

S. L. WIEGAND.

Improvement in Piston Packing.

119,100.

Patented Sep. 19, 1871.

Fig. 1.

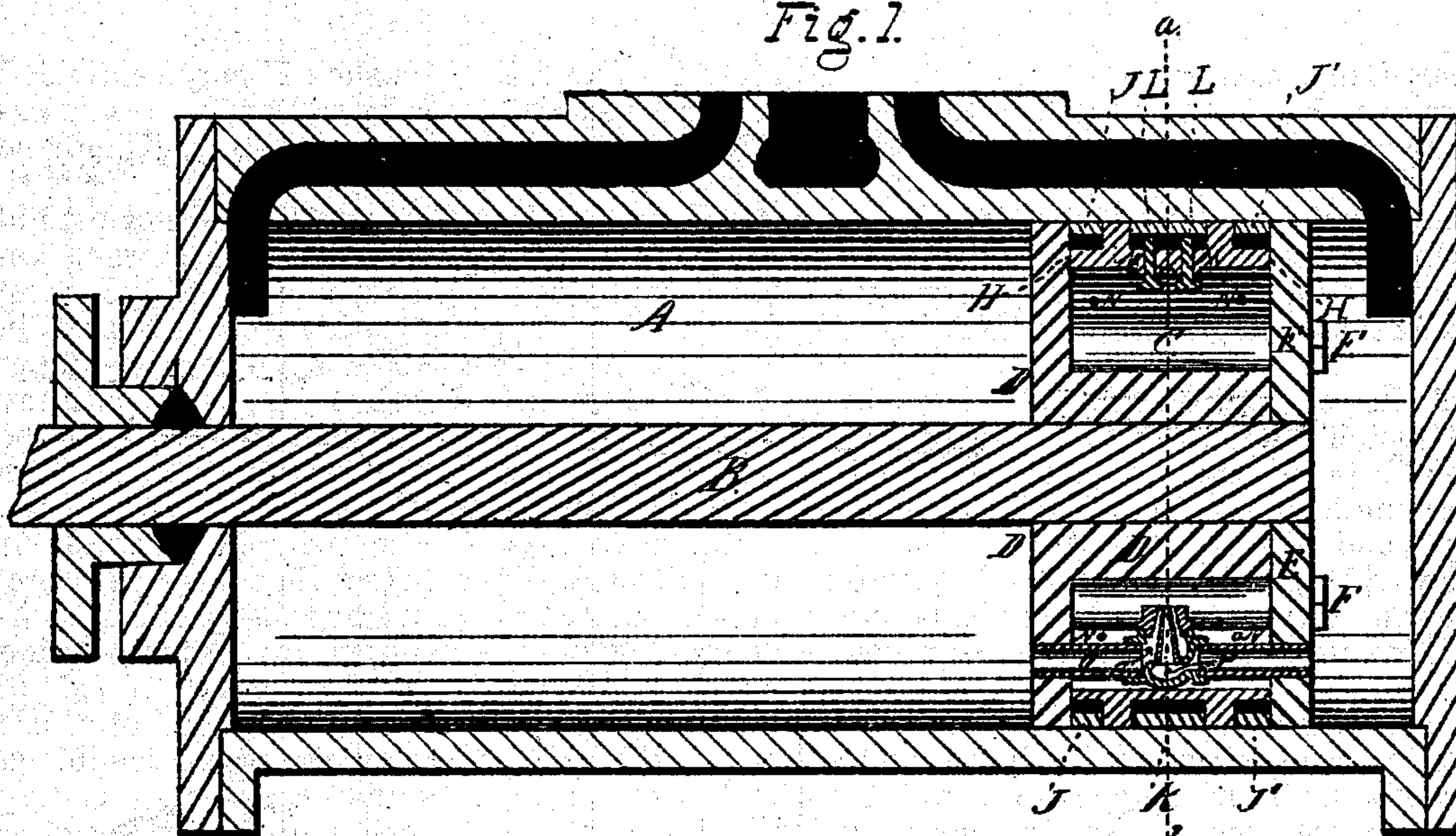


Fig. 2.

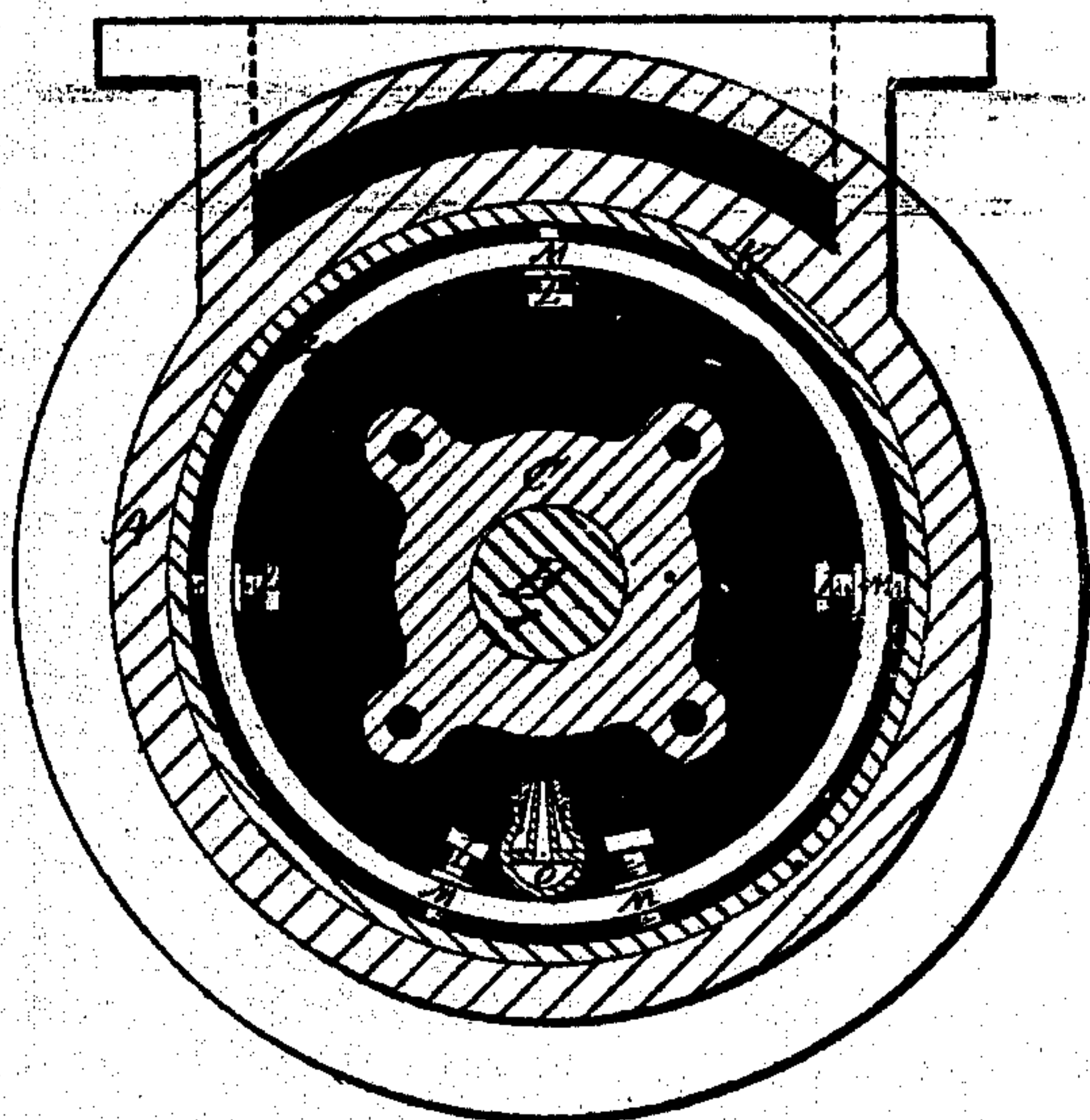


Fig. 3.

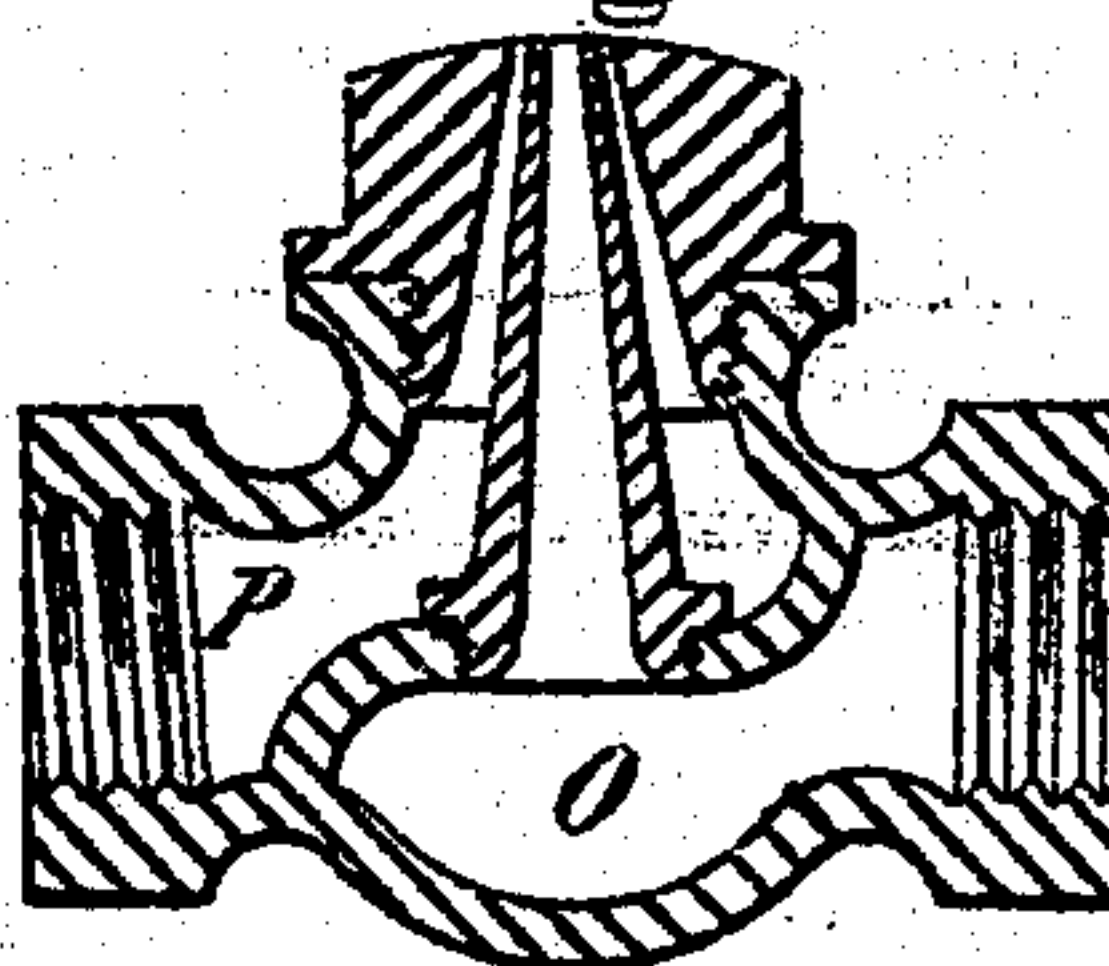
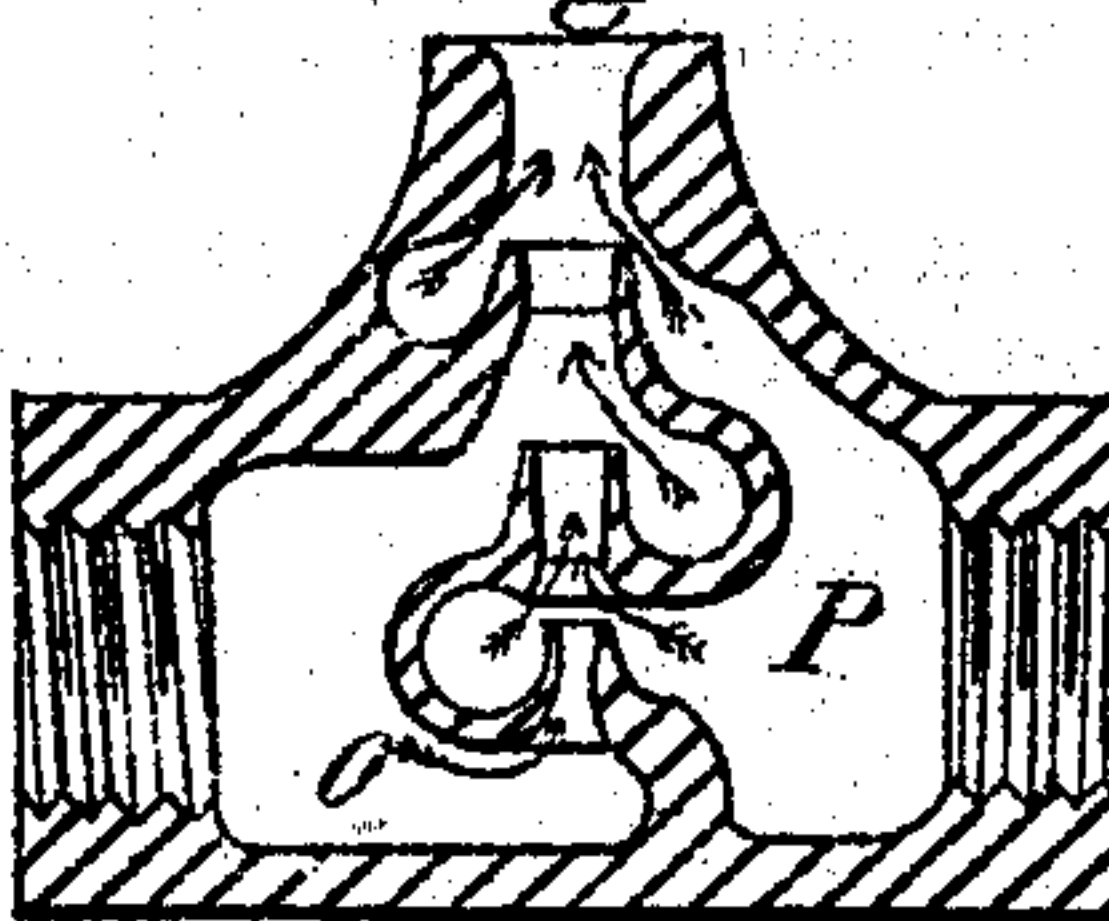


Fig. 4.



Witnesses

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S. LLOYD WEIGAND, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN PISTON-PACKINGS.

Specification forming part of Letters Patent No. 119,100, dated September 19, 1871.

To all whom it may concern:

Be it known that I, S. LLOYD WIEGAND, of the city and county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Piston-Packing for Pumps and Steam-Cylinders; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the drawing annexed.

Figure 1 shows a longitudinal section of a cylinder and piston containing this improvement. Fig. 2 shows a transverse section of the cylinder on the plane indicated by the vertical dotted line *a b* in Fig. 1, and with the follower end removed. Fig. 3 shows a longitudinal section of the tubular fixture that forms the prominent characteristic of this invention; and Fig. 4, a modification thereof.

The nature of my invention consists in combining two tapering tubes leading into the interior cavity of a piston from opposite sides thereof, in such a manner that the smaller end of one tube is made annular and encircles the smaller end of the other tube, and whenever a jet of steam or other fluid flows through either tube into the cavity of the piston by reason of fluid pressure being applied to either side of the piston, a current of fluid is induced through the other tube from the opposite side of the piston. Fluid pressure is thus readily and effectively maintained in the cavity of the piston, and being transmitted through suitable apertures to the inner surfaces of the packing-rings, holds them in close contact with the inner surface of the cylinder with sufficient force to render the piston steam-tight, but not enough to occasion injurious friction.

I will now proceed to particularly describe the manner of making and using my invention, referring in so doing, by letters of reference, to the drawing hereto annexed.

The same letters of reference apply to the same parts in the several figures.

A represents a cylinder provided with a piston-rod, B, bearing upon the end a piston, C, formed of a body or spider, D, secured firmly on the rod B, and a follower, E, secured by several bolts F to the body or spider D. Between the body D of the piston and the follower E, is placed a cylindrical shell, H, turned with shoulders so as to form grooved recesses, in which are placed pack-

ing-rings J and J'. The shell H may be divided and grooved in the center so as to form a recess into which a central supporting-ring, K, may be fitted, which may be adjusted concentrically with the piston-rod B and internal surface or bore of the cylinder A, by means of the set-screws L, provided with lock-nuts M. A number of apertures, N, are drilled, communicating from the cavity in the shell H to the bottoms of the grooves under the packing-rings J and J'. These permit any fluid pressure in the cavity in the shell H to be transmitted to the interior surface of the rings J and J'.

So far as I have described this invention, it coincides with some others that have been previously made and used; but the peculiar characteristic and important feature of my invention consists of a tube, O, leading from one side of the piston and terminating in a tapering nozzle or jet-tube in the cavity of the piston combined with which tube O is another tube, P, leading into the cavity of the piston and terminating in a conical jet-tube encircling and surrounding that of the tube O. There is no fluid communication between the tubes O and P, excepting where the conical nozzles terminate in the cavity of the piston. A jet of steam or other fluid flowing into either of the tubes induces a current inward into the cavity of the piston in the same manner that the flow of steam through an injector draws water into the annular space surrounding the steam-jet. In large pistons several pairs of tubes may be advantageously used in preference to one larger pair. It will be plainly apparent that so long as there is fluid pressure upon either side of the piston, there will be like pressure or greater in the cavity of the piston and against the inner surfaces of the rings J and J', so that the rings will be held in close contact with the inner surface or bore of the cylinder with a force always in due proportion to the pressure in the cylinder.

Various modifications can be made of this invention by changing the form of the tube; as, for instance, the central jet may be made in the same axial line as the tube O, while the annular jet-tube surrounding it may be connected with a curved pipe, instead of having both tubes O and P curved, as shown. Valves opening inward may be placed in the tubes O and P, or a valve may be placed in the cavity of the piston so as

to close both the central and annular jets. These are not desirable, but will work, and do not change the essential feature of the invention.

I am aware that devices have been proposed in which one jet-tube leading from one side of a piston induces a current in a jet-tube leading from the opposite side thereof. This I distinctly disclaim; but

What I do claim as my invention, and desire to secure as such by Letters Patent, is—

An annular jet-tube leading from one side of the piston, surrounding a jet-tube leading from

the opposite side of the piston, inducing currents through each other, and thereby applying internal pressure to the packing-rings, substantially as described and shown.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

S. LLOYD WIEGAND.

Witnesses:

A. ELLWOOD JONES,
JOHN B. DEVINE.