

J. H. STOMBS.
Balanced Valves.

No. 143,193.

Patented September 23, 1873.

Fig. 1.

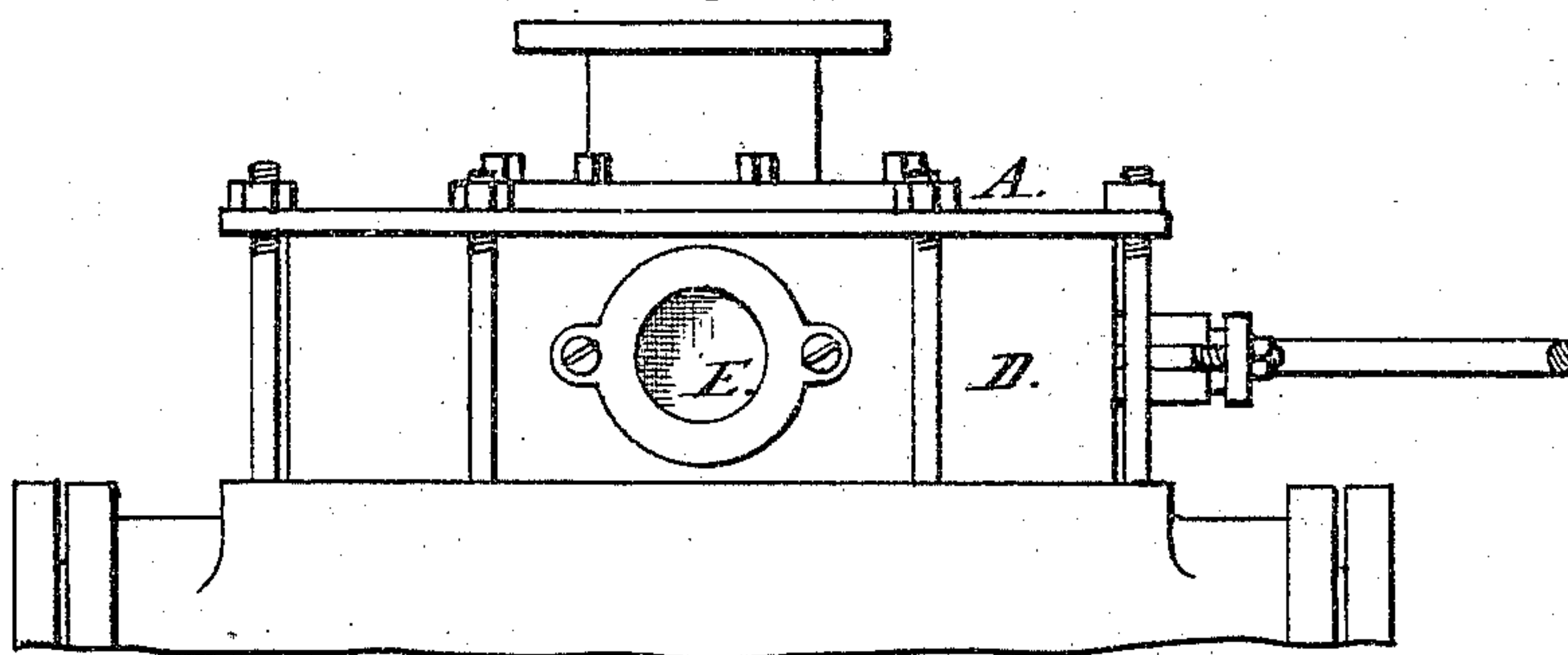


Fig. 2.

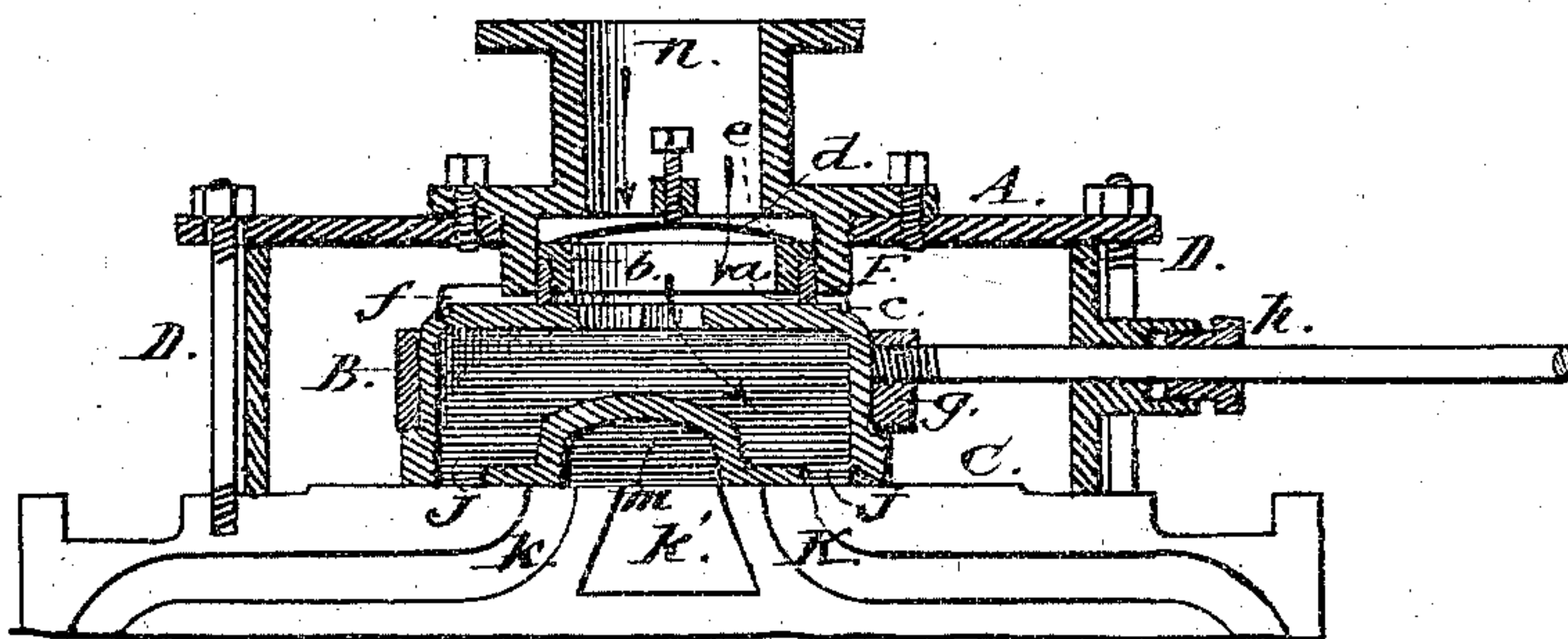


Fig. 3.

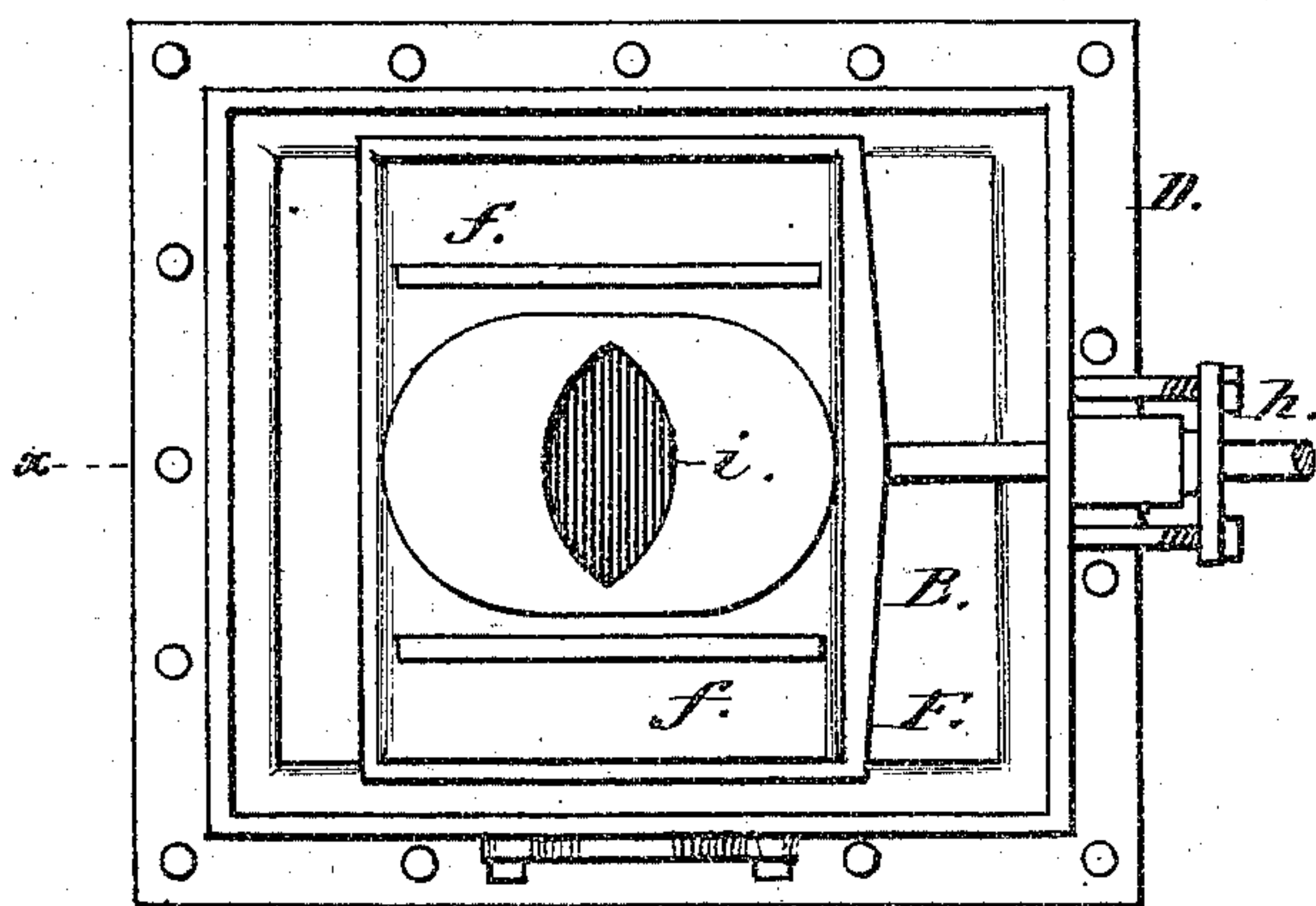
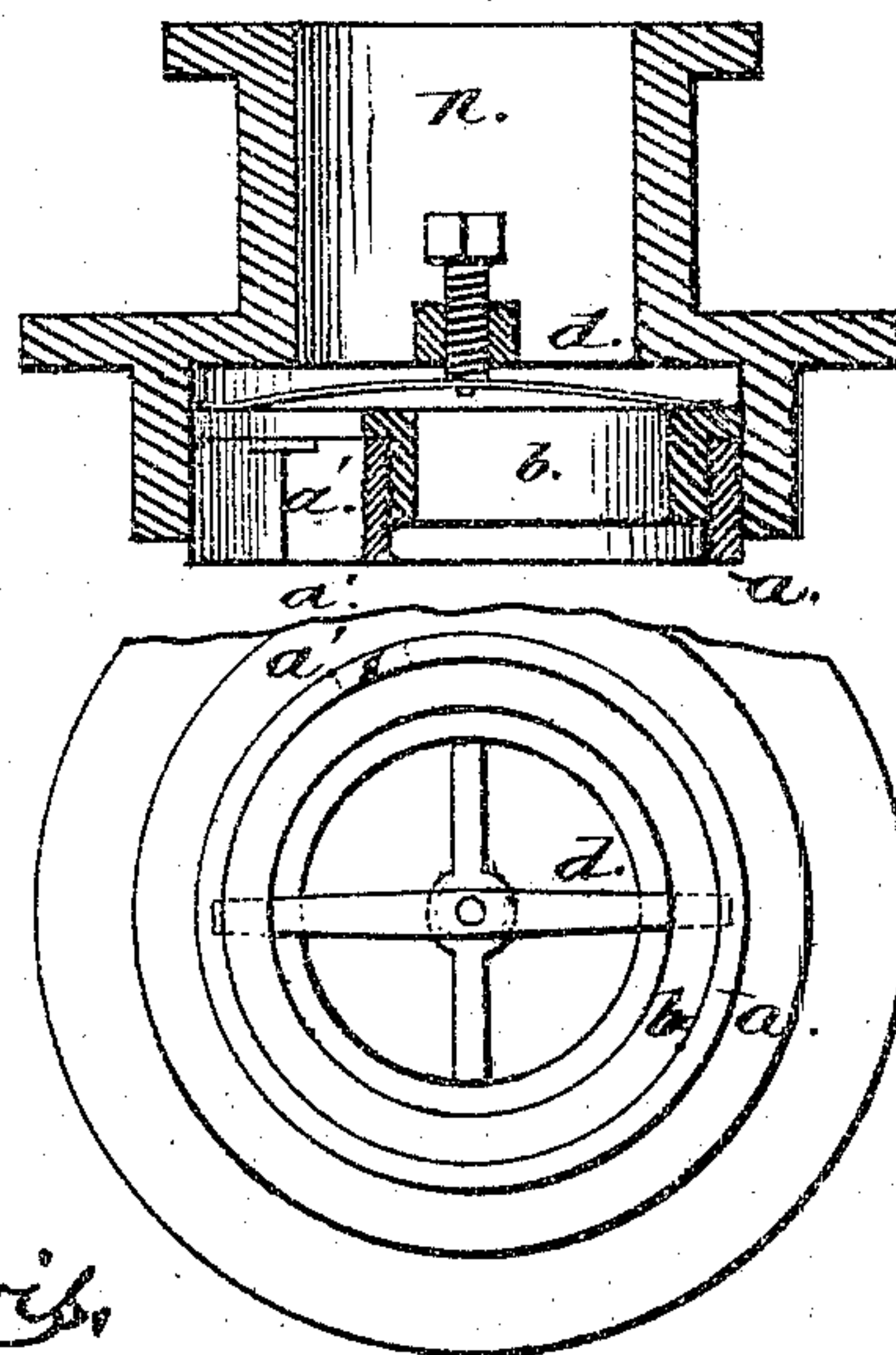


Fig. 4.



Witnesses.
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UNITED STATES PATENT OFFICE.

JOSEPH H. STOMBS, OF WINONA, MINNESOTA.

IMPROVEMENT IN BALANCED VALVES.

Specification forming part of Letters Patent No. **143,193**, dated September 23, 1873; application filed March 24, 1873.

To all whom it may concern:

Be it known that I, JOSEPH H. STOMBS, of Winona, in the county of Winona and State of Minnesota, have invented certain new and useful Improvements in Balance Slide-Valves; and I do hereby declare that the following is a full, clear, and exact description thereof that will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings and to the letters of reference marked thereon, which form a part of this specification.

This invention has relation to steam chests and valves known as balance slide-valves; and consists of a hollow valve, through which the steam passes to the cylinder of the engine by means of the ordinary steam-ports.

This valve slides upon the valve-seats of the steam-chest, as is usual with such valves, and has at its top an opening for the passage of steam, and a seat upon which a packing-ring rides. This packing-ring fits inside of a cylinder, and is held to its place by a follower and spring, or its equivalent.

In the drawing, Figure 1 is a side view of my improved balance slide-valve; Fig. 2, a longitudinal section thereof; Fig. 3, a top view of the interior of the valve-chest; Fig. 4, a detached view.

A represents the cover to the steam-chest. B is the hollow valve. C is the valve-seat and chest-bottom. D is the case or sides of chest. E, Fig. 4, is the transparent cover to the opening in steam-chest. F is the cylinder in which the packing-ring *a* and follower *b* are held. *e* is a rigid cross-bar, through which a set-screw passes to hold and adjust the spring *d*. *h* is the valve-stem, and *g* the yoke, by which the valve is moved.

For an engine-valve the inside diameter of the cylinder F is made one-third larger in area than the areas of both receiving-ports *k k*, to equalize the back pressure of steam from the cylinder when cut off by the lap of the valve or link motion.

Through the opening *n* steam is admitted, and by its pressure serves to expand the packing-ring *a* so as to fill the cylinder F and form

a steam-joint, and also serves to force the ring *a* down upon the seat C at the top of the valve B. From thence the steam passes, as represented by the arrows, through the opening *i*, which is equal in area to one of the receiving-ports *j*, into the valve B; and as the valve B is moved to the right or left one of the ports *k* is opened, and the steam is admitted to the engine-cylinder, the ports *k k* and *k'* being in all respects the same as are now in use. Consequently, this valve and packing-ring may be attached to ordinary steam-chests now in use.

The ribs *f f* serve as guides for the valve B, and slide against the sides of the cylinder F.

This valve is applicable for a throttle-valve, or for any other purpose where a balance-valve is desirable. As a throttle-valve, the area of the cylinder F is made equal to the area of both ports or openings for the passage of steam, as there is in this case no back pressure.

The packing-ring *a* is drilled edgewise its entire width, and then cut open tangentially to the inside circle of the ring, the cut passing through the center of the hole, as shown in Fig. 4. Into this hole the pin *a'* is fitted, and its head let in to the edge of the ring so as to cover the opening, and thus make a perfect steam-joint.

By the employment of the pin *a'*, entering the split in the ring *a*, the latter can be held in a firm position, and produces a perfect and tight joint between the surface *c* of the valve and the top of the chest.

Having thus described my invention, I claim—

The hollow valve B with its ports *j j*, exhaust-cavity *m*, seat C, and ribs *f f*, in combination with the packing-ring *a*, follower *b*, spring *d*, and cylinder F, substantially as and for the purpose specified.

In testimony that I claim the foregoing I have hereunto set my hand this 12th day of March, 1873.

JOSEPH H. STOMBS.

Witnesses:

F. C. BRYAN,
R. R. BRIGGS.