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OIL SAVING DEVICE FOR OIL WELLS

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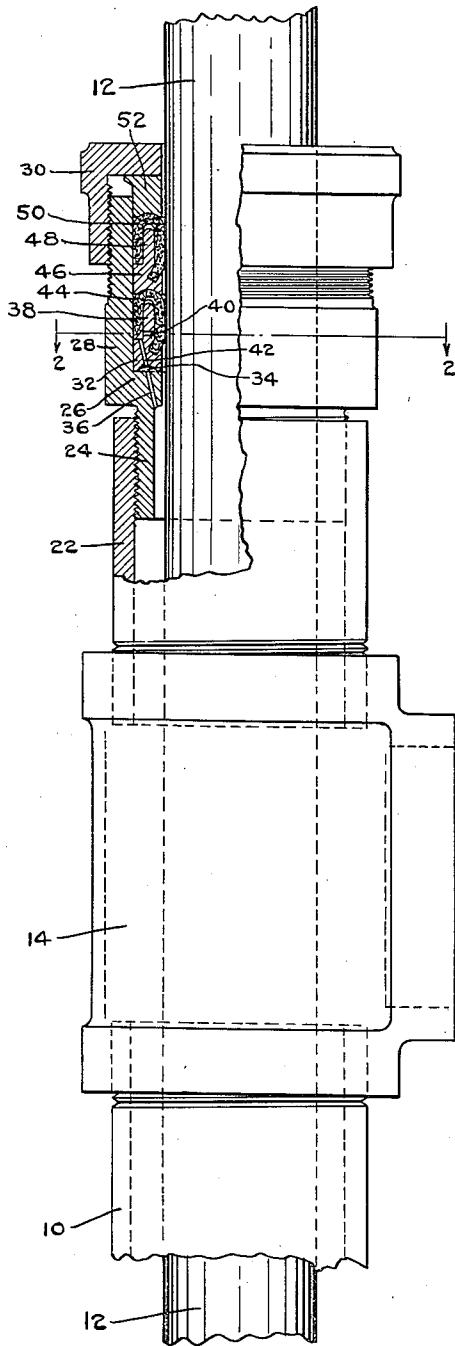


Fig-1

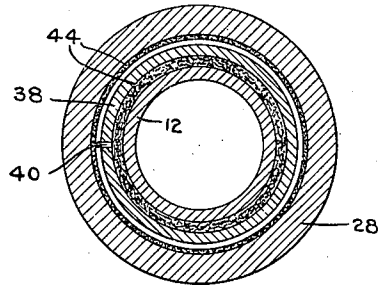


Fig-2.

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OLOF B. ANDERSON, OF MARQUETTE, MICHIGAN, ASSIGNOR TO E. J. LONGYEAR COMPANY, OF MINNEAPOLIS, MINNESOTA, A CORPORATION.

OIL-SAVING DEVICE FOR OIL WELLS.

Application filed February 13, 1922. Serial No. 536,117.

To all whom it may concern:

Be it known that I, OLOF B. ANDERSON, a citizen of the United States, residing at Marquette, in the county of Marquette and State of Michigan, have invented certain new and useful Improvement in Oil-Saving Devices for Oil Wells, of which the following is a specification.

My invention relates to oil saving devices for oil wells. An object is to provide a device which will automatically close the upper end of the well casing or pipe sections when oil is struck so as to prevent the wastage of the oil by escape from the casing. An object in particular is to provide an attachment for the upper end of the well casing whereby the pressure of the upwardly flowing oil will cause a tight joint to be made between the drill rod and the surrounding casing.

The full objects and advantages of my invention will appear in connection with the detailed description, and the novel features embodied in my inventive idea will be particularly pointed out in the claim.

In the accompanying drawings which illustrate one embodiment of my invention, Fig. 1 is an elevational view of the device with a portion thereof shown in vertical section. Fig. 2 is a view in horizontal section on the line 2—2 of Fig. 1.

Referring to the construction shown in the drawings, the numeral 10 designates the upper section of a plurality of pipe sections which are put into the ground during the operation of drilling oil wells, and the numeral 12 designates any customary drill rod which operates within the pipe sections or well casing. The upper end of the pipe section 10 is threaded for engagement of a union member 14 which has a lateral opening to which a branch pipe 16 is attached by a threaded member 18 containing a valve which is operated by a rod 20. A short pipe section 22 is threaded into the upper end of the member 14 and a short pipe section 24 is threaded into the upper end of the section 22. The section 24 above its lower threaded end is provided with an annular shoulder 26 connecting with an enlarged portion 28 of this section and the upper end of the enlarged portion is externally threaded to receive a cap 30 through which the drill rod 12 extends. A ring 32 is placed

on the annular shoulder 26 and the lower face of this ring is provided with an annular groove 34 into which leads a perforation 36 extending through the shoulder 26. The upper side of the ring 32 is reduced to form an annular member 38 which is provided with a lateral perforation 40. A perforation 42 leads from the groove 34, through the body of the ring 32 to the outside of the reduced portion 38. A gasket 44 of suitable flexible material extends from the outside of the member 38 over the top of the same and down into an annular groove below the perforation 40. A ring 46 is placed upon the bent over upper portion of the gasket 44 and the upper side of this ring is reduced to form an annular member 48. A gasket 50 extends from the outside of the member 48 over the top of the same and down into an annular groove on the inside of the body member of the ring 46. A ring 52 is placed upon the bent over upper portion of the gasket 50 and this ring is adapted to be engaged by the cap 30 when the latter is screwed down.

The operation and advantages of my invention will be readily understood in connection with the foregoing description. The space between the pipe section 24 and the drill rod 12 is connected with annular groove 34 by the perforation 36 so that when oil starts to flow upwardly the pressure thereof is exerted through the perforation 36 and the perforations 42 and 40 so as to be communicated to the outside of the inner member of the gasket 44, thereby forcing the same all the way around its circumference into intimate contact with the drill rod and preventing the escape of oil out of the top of the well casing. It will be understood that the device containing the gaskets is attached to the upper section of the pipe constituting the well casing before there is likelihood of striking oil so as to be ready for operation at such time. On account of the placing of the groove 34 in the lower side of the ring 32, it is not necessary that the perforations 36 and 42 be in alinement with each other, since there will be a communication between them regardless of their relative positions. It will be apparent that upon screwing down the cap 30, both of the gaskets 44 and 50 will be expanded into contact with the drill rod so that a tight

joint may be made manually as well as automatically. When my device is used, the escape of oil from the well casing will be prevented, and the oil will be delivered from
 5 the well through the branch pipe 16 only when permitted by opening the valve which is attached to the valve rod 20. It will be noted that the pressure of oil through the perforation 42 also causes the outer member
 10 of the gasket 44 to be forced into intimate contact with the inner wall of the jacket or enlarged member 28. In order that this action may be effected, the lower inner edge of the outer gasket member is preferably
 15 beveled as shown. The ring 46 rests upon the bent over portion of the gasket 44 and in connection with the cap 30 and ring 52 serves to restrain upward movement of the gasket 44 so that the latter is caused to
 20 tightly engage the drill rod by pressure of oil within the well casing.

I claim:

An oil saving device for oil wells comprising a jacket adapted to be secured to the upper end of the well casing, said jacket
 25 having an internal shoulder provided with a perforation, a ring resting upon said shoulder and having a circumferential groove with which said perforation communicates, a reduced member connected with
 30 the upper end of said ring, a gasket extending over said reduced member and upon both sides thereof, said reduced member containing a lateral perforation and the body of said ring containing a perforation leading
 35 from said circumferential groove to the outside of said reduced member, and means for restraining upward movement of said gasket.

In testimony whereof I hereunto affix my
 signature.

OLOF B. ANDERSON.