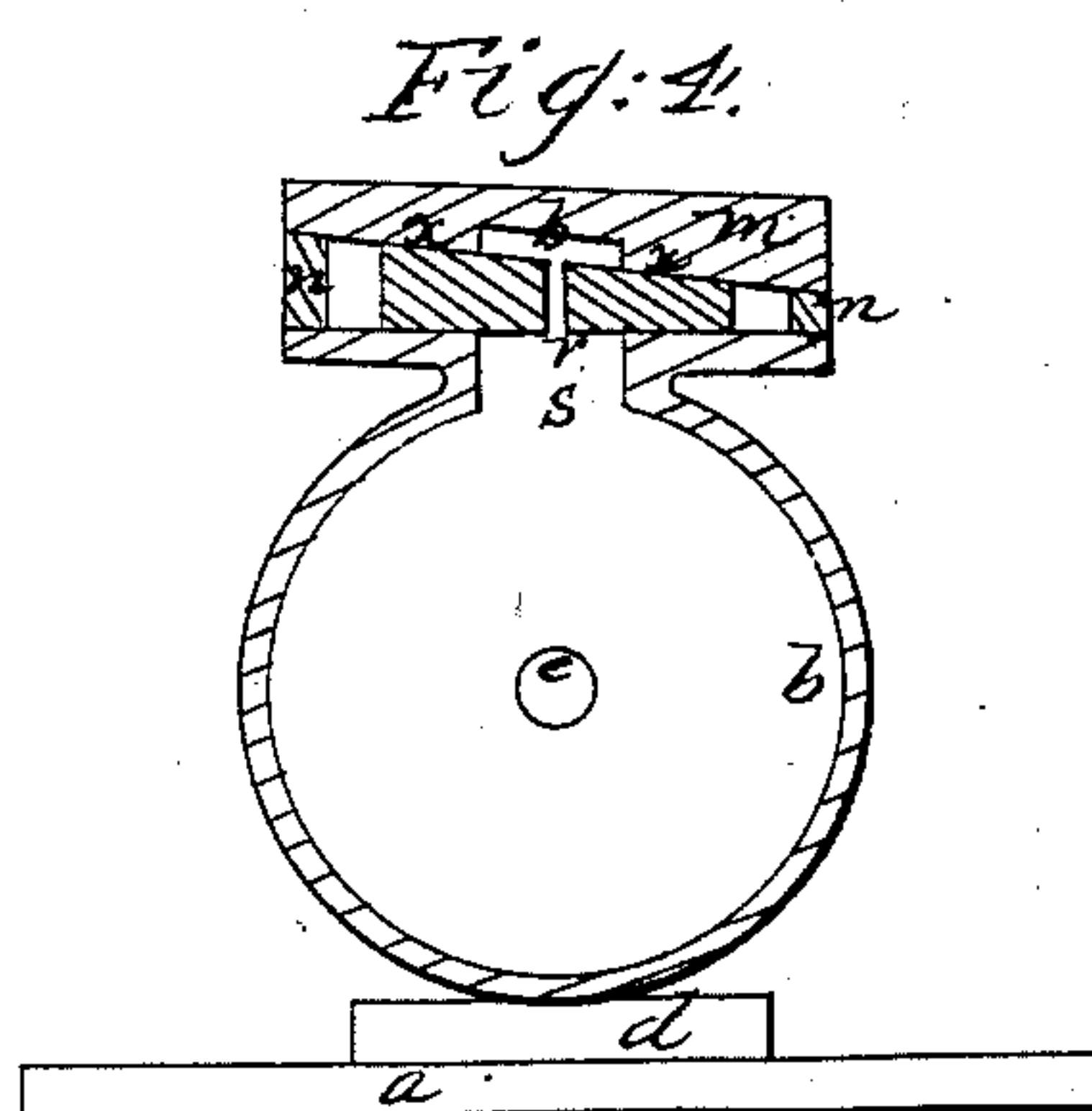
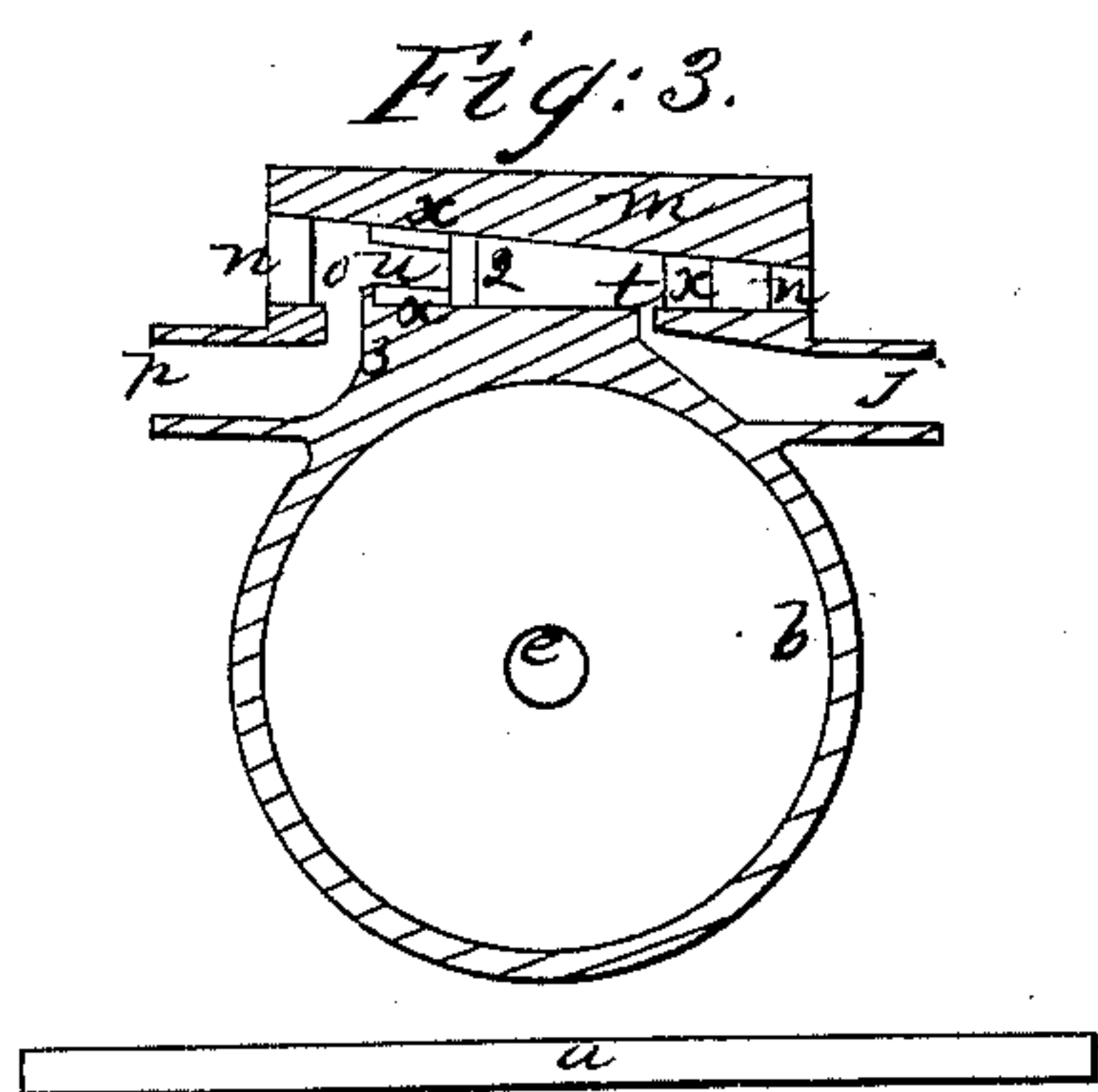
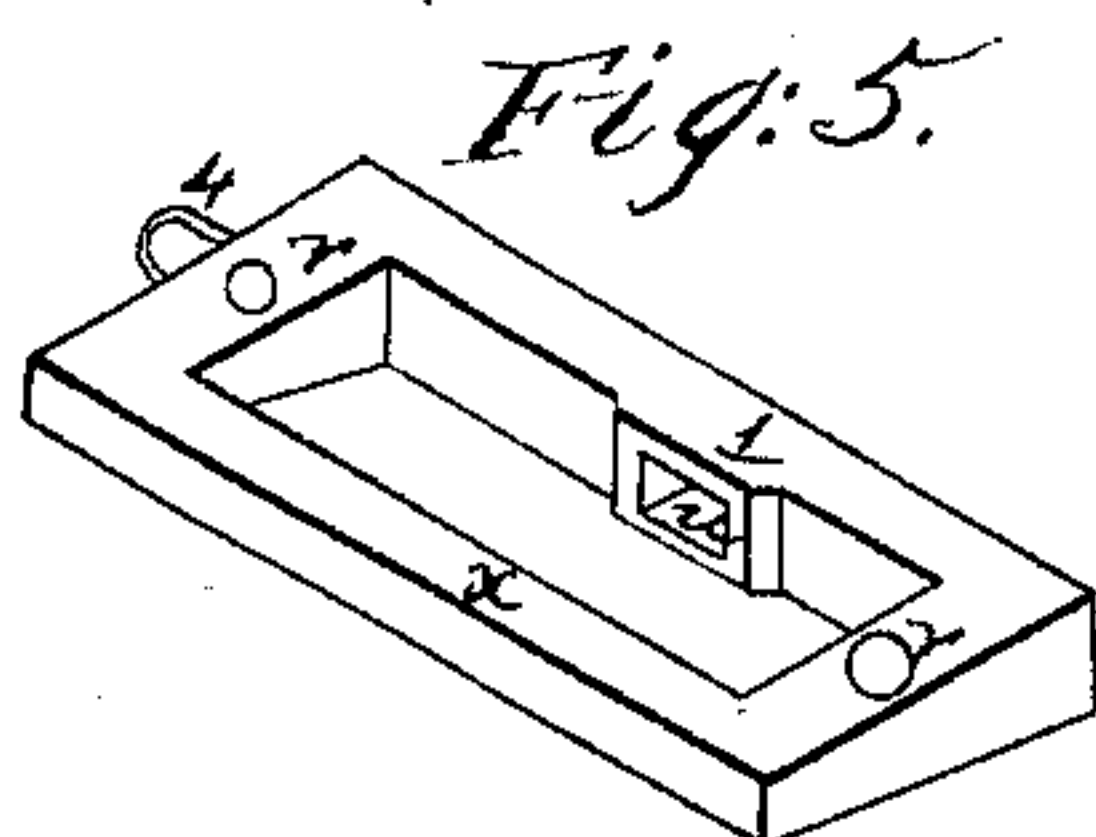
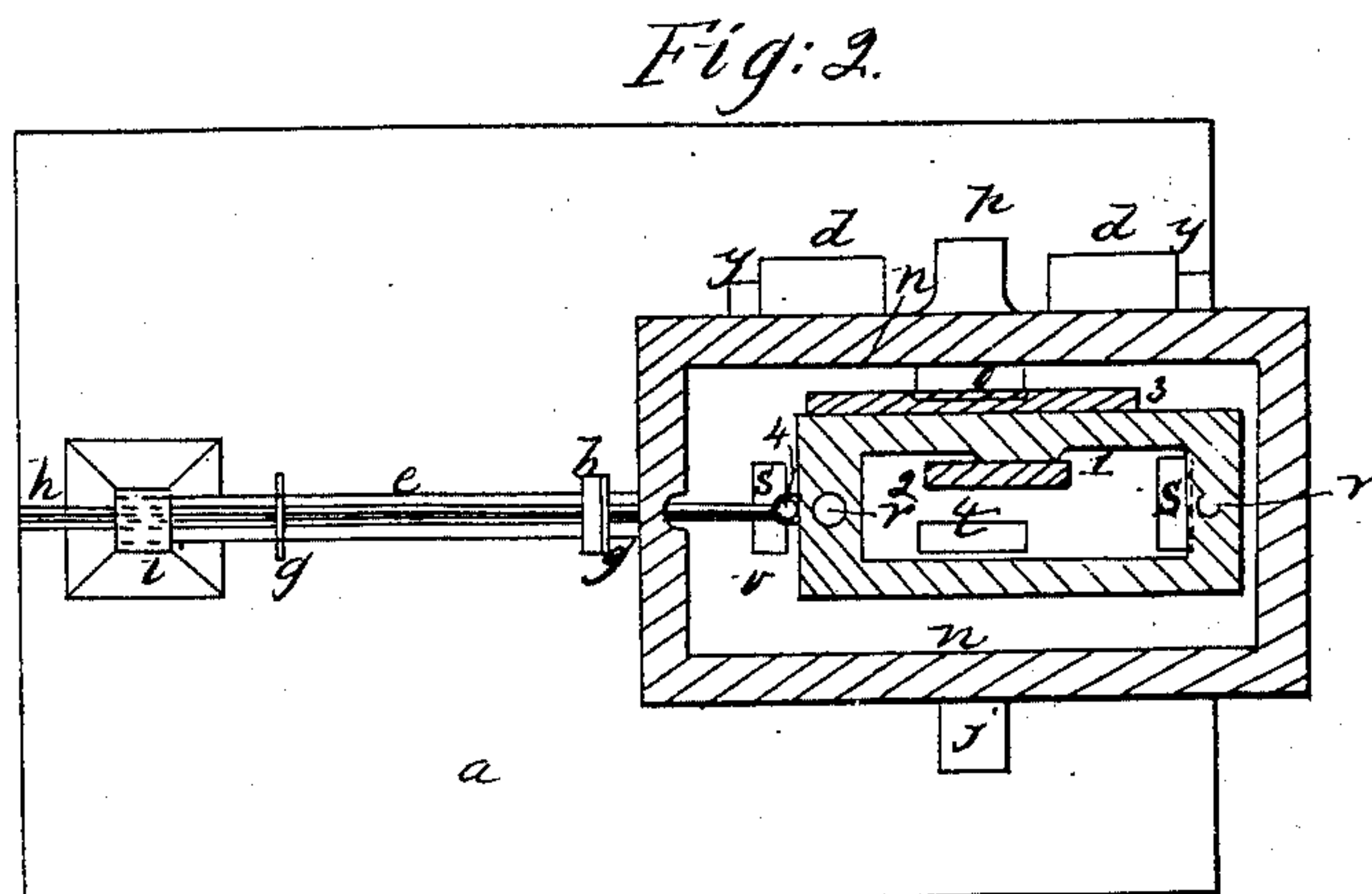
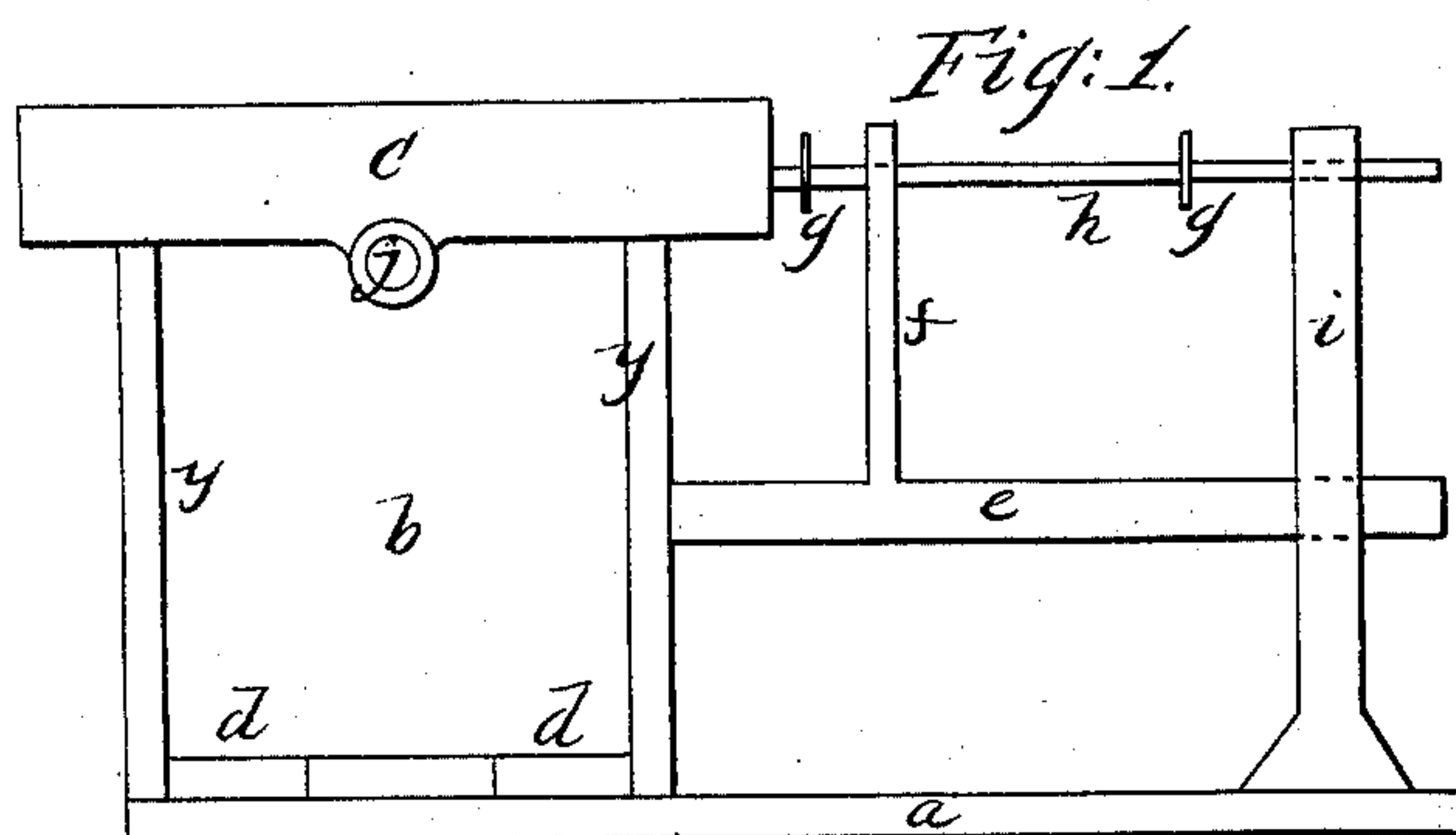


J. Sloan,
Steam Balanced Valve.

N^o 27,011.

Patented Jan. 31, 1860.



Witnesses.

James J. Schuster
George P. Stick

Inventor.

John Sloan

UNITED STATES PATENT OFFICE.

JOHN SLOAN, OF PITTSBURG, PENNSYLVANIA.

BALANCED SLIDE-VALVE.

Specification of Letters Patent No. 27,011, dated January 31, 1860.

To all whom it may concern:

Be it known that I, JOHN SLOAN, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and Improved Balance Slide-Valve; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

The nature of my invention consists in the use of a wedge-shaped slide valve; and in an arrangement for balancing the valve, the whole being constructed and arranged in the manner herein after described.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In the accompanying drawings Figure 1, is a side view of the engine. Fig. 2, is a top view of the engine with the cap of the steam chest removed. Fig. 3, represents a cut or sectional view of the cylinder, steam chest, slide valve, receiving and exhaust openings and pipes. Fig. 4, is a cut or sectional view of the cylinder, steam chest and slide valve, and represents one of the steam ports which lead into the cylinder, also one of the openings in the slide valve, and one of the steam chambers in the cap of the steam chest. Fig. 5, is a perspective view of the valve.

(a) is the base upon which the engine rests.

(b) is the cylinder.

(y) are the flanges on the ends of the cylinder.

(d) are the lugs of the cylinder and are used for bolting it down on the base (a).

(c) is the steam chest, (e) is the piston rod which is furnished with an arm (f) which is used in connection with the flanges (g) on the rod (h) for the purpose of operating the slide valve (x). The guides or bearings of the piston rod (e) and valve rod (h) are in the stand (i).

(v) is the valve seat which is furnished with two guides (2 and 3).

(n) is the case which forms the sides and ends of the steam chest.

(m) is the cap of the steam chest and is furnished with a steam chamber at each end directly over the steam ports (s) of the cylinder. The steam chambers (l) in the cap (m) of the steam chest are used for the purpose of balancing the slide valve (x) which is furnished with openings (r) which

form a steam passage between the steam

ports (s) of the cylinder and the steam chambers (l) in the cap of the steam chest.

The valve (x) and its chamber are made wedge shaped. The upper surface of the valve is covered by the cap (m). The thick side of the valve on the inside is furnished with a projection (1) which has an opening (u) through it and the side of the valve. This opening is used for the purpose of cutting away a portion of the projection (1) so that it will wear away equally with the upper and lower surfaces of the valve, thereby allowing the valve to seat itself by its own action; and the opening (u) also relieves a part of the thick side of the valve from the action of the steam in exhausting from the cylinder, thereby equalizing the pressure of steam on the outside ends and sides of the valve. The projection (1) on the inside of the valve and the guide (2) protects a portion of the thick side of the valve on the inside from the action of the steam when receiving, thereby making the pressure of steam equal on the inside ends and sides of the valve. The valve is relieved from the upward pressure by the chambers (l) which are made equal in size to the steam ports (s) leading into the cylinder, the steam from the port (s) causing the upward pressure, passes through the opening (r) into the chamber (l) in the cap, thereby balancing the valve by thus relieving it from the upward pressure of steam in the cylinder.

(o) is the exhaust opening.

(p) is the exhaust pipe.

(j) is the steam pipe which connects with the steam boiler.

(r) is the receiving or supply opening.

(4) is a staple into which the rod (h) is hooked. It will be observed that the pipe (j) and the opening (r) can be used for the purpose of exhausting the steam, and the pipe (p) and the opening (o) can be used for the purpose of supplying the cylinder with steam.

When the slide valve and the other parts of the engine are in the position represented in Fig. (2) the back end of the cylinder will be receiving steam and the front end of the cylinder will be exhausting steam. Now by moving the piston (e) forward toward the stand (i) the projecting arm (f) will come in contact with the forward flange (g) on the rod (h) and move the valve forward until it passes the forward port (s); the

forward end of the cylinder will then be receiving steam and the back end will be exhausting steam.

Having thus described the nature, construction, and operation of my improvement, what I claim as of my invention and desire to secure by Letters Patent of the United States is—

1. The use of the wedge shaped slide valve (x), in combination with the steam chest, said steam chest being adapted in form and size to the form and size of the valve as herein described and set forth.

2. The use of the projection (1), and opening (u) when used in connection with the guide and guard (2) as herein described and for the purpose set forth.

3. The use of the openings (r) in the valve (x), when used in connection with the steam chambers (l) in the cap (m) and the steam ports (s) of the cylinder; as herein described and for the purpose set forth.

JOHN SLOAN.

Witnesses:

JAMES J. JOHNSTON,
GEORGE P. GRECK.