April 19, 1927. 1,625,378

J. E. SNODGRASS

CASING HEAD FOR OIL WELLS

Filed June 12, 1926

Fig. 1.

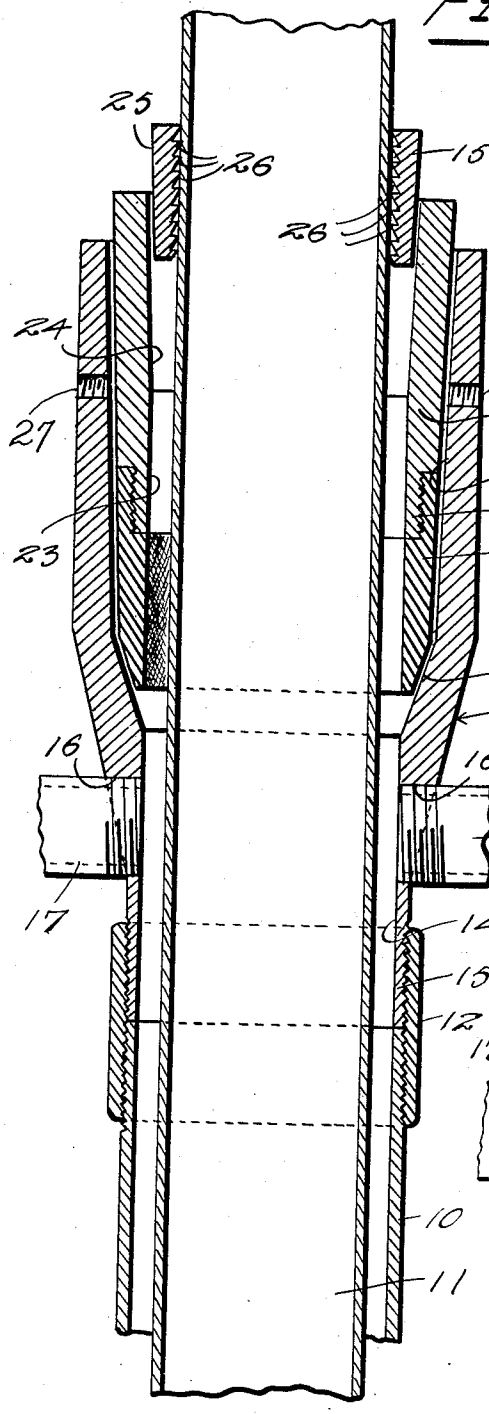
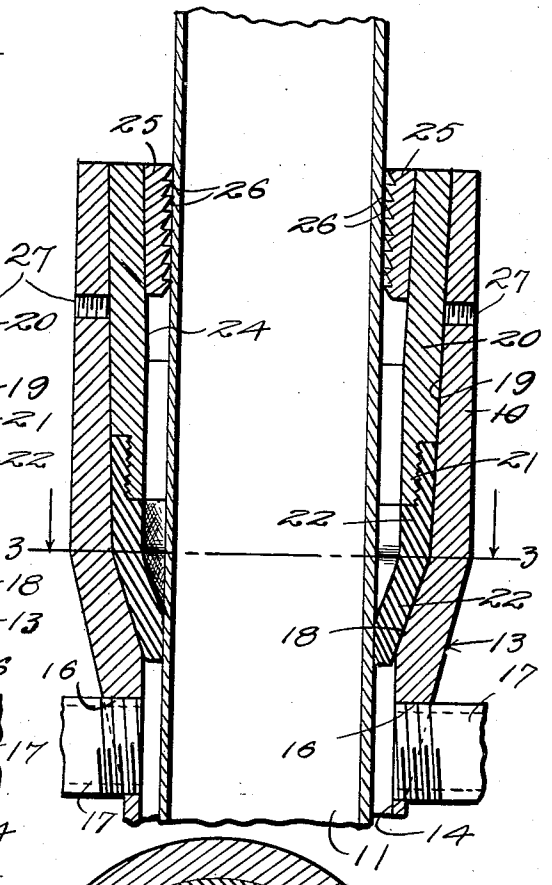


Fig. 2.



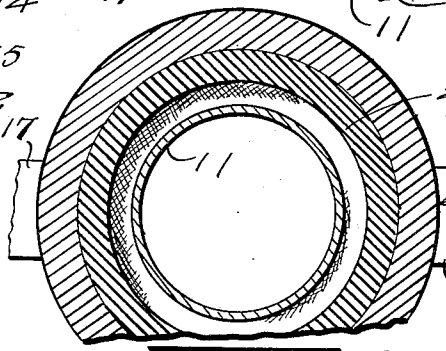


Fig. 3.

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UNITED STATES PATENT OFFICE.

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CASING HEAD FOR OIL WELLS.

Application filed June 12, 1926. Serial No. 115,566.

This invention relates to casing heads for oil wells and more particularly to a device of this character which may be employed for packing off wells which are gasing.

A more specific object of the invention is to provide a device of this character which may be readily applied to the casing and tubing or inner and outer casing of an oil well either during construction or operation thereof to pack off the leaking gas.

A further object of the invention is to provide a device of this character which may be very readily applied, which will be durable and efficient in service and a general improvement in the art.

These and other objects I attain by the construction shown in the accompanying drawing, wherein for the purpose of illustration is shown a preferred embodiment of my invention and wherein:—

Figure 1 is a vertical sectional view showing a casing head constructed in accordance with my invention with the parts in position ready for the lowering of the inner casing section;

Figure 2 is a similar section showing the inner casing section lowered into position and the seal effected;

Figure 3 is a section on the line 3—3 of Figure 2.

Referring now more particularly to the drawing, the numeral 10 generally designates the outer and 11 the inner casing of an oil well. The inner casing 11 may be the tubing of the well or smaller casing which is being led through the larger casing 10. The upper end of the casing 10 is provided with a coupling 12 of any suitable character. In accordance with my invention, I provide a body 13 having a bore 14 of the same size as the bore of the casing and adapted at its lower end, as at 15, for engagement with the coupling 12. Adjacent its lower end, the body is formed with openings 16 for the attachment of outlet pipes 17 for the passage of gas, oil or water which is packed off by the head.

Above these openings, the bore 14 has a relatively abrupt conical enlargement 18, so that the bore expands upwardly. From the upper end of the enlargement 18, the bore continues to enlarge toward its upper end, as indicated at 19, or at a much smaller angle to the main bore than the enlargement 18. A sleeve 20 is provided, the exterior surface of which has the same taper as the portion 19 of the bore and the sleeve is preferably of such size that its outer face seats on the tapered portion 19 of the bore when the upper ends of the sleeve and body 13 are aligned with one another. The lower end of this sleeve is constructed, as at 21, to permit attachment thereof of a packer 22, the lower end of which has its outer face beveled at the same angle as the enlargement 18 of the bore 14. The sleeve and packer have a bore 23 preferably of approximately the same size as the bore of the casing 10 and this bore adjacent the upper end of the sleeve increases in diameter upwardly, as at 24, so that a downwardly tapering section is provided for coaction with the downwardly tapered outer face of slips 25, the inner faces of which are provided with teeth 26 for coaction with the outer wall of the casing section 11. These slips preferably come into engagement with the tapered bore of the sleeve 20 when the upper ends of the slips are flush with the upper end of the sleeve, so that when the sleeve and slips are fully seated, the entire upper surface of the body 10, sleeve 20 and slips 25 provides a flat smooth surface.

It will, of course, be understood that in the installation of the device, after the body 10 has been secured to the outer casing, the sleeve 20 is slipped over the inner casing section 11 and dropped into the bore at the upper end of the sleeve. The slips 25 are then placed in position and the casing section 11 allowed to lower, so that these slips will engage with the sleeve 20 and by the application of the weight of the casing section 11 thereto, the sleeve 20 through the slips causes the sleeve 20 to move downwardly, so that the packer 22 is swaged inwardly by the tapered wall of the enlarged portion 18 of the bore and comes into sealing engagement with the surface of the casing section 11. The packer 22 may be of any suitable character, rubber or lead being preferred for this purpose. If desired, set-screws may be introduced through openings 27 to engage the sleeve 20 and maintain the same in sealing position, so that a seal may be provided during slight vertical shifting movements of the tubing 11.

Since the construction hereinbefore set forth is obviously capable of a certain range of change and modification without mate-

rially departing from the spirit of the invention, I do not limit myself to such specific structure except as hereinafter claimed.

I claim:—

1. In a casing head for oil wells embodying inner and outer casings, a body adapted to be attached to the outer casing and having a bore increasing in diameter toward its upper end, a sleeve to surround the inner casing and externally formed to fit within the tapered portion at the upper end of the bore, a packing carried by the lower end of the sleeve, slips for engagement with the inner casing and with the sleeve to lock the sleeve to the inner casing for downward movement with the inner casing and a forming shoulder at the lower end of the tapered bore of said body for directing the packing inwardly during downward movement of the sleeve to thereby force it into engagement with the inner casing.

2. In a casing head for oil wells embodying inner and outer casings, a body adapted to be attached to the outer casing and having a bore increasing in diameter toward its upper end, a sleeve to surround the inner casing and externally formed to fit within the tapered portion at the upper end of the bore, a packing carried by the lower end of the sleeve, slips for engagement with the inner casing and with the sleeve to lock the sleeve to the inner casing for downward movement with the inner casing and a forming shoulder at the lower end of the tapered bore of said body for directing the packing inwardly during downward movement of the the sleeve to thereby force it into engagement with the inner casing, said slips fitting the bore of the sleeve when the upper surfaces thereof are flush with the upper end of the sleeve.

3. In a casing head for oil wells embodying inner and outer casings, a body adapted to be attached to the outer casing and having a bore increasing in diameter toward its upper end, a sleeve to surround the inner casing and externally formed to fit within the tapered portion at the upper end of the bore, a packing carried by the lower end of the sleeve, slips for engagement with the inner casing and with the sleeve to lock the sleeve to the inner casing for downward movement with the inner casing and a forming shoulder at the lower end of the tapered bore of said body for directing the packing inwardly during downward movement of the sleeve to thereby force it into engagement with the inner casing, said slips fitting the bore of the sleeve when the upper surfaces thereof are flush with the upper end of the sleeve, said sleeve fitting the tapered bore of the body when the upper end of the sleeve is flush with the upper end of the body.

4. In a casing head for oil wells embodying inner and outer casings, a body adapted to be attached to the outer casing and having a bore increasing in diameter toward its upper end, a sleeve to surround the inner casing and externally formed to fit within the tapered portion at the upper end of the bore, a packing carried by the lower end of the sleeve, slips for engagement with the inner casing and with the sleeve to lock the sleeve to the inner casing for downward movement with the inner casing and a forming shoulder at the lower end of the tapered bore of said body for directing the packing inwardly during downward movement of the sleeve to thereby force it into engagement with the inner casing, said body between its point of attachment with the casing and said forming shoulder being provided with outlets.

In testimony whereof I hereunto affix my signature.

JOSEPH E. SNODGRASS.