

(No Model.)

E. V. THOMAS.  
BALANCED SLIDE VALVE.

No. 441,782.

Patented Dec. 2, 1890.

Fig. 1.

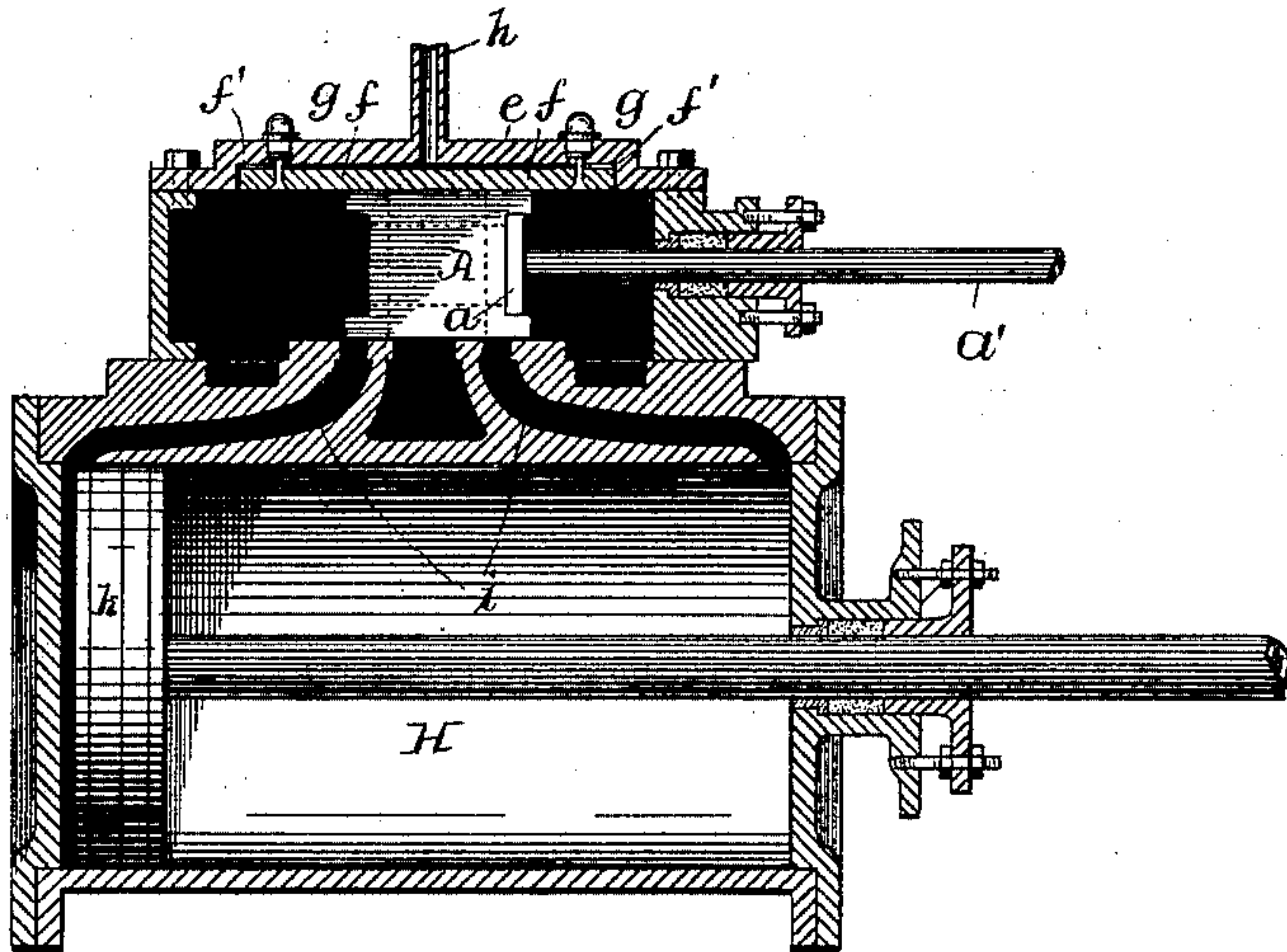


Fig. 2.

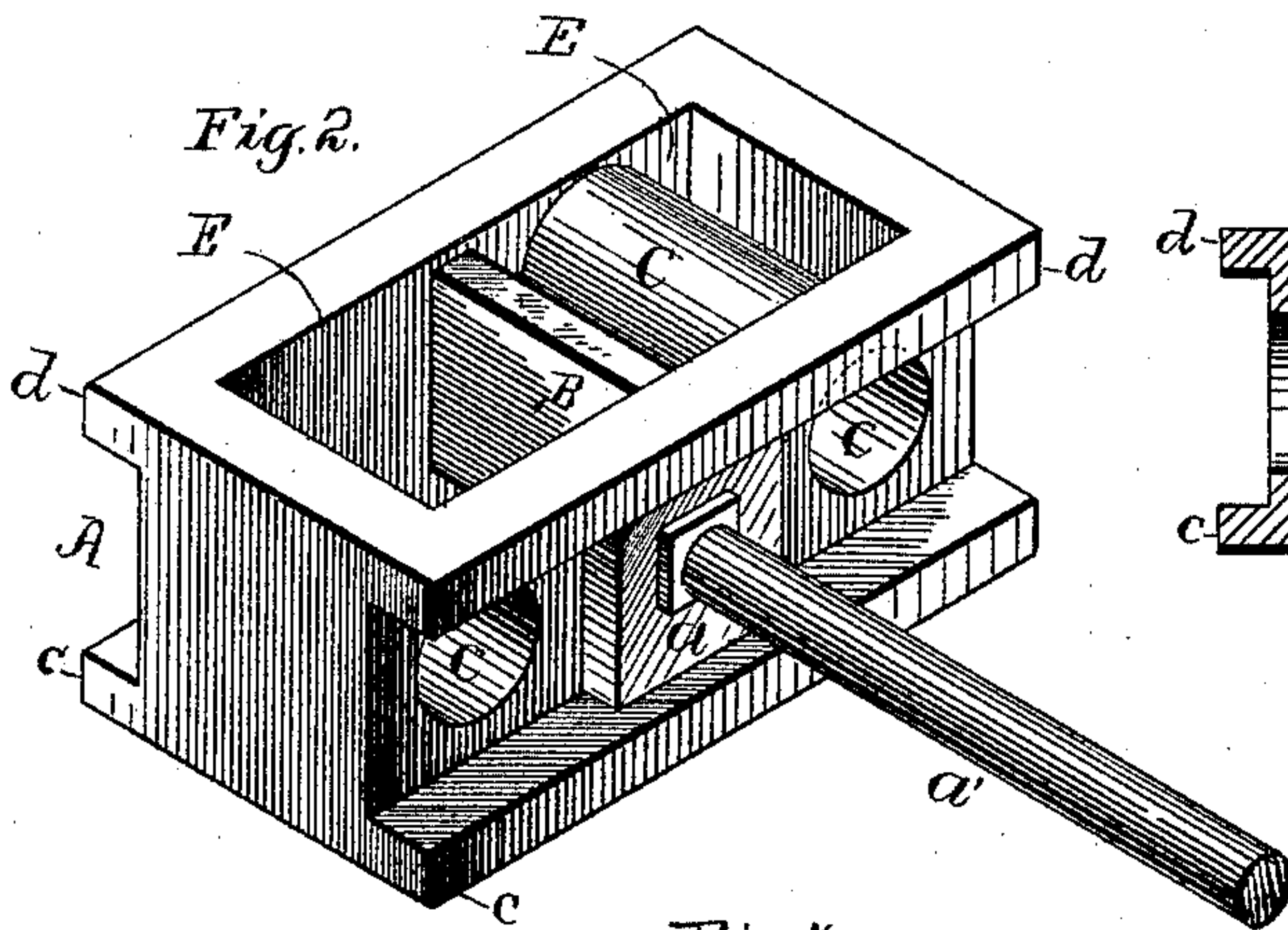


Fig. 3.

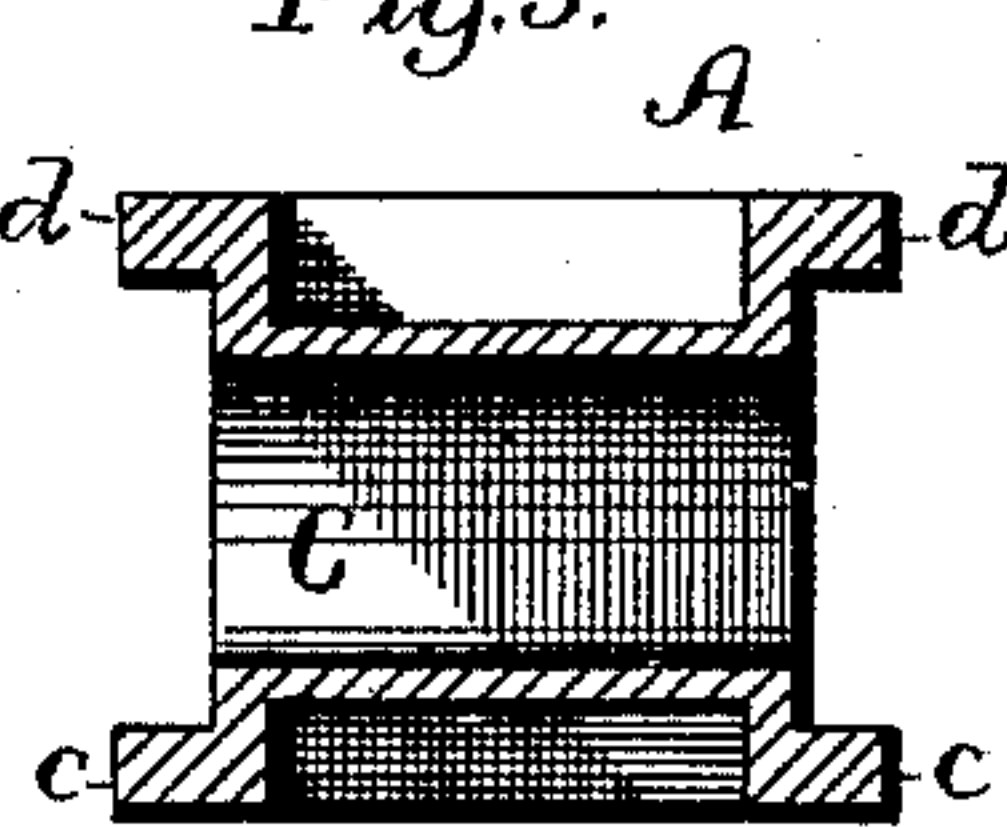
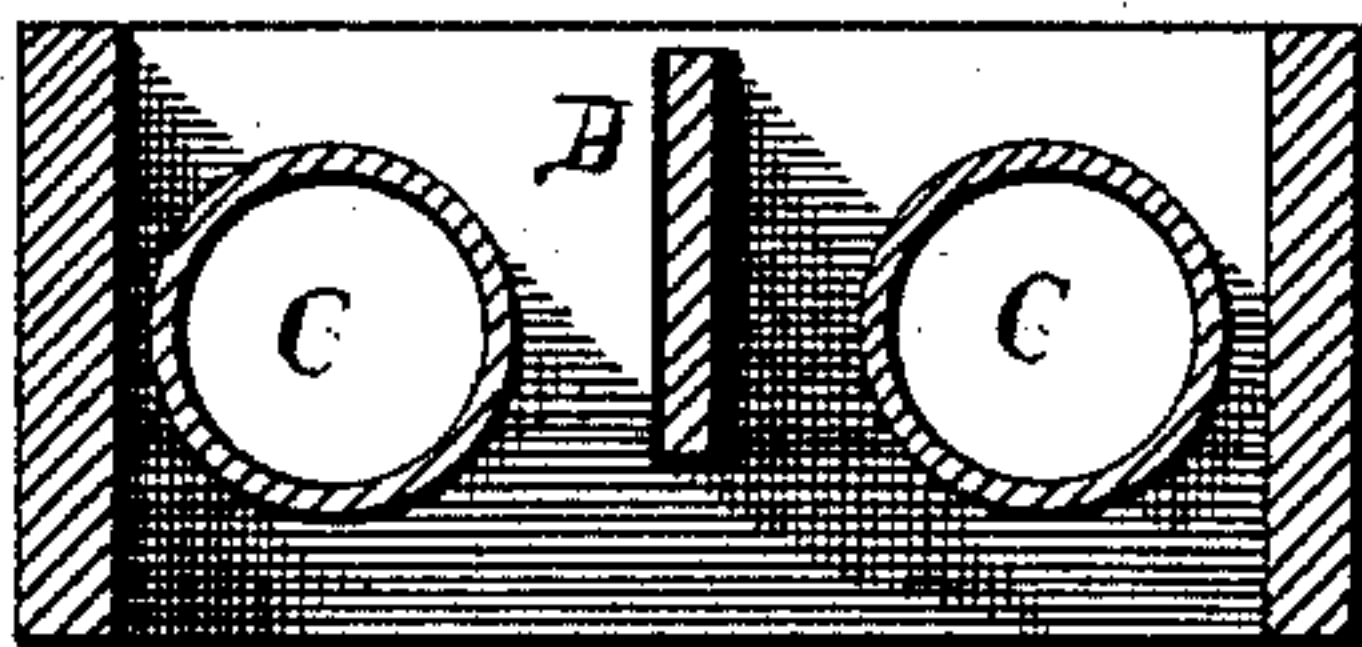


Fig. 4.



Witnesses

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# UNITED STATES PATENT OFFICE.

EDMESTON V. THOMAS, OF KANSAS CITY, MISSOURI.

## BALANCED SLIDE-VALVE.

SPECIFICATION forming part of Letters Patent No. 441,782, dated December 2, 1890.

Application filed February 4, 1890. Serial No. 339,146. (No model.)

*To all whom it may concern:*

Be it known that I, EDMESTON V. THOMAS, of Kansas City, Jackson county, Missouri, have invented certain new and useful Improvements in Balanced Slide-Valves, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to improvements in balanced slide-valves for steam-engines; and it consists in the novel construction herein-after fully set forth and described.

In the drawings which illustrate the manner of constructing and carrying out my invention, Figure 1 is a vertical section of a steam cylinder and chest provided with my improved balanced slide-valve. Fig. 2 is a detail in perspective of said valve. Fig. 3 is a longitudinal section through the same, and Fig. 4 is a cross-section.

Referring to the drawings by letter, A represents my balanced valve provided with a projection, to which is properly secured the valve-stem *a'*.

A partition B is provided at the center of the width of the valve, as shown in Figs. 2 and 4. To give it strength, this partition descends from the top about two-thirds of the way down in the valve. (This is also more clearly shown in Fig. 4.) Said partition B may be dispensed with in smaller valves, as it is only designed to strengthen the valve-walls.

C are longitudinal openings or tubes which pass through the valve from front to rear, and are for the purpose of presenting the smallest possible surface of the valve to the steam, thus allowing it to operate back and forth without being impeded by the pressure of the steam against its surface. The walls of the valve are made vertical, with extensions or flanges *d* at the top and corresponding extensions or flanges *c* at the bottom. This equalizes the surface for the steam-pressure above and below.

In large valves two or more tubes may be constructed, and, as before stated, are for the

purpose of presenting the least possible surface against the steam.

E is the exhaust in said valve, which extends through the valve from top to bottom, thereby preventing any back-pressure from the exhaust-steam.

*c* are the necessary outside laps of the valve. The flanges *d* are added at the top to counter-balance the pressure put upon laps *c c*, thus balancing the valve by presenting an equal area for steam-pressure at the upper and lower sides.

The valve itself is not adjustable to the height of the chest; but the valve-plate *f* against which it moves can be raised or lowered to the wear of the valve by operating the set-nuts *g*, which are secured in steam-chest covering *e*. In said covering *e* is a tube *h*, which communicates with an oil-cup for lubricating the device. The plate *f* is packed around its edges with packing *f'*, leaving the space between the set-nuts *g* open, in which the oil distributes itself, and then passes through small perforations in the adjustable plate *f* for lubricating the valve A.

H is a steam-cylinder provided with a piston *k*, as shown in Fig. 1, the steam being admitted into the said cylinder from steam-chest through the steam-ports *i*.

Having thus fully described my invention, what I claim as being new, and desire to secure by Letters Patent, is—

A valve A, open at the top and bottom and having end and side walls, the said end walls having upper and lower flanges *d c*, and tubular openings extending from the outer face of one end wall to the outer face of the other, in combination with a perforated plate *f*, packing *f'*, and set-nuts *g'*, the said plate *f* serving as a cover for the said valve, as described.

In testimony whereof I affix my signature in presence of two witnesses.

EDMESTON V. THOMAS.

Witnesses:

R. A. BALDERSON,  
A. A. HIGDON.