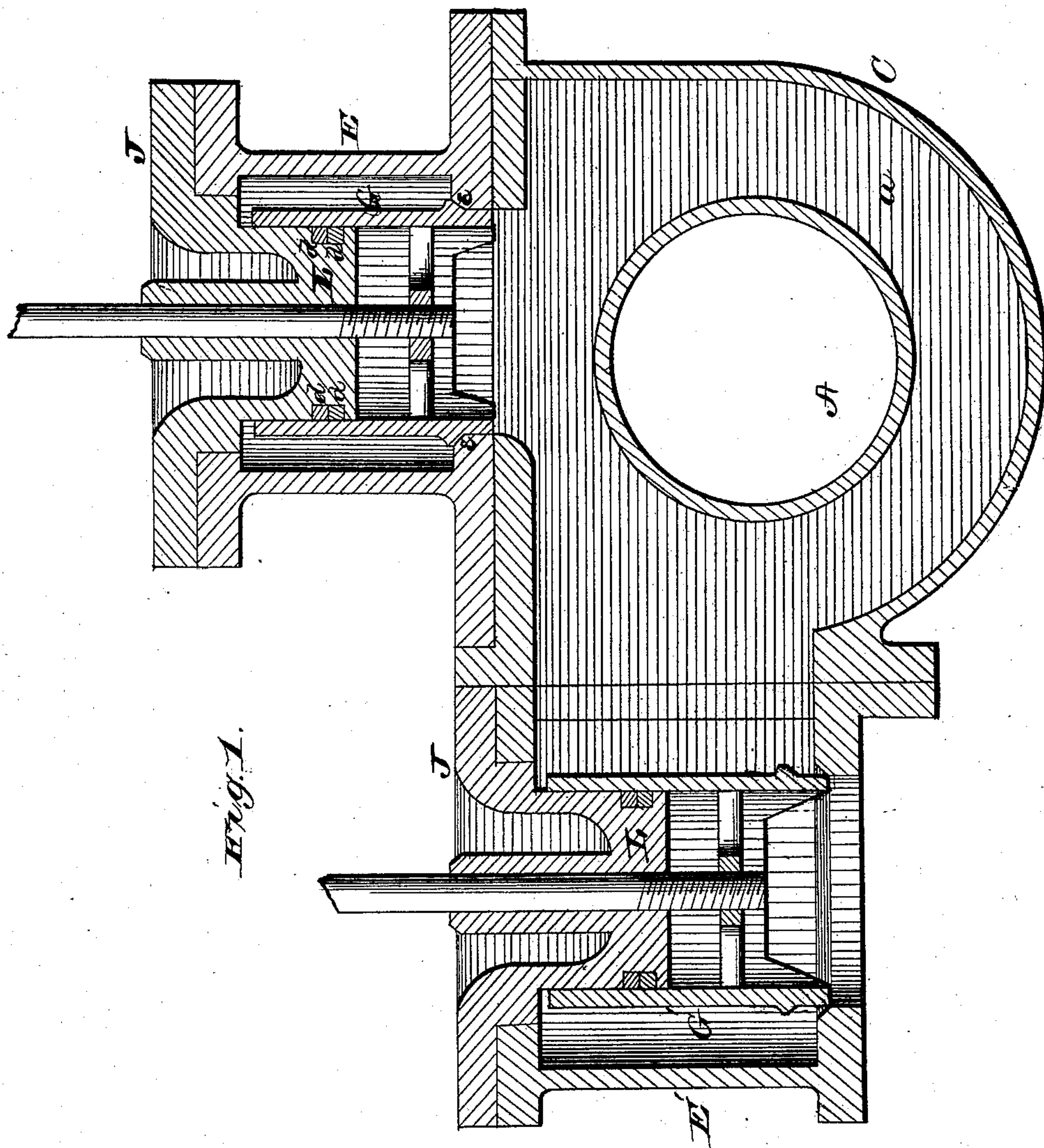


H. F. FRISBIE.
Steam-Engine Cylinder.

No. 198,099.

Patented Dec. 11, 1877.



WITNESSES

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Wm. Hall

INVENTOR

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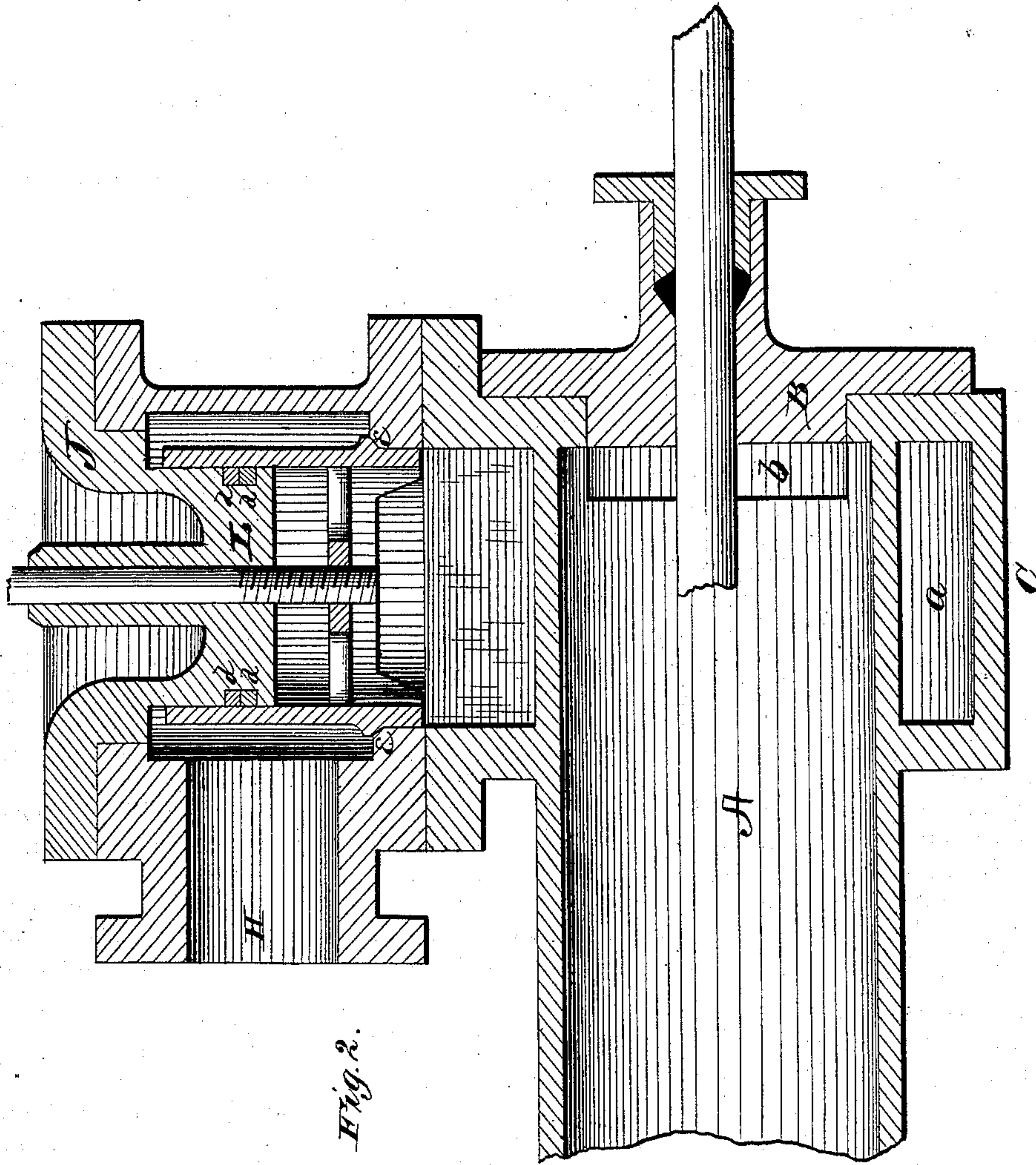


Fig. 2.

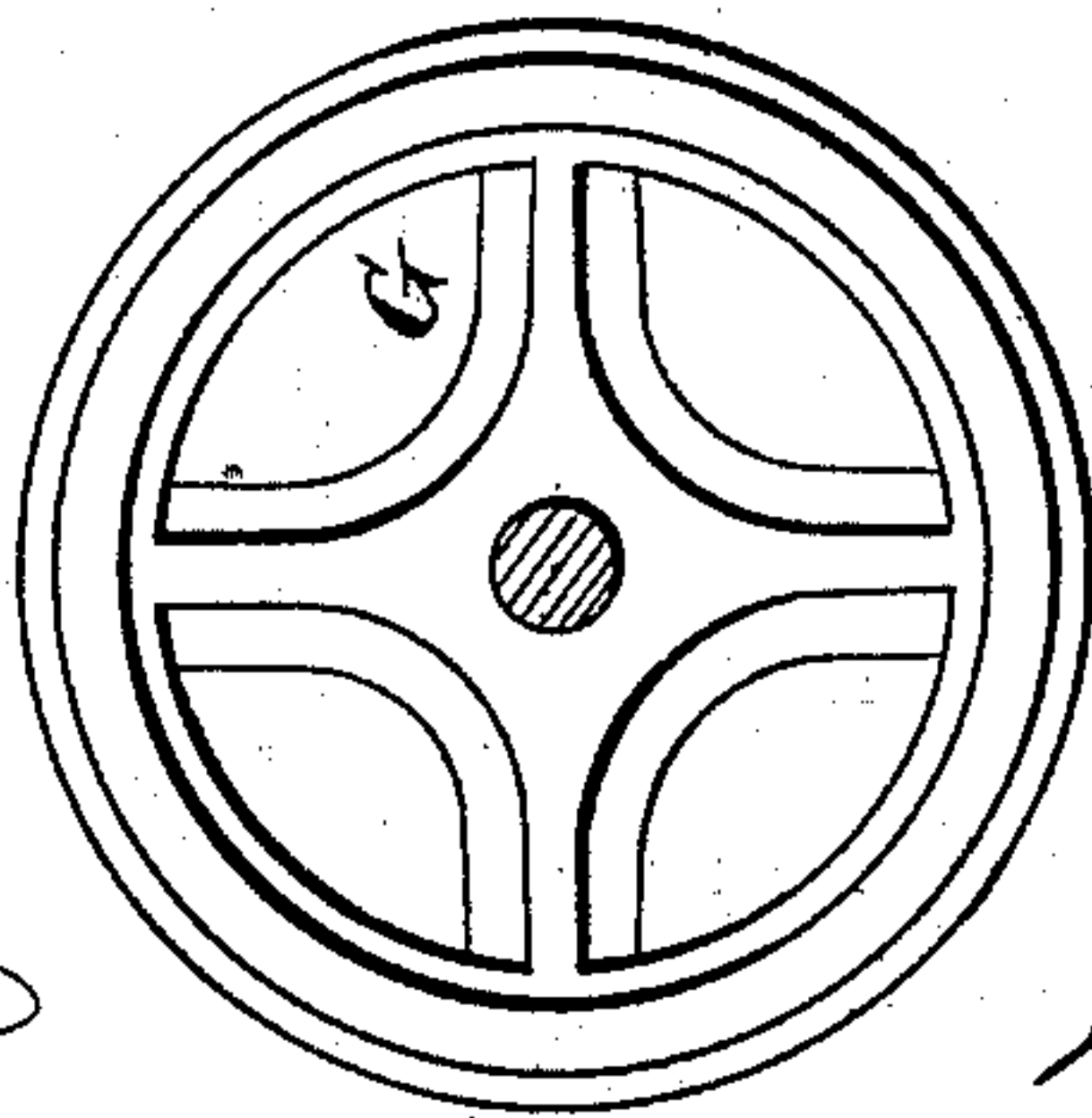


Fig. 3.

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UNITED STATES PATENT OFFICE.

HAMLIN F. FRISBIE, OF DANVILLE, ILLINOIS.

IMPROVEMENT IN STEAM-ENGINE CYLINDERS.

Specification forming part of Letters Patent No. **198,099**, dated December 11, 1877; application filed December 1, 1877.

To all whom it may concern:

Be it known that I, HAMLIN F. FRISBIE, of Danville, in the county of Vermillion and in the State of Illinois, have invented certain new and useful Improvements in Steam-Engine Cylinders; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

My invention relates to steam-engine cylinders; and it consists in the construction of the ends of the cylinder and valve-chest with valves, all as hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, in which—

Figure 1 is a transverse section through the end of the cylinder. Fig. 2 is a longitudinal section of the same, and Fig. 3 is a detailed view of the valve.

A represents a portion of the steam-cylinder at the end, and B is the head thereof. At each end the cylinder A is formed with a surrounding jacket, C, which leaves a steam-chamber, *a*, entirely surrounding the end of the cylinder. The end of the cylinder A is cut away next to the head B, or close to the head, so as to form a nearly continuous passage, *b*, from the steam-chamber *a* into the cylinder, whereby the steam is admitted at one time into the cylinder almost over its entire area, instead of at one point only, and thereby making the action instantaneous.

The jacket C is formed with two valve-chests, E and E', constructed exactly alike, and containing the valves G and G', respectively, one being for inlet and the other for exhaust, so that the description of one will answer for both.

The chest E is formed with an annular valve-

seat, *e*, below the steam-inlet H, upon which seat the valve G rests. This valve is made cylindrical, and fits around a cylindrical head, L, projecting from the cover J of the chest. In this head is a circumferential groove, with suitable packing-rings *d d* placed therein to form tight joints with the valve.

The two inlet-valves at opposite ends of the cylinder are, of course, connected by suitable mechanism and operated alternately. In like manner the two exhaust-valves G' are operated for the same purpose.

My invention is particularly intended for low-pressure engines, but can also be used for high-pressure engines, the main object being to admit the steam at one time over the entire area of the cylinder and piston.

The valve-chests and valves may be located at any point desired, either top, bottom, or sides.

To the construction of the valve I, however, lay no claim in this application, as I shall make the same the subject of a separate application.

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

A steam-cylinder provided at each end with a surrounding-jacket, C, forming a continuous steam-chamber, *a*, with a passage, *b*, from said chamber into the cylinder, extending nearly around the end thereof, to admit of an instantaneous ingress and egress of steam, each jacket being provided with an inlet and an outlet chest having valves therein, substantially as herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 1st day of December, 1877.

H. F. FRISBIE.

Witnesses:

FRANK GALT,

H. AUBREY TOULMIN.