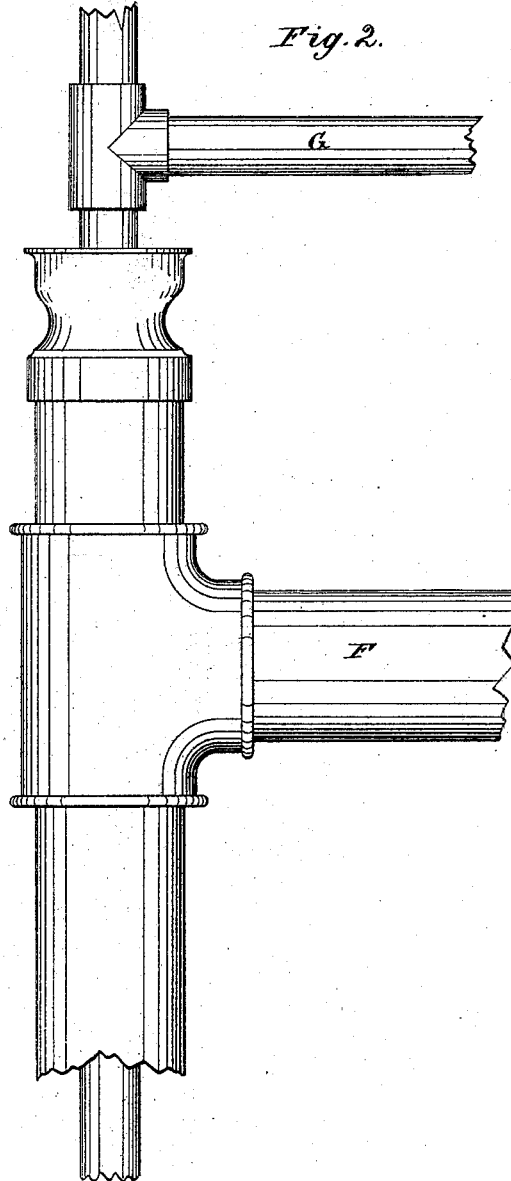
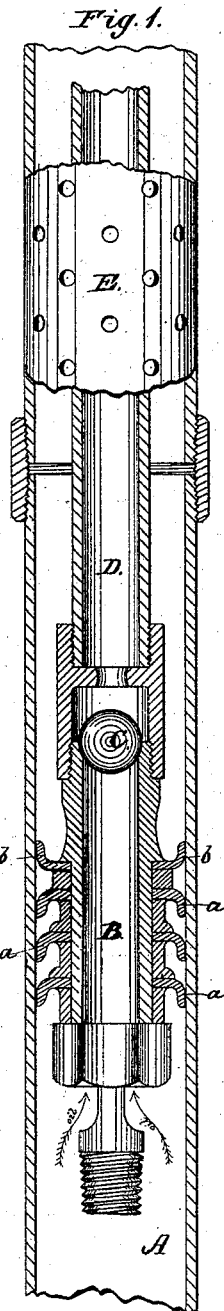


F. J. HANNA.  
Oil-Well Pump.

No. 209,258.

Patented Oct. 22, 1878.



WITNESSES:

*W. W. Hollingsworth*  
*John C. Kernon*

INVENTOR:

*Francis J. Hanna*

BY

*Wm. T. C.*  
ATTORNEYS.

# UNITED STATES PATENT OFFICE.

FRANCIS J. HANNA, OF KANE CITY, PENNSYLVANIA.

## IMPROVEMENT IN OIL-WELL PUMPS.

Specification forming part of Letters Patent No. **209,258**, dated October 22, 1878; application filed September 21, 1878.

*To all whom it may concern:*

Be it known that I, FRANCIS J. HANNA, of Kane City, in the county of Venango and State of Pennsylvania, have invented a new and useful Improvement in Oil-Well Pumps; and I do hereby declare that the following is a full, clear, and exact description of the same.

The invention will first be described in connection with the drawing, and then pointed out in the claim.

In the drawing, Figure 1 represents a vertical section of a pump and portions of tubing constructed according to my invention, and Fig. 2 a side view of the upper portion of the tubing and the hollow piston-rod.

A represents the barrel in which works the piston B, having a portion of the cupped leathers *a a a* with their lips turned downward, and one or more, *b*, set upward. Above these cups is the valve C, which is arranged to freely admit the liquid in the barrel below the piston to rise through it into the hollow piston-rod D; but there is no communication between the interior of the piston-rod and the space in the barrel above the piston. At E is the tubing, having a number of perforations above the working-barrel of the pump, which may be made in any desired position to suit circumstances.

Should it be found that the well has become clogged with paraffine, steam is driven through the pipe F into the tubing E, and, issuing through the perforations therein, melts the paraffine in the surrounding oil-rock. If the pump is to be used for raising the salt water which proves so troublesome in many wells, the working-barrel may be sunk below the oil-rock, when the water will be raised by the pump and the oil flow through the tubing in the following manner: On the descent of the piston the water will be driven up through it

past the valve C into the hollow piston-rod D and out at the pipe G, forming a horizontal continuation of the piston-rod. As the piston ascends the water rises in the interior of the working-barrel A, to be driven upward on the next descent of the piston. As there is no communication between the tube E and the interior of the hollow piston-rod, water ascends through the latter, the space surrounding it being left vacant so far as the pumping operation is concerned, and consequently the oil, being the lightest, will float above the water, and, entering the perforations, will rise up through the tubing and pass out at the pipe F. As the water becomes exhausted the oil accumulates, and is raised by the pump, so that, should there be pressure enough, the oil will be pumped through the piston-rod and flow through the tube at the same time.

By the arrangement of the cup-leathers in the manner shown, the upper one prevents the passage of the steam downward, so that its whole force is expended on the paraffine at the sides, and the lower ones act to drive the liquid through the piston and its hollow rod.

What I claim as new is—

The tubular piston B, open at each end, having ball-valve C at top, and connected by a centrally-open coupling with tubular piston-rod, in combination with pump-barrel, perforated at E, and provided with pipes F G, as and for the purpose specified.

The above specification of my invention signed by me this 10th day of September, 1878.

FRANCIS J. HANNA.

Witnesses:

T. J. W. ROBERTSON,  
SOLON C. KEMON.