

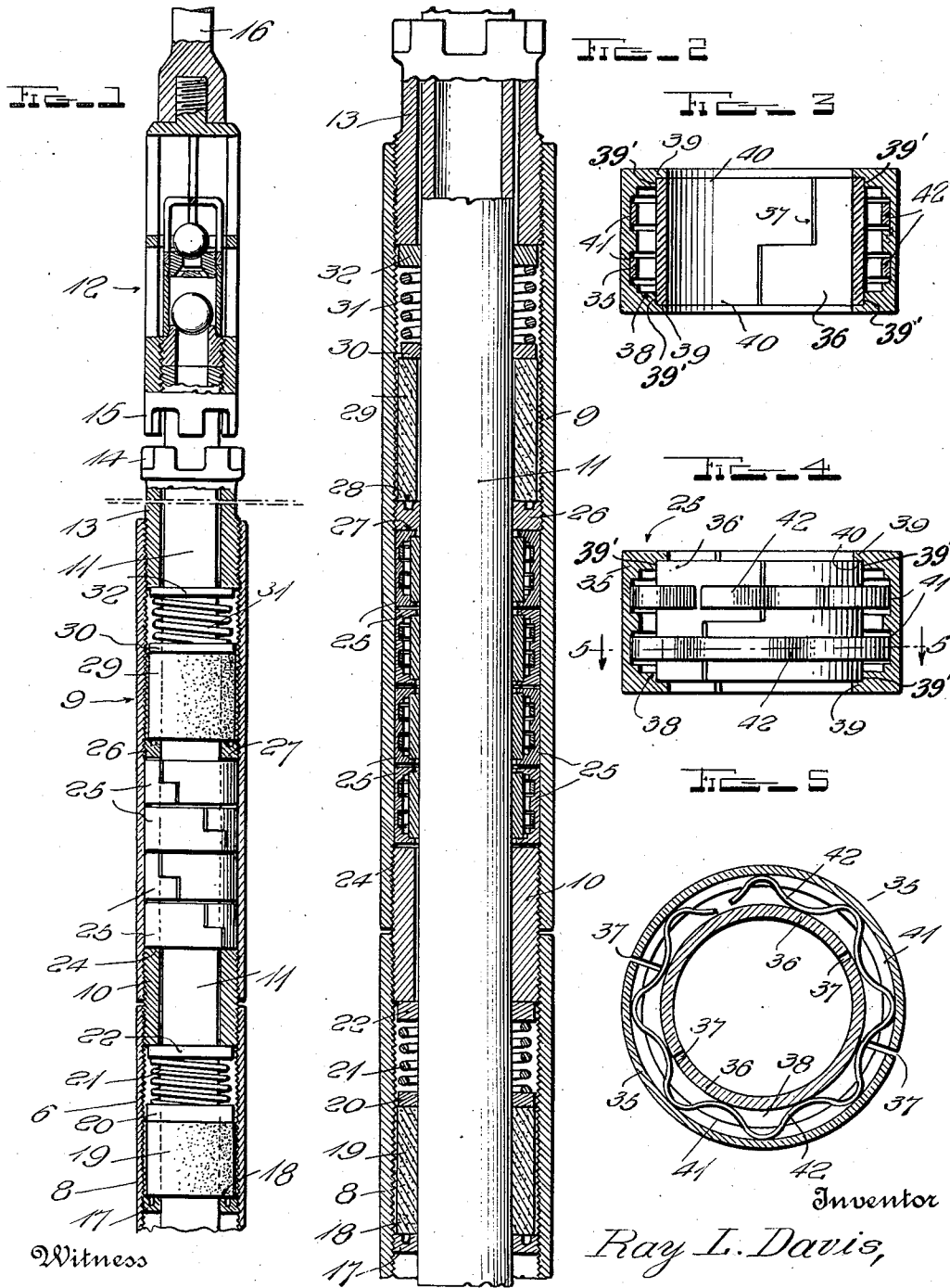
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WORKING BARREL PACKING MEANS

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UNITED STATES PATENT OFFICE

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WORKING BARREL PACKING MEANS

Application filed May 25, 1928. Serial No. 280,574.

The invention relates primarily to improvements in packings intended for pumps used in oil or other deep wells, and it is the object of such invention to provide a packing well adapted for use in a pump which is free from the usual cup leathers or analogous suction means carried by the reciprocating working barrel.

With the foregoing in view, the invention resides in the novel subject matter hereinafter described and claimed, description being accomplished by reference to the accompanying drawings.

Fig. 1 is a sectional view partly in elevation through the upper portion of a pump embodying my invention.

Fig. 2 is an enlarged sectional view through the packing means and associated parts.

Fig. 3 is a vertical sectional view through one of the packing rings.

Fig. 4 is a view of one of the packing rings showing the outer annulus thereof in section but illustrating the inner annulus and the springs in elevation.

Fig. 5 is a horizontal sectional view on line 5—5 of Fig. 4.

The drawings above briefly described, illustrate the preferred form of construction, and while this construction will be herein specifically explained, it is to be understood that within the scope of the invention as claimed, variations may be made.

The numeral 6 denotes in a general way, the upper portion of a stationary pump barrel, which barrel extends downwardly to a standing valve (not shown) and to an anchor, seating device or the like (not shown). The barrel 6 embodies a main body portion 8, a relatively short upper section 9, and a coupling sleeve 10 threaded into and connecting the adjacent ends of said body portion 8 and said upper section 9.

Extending into the barrel 6 through its upper end, is a working barrel 11 of conventional or other desired form. Preferably, this working barrel is provided with upper and lower traveling valves, the uppermost of which is shown at 12. This valve 12, herein illustrated, is of a construction covered

by my U. S. application Serial No. 280,572, filed May 25, 1928. Within the barrel section 9, I dispose compressible packing means and into the upper end of said section, I thread a follower sleeve 13 for compressing said packing or a portion thereof when said sleeve is threaded further into said section. This follower and the working barrel 11 are provided with co-acting means 14—15 which are normally widely separated from each other, said means being in the form of lugs. Preferably, the lugs 14 are integral with the upper end of the sleeve 13 and the lugs 15 are integral with the lower end of the cage of the traveling valve 12. This valve is connected in the usual way with the pump rod 16 and when this rod is disconnected at the top of the well and lowered sufficiently, the lugs 15 interengage the lugs 14. Thus, a driving connection is established between the working barrel and the follower sleeve 13, so that upon rotation of said working barrel by means of the pump rod 16, the follower sleeve 13 may be rotated to compress and tighten the packing means. This packing means is preferably of the construction now to be described.

17 denotes a ring nut threaded into the barrel body 8, the upper side of this ring nut constituting an upwardly facing shoulder 18 upon which appropriate compressible packing 19 rests. Upon the upper end of this packing, I have shown a washer 20 which contacts with the lower end of a coiled compression spring 21. The upper end of this spring is shown engaging another washer 22 abutting the lower end of the coupling sleeve 10, which sleeve end constitutes a downwardly facing shoulder. The upper end of sleeve 10 constitutes a second upwardly facing shoulder 24, and resting upon this shoulder, is a series of packing rings 25 which contact both with the interior of the barrel section 9 and the exterior of the working barrel 11. At the upper end of this series of packing rings, a second ring nut 26 is threaded into the barrel section 9, the lower side of this ring nut constituting a downwardly facing shoulder 27 for holding the rings 25 against ascent, while the upper side of said ring nut

constitutes a third upwardly facing shoulder 28 upon which a second compressible packing 29 rests. Contacting with the upper end of this packing is a washer 30 at the lower end of a coiled compression spring 31. Another washer 32 is shown at the upper end of said spring and abutting the lower end of the follower sleeve 13.

Due to the spring 21 forcing constantly downward upon the compressible packing 19, this packing is self adjusted to always remain in tight contact with the barrel body 8 and the working barrel 11. The same is true of the packing 29, but this packing may be tightened from time to time by effecting rotation of the follower sleeve 13 as above described, that is, by lowering the working barrel until the lugs 14—15 become interengaged, and then rotating the pump rod 16 to thread said sleeve 13 further into the barrel section 9. Due to features of construction hereinafter described, the packing rings 25 are self-adjusted to always remain in tight contact with the working barrel 11 and with the stationary barrel section 9, but rings of constructions other than that herein disclosed, may be used in some circumstances, and the rings may either be held against any vertical movement with the working barrel 11, or may be permitted a slight degree of vertical movement, as circumstances may dictate.

One of the packing rings 25 is detailed in Figs. 3, 4 and 5, and in the following description, reference is made only to these three views.

Ring 25 embodies an outer ring 35 and an inner ring 36, each transversely split as at 37 to permit slight variance in diameter as wear takes place. Ring 36 is split on stepped lines to prevent leakage from edge to edge thereof. The interior of the ring 35 is provided with a continuous channel 38 of transversely stepped form, and the inner edges of the side flanges or walls of this channel, are stepped, providing sealing faces 39 abutting the side edges 40 of the inner ring 36, and also providing inwardly facing continuous shoulders 39' which are adapted to abut the periphery of the inner ring 36, thereby preventing excessive radial movement of this ring within the outer ring 35 and consequently preventing longitudinal springing of any rod, barrel or the like 11 which may pass through the ring. The inner side of ring 35 is formed with circumferential grooves 41 which receive annular springs 42 disposed in the channel 38. These springs force outwardly upon the outer ring 35 to maintain it in tight contact with the barrel section 9, and they also force inwardly upon the inner ring 36 to hold the latter in sealing contact with the working barrel 11.

As above stated, the details herein disclosed are preferably followed, but within the scope

of the invention as claimed, numerous variations may be made.

I claim:—

In a packing, an inner sealing ring transversely split on stepped lines, an outer transversely split ring surrounding said inner ring and of greater axial dimension than the latter, the edges of said outer ring being provided with integral inwardly projecting circumferentially extending flanges, said flanges being stepped at their inner edges to provide annular sealing faces lying against the end faces of the inner ring and to provide annular inwardly facing shoulders to abut the periphery of said inner ring, thereby preventing excessive radial movement of said inner ring within the outer ring, and spring means between the two rings, acting inwardly upon the inner ring and outwardly upon the outer ring.

In testimony whereof I have hereunto affixed my signature.

RAY L. DAVIS.