

H. FITZSIMMONS.
Balanced Valves.

No. 136,985.

Patented March 18, 1873.

Fig. 2

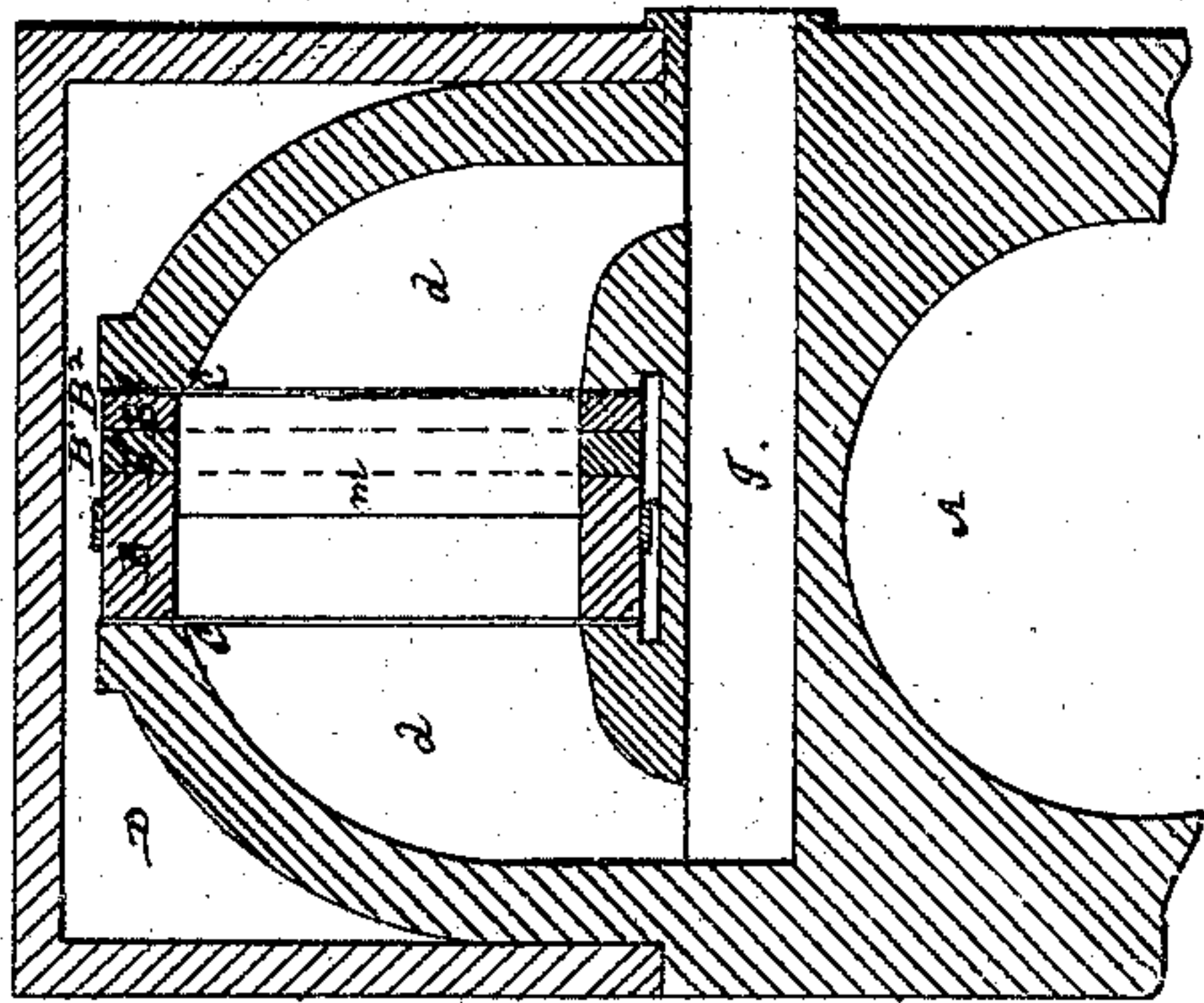


Fig. 3

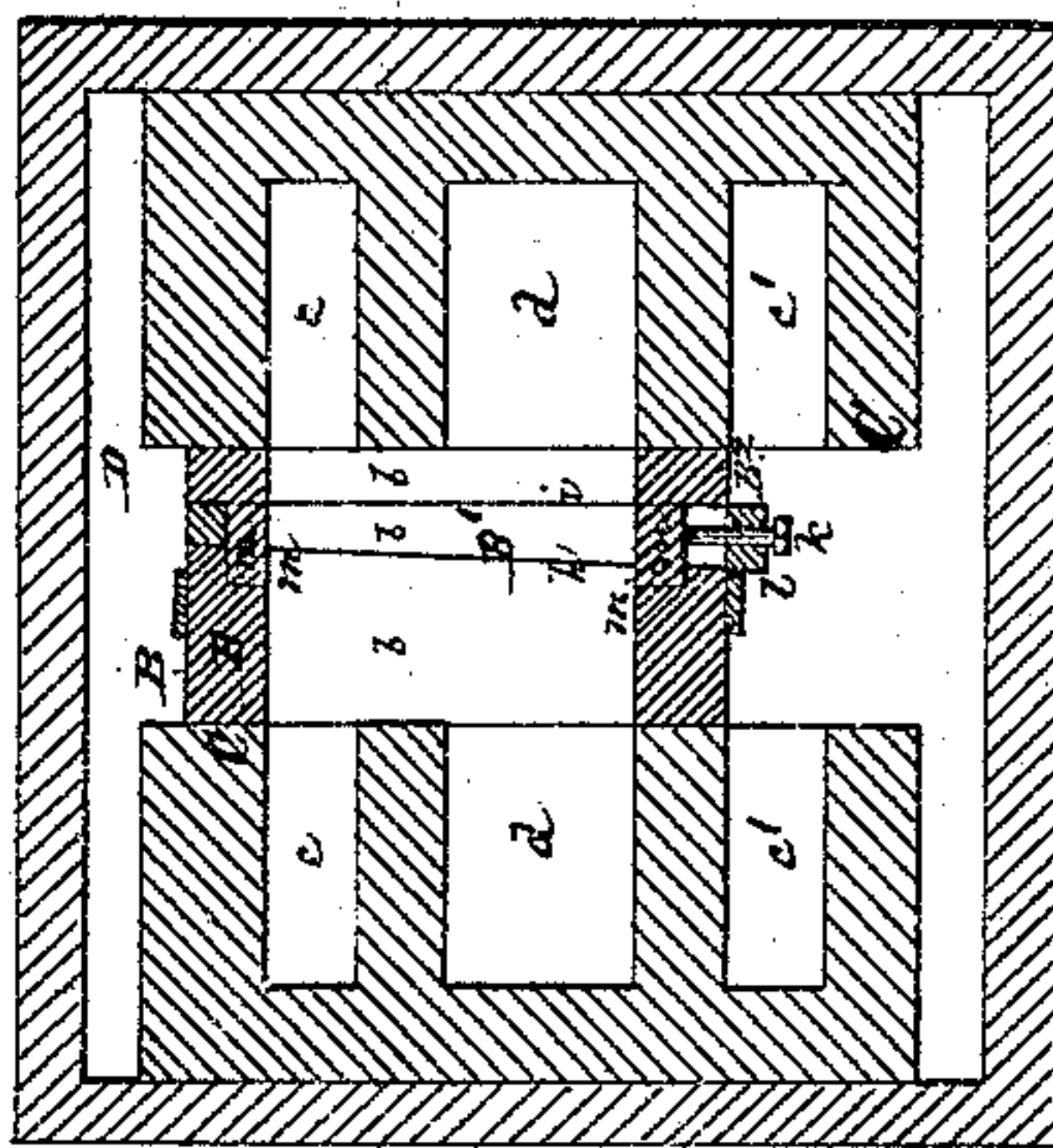


Fig. 1

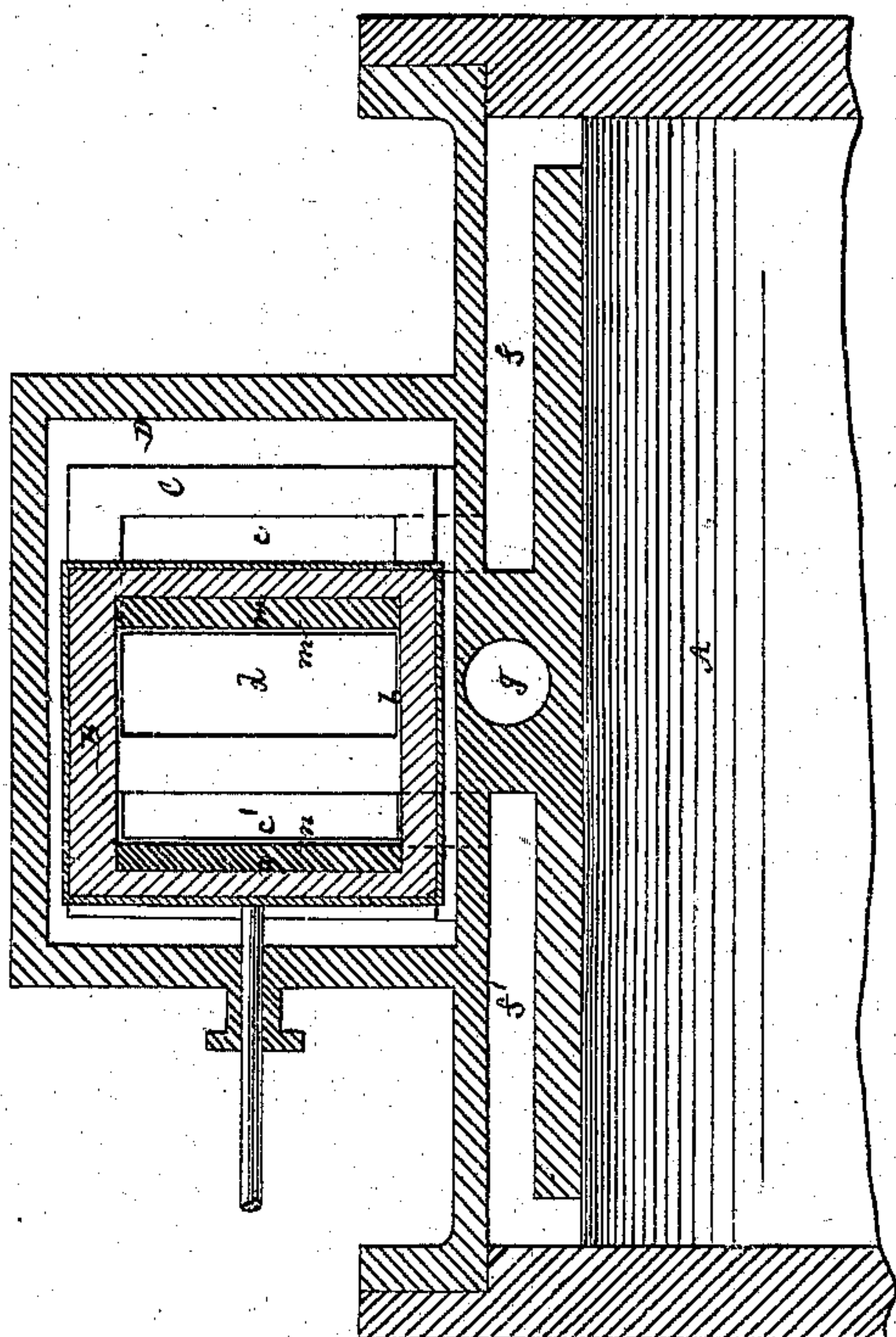


Fig. 5

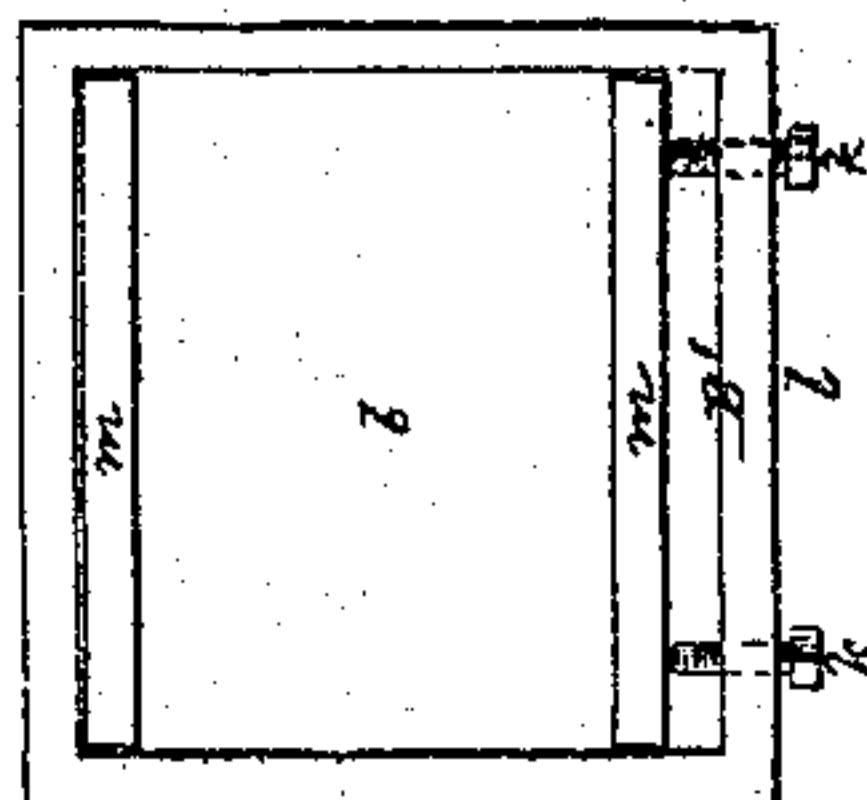
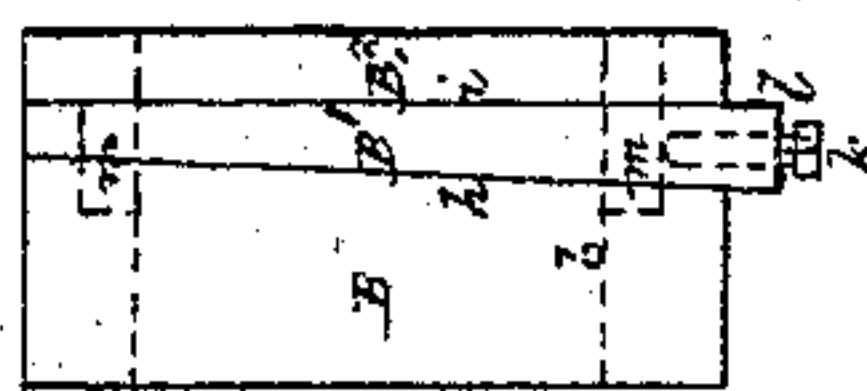


Fig. 4



Witnesses:

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UNITED STATES PATENT OFFICE.

HENRY FITZSIMMONS, OF HOUSTON, TEXAS.

IMPROVEMENT IN BALANCED VALVES.

Specification forming part of Letters Patent No. 136,985, dated March 18, 1873.

To all whom it may concern:

Be it known that I, HENRY FITZSIMMONS, of Houston, in the county of Harris and State of Texas, have invented a new and useful Improvement in Balance Slide-Valves for Steam and other Engines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 represents a vertical section of my improved slide-valve applied to an engine-cylinder; Fig. 2, a further vertical section of the same at right angles to the former figure; Fig. 3, a horizontal section of the valve and valve-case; Fig. 4, an edge view of the valve removed; and Fig. 5, an interior face view of an intermediate wedge-shaped packing-frame and an outer valve section or piece fitted thereto.

Similar letters of reference indicate corresponding parts.

My invention relates to balance slide-valves constructed with opposite sides or faces arranged to slide between seats on both sides of the valve, and in which the sides of the valve are adjusted as required to form close but free contact with the seats. The invention consists in a novel combination of parts and ports or passages, including a sectional-ly-constructed frame-like valve entirely open through its body, and with its one and intermediate section of wedge shape and adjustable by the pressure of the steam on its thicker end between the other sections to insure a proper fit of the valve between its seats. By this improvement a balance slide-valve may be produced which is close, durable, and efficient in every respect.

Referring to the accompanying drawing, A represents the cylinder in part of a steam-engine, having my improved valve, arranged in a vertical position, applied thereto. Said valve, which is composed of frame-like sections B B¹ B², has a thorough opening, *b*, through it, extending from side to side or both faces of it, and reciprocates in between opposite valve-seats C C within the valve-chest D. These valve-seats are formed of blocks or cheeks, provided with opposite ports *c c*, *c' c'*, and *d d*, the ports *c c* connecting with a passage, *f*, which admits steam to and from one end of the engine-cylinder, and the ports *c' c'*

connecting with a like passage, *f'*, controlling the opposite end of the cylinder, while the ports *d d* communicate with a general exhaust-outlet, *g*, the steam being exhausted through the central or body opening *b* of the valve when the same is brought over either pair of ports *c c* or *c' c'*, and the steam passing from the valve-chest through either pair of said ports, accordingly as the same are uncovered by the valve. In this way a perfect balance of pressure on the valve is obtained both laterally and around the outer or exposed edges of the valve within the valve-chest D, to which steam is freely admitted at any suitable point. To insure the valve working in close but free contact with the seats C C, it is composed of three independent frame-like sections, B B¹ B², arranged in direction of the length and width of the valve, and the intermediate one B¹ of which is of wedge shape, resting between an inclined inner marginal surface, *h*, of the one outer section, B, and the inner marginal surface *i* of the other outer section, B², and being adjustable between said two outer sections by the pressure of steam acting upon the thick edge *l* of the wedge, and, if necessary, limited or controlled by set-screws *k k*, which should be provided with jam-nuts. These screws bear against the one of a pair of inner tongue-like strips, *m m*, on opposite edges of the one outer section, B², said strips being of the length or width, as the case may be, of the opening *b*, and passing through the packing section B¹ to or within a socketed or reduced construction of the outer section B, whereby the several sections of which the valve is composed are retained in proper relation with each other without impeding the adjustment of the valve in direction of its thickness—that is, between the seats C C.

What is here claimed, and desired to be secured by Letters Patent, is—

The combination of the wedge-shaped and automatically-adjustable intermediate section B¹ with the outside sections B B² of the open body or frame-like valve, the strips *m m*, the screws *k k*, the valve-seats C C, and the ports or passages *c c*, *c' c'*, *d d*, and *f f' g*, substantially as shown and described.

HENRY FITZSIMMONS.

Witnesses:

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