Dec. 4, 1956 P. POLSON 2,772,741

COMBINATION PARAFFIN SCRAPER AND ROD GUIDE

Filed June 20, 1952

Fig. 1.

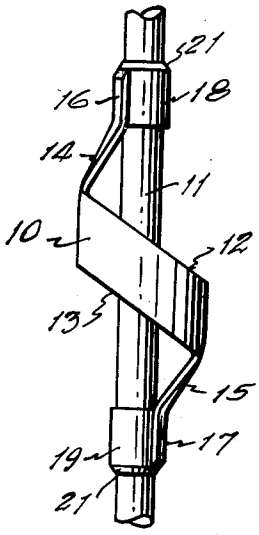


Fig. 2.

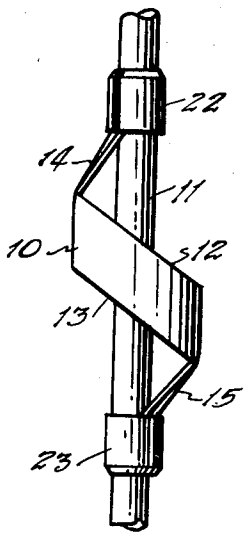


Fig. 5.

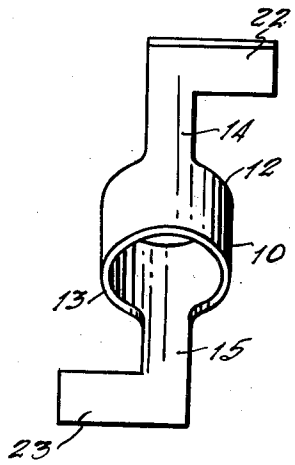


Fig. 3.

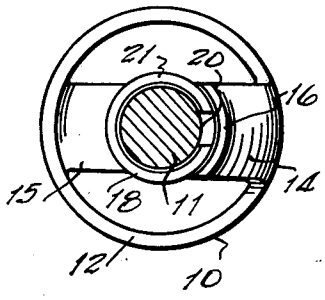


Fig. 4.

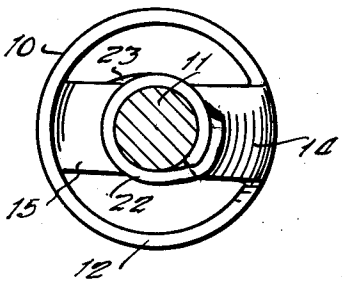
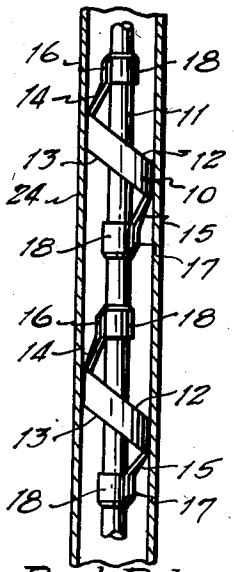


Fig. 6.



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COMBINATION PARAFFIN SCRAPER AND ROD GUIDE

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Application June 20, 1952, Serial No. 294,643

5 Claims. (Cl. 166—176)

This invention relates to oil well pumping equipment, and it has particular reference to paraffin scrapers for preventing or minimizing the accumulation of paraffin deposits on the inner surfaces of the well tubing during pumping operations, and its principal object resides in the provision of a device which effectively prevents static deposits of paraffin in the tubing and affords an efficient guide for sucker rods operating therein, a related device being disclosed in an abandoned application bearing Serial No. 140,003, filed by Paul Polson on January 23, 1950.

An object of the invention is that of providing a simple and economical structure which can be installed along the sucker rod at spaced intervals, as desired, and arranged thereon at different radial positions with respect to each other so as to insure the maximum efficiency in operation.

Another object of the invention resides in the provision of a paraffin scraper and sucker rod guide having a minimum of parts which materially minimizes the cost of production of the device and affords a structure which is not readily destructible so as to become dislodged and fall into the well to impair the pump or in anywise hinder its operation.

A further object of the invention is manifest in the provision of a paraffin scraper and sucker rod guide which is formed so that its presence at a plurality of spacings along the sucker rod will not excessively restrict the flow of the oil products through the tubing and unnecessarily burden the pump operating mechanism with its weight.

Broadly, the invention contemplates the provision of a combination rod guide and paraffin scraper which can be so arranged and spaced along the rod as to effectively scrape the inner surface of the tubing for the full extent of the pump stroke and prevent the rod from contacting the tubing wall.

While the foregoing objects are paramount, other and lesser objects will become manifest as the description proceeds, taken in connection with the appended drawings wherein:

Figure 1 illustrates the invention in elevation, showing one method of securing the same to a sucker rod, illustrated fragmentarily.

Figure 2 is another elevational view of the invention showing a different method of attachment to the rod.

Figure 3 is a plan view of the invention, as illustrated in Figure 1, showing a sleeve embracing the rod to which the scraper is welded.

Figure 4 is a plan view of the invention, as shown in Figure 2, in which a right-angular tab is formed with the shanks and turned about the rod.

Figure 5 is an elevational view of the invention formed with right-angular tabs on the outer ends of the shanks and installed in the manner shown in Figure 4, and

Figure 6 fragmentarily illustrates a typical installation

of a plurality of scrapers in a well tubing shown fragmentarily in vertical section.

Accordingly, the invention comprises a tubular blade **10** which is adapted to be arranged upon a sucker rod **11** and concentrically thereof, as shown in Figures 1 and 2, so that its opposing scraping edges **12** and **13** are oblique with respect to the axis of the tubular blade **10**. It is desirable that the opposing scraping edges **12** and **13** be inclined in angle slightly greater than 45 degrees so that the upper edge **12** on one side is below the lower edge **13** on the opposite side of the rod **11**. By this arrangement there can be a greater overlapping of the wiping or scraping action of the blade **10** than would be possible if the latter should be formed with the scraping edges in horizontal planes and provide for maximum fluid passage through the device. When a plurality of the units are spaced along the rod **11**, and oriented to different rotative positions with respect to each other, the wiping operations of each unit will be overlapped by its adjacent units.

Formed integrally with the opposing edges **12** and **13** of the blade **10** are upper and lower shanks **14** and **15** which are inclined inwardly toward the rod **11** and have their outer ends **16** and **17** bent outwardly so as to lie against collars **18** and **19** arranged upon the rod **11** and to which the members **16** and **17** are welded. These members are arcuate in transverse section to conform to the surface of the rod **11**, as illustrated in Figures 3 and 4.

The collars **18** and **19** are C-shaped in plan, as shown in Figure 3, having a gap **20** therein and having a bevelled outer surface **21**. The collars are formed on the rod **11** under relatively high pressure to insure rigidity. The outer ends **16** and **17** of the shanks **14** and **15** are welded along each longitudinal edge to the collars **18** and **19** over the gaps **20** therein, the collars thus absorbing the greater portion of the heat applied in the welding operation.

In Figures 2, 4 and 5 is illustrated a modified structure in which the shanks **14** and **15** have oppositely extending integral tabs **22** and **23** formed at right-angles thereto, as shown particularly in Figure 5. Otherwise the shanks **14** and **15** are identical with those shown in Figures 1 and 3. The shanks **14** and **15** are secured to the rod **11** by turning the tabs **22** and **23** thereabout so that the free ends thereof lap over a portion of the outer ends of the shanks **14** and **15** and welded thereto, in the manner shown in Figures 2 and 4. In this operation the rod **11** is also protected from the maximum welding heat, the greater portion of which is taken up by the shanks to which the tabs are secured.

The blades **10** are tubular in form and have their circumferential surfaces parallel to the axis of the rod **11** and conformable to the cylindrical inner surface of the tubing **24** in which they operate. The upper and lower edges **12** and **13** of the blade **10** are parallel to each other but are at an angle with respect to the axis of the blade. The external diameters of the blades **10** are slightly less than that of the tubing **24**, in order to insure free movement therein, as these members maintain the concentric arrangement of the rod **11**, and lubrication is provided by the oil flowing through the tubing **24**.

The scrapers can be spaced along the rod **11** as desired and where needed, but it is practicable to space the blades **10** so that the wiping or scraping action of each will slightly overlap the adjacent members. This spacing would depend primarily upon the length of the stroke of the pump. The radial arrangement of the blades **10** about the rod **11** may also be varied to obtain the maximum results and insure proper scraping action.

Manifestly, the structure herein shown and described

is capable of certain changes and modifications, from time to time, by persons skilled in the art without departing from the spirit and intent of the invention or the scope of the appended claims.

What is claimed is:

1. In a paraffin scraper and rod guide for oil wells, in combination with a sucker rod in a well tubing, a tubular circular element, the top and bottom edges of which are inclined to the vertical and parallel to each other, the said element being installed on said sucker rod in concentric relation thereto and having a diameter slightly less than that of said well tubing, a shank formed with each opposing edge of said tubular element and on opposite sides thereof, the said shanks being projected in opposite directions and inclined inwardly to be rigidly attached to said rod, and means forming parts of said shanks for securing the outer ends of said shanks to said rod.

2. In a paraffin scraper and sucker rod guide for oil wells, in combination with a sucker rod in an oil well tubing, a tubular cylindrical element adapted for installation at spaced intervals along and concentrically of said sucker rod, the said element having parallel top and bottom edges inclined to the vertical and having its wall parallel to the axis of said rod, a shank formed with each opposing edge and on each side of said element and inclined inwardly against said rod, and means embracing said rod for rigidly securing the outer ends of said shanks thereto.

3. In a paraffin scraper and sucker rod guide for installation at spaced intervals along and concentrically of a sucker rod within a well tubing, in combination with a sucker rod, a tubular cylindrical element, the top and bottom edges of which are parallel to each other and inclined to the vertical, and the side walls of which are parallel to the axis of said sucker rod, a supporting

shank integral with each edge and on diametrically opposite sides of said element, the said shanks being inclined inwardly and having their outer ends lying against said rod, and means embracing said rod for securing the said shanks thereto.

4. In a paraffin scraper and sucker rod guide for installation at predetermined spacings along and concentrically of a sucker rod operating in a well tubing, in combination, a tubular cylindrical element, the top and bottom edges of which are inclined to the vertical and parallel to each other, and the side walls of which are parallel to the axis of the sucker rod, and a pair of opposingly arranged shanks formed on opposite edges and on opposite sides of said element and inclined toward the axis thereof and against said rod providing means for securing said element thereto in concentric relation therewith.

5. In a combined paraffin scraper and sucker rod guide for installation in a well tubing at definite spacings along a sucker rod, the combination comprising a tubular circular element, the top and bottom edges of which are inclined to the vertical and parallel to each other, and the side walls of which are parallel to the axis of said rod, a shank formed with each opposing edge and at opposite sides of said element, the said shanks being inclined toward the axis of said element providing means for rigidly supporting the same concentrically on a sucker rod.

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