

N. THOMAS.

Valves for Air-Brake Cylinders.

No. 137,037.

Patented March 18, 1873.

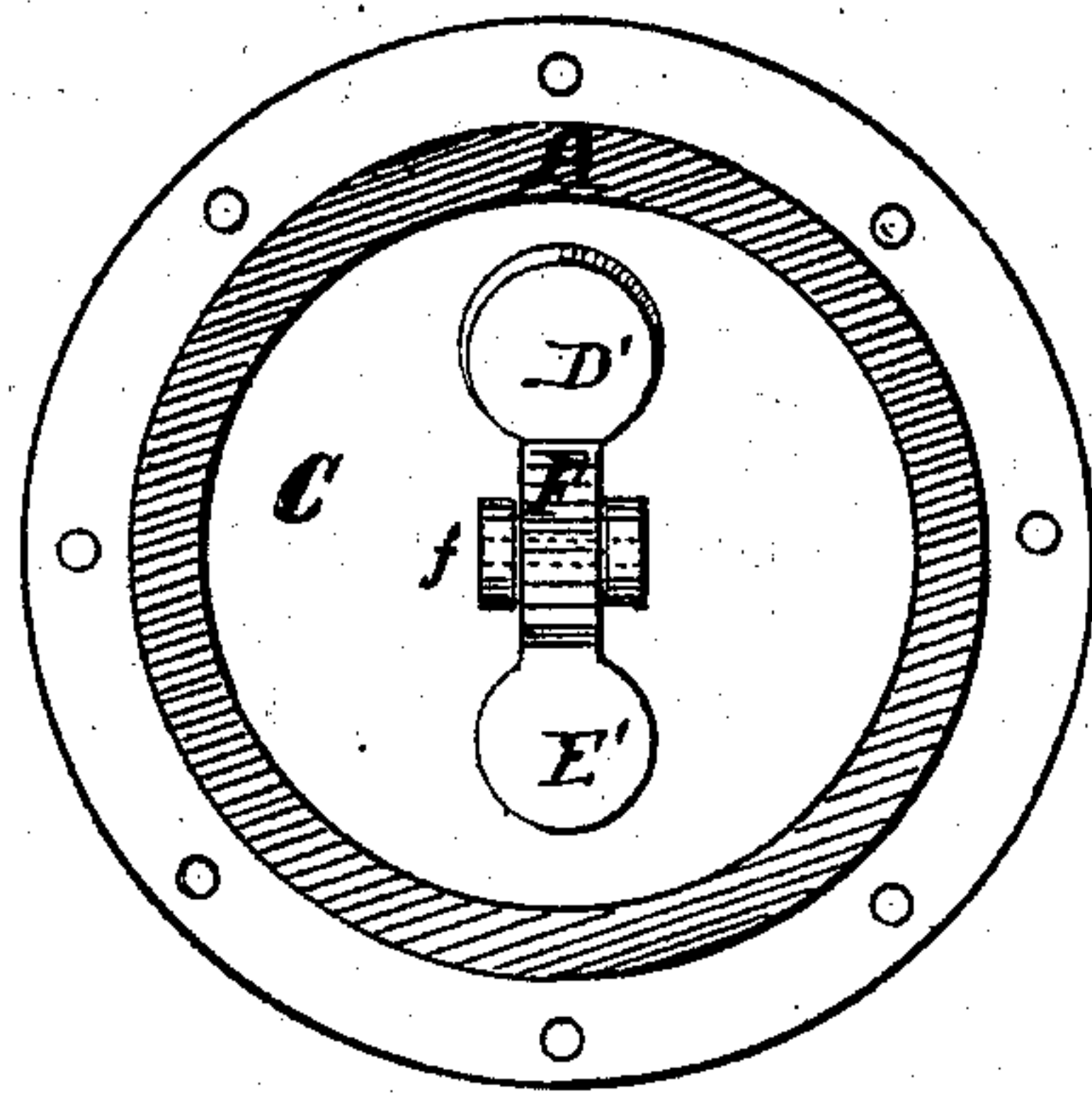
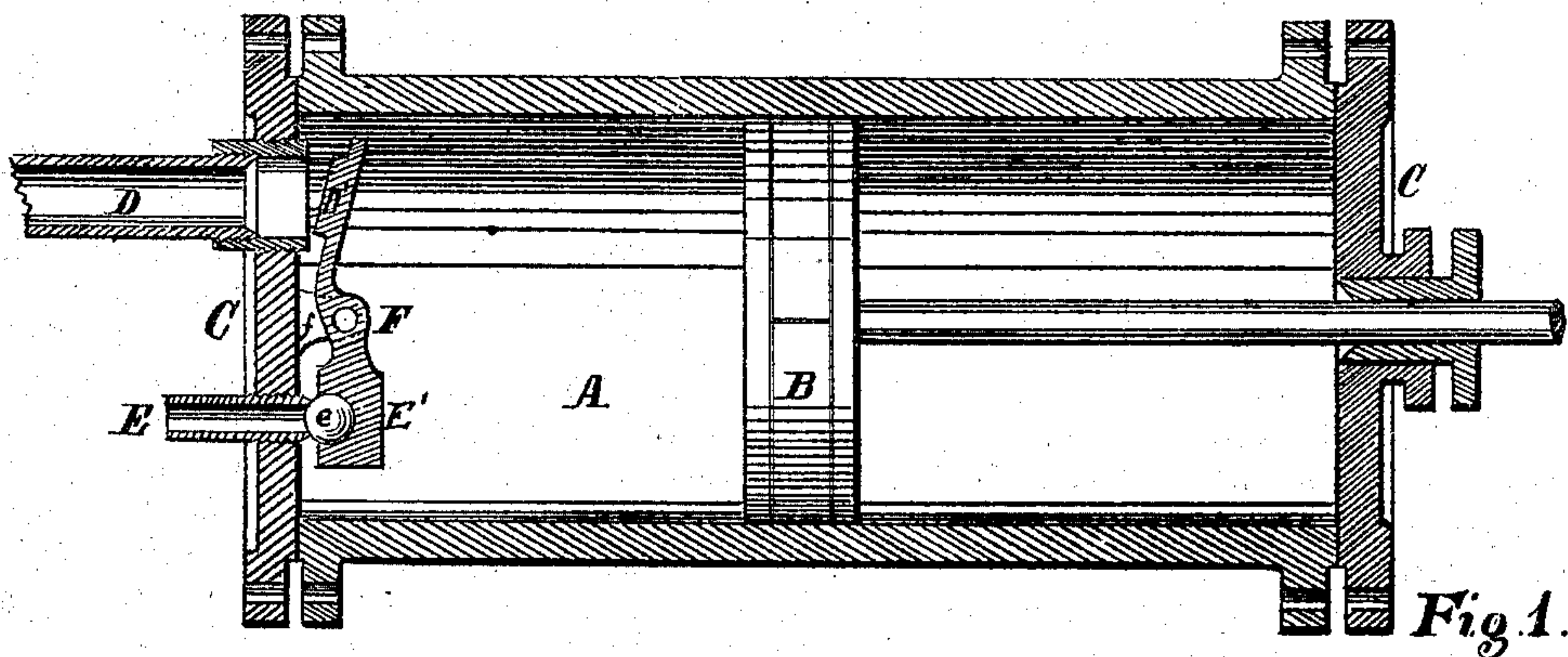


Fig. 2.

WITNESSES:

John W. Mumby
Henry L. Brown

INVENTOR:

Nicholas Thomas

UNITED STATES PATENT OFFICE.

NICHOLAS THOMAS, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF HIS RIGHT TO THOMAS HULL, OF SAME PLACE.

IMPROVEMENT IN VALVES FOR AIR-BRAKE CYLINDERS.

Specification forming part of Letters Patent No. 137,037, dated March 18, 1873.

To all whom it may concern:

Be it known that I, NICHOLAS THOMAS, of Chicago, in the county of Cook and State of Illinois, have invented certain Improvements in Valves for Air-Brake Apparatus, of which the following is a specification:

Nature of the Invention.

This invention relates to a valve which operates automatically to permit air to enter the cylinder of an air-brake while the pressure is on, and to allow it to escape when the pressure is off; and the invention consists of a valve having two seats, one or both of which are elastic, between which the valve is pivoted, so that when the air is turned onto the supply-pipe the pressure will open the ingress-port (which is closed by one end of the lever) and close the egress-port at the other end of the lever. The back pressure, when the supply of air is cut off, acts upon the surface of the ingress-port to move the lever and open the egress-port. For this purpose the surface of the lid or valve at the ingress-port is made larger than at the egress-port, so that it receives a larger portion of the pressure than the lid of the egress-port, or the arm of the lever upon the ingress side may be longer, which will counterbalance the pressure at the lid of the egress-port if the surfaces are the same; or the surfaces being the same and the leverage the same a spring may be applied to assist, so that the back pressure may be enabled to close the ingress and thus open the egress.

In the accompanying drawing, which forms a part of this specification, Figure 1 represents a vertical longitudinal section of an air-brake cylinder, showing this invention applied to one of the cylinder-heads. Fig. 2 is a vertical transverse section of the cylinder looking toward the head containing the apparatus.

Like letters of reference made use of in the several figures indicate like parts.

To enable those skilled in the art to make and use my invention, I will proceed to describe the same with particularity, making use in so doing of the aforesaid drawing by letters of reference thereto.

General Description.

In the said drawing, A represents the cylinder of an air-brake apparatus. B is the piston; C C, the cylinder-heads. D is the pipe, which supplies the cylinder with compressed air; and E is the discharge or egress port, out of which the air passes when it has done its work. F is a lever pivoted in a fulcrum, *f*, from the cylinder-head. This lever, at each end, is fitted with a valve, one sitting over the ingress-pipe D and the other over the egress-pipe E. The valve, at the egress-pipe E, is made with an elastic ball, *e*, the valve at the other end, at the ingress-pipe, being simply of metal against metal, as it is not necessary that it should be perfectly tight. To distinguish the two more clearly, the valve at the ingress-pipe is marked D' and that at the egress-pipe E'. When the pressure of air is turned onto the pipe D it opens and passes through the valve D' into the cylinder, and the valve D' remains open until the supply is cut off. During the pressure and while the valve D' is open the valve E' at the egress-pipe is necessarily closed, as it is at the other end of the lever F. When the supply of air is cut off the pressure within the cylinder acts upon the face of both valves, but as the surface of the valve D' is made a little larger or the arm of the lever to which it is attached a little longer the pressure against said valve D' overcomes that exerted against the other end of the lever, and closes said valve D' and opens at the same time the egress-valve E'. The elastic ball *e* is applied to the valve E' to insure a close joint as one purpose, and also in addition for the further purpose of insuring the closing of the valve E' before the other valve has entirely opened. When the pressure is inward at the valve D' the elastic ball closes the valve E' by coming in contact before the other valve has opened, and then by further yielding allows the other valve to open. When the pressure is cut off the elasticity of this ball, reacting, closes or nearly closes the valve D', which, being further closed, opens the valve E', so that there is always a certainty of action.

Instead of applying this valve device to the

cylinder-head, it may be applied entirely to the pipe D by forming the egress-aperture in the side of the said pipe, and making the lever F of a bell-crank or L-shape, as will be readily understood by those skilled in the art most nearly pertaining to this invention.

Claim.

Having thus fully described the construction and operation of my invention, that which I claim as new, and desire to secure by Letters Patent, is—

The combination of an air-brake cylinder with the valve hung on a pivot with two valve-seats, one or both of the valves or valve-seats being made elastic, and so arranged that the opening of one will close the other, substantially as and for the purpose specified.

NICHOLAS THOMAS.

Witnesses:

HEINRICH F. BRUNS,
JOHN W. MUNDAY.