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C. C. HOSMER

PACKER FOR OIL WELLS

Filed Sept. 15, 1922

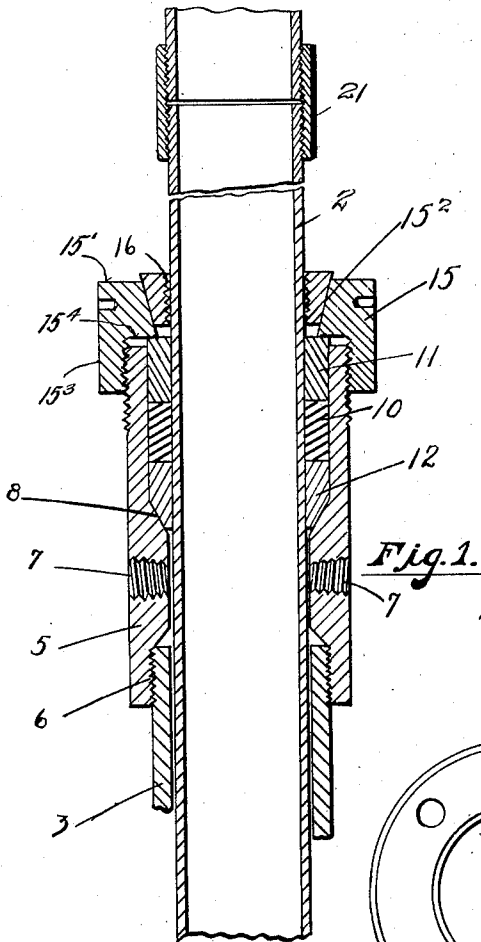


Fig. 1.

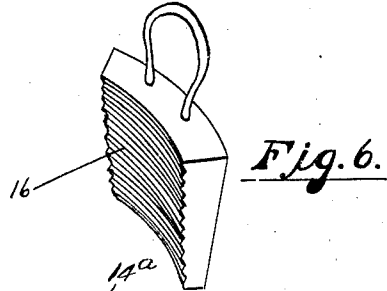


Fig. 6.

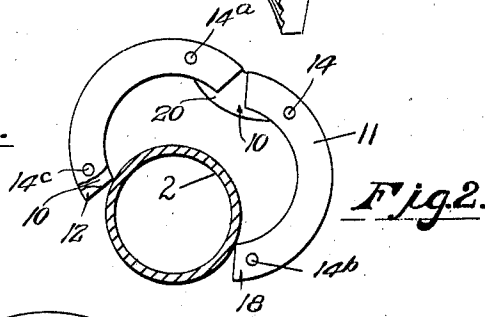


Fig. 2.

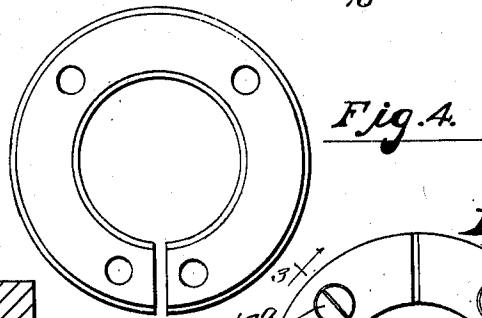


Fig. 4.

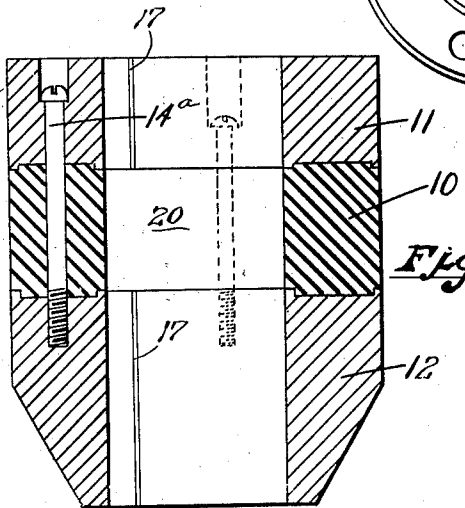


Fig. 3.

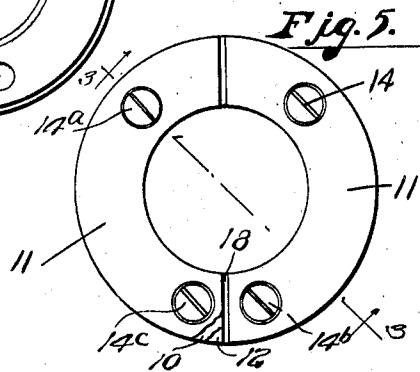


Fig. 5.

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UNITED STATES PATENT OFFICE.

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PACKER FOR OIL WELLS.

Application filed September 15, 1922. Serial No. 588,391.

To all whom it may concern:

Be it known that I, CHESTER C. HOSMER, a citizen of the United States, residing at Huntington Beach, in the county of Orange and State of California, have invented new and useful Improvements in Packers for Oil Wells, of which the following is a specification.

This invention relates to deep well apparatus and more particularly to casing heads and it is an object of the present invention to provide an extremely simple, substantial and practicable device for quickly and effectively packing casing heads.

It is another object to provide a unitary packing device for casing heads and to provide a device that may be applied with or without the usual spider and that can be set in tight position by utilizing the weight of pipe to press down on the packing rings.

It is another object of this invention to provide a packer for a casing head, in which the packer may be compressed by the weight of the casing or by means independently of the weight of the casing, or by both jointly, as may be desired.

The claims of the present application are limited to the packer, the casing head structure shown and described is claimed in my application for Letters Patent Serial No. 748,105, filed November 6, 1924.

Other objects and advantages will be made manifest in the following specification of an embodiment of the invention illustrated in the accompanying drawings, wherein:

Figure 1 is a central, longitudinal section through a suitable form of casing head showing the packing applied.

Figure 2 is a cross section through the casing showing the manner of applying the unitary packer.

Figure 3 is a central, longitudinal section through the packing unit on line 3—3 of Figures 4 and 5.

Figure 4 is a plan of the rubber gasket.

Figure 5 is a plan of the upper gasket collar.

Figure 6 is a perspective of one of the slip jaws.

The invention is shown as applied to a well casing 2 which extends up through an outer casing 3. A seal is made between the upper end of the outer casing 3 and the inner casing 2 to prevent the escape of gas from the outer casing and this seal is formed by a fitting commonly called a casing

head and which consists of a sleeve 5 having its lower end threaded at 6 on the casing 3 and being provided with gas outlet tap holes 7 to receive gas pipe. The well head 5 is provided with an inwardly extending body forming a seat 8 and to form a tight joint with the casing 2 I have provided a unitary packer.

This unitary packer consists of an intermediate flexible and deformable split rubber collar or gasket 10 of substantial proportions and which may be sprung open at one side, as clearly shown in Figure 2, so as to be passed around the casing 2 and then closed as is shown in Figure 1.

The deformable gasket 10 is adapted to be compressed between metallic wear taking parts consisting of an upper two-piece collar 11 and a lower two-piece wedge 12, the lower end of which is tapered to conform to the tapering seat 8 in the casing head.

In assembling the parts 10, 11 and 12, the line 17 between two confronting ends of the sections of the collar 11 is in vertical alinement with the line separating the two sections of the wedge 12, and the line 18 separating the other two ends of the sections 11, and the line 19 representing the split in the gasket 10, and the second line separating the two sections of the wedge 12 are in vertical alinement. The screws 14 and 14^a are inserted through the parts 11 and 10 into the part 12, as shown in Fig. 3, and the screws are spaced a considerable distance apart and equal distances from the line 17, so that the elasticity of the gasket 10 between the screws 14 and 14^a stretches and forms a hinge 20 to allow the unitary packer to open on the lines 18 so that it may be inserted on to the casing 2 as shown in Fig. 2. The screws 14^b and 14^c are inserted near the faces forming the line 18, but the exact positions of these screws is immaterial.

Thus I have produced a unitary packer consisting of a sectional metallic upper collar, a sectional metallic lower wedge shape collar, a split rubber gasket between the two collars, the parts being held together by screws and confronting ends of the metallic members being in line with the split in the rubber gasket so that the unitary packer may open to be removed from or inserted upon a casing or the like sidewise.

When it is desired to shut off the gas the unitary packer is slipped around the casing 2 and is then pushed down the casing

so that it will enter the chamber within the upper end of the casing head 5. The packer is pushed as tightly as may be possible and may be positively rammed to final position by the application of ordinary forms of tools or spiders, or it can be rammed by the weight of the inner casing 2.

When the packer has been inserted in the casing head 5 a clamping spider 15 is shifted down the casing 2 and threaded on the upper end of the sleeve 5. The clamping spider 15 may be utilized to run down on the upper collar 11 of the packer and thereby compress the gasket 10 until it snugly embraces the inner casing 2.

The clamping spider 15 consists of a flat top portion 15¹ provided with a tapered or inverted conical seat 15² for the reception of slips 16, which may be inserted between casing 2 and clamping spider 15, if desired, to support the casing 2 on said clamping spider 15. An internally threaded flange 15³ extends downwardly from the flat top portion 15¹ for engagement with the threaded upper portion of the sleeve 5. 15⁴ designates an annular shoulder formed on the underside of the top portion 15¹ and the threaded flange 15³.

In the assembly shown in Fig. 1, it should be noted that the packer is compressed by the clamping spider 15 which has been screwed down upon the sleeve 5 until its annular shoulder 15⁴ presses upon the two piece collar 11, causing the rubber gasket 10 to hug snugly the casing 2 and forming a tight joint therewith.

In this assembly, it should be noted, the packer is not compressed by the weight of the casing 2 but by the screwing of the clamping spider 15 upon the sleeve 5. However, if desired, the weight of the casing may be used for compressing the packer by partly unscrewing the clamping spider 15 until its shoulder 15⁴ is free of the split ring 11 of the packer.

In some cases it is desirable to suspend the casing 2 by the clamping spider and the slips therein and this is accomplished by introducing a number of wedge shaped slips 16 into the tapered seat 15² of the spider 15; the inner concave faces of the slips 16 being toothed or roughened so as to grip the casing and hold the same.

The casing 2, after the removal of the slips 16 from the clamping spider 15, may rest by its coupling 2¹ directly upon the split ring 11 of the packer. It should be noted that in such a case the compression of the packer may be increased as desired, by screwing the clamping spider 15, which is now entirely unconnected of the casing 2, down upon the split ring 11 of the packer so that both the weight of the casing 2 and the pressure exerted by the clamping spider 15 upon the packer will compress

the same. Furthermore, where the casing 2 rests directly by its coupling 2¹ upon the packer, the clamping spider 15 may be backed off the packer, leaving the packer compressed by the weight of the casing 2 alone.

Further embodiments, modifications and variations may be resorted to within the spirit of the invention as here claimed.

What is claimed is:

1. A packer for a casing head consisting of a gasket ring split at one side and having attached to its upper and lower faces wear taking means, said means covering the entire upper and lower faces of said gasket the packer being adapted to be opened along one side to pass around a tube in a casing and then closed.

2. A packer for a casing head consisting of a gasket ring split at one side and having wear taking means, the packer being adapted to be opened to pass around a casing and then closed, said wear taking means consisting of upper and lower two-part collars attached to the gasket faces said means covering the entire upper and lower faces of said gasket.

3. A packer for oil well casing heads consisting of a split gasket ring, a two part collar on the top of the ring, a two part collar on the bottom of the ring, and means for fastening the collars and ring to form a unitary device, said collar covering the entire upper and lower faces of said gasket ring, said collar ring being split in the same plane so that the assembled packer may be opened to pass around a tube and then closed.

4. A packer for oil well casing heads consisting of a split gasket ring, a two part collar on the top of the ring, a two part collar on the bottom of the ring, and means for fastening the collars and ring to form a unitary device, the lower collar having a tapered end face to fit a complementary seat in a casing head said gasket ring and said collar being split in the same plane to pass about the casing.

5. A packing device consisting of a substantial packing ring split along one side and capable of being sprung open at the opposite side so as to pass around the pipe or tube at the casing head, and upper and lower wear-taking members consisting of two part collars covering the entire upper and lower faces of the packing ring which are attached to the upper and lower faces of the packing ring and are thereby hingedly related, and forming as a whole a unitary packer split along one side.

6. A packer, comprising a packing ring split on one side only and capable of being sprung so as to pass around the pipe or tube, a pair of wear-taking members between which said packing ring is disposed, said wear-taking members being split into a plu-

5 rality of sections, each section not to exceed a semi-circle, said wear taking member covering the entire upper and lower faces of said packing ring and means for removably fastening the packing ring and wear-taking members together.

10 7. A packer, comprising a packing ring split on one side only and capable of being sprung so as to pass around a pipe, a pair of wear-taking members between which said packing ring is disposed, said wear-taking members being each split into two semi-circular sections, the split in the packing ring being in vertical alinement with splits in the wear-taking members, and means disposed within the packing ring and wear-taking members for removably fastening them together.

20 8. A packer, comprising a packing ring split on one side only and capable of being sprung so as to pass around a pipe, a pair of wear-taking members, between which said packing ring is disposed, each of said wear-taking members consisting of a pair of semicircular sections, the split in the packing ring being in vertical alinement with splits in the wear-taking members, vertical bores in alinement in the packing ring and the wear taking members, and countersunk bolts in said bores for removably fastening the packing ring and the wear-taking members together.

25 9. A packer, comprising a packing ring split along the one side only and capable

of being sprung so as to pass around a casing, upper and lower wear-taking members, each consisting of two part semi-circular collars disposed on the upper and lower face of the packing ring respectively, the split of the packing ring being alined with the splits of said wear-taking members, there being a plurality of vertical bores in alinement passing through said packing ring and wear-taking members, and fastening bolts disposed in said bores and screw threaded in the lower wear-taking member for removably holding the packing ring and wear-taking members together.

35 10. A packer, comprising a packing ring split on one side only and capable of being sprung so as to pass around a casing, upper and lower wear-taking members, each consisting of a plurality of two semi-circular collars disposed on the upper and lower face of the packing ring respectively, the split in the packing ring being in vertical alinement with the splits of the collars, a pair of vertical bores in alinement in the packing ring and the wear-taking members, said bores being equi-distantly disposed from a point located diametrically opposite from the split of the packing ring, the bores in the lower collar being screw threaded and countersunk bolts disposed in said bores and screw threaded in the lower collar.

45 In testimony whereof I have signed my name to this specification.

50 CHESTER C. HOSMER.