

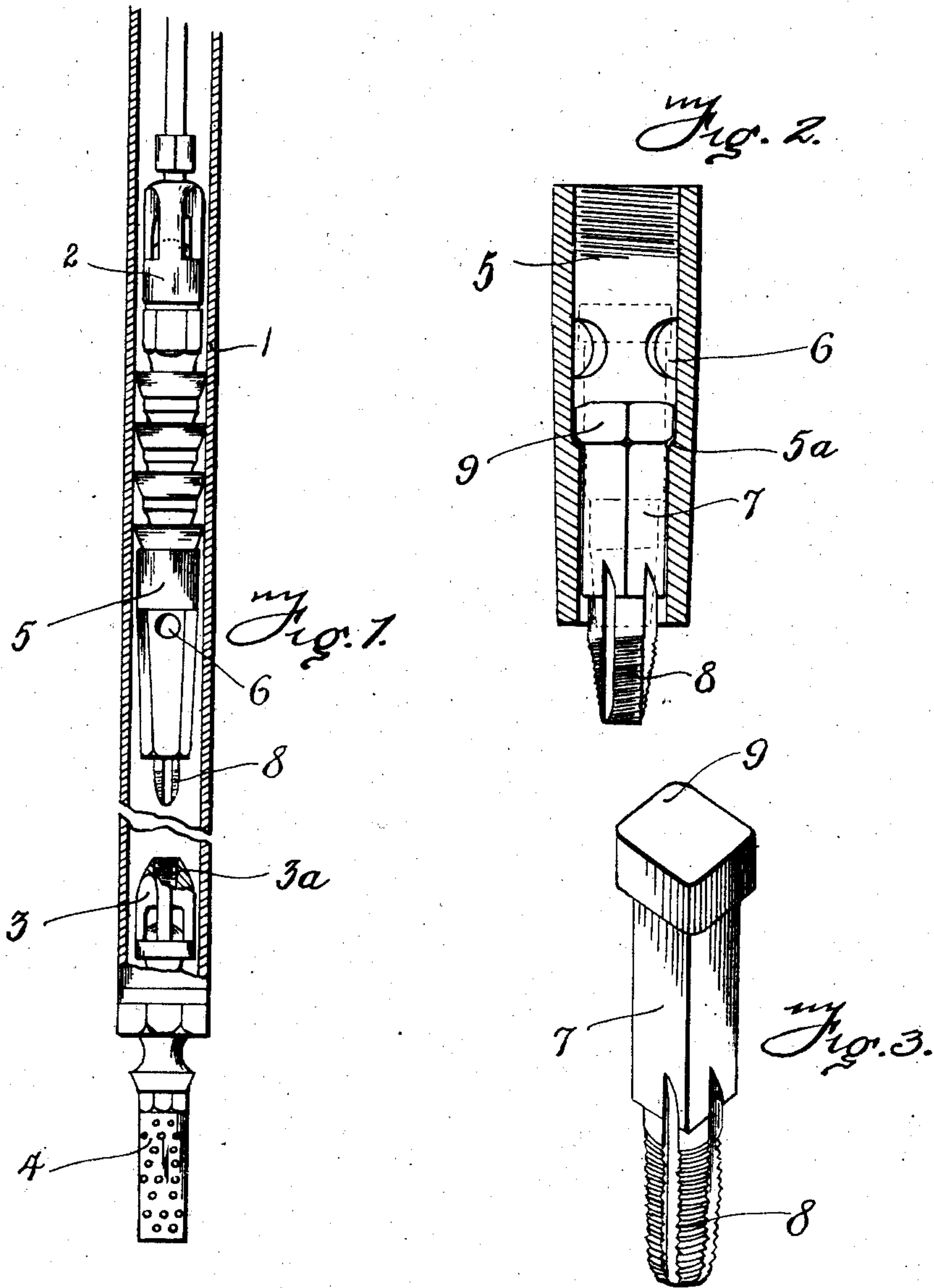
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E. A. COPELAND.

STAND VALVE EXTRACTING MEANS FOR OIL WELL PUMPS.

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Witnesses

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# UNITED STATES PATENT OFFICE.

EVELYN A. COPELAND, OF TIONESTA, PENNSYLVANIA.

## STAND-VALVE-EXTRACTING MEANS FOR OIL-WELL PUMPS.

No. 879,147.

Specification of Letters Patent.

Patented Feb. 18, 1908.

Application filed November 25, 1907. Serial No. 403,739.

*To all whom it may concern:*

Be it known that I, EVELYN A. COPELAND, a citizen of the United States, residing at Tionesta, in the county of Forest and State of Pennsylvania, have invented certain new and useful Improvements in Stand-Valve-Extracting Means for Oil-Well Pumps, of which the following is a specification.

As is well known, the depth of an oil well is usually anywhere from five hundred to two thousand feet, and the usual means for pumping the oil from the well comprises a working barrel arranged within the well casing, a stand valve being secured to the lower end of the working barrel while a valved plunger or piston is arranged in the working barrel and operated by rods. The operation of either of the valves of the pumping mechanism is often interfered with by lodgment of small pieces of wood, or other foreign matter, between the valve ball and its seat. When the ball valve is interfered with, so far as its proper operation is concerned, in the manner above mentioned, it is necessary to remove the plunger, or the stand valve, according to which one is not working properly, in order to displace the foreign matter which prevents the valve from doing its work. The above operation of removing the plunger from the well may be readily performed by pulling all of the rods out of the well carrying the said plunger with it. If the stand valve, however, is not in working order, it is customary and necessary to first remove the plunger, attach an extracting member to the lower end thereof, then lower said plunger into the well again in order to connect the extracting member with the stand valve, after which the latter may be removed from the well. The above operation is disadvantageous for the reason that it is necessary to withdraw the rods and plunger twice in order to remove the stand valve, which doubles the labor and expense when said operation is compared with that involved in the use of my present invention, whereby the stand valve is removable from the well together with the plunger, eliminating the necessity of withdrawing the rods twice from the well.

The broad idea involved in my invention is not new but the special means employed by me do away with certain defective features which have doubtless been responsible for failure to adopt or use prior patented devices by which it is aimed to accomplish the

same object as is incidental to my invention, are new.

For a full understanding of my invention, including the detail construction thereof and its peculiar mode of operation reference is to be had to the following description, and to the accompanying drawings, in which:

Figure 1 is a vertical sectional view of an oil well pump partially broken away and illustrating the application of my invention. Fig. 2 is a vertical sectional view of my extracting means which comprises an attachment for the plunger; Fig. 3 is a detail perspective view of the extracting member proper.

Throughout this description and in the drawings similar reference characters denote similar parts.

In the drawings the numeral 1 designates the working barrel of an oil well pump in which operates the usual form of plunger 2 having the usual valve, at the lower end of which is arranged the stand valve 3 and strainer 4. The upper extremity of the stand valve is provided with a threaded socket 3<sup>a</sup>, as is usual. Ordinarily the lower end of the plunger has a detachable member secured thereto, which member is removed in order to admit of substitution of a threaded extracting stem in the present commonly used form of oil pumps, when it is necessary to remove the stand valve, the said threaded stem being adapted to screw into the socket 3<sup>a</sup>. In the present invention I dispense with the threaded member above described and substitute therefor a specially formed tubular member 5 the upper portion of which is provided with internal screw threads by which the member is attached to the plunger as shown in Fig. 1 of the drawings. This tubular member 5 holds the packing of the plunger in place and at the same time normally supports an extracting member 7 adapted under all conditions for free vertical movement relative thereto. The intermediate portion of the tubular supporting member 5 is provided with openings 6 through which the fluid pumped from the well passes in an evident manner. The extracting member 7 is arranged below the openings 6 of the member 5 and comprises a square, or many-sided shank at the upper extremity of which is provided a head 9 and the lower end portion of which is reduced and threaded as shown at 8. The opening through the member 5 is of square form, in cross section, at the lower



end portion of said member 5, in order to snugly receive and fit about the shank of the extracting member 7, thereby necessitating rotation of the extracting member with the tubular member 5 and the plunger, the extracting member, however, being freely movable vertically independently of its support. The member 7 is adapted to gravitate so that it will usually occupy the position in which it is shown in Figs. 1 and 2 after it has been moved upwardly as shown in dotted lines in Fig. 2 so that it is entirely received or housed by the supporting member 5, this being an essential and advantageous feature in the operation of the present invention. The head 9 of the extracting member 7 limits the degree of downward movement thereof by engagement with an internal shoulder 5<sup>a</sup> between the ends of the member 5. The threaded lower extremity 8 of the extracting member 7 is adapted to be readily screwed into the socket 3<sup>a</sup> of the stand valve.

In the actual operation of my invention, the attachment including the members 5 and 7 does not interfere in any way whatever with the operation of the pumping mechanism adjacent thereto. Should the pump not operate properly, and it be desired to remove the stand valve and plunger to displace foreign matter interfering with the operation of either, the extracting device or attachment is always in a position ready for immediate connection for the plunger and stand valve, though of course under normal conditions said members are independent of one another. To connect the members 2 and 3 it is only necessary to lower the plunger 2 a sufficient distance to enable the lower end of the stem 8 to enter the socket 3<sup>a</sup>, whereupon the plunger 2 will be rotated by its rods and the screw connection between parts 3 and 7 established, permitting immediate withdrawal of the members 2 and 3 simultaneously. By reason of the peculiar mounting of the member 7 there is no liability of the threads of said member or the threads of the socket 3<sup>a</sup> becoming stripped should the lower end of

the plunger be dropped suddenly upon the stand valve. Should this happen with reference to my invention the member 7 will move upwardly into the member 5, in a manner readily apparent, but so arranged that its lower extremity will be received by the socket 3<sup>a</sup> ready to be screwed into connection therewith for the desired purpose.

Having thus described the invention what is claimed as new is:—

1. In means of the class described, the combination with an oil well pump including a plunger, and a stand valve having a threaded portion at its upper end, of an attachment applied to the lower end of the plunger and consisting of a supporting member secured to the plunger, and an extracting member mounted for rotation with said supporting member but movable into a position in which it does not project from said supporting member, said extracting member having a threaded portion at its lower end for connection with that of the stand valve.

2. In means of the class described, the combination with an oil well pump including a plunger and a stand valve, extracting means for the stand valve consisting of a tubular supporting member detachably secured to the plunger, and an extracting member the lower end of which has means for connection with the stand valve, said extracting member embodying a head normally supporting it in a position in which its lower end projects from the lower end of the supporting member, said extracting member furthermore interlocking with the supporting member for rotation therewith and being freely movable vertically thereon so as to be entirely received in the supporting member under certain conditions of service.

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

EVELYN A. COPELAND.

Witnesses:

JAMES HASLET,  
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