(No Model.)

H. J. JOHNSON.

SLIDE VALVE SEAT.

No. 300,372. Patented June 17, 1884.

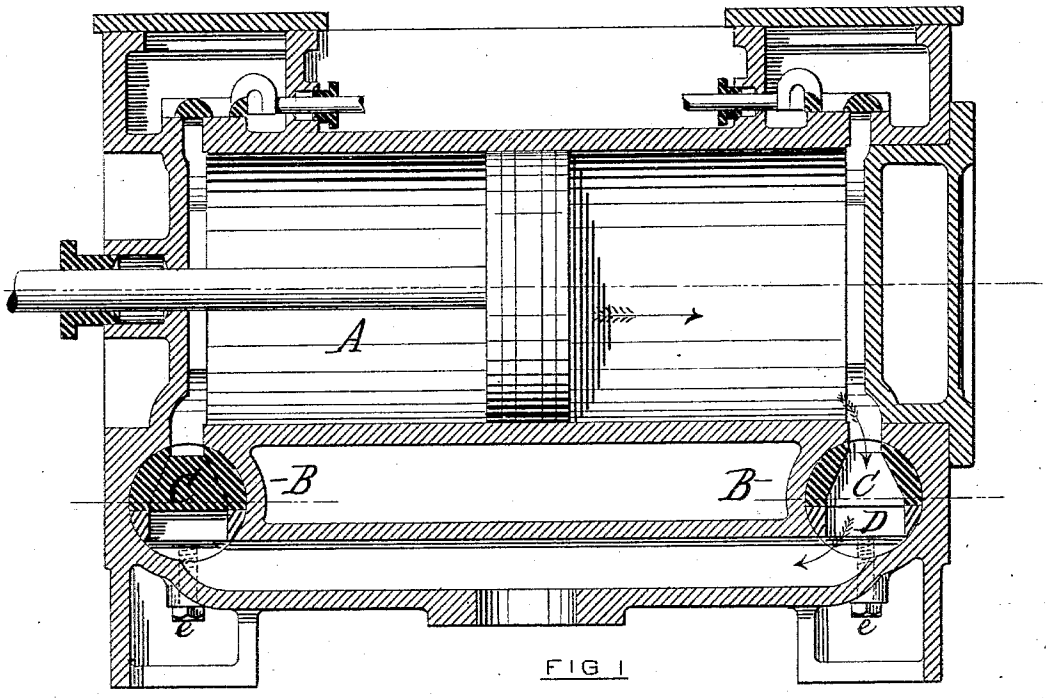

FIG 1

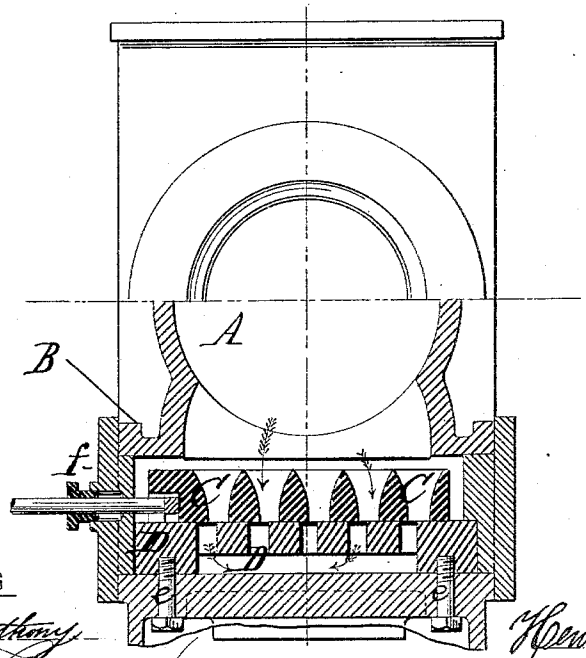

FIG 2

WITNESSES

Gardner & Anthony

Walter H. Brown

INVENTOR

Henry J. Johnson

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

HENRY JAMES JOHNSON, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO HENRY W. GARDNER, OF SAME PLACE.

SLIDE-VALVE SEAT.

SPECIFICATION forming part of Letters Patent No. 300,372, dated June 17, 1884.

Application filed February 29, 1884. (No model.)

To all whom it may concern:

Be it known that I, HENRY JAMES JOHNSON, of the city and county of Providence, and State of Rhode Island, have made an invention of certain new and useful Improvements in Slide-Valve Seats for Steam-Engines and other Purposes; and I do hereby declare that the following, in connection with the accompanying drawings, is a full, clear, and exact description and specification of the same.

The invention has reference more particularly to slide-valves whose shells or chests are cast fast to other devices—as, for example, to steam-cylinders—and are then bored out and fitted with valve-seats having the form of cylindrical segments; and its object is to enable the valve-seat to be readily applied to the shell and secured therein, and to be readily removed for repairs or for the insertion of a new seat. So far as my knowledge extends, the valve-seats of such slide-valves have been made hitherto in one of two modes. According to one mode the valve-seat is a segment of a cylinder larger than a half-cylinder, and is forced into the bore of the shell. In another mode the valve-seat is a smaller segment than half a cylinder, and is held in place by long wedges or keys driven longitudinally above its edges in seats provided for the purpose. The first mode is, in my opinion, objectionable, because of the difficulty of getting the seat out of the shell, while the second mode also is, in my opinion, objectionable, because of the expense of the key-seats and keys and the space occupied by the latter. According to my system of construction the valve-seat is a segment whose bearing-surface on the shell of the valve is less than half the bore of the shell, so that it can be readily inserted therein and removed, and it is secured to the shell by screw-bolts that pass transversely through the shell or chest, so that the cost of securing the valve-seat is small, and the seat can be readily loosened for removal by simply unscrewing the bolts.

In order that the invention may be fully understood, I have represented in the accompanying drawings and will proceed to describe my improved valve construction as applied to the exhaust-valves of the cylinder of a steam-engine.

Figure 1 of said drawings represents a central longitudinal section of the steam-cylinder and valves. Fig. 2 represents a partial transverse section of the said cylinder and one exhaust-valve with a part of the butt of the cylinder in elevation.

In the said example the steam-cylinder A has the shells or chests B B of the exhaust-valves cast in one piece with it, and these shells are bored out cylindrically. The valve C is a five-ported slide-valve fitted to slide endwise in the shell. The valve-seat D is a segment of a cylinder of a curvature to fit snug to the bore of the shell, and slotted to form the ports or passages for the steam, and the seat is smaller than half a cylinder—that is, its bearing-surface on the shell is less than half a cylinder. This seat is inserted endwise in the shell or chest B, the bonnet *f* of the shell being removable for that purpose, as is usual. The valve-seat is secured by two screw-bolts, *e e*—one at each end of the seat—each bolt being entered transversely of the shell through a hole bored for that purpose. As the bearing of the valve-seat on the shell is less than a semi-cylinder, it can be readily inserted into the bore of the shell and withdrawn therefrom, and when it is in place the bolts hold it firmly to the shell, and the removal of the bolts frees it so that it can be readily removed. The necessity of forcing the valve-seat into its place is obviated, and as the bolt-holes in the shell are made by a simple drilling operation, the cost of securing the valve-seat is small.

The shell of the valve may of course be made separately from the steam-cylinder or other device with which it is to operate, and may be secured thereto by bolts.

I claim as my invention—

1. The segmental cylindrical valve-seat, constructed, substantially as before set forth, with its bearing smaller than a semi-cylinder and perforated transversely for screw-bolts.

2. The combination, substantially as before set forth, of the shell of the valve, the segmental cylindrical valve-seat constructed with a bearing less than a semi-cylinder, and the transverse screw-bolts by which the first two are secured to each other.

In witness whereof I have hereto set my hand this 23d day of February, A. D. 1884.

HENRY JAMES JOHNSON.

Witnesses:
GARDNER C. ANTHONY,
WALTER F. BROWN.