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CUT-OUT VALVE FOR PNEUMATIC INSTRUMENTS.

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1,131,471. Patented Mar. 9, 1915.

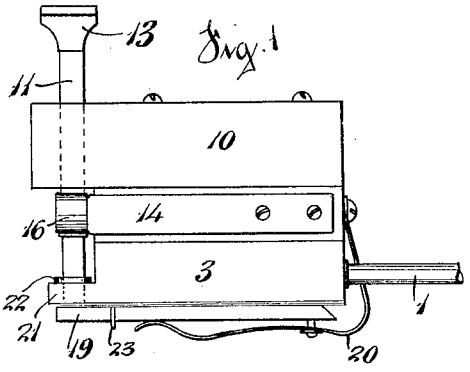

Fig. 1

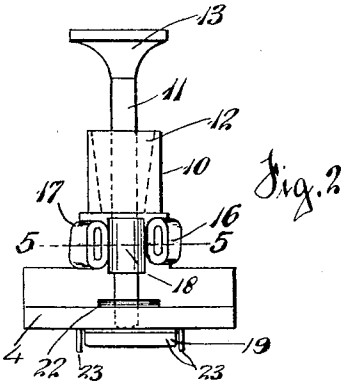

Fig. 2

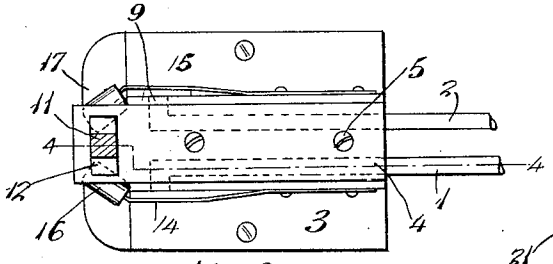

Fig. 3

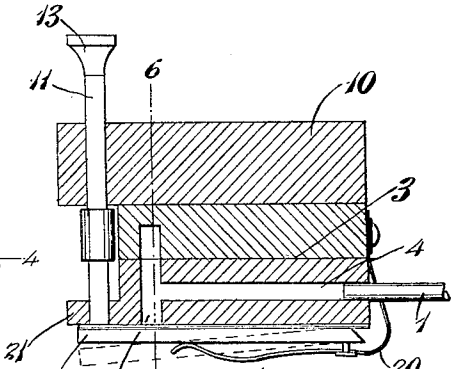

Fig. 4

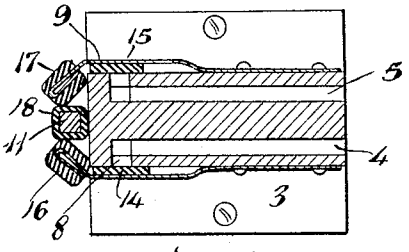

Fig. 5

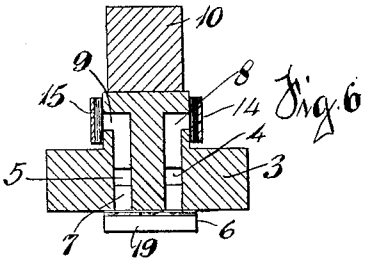

Fig. 6

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UNITED STATES PATENT OFFICE.

ROBERT W. COOPER, OF DAYTON, KENTUCKY, AND FRANK A. LEE AND RAY J. MEYER, OF CINCINNATI, OHIO; SAID COOPER AND SAID LEE ASSIGNORS TO THE JOHN CHURCH COMPANY, OF CINCINNATI, OHIO, A CORPORATION OF OHIO.

CUT-OUT VALVE FOR PNEUMATIC INSTRUMENTS.

1,131,471. Specification of Letters Patent. Patented Mar. 9, 1915.

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To all whom it may concern:

Be it known that we, ROBERT W. COOPER, a citizen of the United States, and a resident of the city of Dayton, in the county of Campbell and State of Kentucky, and FRANK A. LEE and RAY J. MEYER, citizens of the United States, and both residents of the city of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Cut-Out Valves for Pneumatic Instruments, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

This invention is intended for application to pneumatic instruments which have regulator or wind devices located in the channel between the source of vacuum and the source of suction. In such devices, the operation thereof is desired to be controlled by valves raised and lowered by pneumatics. Such a structure is shown in Doman, No. 927,454, of July 6, 1909, as indicated by numerals 28, 46, of Figure 1. It has been found desirable to have a valve which has a combined action, or three-way feature, which can admit atmosphere at the will of the operator either to a bass or a treble regulator, or to both regulators at once.

It is the object of our invention to provide a valve of this nature, and this we accomplish by that certain construction and arrangement of parts to be hereinafter specifically pointed out and claimed.

In the drawings, Fig. 1 is a side elevation of the valve. Fig. 2 is a front elevation of the same. Fig. 3 is a top plan view of it. Fig. 4 is a vertical section on the line 4, 4, of Fig. 3. Fig. 5 is a horizontal section on the line 5, 5, of Fig. 2. Fig. 6 is a vertical section on line 6, 6, of Fig. 4.

The key bottom of the instrument is not shown, but it is understood that the valve is to be mounted thereon at any convenient place, or else the key bottom may be used instead of the block 10 to be hereinafter described.

The tubes 1 and 2 lead respectively from the wind boxes, or regulator boxes (not shown) say for the treble and bass of a player piano, into the chamber box 3. Any desired form of chambers are located in this box, one for each of the two tubes, the only requisite of construction being the location of the outlets and the non-communication of the chambers. In the construction preferred, and illustrated in the drawings, two non-communicating T-shaped chambers 4 and 5 are formed. The two downwardly projecting portions 6 and 7 of the T are open at the bottom, and the openings relatively close together in the base of the chamber box. The upwardly extending portions turn at right angles to each other at the top and extend away from each other, opening out at the opposite sides of the box toward the top of it, at 8 and 9. The box 3 is formed with its upper portion where the outlets 8 and 9 are located narrow enough to permit of proper operation of the valve flaps hereinafter described.

On the top of the chamber box is suitably attached a block 10 to carry the valve operating rod 11. For this purpose, a lateral rectangular cut 12 is made in the block to receive the rod 11, and the said cut made V-shaped in vertical section (Fig. 2). The rod is preferably square in cross section, and will thus be capable of a lateral rocking movement in the block 10. It is also capable of an up and down movement in the block. A proper button 13 is provided on the top of the rod, for the operator of the valve. It can now be appreciated that by rocking in one direction away from the side of either lateral chamber opening, this rod will be capable of opening a flap located over such opening, and that by pressing down on the rod and providing a flap which covers both openings 6 and 7 in the base of the box, that then both of the chambers are opened at once. This is the three-action feature of the valve.

We provide the spring flaps 14 and 15, suitably attached to the sides of the box, and located over the openings 8 and 9. The ends of the flaps extend around to the front of the box and have the padded ends 16 and 17, which are so located as to contact with the rod 11 in vertical position. A rubber collar 18 is provided for the rod to contact with the pads. This construction provides the parts for opening the lateral openings of the chambers. The specific construction of pads, collar and the like is, of course, merely the preferred construction.

A valve flap 19 is suitably hinged to the

base of the box, of sufficient width to cover both base outlets, and a strong spring 20 attached to the box and arranged to keep the flap securely closed. The box is extended at 21 and cut to form a guide for the rod 11, and the flap extended underneath this portion. A felt collar 22 is located around the cut in the portion 21 to act as a bushing, although this is not a requisite part of our construction, and pins 23 are placed at each side of the flap to keep it in position upon opening and closing. This construction then provides for the opening of both base openings simultaneously by the pressing down on the rod 11.

By operating the regulator devices, the force of the suction is throttled or reduced. The valve now described with its three independent actions is adapted to admit air at atmospheric pressure to the treble and bass wind boxes or regulator devices of a player piano, separately, or to both of them together.

In this specification, by applying this device to a use in pneumatic instruments which work by suction, it is not desired to limit the scope of the claims to valves for suction purposes alone.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent, is:—

1. In an air valve, two air chambers, two sets of inlets for said chambers, a flap for opening and closing one of the sets of inlets, independent flaps for each inlet of the other set, and an actuating means common to all of the flaps adapted to actuate any one thereof, at will.

2. In an air valve, two air chambers, two sets of inlets for said chambers, a flap for opening and closing one of the sets of inlets, independent flaps for each inlet of the other set, and an actuating rod common to all of the flaps adapted to actuate any one thereof, at will.

3. In a valve, two air chambers, two sets of inlets for said chambers, a flap for opening and closing one of the sets of inlets, independent flaps for each inlet of the other set, and a rod mounted so as to rock and reciprocate said flaps located one at the end and one on either side of the rod for the purpose specified.

4. In a valve, a chamber box, two air chambers located in said box, two sets of inlets for said chambers, a flap for opening and closing one of the sets of inlets, independent flaps for each inlet of the other set, a block mounted on said box, a rod carried by said box, means whereby said rod may take a rocking and reciprocating movement, said flaps located one at the end, and one on either side of said rod.

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