

(No Model.)

G. J. FRITZ.

FORCE PUMP.

No. 262,394.

Patented Aug. 8, 1882.

Fig. 1.

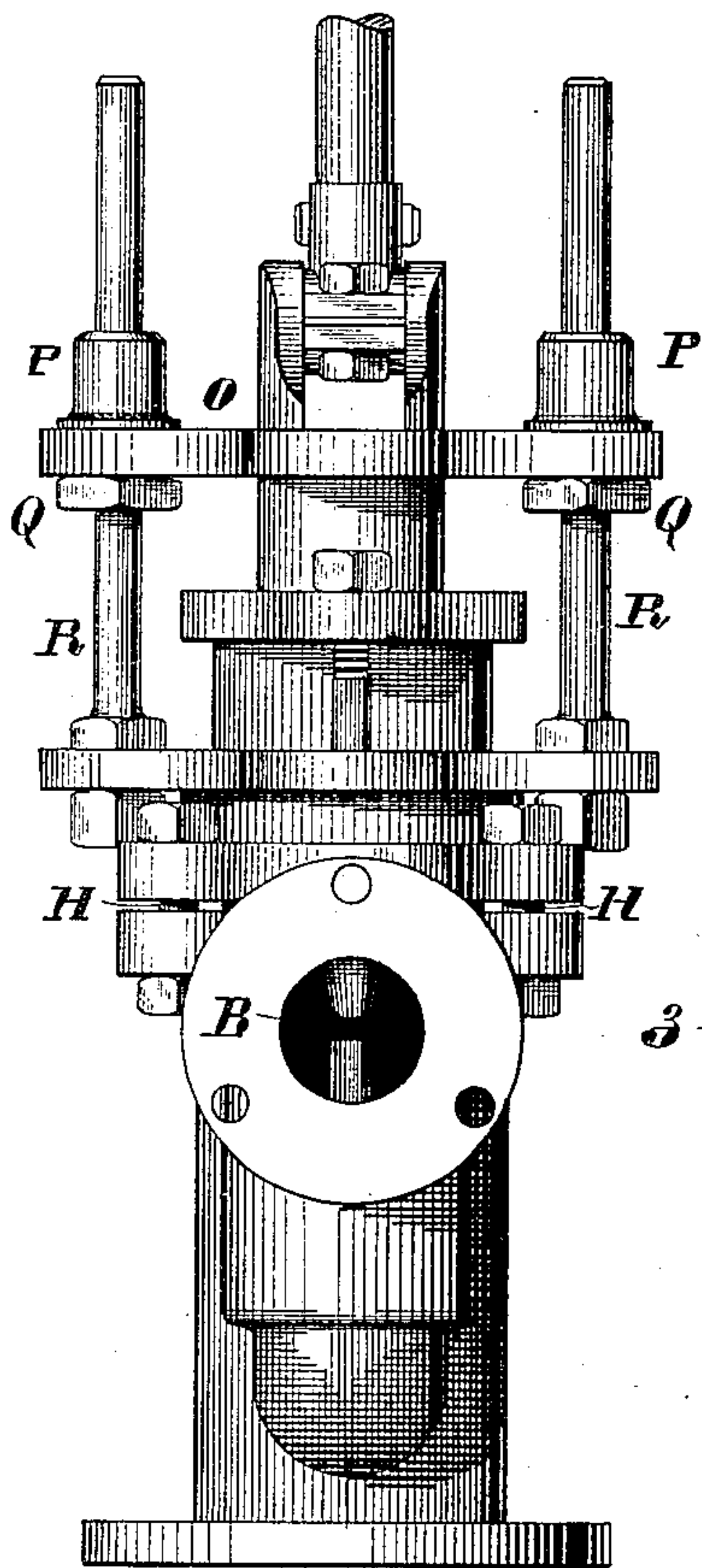


Fig. 2.

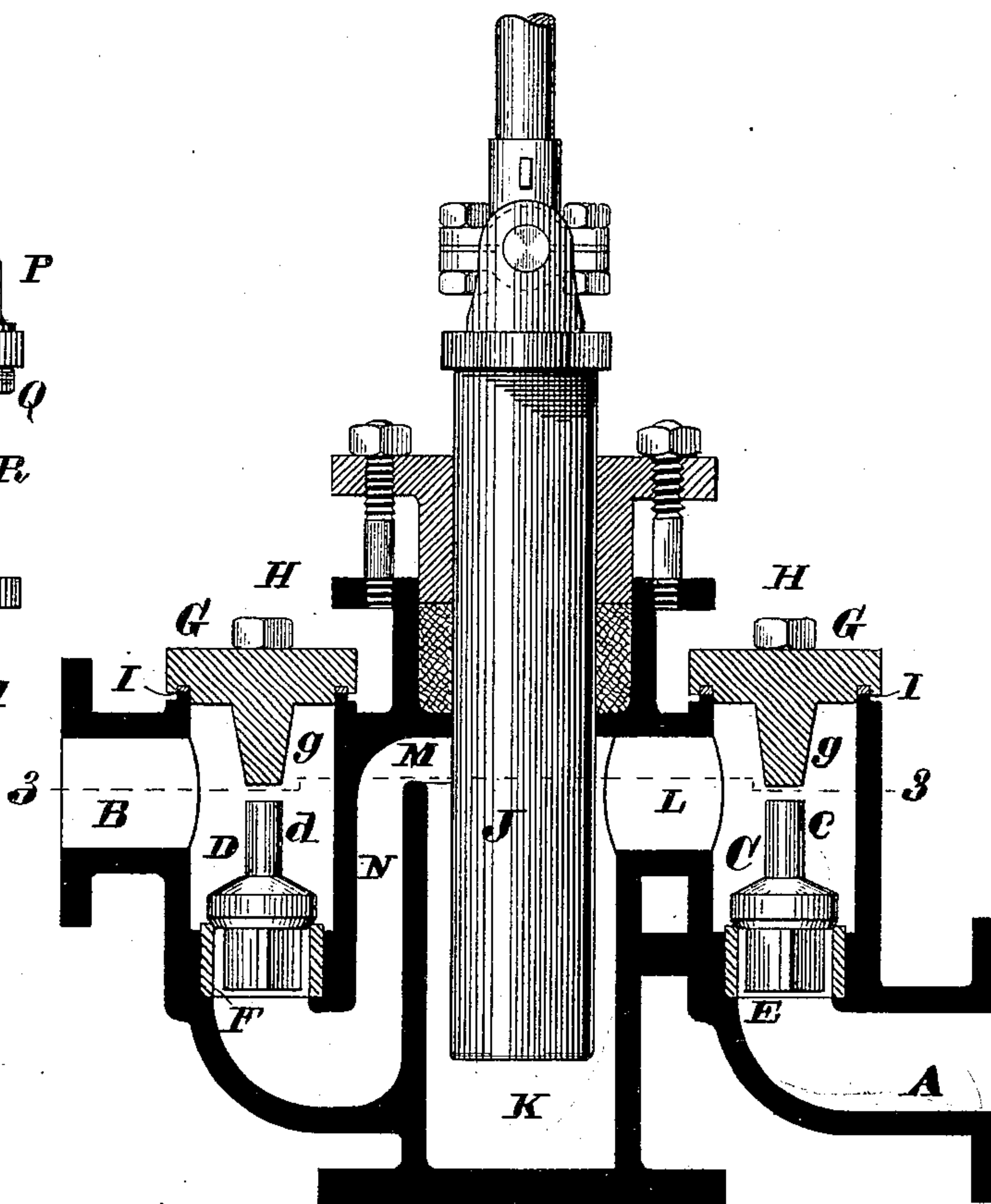
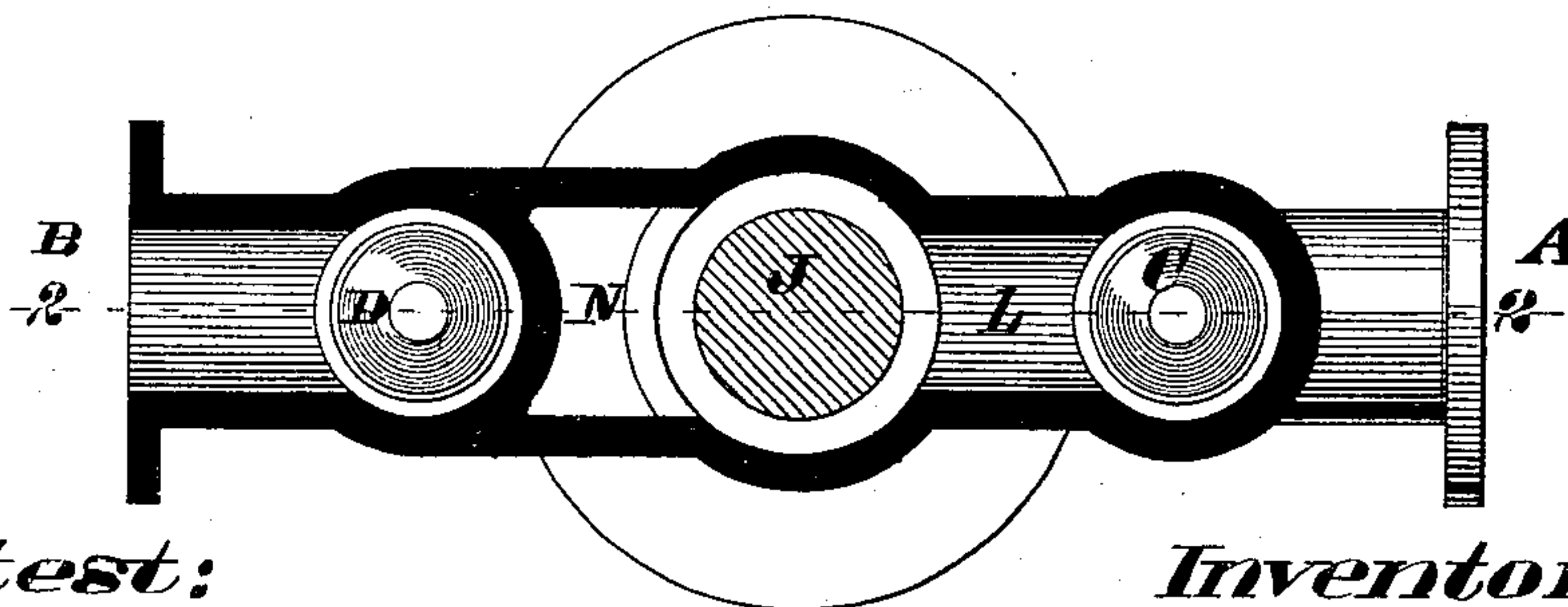


Fig. 3.



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UNITED STATES PATENT OFFICE.

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FORCE-PUMP.

SPECIFICATION forming part of Letters Patent No. 262,394, dated August 8, 1882.

Application filed February 7, 1882. (No model.)

To all whom it may concern:

Be it known that I, GEORGE J. FRITZ, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Force-Pumps, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates, first, to a descending duct leading from the upper part of the plunger-cylinder to the chamber beneath the eduction-valve.

My invention relates secondly to guides for the plunger.

In the drawings, Figure 1 is an elevation. Fig. 2 is a vertical section on line 2 2, Fig. 3. Fig. 3 is a horizontal section on line 3 3, Fig. 2.

A represents the induction-port, and B the eduction-port, of the pump.

C and D represent the valves, and E and F their respective seats. The seats are formed separate from the main casting, and are fixed in place in enlargements of the ports made to receive them (see Fig. 2) after the valves have been fitted to them. The object of thus securing the seats in place is to avoid danger of their becoming loose, as they are liable to do when they are cemented in; and another advantage is that there is no danger of steam finding a passage between them and the casting. They can also be easily removed and replaced by new ones, and it is impossible for any pressure of the valves to displace them. The valves have ordinary guide-wings.

c d are stems, which limit the upward movements of the valves by impingement against the depending stems of the valve-chamber heads G. The heads are secured in place by bolts H, and thus are easily removable to allow access to the valves.

I I are gum or other gaskets beneath the heads.

J is the plunger, working in a suitable stuffing-box, as usual.

K is the cylinder of the plunger.

L is the inlet-passage from the chamber of valve C.

M is the outlet-passage from the plunger-cylinder. The opening M is situated at the upper part of the cylinder, and leads to a descending duct, N, which communicates at its lower end with the chamber of valve D.

In pumping heated water, especially where it approaches the boiling temperature and suction is depended on in any degree to draw water into the pump, steam forms in the cylinder and interferes with the successful operation of the pump. I provide my descending duct N (communicating with the upper part of the cylinder) to get rid of the steam as fast as it may be formed. Supposing steam to be present in the upper part of the cylinder, on the descent of the plunger the water escaping from the cylinder would force the steam out through the port M, and down through the duct N, and out through the port of the valve D. Thus there would be no accumulation of steam in the upper part of the cylinder, and the bad result of a gradually-increasing quantity of steam in the cylinder is avoided by clearing the cylinder of steam at each stroke of the plunger.

The plunger has secured to it a cross-head, O. By means of sleeves P P and nuts Q Q the cross-head is secured to guide-standards R R, secured to and extending upward from the head of the plunger-cylinder. Thus the plunger is guided and held in a perfectly vertical position in the stuffing-box.

I claim as my invention—

1. A force-pump provided with a descending duct between the upper part of the plunger-cylinder and the chamber beneath the eduction-valve, as set forth.

2. In a force-pump, the combination of plunger-cylinder, cross-head secured to the plunger, guide-standards secured to the pump-cylinder, and sleeves and nuts connecting the cross-head with the standards, as set forth.

GEORGE J. FRITZ.

Witnesses:

SAML. KNIGHT,
GEO. H. KNIGHT.