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PARAFFIN REMOVING AND PREVENTING APPARATUS

Filed July 10, 1950

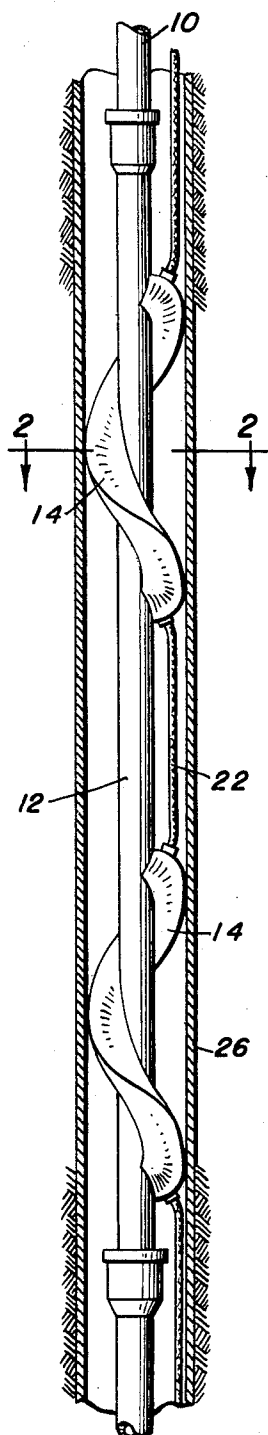


Fig. 1

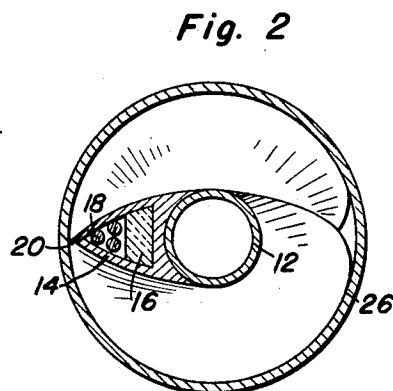


Fig. 2

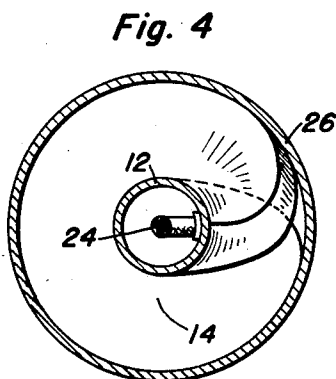


Fig. 4

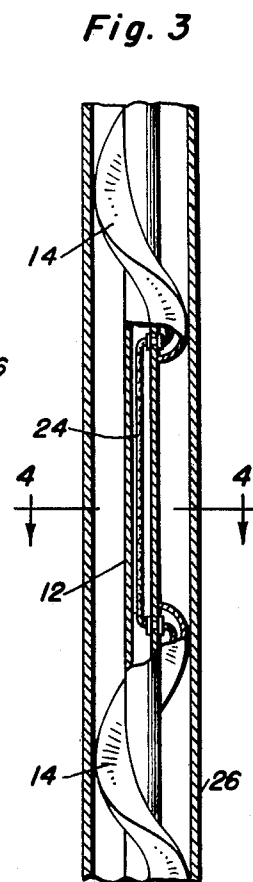


Fig. 3

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PARAFFIN REMOVING AND PREVENTING APPARATUS

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5 Claims. (Cl. 166—17)

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This invention relates to new and useful improvements in oil well apparatus and the primary object of the present invention is to provide a device for removing paraffin from the inner walls of a well tubing and which will also tend to prevent the formation of paraffin on the inner walls of a well casing or tubing.

Another important object of the present invention is to provide a hollow spiral blade permanently attached to a sucker rod and having an electrical heating unit mounted therein that will prevent the formation of paraffin on the inner walls of an oil well casing or tubing.

A further object of the present invention is to provide a paraffin removing and preventing apparatus including a sucker rod having a plurality of longitudinally spaced hollow spiral blades thereon with an electrical heating unit in each blade and with the heating units of adjacent blades connected by electrical connectors that are disposed either within or exteriorly of the sucker rod.

A still further aim of the present invention is to provide a paraffin remover and preventing device that is simple and practical in construction, strong and reliable in use, efficient and durable in operation, inexpensive to manufacture, and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a vertical sectional view of a well tubing and showing the present invention inserted therein;

Figure 2 is an enlarged transverse horizontal sectional view taken substantially on the plane of section line 2—2 of Figure 1;

Figure 3 is a view similar to Figure 1, but showing the sucker rod and parts of adjacent blades broken away and with electrical connectors being adjacent blades extending through the sucker rod; and

Figure 4 is an enlarged transverse horizontal sectional view taken substantially on the plane of section line 4—4 of Figure 3.

Referring now to the drawings in detail, wherein for the purpose of illustration, there is disclosed a preferred embodiment of the present invention, the numeral 10 represents a sucker rod one section, 12, of which supports a plurality of longitudinally spaced, spiral and hollow blades

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14. The blades 14 are substantially V-shaped in cross-section, as shown in Figure 2, and the blades are permanently attached to the outer periphery of the section 12 by any suitable means, such as welding or the like.

A spiral insulating strip 16 is received within each blade and an electrical heating unit 18 is also received within each blade and is located between the strip 16 and the sharpened edges 20 of the blades.

The heating units of adjacent blades are electrically connected by insulated conductors 22 that are disposed exteriorly of the sucker rod and which extend through apertures in the blades, or else, the conductors 24 are disposed within the sucker rod section 12 and extend through registering openings in the rod section 12 and the blades 14 as shown in Figures 3 and 4.

In practical use of the present invention, the heating unit in the uppermost blade is connected to a suitable source of electric current so that all heating units will be energized to prevent the formation of paraffin on the inner walls of a well casing or tubing 26 in which the sucker rod is received. Furthermore, a rotation of the sucker rod will remove any paraffin tending to collect on the inner walls of the tubing or casing.

A thermostatic control is electrically connected to the conductors to prevent the heating units from becoming overheated.

In view of the foregoing description taken in conjunction with the accompanying drawings it is believed that a clear understanding of the construction, operation and advantages of the device will be quite apparent to those skilled in this art. A more detailed description is accordingly deemed unnecessary.

It is to be understood, however, that even though there is herein shown and described a preferred embodiment of the invention the same is susceptible to certain changes fully comprehended by the spirit of the invention as herein described and the scope of the appended claims.

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

1. For use with an oil well tubing, a sucker rod having a hollow spiral blade thereon, and a heating unit within said blade.

2. A device for preventing the formation of paraffin on the inner walls of a well tubing and for removing paraffin from the inner walls of a well tubing, said device comprising a sucker rod, a hollow spiral blade on the sucker rod, and an electrical heating unit within the blade and connected to a source of electric current.

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3. A device for preventing the formation of paraffin on the inner walls of a well tubing and for removing paraffin from the inner walls of a well tubing, said device comprising a sucker rod, a plurality of longitudinally spaced spiral blades permanently attached to the sucker rod, said blades being hollow, and a heating unit within each blade, the heating units of adjacent blades being connected together.

4. A device for preventing the formation of paraffin on the inner walls of a well tubing and for removing paraffin from the inner walls of a well tubing, said device comprising a sucker rod, a plurality of longitudinally spaced spiral blades permanently attached to the sucker rod, said blades being hollow, a heating unit within each blade, and electrical conductors between the heating units of adjacent blades and located within the sucker rod.

5. A device for preventing the formation of paraffin on the inner walls of a well tubing and

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for removing paraffin from the inner walls of a well tubing, said device comprising a sucker rod, a plurality of longitudinally spaced spiral blades permanently attached to the sucker rod, said blades being hollow, a heating unit within each blade, and electrical conductors connecting the heating units for adjacent blades, said conductors being disposed exteriorly of said sucker rod.

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