C. A. WAITZ.

BOTTOM HOLE PACKER.

APPLICATION FILED JULY 6, 1912.

1,097,277.

Patented May 19, 1914.

2 SHEETS—SHEET 1.

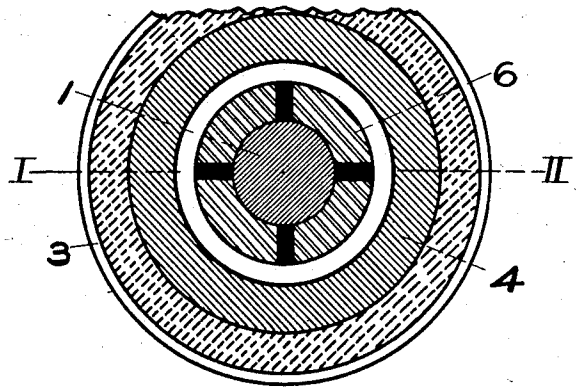


FIG. 3.

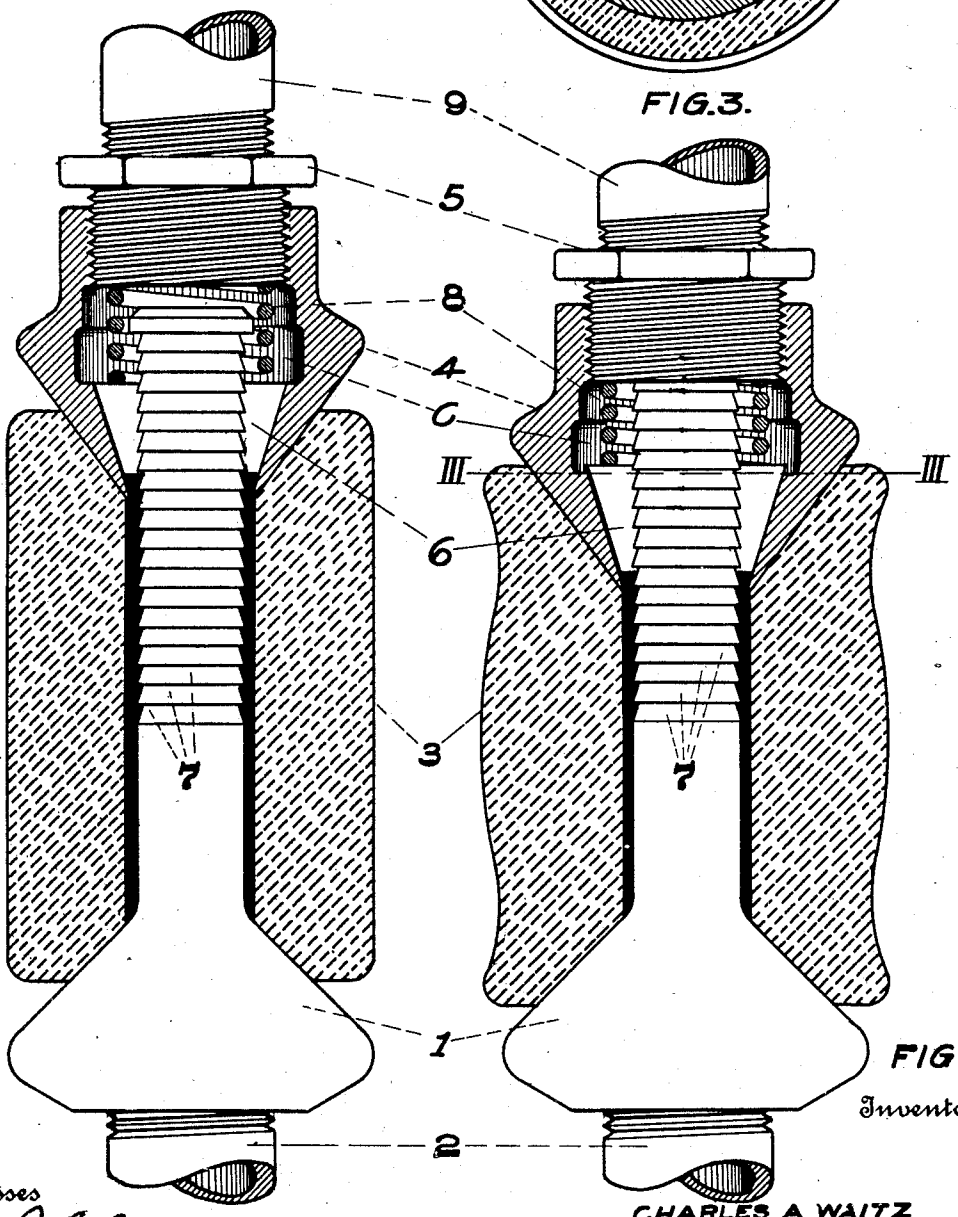


FIG. 1.

FIG 2

Inventor

CHARLES A. WAITZ

Witnesses

J. G. Cole

L. L. Stull

By Edward R. Inman

Attorney

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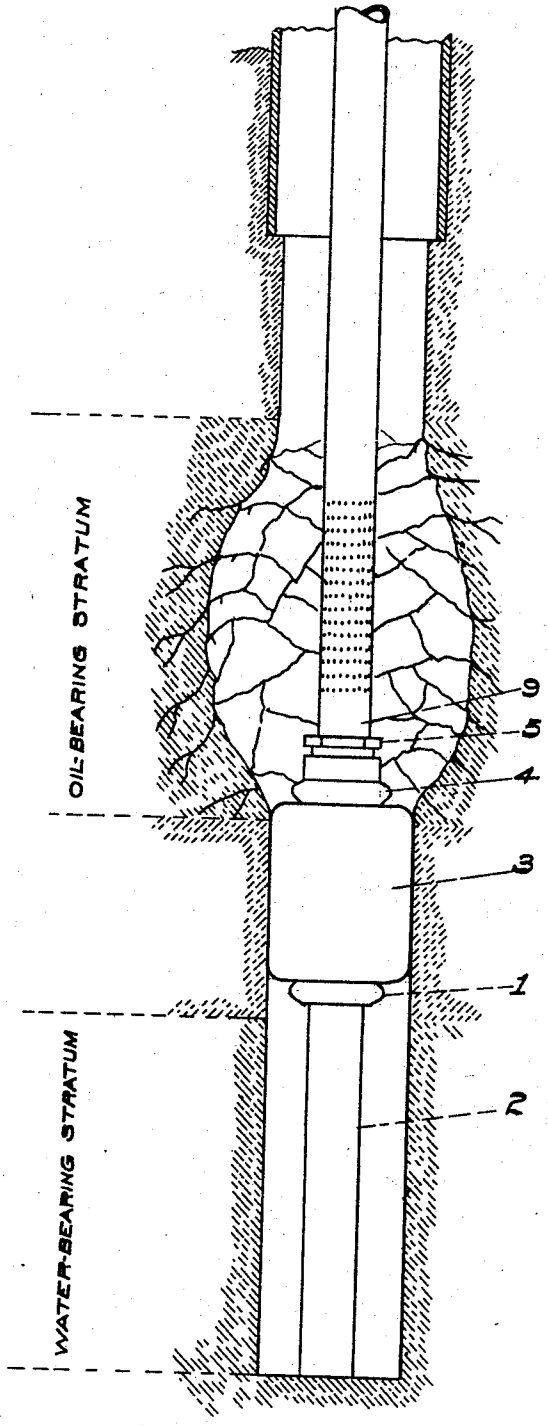


FIG. 4.

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UNITED STATES PATENT OFFICE.

CHARLES A. WAITZ, OF ROUSEVILLE, PENNSYLVANIA.

BOTTOM-HOLE PACKER.

1,097,277. Specification of Letters Patent. Patented May 19, 1914.

Application filed July 6, 1912. Serial No. 708,050.

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 Bottom-Hole Packers, of which the following is a specification.

My invention relates to improvements in packers for oil wells, and especially that class of packers known as bottom-hole packers in contradistinction to that class of packers commonly termed well-packers.

The bottom-hole packer is adapted for oil wells which are drilled into a water-bearing stratum, the flow from which is of large volume and high pressure, and which lies below the oil or gas stratum. By setting my packer above the water-bearing stratum, it completely shuts off the upward flow of water which otherwise would have to be pumped out at considerable expense and trouble to keep it from reaching the oil or gas-bearing stratum and spoiling the well.

The construction of my improved packer and the method of applying same are herein fully set forth, reference being had to the accompanying drawings, which illustrate one way in which my invention may be mechanically expressed.

The respective views in the drawings are as follows:—Figure 1 is a central, vertical section through my improved packer, showing the same in the normal position. Fig. 2 is a central vertical section through the packer, showing same in a partially expanded position. Fig. 3 is a transverse section on line III III of Fig. 2. Fig. 4 is an elevation of the packer, showing the same in position in a well.

My packer consists of a cylindrical standard 1, having an enlarged lower end, which is tapped for the reception of a pipe 2, or other suitable anchor, the lower end of which anchor is adapted to rest upon the bottom of the well and support the packer at the proper height. A sleeve 3, of any suitable expansible material, is placed over the standard and rests upon the enlarged base thereof, the upper face of which base tapers and diverges downwardly. The opening in the lower end of said sleeve is conformed to the taper of said base and receives a portion thereof. An expander-head 4 is placed at the upper end of the standard 1 and rests in the upper end of sleeve 3; the lower face of said expander-head is tapered and converges downwardly. The upper end of the opening in sleeve 3 is conformed to receive the lower portion of said expander-head and to form a seat therefor. Within said head 4 is formed a chamber C, in the upper end of which is screwed a reducing bushing 5; said chamber is adapted for the reception of a number of detent-wedges 6, the inner faces of which are serrated for the purpose of engaging corresponding serrations 7 upon the standard 1. The lower portion of chamber C in which the wedges 6 seat, converges downwardly, and the outer faces of said wedges conform to said convergence. Because of this construction the expander-head may move downward over the standard 1, but any tendency to move in the opposite direction or upward, is checked by the wedges which firmly grip the standard and prevent such movement. If desired, a spiral spring 8 may be placed in chamber C, with its upper end bearing against the lower end of the bushing 5, and its lower end bearing upon the upper ends of the wedges 6, to insure a positive action of said wedges. I do not wish, however, to confine myself to the employment of said spring, as it may be dispensed with.

When my improved packer is to be placed in service in a well, as shown in Fig. 4, a suitable support or anchor is secured to the lower end of the standard 1. Said support 2, is of such a length as to rest upon the bottom of the well and support the packer at the proper position above the water-bearing stratum.

The tubing 9 of the well may be attached to the upper end of the expander-head and the packer lowered into the well by means of the tubing. When anchor 2 reaches the bottom of the well and rests thereon, the whole weight of the tubing is permitted to bear upon the expander-head, which forces said head downward into sleeve 3 and causes said sleeve to expand and completely fill the well-hole, thus effectually stopping the passage of fluid by the same, in either direction. As the expander-head moves downward over the standard 1, the detent-wedges 6 also move downward and continue in close engagement with the standard and this causes the packer to become firmly locked in the expanded position and

to be retained thereat. After the packer is in position, the tubing 9 is detached therefrom and the packer remains in position as an independent fixture.

It is not necessary to use the tubing as a means for lowering the packer into the well, as other means could be used for this purpose, and any other suitable means may be employed for forcing the expander-head downward, such, for instance, as the drilling tools, or any other suitable weight or means for exerting pressure upon the head.

I claim—

In a bottom-hole packer for wells, in combination, a cylindrical standard having an enlarged, downwardly-diverging lower end, an anchor attached to and extending downwardly from said standard and adapted to rest upon the bottom of the well, there being serrations upon the upper end of said standard, an expander-head positioned at the upper end of said standard and having an upwardly-diverging lower face, there being a chamber within said head through which the upper end of said standard passes, detents positioned within said chamber arranged to engage said serrations for the purpose set forth, means positioned within said chamber arranged to retain said detents in the engaged position, said expander head being adapted to be attached to the tubing of the well, and a flexible packer-sleeve surrounding said standard and positioned intermediate said enlargement and said head.

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

CHARLES A. WAITZ.

Witnesses:

WM. M. PARKER,

PEARL PROPER.