

B. R. VAN VALKENBURG.  
 CONTROL VALVE.  
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1,053,936.

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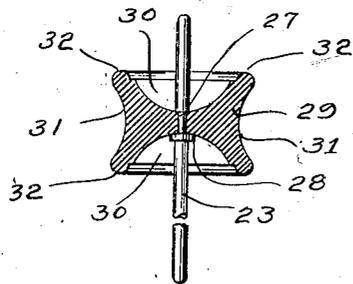
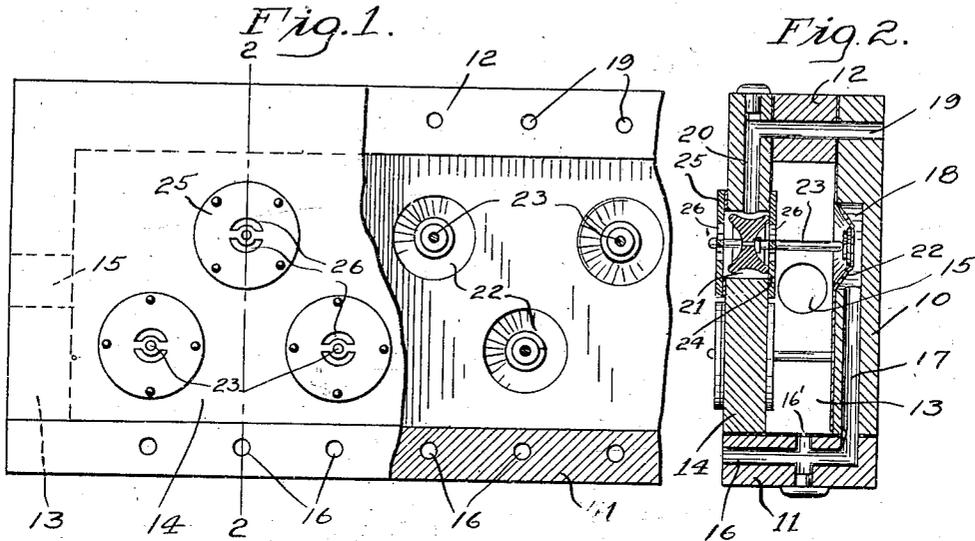


Fig. 4.

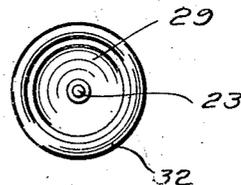


Fig. 3.

WITNESSES:

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# UNITED STATES PATENT OFFICE.

BURT R. VAN VALKENBURG, OF OAKLAND, CALIFORNIA.

## CONTROL-VALVE.

1,053,936.

Specification of Letters Patent. Patented Feb. 18, 1913.

Original application filed October 31, 1911, Serial No. 657,891. Divided and this application filed April 2, 1912. Serial No. 687,989.

*To all whom it may concern:*

Be it known that I, BURT R. VAN VALKENBURG, citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Control-Valves, of which the following is a specification.

This invention relates to controlling valves used in connection with musical instruments of the pneumatically operated type, and is a divisional application divided from a former application bearing the Serial No. 657,891, filed Oct. 31, 1911.

The principal object of the invention is to provide the valve with a peculiar type of sealing disk which is so constructed that the flow of air will meet with the least resistance, thus causing a quick action when the valve is opened.

With the above and other objects in view the invention consists in general of certain novel constructions, combinations and arrangements of parts, as will be hereinafter fully described, illustrated in the accompanying drawings, and specifically claimed.

In the accompanying drawings, like characters of reference indicate like parts in the several views, and:—Figure 1 is a plan view of a vacuum trunk with the improved valves, a portion of the trunk being shown in section. Fig. 2 is a section on the line 2—2, Fig. 1. Fig. 3 is a plan view of one of the valve disks. Fig. 4 is a sectional view through the same.

Referring to the accompanying drawings it will be seen that the vacuum chest is provided with a bottom 10, sides 11 and 12, end 13, and top 14. An opening 15 is formed in the end 13 so that communication may be had with the suction bellows to form a vacuum in the trunk. The side wall 11 is provided with a plurality of openings 16 which communicate with cells 18 formed in the bottom. Openings 19 are formed through the bottom and wall 12 and extend into the top 14 where they communicate with openings 20 leading to enlarged openings 21. A diaphragm 22 is placed over each of the cells 18 and a shaft 23 extends from each of the diaphragms through one of the openings 21. Disks 24 and 25 are attached to the top 14, the disk 24 being at the inner end of the opening 21 and the disk

25 being at the outer end. Each of these disks is provided with guide holes for the shaft and openings 26 to permit air to pass into the enlarged opening 21. The shaft 23 is provided between the disks 24 and 25 with a reduced portion forming a seat 27, a shoulder 28 being formed at the inner end of the seat. A resilient valve 29 is mounted upon the shaft 23 between the disks 24 and 25 and fits in the seat 27. The opening formed through the valve is of less diameter than the shaft is at the seat so that it is necessary to extend the valve slightly in order to fit it upon the seat. This causes the valve to contract after being placed in the seat, and is thus tightly held in place. The shoulder 28 prevents the shaft from being pushed through the valve when the device is operated. The valve is formed from a substantially cylindrical piece of rubber which is provided with the concaved faces 30 and the concaved sides 31, the concaved faces and side meeting to form the rounded edges 32. These edges 32 come in contact with the plates 24 and 25 and form air tight joints, and it should be noted that by having the edges 32 curved that the passage of air from the opening 20 through the opening 21 into the vacuum chamber of the chest is not obstructed.

When this device is in use vacuum is maintained in 16 by means of bleed hole 16' and upon opening of the hole in the tracker bar, air from the same passes through the opening 16 into the opening 17 and from thence into the cell 18. The cell 18 is filled with air and this raises the diaphragm so that the shaft 23 is moved, lifting the valve from contact with the disk 24 and bringing it into contact with the disk 25. This uncovers the openings formed in the disk 24 and covers the openings in the disk 25 so that air enters through the openings 19 and 20 and may pass around the valve, through the disk 24 and into the vacuum chamber of the chest.

It should be noted that since the valve 29 has no sharp edges that the free passage of the air through the opening 21 is not interrupted, and it should also be noted that when the valve is against the disk 24 that the valve forms a suction cup, thus making a very tight joint and thereby entirely preventing any danger of leakage.

Having thus described the invention, what is claimed as new is:—

5 A device of the character described comprising a chest provided with openings leading through its walls and communicating with a cell and with an enlarged opening formed in alinement with the cell, a diaphragm extending across said cell, a shaft extending from said diaphragm  
10 through said enlarged opening, disks secured to the wall of said chest at each end of said enlarged opening and provided with alined openings through which said shaft passes, and said shaft being provided with  
15 an annular groove positioned between said

disks, a shoulder formed upon said shaft at the inner end of said groove, a valve mounted upon said shaft between said disks and fitting in said groove, said valve being formed from a substantially cylindrical block of elastic material provided with concave valve faces and with a grooved edge meeting the concave valve faces at curved edges.

In testimony whereof I affix my signature 25 in presence of two witnesses.

BURT R. VAN VALKENBURG.

Witnesses:

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