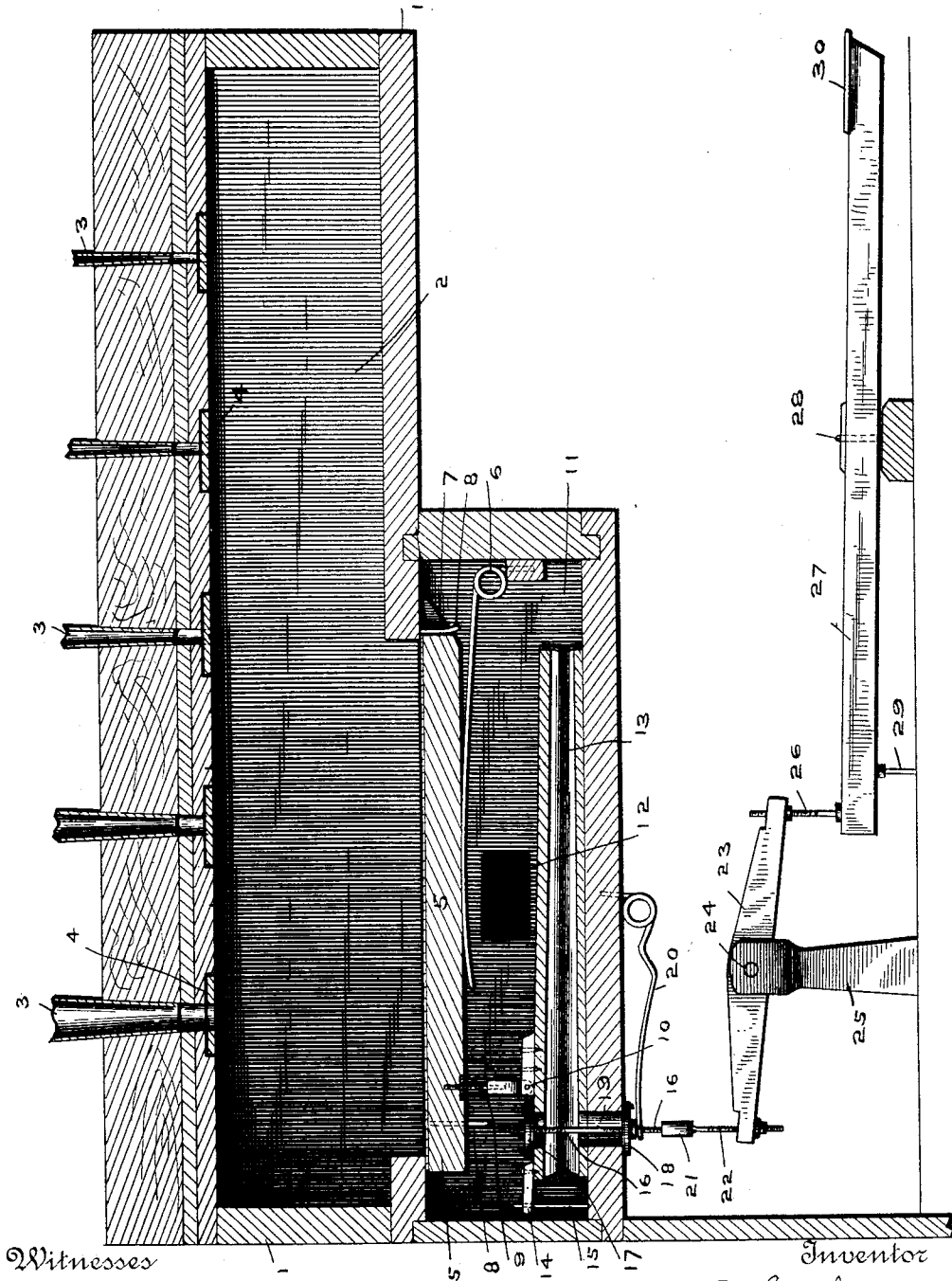


(No Model.)

T. P. SANBORN.
VALVE MECHANISM.

No. 465,208.

Patented Dec. 15, 1891.



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UNITED STATES PATENT OFFICE.

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VALVE MECHANISM.

SPECIFICATION forming part of Letters Patent No. 465,208, dated December 15, 1891.

Application filed May 28, 1891. Serial No. 394,428. (No model.)

To all whom it may concern:

Be it known that I, THOMAS P. SANBORN, of Indianapolis, county of Marion, and State of Indiana, have invented certain new and
5 useful Improvements in Organ-Valve Mechanism; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, in which like letters refer
10 to like parts.

My invention relates to improvements in the construction of mechanism for operating organ-valves; and its object is to equalize and balance the pressure upon the valve by means
15 of an auxiliary air-chamber and bellows, so that the valve will respond easily and readily to a slight touch upon the key, and will be understood from the following description:

The drawing represents a cross-section
20 through the organ on the central line of the auxiliary air-chamber, the key and lever below being in elevation.

In detail, 1 is the casing of the organ; 2, the principal wind-chest; 3, the pipes, and 4 the sliders for admitting air from the wind-chest
25 into the pipes.

5 is the valve at the bottom of the main chest, which is partly controlled by the spring 6, connected at one side.

30 8 are pins for guiding the movement of the valve, one of these being in a slot 7 at one end of the valve.

9 is a screw-pin connected to the valve 5 for adjusting its movement and secured below to
35 a metal piece hinged at 10 to a block fastened upon the top of the collapsible bellows 13.

11 is an auxiliary air-chamber connected to the main chest directly below the valve 5,
40 having an air-opening 12.

13 is an auxiliary bellows having at one end a guide-block 14, which works on a pin 15, for steadying the bellows during its vertical movement.

45 16 is a valve-rod having a valve 17 on its upper end, which closes an opening in the top of the bellows 13 and passing down through an opening 19 in the bottom of the air-chamber, and 18 is a valve for closing such opening.

50 20 is a spring whose tension bears against the under side of the valve 18, normally keeping it closed.

21 is a link which connects the rod 16 to a staple 22, which passes through the end of a rocking lever 23, pivoted at 24 to the up-
55 right 25.

26 is a screw-pin entering the opposite end of the lever 23 and resting below on the lever 27, pivoted at 28 to the frame-work, having a
60 key 30 on its outer end and supported from beneath by a pin 29.

My invention consists in providing the auxiliary air-chamber 11 and in locating therein an auxiliary collapsible bellows 13, provided
65 with a valve-rod 16 and the valves 17 and 18, and in connecting this valve-rod directly to the lever 23 below, providing also a spring 20 for controlling the valve movement.

I will now explain the operation of my device. When the key 30 is depressed, the opposite end of the lever 27 is raised, and the
70 outer end of the lever 23 is tilted downward, opening the valve 18 and closing the valve 17. The air in the bellows 13 will then escape through the opening 19, and the pressure of the air in the chest 11, pressing downward
75 upon the top of the bellows, collapses the same, thereby relieving the pressure upon the under side of the valve 5, and as the bellows falls it pulls down the valve 5 by means of
80 the pin 9 against the air-pressure in chamber 11 and against the weak pressure of the spring 6, and the air from the auxiliary chest 11 will then enter into the main chest 12 through the open valve and to the pipes of the
85 organ. The opening of the valve 5 is therefore easy and gradual and by no means abrupt or violent, and when the pressure upon the key 30 is relieved a reverse action takes place, namely: the spring 20 returns the valve
90 18 to its seat, closing the opening 19, and at the same time opening the valve 17, allowing the wind from the chest 11 to pass through the opening below the valve 17 into the bellows 13, and the pressure of the air in the
95 bellows being equal to that in the chest 11 the force of the spring 6 will return the valve 5 to its seat with ease, and the air is thereby cut off from the organ-pipe.

In my device upon touching the key the
100 valve 18 is opened, allowing the air in the bellows 13 to escape, closing the valve 17, and the air rushing out from the bellows the latter will collapse, and the pressure of the air

in the chest 11 upon the top of the bellows will tend to draw the valve 5 from its seat, even against the pressure of the spring 6. The pressure, therefore, upon the valve 5 is overcome, not by an equivalent pressure upon the key, but through the escape of the air from the auxiliary bellows, which opens the valve by the pin 9. It will thus be seen that the pull upon the valve is positive whenever the key is pressed, and the valve will be opened whether the bellows is tight or not. This pin 9, which connects the bellows 13 to the valve 5, is threaded above, so that it furnishes a means of adjusting the connection between the bellows and valve, and this adjustment may be made so delicate that a very slight pressure upon the key will operate the auxiliary bellows and its valve mechanism and open the main valve 5, admitting the air-blast to the organ-pipe.

What I claim as my invention, and desire to secure by Letters Patent, is the following:

1. In an organ, an auxiliary air-chamber 11, located below the main valve 5, and an auxiliary bellows in such air-chamber, having openings in it above and below, alternately closed and opened by the spring-controlled valves 17 and 18, mounted on the rod 16, connected directly to the key-controlled lever 23, substantially as shown and described.

2. In an organ, an auxiliary air-chamber

provided with a bellows connected to the main valve, such bellows having inlet and outlet valves alternately opened and closed by pressure upon the key-lever, the latter connected with the valve-rod of such bellows, whereby the main valve 5 is positively opened by pressure upon the key, substantially as shown and described.

3. In an organ, an air-chamber located below the main wind-chest, an opening between such wind-chest and air-chamber normally closed by a spring-controlled valve, a bellows in such auxiliary chamber, having inlet and outlet openings on opposite sides, the main valve adjustably connected to the top of such bellows, a valve-rod passing through the latter, and valves mounted thereon whose action closes one valve when the other is open, such valve-rod connected to the pivoted lever directly operated by pressure upon the key, whereby the main valve is directly opened by the joint action of the key-pressure and the collapsing of the auxiliary bellows, all combined substantially as shown and described.

In witness whereof I have hereunto set my hand this 20th day of May, 1891.

THOMAS P. SANBORN.

Witnesses:

H. D. NEALY,
C. P. JACOBS.