

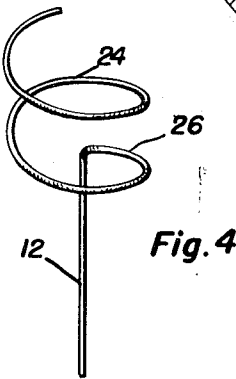
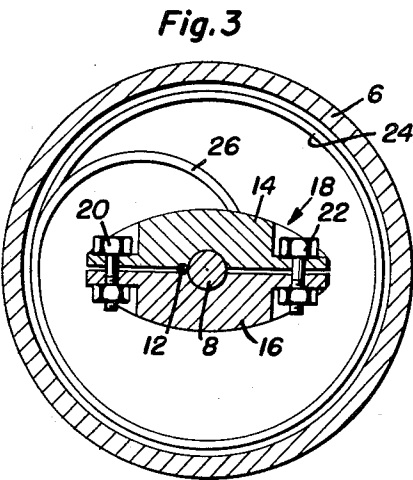
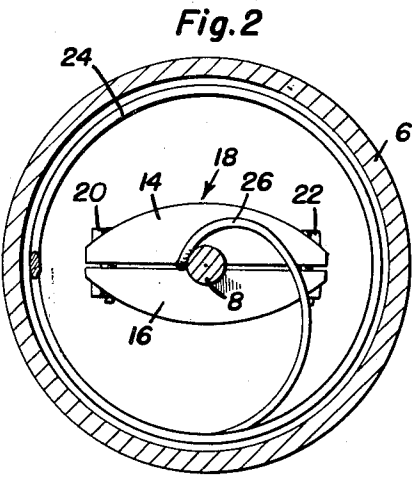
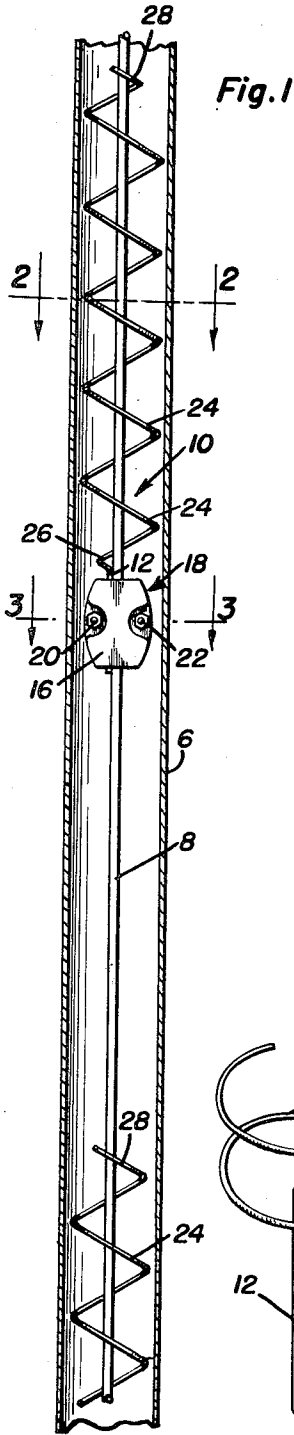
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MEANS TO PREVENT THE ACCUMULATION OF PARAFFIN IN TUBING

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MEANS TO PREVENT THE ACCUMULATION
OF PARAFFIN IN TUBING

Carl H. Besse, Hobbs, N. Mex., assignor, by direct and mesne assignments, of forty-two and one-half per cent to T. S. McCarty, Odessa, ten per cent to J. G. Henderson, Odessa, and five per cent to C. H. McHugh, Sundown, Tex.

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3 Claims. (Cl. 166—176)

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The present invention relates to improved ways and means to cope successfully with the paraffin problem in its relation to oil well tubing and has more specific reference to a simple structural device which minimizes the accumulation of paraffin to start with and thereafter serves to scrape and remove same if it succeeds in adhering to the interior wall of the tubing.

It is a matter of common knowledge that so-called paraffin removers for oil well tubing are not new. As a matter of fact, some of these devices are characterized by reciprocable coil spring means with the convolutions adapted to have wiping contact with the surface of the tubing. Most of these prior art devices are constructed to be brought into play only after the rods are pulled from the tubing which means use of the device after a considerable coating of paraffin has accumulated on the tubing. The invention at hand is distinct in that it is not so much constructed for removing the paraffin which has formed in the tubing but is intended to keep the paraffin from forming as much as possible in the first place so that the paraffin is carried from the tubing by the flow of fluid from the well and, in addition, to obviate the necessity of pulling the rods from the tubing.

More specifically, the invention has to do with the combination of well tubing, a sucker rod reciprocable therein, a steel coil spring having its convolutions in wiping and scraping contact with the interior of the tubing and clamp means for connecting and maintaining one end of the coil spring means on the sucker rod.

From a more specific structural standpoint, the invention has to do with an especially designed coil spring paraffin preventer which is characterized by a clamp connected with the sucker rod and anchoring one straight end portion of the length of steel wire wherein the adjacent portion of the latter spirals from the axial center and merges into and joins with helical coils, the outermost part of which is reduced to embrace the sucker rod.

Other objects, features and advantages will become more readily apparent from the following description and the accompanying sheet of illustrative drawings.

In the drawings:

Figure 1 is a view in section and elevation showing the fragmentary portion of a section of oil well tubing and showing a complete paraffin preventer and the manner in which it is used and showing, in addition, a portion of another one therebeneath.

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Figure 2 is an enlarged horizontal cross-section taken on the plane of the line 2—2 of Figure 1, looking in the direction of the arrows.

Figure 3 is a cross-section on the line 3—3 of Figure 1 also looking in the direction of the arrows.

Figure 4 is a fragmentary elevational view showing one end of the coiled wire member or means.

Referring now to the drawings by way of reference numerals and to the preferred embodiment of the invention shown in the drawings and with reference to Figure 1 the numeral 6 denotes a portion of a length of oil well tubing and the numeral 3 designates the reciprocable sucker rod therein. The invention at bar is clamped on and forms a part of the sucker rod and is used while the oil is being pumped through the tubing to the surface. The coiled wire means is denoted by the numeral 10 and comprises a length of steel wire of appropriate resiliency and gage. The lower end is linearly straight and provides an attaching shank as at 12. This shank is clamped between the components or sections 14 and 16 of the two-part sucker rod clamp 18 as best shown in Figure 3. Actually, the shank 12 parallels and is in direct contact with the sucker rod and is secured between the clamping members by the bolt and nut assemblies 20 and 22 in an obvious fashion. The main convolutions which are uniform helices are denoted by the numerals 24 and they are diametred to have proper associable relation with the interior surface of the tubing 6. The lowermost convolution is joined with the shank by way of a properly curved spiral or extension 26. The latter extension has a re-entrant or return bend which joins with the aforementioned straight shank 12 and locates the shank in an axially centered position. The uppermost convolution is formed with a reduced terminal 28 which suitably embraces the sucker rod in the manner shown.

It is within the purview of the herein revealed inventive concept to attack the oil well paraffin problem by pursuing a procedure wherein the rods are not pulled but, where instead, the paraffin preventer is carried by and forms a part of the reciprocatory sucker rod. This means the use of a preventer and remover of the coiled-type herein covered and which is characterized by a series of longitudinally spaced uniform helical convolutions reduced at one end as at 28 to embrace the sucker rod and having a straight portion or shank 12 at the opposite end connected

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with the lowermost convolution by way of a spiral twist or turn 26, plus the clamp.

It is thought that persons skilled in the art to which the invention relates will be able to obtain a clear understanding of the invention after considering the description in connection with the drawings. Therefore, a more lengthy description is regarded as unnecessary.

Minor changes in the shape, size and arrangement of details coming within the field of invention claimed may be resorted to in actual practice, if desired.

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

1. In combination, a sucker rod, and means detachably and adjustably mounted on said sucker rod for constant cooperation with interior surfaces of well tubing and serving to minimize the likelihood of paraffin depositing itself on surfaces of the tubing and so that the rods do not have to be pulled to remove the paraffin from the walls of the tubing, said means comprising a length of wire having convolutions concentrically surrounding the sucker rod and of outside diameters such that they have associated scraping relation in respect to the interior surfaces of said tubing, one end-most convolution having an extension radiating from the end of said latter convolution and having a return bend terminating in a substantially straight terminal axially disposed and paralleling said sucker rod, and clamp means embodying sucker rod and sections detachably and adjustably embracing the sucker

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rod, said terminal being clampingly held between said clamp sections.

2. The structure defined in claim 1, and wherein the other endmost convolution, the uppermost of the over-all convolutions, is reduced in diameter and therefore is of a diameter less than that of the other convolutions and is free of direct retentive connection with said sucker rod.

3. An attachment for a sucker rod comprising a length of wire coiled between its ends to provide a plurality of uniformly sized helical convolutions, one endmost convolution of said wire having a linearly straight terminal which is axially disposed and provides an attaching shank, said attaching shank being adapted to reside in parallel direct metal-to-metal contact with a surface of the sucker rod with which it is cooperable, and clamp means adapted to completely embrace and bind said shank between the clamp means and sucker rod in a manner to thus bind and clamp the shank to the sucker rod, said clamp means embodying opposed complementary sections abutting each other and separably bolted together.

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