

No. 659,221.

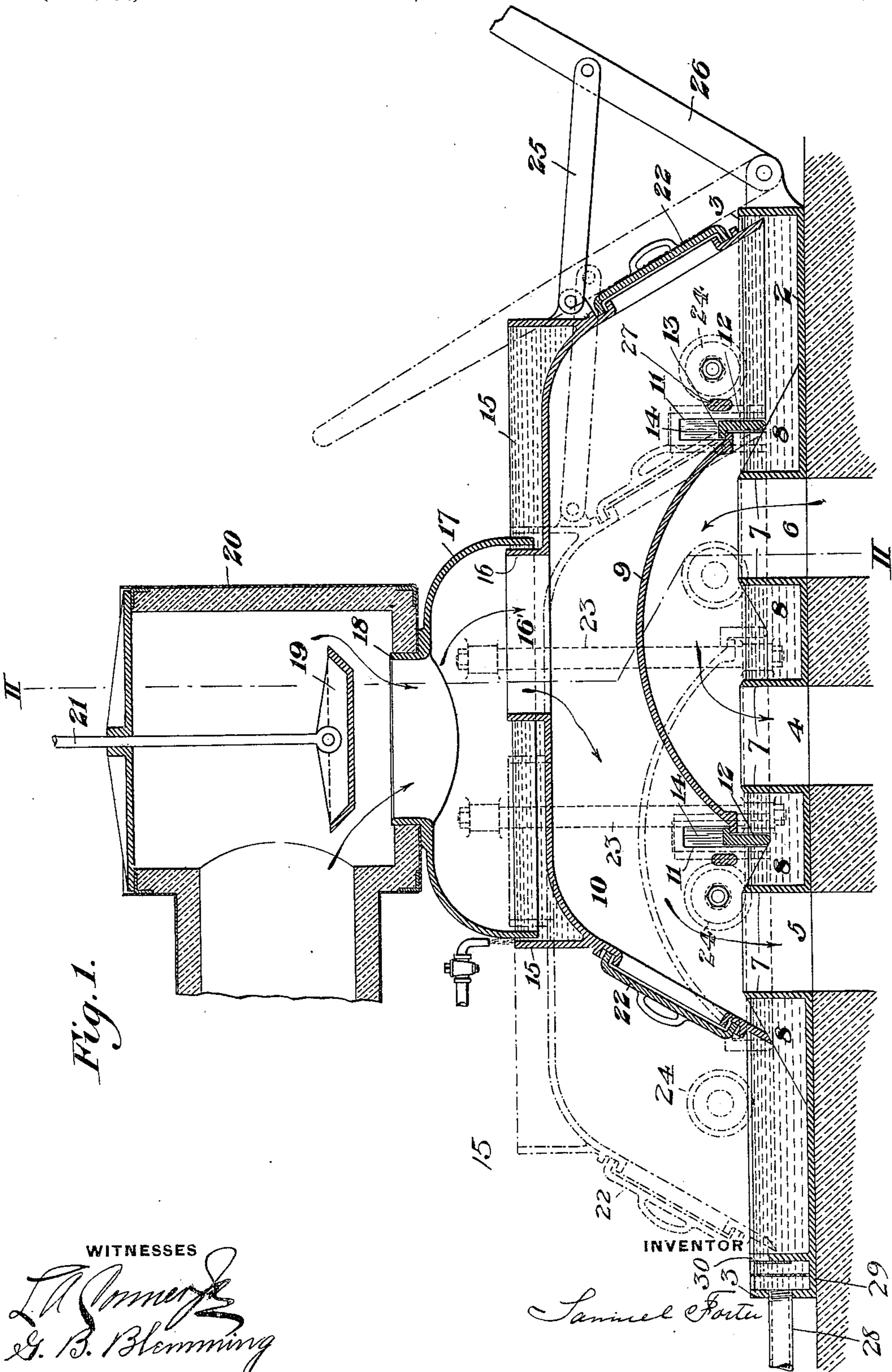
Patented Oct. 9, 1900.

S. FORTER.
REVERSING VALVE.

(Application filed July 29, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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2 Sheets—Sheet 2.

Fig. 3.

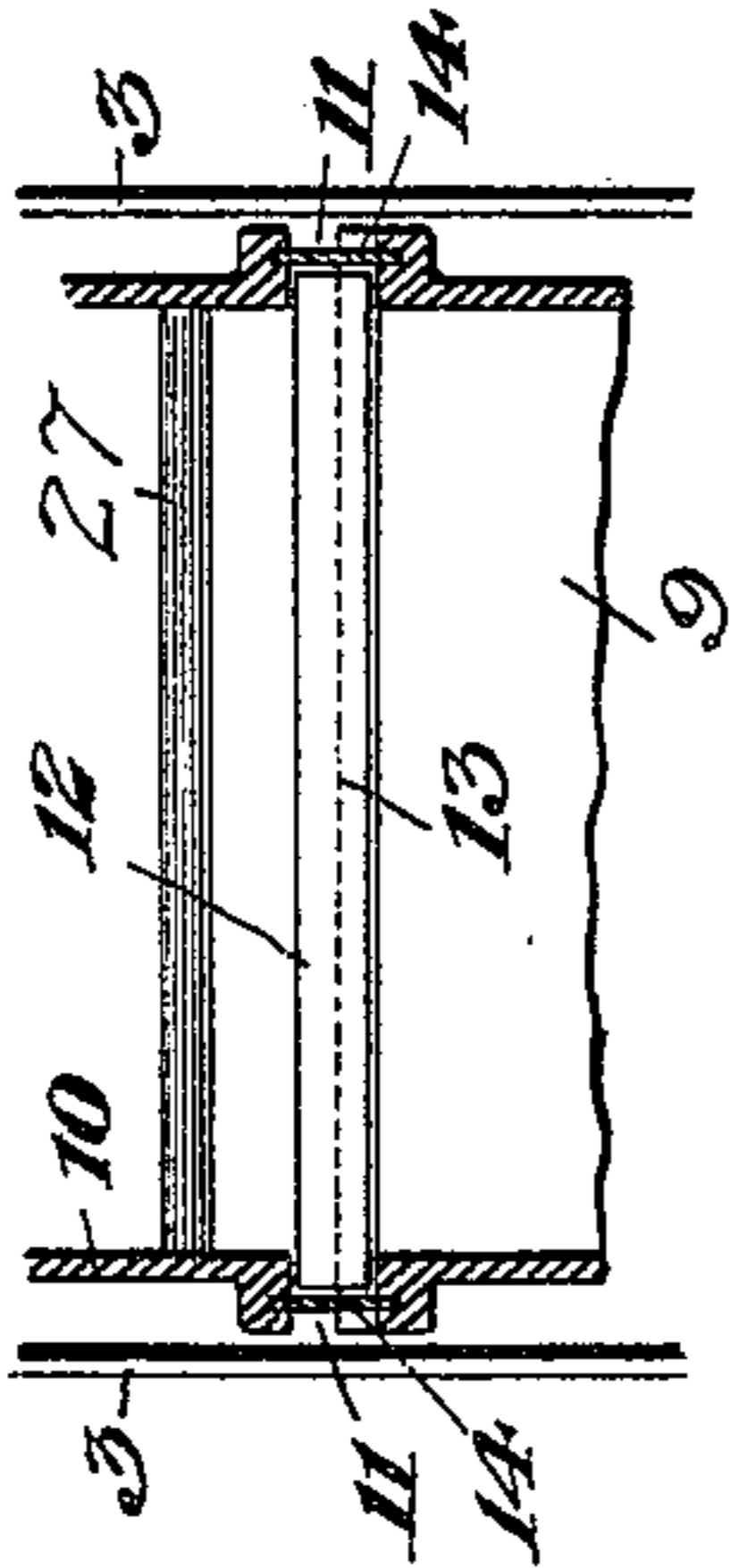


Fig. 4.

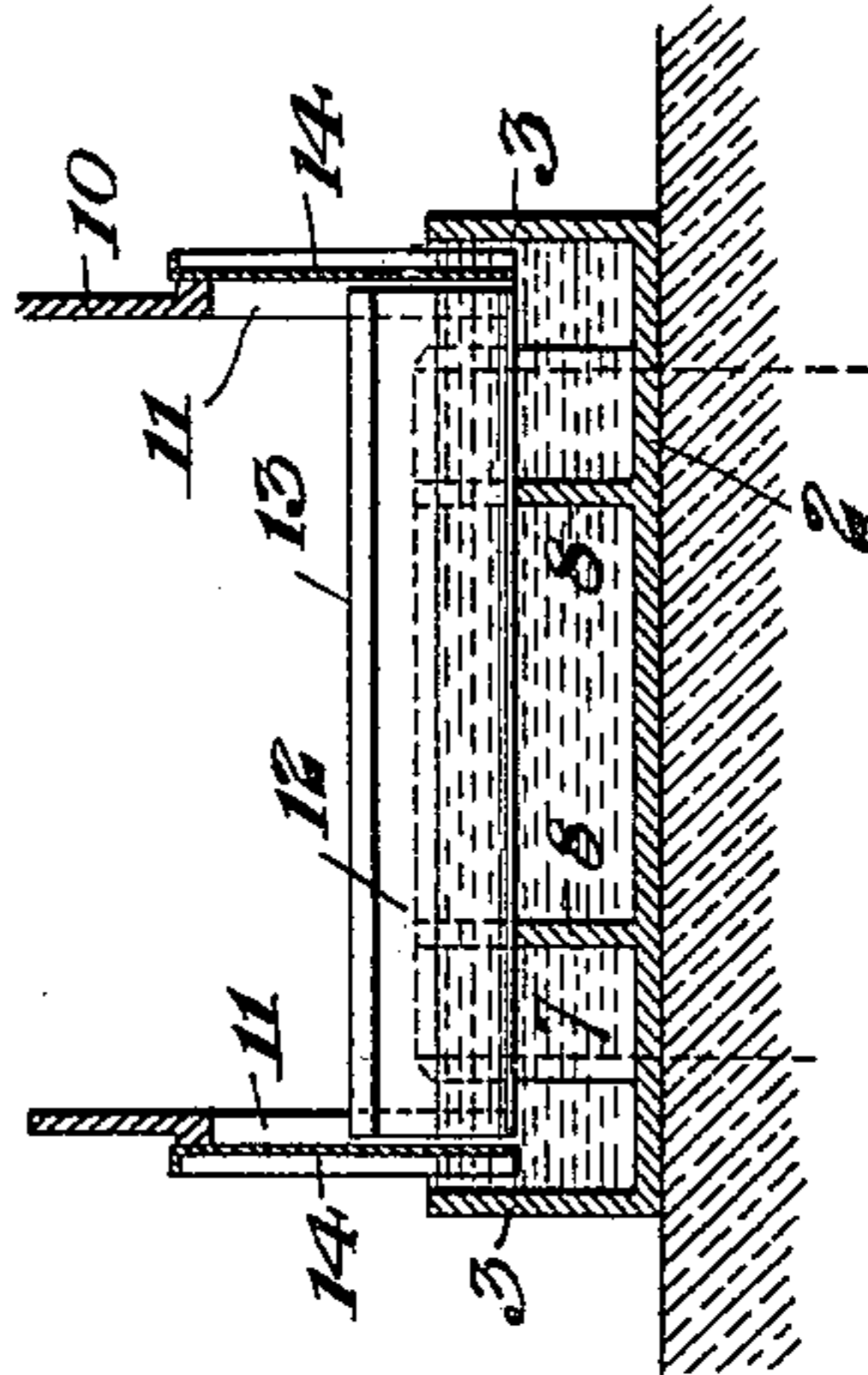
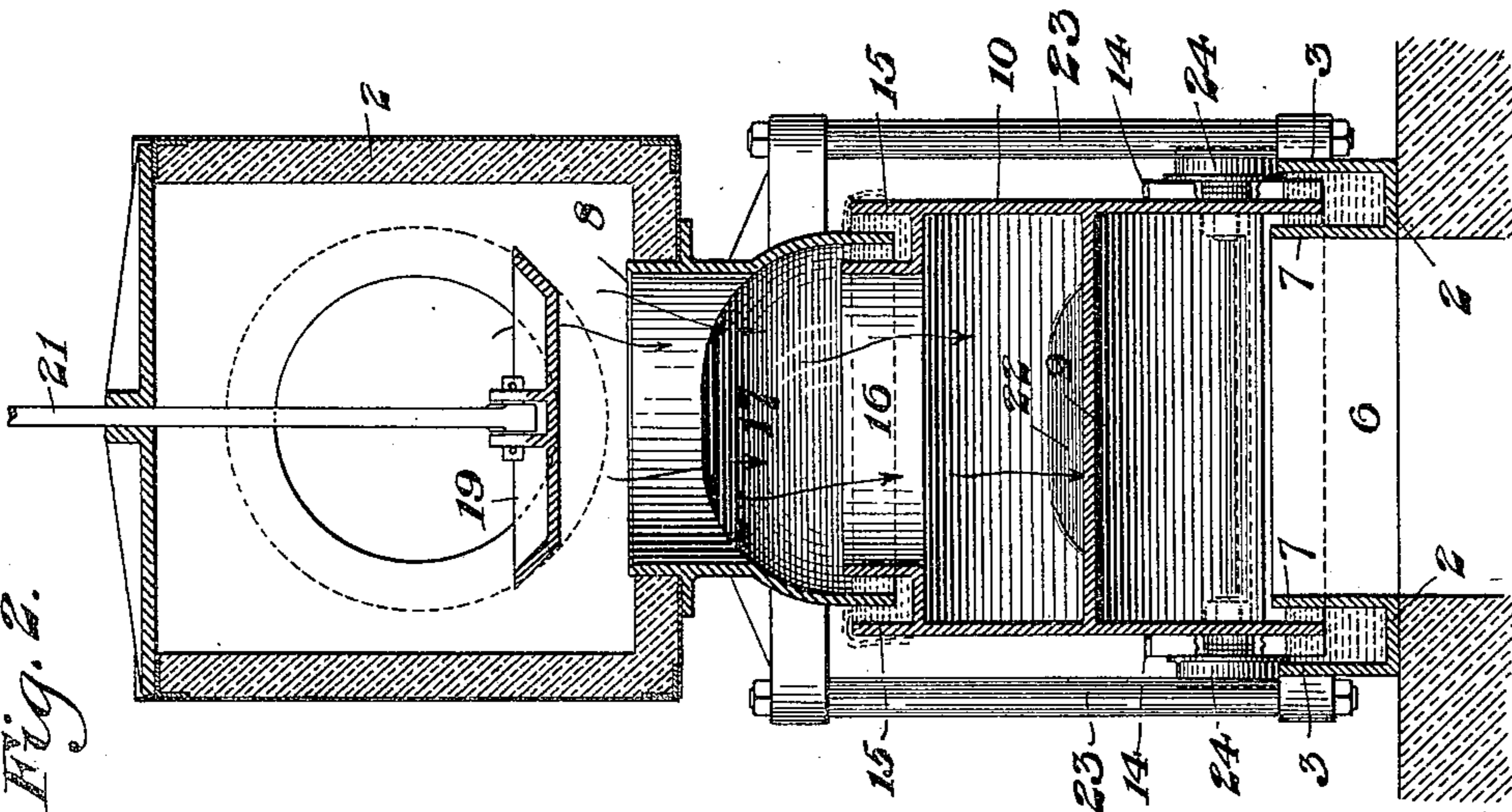


Fig. 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

SAMUEL FORTER, OF PITTSBURG, PENNSYLVANIA.

REVERSING-VALVE.

SPECIFICATION forming part of Letters Patent No. 659,221, dated October 9, 1900.

Application filed July 29, 1899. Serial No. 725,442. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL FORTER, of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Reversing-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 my improved valve, showing the same in different positions. Fig. 2 is a vertical cross-section on the line II II of Fig. 1, and Figs. 3 and 4 are detail views of movable closure portions of the valve.

My invention relates to the class of shifting liquid-sealed valves which are employed as reversing-valves in connection with regenerative furnaces and similar heating-furnaces, and is designed to provide a valve of this character which may be moved laterally without lifting and will be liquid-sealed in its different positions. It is further designed to provide a valve of this character in which the valve and casing shall be liquid-sealed both in the upper and lower portions, thus preventing escape of gases.

In the drawings, 2 represents a bed-plate casting, having a rim 3 and provided with a port 4, leading to the stack, and ports 5 and 6, through which the gases pass to and from the furnace alternately. These ports are provided with upwardly-projecting flanges 7, which extend to a point above the level of the liquid contained within the bed-plate, the ports 5 and 6 having inclined ribs 8, leading from below the water-level to the upper edges of the flanges.

The valve proper, 9, consists of a curved partition-plate, having its ends secured to a horizontally-moving casing 10, the partition-plate preferably being cast integral with the casing. The casing is provided at each side with vertical slots 11, forming suitable guides for the ends of vertically-sliding closure-plates 12, having ribs 13, which rest upon the side edge portion of the valve when these plates are in their lowest position. The closure-plates 12 thus constitute the lower edges of the valve 9 and make the connection between the same and the liquid seal. Thin plates 14 are secured to the casing over the slots and project

down below the water-level, the plates 12 being a little shorter than the distance between the plates 14, so as to allow for easy operation of the closures. The upper part of the casing is provided with a continuous upright flange 15, inclosing its top and arranged to contain a pool of water, through which the flanged portion 16 projects upwardly into the interior of the depending bell 17. The edges of this bell are below the level of the water held on the top of the casing, thus water-sealing the port 16. The open top of the bell is provided with the seat 18 for the usual mushroom valve 19, which is moved vertically within the case 20 by the usual valve-rod 21.

The casing 10 is provided with the usual cleaning-doors 22, and the sides of the bed-plate are provided with the vertical standards 23, upon which is supported the bell 17. The casing is carried upon rollers 24, mounted on short shafts projecting from its sides and movable upon the longitudinal portion of the rim 3. The casing and the valve may be reciprocated horizontally by link connections 25 with the hand-lever 26, pivoted to the bed-plate.

27 is a brace for the casing; 28, an overflow-pipe; 29, the perforated plate to keep tar from getting into the overflow-pipe, and 30 a movable plate to regulate depth of water in the seal according to the vertical adjustment of plate 30.

The operation of the device is apparent. When the parts are in the position shown in the full lines in Fig. 1, gas entering through the port 18 passes through the port 5 to the furnace, while the gases from the furnace pass out through ports 6 and 4 to the stack. When it is desired to reverse, the casing is moved horizontally to the position shown in dotted lines. During this movement the closures 12 will ride up the inclined ribs and over the ports 5 and 6, and thence passing down the inclined ribs on the other side will drop by gravity into sealing position.

The advantages of my invention result from doing away with all levers or other operating mechanism within the casing where they would become heated. Lifting of the valve in its movements is rendered unnecessary, and the closures move automatically to their sealing position upon movement of the casing

and valve. The casing is sealed both at the top and bottom, and the construction is simple and not liable to get out of order.

I claim—

5 1. In reversing-valves, a plate provided with valve-ports; suitable channels around said ports receiving a sealing liquid; a movable casing having its lower edge sealed by said liquid; an inlet-port in said casing and
10 a valve within said casing moving therewith and having its lower edge sealed by said liquid when seated.

2. In reversing-valves, a plate provided with valve ports; suitable channels around
15 said ports receiving a sealing liquid; a horizontally-movable casing having its lower edge sealed by said liquid; an inlet-port in said casing; a valve within said casing and moving therewith and vertically-movable closure-
20 plates constituting the lower edges of said valve and making the connection between the same and the sealing liquid.

3. In reversing-valves, a plate provided with valve-ports; suitable channels around
25 said ports receiving a sealing liquid; a hori-

zontally-movable casing having its lower edge sealed by said liquid; a port in the upper part of said movable casing; suitable channels in said casing around said port to receive a sealing liquid; a bell supporting a valve-
30 seat and entering said sealing liquid and a valve for said seat.

4. In reversing-valves, a plate provided with valve-ports; suitable channels around said ports receiving a sealing liquid; a hori-
35 zontally-movable casing having its lower edges sealed by said liquid; an inlet-port in said casing; a valve within said casing and moving therewith; vertically-movable closure-plates constituting the lower edges of said
40 valve and making the connection between the same and the sealing liquid and guides in said casing for said closure-plates.

Signed by me, at Pittsburg, Pennsylvania, this 26th day of July, 1899.

SAMUEL FORTER.

Witnesses:

H. M. CORWIN,
G. B. BLEMMING.