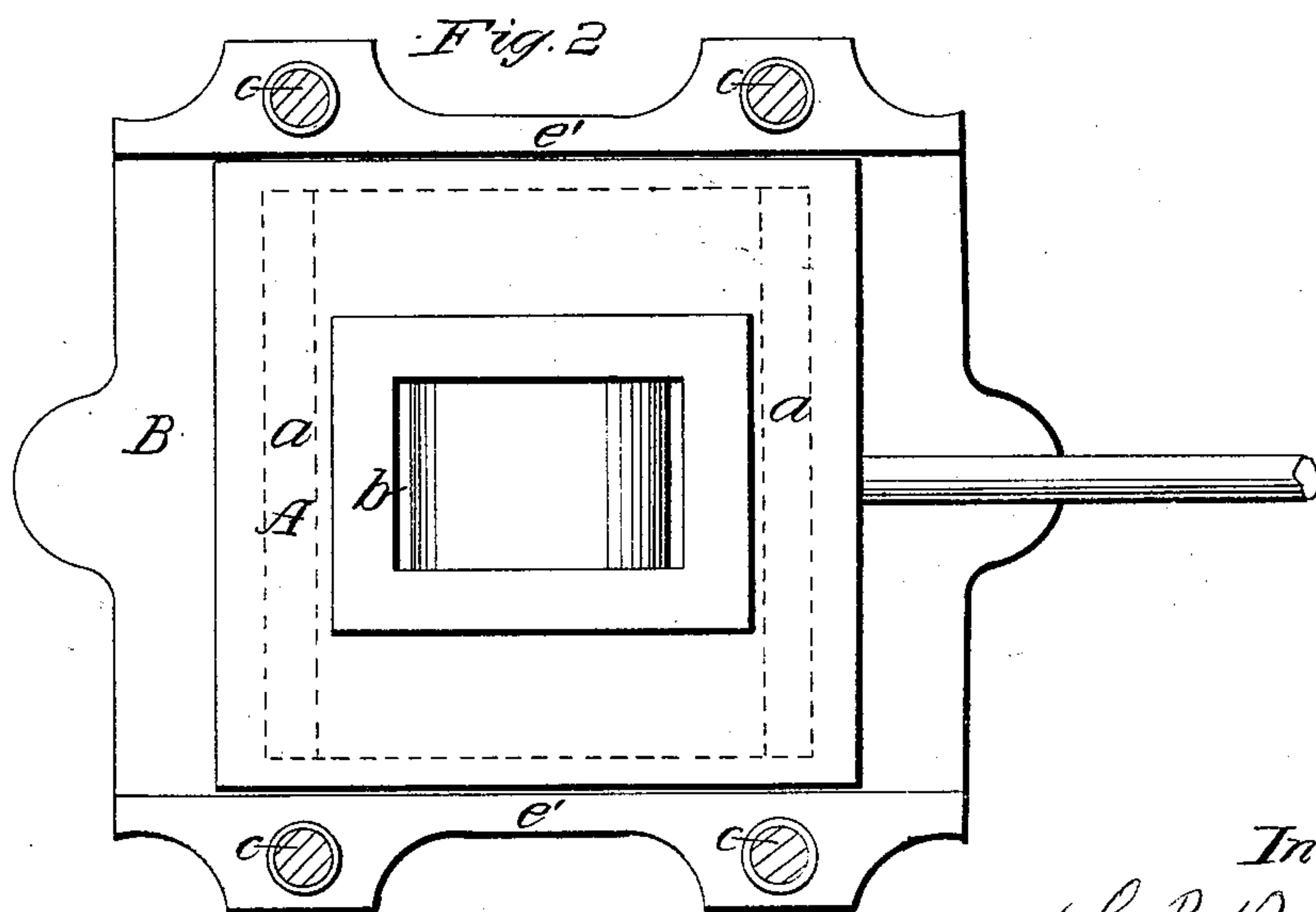
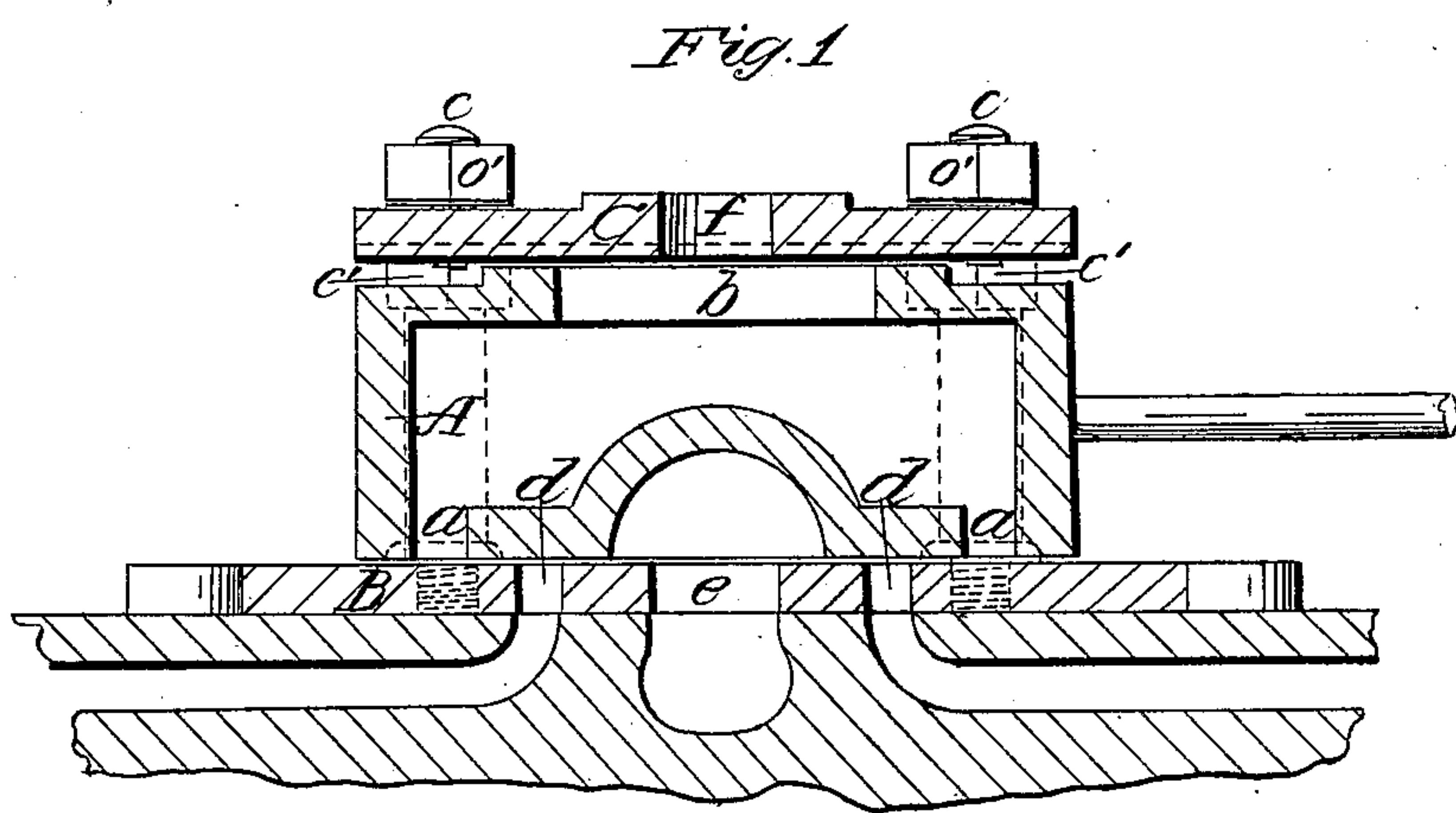


L. P. Rice,
Steam Balanced Valve.
N^o 29,822. Patented Aug. 28, 1860.



Witnesses:
J. W. Crompton
R. S. Spencer

Inventor:
L. P. Rice
per [Signature] Attorney,

UNITED STATES PATENT OFFICE.

L. P. RICE, OF ADRIAN, MICHIGAN.

SLIDE-VALVE FOR STEAM-ENGINES.

Specification of Letters Patent No. 29,822, dated August 28, 1860.

To all whom it may concern:

Be it known that I, L. P. RICE, of Adrian, in the county of Lenawee and State of Michigan, have invented a new and useful
5 Improvement in Slide-Valves for Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of
10 this specification, in which—

Figure 1 represents a longitudinal vertical section of my invention. Fig. 2 is a plan or top view of the same, with the cover removed.

15 Similar letters of reference indicate corresponding parts in both the figures.

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

20 A represents a box made in the form of a cube or nearly so and cast of iron or brass or made of any other suitable material. The bottom of this box is perforated with two apertures *a*, and its central part is elevated
25 so that said bottom assumes the form of a common D-valve, as clearly shown in Fig. 1. The top of the box A, is also perforated with one aperture *b*, equal in area to the two apertures *a*, in the bottom, and the box
30 works steam-tight between two plates B, C, which are united by screw-rods *c*, and nuts *c'*, in such a manner that their distance from each other can be adjusted at pleasure. The bottom plate B, is attached to a steam cylinder and it is perforated with two apertures
35 *d*, to correspond to the steam-ports, and one aperture *e*, to correspond to the exhaust port, and it is also furnished with ways *e'*, on its sides to form the guides for the box A.
40 The top plate C, on the other hand has one opening *f*, in its center, intended to connect with the steam-pipe. When the box A, is in its place, and if the plates B, C, are adjusted by means of the screw rods *c*, and nuts *c'*,
45 the opening *f*, in the top plate C, is right

over the aperture *b*, in the top of the box, and this latter aperture is made long enough so that in moving the box in a longitudinal direction the steam is always freely admitted to the interior of the box.

50 The valve-rod is attached to the box A, and it will be noticed that there is no necessity of covering the box with a steam chest so that the packing generally needed around the valve rod can be dispensed with. The
55 box A, in fact, forms the steam-chest and the valve combined into one, and the pressure of the steam on the sides of this box is perfectly balanced, the aperture *b*, on its top being equal in area to the apertures *a*, in
60 the bottom, so that the same moves just as easily when the steam is let on as when the steam is shut off.

The simplicity of this valve is unsurpassed; it is perfectly balanced under all
65 circumstances; in cases of wear the plate C, can be readily adjusted, so that the joints are kept tight under all circumstances, and by dispensing with the stuffing-box usually
70 needed in the side of the steam-chest to form the joint around the valve rod, the valve can be made to move much easier than balance valves of ordinary construction.

I do not claim broadly the idea of admitting steam to both sides of the valve so that
75 it will be balanced; nor do I claim broadly the arrangement of the valve between two plates as a substitute for the steam chest.

What I claim as new, and desire to secure by Letters Patent, is—
80

The employment of a box valve A, that has its bottom elevated in the middle as shown, when said box is arranged between two plates A, B, and the whole constructed
85 so as to operate as herein represented and described for the purpose set forth.

L. P. RICE.

Witnesses:

WM. S. GRUNDY,
G. H. ARCHBALD.