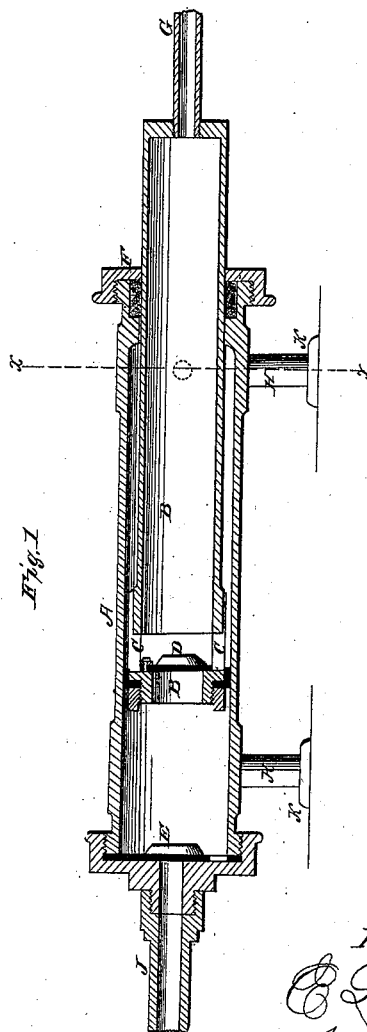
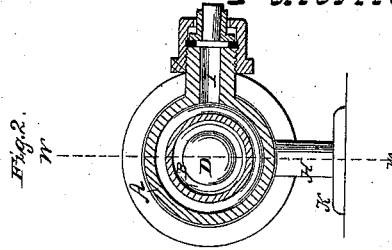


*E. L. Staples,*

*Pump Lift,*

*N<sup>o</sup> 55,022.*

*Patented May 22, 1866.*



Witnesses.  
*J. M. E. Lym*  
*W. B. Loring*

Inventor.  
*E. L. Staples*  
per *Munn & Co*  
Attorneys

# UNITED STATES PATENT OFFICE.

E. L. STAPLES, OF NASHVILLE, TENNESSEE, ASSIGNOR TO JAMES E. RUST,  
OF SAME PLACE.

## IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. 55,022, dated May 22, 1866.

*To all whom it may concern:*

Be it known that I, E. L. STAPLES, of Nashville, in the county of Davidson and State of Tennessee, have invented a new and useful Improvement in Pumps; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an axial section of a pump made according to my invention, the plane of section being seen at *w*, Fig. 2. Fig. 2 is a cross-section on the line *x*, Fig. 1.

Similar letters of reference indicate corresponding parts.

The object of this invention is the construction of a pump for use in deep wells, although it is applicable to other wells. It consists, among other things, in enlarging the upper part of the piston or plunger rod nearly to the size of the internal diameter of the cylinder, such enlarged part being connected to the piston by narrow bars, and its outer end working through a stuffing-box in the end of the cylinder. Said piston-rod is reduced in diameter beyond the stuffing-box, whence it is continued to the top of the well by a hollow rod of smaller diameter, whose end screws into the solid end of such enlargement. The water or other liquid pumped up is discharged from the end of the piston-rod, or it may be discharged from the side of the pump-cylinder, in which case the opening at the end of the piston-rod should be closed.

A designates a pump-cylinder, which is provided with brackets H K H K, for securing it in any position and at any desired height in a well, either above or below the surface of the water, the pump being capable of operation both as a submerged pump and in the ordinary way. The bottom of the cylinder is provided with the usual inlet-valve E, which is in communication with an inlet-pipe, J, which is continued down to the water or other liquid to be raised. The side of the cylinder, near its upper end, is provided with an edu-

tion-pipe, I, through which the discharge of water may be made if desired.

B is the piston, having a valve, D, and being connected by two or more bars, C, to a hollow chamber, B', which is an enlargement of the piston. This chamber is open at its inner end next to the piston, and its opposite or outer end, which protrudes through the top of the cylinder, is closed, excepting that it has an opening through it to receive a hollow pipe, G, which forms the piston-rod of the pump. The chamber B' may be said to form part of the piston of the pump, but it will be observed that its construction, if it be considered part of the piston, is peculiar, inasmuch as there is an open space next above the piston-valve and between it and the end of said chamber B'. The chamber B' is not equal in diameter to the interior of the cylinder, and consequently an annular space is left between them, into which the water or other liquid may enter, and through which it passes continually when the discharge is to be through the side education-pipe, I. The chamber B works through a stuffing-box, F, placed at the upper end of the cylinder, and the length of said cylinder is such that when the piston is at its lowest position its outer or upper end will not quite reach the top of the stuffing-box. When the side pipe, I, is closed the discharge of liquid will be through the piston-rod G to the top of the well.

I claim as new and desire to secure by Letters Patent—

1. Connecting to the piston B of a pump a chamber, B', open at its inner end and connected to the piston by bars or rods C, said chamber having a hollow piston-rod screwed into its closed outer end, substantially as described.

2. In combination, the pump-cylinder A, the piston B, and the chamber B', connected with it, the hollow piston-rod G, and the side education-pipe, I, substantially as shown.

E. L. STAPLES.

Witnesses:

ISAAC PAUL,  
J. W. WRIGHT.