No. 796,983. PATENTED AUG. 15, 1905.

G. W. BEMIS.

BELLOWS VALVE FOR PNEUMATIC INSTRUMENTS.

APPLICATION FILED MAR. 18, 1903. RENEWED DEC. 17, 1904.

Fig. 1.

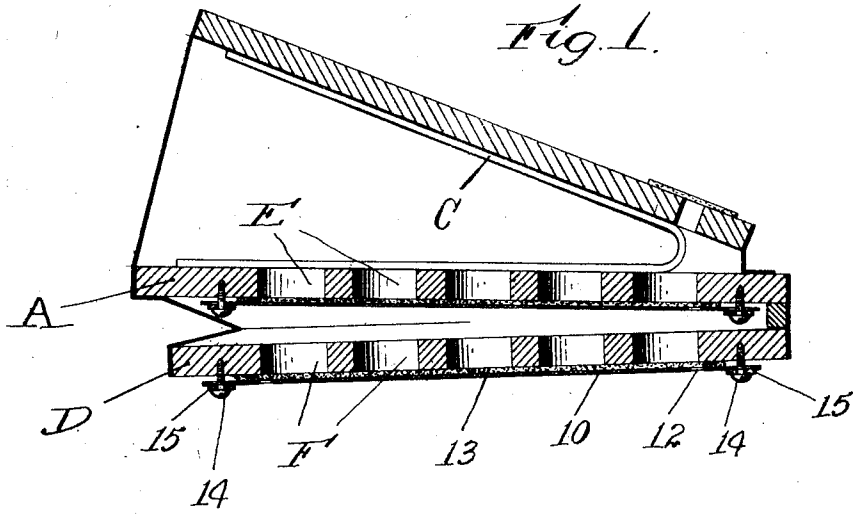


Fig. 2.

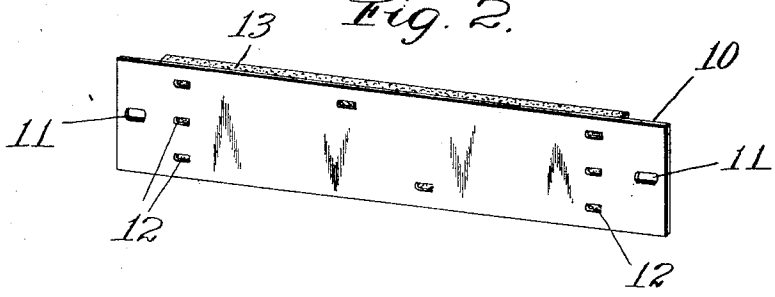


Fig. 3.

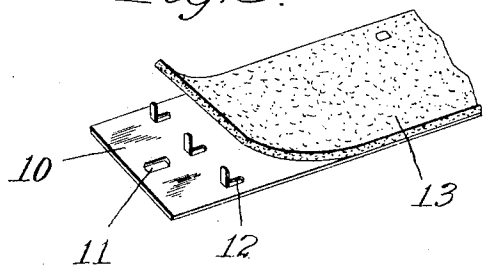
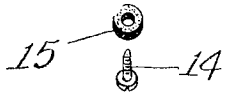


Fig. 4.



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UNITED STATES PATENT OFFICE.

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BELLOWS-VALVE FOR PNEUMATIC INSTRUMENTS.

No. 796,983. Specification of Letters Patent. Patented Aug. 15, 1905.

Application filed March 18, 1903. Renewed December 17, 1904. Serial No. 237,241.

To all whom it may concern:

Be it known that I, GEORGE W. BEMIS, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Bellows-Valve for Pneumatic Instruments, of which the following is a specification.

This invention relates to the air-pumping device or bellows for a musical instrument or for other purposes.

The especial object of this invention is to provide an improved construction of bellows-valve of simple, efficient, and durable form which will dispense with the use of springs for holding the valve stretched and which will more efficiently prevent leakage through the body of the valve or between the valve and its seat.

To this end this invention consists of the bellows-valve and of the combinations of parts therewith, as hereinafter described, and more particularly pointed out in the claims at the end of this specification.

In the accompanying drawings, Figure 1 is a sectional view of sufficient parts of a bellows for a musical instrument to illustrate the application of my invention thereto. Fig. 2 is a perspective view of a valve constructed according to my invention. Fig. 3 is a detail view thereof, showing the manner in which the sheepskin facing may be fastened in place; and Fig. 4 is a detail view of one of the holding-screws.

In that class of constructions to which this invention relates the air-pumping device or bellows usually comprises a middle board connected by valve-openings to a wind-chest and having a treadle-actuated board or movable section hinged thereto. The treadle-actuated section of the bellows is also provided with valve-openings leading to the outside air. The bellows-valves which have heretofore been employed in constructions of this class have each usually consisted of a strip of sheepskin or similar material tacked or glued in place at one end and kept tightly stretched by a spring connected to its opposite end. In practice I have found that the ordinary form of bellows-valve is objectionable, as any folds or wrinkles in the sheepskin will prevent the same from fitting closely to the valve-seat, and at the same time more or less air is always permitted to leak through the pores of the leather. Valves of this construction are also badly affected by moisture and variations in temperature, and the tension which is kept upon the leather speedily wears the same out. To overcome these objections, a bellows-valve constructed according to my invention dispenses with the use of all stretching-springs or other tensioning devices and consists of a strip or backing of thin sheet metal with a facing of sheepskin or similar material secured thereto. The facing for the valve may be held in place by small tongues or clips headed through the sheepskin, and the valve is held in place by fastening screws or pins extending through slots in the metal.

Referring to the drawings for a detail description of a construction embodying my invention as illustrated in Fig. 1, the bellows comprises a middle board A, having valve-openings E extending up into the wind-chest. Hinged onto the middle board is a top board, forming the other section of the wind-chest, which wind-chest is normally extended or kept under tension by the spring C. Hinged on the lower side of the middle board A is a treadle-operated section D, having valve-openings F. Coöperating with the valve-openings E and F are valves constructed according to my invention. Each of these valves, as illustrated most clearly in Fig. 2, comprises a strip 10 of thin sheet metal, preferably spring-brass, and a facing 13 of sheepskin or similar material, which may be held in place by integral tongues formed by cutting slots 12 in the sheet-metal strip 10, as shown most clearly in Fig. 3. The metallic body portion 10 is provided with slots 11 at its ends, and fitting through the slots 11 are screws 14 with felt washers 15 thereon.

By means of this construction I have provided a bellows-valve in which the sheepskin will be held from wrinkling, so that it will always fit closely to the valve-seat, while at the same time less leakage will be permitted through the leather.

In the use of this construction the spring metal will bend or flex to permit the valves to move away from the valve-seat, this motion being permitted by the slots which receive the holding-screws, while at the same time the resilience of the sheet metal will normally tend to hold the central part of the valve up against its seat.

In some cases I have found it desirable to give the sheet metal a slight bend or curve, so as to increase the tendency to fit closely against the valve-seat, although perfectly-

straight strips of sheet metal may be successfully employed.

I am aware that changes may be made in practicing my invention by those who are skilled in the art without departing from the scope thereof as expressed in the claims. I do not wish, therefore, to be limited to the construction I have herein shown and described, but

What I do claim, and desire to secure by Letters Patent of the United States, is—

1. In a construction of the class described, the combination of a valve-board having ports or openings therethrough, a valve consisting of a strip of spring metal with a facing of sheepskin or similar material secured thereto, and screws or pins extending through slots in the sheet-metal strip to hold the same in place upon the valve-board.

2. In a construction of the class described, the combination of a valve-board having a line of ports or openings therein, a valve coöperating with said ports, and comprising a strip of spring metal with a sheepskin facing secured thereto by means of integral fingers or clips extending from the sheet-metal strip, and screws fitting through slots in the sheet-metal strip to hold the same in place, substantially as described.

3. In a bellows, a flexible flat valve having its ends held slidably to permit flexing of the same.

4. In a bellows, the combination of a wall having an air-opening, and a flexible flat valve held to said wall to control the passage of air through said opening, said valve having its ends held slidably to said wall to permit the intermediate portion thereof to flex and allow the passage of air through said opening.

5. In a bellows, the combination of a wall having an air-opening, a flexible flat valve lying against said wall to normally close said opening, and means for retaining the ends of said valve against the wall while permitting said ends to move lengthwise of the valve; thereby allowing the intermediate portion of the valve to flex outward from said wall.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

GEORGE W. BEMIS.

Witnesses:

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