(No Model.) 2 Sheets—Sheet 1.

P. T. BERG.

VALVE SEAT FOR HOT BLAST STOVES.

No. 398,933. Patented Mar. 5, 1889.

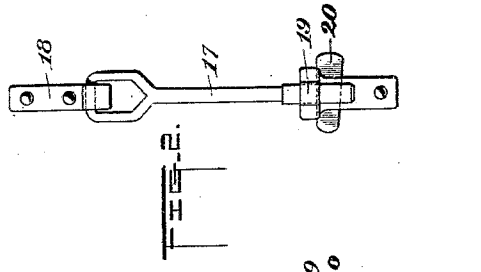


Fig. 2.

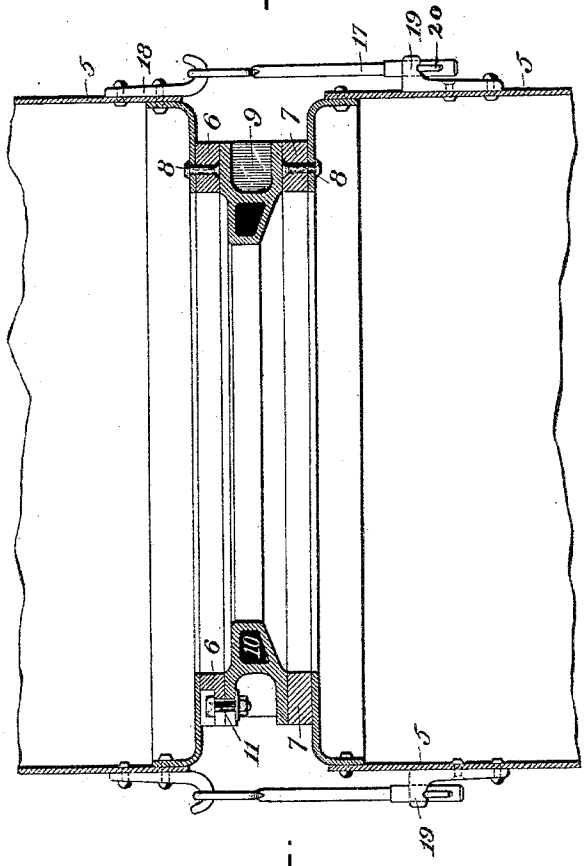


Fig. 1.

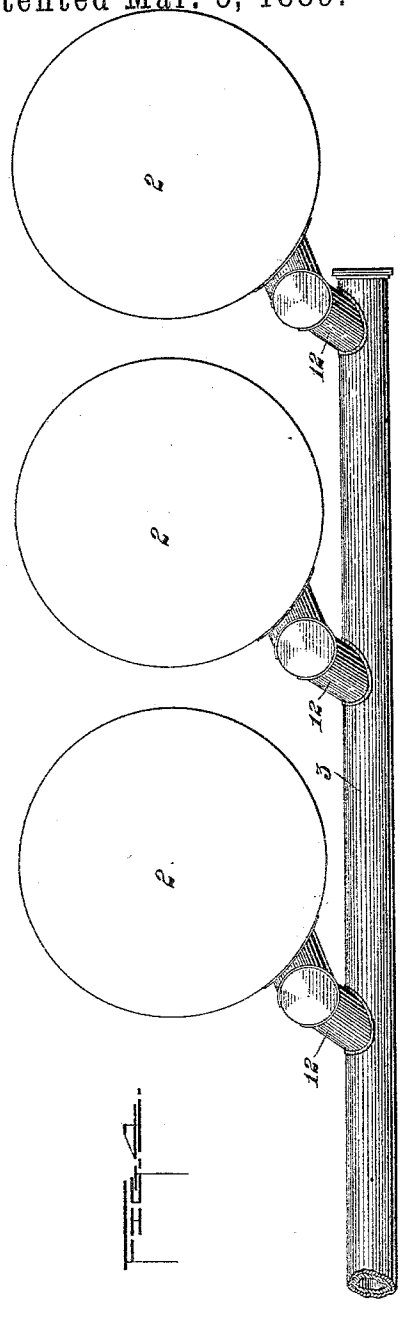


Fig. 3.

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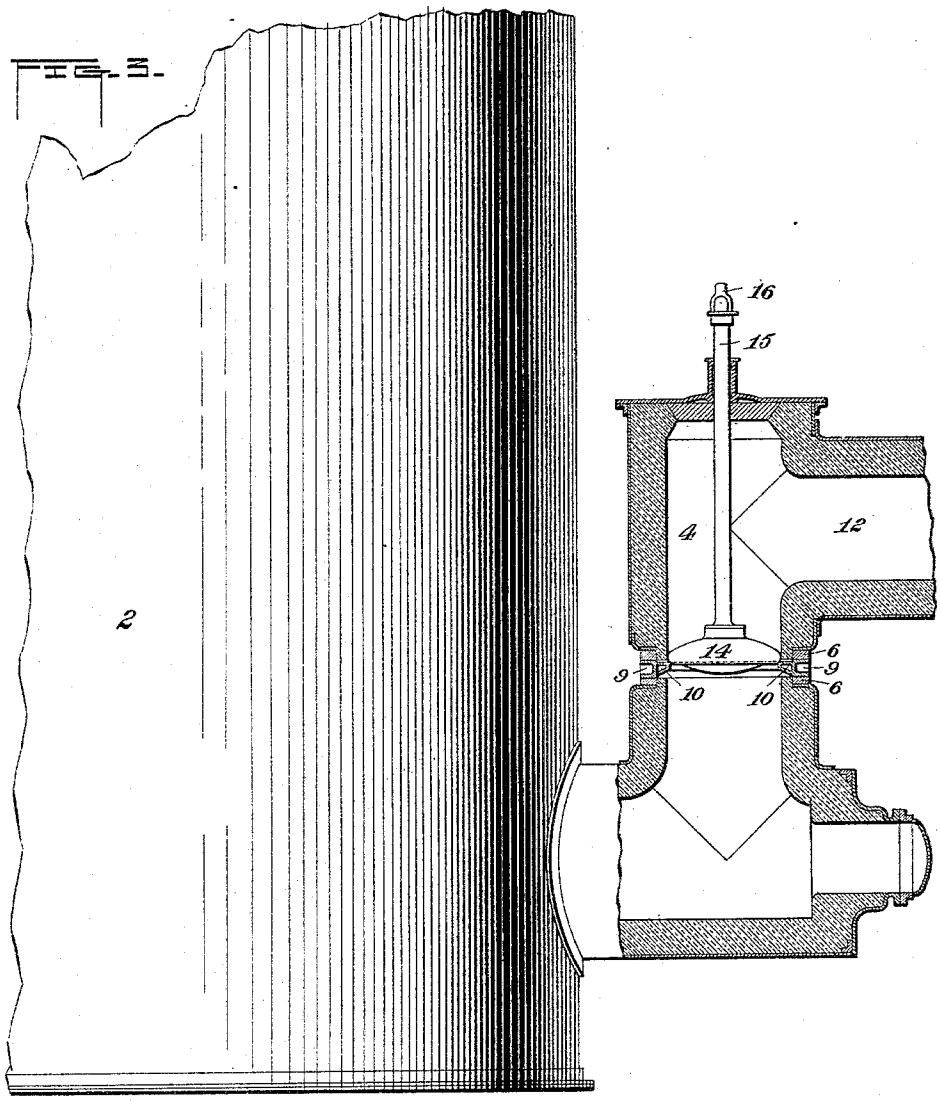
(No Model.) 2 Sheets—Sheet 2.

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FIG. 3.



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UNITED STATES PATENT OFFICE.

PER TORSTEN BERG, OF BRADDOCK, PENNSYLVANIA.

VALVE-SEAT FOR HOT-BLAST STOVES.

SPECIFICATION forming part of Letters Patent No. 398,933, dated March 5, 1889.

Application filed September 1, 1888. Serial No. 284,358. (No model.)

To all whom it may concern:

Be it known that I, PER TORSTEN BERG, of Braddock, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Valve-Seats for Hot-Blast Stoves; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical central section of one of my improved valve-seats when applied to the valve-chamber of a hot-blast stove. Fig. 2 is a front view of the connections by which the upper and lower parts of the valve-chamber are held together. Fig. 3 is a vertical section, on a smaller scale, of the valve-seat and valve shown in connection with the blast-pipe and the base of the stove. Fig. 4 is a plan view showing several stoves arranged in line and each provided with my improvement.

Like symbols of reference indicate like parts in each.

In the drawings, 2 represents the hot-blast stoves, 3 is the blast-pipe, and 4 is the valve-chamber. The valve-chamber is divided into two parts or sections, which are faced with metal lining 5. At the base of one section and at the top of the other are rings 6 7, made of metal castings, which are secured to the linings 5 by bolts 8.

The valve-seat 9 consists of an annular casting, the inner part of which is provided with a hollow passage, 10, for the circulation of water, and the inner rim is adapted to receive the valve.

The outer portion of the valve-seat is provided with annular flanges, as shown in Fig. 1, and by means of the upper of these flanges when the valve-seat is interposed between the rings 6 and 7 it is secured to the upper ring, 6, by means of bolts 11, which pass through slots in the flange of the valve-seat and in the ring 6. When thus arranged, the valve-seat is held permanently in place by means of the bolts 11 and by pressure of the upper portion of the valve-chamber, which bears directly upon it.

The advantage of the form of valve-seat which I have just described is that it is dissociated from the masonry walls of the valve-chamber, and can be removed and set in place without tearing out these walls by simply loosening and removing the bolts 11, jacking up the upper part of the valve-chamber, and drawing out the valve-seat horizontally. This form of valve-seat, while it is of my invention, I do not claim herein specifically, because I have made it the subject of a prior patent application, No. 203,058.

I shall now indicate the differences between the valve-seat of the present case and that which is described and claimed in the application above referred to. In the valve-seat of said application there were bolts securing the flanges both to the upper and lower rings, 6 and 7. In blast-furnace practice it is the custom to set a number of blast-stoves side by side, and to provide a single blast-supply pipe running by the side of the stoves and connecting in the upper portions of their valve-chambers by means of horizontal branch pipes 12. (See Figs. 3 and 4.) The effect of heat on the blast-pipe 3 is to expand it, and thus to impart to it a longitudinal movement or extension, which, acting on the upper portions of the valve-chambers through the leverage of the branch pipes 12, tends to shift them with a rotary motion. When the valve-seat is connected rigidly by bolts to both portions of the valve-chamber, the effect of the extension just noted is to cause a great strain on the valve-seat, which is very apt to break it or to move it so out of position that it shall not afford a perfect seating for the valve 14, which is the usual vertically-moving valve provided with a stem, 15, and actuating-lever 16. I overcome this evil by connecting the valve-seat to one portion only of the valve-chamber by means of bolts, so that when the valve-chamber is shifted, as before described, the valve-seat shall move with that portion of the chamber to which it is affixed, and shall move upon but independently of the other portion of the chamber.

To prevent displacement of the valve-seat relatively to the valve under the expansive influence of the heat, and to afford to the valve a continually-correct seating, I fix the valve-seat to that portion of the valve-chamber which contains the valve and valve-stem, so that the motion of the valve-chamber shall

carry with it both the valve and its seat, the relative positions of which are therefore constant. In the arrangement shown in the drawings this portion of the valve-chamber is the upper portion. In order to hold the two parts of the valve-chamber firmly together, so as to prevent the warping of their walls and leakage from the chamber, and at the same time to permit of the free motion of the parts which I have just described, I employ links 17, the upper ends of which are hung on hooks 18 on the upper portion of the valve-chamber, while the lower ends fit between forked lugs 19 on the lower portion of the chamber, and are there secured by means of wedges or keys 20, which pass through slots in the link 17 and bear against the under sides of the lugs, thus enabling the parts of the valve-chamber to be drawn and held firmly together. These links obviously permit of a slight swinging motion, so as to compensate for shifting of the upper portion of the valve-chamber.

The advantages of my invention will be appreciated by those skilled in the art to which it appertains. It is simple in construction, easy to be set in place or removed, and the arrangement which I have shown renders the parts very durable and efficient.

I claim—

1. The combination of the valve-chamber made in transversely-divided sections, a valve-seat ring interposed between the sections, fixed to one of them and bearing loosely on the other, so as to permit of independent transverse motion thereof, a valve connected with that section of the valve-chamber to which the valve-seat is fixed, and a pipe for the passage of gases connected with said chamber, substantially as and for the purposes described.

2. The combination of the upright valve-chamber composed of transversely-divided sections, a valve-seat secured to the upper section only, a vertically-moving valve arranged within the valve-chamber and having its stem connected with the upper section, and a pipe for the passage of gases connected with said chamber, substantially as and for the purposes described.

3. The combination of the valve-chamber made in transversely-divided sections, a valve-seat ring interposed between the sections, fixed to one of them and bearing loosely on the other, a valve which is connected with that section of the valve-chamber to which the valve-seat is fixed, links connecting the sections of the valve-chamber, and a pipe for the passage of gases connected with said chamber, substantially as and for the purposes described.

4. The combination of the valve-chamber made in transversely-divided sections, metal rings or facings fixed to the opposing faces thereof, a valve-seat ring interposed between the facings, fixed to one and bearing loosely on the other, a valve which is connected with that section of the valve-chamber to which the valve-seat is fixed, and a pipe for the passage of gases connected with said chamber, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand this 29th day of August, A. D. 1888.

PER TORSTEN BERG.

Witnesses:
JAMES K. BAKEWELL,
W. B. CORWIN.