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OIL WELL TUBING SCRAPER

Filed Dec. 29, 1960

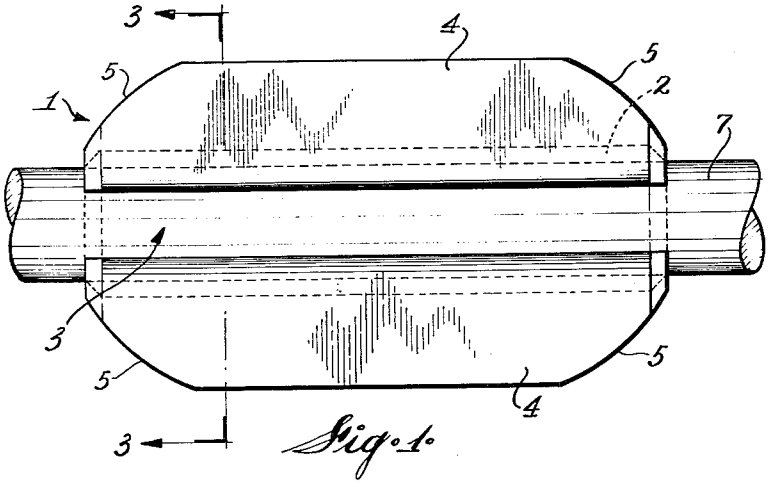

Fig. 1.

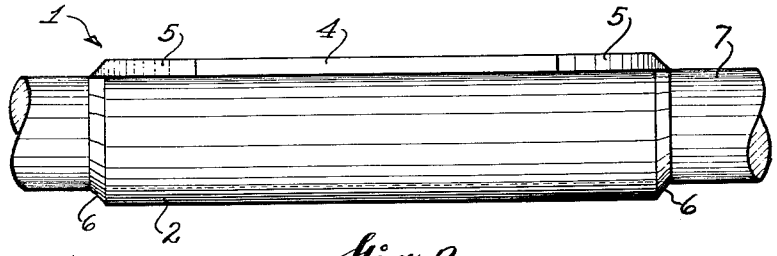

Fig. 2.

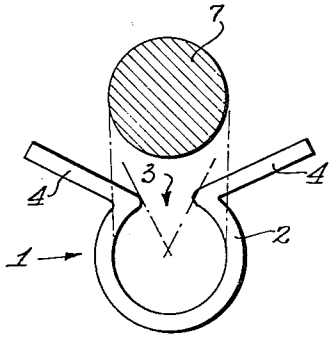

Fig. 4.

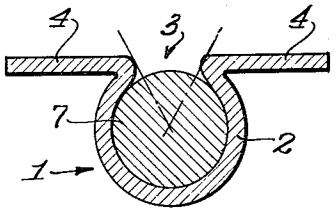

Fig. 3.

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OIL WELL TUBING SCRAPER

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This invention relates to oil well tubing scrapers.

It is common practice to mount scrapers on the sucker rods of oil well pumping equipment to maintain the interior surface of the tubing free from accumulations of paraffin and the like. It is desirable that such a scraper be subject to convenient and rapid attachment to the sucker rod, that it be firmly secured to the rod without damage to the rod, that it be removable and replaceable without damage to the rod, that it be of simple manufacture, and that, of course, it be of effective and satisfactory operation. It is, however, difficult to achieve all of these characteristics in a single structure.

It is an object of this invention to provide a tubing scraper which is of simple one-piece construction, which is attachable to a sucker rod and removable therefrom without danger of damage thereto, which may be attached to the sucker rod in the field in a rapid and convenient manner, and which is effective in operation.

The invention resides in a tubing scraper which comprises a unitary spring steel member having a tubular portion, an opening in said tubular portion and extending longitudinally from end to end thereof, and a scraper blade extending outwardly from each edge of said tubular portion defining said opening.

The invention will be described with reference to the accompanying drawing, in which—

FIGURE 1 is a side elevation of the scraper in association with a sucker rod,

FIGURE 2 is another side elevation of the scraper,

FIGURE 3 is a section on line 3—3 of FIGURE 1, and

FIGURE 4 is an end view of the scraper in position for attachment to a sucker rod.

In the drawing, 1 is a scraper in accordance with the invention and comprises a unitary plate member which may be of generally uniform thickness throughout. Preferably, the member is of metal such as spring steel.

The member 1 has a tubular portion 2 extending from end to end thereof, such tubular portion having a sucker rod entrance opening 3 extending from end to end thereof. The internal circumferential extent of the tubular portion 2 (in its normal unattached condition) is substantially greater than 180° and normally is greater than 240°, but less than 330°. Preferably, this circumferential extent is of the order of 290–320°.

Extending from each edge of the tubular portion 2 defining the opening 3 is a flat scraper blade 4. The blades 4, in the unattached position of the scraper, as shown in FIGURE 4, are in angular relation to each other. Each blade 4 extends from end to end of the tubular portion but preferably each end edge 5 thereof is tapered inwardly towards the tubular portion.

Preferably, also, the end edges of the tubular portion 2 are bevelled as indicated at 6.

The internal diameter of the tubular portion 2 (in its normal unattached condition) is slightly smaller than the diameter of the sucker rod 7 to which it is to be applied.

It will be apparent that, by applying pressure to the scraper blades 4, the two longitudinal halves of the scraper may be sprung apart to widen the opening 3 to a sufficient extent to permit passage therethrough of the sucker rod 7. In operation, a simple clamping jig is employed to apply such pressure and permit the scraper to be mounted in proper position on the sucker rod. On removal of the clamping jig, the tubular portion 2 is firmly clamped upon the rod due to its inherent spring action. As clearly shown in FIGURE 3, the scraper blades 4 are aligned when the scraper is mounted on the rod.

Since the scraper is attached to the sucker rod solely by spring tension and without welding or shrinking by heat treatment, there is no possibility of injury to the sucker rod. Adequate spring tension for rigid mounting is readily achieved by employing available material for the scraper such as heat treated spring steel. Moreover, such a means of attachment makes it possible to readily attach and remove the scraper from the sucker rod. Since only a simple clamping jig is required for mounting or dismounting the scraper, it is easily portable and such mounting and dismounting may be readily performed in the field.

Since the tubular portion 2 extends from end to end of the scraper blades and since its internal surface in cross-sectional extent greatly exceeds 180°, maximum fricitonal surface clamping area with respect to the sucker rod is provided. If desired, the internal surface of the subular portion may be roughened to improve its frictional contact.

I claim:

1. A scraper for oil well tubing comprising a unitary spring steel member having a tubular portion and an opening in said tubular portion extending longitudinally from end to end thereof, the internal circumferential extent of said tubular portion being greater than 240°, and a scraper blade extending outwardly from each edge of said tubular portion defining said opening each said blade having a length substantially greater than its width and having a free longitudinal edge constituting a scraping edge, said scraping edge lying radially beyond the external surface of said tubular portion.

2. A scraper for oil well tubing as defined in claim 1, each said scraper blade extending from end to end of said tubular portion.

3. A scraper for oil well tubing as defined in claim 1, said scraper blades being in angular relation to each other.

4. A scraper for oil well tubing as defined in claim 1, the internal circumference extent of said tubular portion being greater than 240° but less than 330°.

5. A scraper for oil well tubing as defined in claim 1, the internal circumferential extent of said tubular portion tion being of the order of 290–320°.

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