

(No Model.)

I. H. CONGDON.  
VALVE SEAT FOR STEAM ENGINES.

No. 282,058.

Patented July 31, 1883.

Fig. 1.

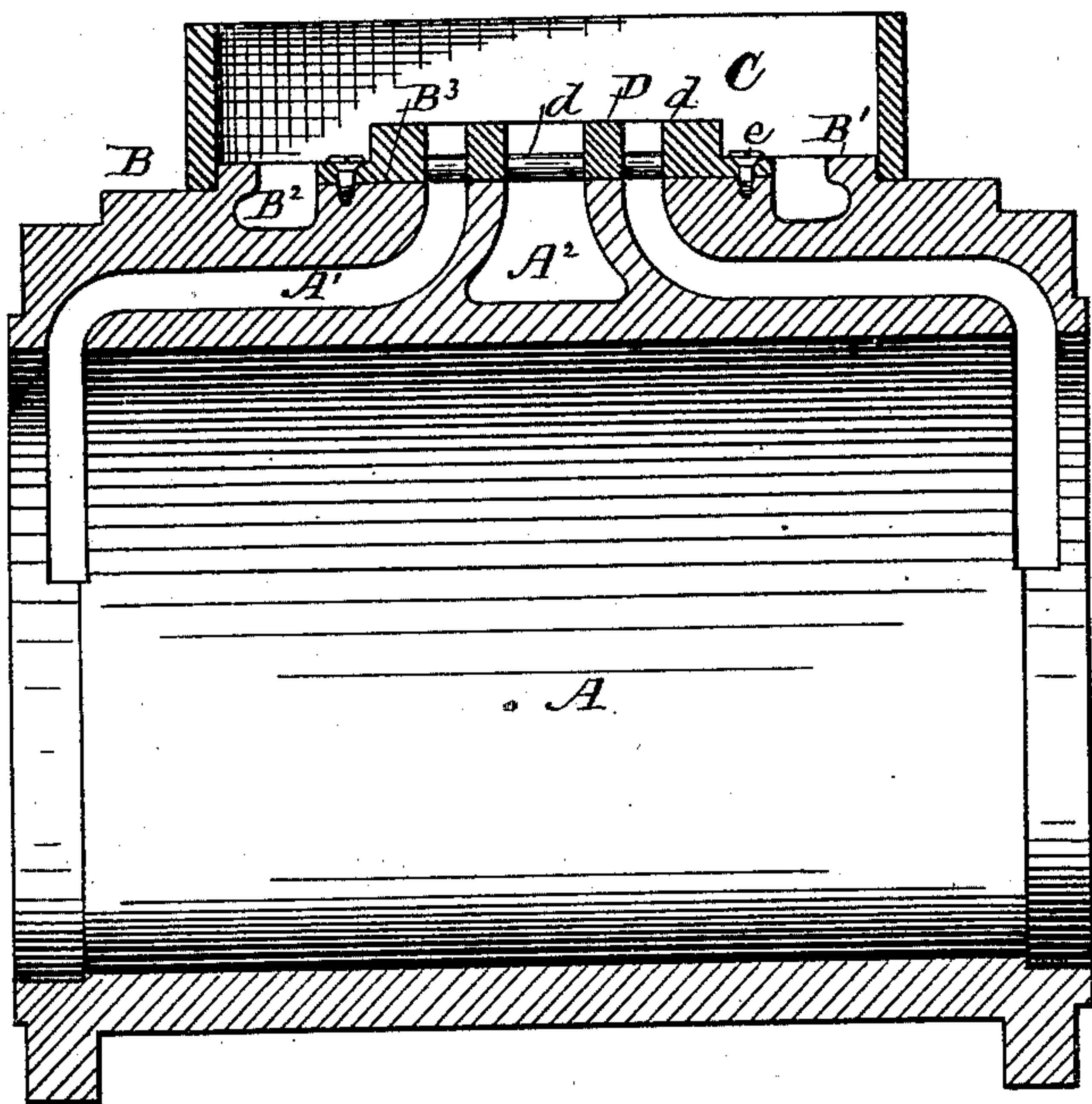


Fig. 5.

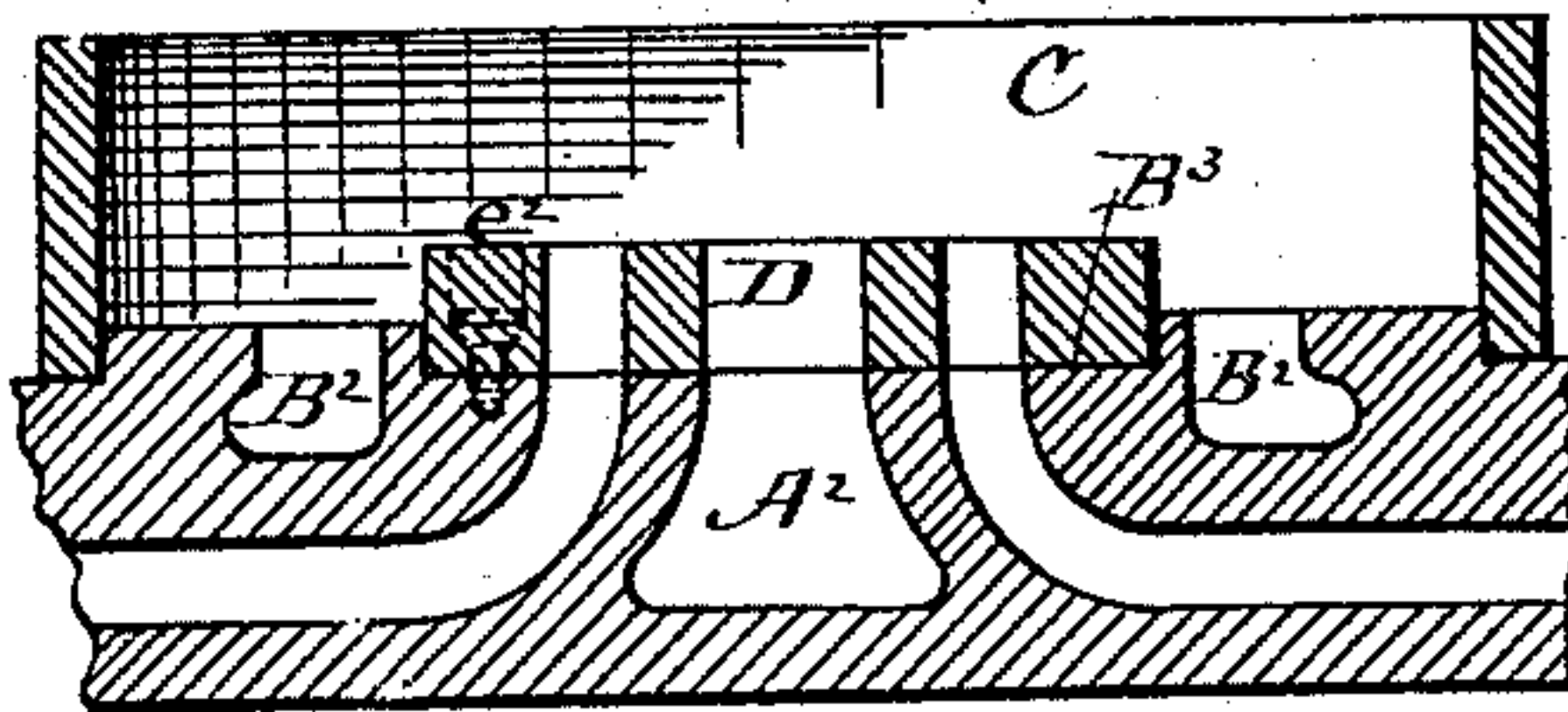


Fig. 6.

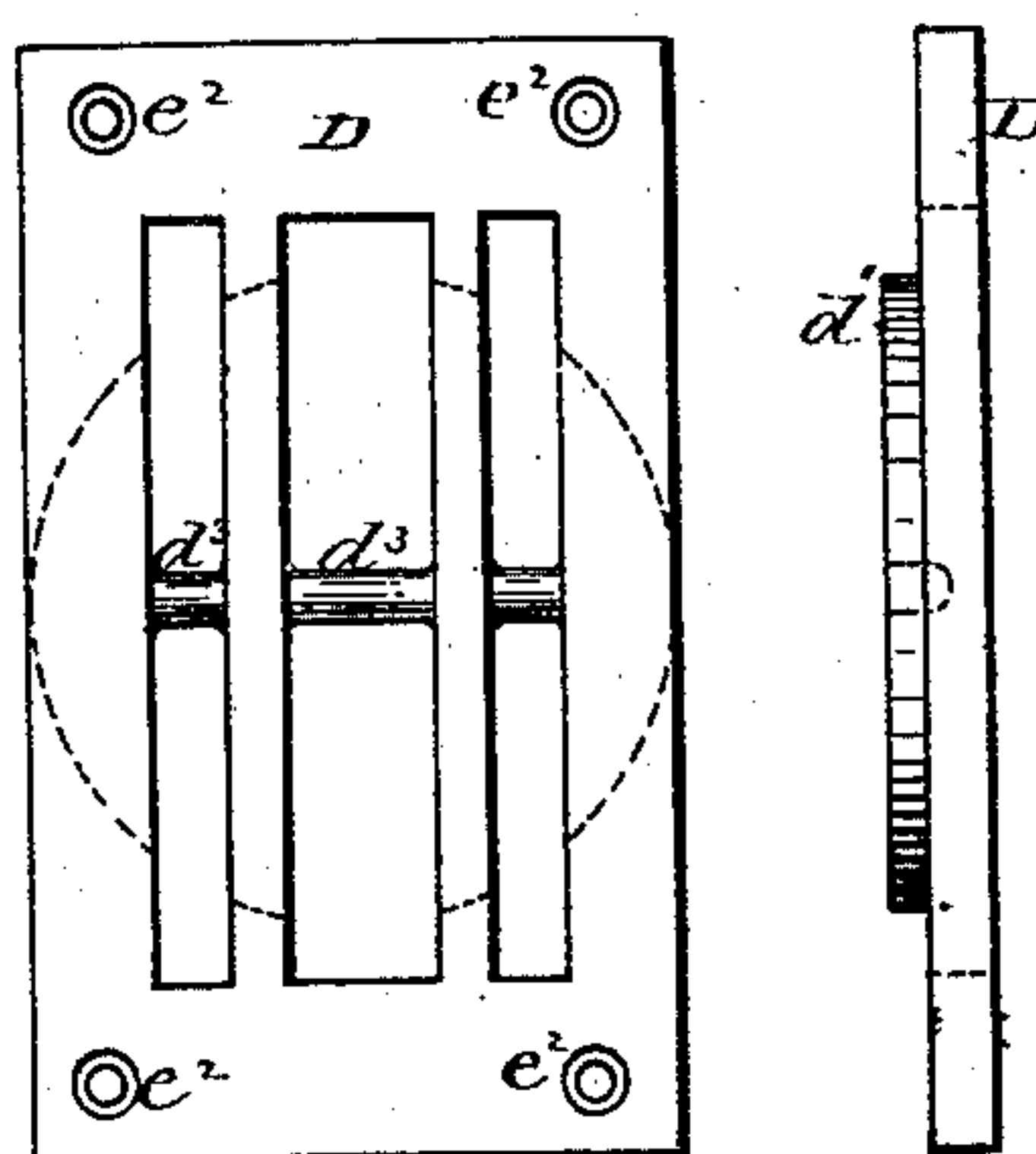


Fig. 2.

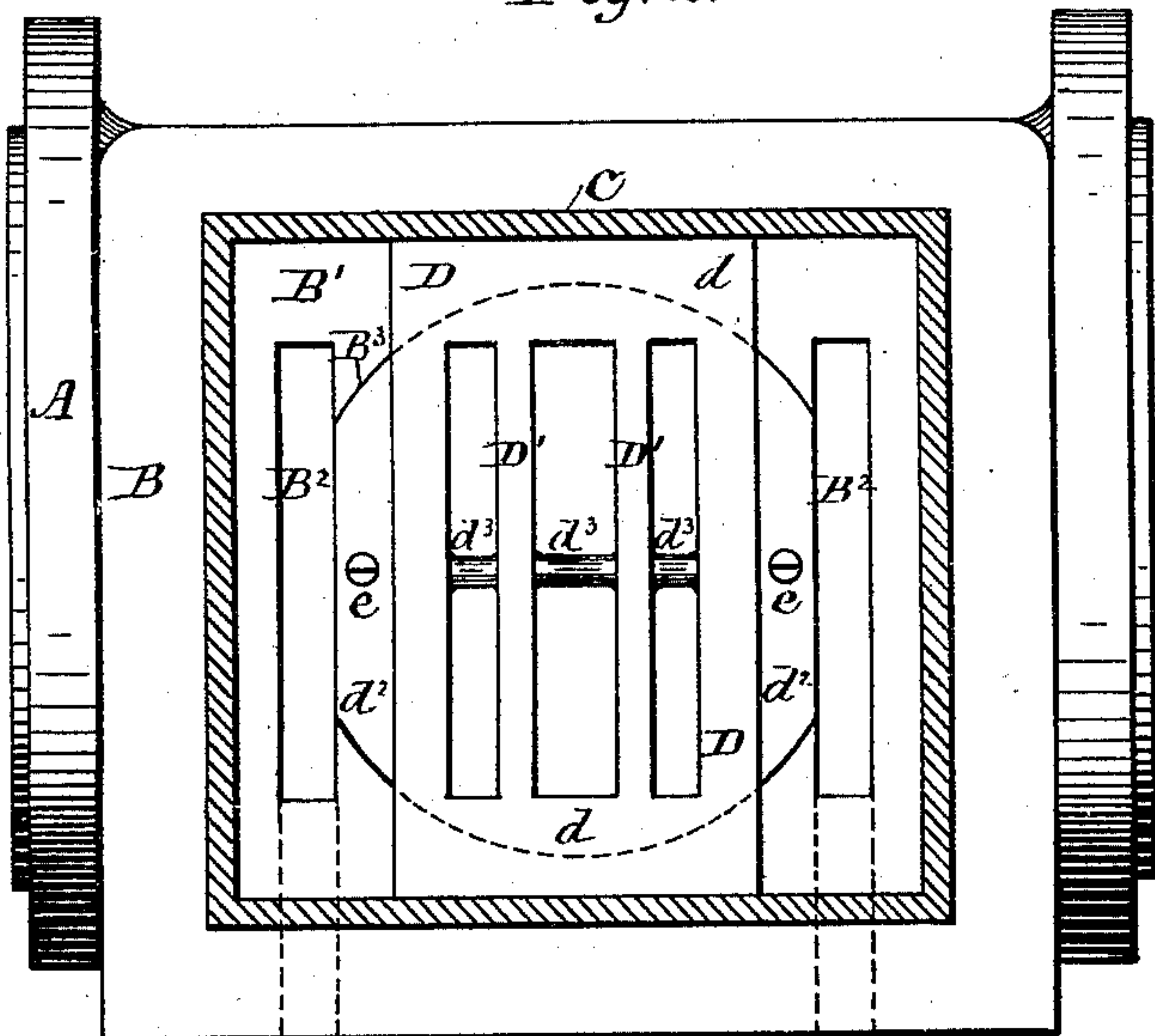
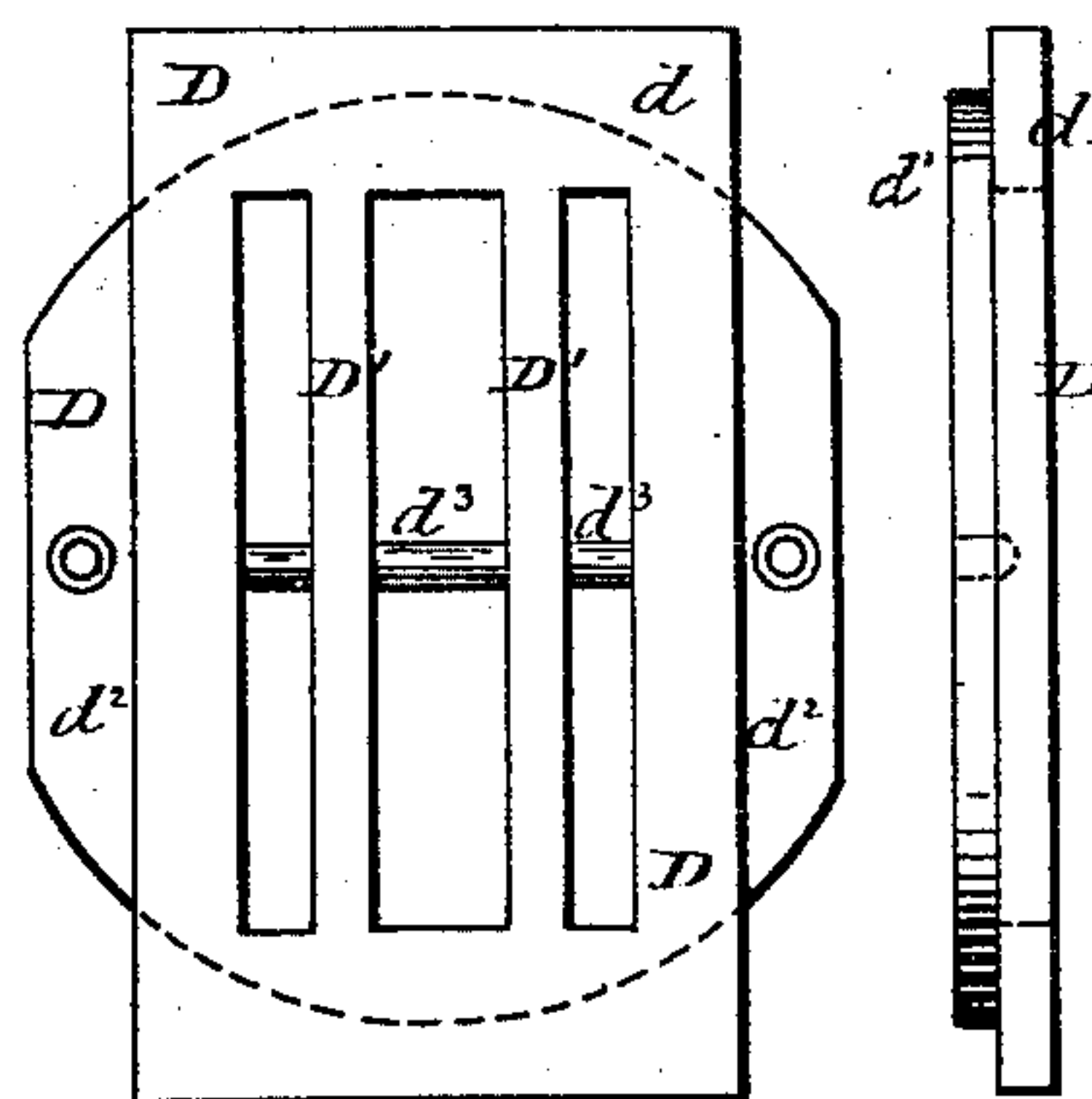


Fig. 3.

Fig. 4.



Witnesses:

W. B. Masson  
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Isaac H. Congdon  
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att'y.



# UNITED STATES PATENT OFFICE.

ISAAC H. CONGDON, OF OMAHA, NEBRASKA.

## VALVE-SEAT FOR STEAM-ENGINES.

SPECIFICATION forming part of Letters Patent No. 282,058, dated July 31, 1883.

Application filed January 15, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, ISAAC H. CONGDON, a citizen of the United States, residing at Omaha, in the county of Douglass and State of Nebraska, have invented a new and useful Valve-Seat for Steam-Engines, of which the following is a specification.

My invention relates to improvements in removable valve-seats of cylinders; and the objects of my improvements are to provide cylinders with a removable valve-seat that will be easily fitted to the cylinder and adapted to remain in position without bringing any strain upon the fastenings.

Heretofore the steam-chests of cylinders have been provided with a false or removable valve-seat bolted or otherwise secured upon the surface of the saddle of the cylinder. They are generally formed of a flat plate provided with ports for the passage of steam, and are bolted directly upon the surface of the saddle, or are provided with lugs that are bolted upon said surface; but the continuous motion of the valve upon the seat soon loosens the bolts and permits steam to escape between the false seat and the surface of the cylinder-saddle, preventing the valve from operating properly.

The objects of my invention are to remedy these defects by the construction illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section of a cylinder and part of a steam-chest provided with my improvement. Fig. 2 is a plan view of the cylinder, showing the detachable valve-seat in position and the steam-chest in section. Fig. 3 is a plan of the improved valve-seat detached from the cylinder. Fig. 4 is a side view of the same. Fig. 5 represents a vertical section of a cylinder-saddle and steam-chest having the steam-inlets closer to the valve-seats than in Figs. 1 and 2, and provided with the improved valve-seat. Fig. 6 is a plan and side view of the same valve-seat detached from the cylinder.

In said drawings, A represents a steam-cylinder provided with the usual steam-passages, A', and exhaust-port A<sup>2</sup>. The surface of the saddle of the cylinder is planed at B to receive the lower edge of the casting C, forming a part of the steam-chest. The central portion, B', of the saddle projects upward a short distance

within the chest C and helps to retain the latter in proper position while relieving the fastening-bolts (not shown) from strain. This central portion, B', of the saddle is provided at each end with steam-passages B<sup>2</sup>, to admit steam into the steam-chest, and with a central recess, B<sup>3</sup>, to receive the bottom of the valve-seat D. The central recess, B<sup>3</sup>, is of sufficient size to surround the steam-ports, and may be half an inch deep (more or less.) It is made circular, as it can be most conveniently bored out with a cylinder-facing machine.

The removable valve-seat D is composed of a plate having its upper portion, d, rectangular in form and its lower portion, d', circular, except where planed off on two sides, so as not to interfere with the steam-passage B<sup>2</sup>. This portion d' projects beyond the rectangular part d and forms flanges d<sup>2</sup>, by which the valve may be secured to the bottom of recess B<sup>3</sup> in the cylinder-saddle by screws e. The upper portion, d, is planed, so as to project about an inch above the flange d<sup>2</sup>, and forms the surface upon which the valve travels. This valve-seat D is provided with ports corresponding in size and location with the ports A' A<sup>2</sup> of the cylinder. The transverse bars D', separating these ports, are sustained on both sides and prevented from warping by bridges d<sup>3</sup>, forming a continuous support across the three ports or passages. The bridges extend upward only about half-way up these passages, so that they will not come in contact with the slide-valve until the valve-seat is nearly worn out.

The modified construction of removable valve-seat shown in Figs. 5 and 6 is for the accommodation of cylinders having the steam-inlets B<sup>2</sup> close to the edge of the valve-seat, as found in many engines already constructed. In this case the circular recess B<sup>3</sup>, made in the top of the saddle, is of smaller diameter than in the other figures, and the circular bottom d' is turned to fit into this smaller recess, and thus relieve the fastenings of all strain. In this case the fastenings consist of two or four screws inserted through deeply countersunk screw-holes e<sup>2</sup>, adjoining the edges of the valve-seat, and having their screw threaded end engaging with the saddle. After having thus secured the valve-seat to the saddle the cavi-



ties above the heads of the screws are filled with Babbit metal or other suitable composition.

My valve-seat can be easily fitted to cylinders that have been used and have their valve-seat worn out, without disturbing the joints of the chest to the saddle, by using a cylinder-facing machine, as above stated, to provide the face of the saddle with a recess to receive my improved valve-seat.

I am aware that the saddle of steam-cylinders has been provided with a rectangular recess, within which has been placed a rectangular valve-seat having its upper face on a level with the surface of said saddle, but they differ from mine in form and in the facility with which the latter can be fitted in position.

Having now fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of a steam-cylinder provided with a circular recess, with a removable valve-seat provided with a circular flange adapted to fit within said recess, and having its face projecting from said flange, substantially as and for the purpose described.

2. The combination of a steam-cylinder provided with a circular recess cut into the face of its saddle, with a removable valve-seat projecting upward from said face, and provided with a flange fitting in said recess, retaining-screws passing through said flange, and bridge-pieces extending across the three stream-passages of the valve-seat, substantially as and for the purpose described.

ISAAC H. CONGDON.

Witnesses:

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