March 13, 1928. 1,662,707

C. C. HOSMER

CASING HEAD

Original Filed Sept. 15, 1922

Fig. 1.

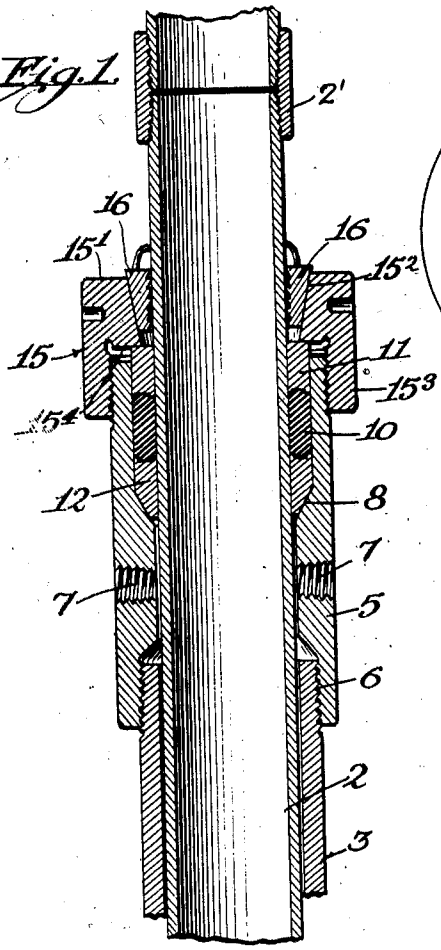
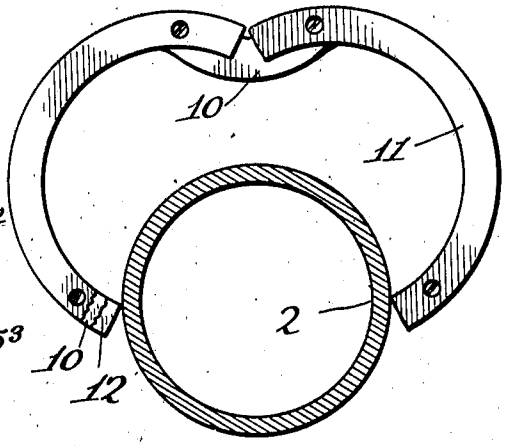


Fig. 4.



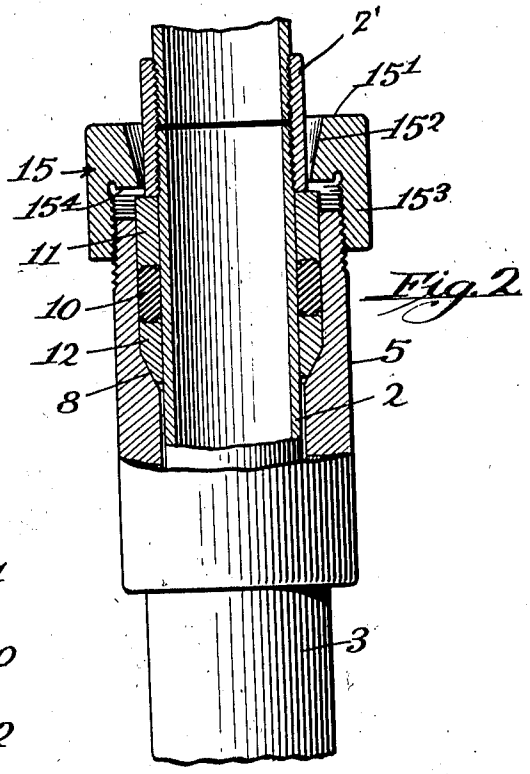
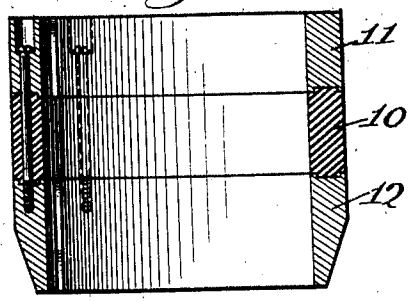


Fig. 2.

Fig. 3.



Witness:

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UNITED STATES PATENT OFFICE.

CHESTER C. HOSMER, OF HUNTINGTON BEACH, CALIFORNIA.

CASING HEAD.

Original application filed September 15, 1922, Serial No. 588,391. Divided and this application filed November 6, 1924. Serial No. 748,105.

This invention relates to a 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 present application is a division of applicant's application for a packer, Serial No. 588,391, filed September 15, 1922, matured into U. S. Patent Number 1,525,582, in which the packer is claimed, the present invention having the claims limited to the casing head structure.

My invention consists in the arrangement and construction of parts hereinafter described and claimed.

In the accompanying drawings, which form a part of the specification, I have illustrated a casing head embodying my invention, and in which

Figure 1 is a central, longitudinal section through a suitable form of casing head showing the packing applied and compressed by the clamping spider.

Fig. 2 is a central longitudinal section of the casing head showing the unitary packer compressed by the weight of the casing alone, the collars of the casing head resting directly upon the unitary packer.

Fig. 3 is a central longitudinal section through the unitary packer, and

Fig. 4 is a cross section through the casing, showing the manner of applying the unitary packer.

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 4, 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.

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 packing device 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 15^1 provided with a tapered or inverted conical seat 15^2 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 15^3 extends downwardly from the flat top portion 15^1 for engagement with the threaded upper portion of the sleeve 5. 15^4 designates an annular shoulder formed on the underside of the top portion 15^1 and the threaded flange 15^3.

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 15^4 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 15^4 is free of the split ring 11 of the packer, as clearly shown in Fig. 2. It should be noted that the shoulder 15^4 of the clamping spider 15 is adapted to engage the outer circular margin only of the split ring 11 and that there is a sufficient clearance for the coupling 2^1 of the interior casing 2 to pass freely through the tapered seat 15^2 of the clamping spider and that said coupling 2^1 rests upon the inner circular margin of the split ring 11.

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 15^2 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 2^1 directly upon the split ring 11 of the packer, as shown in Fig. 2. 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, (see Fig. 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 upon the packer will compress the same. Furthermore, where the casing 2 rests directly by its coupling 2^1 upon the packer, the clamping spider 15 may be backed off the packer, leaving the packing 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.

I claim:

1. A casing head comprising a sleeve applied to an exterior casing, said sleeve having an interior seat, a packer positioned in said sleeve and resting on said seat to embrace an interior casing, a clamping spider connected to said sleeve and adapted on its downward movement to compress said packer, to seal the joint between the casing head and the interior casing, said clamping spider having an aperture of sufficient size for a coupling of the interior casing to rest directly upon said packer without touching said clamping spider, whereby the packer may be compressed by either the clamping spider, the weight of the interior casing, or both, as desired.

2. A casing head comprising a sleeve applied to an exterior casing, said sleeve having an interior seat, a packer positioned in said sleeve and resting on said seat to embrace an interior casing, a clamping spider connected to said sleeve and adapted on its downward movement to compress said packer, said clamping spider having an aperture of sufficient size for a coupling of the interior casing to rest directly upon said packer without touching said clamping spider, the aperture of said clamping spider being tapered for the reception of slips for the support of the weight of the interior casing, whereby the packer may be compressed by either the clamping spider, the weight of the interior casing, or both, as desired.

3. A casing head comprising a sleeve applied to an exterior casing, said sleeve having an interior seat, a packer embracing an interior casing and resting on said seat, a clamping spider connected to said sleeve and having means adapted on its downward movement to compress the upper outer margin only of said packer, said clamping spider having an aperture of sufficient size for a coupling of the interior casing to pass freely therethrough and to rest directly upon said packer without touching said clamping spider, whereby the packer may be compressed by either the clamping spider, the weight of the interior casing, or both, as desired.

4. A casing head comprising a seat for a packer, a packer on said seat and embracing an interior casing, a clamping spider connected to an exterior casing and adapted on its downward movement to compress said packer, said clamping spider having an aperture of sufficient size for a coupling of the interior casing to pass freely therethrough and to rest directly upon said packer without touching said clamping spider, whereby the packer may be compressed by either the clamping spider, the weight of the interior casing, or both, as desired.

5. A casing head comprising a sleeve applied to an exterior casing, said sleeve having an interior seat, a packer on said seat to embrace an interior casing, a clamping spider having a central aperture and provided with a shoulder adjacent the lower end of the aperture, said shoulder being adapted to compress on the downward movement of the clamping spider the upper outer circular margin only of said packer, said aperture being of sufficient size to permit a coupling of the interior casing to pass freely therethrough and to rest directly upon said packer without touching said clamping spider, whereby the packer may be compressed by either the clamping spider, the

weight of the interior casing, or both, as desired.

6. A casing head comprising a sleeve screw threaded on an exterior casing, the said sleeve having an interior seat, a packer on said seat to embrace an interior casing, a clamping spider screw threaded to said sleeve and being provided intermediate its upper and lower ends with an internal shoulder adapted on the downward movement of said clamping spider to compress said packer, said clamping spider being provided with a central aperture of sufficient size to permit a coupling of said interior casing to pass freely therethrough and to rest directly upon said packer without touching said clamping spider, whereby the packer may be compressed by either the clamping spider, the weight of the interior casing, or both, as desired.

7. A casing head comprising a sleeve removably attached to an exterior casing, said sleeve having an interior seat, a packer on said seat to embrace an interior casing, a clamping spider screw threaded on the exterior upper end of said sleeve and having a central tapered aperture adapted for the reception of slips for the support of the said interior casing, said aperture being of sufficient size to permit the coupling of the interior casing to pass freely therethrough and to rest directly on the said packer without touching said clamping spider, said clamping spider having an interior circular shoulder intermediate its upper and lower ends adapted on the downward movement of said clamping spider to engage the upper outer margin of said packer and to compress the same, whereby the packer may be compressed by either the clamping spider, the weight of the interior casing, or both, as desired.

8. A casing head comprising a seat for a packer, a packer on said seat and embracing an interior casing, a removable spider connected to the casing head, said spider having an aperture of sufficient size for a coupling of the interior casing to pass freely therethrough and to rest directly upon said packing without touching said spider, and clamping means associated with the spider adapted to compress the packer, whereby the packer may be compressed either by the weight of the casing alone, or by the clamping means associated with said spider, or both, as desired.

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

CHESTER C. HOSMER.