

C. A. WAITZ.
WALL PACKER FOR OIL WELLS.
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1,014,272.

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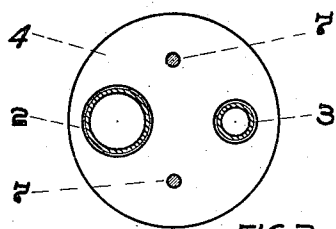


FIG. 2.

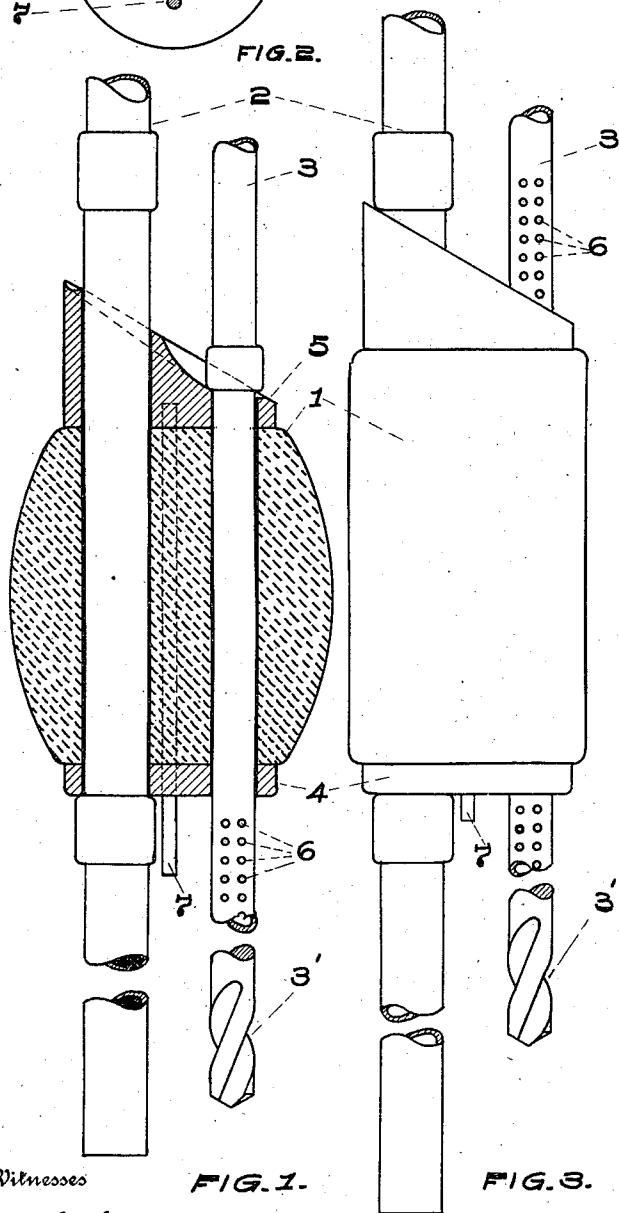


FIG. 1.

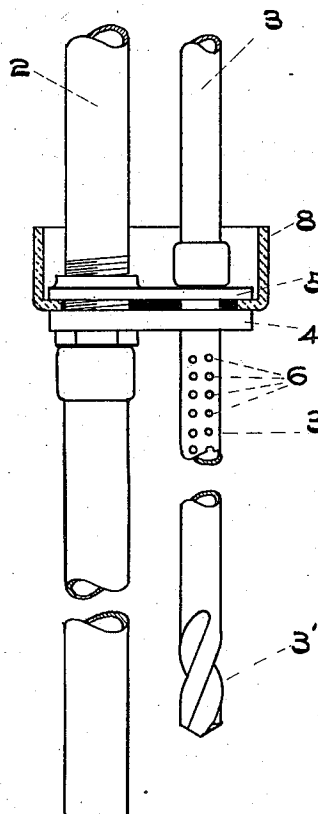


FIG. 3.

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CHARLES A. WAITZ, OF ROUSEVILLE, PENNSYLVANIA.

WALL-PACKER FOR OIL-WELLS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES A. WAITZ, citizen of the United States, residing at Rouseville, in the county of Venango and State of Pennsylvania, have invented certain new and useful Improvements in Wall-Packers for Oil-Wells, of which the following is a specification.

The object and construction of my invention are herein fully set forth, reference being had to the accompanying drawings which form a part hereof and show how my improved packer may be constructed.

The several views of the drawings are as follows:

Figure 1 is a central vertical section of a wall packer embodying my invention and showing the same in the expanded position. Fig. 2 is a bottom view of the upper disk. Fig. 3 is an elevation showing my packer in the normal position, and with the gas-escape pipe in the raised position. Fig. 4 shows a modified form of packer constructed in accordance with my invention.

The prime object of my invention is to provide a packer that can be more easily removed or pulled from the well than other packers of this type now in use, especially after having been in the well for some time and become covered with cavings from the walls of the well such as slate, sand-rock, etc.

Other objects of my invention will presently be set forth.

The construction of my improved wall packer is substantially as follows:—I provide a sleeve of rubber 1, longitudinally through which, holes are formed for the passage of the oil conducting tubing 2 and the gas-escape pipe 3. I place a metallic disk 4 at the lower end of sleeve 1, which disk is also provided with holes for the passage of said tubing and pipe. There is a metallic disk 5 at the upper end of sleeve 1, through which said tubing and pipe also pass. The novelty of my invention resides principally in the construction, way of inserting, and equipment of the gas-escape pipe 3, which is hereafter fully explained, along with other novel details of construction.

It is occasionally necessary to remove a packer from the well, and with the common form of packer of the type here shown this is a difficult job, for several reasons, the main one of which is, that there is no re-

liable way of relieving the packer from the weight and pressure of the fluid above it. Packers of the type shown in Figs. 1 and 2, are suspended in the well by means of the oil-conducting tubing (2). The gas-escape pipe is sustained by the upper disk—to which it is permanently attached in the common form of packer, and the weight of this pipe is, ordinarily, sufficient to expand the packer enough to cause it to fill the hole; but occasionally a tight joint can not be made in this way between the periphery of the packer and the walls of the well, and in such case, various expedients are resorted to in order to make a tight joint, such as pouring drillings, pulverized coal, sand, etc., into the well on top of the packer. A packer that has been treated in this way is difficult to remove and must generally be torn and mutilated in order to remove it from the well, as there is no positive way of relieving it from the pressure of the fluid above it. Furthermore, in some wells, there is a certain amount of oil in the water-bearing stratum above the packer, and when a certain amount of oil has accumulated above the packer, it is desirable that it should be let down below the packer where it can be pumped out. There is no way of doing this with the common form of packer. In my improved packer I overcome these difficulties in the following way:—In the gas-escape pipe 3 which extends to the surface of the ground I form a number of perforations 6 and distribute them over a portion of the pipe somewhat greater in length than the combined length of the sleeve and disks, so that they may be positioned both above and below the packer by raising pipe 3 as shown in Fig. 3. When it becomes desirable to allow the fluid which is above the packer to flow down below it I raise the gas-escape pipe to the position shown in Fig. 3, which brings some of the perforations above the sleeve while others remain below it, and this will provide a free passage for the fluid through the perforations and the pipe, and the flow of fluid cannot be interfered with by the accumulation of material above the packer. After the fluid has passed down through the pipe 3, said pipe may be again lowered to its original position or it may be pulled out, as circumstances require.

To the lower end of pipe 3 I attach a

short section of a twist drill 3', by means of which it is possible to bore through any accumulation of material above the packer when said pipe is to be reinserted after removal, and by this means it is always possible to reinsert said pipe.

On account of pipe 3 being removable from the packer, it is much easier to pull the packer from the well than it is with the usual form of packer in which the gas-escape pipe is not removable, as it renders the sleeve more flexible and permits it to collapse into a smaller body when being pulled, thus permitting it to pass through contracted places in the well with greater ease.

In order to secure and maintain the register of the pipe and tubing holes in the disks with those in the sleeve of my packer, I attach rods 7 to the upper disk 5, which rods pass downward through sleeve 1 and disk 4. Said rods are securely attached to the upper disk 5 but pass freely through said sleeve and lower disk.

In Fig. 4 I show what is known in the art as a cup packer, which, in addition to being used as a wall packer, is sometimes used as a casing packer. This consists of a flexible cup 8, of any suitable material which is secured between the disks 4 and 5, through which the tubing 2 and the gas-escape pipe pass. Pipe 3 is vertically movable through said disks and cup, and is also provided with perforations 6, which are so arranged that a portion of said perforations may be positioned above the packing member and a portion thereof below said member, by a vertical adjustment of said pipe, and when said perforations are thus positioned, water may flow downward through the same, as, and for the purpose above set forth.

I claim:—

1. In a packer for oil wells, a flexible packing member provided with an oil-conducting tubing passage, and a gas-escape pipe passage, metallic disks positioned above and below said packing member, said disks being arranged for the passage of said pipe and tubing, an oil-conducting tubing passing through said flexible member and said disks, a gas-escape pipe passing through said flexible member and said disks and vertically movable therein and extending to the surface of the ground, there being perforations in said pipe positioned normally below said flexible member and in close proximity thereto, so that by a vertical adjustment of said pipe said holes may be positioned partly above and partly below said flexible member, for the purpose set forth.

2. In a wall packer for oil wells, a flexible sleeve provided with a tubing passage and a gas-escape pipe passage, a metallic disk positioned above said sleeve, a metallic disk positioned below said sleeve, said disks being provided with corresponding tubing and pipe passages, oil conducting tubing passing through said sleeve and said disks, a vertically movable gas escape pipe passing through said sleeve and disks, and a drill point upon the lower end of said pipe; there being perforations in said pipe positioned in close proximity to said sleeve and distributed over a length of said pipe greater than the length of said sleeve.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES A. WAITZ.

Witnesses:

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JOHN L. McBRIDE.