

(No Model.)

J. B. WALLACE.
BALANCE SLIDE VALVE.

No. 319,151.

Patented June 2, 1885.

Fig. 1.

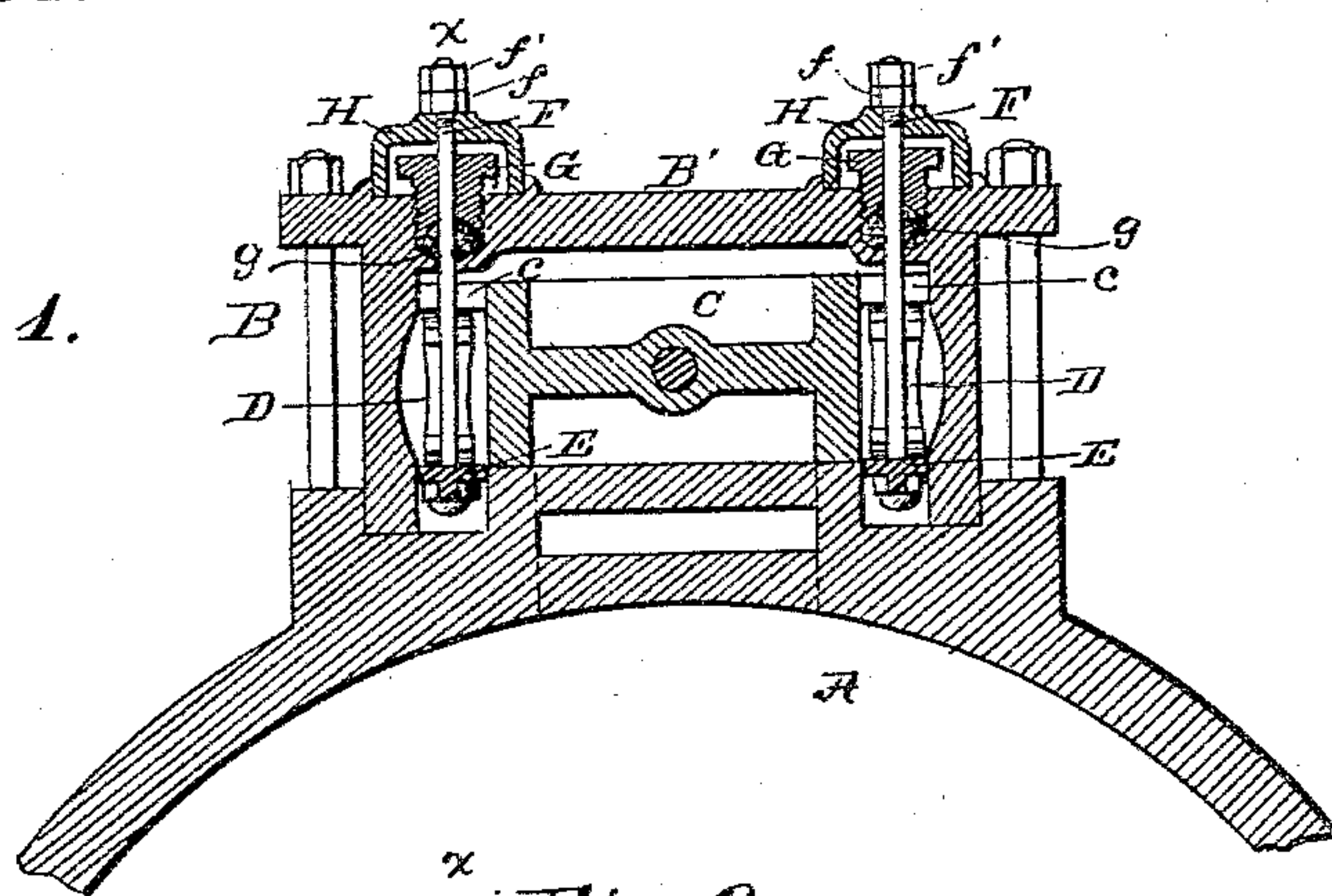


Fig. 2.

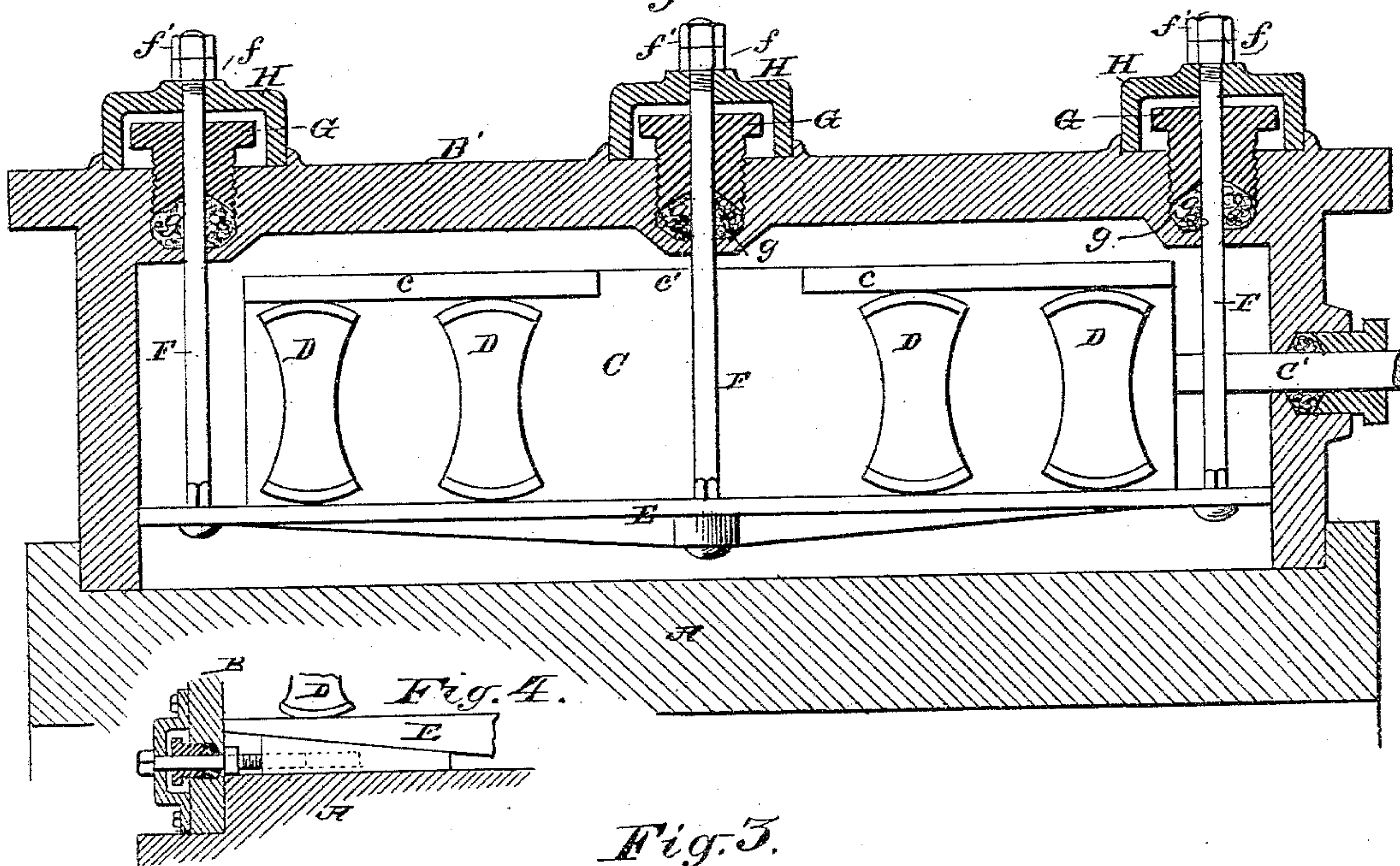


Fig. 4.

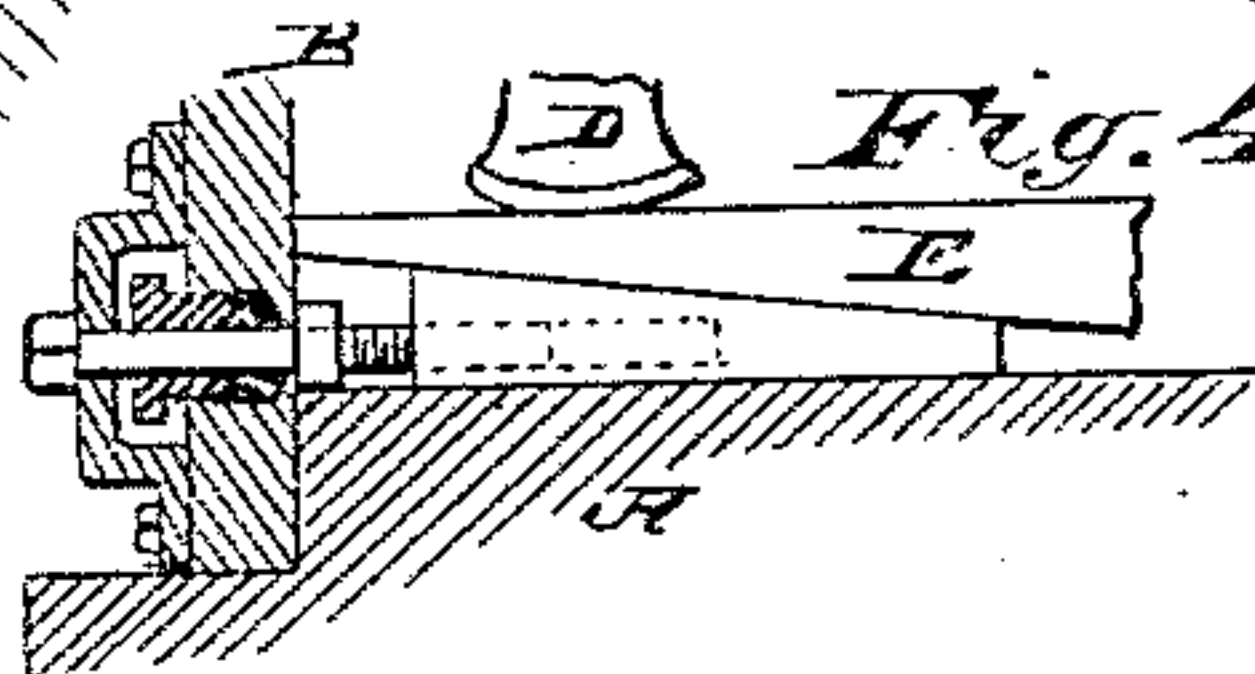
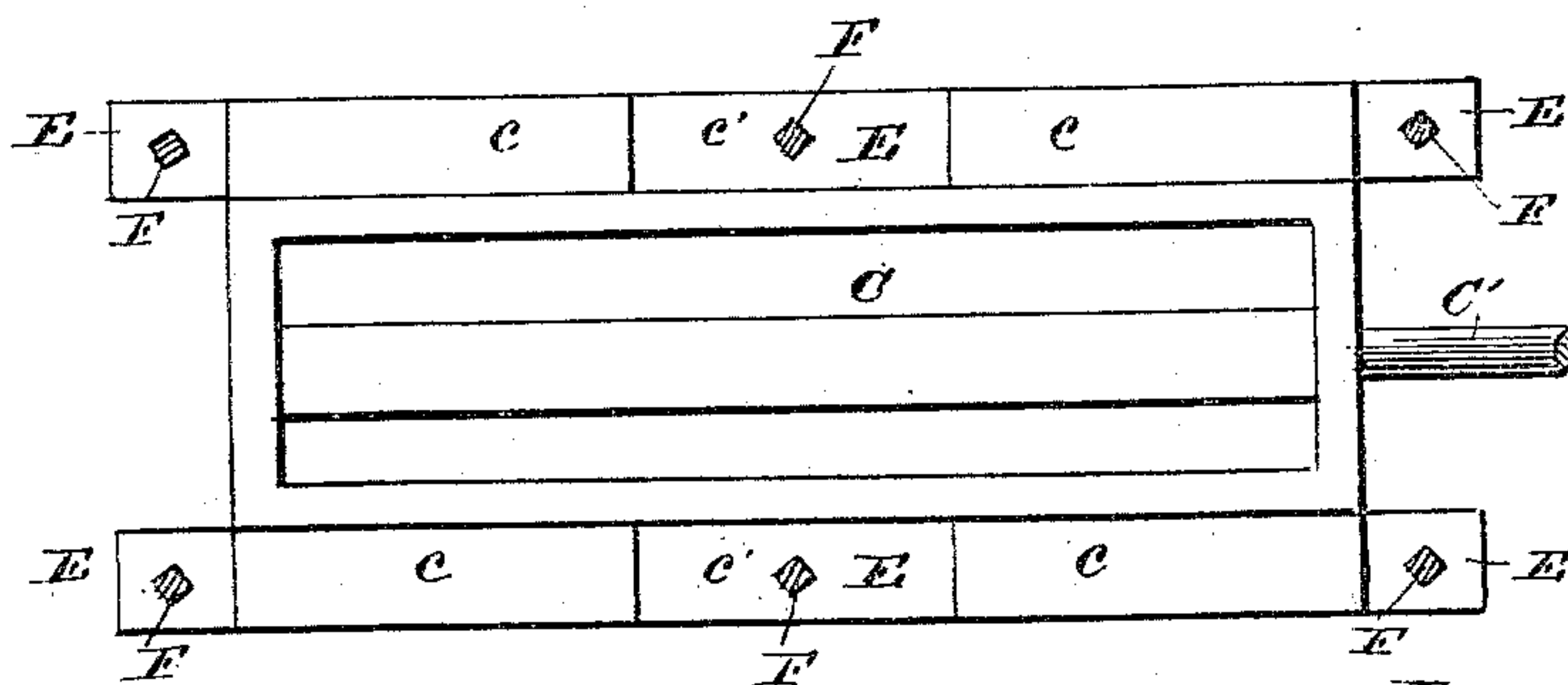


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

J. BENNETT WALLACE, OF CHICAGO, ILLINOIS, ASSIGNOR OF TWO-THIRDS
TO GARSON MYERS AND MELVILLE E. DAYTON, BOTH OF SAME PLACE.

BALANCE SLIDE-VALVE.

SPECIFICATION forming part of Letters Patent No. 319,151, dated June 2, 1885.

Application filed June 9, 1884. (No model.)

To all whom it may concern:

Be it known that I, J. BENNETT WALLACE, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Steam-Engine Balanced Slide-Valves; and I 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, which form a part of this specification.

This invention relates to that class of steam-engine slide-valves in which the steam-pressure on the valve is met by vibrating supports or segmental rockers, which either sustain the valve in contact with its seat or uphold the same clear of the seat by a minute distance, with a view of avoiding the friction caused by the pressure of the steam, which would otherwise bear said valve forcibly upon its seat. The principal objections to this class of devices for the support of the valve consist in the difficulty of originally constructing the parts to give the proper relation of the valve to its seat and in their lack of durable efficiency. The bearing-surfaces become worn very soon to a sufficient extent to allow the valve to rest upon its seat, so that the anti-friction devices lose their effect, and to meet such wear the parts are usually set in the first instance to give an undesirable space between the valve and its seat.

The object of this invention is to provide, in connection with vibrating, rocking, or rolling supports for the valve, means for adjusting at pleasure and with accuracy the space between the valve and its seat or the degree of pressure permissible between the valve and its seat if in contact.

To this end the invention consists in the matters hereinafter set forth, and pointed out in the appended claims.

In the drawings, Figure 1 is a transverse vertical section of a steam-engine valve-chest with valve therein provided with my improvement. Fig. 2 is a longitudinal vertical section in the line $x x$ of Fig. 1, or in a plane at one side of the valve, and its vertical supports. Fig. 3 is a plan view of the valve and the adjustable bearings or supports for the rockers which are comprised in my improvement.

A is a steam-engine cylinder. B is a valve-chest therein, and C is a valve in said chest. The valve C is provided with laterally-projecting flanges $c c$ at its sides and in this case at its upper portion.

D D are segmental rocking supports, placed beneath the overhanging flanges $c c$, and intended to uphold the valve in proper relation with reference to its seat.

E E are longitudinal bars, arranged one at each side of the valve and beneath the rockers D D, being intended to form the support of said rockers.

F F are rods attached to the bars E and passing upward through the top plate, B', of the valve-chest, being provided at their upper ends with threaded nuts f , by which said bars E may be raised and lowered at pleasure from the exterior of the valve-chest without removing said top B'.

G G are stuffing boxes or glands, screw-threaded into packing-recesses g in the top B'.

H H are bridges or yokes which set over the glands G, and through which the supporting-rods F pass. The nuts f on said rods F bear upon the bridges H, and by raising and lowering said nuts upon the rods the bars E are lifted or depressed, as may be desired, to give the proper relation of the valve C with its seat. As here shown, there are three rods F for the support of each one of the bars E, one at each end and the third at the middle of each bar. So, also, said rods are shown as being straight and passing directly upward through the bar E and through the top plate, B', of the valve-chest.

To accommodate the intermediate rod, F, when straight, as shown, the flanges c on each side of the valve are cut away or separated at c' a sufficient distance to allow for the longitudinal movement of the valve. The bars E are severally held longitudinally in place by being fitted to the space between the ends of the steam-chest, and they are laterally held in place between the sides of the steam-chest and the sides of the elevated valve-seat, as clearly shown in Fig. 1. Other suitable provision may obviously be made to retain the said bars in place, variable with the requirements of individual cases. Cogs upon the segmental rockers D and corresponding cogs or racks upon

the flanges *c* and bars *E* or any other one of the familiar devices for retaining said rockers in place may be employed. Such devices are not shown in the accompanying drawings, because they have no especial relation to the invention herein set forth. Of course, in the case of long valves operating at the extreme ends of the cylinder, the bar *E* may be provided at each side of the valve, one at each end, and said bars in that or in any case may be upheld by two rods, *F*, instead of three. Wedges placed beneath the bar *E*, so as to slide longitudinally of said bar, and screws for operating said wedges protruding through packing-glands at the ends of the steam-chest, are the equivalents of the lifting-rods shown.

In operating the adjusting devices shown and above explained the valve will desirably be first allowed to rest upon its seat with full pressure of steam upon it. The slack of the bolts *F* will then be taken up by means of the nuts *f*, after which said nuts will be each further turned down enough to raise the bars *E* and the valve slightly, or sufficiently to give the desired clearance of the valve upon its seat.

The nuts *f* may be secured by jam-nuts *f'*, as shown.

I claim as my invention—

1. The combination, with the valve-seat, the slide-valve provided with overhanging flanges *c*, and rocking supports for the valves, of movable supports *E* for the rockers, and means for adjusting the position of said supports constructed to be operated from the exterior of the valve-chest, substantially as described.

2. The combination of the valve-chest, valve-seat, slide-valve provided with flanges, rockers for the support of the valve, movable bars *E* for the support of the rockers, and screw-threaded rods connected with said bars *E* and projecting through the top of the valve-chest, and provided with nuts, substantially as described.

3. The combination, with the adjustable rocker-supports *E* and valve-chest, of rods *F*, glands *G*, and bridges *H*, substantially as described, and for the purposes set forth.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

J. BENNETT WALLACE.

Witnesses:

M. E. DAYTON,
OLIVER E. PAGIN.