

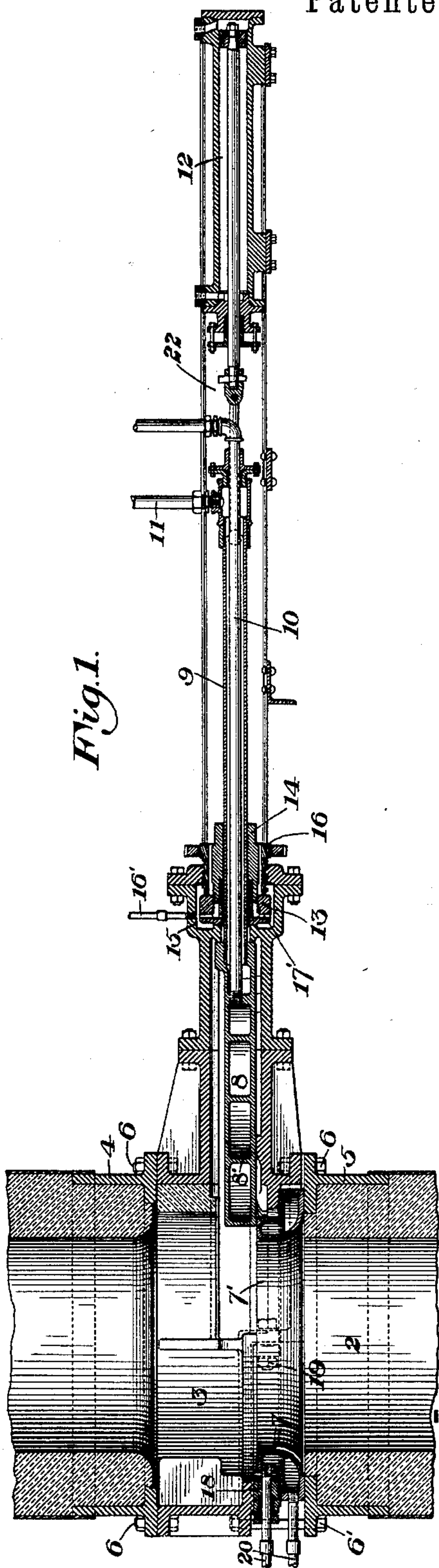
(No Model.)

2 Sheets—Sheet 1.

M. A. NEELAND & W. ROTHHOFF.
VALVE.

No. 592,478.

Patented Oct. 26, 1897.



WITNESSES

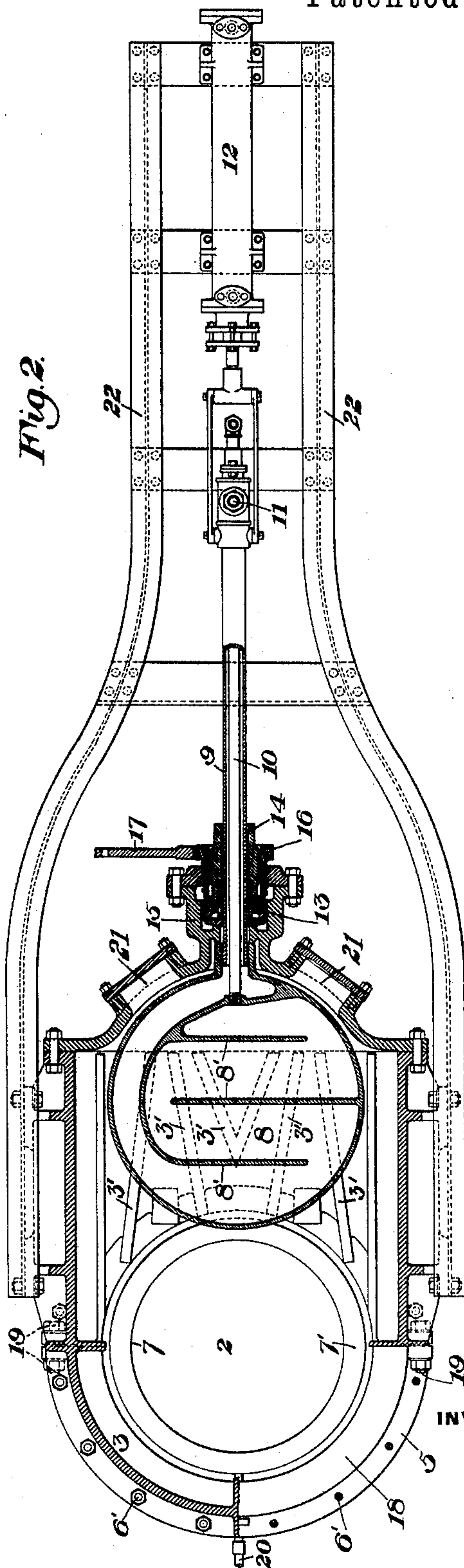
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2 Sheets—Sheet 2.

Patented Oct. 26, 1897.



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UNITED STATES PATENT OFFICE.

MARVIN A. NEELAND AND WILLIAM ROTHOFF, OF DUQUESNE,
PENNSYLVANIA.

VALVE.

SPECIFICATION forming part of Letters Patent No. 592,478, dated October 26, 1897.

Application filed November 21, 1896. Serial No. 612,974. (No model.)

To all whom it may concern:

Be it known that we, MARVIN A. NEELAND and WILLIAM ROTHOFF, of Duquesne, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Valves, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical longitudinal section of a valve-seat and valve mechanism constructed in accordance with our invention; and Fig. 2 is a plan view, partly in section.

In the drawings, 2 represents the air-flue of a hot-blast stove, between the sections of which is placed a valve-casing 3. Annular caps 4 5 are set at the ends of said sections, and the casing is interposed between them and is held by suitable bolts 6 6'.

7 is the valve-seat, an annular hollow water-cooled casting set in the base of the casing on the cap 5 and having an upwardly-extending portion 7', upon which the valve 8 fits. This valve is a hollow disk, which slides horizontally within the casing and has a projecting hollow stem 9. A water-supply pipe 10 extends through the stem into the valve, which has internal partitions 8', arranged to cause the water to flow indirectly, and water entering from said pipe flows through the valve and thence out through the hollow stem 9 into a discharge-pipe 11.

12 is a motor which may be used for moving the valve on its seat as required to open or close the same.

The valve-casing back of the circular opening for the flue 2 is provided with horizontal ribs 3', upon which the valve rests when it is open, as shown in Fig. 2. We preferably make these ribs of considerable vertical height, so as to provide intermediate pockets for receiving the dust which will settle upon them when the valve is closed, but which will be scraped from their surfaces by motion of the valve in opening the same. We do not make these ribs parallel with the line of motion of the valve, but incline them thereto and preferably direct them toward hand-holes 21 at the end of the valve-casing at the sides of the passage for the valve-stem, through which holes a scraping-tool can readily be in-

troduced in order to remove the dust. By having these ribs out of parallel with the path of motion of the valve they are prevented from wearing grooves on the valve's lower surface.

13 is a stuffing-box through which the stem passes. It has a gland 14 and fits within a box or case 15, which is sufficiently larger than the stuffing-box to permit some lateral play vertically or horizontally.

16 is an annular screw-clamp which engages with a threaded portion of the box 15 and bears against the stuffing-box, so that when the clamp is turned by a suitable wrench 17 the stuffing-box can be forced inwardly and clamped rigidly in place. If at any time the valve should not be in proper alinement with its seat, the clamp may be loosened. This will allow the stuffing-box to move in its case until the valve adjusts itself properly on the seat, whereupon the clamp may be tightened and the stuffing-box thus fixed in the desired position. A proper fitting of the valve upon its seat is thus insured.

To prevent hot air from the flue 2 from escaping along the crevices between the valve-stem and the stuffing-box, we introduce into the case 15 an air-supply pipe 16', connected with a supply of cold air under pressure, so that a back pressure of air in the stuffing-box will thus be created. Ports 17' connect the interior of the stuffing-box with the case 15.

To render the valve-seat easily removable, which is an important function of our invention, we form in the casing 3 at the level of the seat a peripheral slot extending one-half around the same at the side opposite to the valve-stem, so that the seat may be inserted and removed freely through it, and to close said opening when the valve-seat is in place we employ a semiannular closing-piece 18, which is fitted between the end of the slot in the casing and the top of the outer portion of the valve-seat. This closing-piece is secured by bolts 19 to the casing at the ends of the opening, and when it has been put in place and the casing held to the cap 5 by the bolts 6' a secure and tight connection is made. To remove the seat, its water-pipes 20 are uncoupled, the bolts 6' removed in front of the closing-piece, the closing-piece unbolted from the

casing and removed horizontally, whereupon the valve-seat can be readily withdrawn and replaced without removing the valve-casing from between the caps 4 and 5.

5 As the valve-seat 7 and water-pipe 20 are water-cooled, while the closing-piece 18 and the valve-casing 3 are not so cooled, we provide means for preventing the evil consequences which would result from the expansion and contraction of the closing-piece 18
10 relatively to the water-pipe if it were fixed thereto. This we accomplish by providing the closing-piece with a stuffing-box 18', through which the water-pipe 20 passes. It also serves
15 to make a substantially air-tight joint around the water-pipe.

As shown in the drawings, the motor 12 is supported by beams 22, connected to the main casing and constituting a horizontally-projecting framework. These beams not only
20 serve to support the motor, but they make it easier to handle the valve-casing when it is to be removed or replaced. Thus by taking a hitch with a line around said beams about
25 opposite to the position of the stuffing-box 13 and fastening a second line to the beams at their outer ends the casing can be lifted by the first line to a proper level to be inserted between the caps 4 and 5 and may be balanced and steered by the second line.

The advantages of our invention will be appreciated by those skilled in the art.

Within the scope of the invention as defined in the claims modifications in the form
35 and structure of the parts may be made by the skilled mechanic, since

What we claim is—

1. A sliding furnace-valve having a stem, a stuffing-box for the stem fitted so as to have
40 lateral play in a direction at right angles to the plane of the valve, and a clamp for fixing the stuffing-box; substantially as described.

2. A furnace-valve having a stem, a stuff-

ing-box for the stem, fitted so as to have play vertically as well as horizontally, and a clamp
45 for fixing the stuffing-box; substantially as described.

3. A furnace-valve seat having a casing provided with an opening through which the valve is insertible edgewise, and a closing-
50 piece set in said opening on the side of the structure opposite to the valve-stem, substantially as described.

4. A furnace-valve seat having a casing provided with an opening through which the
55 valve-seat is insertible horizontally, and a semiannular closing-piece adapted to be set in said opening in contact with the seat; substantially as described.

5. A furnace-valve seat, having a casing provided with an opening through which the
60 valve-seat is insertible horizontally, and a semiannular closing-piece adapted to be set in said opening in contact with the seat back of a vertically-projecting annular portion of
65 said seat on which the valve travels; substantially as described.

6. A furnace-valve seat, having a casing provided with an opening through which the
70 valve-seat is insertible horizontally, a closing-piece adapted to be set in said opening, a water-pipe extending through said closing-piece to the valve-seat, and a stuffing-box through which the pipe travels; substantially
75 as described.

7. A furnace-valve casing having a sliding valve and supporting-ribs on which the valve
75 moves in opening, said ribs being out of parallel with the path of motion of the valve.

In testimony whereof we have hereunto set
80 our hands.

MARVIN A. NEELAND.
WILLIAM ROTTHOFF.

Witnesses:

GEORGE F. PITTS,
ARTHUR B. PITTS.