

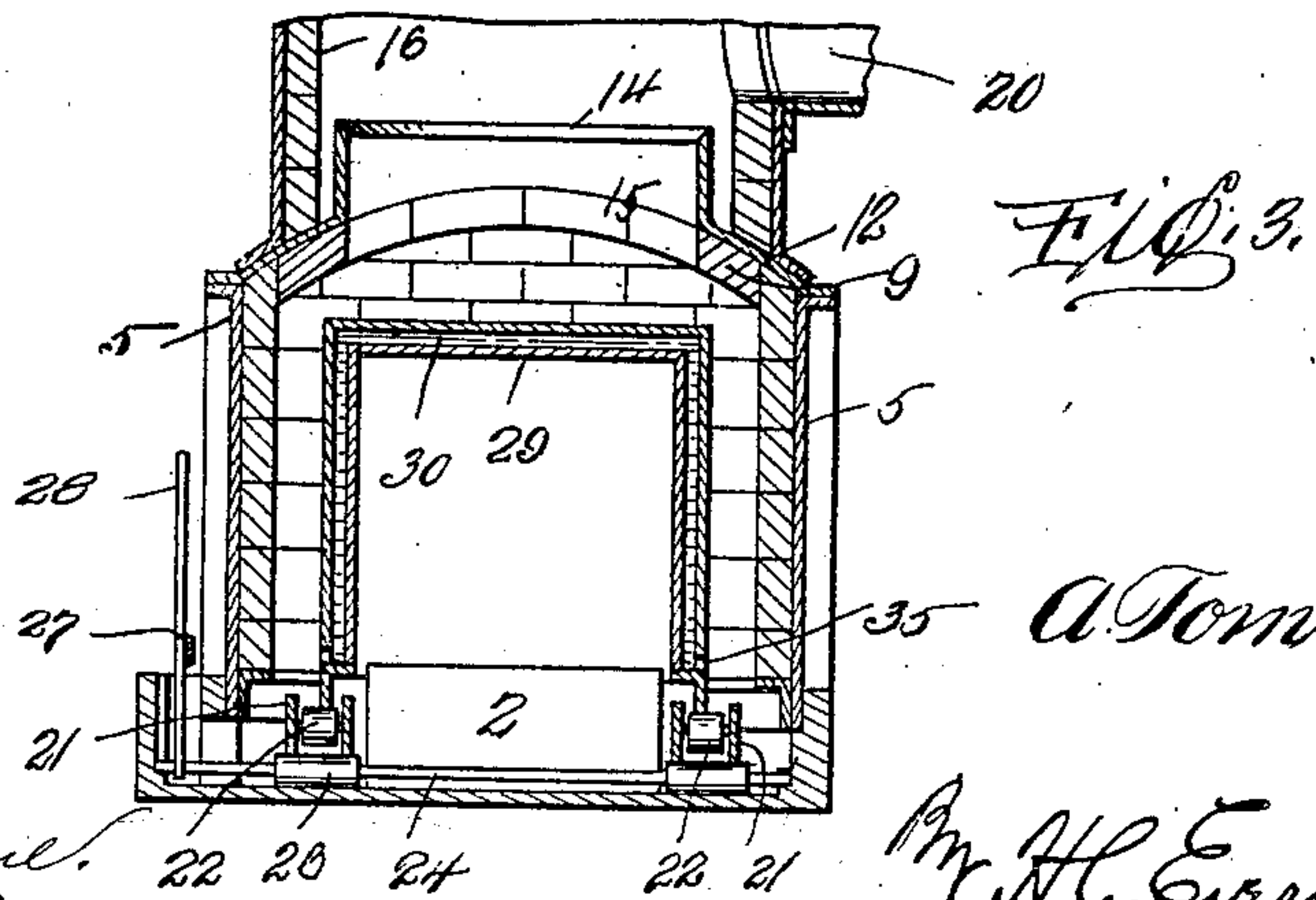
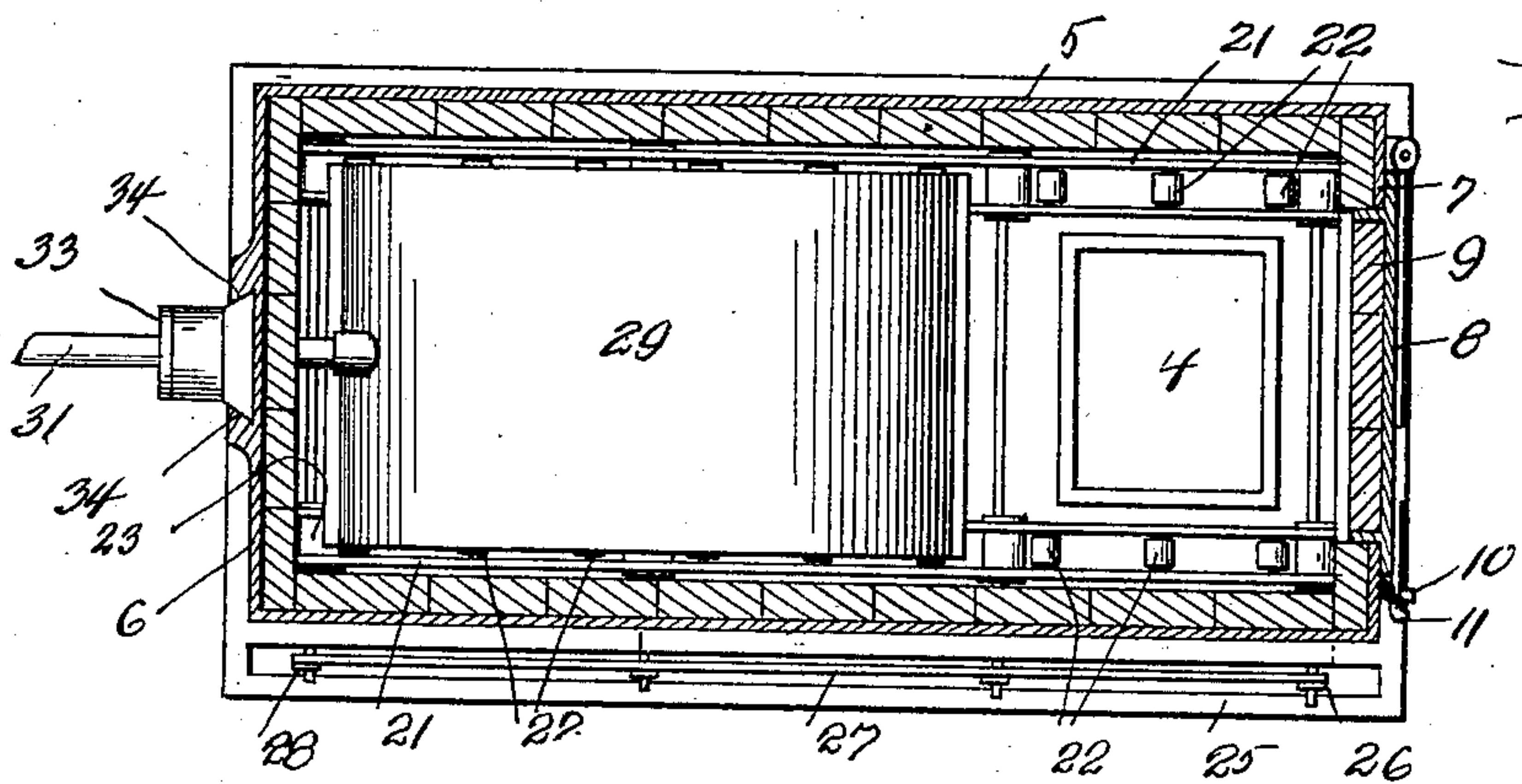
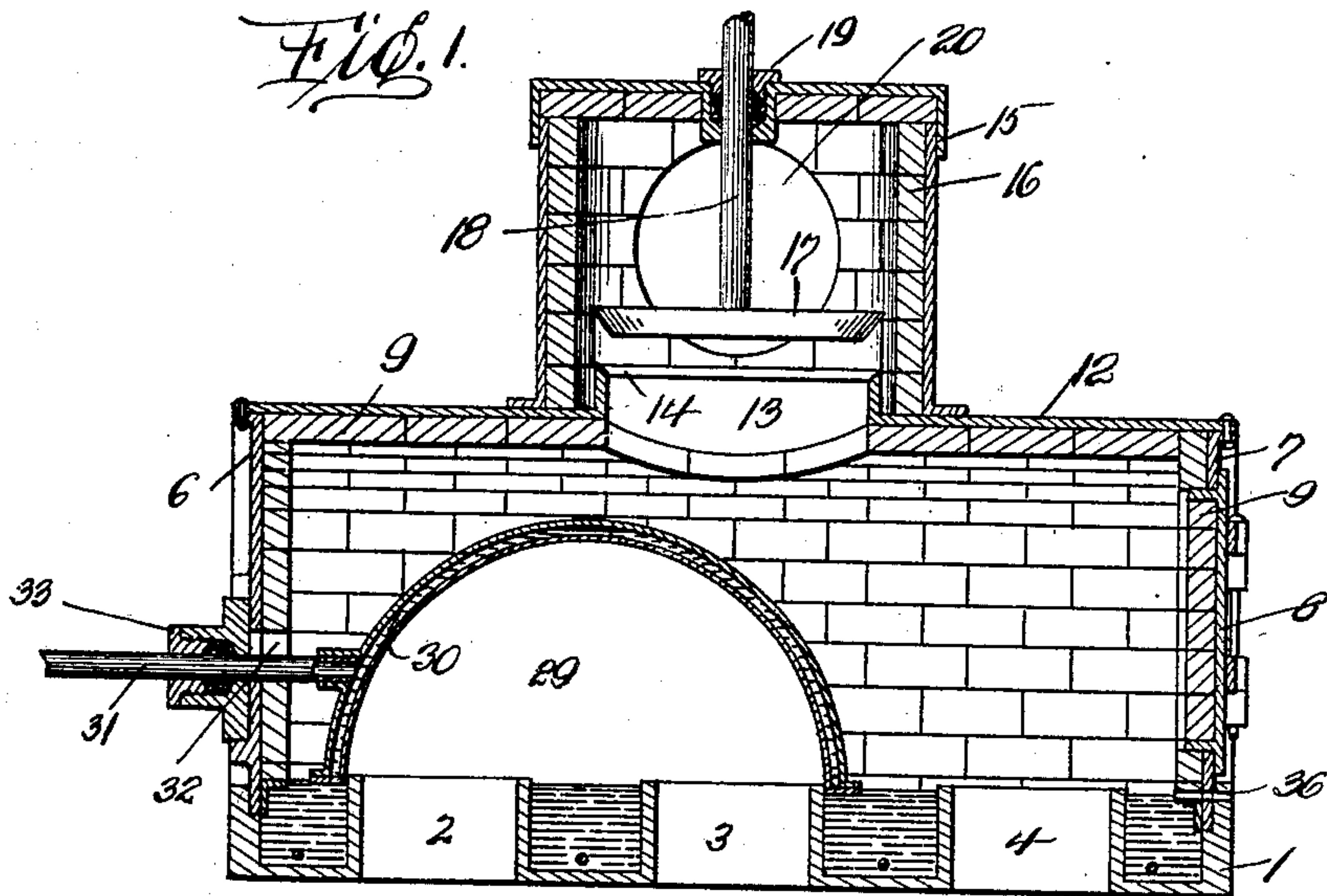
A. TOMKINS.  
VALVE.

APPLICATION FILED MAR. 27, 1908.

898,805.

Patented Sept. 15, 1908.

2 SHEETS—SHEET 1.



Witnesses

*Samuel Payne.*  
*R. H. Butler*

Inventor

*A. Tomkins.*

*Mr. H. C. Everett*

Attorneys

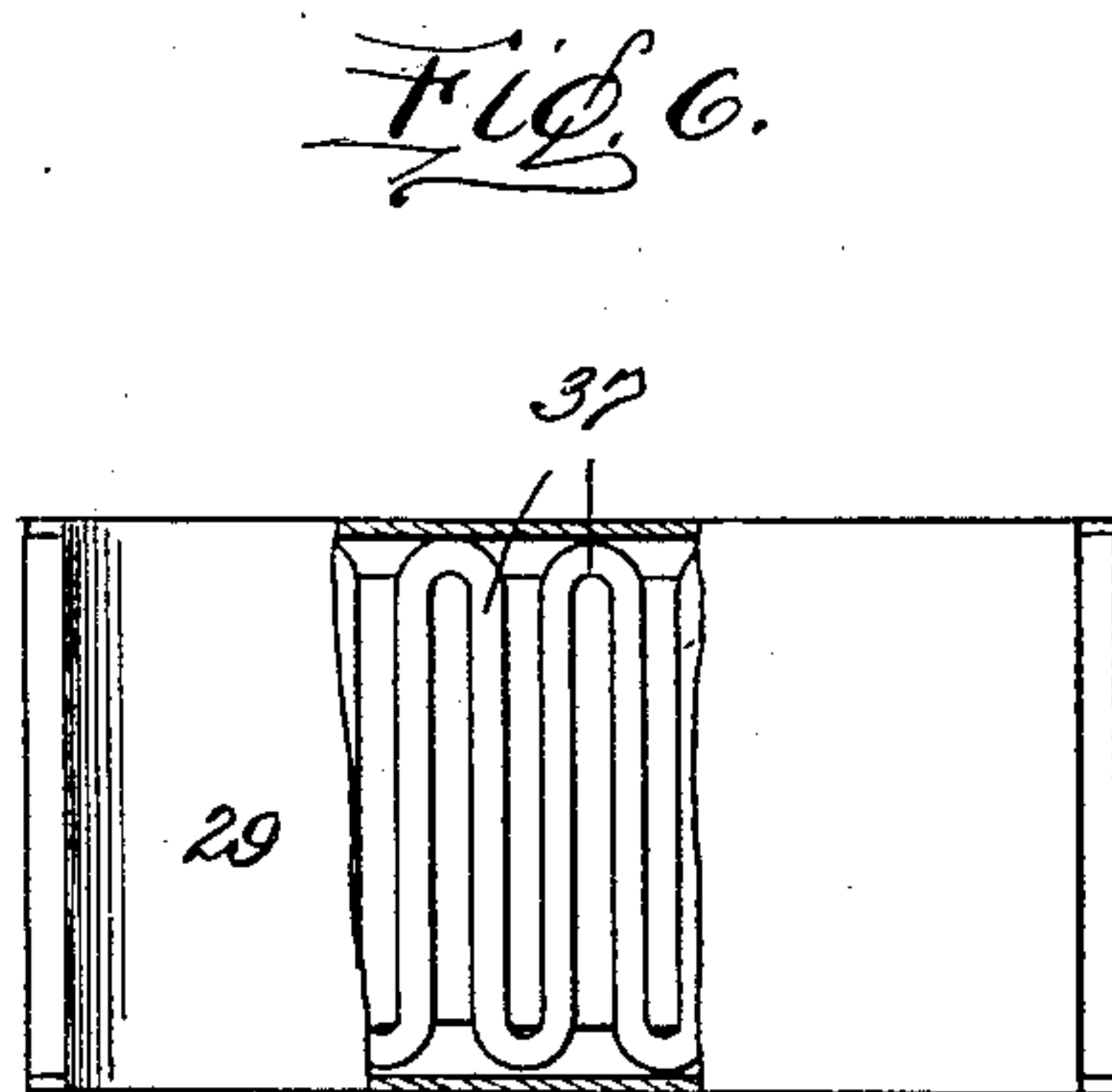
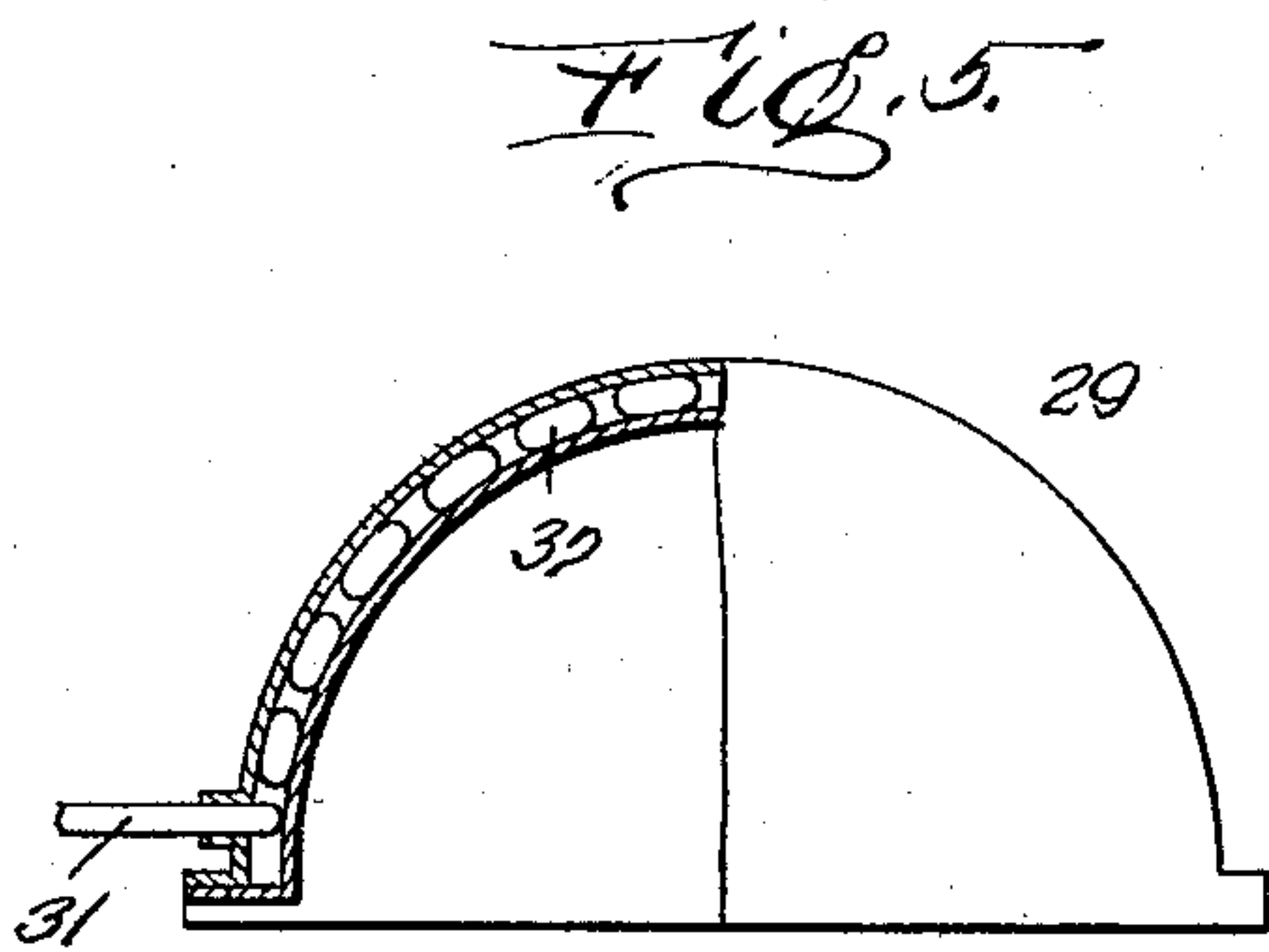
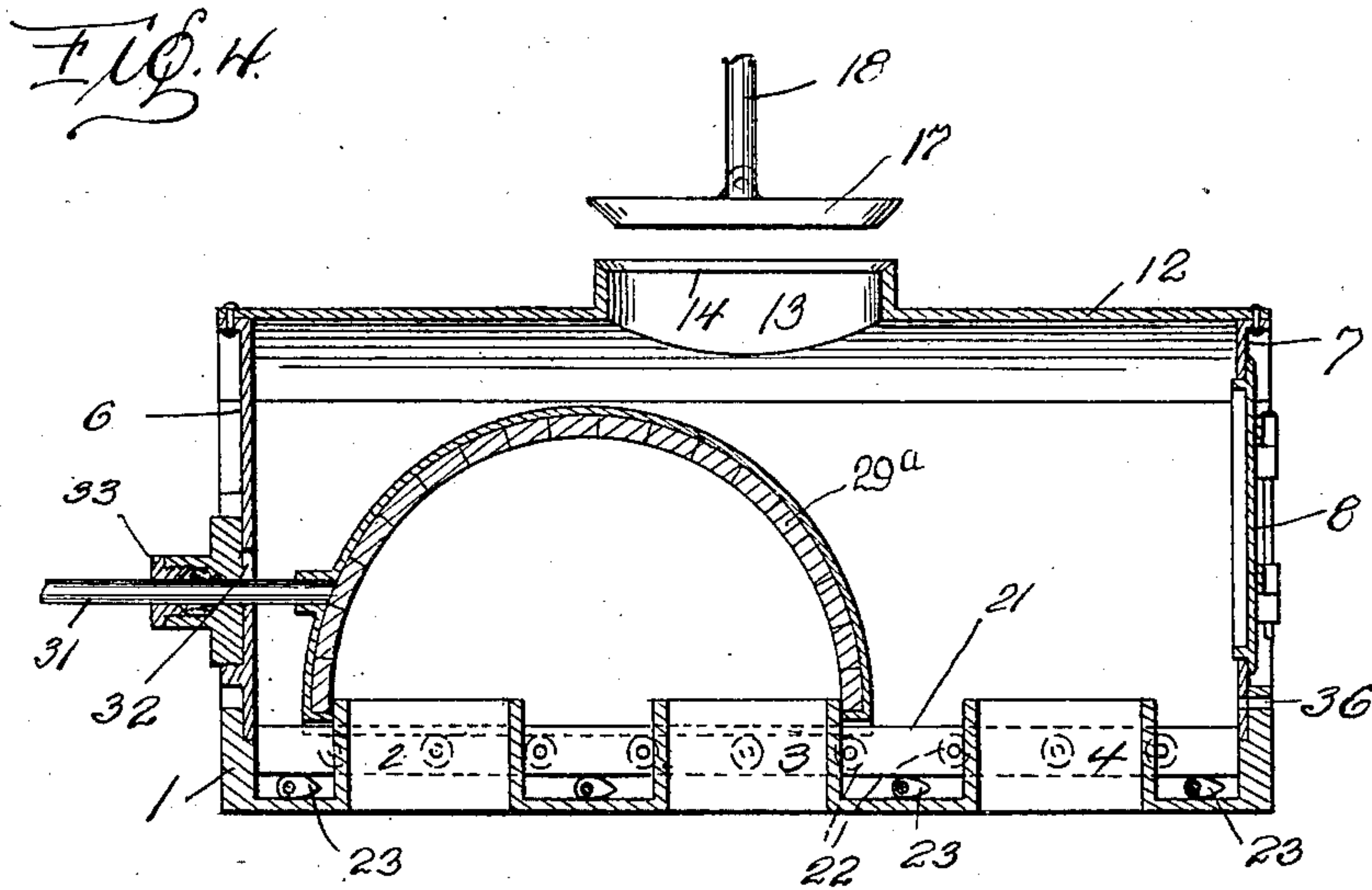
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By

*H. C. Everett & Co.*  
Attorneys



# UNITED STATES PATENT OFFICE.

ALFRED TOMKINS, OF PITTSBURG, PENNSYLVANIA.

## VALVE.

No. 898,805.

Specification of Letters Patent.

Patented Sept. 15, 1908.

Application filed March 27, 1908. Serial No. 423,622.

*To all whom it may concern:*

Be it known that I, ALFRED TOMKINS, a citizen of the United States of America, residing at Pittsburg, in the county of Allegheny 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 novel valve that will stand a high degree of temperature before warping, fusing or becoming distorted and inoperative.

My invention aims to provide a valve that can be used in connection with heating and melting furnaces, and with numerous devices wherein the valves are subjected to a high degree of temperature. To this end, I employ water as a cooling agent for my valve, the water being arranged to circulate and maintain the valve and its seat in a cool condition when a furnace or engine is in operation. The valve is constructed upon the principle of a slide valve, with the exception that I have devised means for slightly elevating the same, and this means together with the details of my valve will be presently described and then specifically pointed out in the appended claims.

Referring to the drawings:—Figure 1 is a longitudinal sectional view of my valve as designed for controlling the admission of gas to a furnace or engine, Fig. 2 is a horizontal sectional view of the same, Fig. 3 is a cross sectional view, Fig. 4 is a longitudinal sectional view of my valve as constructed for admitting air to a furnace, Fig. 5 is an elevation, partly broken away and partly in section of a modified form of valve, and Fig. 6 is a plan of the same, partly broken away and partly in section.

To put my invention into practice, I provide a metallic base 1 having walled ports 2, 3 and 4, the port 3 being an exhaust to the atmosphere, and the ports 2 and 4 alternately used as inlet and outlet ports for a furnace.

Upon the base 1 is arranged metallic side walls 5 and end walls 6 and 7, the latter having a door-way formed therein normally closed by a door 8, which together with the walls of the structure is lined with fire brick 9. The door 8 is maintained in a closed position by a keeper 10 and the latch 11. This door permits of the interior of the structure

being reached to reline the same at any desired time.

The rectangular structure just described is closed by an arched interiorly lined roof 12 having an opening 13 formed therein provided with a valve seat 14. The seat 14 is housed by a cupola 15 provided with a lining of non-fusible material 16. Located in the cupola 15 is a valve 17 having a valve stem 18 extending through a stuffing box 19 provided therefor in the cupola. The valve 17 is employed for controlling the admission of gas to my valve structure, said gas being admitted to the cupola 15 through an opening 20 provided therefor.

In the base 1 at each side is arranged a set of elevating frames 21 between which are journaled rollers 22. The sets of frames 21 are adapted to rest upon cams 23 mounted upon shafts 24 journaled transversely of the valve structure. These shafts 24 extend out of one side of the furnace into a bearing 25 and are provided with crank arms 26 which are connected to a rocking bar 27 actuated through the medium of a lever 28 arranged upon the end of one of said shafts. When the lever 28 is moved, the cams 23 can be swung upwardly to elevate the frames 21, the object of which will presently appear. Movably mounted upon the rollers 22 of the frames 21 is a valve or hood 29, said valve or hood being constructed of sheet metal and provided with a cooling chamber 30, this chamber protecting the entire surface of the valve or hood.

Connecting with the cooling chamber 30 of the valve or hood 29 is a hollow piston rod 31 for supplying water or a cooling agent to said valve or hood. This piston rod 31 extends through an opening 32 in the end wall 6 of the valve structure and through a stuffing box 33 slidably mounted in a dove-tailed guideway 34 provided therefor in the wall 6. The walled ports 2, 3 and 4 are adapted to be surrounded by water in which the edges of the valve or hood 29 are immersed, thereby providing a water-seal connection between either ports 2 and 3 or ports 3 and 4. Water is admitted to the base 1 from the cooling chamber 30 of the valve or hood 29 through openings 35 provided therefor in the lower side edges of the valve or hood 29, and the overflow in the base 1 is taken care of by an opening 36 formed in the end wall 7 and the base 1.

In Fig. 4 of the drawings, I have illus-



trated a furnace wherein the cupola 15 is dispensed with and air used instead of gas. In this connection, I provide the metallic hood or valve with a lining 29<sup>a</sup> of fire brick or non-fusible material and use a solid piston rod in connection with the same. A further modification of the hood or valve is illustrated in Figs. 5 and 6, wherein coils of pipe 37 are arranged for conveying water through the hood or valve and maintaining the same in a cool condition.

In operation, the valve or hood 29 is adapted to be shifted by the piston rod 31 and the lever 28, these elements being simultaneously operated to move the valve or hood from the position illustrated in Figs. 1 and 2 to a position that will establish communication between the ports 3 and 4.

It is apparent from the novel construction of my valve that it will be impossible for the same to be injured by the intense heat of the furnace or engine in connection with which the same is used, as the metallic parts thereof are fully protected by water maintained in circulation by a suitable pump or apparatus.

The invention as herein described is susceptible to such structural changes as fall within the scope of the appended claims.

Having now described my invention what I claim as new, is:—

1. A valve of the type described comprising a base having walled ports formed therein, a valve structure arranged upon said base and consisting of walls, a roof having an opening formed therein, and a cupola, said walls, roof and cupola being lined with a non-fusible material, a valve located in said cupola for closing the opening of said roof, frames arranged at the sides of said base, a hood supported from said frames and adapted to inclose two of said ports, said hood having a water cooled chamber formed therein, a hollow piston connecting with the chamber of said hood, a movable stuffing box carried by one of said walls and surrounding said piston, cams located beneath said frames for elevating said frames and hood, means arranged upon the outside of said valve structure for operating said cams, said hood hav-

ing openings formed therein for admitting water to said base, and one of said walls having an opening formed therein for the overflow water of said base.

2. A valve of the type described comprising a base having walled ports formed therein, a valve structure arranged upon said base and consisting of walls, a roof having an opening formed therein, said wall and roof being lined with a non-fusible material, a valve located in said cupola for closing the opening of said roof, frames arranged at the sides of said base, a hood supported from said base and adapted to inclose two of said ports, said hood having a water cooled chamber formed therein, a hollow piston connecting with the chamber of said hood, a movable stuffing box carried by one of said walls and surrounding said piston, cams located beneath said frames for elevating said frames and hood, means arranged upon the outside of said valve structure for operating said cams, said hood having openings formed therein for admitting water to said base, and one of said walls having an opening formed therein for the overflow water of said base.

3. A valve of the type described comprising a base having ports formed therein, a valve structure mounted upon the base and embodying walls, a roof and a cupola, said roof having an opening, a valve within the cupola for closing the opening in the roof, a hood supported from said base and adapted to inclose a plurality of said ports, said hood having a water cooled chamber formed therein, a hollow piston connecting with the chamber of said hood, means for elevating said hood, means for operating said elevating means, said hood having openings for admitting water to the base, and one of said walls having an opening for the overflow of water from the base.

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

ALFRED TOMKINS.

Witnesses:

THOMAS B. WERNER,  
JOHN NEUNER, Jr.