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TREMOLO DEVICE FOR ACCORDIONS

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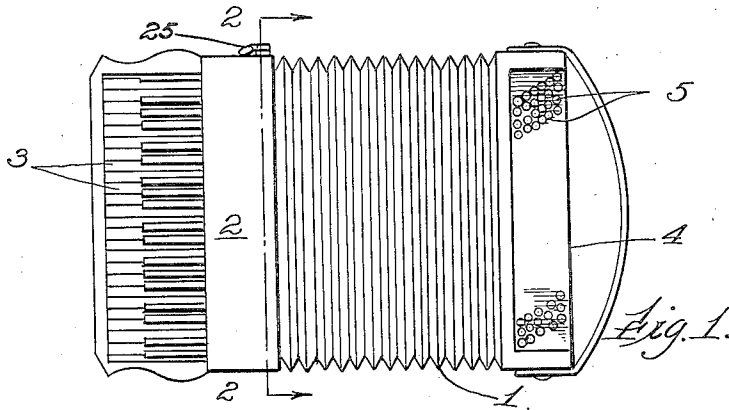


Fig. 1.

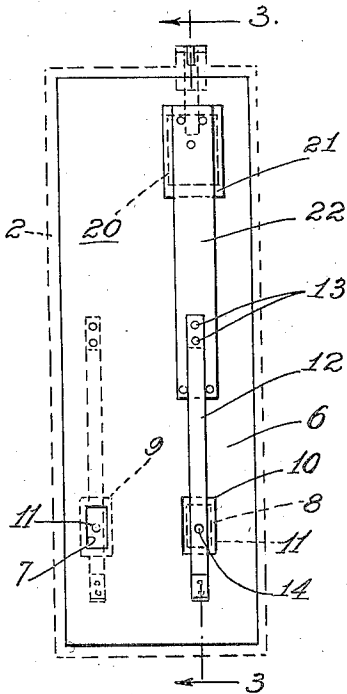


Fig. 2.

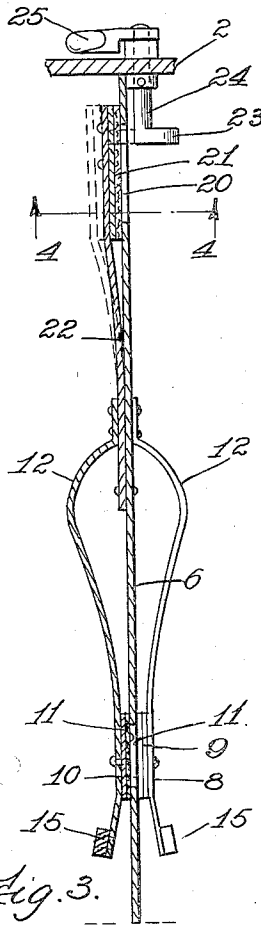


Fig. 3.

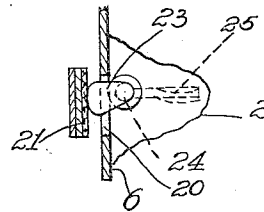


Fig. 4.

Witness
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TREMOLO DEVICE FOR ACCORDIONS

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5 Claims. (Cl. 84—376)

This invention relates to an improvement in accordions, and is directed particularly to means for producing a "vibrato" or "tremolo" effect by the use of a relatively simple mechanism which shall be economical to manufacture and which may be readily placed in service at will by the player. It consists in the features and elements of construction herein shown and described, as indicated by the claims.

10 In the drawing:

Figure 1 is a front elevation of an accordion embodying this invention.

Figure 2 is an elevation of a partition between the bellows and the reed chest, being taken substantially as indicated at line 2—2 on Figure 1.

15 Figure 3 is a section taken as indicated at line 3—3 on Figure 2.

Figure 4 is a detail section taken as indicated at line 4—4 on Figure 3.

20 The instrument illustrated in Figure 1 is a typical piano accordion comprising a bellows, 1, with a reed chest, 2, at one end for the treble reeds which are enclosed within it, and which are controlled by keys, 3, arranged to resemble a piano keyboard. At the opposite end of the bellows a second reed chest, 4, contains the bass reeds for controlling which I have indicated the usual buttons, 5. The present invention is shown as applied to the reed chest, 2, for modifying the quality of tone produced by the treble reeds. It operates by controlling the passage of air between the bellows, 1, and the reed chest, 2.

25 Disposed between said bellows and the reed chest, 2, is a partition wall, 6, as shown in Figure 2, and containing two ports, 7 and 8. These ports are provided with valves 9 and 10, respectively, which seat over the ports and against opposite sides of the partition wall, 6. As shown, the ports are rectangular, and the valves are of corresponding rectangular shape, each consisting of a plate, preferably of metal, faced with a suitable cushioning material such as leather indicated at 11. Each valve is lightly held to its seat by means of a flexible spring arm, 12, said arms being anchored to the partition wall, 6, at their upper ends, as by a pair of rivets, 13, and each arm having its valve secured near the lower end of the arm, as by a single rivet shown at 14. As seen in Figure 3 the spring arms, 12, are bowed cut away from the wall, 6, so as to be clear of contact therewith between their anchored upper ends and the valves, 9 and 10, which they support; and at their extreme lower ends they are bent away from said partition, 6, and carry weights, 15, rigidly secured to said end portions.

The valve, 9, which seats against one side of the partition wall, 6, is exposed through its port, 7, to the pressure of air directed against the opposite side of said partition, and in like manner the valve, 10, seating against said opposite side of the wall, 6, is exposed through its port, 8, to air pressure from the other direction. In the operation of the instrument the bellows, 1, causes air to be sucked in past the reeds and through the port, 7, and then to be accessible from the bellows through the port, 8, and past the reeds. The tremolo or vibrato effect is produced when this air is caused thus to flow through the ports, 7 and 8, because the flexible spring arms, 12, while tending always to seat the valves, permit them to open momentarily and then to close or nearly close, so that each valve "flutters" on its seat during the passage of air through its port. The weights, 15, which may be conveniently made as blocks of lead, or similar heavy metal, accentuate this action in combination with the resilience of the springs, 12,—producing a tendency for each valve to bounce or rebound slightly from its seat each time it closes. These weights also afford an opportunity for delicately adjusting the valves individually during assembly of the instrument, because by bending the spring arms, 12, more or less sharply at 15, the effective force of the weights, 15, in valve-closing direction may be modified until the desired operation of the tremolo mechanism is secured.

In other words, each of the arms, 12, with its attached valve and weight, is somewhat in the nature of a pendulum, and the offset position of the weight, 15, due to the bending of the lower end of the arm, 12, tends to bias the pendulum toward the valve seat. In playing the instrument the performer may take advantage of this pendulous relation by tilting the instrument in one direction and then in the other if he wishes to increase the tendency of the valves to open readily and thus modify the period of vibration of the tremolo mechanism.

For securing a normal, steady tone without tremolo effect, I provide a relatively large port, 20, in the partition wall 6, over which a valve, 21, is held seated by a flat spring arm, 22. A cam, 23, carried by a rock shaft, 24, is mounted at the opposite side of the partition, 6, from that against which the valve, 21, seats, so that when this shaft is turned through an angle of about 90 degrees by means of its externally exposed lever arm, 25, the cam, 23, bearing against the inner face of the valve, 21, forces the valve to open position, as indicated in dotted lines in Figure 3.

With the construction just described a very satisfactory vibrato or tremolo is produced for the treble reeds of the instrument, and its quality can be varied considerably at the will of the player by tilting the instrument so as to increase or decrease the effect of the pendulous mountings of the valves in contributing to the result.

While there is shown and described herein certain specific structure embodying the invention, it will be manifest to those skilled in the art that various modifications and re-arrangements of the parts may be made without departing from the spirit and the scope of the invention, and that the same is not limited to the particular form herein shown and described, except in so far as indicated by the appended claims.

I claim:

1. In an accordion including a bellows and a reed chest, a partition wall between them having a port, a valve to seat over said port and a flexible spring arm supporting said valve normally in seated position adapted to permit the valve to be unseated by air pressure acting in the direction in which the valve opens, whereupon the flexible spring arm tends to vibrate and cause a fluttering action of the valve.

2. In an accordion including a bellows and a reed chest, a partition wall between them having a port, a valve seating over said port and against one side of the partition, said valve being exposed through the port to air pressure acting toward the other side, a flexible spring arm normally supporting said valve pendulously in seated position adapted to permit the valve to be momentarily unseated by said air pressure for causing a fluttering of the valve to produce a tremolo effect.

3. In an accordion including a bellows and a reed chest, a partition wall between them having two ports, a pair of valves arranged to seat respectively over said ports and against opposite sides of said wall, and a flexible spring arm supporting each of said valves independently of the other normally in seated position, and each adapted to permit its valve to be momentarily unseated by air pressure acting through the port which it covers so that a tremolo effect is produced by air flowing through the partition in either direction.

4. In an accordion including a bellows and a reed chest, a partition wall between them having a port, a valve to seat over said port and a flexible spring arm secured to the partition at a substantial distance from the port and thus supporting said valve normally in seated position adapted to permit the valve to be unseated by air pressure acting in the direction in which the valve opens, whereupon said flexible spring arm tends to vibrate and cause a fluttering action of the valve.

5. In an accordion including a bellows and a reed chest, a normally vertical partition wall between them having a port, a valve to seat over said port, a flexible spring arm secured to the partition at a substantial distance above the port and pendulously supporting said valve normally in seated position but adapted to permit the valve to be momentarily unseated by air pressure acting through the port, the free end of the arm beyond the valve being bent to extend away from the partition, and a weight secured to said bent end portion for supplementing the spring action of the arm.

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