April 29, 1952 J. C. TRIPPLEHORN 2,595,025

SPIRALED PARAFFIN REMOVER FOR OIL WELLS

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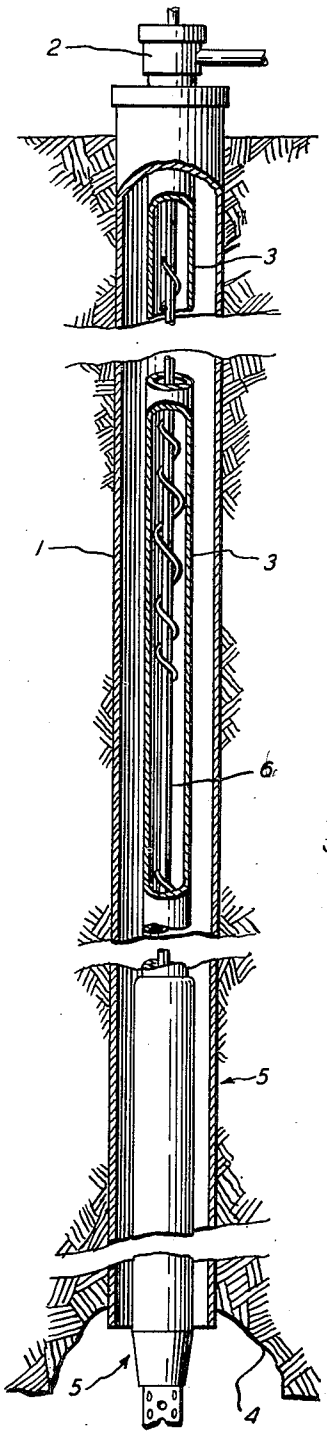


Fig. 1.

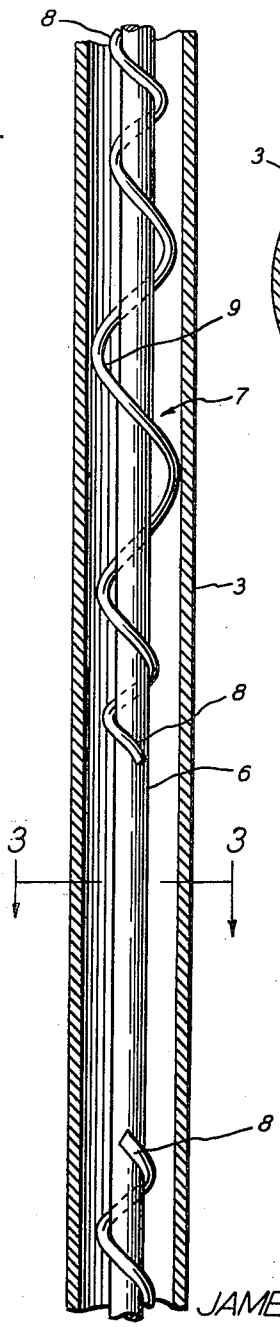


Fig. 2.

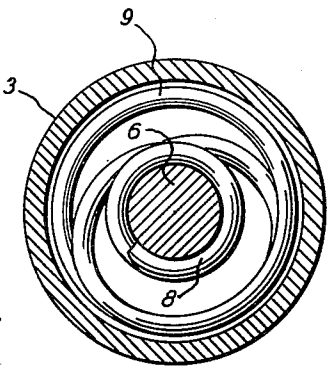


Fig. 3.

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SPIRALED PARAFFIN REMOVER FOR OIL WELLS

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Application August 23, 1947, Serial No. 770,229

4 Claims. (Cl. 166—18)

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This invention relates to paraffin removers for oil wells and has reference to a spiraled construction for attachment to the rods of pumping wells. This application relates in part to my copending application, Serial No. 735,725, filed March 19, 1947, now abandoned.

An object of the invention is to provide an arrangement and construction of the referred to class capable of operation in well tubing which is not of a uniform diameter.

Another object of the invention is to provide a spiraled paraffin remover of the referred to class which will not catch or become lodged at the joints between lengths of tubing by reason of its resilient construction.

A further object of the invention is to provide, in addition to the foregoing, a remover which may be engaged on the rods of wells without clips, welding, or other conventional means.

These and other objects will become apparent from the following description of an exemplary form of the invention shown in the accompanying drawings, wherein:

Figure 1 is a vertical sectional view of an oil well and showing units comprising the present invention positioned on the well sucker rod.

Figure 2 is an enlarged vertical sectional view of a portion of the tubing or sucker rod illustrated in Figure 1, and particularly showing the location and arrangement of the spiraled units comprising the present invention.

Figure 3 is a further enlarged lateral sectional view taken on lines 3—3 of Figure 2.

A typical pumping oil well, such as shown in Figure 1, includes a string of casing 1, a casing head 2 above the earth's surface, a string of tubing 3 extending downwardly from the said casing head into the well cavity 4, and a pump assembly 5 secured to the lower end of the said tubing and within or above the said well cavity. Within the tubing 3 there is a string of sucker rods 6 which are actuated by means (not shown) for imparting reciprocating action to the pump assembly 5.

As oil is pumped upwardly through the pump 5 and tubing 3, paraffin accumulates on the inner surface of the said tubing, and over a period of time so constricts the central opening that the paraffin must be removed. The present invention is comprised of multiple units for attachment to the sucker rods 6 and are capable of reciprocating movement near the inner surface of the tubing 3 to prevent accumulation or to remove paraffin.

Each unit of the invention is comprised of a

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spiral of strong resilient material, such as wire spring steel, and is of relatively small diameter at each end; whereas the diameter of the helix at its central portion is slightly less than the inside diameter of the tubing 3. For identifying the parts of the invention, the spiral or helix is generally designated by the numeral 7, the ends of reduced diameter by the numeral 8, and central or intermediate diameter by the numeral 9. The inside diameter of each end of the helix is normally less than the outside diameter of the rod 6, thereby providing frictional engagement of the unit in place.

As the rod 6 is lowered into the tubing 3, the units 7 may pass through asymmetric diameters in the said tubing and will pass the tubing joints (not shown) by reason of the flexibility and compressibility of the large intermediate diameters 9.

In operation, the units 7 are preferably spaced on the rod 6 at distances substantially equal to the stroke of the said rod, and thus provide a continuous movement along the entire inner surface of the tubing 3. As shown in all of the figures, the greatest outside diameter 9 of each unit 7 is slightly less than the inside diameter of the tubing 3, and since the units are not in sliding contact with the wall of the tubing 3, friction therebetween is reduced or eliminated.

It is obvious that the invention is not limited to the form of the construction shown, but may be employed in many ways within the scope of the appended claims.

What is claimed is:

1. A spiraled paraffin remover adapted to engage a sucker rod within a well tubing, comprising: a round wire coiled into a helix, at least one coil of the helix being of uniform diameter, said uniform diameter being normally less than the diameter of the rod and being expansible to frictionally grip the rod when mounted thereon, and at least another coil of the helix being of a uniform diameter substantially equal to the inside diameter or the tubing.

2. A spiraled paraffin remover as defined in claim 1, and wherein the diameter of the last said coil is slightly less than the diameter of the well tubing.

3. Means for removing paraffin from the inner wall of a well tubing having a reciprocating sucker rod therein, said means comprising a multiple of coiled wire helixes mounted on the rod and spaced thereon at distances substantially equal to the length of the sucker rod stroke, each said helix being comprised of a round wire coiled into said helix shape, at least one coil of the helix

being of uniform diameter, said uniform diameter being normally less than the diameter of the rod and being expansible to frictionally grip the rod when mounted thereon.

4. A spiraled paraffin remover adapted to engage a sucker rod within a well tubing, comprising: a round wire coiled into a helix and having the end coils thereof of uniform diameter, said uniform diameters being normally less than the diameter of the rod and being expansible to frictionally grip the rod when mounted thereon, and one of the intermediate coils of said helix being of a uniform diameter substantially equal to the inside diameter of the tubing.

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