

(No Model.)

B. V. NORDBERG.
STEAM PUMP.

No. 433,996.

Patented Aug. 12, 1890.

Fig. 1.

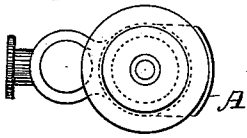


Fig. 2.

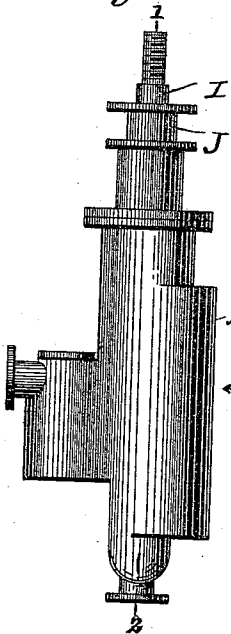


Fig. 3.

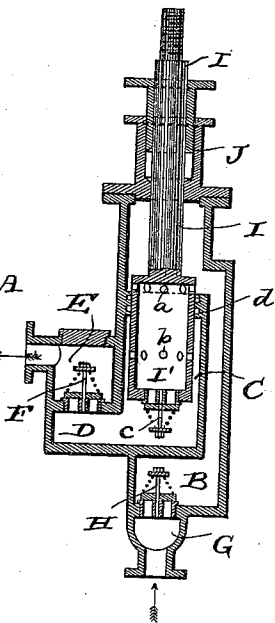


Fig. 4.

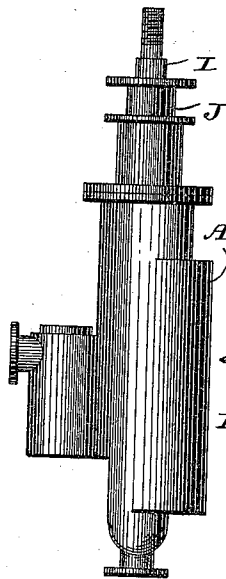
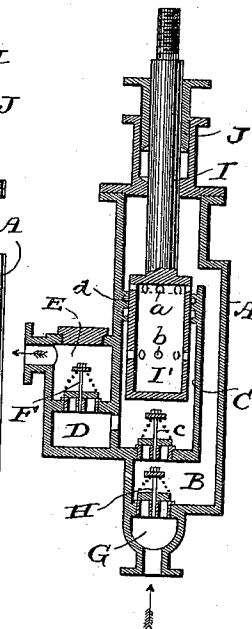


Fig. 5.



Witnesses
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UNITED STATES PATENT OFFICE.

BRUNO V. NORDBERG, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO THE
BRUNO NORDBERG COMPANY, OF SAME PLACE.

STEAM-PUMP.

SPECIFICATION forming part of Letters Patent No. 433,996, dated August 12, 1890.

Application filed January 13, 1888. Serial No. 260,632. (No model.)

To all whom it may concern:

Be it known that I, BRUNO V. NORDBERG, of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Steam-Pumps, and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to steam-pumps and will be fully described hereinafter.

In the drawings, Figure 1 is a plan view of my improved pump. Fig. 2 is an elevation of the same. Fig. 3 is a section on line 1 2, Fig. 1. Fig. 4 is an elevation, and Fig. 5 a central vertical section, of a modification of the same.

A is the shell of my pump; B, the main chamber; C, the cylinder; D, an arm of the cylinder; E, an outlet-chamber; F, a valve leading from said arm of the cylinder to outlet-chamber; G, an inlet-chamber, and H a valve leading from the inlet-chamber to the main chamber B.

I is the plunger or piston, which works in a stuffing-box J in the upper portion of the shell A. The piston I', which is hollow, is properly fitted in the cylinder C and provided with two rows of perforations *a* and *b* in its sides, and with a valve *c*, that opens outward from its bottom.

The operation of my device is as follows: When the piston begins its downward stroke, the pump being full, as long as the row of perforations *b* are closed from the cylinder by the packing *d* the piston will have a forcing action, expelling from the cylinder through valve F and sucking into chamber B through valve H; but just as soon as the perforations *b* pass below the packing or stationary bushing *d* there will be circulation established

through perforations *a* and *b* and between chamber B and the cylinder, and the plunger I will merely displace for the remainder of the stroke and suction will cease, and this equilibrium will continue throughout the return or upward stroke of the plunger, as the valve *c* will permit a circulation through the piston-head during the stroke of the piston; but, though the equilibrium will continue, expulsion will cease when the downward stroke is completed, and suction occasioned by the withdrawal of the plunger will begin with the upward stroke.

The modification shown in Figs. 4 and 5 differs only from that just described in that the valve *c* is located in the bottom of the cylinder instead of in the piston.

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

In a steam-pump, the combination, with a main chamber and inlet-valve, of a cylinder and outlet-valve leading therefrom, a hollow perforated piston adapted during a portion of its stroke to connect the cylinder and main chamber, and a stationary bushing for cutting off communication between the cylinder and main chamber during the remainder of the stroke, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

BRUNO V. NORDBERG.

Witnesses:

CHARLES EDWARD SHADALL.
S. S. STOUT.