

T. J. DONOVAN.
VALVE.

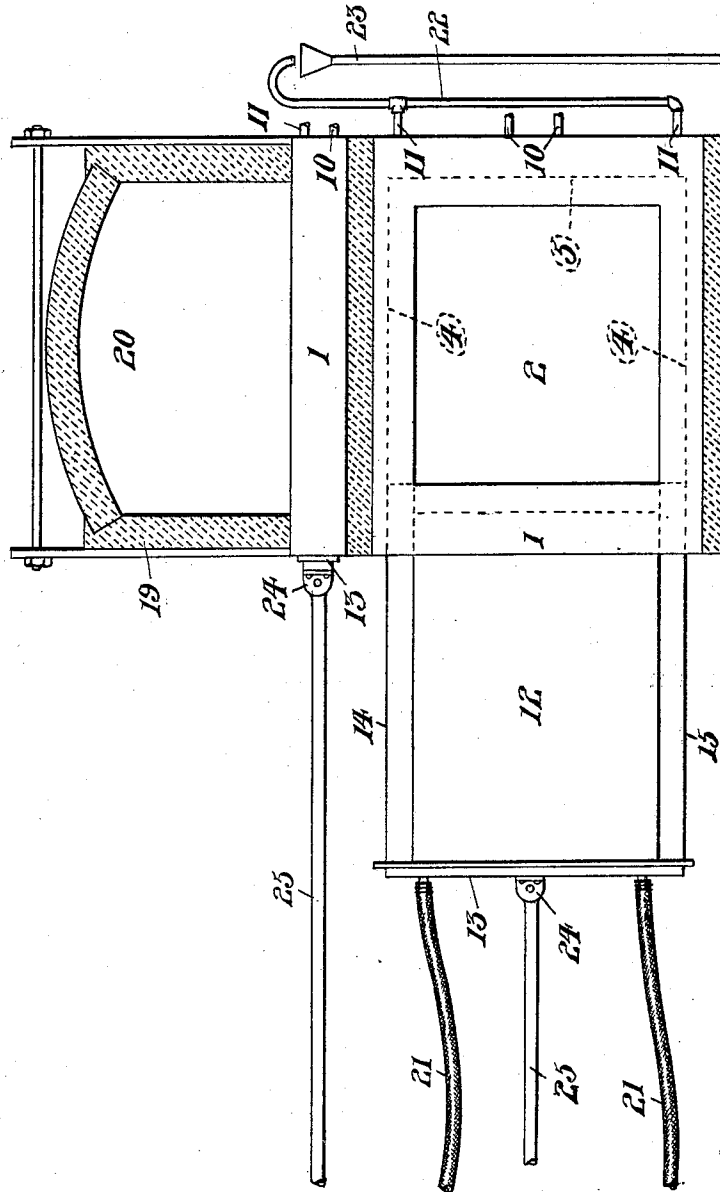
APPLICATION FILED JAN. 20, 1912.

1,031,539.

Patented July 2, 1912.

2 SHEETS—SHEET 1.

FIG. 1.



WITNESSES

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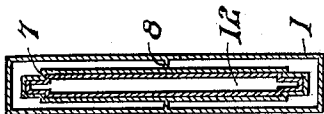


FIG. 3.

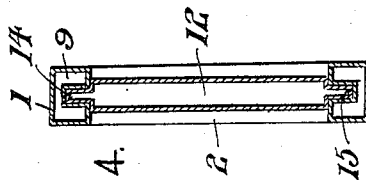


FIG. 4.

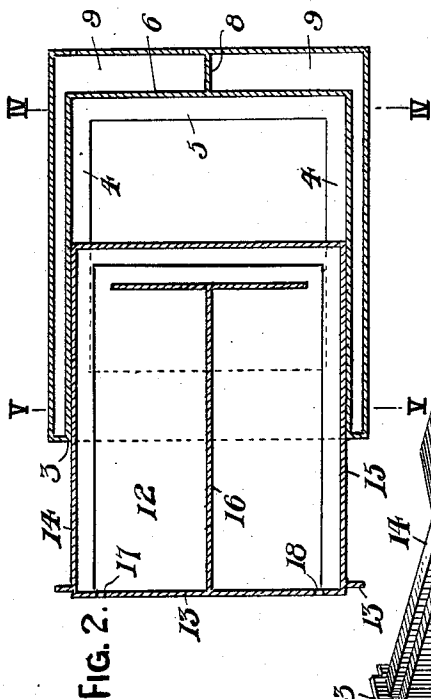


FIG. 2.

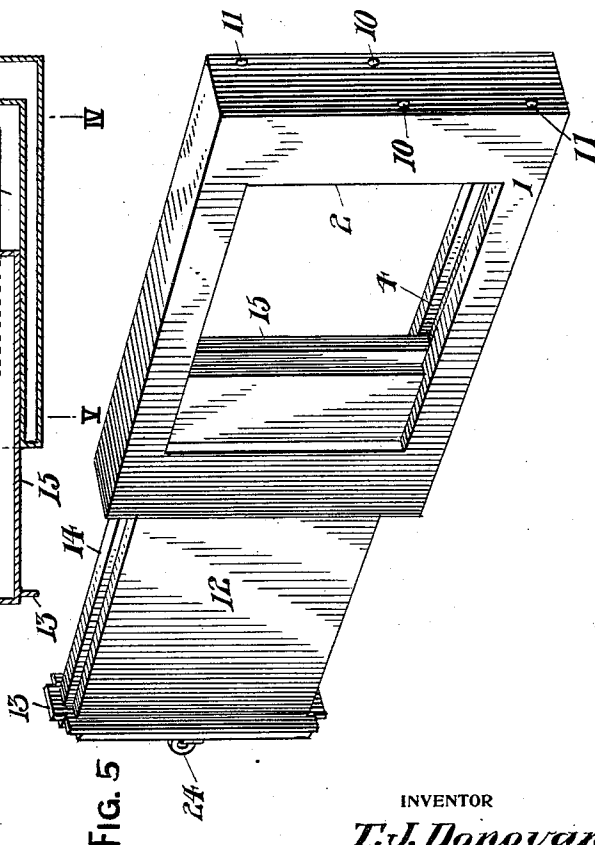


FIG. 5.

WITNESSES

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UNITED STATES PATENT OFFICE.

THEODORE J. DONOVAN, OF SHARON, PENNSYLVANIA.

VALVE.

1,031,539.

Specification of Letters Patent.

Patented July 2, 1912.

Application filed January 20, 1912. Serial No. 672,365.

To all whom it may concern:

Be it known that I, THEODORE J. DONOVAN, a citizen of the United States of America, residing at Sharon, in the county of Mercer and State of Pennsylvania, have invented certain new and useful Improvements in Valves, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to valves, and the primary object of my invention is to provide a water cooled valve and valve casing that can be advantageously used in connection with various types of furnaces for conveying gas from one part of the furnace to the other, the construction of the valve being such that it can not burn out under ordinary circumstances and cause a cessation in the operation of the furnace for repair purposes.

Another object of this invention is to provide a gas tight valve that can be used in a horizontal or vertical position, the valve being in the form of a gate that can be easily and quickly opened and closed.

A further object of this invention is to accomplish the above results by a mechanical construction that is inexpensive to manufacture, easy to install and highly efficient for the purposes for which it is intended.

With the above and other objects in view, the invention resides in the novel construction, combination and arrangement of parts to be hereinafter specifically described and then claimed.

Reference will now be had to the drawing, wherein:—

Figure 1 is a vertical sectional view of the furnace, Fig. 2 is a longitudinal sectional view of one of the valves, Fig. 3 is a cross sectional view taken on the line IV—IV of Fig. 2, with the valve closed, Fig. 4 is a similar view taken on the line V—V of Fig. 2, and Fig. 5 is a perspective view of the valve partially opened.

A valve in accordance with this invention comprises a rectangular hollow metallic casing or frame 1 provided with a transverse rectangular opening 2 and this opening is intersected by a gate compartment 3 that extends from one end of the casing to within proximity to the opposite end. The longitudinal walls of the opening 2 are provided with longitudinal grooves 4 and the wall 6 of the opening 2 has a longitudinal groove 5 connecting the grooves 4. The

grooves 4 and 5 are of a less width than the compartment 3, providing shoulders 7. The inner and outer walls of the hollow casing 1 are connected by a web or partition 8 that divides the casing into two water compartments 9. The water compartments 9 have water inlet ports 10 and water outlet ports 11, whereby water can be circulated throughout the compartments of the casing to cool the walls thereof.

Slidably mounted within the gate compartment 3 is a hollow gate 12 having a head 13 that engages the open end of the casing 1 and limits the inner movement of the gate. The gate 12 is formed with longitudinal ribs 14 and 15 that slide in the grooves 4 and 5 respectively, said ribs co-operating with the shoulders 7 in providing a gas tight connection between the gates and the casing thereof. The hollow gate has a longitudinal partition 16 extending from the head 13 to a point in proximity to the inner end wall of the gate, said partition dividing the gate into compartments, one of which has a water inlet opening 17 and the other a water outlet opening 18.

By reference to Fig. 1 of the drawing it will be observed that the valves are arranged in a horizontal and vertical position in a furnace 19 that has gas flues 20. The valves are opened and closed to deflect gas from one flue to another and change the course of the gas through the furnace. In order that the valves can be water cooled, the valves can be provided with flexible water connections 21, as hose, and the water outlet openings of the valve casings have overflow pipe connections 22 that discharge the overflow of water to a suitable drain pipe 23.

The heads 13 of the valves are provided with apertured lugs 24 to which rods 25 can be connected for opening and closing the valves. With the valves of considerable size hydraulic means can be employed for operating the rods 25.

What I claim is:—

1. A valve for the purpose set forth comprising an oblong frame having its sides and ends provided with water passages, the inner face of one end and the inner face of each of its sides formed with grooves, the other end of said frame formed with an opening closed to the water passage in said end, a partition for separating the passages in one side of the frame from the passages

in the other side of the frame, a hollow gate closing said frame and having ribs extending in said grooves, said gate provided with a head engaging said frame for limiting the closing movement of the gate, means carried by said head for connecting the gate to an operating means therefor, means whereby a circulation of water can be had through the gate, and means whereby a circulation of water can be had through said passages of the frame.

2. A valve for the purpose set forth comprising an oblong frame having its sides and ends provided with water passages, the inner face of one end and the inner face of each of its sides formed with grooves, the other end of said frame formed with an opening closed to the water passage in said end, a partition for separating the passages in one side of the frame from the passages in the other side of the frame, a hollow gate closing said frame and having ribs extending in said grooves, said gate provided with a head engaging said frame for limiting the closing movement of the gate, means carried by said head for connecting the gate to an operating means therefor, means whereby a circulation of water can be had through said gate, means whereby a circulation of water can be had through the passages of the frame, and a T-shaped partition mounted in said gate and of less length and width than the length and width of the gate.

3. A valve for the purpose set forth comprising a frame having hollow sides and ends to provide water passages, one of the ends of said frame formed with an opening closed to the water passages, the inner face of the other end of said frame and the inner face of the sides of said frame formed with grooves closed to the water passages, a hollow gate extending into said frame for closing it and having its sides and one end provided with ribs extending into said grooves, said ribs being hollow and opening into the interior of the gate, said gate provided with a head capable of engaging the frame for limiting the inward movement of the gate into the frame, and means carried by the head for connecting the gate to an operating means.

4. A valve for the purpose set forth comprising a frame having hollow sides and ends to provide water passages, one of the ends of said frame formed with an opening closed to the water passages, the inner face of the other end of said frame and the inner face of the sides of said frame formed with grooves closed to the water passages, a hollow gate extending into said frame for closing it and having its sides and one end pro-

vided with ribs extending into said grooves, said ribs being hollow and opening into the interior of the gate, said gate provided with a head capable of engaging the frame for limiting the inward movement of the gate into the frame, means carried by the head for connecting the gate to an operating means, and means for separating the water passages at one side of the frame from the water passages at the other side of the frame.

5. A valve for the purpose set forth comprising a frame having hollow sides and ends to provide water passages, one of the ends of said frame formed with an opening closed to the water passages, the inner face of the other end of said frame and the inner face of the sides of said frame formed with grooves closed to the water passages, a hollow gate extending into said frame for closing it and having its sides and one end provided with ribs extending into said grooves, said ribs being hollow and opening into the interior of the gate, said gate provided with a head capable of engaging the frame for limiting the inward movement of the gate into the frame, means carried by the head for connecting the gate to an operating means, and a T-shaped partition arranged within said gate and of less width and length than the width and length of the gate.

6. A valve for the purpose set forth comprising a frame having hollow sides and ends to provide water passages, one of the ends of said frame formed with an opening closed to the water passages, the inner face of the other end of said frame and the inner face of the sides of said frame formed with grooves closed to the water passages, a hollow gate extending into said frame for closing it and having its sides and one end provided with ribs extending into said grooves, said ribs being hollow and opening into the interior of the gate, said gate provided with a head capable of engaging the frame for limiting the inward movement of the gate into the frame, means carried by the head for connecting the gate to an operating means, means for separating the water passages at one side of the frame from the water passages at the other side of the frame, and a T-shaped partition arranged within said gate and of less length and width than the length and width of the gate.

In testimony whereof I affix my signature in the presence of two witnesses.

THEODORE J. DONOVAN.

Witnesses:

CATHERINE DONOVAN,
MAX H. SROLOVITZ.