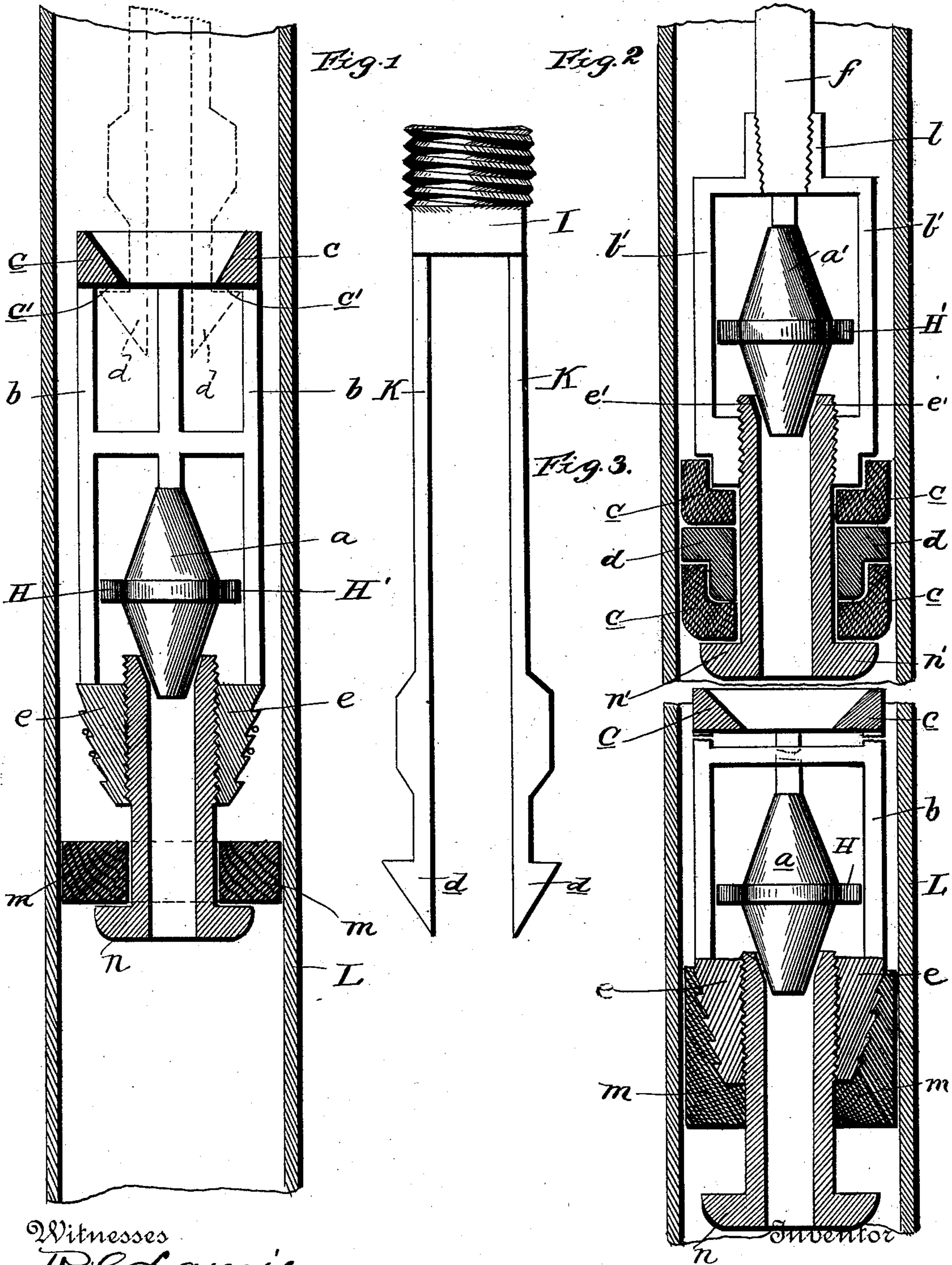


(No Model.)

N. E. HILDRETH.  
TUBULAR WELL VALVE.

No. 359,444.

Patented Mar. 15, 1887.



Witnesses

R. E. Lacey

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# UNITED STATES PATENT OFFICE.

NED E. HILDRETH, OF DECATUR, INDIANA.

## TUBULAR-WELL VALVE.

SPECIFICATION forming part of Letters Patent No. 359,444, dated March 15, 1887.

Application filed December 17, 1886. Serial No. 221,838. (No model.)

*To all whom it may concern:*

Be it known that I, NED E. HILDRETH, a citizen of the United States, residing at Decatur, in the county of Adams and State of Indiana, have invented certain new and useful Improvements in Tubular-Well Valves; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

15 This invention relates to valves which are particularly designed for tubular wells.

The improvement consists in the novel features presently to be described and shown in the annexed drawings, in which—

20 Figure 1 is a central longitudinal sectional view through a tube and valve embodying my invention. Fig. 2 is a similar view showing the sucker and check valve in position, and Fig. 3 is a side view of the grab.

25 The sucker-valve comprises the skeleton frame  $b'$ , the short tube  $n'$ , flanged at its lower end and having its upper portion threaded and screwed into the lower end of the frame  $b'$ , the double conical-ended valve  $a'$ , located within the frame and guided in its movements by the flange  $H'$ , the packing-rings  $c$ , and the metal expanding-ring  $d$ , interposed between the rings  $c$ . The upper end of the frame  $b'$  terminates in a threaded socket,  $l$ , 30 which receives the lower end of the plunger-rod  $f$ . The upper end of the tube  $n'$  is beveled on its inner edge,  $e'$ , forming a seat for the valve  $a'$ , which valve is reversible. By adjusting the tube  $n'$  the packing-rings  $c$  may 40 be expanded more or less. The expanding-ring is flanged at its upper end, and the lower outer corner is rounded for permitting the lower packing-ring to assume the cup shape.

45 The check-valve is similarly constructed to the sucker-valve, and comprises the skeleton frame  $b$ , the double conical-ended valve  $a$ , having the flange  $H$ , and the packing-ring  $m$ . The upper end of the frame  $b$  terminates in a ring,  $c$ , which is beveled from its upper outer 50 edge toward the center or lower inner edge, forming an annular shoulder,  $e'$ , which is

adapted to receive the end of a grab when it is desired to adjust or remove the valve from the tube or case. By reason of the bevel of the ring a suitable tool or instrument can be readily 55 inserted and catch under the shoulder  $e'$ , when it is desired to withdraw the valve. The tool best adapted for the purpose is that shown by dotted lines in Fig. 1 and by full lines in Fig. 3, and consists of the head  $I$ , adapted to be 60 screwed to the end of a rod, (not shown,) and the spring-arms  $K$ , which terminate in the outwardly-extending hooked ends  $d$ .

When it is desired to withdraw the check-valve, the grab (shown in Fig. 3) is let down 65 into the tube. The hooked ends will be guided and compressed by the beveled ring  $c$  till its lower end will engage with the shoulder  $e'$ , as shown by dotted lines, Fig. 1. An upward movement of the grab will carry the 70 valve with it, as will be readily appreciated. The packing-ring  $m$  is located between the flanged end of the tube  $n$  and the lower end of the frame  $b$ , which end is tapered and serrated. By adjusting the tube  $n$  the ring  $m$  will be 75 forced upon the tapered end of the frame and be expanded to any required degree for holding the valve in an adjusted position in the tube.

In practice the check-valve is adjusted to 80 the required position in the tube or casing  $L$ , and is held in such position by the outward pressure of the ring  $m$  against the sides of the tube. The sucker-valve is next placed in position, and the device is in readiness for operation. 85

The check-valve can be removed at will by first removing the sucker-valve and then inserting the grab, as previously stated. The valves  $a$  and  $a'$  can be reversed when one end 90 is worn.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The herein shown and described valve, 95 composed of the skeleton frame having an annular shoulder at its upper end and a threaded socket at its lower end, the short tube beveled at its upper and flanged at its lower end, screwed into the lower end of the frame, the 100 packing mounted on the short tube and confined between its flanged end and the frame,

and the conical-ended valve having a guide-flange projected therefrom midway its ends and fitting the interior of the skeleton frame for guiding the valve in its movements, substantially as described.

2. The combination, with the valve-frame having the inwardly-beveled ring at its upper end, of the grab composed of the head, the spring-arms, and the outwardly-extending

hooks, substantially as shown, and for the purpose described.

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

NED E. HILDRETH.

Witnesses:

J. F. MANN,

R. S. PETERSON.