J. COURVILLE.

AIR PRESSURE REGULATOR FOR PNEUMATICALLY OPERATING MUSICAL INSTRUMENTS.

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905,659. Patented Dec. 1, 1908.

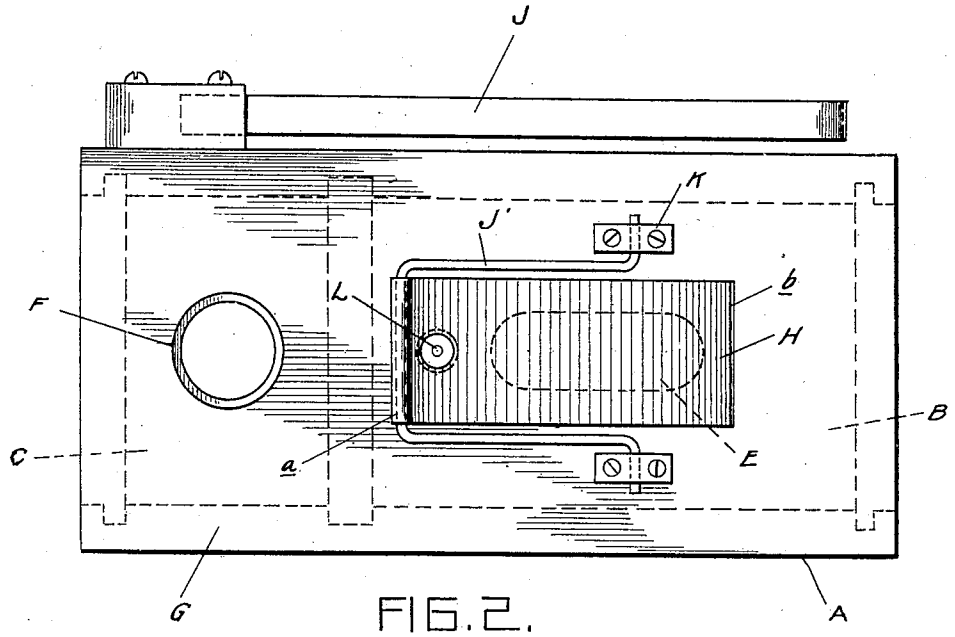


FIG. 2.

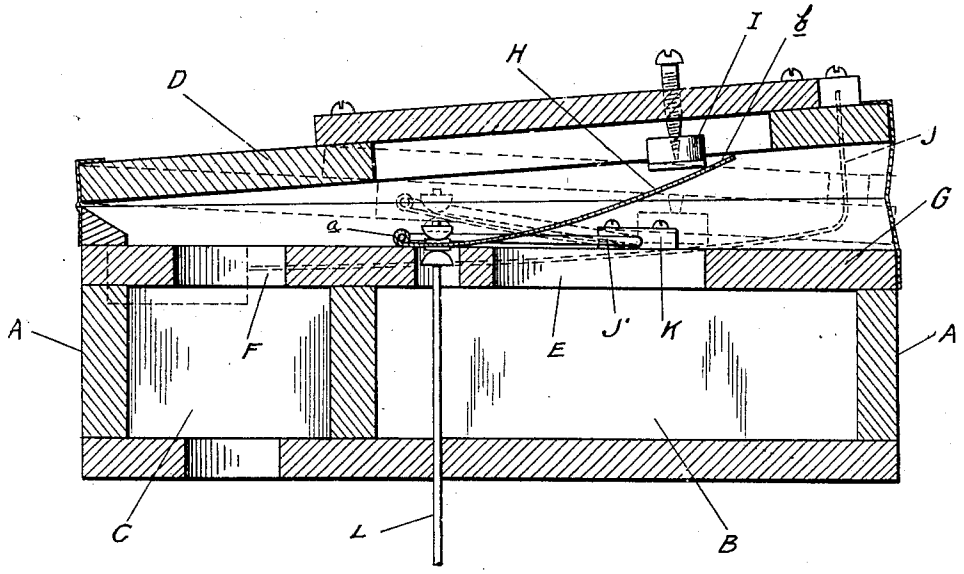


FIG. 1.

WITNESSES

Geo. H. Graves

Jas. P. Barry.

INVENTOR.

JOSEPH COURVILLE.

BY Whittemore, Hulbert & Whittemore

ATTYS.

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOSEPH COURVILLE, OF DETROIT, MICHIGAN, ASSIGNOR TO FARRAND ORGAN COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

AIR-PRESSURE REGULATOR FOR PNEUMATICALLY-OPERATING MUSICAL INSTRUMENTS.

No. 905,659. Specification of Letters Patent. Patented Dec. 1, 1908.

Application filed February 10, 1906. Serial No. 300,486.

To all whom it may concern:

Be it known that I, JOSEPH COURVILLE, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Air-Pressure Regulators for Pneumatically-Operating Musical Instruments, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to air pressure regulators of that type in which the connection between the regulated and unregulated air pressure passages is variably restricted by a pneumatically operated valve.

It is the object of the invention to simplify the construction and to this end the invention consists in certain novel features of construction as hereinafter set forth.

In the drawings, Figure 1 is a longitudinal section through the regulator; and Fig. 2 is a plan, with the bellows removed.

A is a suitable casing containing a chamber B for the unregulated air and a chamber C for the regulated air.

D is the regulator pneumatic which is mounted on one side of the case and is connected to the chamber B through the port E and to the chamber C through the port F, these ports being formed in the wall G of the case.

H is a valve for closing the port E, which is operated by the collapsing of the pneumatic D. This valve is preferably formed of a curved strip of sheet metal, as shown, which is arranged so that when one end *a* is in contact with the wall G adjacent to the port E, the opposite end *b* will extend outward, thereby providing free communication between the chamber B and the interior of the pneumatic and through the latter to the chamber C. When, however, the pneumatic D is collapsed, the projecting end of the valve H will be bent downward, so as to progressively restrict the port E until the latter is completely closed. This bending of the valve is effected through the medium of the pin or bearing I which is adjustably secured to the movable wall of the pneumatic.

J is a spring for holding the pneumatic D normally open.

With the construction as thus far described, when a partial vacuum is created in the chamber B, the pressure will be correspondingly reduced in the pneumatic D, causing the collapsing of said pneumatic until the valve H closes or greatly restricts the port E. The pressure of the air in the pneumatic D and the chamber C is determined by the tension of the spring J and is maintained substantially constant, regardless of variations in pressure in the chamber B, so long as the latter is of higher vacuum.

It is usual to provide regulators of this type with a by-pass connecting the chambers for the regulated and unregulated air pressures and to control this by-pass by a valve, which is separate and distinct from the valve automatically operated by the regulator. In the present construction, I have dispensed with this by-pass connection and the separate valve and have accomplished the same purpose by providing a separate controlling means for the automatically operated valve H. This controlling connection is such that the valve H may be moved to open the port E when the pneumatic D is collapsed and without the necessity of overcoming the pressure of the latter.

J′ is a rockable member to which the valve H is connected at the end *a* thereof. This member is pivoted, as in the bearings K, so that when rocked, the end *a* of the valve will be lifted from the seat and the opposite end *b* will be simultaneously lowered, or, where the pneumatic D is collapsed and the end *b* is depressed thereby, the valve may still be opened by the rocking of the member J′.

L is a rod or other connection to the member J′ for rocking the same.

By the arrangement just described, the valve H may be moved at any time to open the port E and provide an unrestricted connection between the chambers B C. This operation does not in any way interfere with the operation of the pneumatic D and is accomplished without overcoming the resistance of said pneumatic when in collapsed position. The only resistance that is encountered is in closing the valve H by the connection L and in overcoming the slight tension of the spring J.

What I claim as my invention is,—

1. The combination with an air conduit, of a valve for variably restricting said conduit, a pneumatic motor for automatically actuating said valve, operated by the pressure in said conduit on one side of said valve, and

means for independently controlling said valve.

2. The combination with a conduit, of a valve for variably restricting said conduit, a pneumatic motor for automatically operating said valve and operated by the air pressure in said conduit on one side of said valve, and independent means controlling said valve without interfering with the operation of said motor.

3. The combination with an air conduit, of a valve for variably restricting said conduit, a pneumatic motor for automatically operating said valve, operated by the air pressure in said conduit on one side of said valve, and independent means for opening said valve without interference with the operation of said motor.

4. The combination with a casing having separate chambers therein for different air pressures, of a valve controlling a connecting passage between said chambers, a collapsible bellows in constant communication with one of said chambers for automatically actuating said valve to close said passage, and independent means for opening said valve without interference with the operation of said collapsible bellows.

5. An air pressure regulator comprising a collapsible bellows, a valve controlling a port communicating with said bellows, and automatically operating at one end by the collapsing thereof to close the port, and independent means for operating the opposite end of said valve to open the port.

6. An air pressure regulator comprising a collapsible bellows having an air inlet port, a curved resilient plate arranged within said bellows and having one end thereof operated by the collapsing of the bellows to close said port, and independent means for operating the opposite end of said plate to open the port.

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

JOSEPH COURVILLE.

Witnesses:
JAMES P. BARRY,
EDWARD P. AULT.