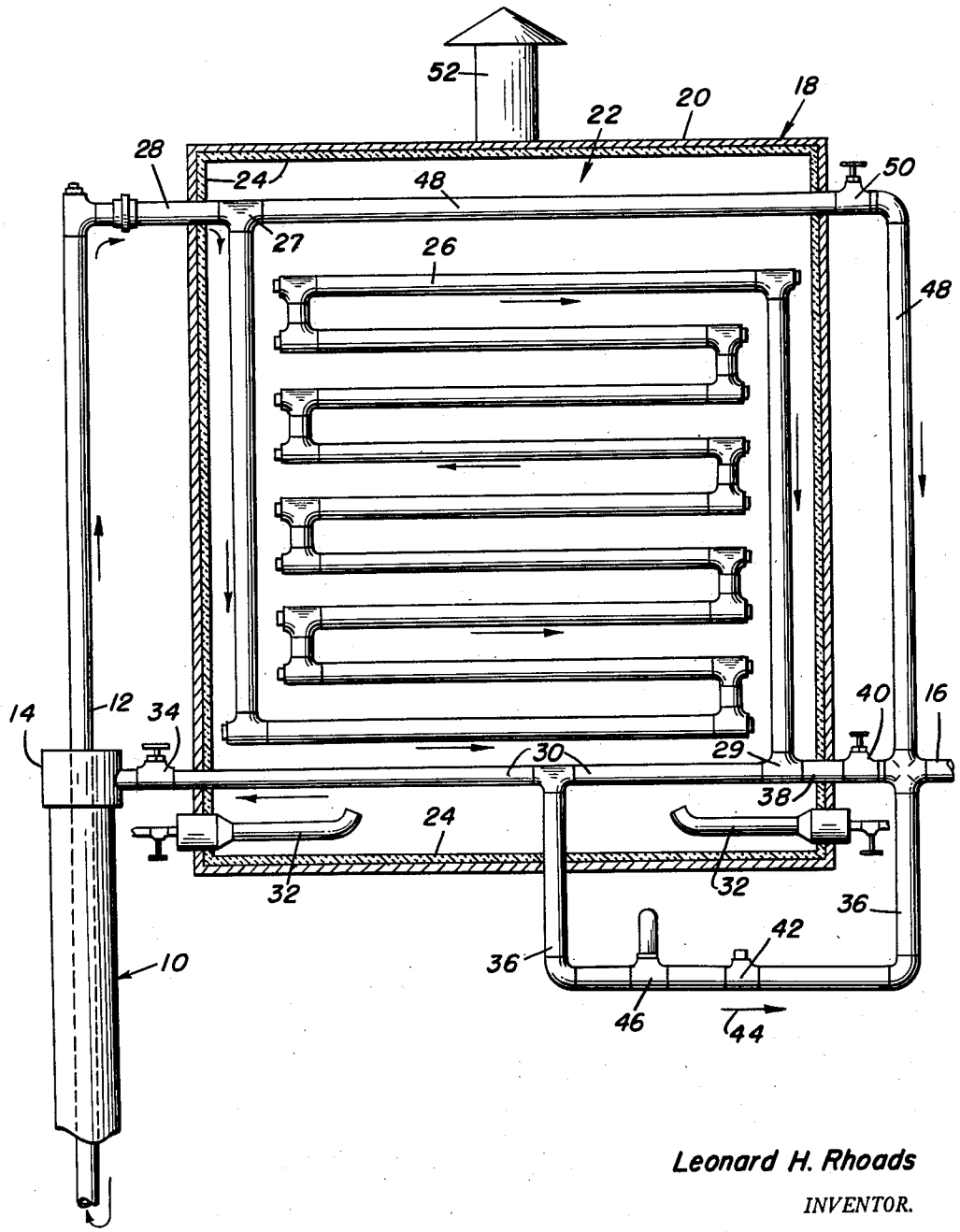
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PARAFFIN REMOVAL SYSTEM FOR WELLS

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PARAFFIN REMOVAL SYSTEM FOR WELLS

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1 Claim. (Cl. 166—17)

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This invention relates to new and useful improvements and structural refinements in paraffin removal systems for oil wells, and the principal object of the invention is to disintegrate formations of paraffin in the lead line between the well and a storage tank, to disintegrate formation of paraffin in the rod and tubing, and to rejuvenate, so to speak, the formation at the bottom of the well so as to facilitate continuous output.

The above objects are achieved by the provision of an apparatus for heating the oil as it passes out of the well and for recirculating the heated oil through the well, pipe or line in which disintegration of paraffin is to be effected, some of the advantages of the invention residing in its simplicity of construction, in its efficient and dependable operation, and in its adaptability for use on wells of different types.

With the above more important objects and features in view, and such other objects and features as may become apparent as this specification proceeds, the invention consists essentially of the arrangement and construction of parts as illustrated in the accompanying drawings, in which:

The figure is a vertical sectional view of the invention applied to an oil well, the various pipes, lines and fittings being illustrated in elevation.

Referring now to the accompanying drawings in detail, the general reference character 10 designates a conventional oil well casing containing the tubing 12 which extends upwardly and outwardly from the casing through a cap 14 at the upper end of the latter, while 16 designates an outlet tube which, if the invention were not present, would extend from the tubing 12 to a storage tank (not shown).

The invention resides in the provision of an apparatus which is designated generally by the reference character 18 and includes a housing or cabinet 20 defining a heating chamber 22 which has insulated walls as indicated at 24 and contains a heating coil 26. The inlet of this coil is connected by a T-coupling 27 and a nipple or short pipe 28 to the upper end of the tubing 12, it being noted that the nipple or pipe 28 projects outwardly from the housing 20, as shown. On the other hand, the outlet of the coil 26 is connected by a T-coupling 29 and by a pipe 30 to the cap 14 and is thereby in communication with the interior of the casing 10, as will be clearly apparent.

A plurality of heaters or burners 32 are provided in the housing 20 under the coil 26, these heaters being of any conventional type.

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A shut-off valve 34 is provided on the pipe 30 between the cap 14 and the T-coupling 29, while a by-pass line 36 communicates with the outlet line or tube 16 and is connected to the pipe 30 at a point between the shut-off valve 34 and the T-coupling 29, as shown.

In addition, the T-coupling 29 is connected by a short pipe 38 to the outlet tube 16, a shut-off valve 40 being provided on the pipe 38, the purpose of which will be hereinafter described.

The by-pass line 36 is equipped with a check valve 42 which permits flow in the direction of the arrow 44 only, and is also provided with a pressure responsive valve 46.

Finally, a conduit 48 extends from the T-coupling 27 to the outlet tube 16, by-passing the coil 26, as shown. A shut-off valve 50 is provided on the conduit 48, and it is to be noted that the housing 20 is equipped with a suitable stack 52 for discharging products of combustion from the heaters 32 into the atmosphere.

When the invention is to be placed in use for disintegrating accumulation of paraffin in the tubing 12, the heaters 32 are energized, oil traveling upwardly through the tubing 12 will pass into the heating oil 26 and will become substantially heated, so that when it subsequently travels through the pipe 30 into the casing 10, the heated oil will disintegrate the formation of paraffin in the casing as well as in the tubing 12. This disintegrating process may be continued by simply recirculating oil through the coil 26 and through the well casing and tubing, until the desired results are achieved.

In the event the oil in the coil 26 should become over heated or otherwise subjected to excessive pressure, the pressure responsive valve 46 will be automatically opened, thus permitting the oil to travel directly from the coil 26 into the outlet tube 16 through the by-pass 36.

It is to be noted that the recirculation of heated oil through the casing 10 and tubing 12 will also "rejuvenate" the formation at the bottom of the well, thus assuring continued output.

When the invention is to be used for disintegrating paraffin formation in the outlet tube 16, that is, between the well and a storage tank, the valve 34 and the valve 50 are closed while the valve 40 is opened, thus causing oil to travel from the tubing 12 through the coil 26 and through the pipe 38 directly into the outlet tube 16.

Finally, when the use of the invention is not desired and oil is to be delivered from the well directly to a storage tank while by-passing the heating coil 26, the valve 50 may be opened and the valve 40 closed, thus resulting in the passage

of oil from the tubing 12 through the conduit 48 into the outlet tube 16.

It is believed that the advantages and use of the invention will be clearly understood from the foregoing disclosure and accordingly, further description thereof at this point is deemed unnecessary.

While in the foregoing there has been shown and described the preferred embodiment of this invention, it is to be understood that minor changes in the details of construction and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as claimed.

Having described the invention, what is claimed as new is:

In an oil well apparatus, an oil delivery and paraffin removal system comprising a heated chamber, an oil heating coil provided in said chamber and having upper and lower ends, a T-coupling provided at each end of said coil, an oil inlet pipe extending from tubing of a well and connected to the coupling at the upper end of the coil, an oil return pipe extending from the coupling at the lower end of the coil to a well casing,

an oil delivery pipe extending from the last mentioned coupling to a storage tank, a by-pass pipe extending from the coupling at the upper end of said coil and connected to said delivery pipe at a point outside of said chamber, a shut-off valve on said by-pass pipe, a second shut-off valve on said return pipe, and a third shut-off valve on said delivery pipe at a point between the by-pass pipe and the coupling at the lower end of said coil, whereby oil flowing through said inlet pipe may be routed selectively through the by-pass and delivery pipes, through the coil and delivery pipe, and through the coil and return pipe.

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