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W. R. CRALL
ANTIPARAFFIN SUCKER ROD
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2,453,199

Fig. 1

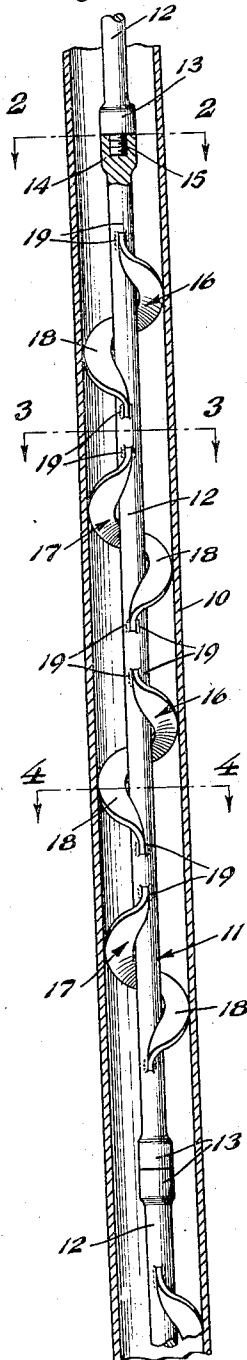


Fig. 2.

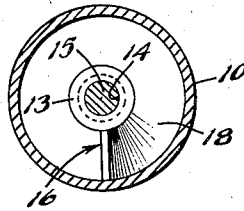


Fig. 3.

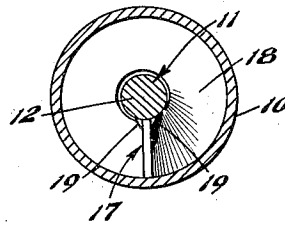
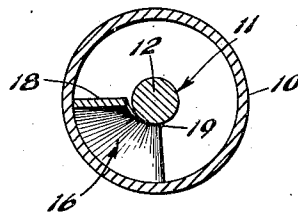


Fig. 4.



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2,453,199

ANTIPARAFFIN SUCKER ROD

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Application December 31, 1946, Serial No. 719,442

1 Claim. (Cl. 166—18)

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This invention relates to a paraffin remover of the type disclosed in Letters Patent of the United States No. 1,639,660 issued August 23, 1927, to A. E. Neumeyer, and more particularly to a type of tubing cleaner especially adapted for continuous scraping and defusing paraffin accumulating on the inside of the well casing while well is pumping.

In most paraffin base crude oil wells an accumulation of paraffin on the well tubing walls tends to retard the flow of oil to the surface and if let go such an accumulation will eventually stop the pump sucker rod from working up and down. The wells then have to be pulled and the paraffin steamed from both the sucker rod sections and the tubing, thus entailing great expense to the operation of such wells.

The primary object of this invention is the removal of paraffin while the well is operating and to put into solution the paraffin accumulation while the pumps are in operation.

Another object is to keep the paraffin in suspension in the liquid so that it may be pumped to the surface.

The above and other objects may be attained by employing this invention which embodies among its features a length of pump sucker rod provided at longitudinally spaced intervals with a spiral scraper each comprising a strip of flat sheet metal of a width sufficient to contact the wall of a well tubing bent into spiral form and welded adjacent opposite ends to its respective sucker rod length.

Other features embody reversing the spiral of adjacent scrapers so that the tendency of one blade to rotate the sucker rod length through contact with the well tubing will be counteracted by the adjacent blade.

In the drawings—

Figure 1 is a typical view representing a longitudinal section through a well tubing showing a portion of a pump sucker rod therein equipped with a set of my improved scrapers,

Figure 2 is a transverse sectional view taken substantially along the line 2—2 of Figure 1,

Figure 3 is a transverse sectional view taken substantially along the line 3—3 of Figure 1, and

Figure 4 is a similar view taken along the line 4—4 of Figure 1.

Referring to the drawings in detail a well tubing 10 has working therein in a conventional manner a pump sucker rod designated generally 11 of conventional form which is formed of a plurality of sucker rod lengths or sections 12 each of which is formed at opposite ends with a

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hub 13. The hub at one end of each rod length 12 is formed with an axial internally screw threaded socket 14 for the reception of an axial externally screw threaded stud 15 formed on the end of the hub 13 of an adjacent rod length.

The construction recited thus far is all conventional and is commonly employed in oil wells.

My invention embodies longitudinally spaced spiral scrapers designated generally 16 and 17 each comprising a flat strip of metal 18 of a width throughout its entire length equal to the space between the periphery of the sucker rod 11 and the well casing 10. These strips are bent spirally so that each extends around its respective sucker rod length 12 for 360° to form a scraper blade. Each strip or blade is welded adjacent its opposite ends as at 19 to its respective sucker rod length, but the portion of each strip or blade which lies between the ends is left free of any attachment to the sucker rod. It will thus be seen that as the sucker rod 11 reciprocates within the well tubing during the process of pumping the well, vibration will be created in the scraper blades through their contact with the tubing 10. It is to be noted that the scrapers 16 are all of the same spiral formation while adjacent scrapers 17 spiral in a reverse direction. This is done so that the tendency of the blades 16 to rotate the sucker rod sections or lengths will counteract the tendency of the blades 17 to turn the rod in the opposite direction, and hence any tendency for one length of sucker rod to unscrew from an adjacent section will be overcome.

In use it will be understood that the spiral scrapers may be employed throughout the entire length of the sucker rod and well tubing and that adjacent scrapers are placed close enough together so that the area of the casing engaged by each scraper will also be engaged by an adjacent scraper as the sucker rod is reciprocated during the pumping operation. In other words with each stroke of the sucker rod that part of the tubing being scraped by the scrapers 16 will also be engaged by a scraper 17. Due to the fact that the scrapers are anchored to the sucker rod lengths 12 only adjacent opposite ends it is obvious that not only is the strength of the sucker rod lengths preserved but the scraper blades 18 through their contact with the well tubing 10 will vibrate and thus agitate the liquid and effectively maintain the paraffin in suspension therein so that it will flow to the surface with the liquid.

While in the foregoing there has been shown and described the preferred embodiment of this invention, it is to be understood that minor

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changes in the details of construction, combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as claimed.

What is claimed is:

For use in a well tubing, a jointed pump sucker rod reciprocating axially of the well tubing and extending substantially throughout the entire length thereof, a paraffin remover for preventing the deposit of paraffin on the well tubing substantially throughout its length comprising a plurality of spiral strip metal scraper blades each having a width sufficient to bridge the space between the outer periphery of the rod and the inner periphery of the tubing and encircling each length of sucker rod between the joints thereof and being spaced from each other a distance less than the reciprocating stroke of the rod, each blade having a spiral about the rod of substantially 360° only, the spirals of every other blade

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extending in opposite directions, each blade contacting the well tubing throughout substantially its entire length, each blade adjacent its opposite ends being rigidly secured to the sucker rod length and the intermediate portions of the blades spaced from and being free from attachment to the rod for longitudinal flexing movement with relation to their respective sucker rod lengths.

WILLIAM R. CRALL.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,639,660	Neumeyer	Aug. 23, 1937
1,810,260	Swinford	June 16, 1931
1,891,615	Bostic	Dec. 20, 1932