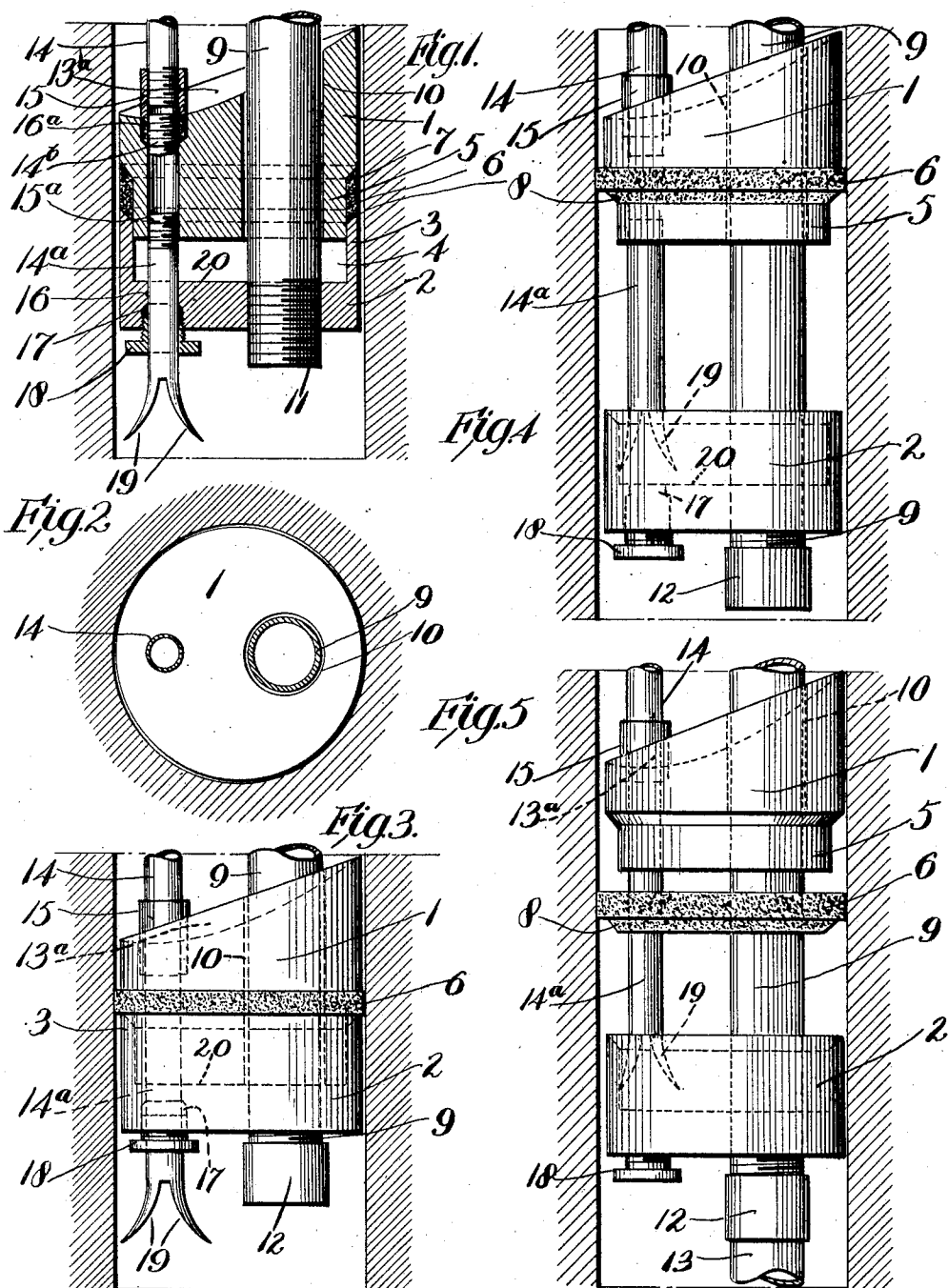


W. S. PIERCE.
 PACKING FOR WELLS.
 APPLICATION FILED JULY 31, 1912.

1,050,689.

Patented Jan. 14, 1913.



Witnesses
 Oliver W. Holmes.
 H. H. Byrne

Inventor
 W. S. Pierce
 By Wilkins & Mackay,
 Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM S. PIERCE, OF FRANKLIN, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO
CHARLES A. PIERCE, OF FRANKLIN, PENNSYLVANIA.

PACKING FOR WELLS.

1,050,689.

Specification of Letters Patent.

Patented Jan. 14, 1913.

Application filed July 31, 1912. Serial No. 712,561.

To all whom it may concern:

Be it known that I, WILLIAM S. PIERCE, a citizen of the United States, residing at Franklin, in the county of Venango and State of Pennsylvania, have invented certain new and useful Improvements in Packing for Wells; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to packings for oil, gas or other wells, and has for its purpose to provide a construction which may be readily lowered to the desired depth in the well boring or shaft, and by a simple operation caused to assume its functional position and effectively prevent flow of water or other foreign matter from the ground above into the well.

The invention further has for its purpose to provide a packing of the character in question comprising a minimum number of parts, which coöperate to release the packing ring from its set position, and permit of the withdrawal of the several parts of the packing from the well; and which, by the peculiar construction and arrangement of parts, will readily free the packing from earth or other matter with which it comes in contact while being withdrawn.

With these and other objects in view the invention consists in the novel details of construction and combinations of parts more fully hereinafter disclosed and particularly pointed out in the claims.

Referring to the accompanying drawings forming a part of this specification in which like numerals designate like parts in all the views:—Figure 1 is a central sectional view partly in elevation of the packing in assembled relation for lowering into the well; Fig. 2 is a top plan view of the same showing parts in section; Fig. 3 is a side elevational view showing the packing in set or functional position; Fig. 4 is a side elevational view showing the packing sections partly disconnected for removing the packing; and Fig. 5 is a similar view illustrating the final step for disconnecting the sections and removing the packing.

Referring to the construction in detail, the packing consists of a casing comprising two sections 1 and 2, the latter of which is constructed with an annular flange 3 pro-

viding a chamber or recess 4 within which telescopes a reduced portion 5 at the lower end of the section 1. The reduced portion 5 of the section 1 has fitted thereon an expansible sleeve or band 6, preferably of rubber, and whose thickness is such that the outer surface thereof lies flush with the outer surfaces of the casing sections 1 and 2, whereby to readily permit the casing being inserted and lowered in the well boring, as will be understood. The upper edge 7 of the expansible ring 6 is beveled, and the immediately adjacent or engaging surface of the section 1 is likewise beveled complementary thereto. The lower edge 8 of the sleeve 6 is in like manner beveled, but in the direction opposite to that of the beveled edge 7, and the upper edge of the flange portion 3 is beveled complementary to the beveled edge 8, as clearly shown in Fig. 1. With this construction, it will be readily seen that relative movement between the casing sections 1 and 2, *i. e.*, when the end 5 is telescoped within the chamber 4, the beveled edge 7 of the packing ring or sleeve will be caused to fold or curl over against the outer wall of the section 1, and thereby expand said packing ring against the sides of the well shaft, as in that manner shown in Fig. 3. During this expanding movement of the packing ring, said ring is prevented from slipping relatively to the casing by reason of the lower beveled edge of the ring being engaged by the beveled edge of the flange portion 3. By reason of thus securing the expansible ring to the packing, said packing is prevented from slipping in the well shaft after being once set to position.

A pipe 9 through which the well is pumped passes loosely through an opening 10 in the casing section 1, and has a screw-threaded portion 11 secured to the lower casing section 2, as shown in Fig. 1. Said screw-threaded portion 11 serves, through the medium of a coupling 12, for connecting the pipe 9 to another pipe section 13 for extending the pipe to a length in accordance with the depth of the well shaft. A second or smaller pipe 14 has screw-threaded thereon a tubular section 15 adapted to engage with a nipple or tubular plug 14^b that is secured to the upper end of the section 1, and a packing ring 16^a surrounds said tubular plug 14^b and makes a liquid tight joint

therewith. A pipe section 14^a of the diameter of pipe 14 is also secured to the section 1 at 15^a, and passes with a close fit through an opening 16 formed in the lower casing section 2. Said section 2 has the opening 16 recessed to receive a packing 17, which, with a gland 18 screw-threaded in said opening, provides a liquid tight joint between the pipe 14^a and the section 2.

The pipe 14 is coupled or connected with the nipple 14^b after the casing has been lowered to the desired position by the pipe 9, and in order that said connection may be easily made, the upper surface of the pipe section 1 is concaved, as at 13^a. The pipe 14 provides an outlet for carrying off any gas which is present in the well, while the pipe 9 serves for drawing off the oil, as heretofore stated. In addition to its purpose for carrying off gas, said pipe 14 serves through its weight to move the casing section 1 downwardly and expand the ring 6 when the casing has been lowered to the desired position, and the weight of said pipe 14 left free to act. Also said casing section 1 may be moved downwardly by forcing down on the pipe 14 to effect the expanding of the ring. It will be understood, of course, that in either of these operations for moving the section 1 to expand the ring, the lower casing section 2 is held still relatively to the casing 1 through the medium of the pipe 9 which is secured to said casing 2.

To the end that the several parts of the well packing, *i. e.*, the casing sections 1 and 2 and the packing ring 6, may all be removed from the well shaft, the lower end of the pipe 14^a is provided with means, whereby the casing section 2 may slip over said end when moved in one direction, *i. e.*, downwardly, or be prevented from moving over said end in the opposite direction. The means shown herein consists in bifurcating the end of the pipe 14^a to provide prongs 19 and bending outwardly said prongs in the manner shown in Fig. 1. With this arrangement, the casing section 2 may be lowered (see Fig. 4), and the bifurcated end of the pipe 14^a drawn through the opening 16 in said section, when the prongs 19 will be bent inwardly and the several parts have substantially that relation shown in Fig. 4. The prongs 19 will, however, when drawn through the opening 16, slightly extend within the chamber 4, and engage with the bottom 20 of said chamber, when the casing section 2 is raised by the pipe 9. The further raising of the casing section 2 will now cause the pipe 14^a to be lifted, and since said pipe is secured to the casing section 1, said section 1 will also be lifted, (see Fig. 5). When the casing section 1 is raised, the packing ring 6 is stripped from said section, but still adheres to the sides of the well shaft, as shown in Fig. 5. Said packing

ring is, however, engaged by the casing section 2 on the further raising of the pipe 9, and is withdrawn through the well shaft with said section 2, as will be understood. By this provision, my construction offers a better packing than that heretofore obtained, in that the packing ring is readily loosened and stripped from the well shaft and recovered as distinct from sticking fast to the well shaft and being lost when the other parts of the packing are withdrawn.

The packing readily clears itself of any accumulation of dirt or other matter from the top of the casing, or loose matter with which it comes in contact while being withdrawn. This provision is accomplished by reason of the fact that said dirt or other matter passes around the casing section 1, through the packing ring 6, and around the casing section 2, as will be understood.

It is obvious that those skilled in the art may vary the details of construction and arrangement of parts without departing from the spirit of my invention, and therefore I do not wish to be limited to such features except as may be required by the claims.

What I claim is:—

1. In a well packing the combination of a casing comprising two relatively movable sections; an expansible sleeve mounted on said casing; means for moving one of said sections relatively to the other to expand said sleeve; and means for moving said other section relatively to the first to release said sleeve whereby to remove said packing from the well, substantially as described.

2. In a well packing the combination of a casing section; a pipe secured to said section for pumping from the well, and for raising and lowering the casing; an expansible sleeve; a second casing section movable relatively to the first named section to expand said sleeve; a member secured to said second section and engaging with the first named section; and means on said second section permitting of the release of said first section from said member when said section is lowered, and engaging therewith when raised to lift the second section for removing said casing and said ring from the well shaft, substantially as described.

3. In a well packing the combination of a casing section; a pipe secured to said section for pumping from the well, and for raising and lowering the casing; an expansible sleeve; a second casing section movable relatively to the first named section to expand said sleeve; a pipe secured to said second section whereby to move the same; and a pipe section secured to said second section and passing through the first pipe section, said pipe section providing a vent for the well with said pipe secured to the second section; and the lower end of said pipe section constructed with oppositely disposed

prongs permitting of the release of said
first section from the pipe section when said
first section is lowered, and engaging with
said first section when raised to lift the sec-
5 ond section for removing said casing and
said expansible ring from the well shaft,
substantially as described.

In testimony whereof, I affix my signa-
ture, in presence of two witnesses.

WILLIAM S. PIERCE.

Witnesses:

JOHN L. NESBIT,
E. W. CRESWELL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."