

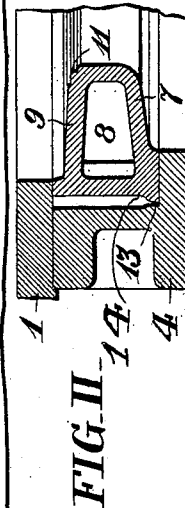
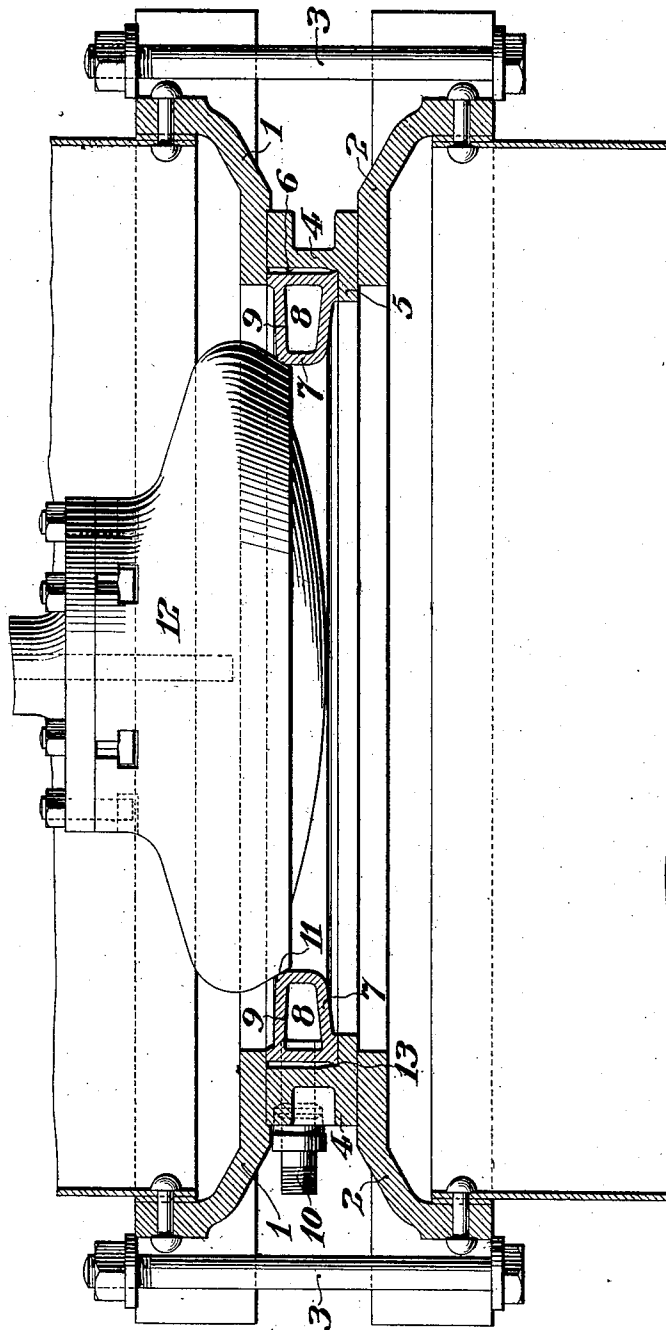
No. 860,865.

PATENTED JULY 23, 1907.

J. M. HARTMAN.
VALVE SEAT.

APPLICATION FILED SEPT. 3, 1904.

FIG. I.



WITNESSES:

Clifton C. Hallwell
John C. Berger.

INVENTOR:

JOHN M. HARTMAN,
by Paige, Paul & Tracy,
Attys.

UNITED STATES PATENT OFFICE.

JOHN M. HARTMAN, OF PHILADELPHIA, PENNSYLVANIA.

VALVE-SEAT.

No. 860,865.

Specification of Letters Patent.

Patented July 23, 1907.

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To all whom it may concern:

Be it known that I, JOHN M. HARTMAN, residing at No. 227 Gowen avenue, in the city of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Valve-Seats, whereof the following is a specification, reference being had to the accompanying drawings.

My invention is especially adapted for advantageous use in the valve seats of hot blast apparatus, where the current of air to be controlled frequently has a temperature of from 1,000 to 1,600 degrees. As heretofore constructed, the valve seats of this class of apparatus are open to serious objections, due to irregular expansion and consequent strain upon the parts.

My present invention is designed to overcome the difficulties found in the existing types of these structures, and to that end it consists, primarily in a divided organization of the valve seat, the parts being so related as to minimize strains or unequal action while affording the necessary stability of the seat. By this improved construction, I am enabled to obtain the above mentioned chief desideratum as well as the minor and more obvious advantages of rendering the parts readily replaceable in the event of injury.

In the accompanying drawing Figure I represents a vertical transverse section through the valve seat and immediately adjacent parts, showing the construction of the two part seat and its retaining devices. Fig. II, is a partial sectional view showing, on an enlarged scale certain details of the seat-rest and seating-ring.

In said drawings, 1, 2, represent the two annular heads or holders for the valve seat, mounted in the usual manner in the wall of the chamber. Said heads are provided with bolts 3, arranged at suitable intervals, whereby they may be clamped in proper relation to the intervening seat.

The valve seat proper comprises two members, viz: an outer ring 4, which I term the seat-rest, and the inner ring 7, which I term the seating ring. The seat-rest 4, may be of cast iron and has upper and lower faces of considerable radial extent so as to properly bear the strain of the clamping devices 1, and 2. Said seat-rest has at its lower portion an inwardly projecting horizontal flange or step 5, and the inner face above said step recedes slightly as shown at 6, so as to facilitate the insertion and withdrawal of the seating-ring. Resting upon the said step 5, is the substantially horizontal seating-ring 7, preferably formed of bronze and having the configuration shown. The interior is hollow, as indicated at 8, and the upper surface of the cavity is inclined upwardly in an outward direction as indicated at 9. The periphery of the outer wall of the seating-ring 7, is substantially vertical throughout its upper portion, but is preferably flared outwardly around its lower portion to a slight extent, as indicated

at 14, in Fig. II. The vertical height of this outer wall of the seating ring is not greater than the height of the wall of the seat-rest above the step 5, so that the direct pressure of the clamping heads 1, and 2, is distributed largely upon the seat-rest 4.

Suitable connections for affording water circulation within the interior of the seating-ring 7, are provided, one of such connections being indicated in the drawing at 10. The upper portion of the inner periphery of the seating-ring has of course the usual configuration, indicated at 11, for properly seating the valve 12. When the two part seat, consisting of the iron seat-rest 4, and bronze seating-ring 7, is clamped in position by means of the heads 1, and 2, a limited annular space 13 is afforded between the outwardly projecting lower portion of the exterior wall of the seating-ring and the inwardly inclined portion of the inner wall of the seat-rest above the step 5. This annular space permits expansion of the bronze seating-ring with relation to the somewhat cooler seat-rest, and, as the method of securing the two permits relative movement without strain, the effect of the relatively higher temperature in the region of the seating-ring is properly compensated. The outward inclination of the top of the cavity within the seating-ring 7, prevents accumulation of steam or air in the region of maximum heat, so that the water may be maintained in complete contact with the portion of the cavity which is adjacent to the valve-seating surface.

Having thus described my invention, I claim:—

1. In a valve seat, the combination with an outer seat-rest; an inner seating-ring freely mounted within said seat-rest; and means for clamping said seat-rest and seat ring together and securing them to the valve chamber, while permitting radial expansion of the ring.

2. In a valve seat, the combination with an outer seat rest comprising an inwardly projecting step on the lower portion of its inner peripheral wall; of an independent seating ring arranged to fit upon said step and having a vertical wall of similar height to the wall of the seat rest; and, means arranged to clamp said rest and ring together, substantially as set forth.

3. In a valve seat, the combination with an outer seat rest comprising an inwardly projecting step on the lower portion of its inner peripheral wall; of an independent seating ring arranged to fit upon said step and having a vertical wall of similar height to the wall of the seat rest; means arranged to clamp said rest and ring together, comprising two annular heads fitted upon axially opposite sides of said ring and rest; and, bolts connecting said heads, substantially as set forth.

4. In hot blast apparatus, the combination with axially opposed conduit walls; of annular heads respectively secured to said walls; an annular valve seat rest independent of said heads and interposed between them; a valve seat ring independent of said rest and heads fitted in said rest between said heads; and, means connecting said heads arranged to compress them upon said rest, substantially as set forth.

5. In hot blast apparatus, the combination with a conduit; of a substantially horizontal valve seat in said con-

duit comprising a cavity whose upper boundary inclines upwardly outward; of means arranged to effect the circulation of a cooling medium in said cavity, substantially as set forth.

- 5 6. The combination with an annular substantially horizontal valve seat comprising an annular cavity whose upper boundary inclines upwardly outward; of means arranged to effect the circulation of a cooling medium in said cavity, substantially as set forth.
- 10 7. The combination with a substantially horizontal valve seat comprising a cavity whose upper boundary inclines upwardly outward; of means arranged to effect the circulation of a cooling medium in said cavity, substantially as set forth.

8. The combination with a substantially horizontal valve seat comprising a cavity whose upper boundary is higher at its outer portion than at its inner portion; of means arranged to direct a cooling medium to and from said cavity, substantially as set forth.

In testimony whereof, I have hereunto signed my name, at Philadelphia, Pennsylvania, this 1st day of September, 1904.

JOHN M. HARTMAN.

Witnesses:

JAMES H. BELL,
E. L. FULLERTON.