

(No Model.)

H. H. BEACH.
Balanced Slide Valve.

No. 242,865.

Patented June 14, 1881.

Fig. 1.

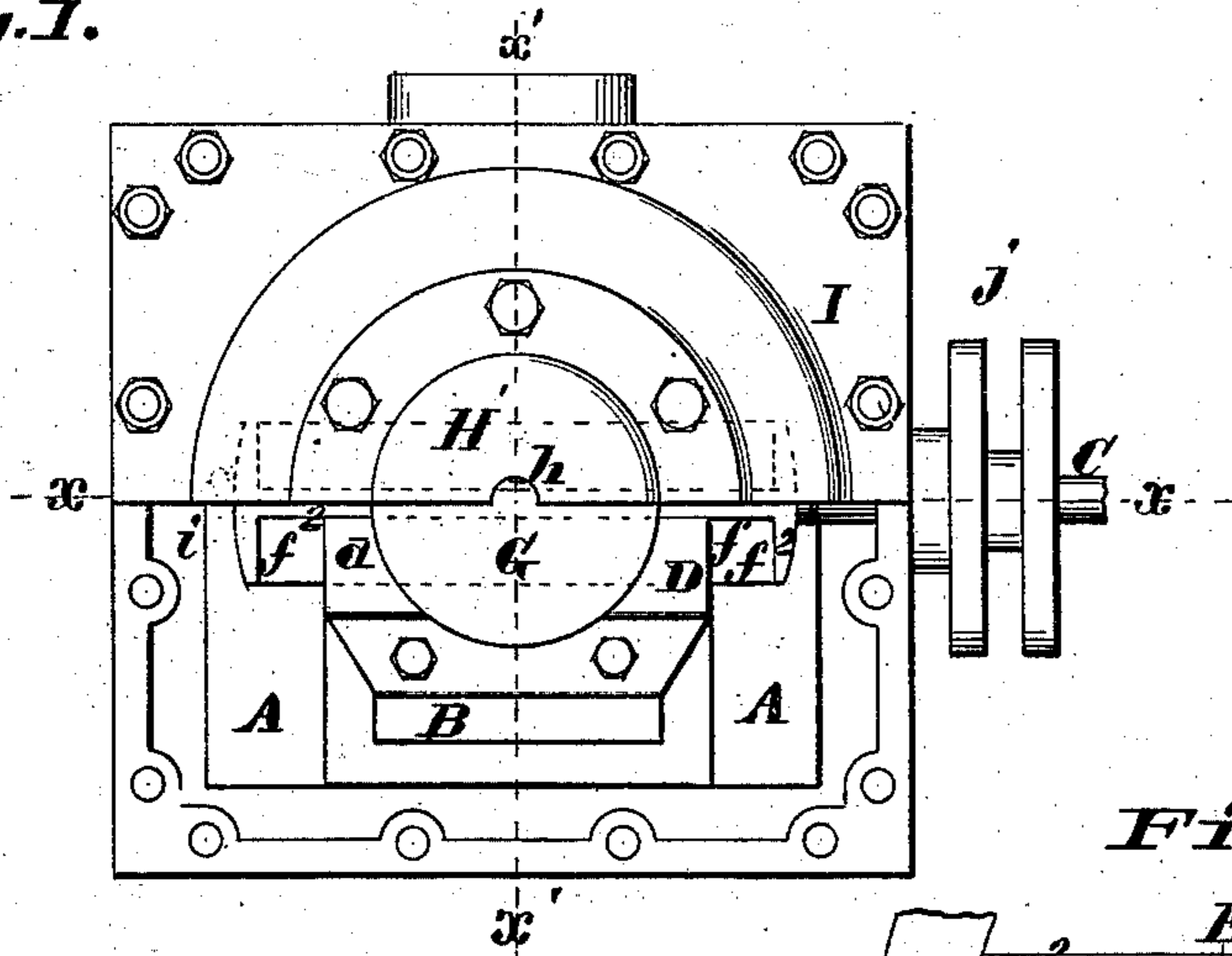


Fig. 2.

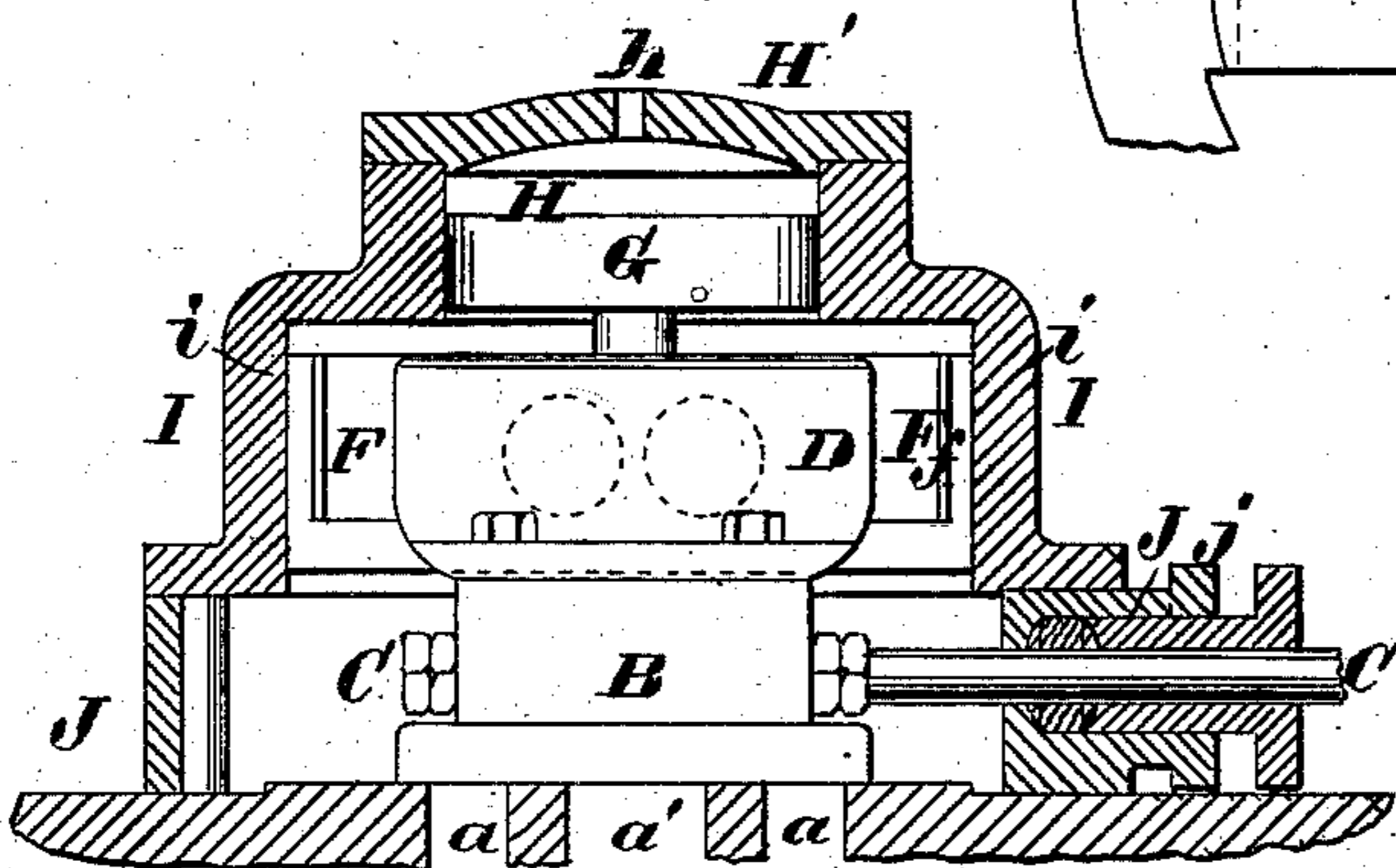


Fig. 3.

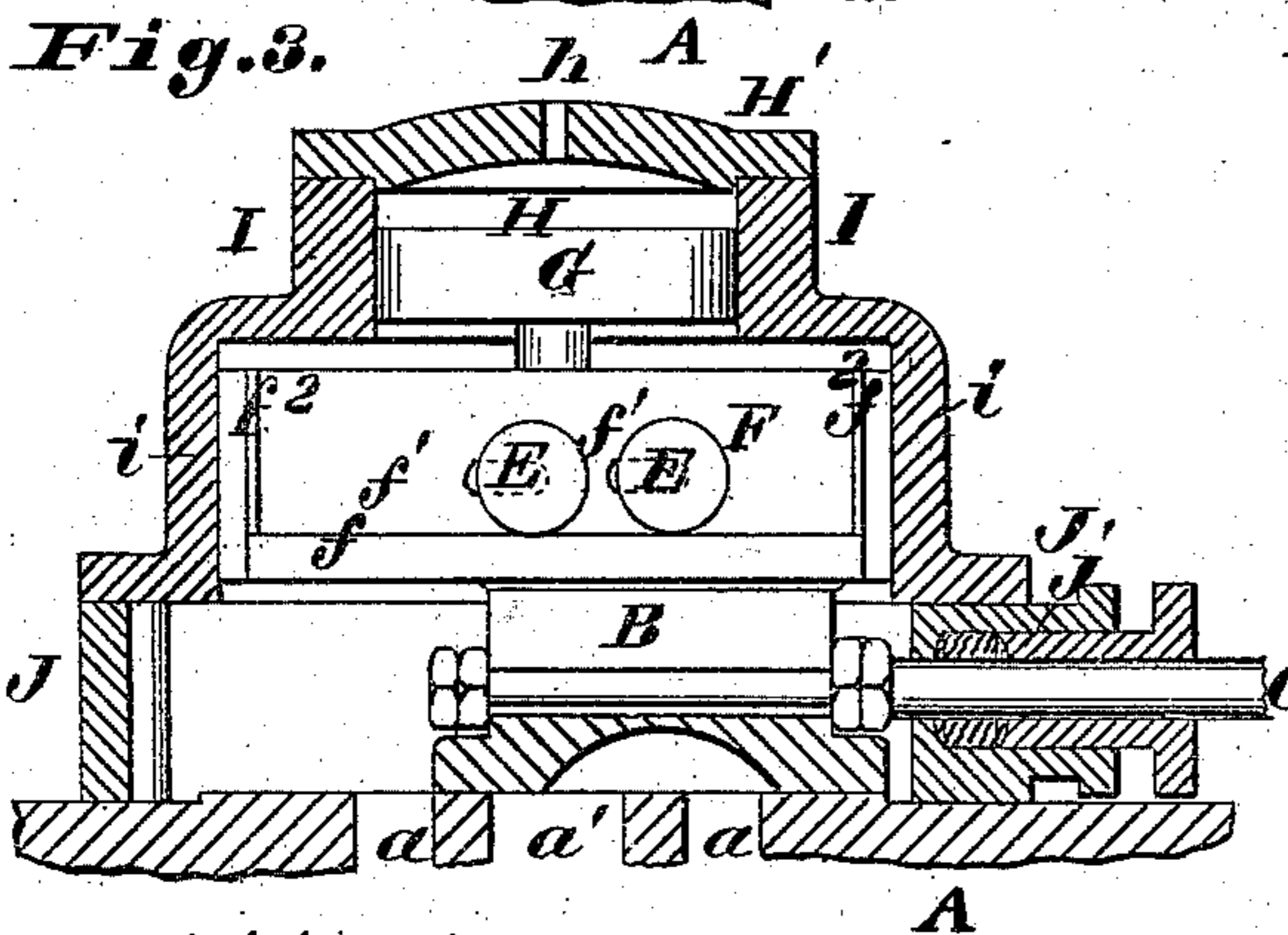


Fig. 5.

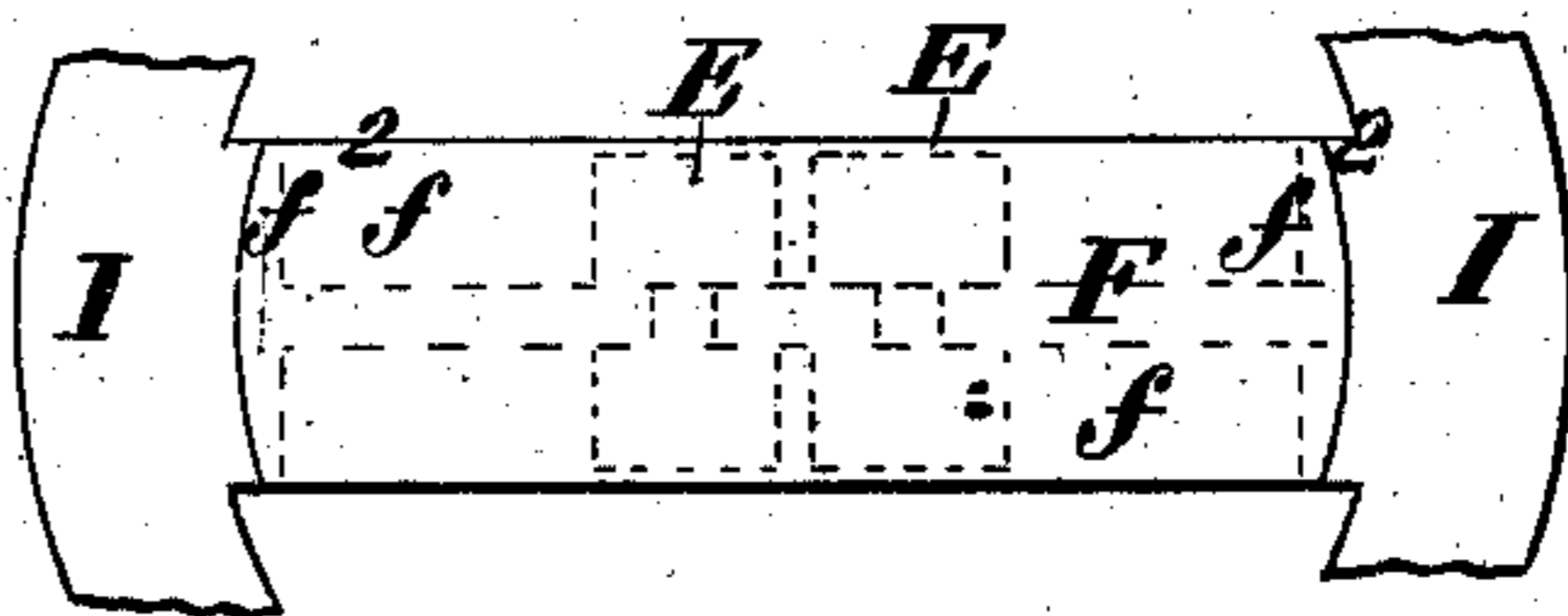
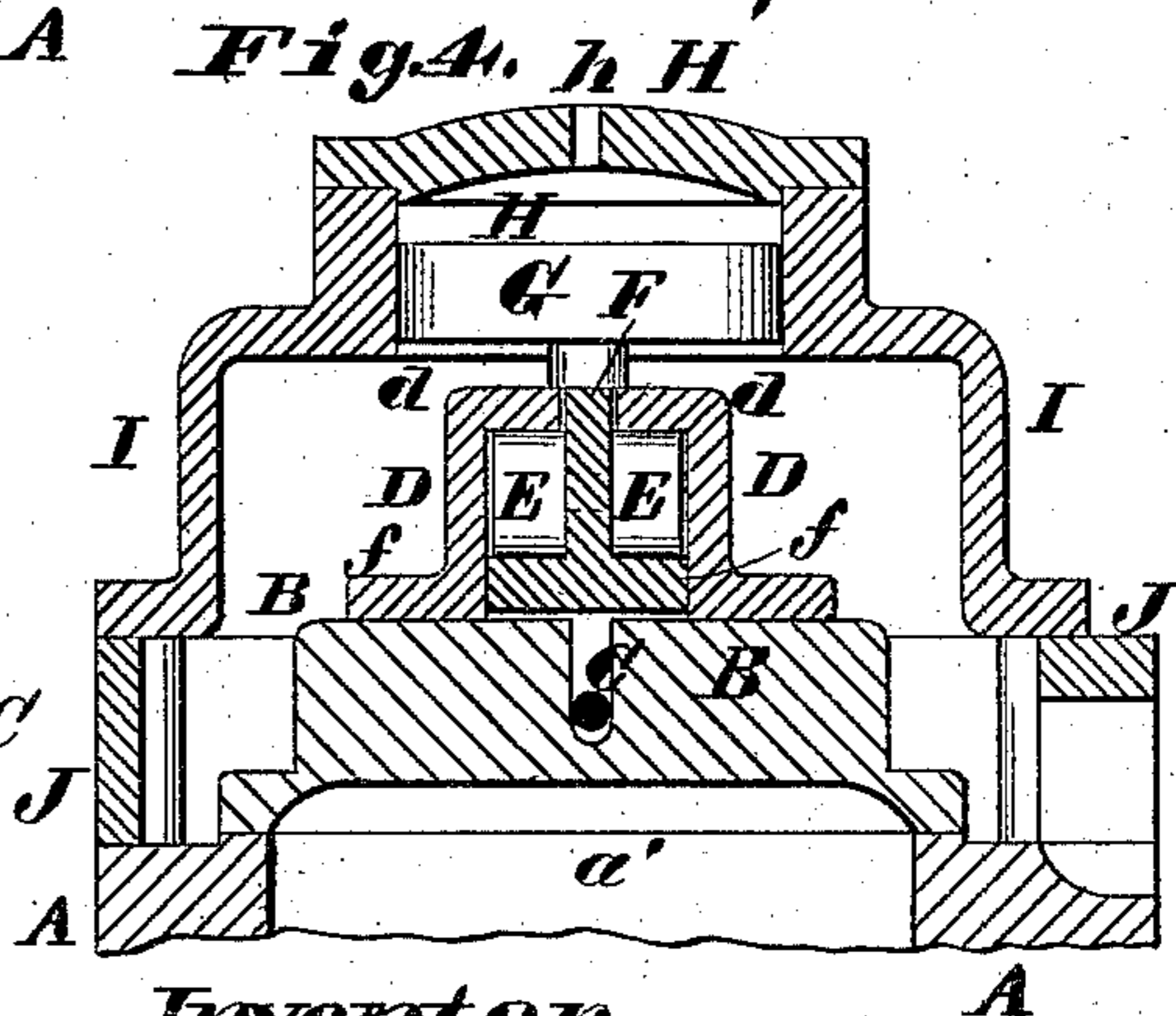


Fig. 4.



Attest:

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UNITED STATES PATENT OFFICE.

HENRY H. BEACH, OF LITCHFIELD, ILLINOIS.

BALANCED SLIDE-VALVE.

SPECIFICATION forming part of Letters Patent No. 242,865, dated June 14, 1881.

Application filed April 2, 1881. (No model.)

To all whom it may concern:

Be it known that I, HENRY H. BEACH, of Litchfield, in the county of Montgomery and State of Illinois, have invented a certain new and useful Improvement in Balanced Slide-Valves, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

The pressure of the steam upon the valve-seat is sustained by rollers working on the flanges of a T-rail suspended from a piston occupying a cylindrical chamber in the top of the steam-chest. Brackets are attached to the top of the valve whose inturned flanges rest upon the rollers.

Figure 1 is a top view of a locomotive steam-chest with one-half of the top removed. Fig. 2 is a side view of the valve and piston with the chest in vertical section at xx , Fig. 1. Fig. 3 is a section of the valve-chest and valve proper on line xx , Fig. 1, with the piston and hanger-rail in side view. Fig. 4 is a vertical section at $x'x'$, Fig. 1. Fig. 5 is a bottom view of the hanger-rail, showing its end bearings against the top portion of the steam-chest.

A is the valve-seat of an engine-cylinder, having the usual valve-ports, a being the steam-ports, and a' the exhaust-port.

B is a D-valve of ordinary construction, working on the seat A.

C is the valve-stem, which may be secured to the valve in any suitable manner. I show the stem as passing through a slot, b , in the valve, with nuts c bearing against the ends of the valve.

To the top of the valve are attached brackets D, having inturned flanges d , that run upon rollers E to support the valve and prevent an excess of friction upon the seat above what is required to make the valve steam-tight. The rollers E roll upon the flanges f of a T-formed hanger-rail, F, supported by a piston, G, fitting a cylindrical cavity, H, in the top I of the steam-chest. The lower part J of the steam-chest is attached directly to the cylinder A, and has a stuffing-box, j , for the valve-stem,

as usual. The rollers E are connected together in couples (see dotted lines, Fig. 5) by gudgeon-pins that work in slots f' in the vertical web of the hanger-rail F. As the valve B works the rollers E roll backward and forward upon the flanges f . The slots f' are made of sufficient length to allow the rollers all the play demanded by the movement of the valve. The ends f^2 of the hanger-rail F are curved concentrically, and have bearing against concave projections i of the inner side of the steam-chest top I. These end bearings prevent endwise movement of the hanger-rail which might be otherwise induced by the movement of the valve.

The piston G has ring or other suitable packing to render it steam-tight in the cylindrical cavity H. The cylinder-head H' has an orifice, h , to allow the entrance of air and the escape of any steam that might find passage around the piston.

My improvement is readily applied to an ordinary valve and steam-chest by removing the top of the steam-chest and substituting a top, I, with a cylindrical cavity, H, a piston, G, with hanger-rail F and rollers E, and screwing the brackets D upon the top of the valve.

I prefer to make the brackets D, hanger F, and the rollers E of cast-steel.

I claim as my invention—

1. The combination of flanges on the valve-bearing on wheels or rollers running on a hanger-rail attached to a piston or plunger working in a cavity of the steam-chest top, the rail being provided with end bearings in the steam-chest to prevent its vibration in the direction of the movement of the valve.

2. The combination of the valve B, flanges d , rail F, piston G, and steam-chest with the rollers E, connected in pairs by shafts passing through slots f' in the vertical web of the hanger-rail F.

HENRY H. BEACH.

Witnesses:

J. B. W. AMSDEN,
DAVID DAVIS.