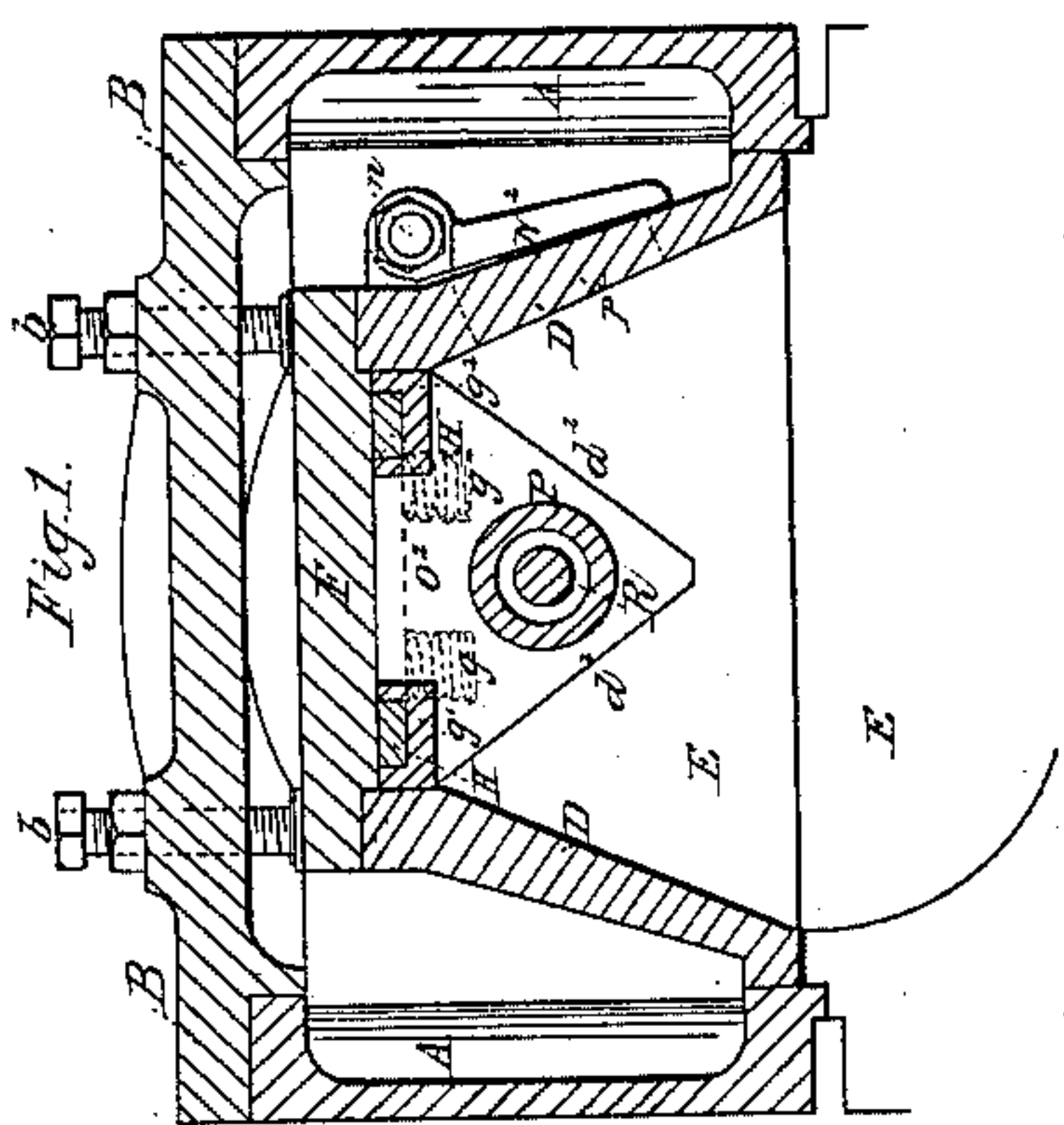
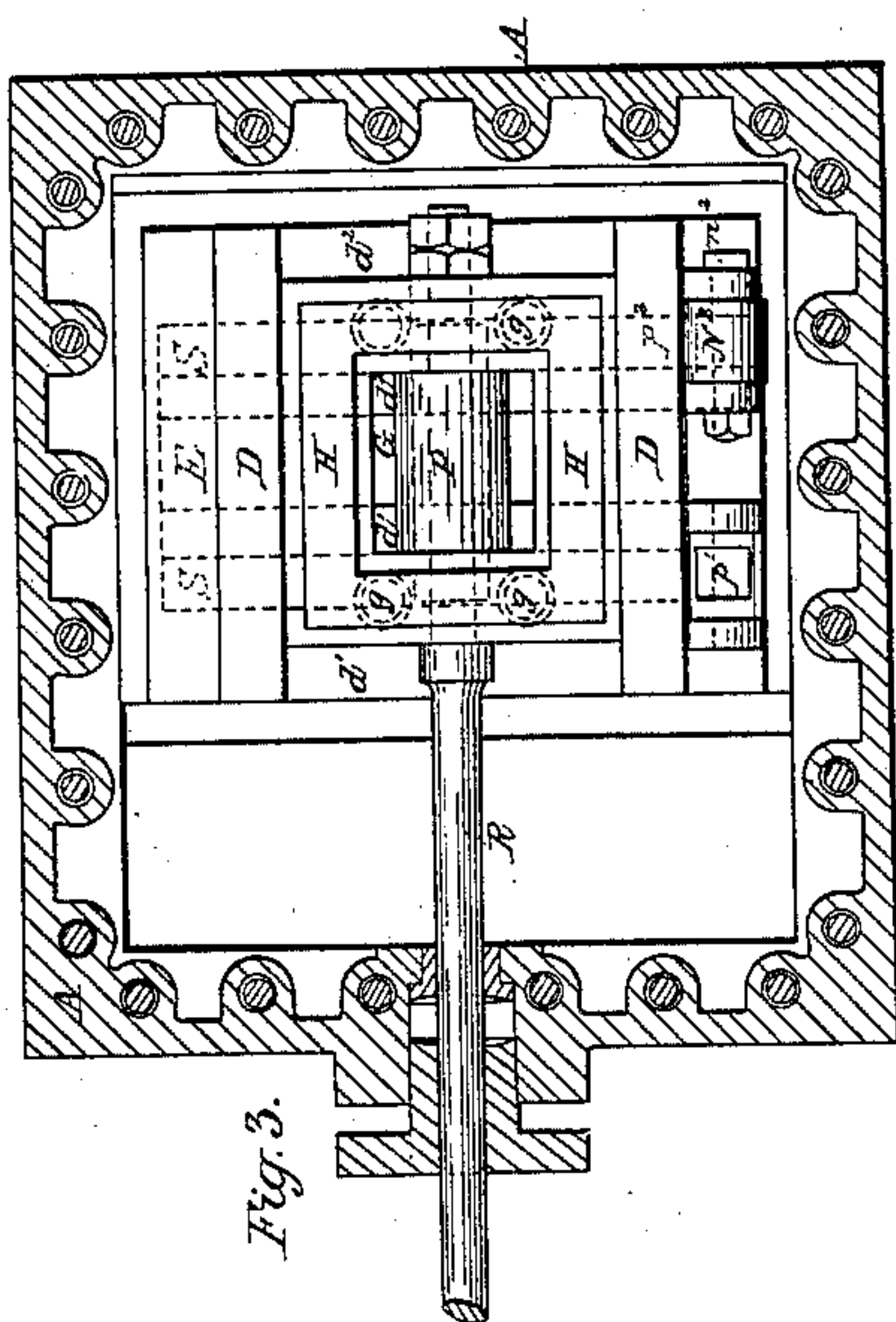
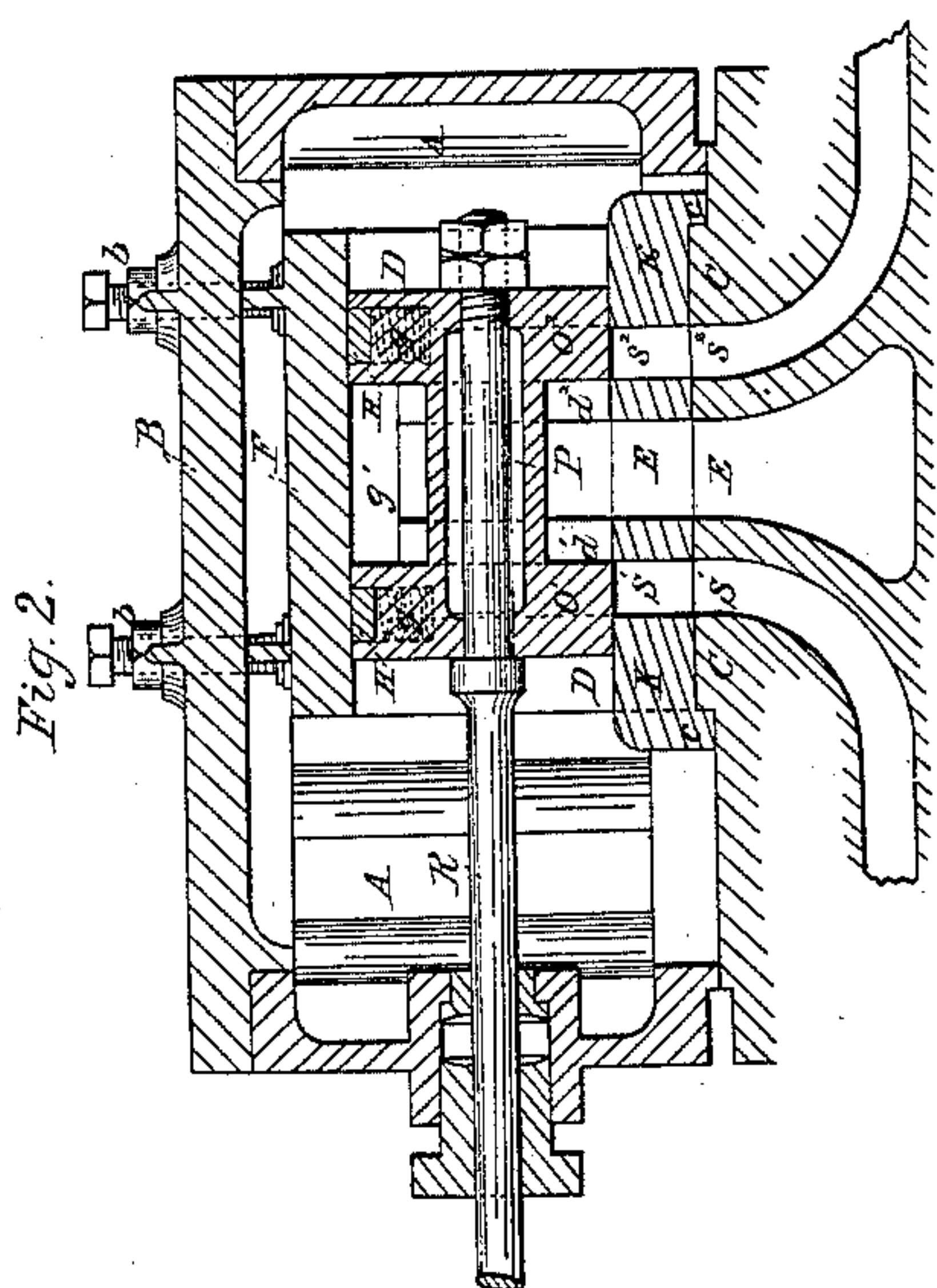


G. H. Hoagland,
Steam Balanced Valve.

N^o 67,302.

Patented July 30, 1867.



Witnesses.
L. Holmes
Geo. W. Reed

Inventor
G. H. Hoagland

United States Patent Office

G. H. HOAGLAND. OF PORT JERVIS, NEW YORK.

Letters Patent No. 67,302, dated July 30, 1867.

IMPROVEMENT IN STEAM-ENGINE SLIDE-VALVES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, G. H. HOAGLAND, of Port Jervis, in the county of Orange, and State of New York, have invented a new and useful Improvement on Balance Slide-Valves; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing making a part of this specification, in which—

Figure 1 represents a transverse section of the steam-chest of an engine cylinder, with my improved slide-valve therein.

Figure 2 a longitudinal section of the same, and

Figure 3 a rear view or horizontal section thereof, with the steam-chest cover removed.

The nature of my invention consists in a novel combination of V-shaped slide-valve, box, or case thereto, with its parts or passages also open at its ends, the whole being arranged within a steam-chest, substantially as hereinafter described; and said invention further consists in a combination with the valve-box of certain relief or safety-valves, controlling openings that establish communication between the steam-ports and interior of the steam-chest, for the purpose of preventing damage or breakage to the engine-cylinder, or other working parts.

In the accompanying drawing, the outer box or case there represented is the steam-chest of an engine-cylinder. E is the exhaust port, and S¹ S² are the steam passages through the bottom plate K of the valve-box D, arranged within said case, which passages are in communication with corresponding passages or extensions thereof through the portion of the engine-cylinder on which the said box or its steam-chest A is seated. The cover F of this box D is represented as a loose plate which is kept close down to the sides of the box D by screws b that may be arranged to pass through the top cover of the steam-chest, and also be extended so as to keep down the box D to the steam-chest face. The box D is open at both ends, a V-shaped way or passage being established throughout its length for the accommodation of the valve of similar configuration, so far as its end faces O¹ and O² are concerned, which are connected by a tube, P, and bars G¹ and G², all of which may be cast together. R is the valve stem, run through the centre of the tube P, and suitably secured thereto. The passages E S¹ S² extend upwardly within the box D, as far as the cover F, or nearly so, the steam passages S¹ S² communicating by lateral openings p¹ p², in said box, with the interior of the steam-chest A. The steam has a free passage between the sides of the steam-chest and the box D, from one end of said chest to the other. The steam can only enter the steam-ports of the engine-cylinder, or pass from the steam-chest thereto, past or outside the ends of the valve as it is reciprocated within the box D, the ends of which are open for ingress of the steam, such action of the valve alternately establishing steam communication from opposite ends of the valve with the ports S¹ S², and the latter alternately communicating through the recessed or middle portion of the valve with the exhaust passage of the cylinder. The upper portion or face of the valve is provided with a packing, H, which may be of rectangular form, and is seated within a groove made in said face, resting on springs g therein, and being forced up or against the inside face of the cover F, said packing being a sufficient distance from the outer edges of the upper face of the valve to allow of steam acting on a sufficient area of the latter to counteract the pressure of steam on the under portion or shelving sides of the blocks O¹ O², as they alternately pass over the stationary ports or passages to which steam has been admitted. This construction serves to give to the valve a balance character, keep it close to its seat, and prevents leakage of steam to the exhaust. Though here described as of a V-form, it is preferred to square off the bottom and side edges of the valve, as represented, to prevent cutting on its seat, and for the accommodation of the packing. It is essential, however, that its general contour should be that of a V, as such is found to wear better than a circular or other form, and the wear of the same be provided for by adjustment of the loose cap or cover F. The openings p¹ p², made in the one side of valve-box D, and establishing communication between the steam-ports S¹ S² and interior of the steam-chest, are covered by valves N¹ N², hung to open outwards, and shut by their own weight and the pressure of the steam in the chest. These valves act as safety or relief valves in case of the pressure of the steam in the cylinder or the ports exceeding that of the steam in the chest, as sometimes occurs in locomotive engines on giving counter-steam; they also serve to facilitate the expulsion of water from the cylinder or ports. As soon as the requisite relief, however, is afforded, these valves close. I denominate them "safety-valves," as in giving relief as described they prevent bursting or starting of the cylinder heads, or otherwise producing breakage or damage.

What I claim as my invention, and desire to secure by Letters Patent, is—

The combination with the valve-box D, arranged within the steam-chest, of the valves N¹ N², controlling openings in communication with the steam-ports, essentially as and for the purpose herein set forth.

G. H. HOAGLAND.

Witnesses:

J. W. COOMBS,

G. W. REED.