W. F. EWELL.

Reed-Organ Tremolo.

No. 206,008. Patented July 16, 1878.

Fig: 1.

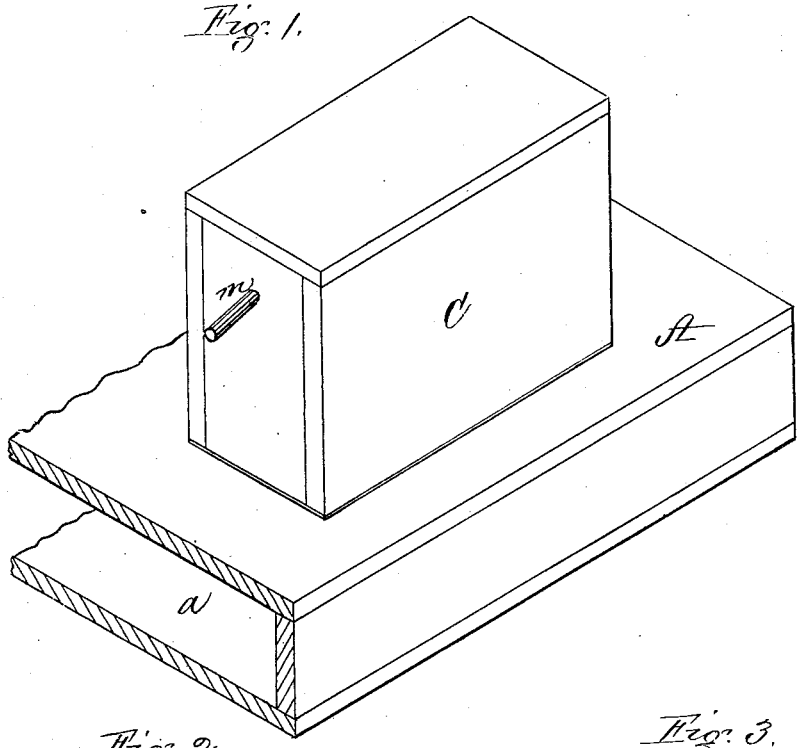


Fig: 2.

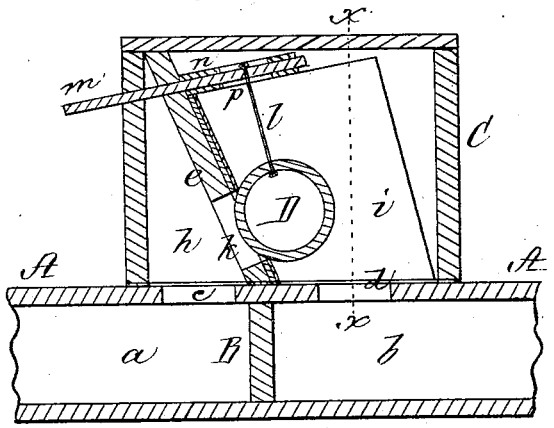


Fig: 3.

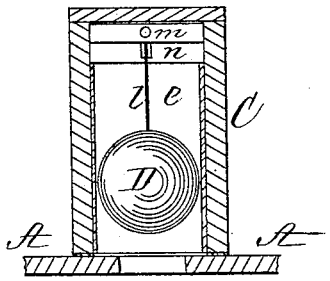
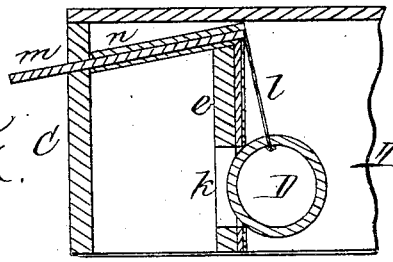


Fig: 4.



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UNITED STATES PATENT OFFICE.

WILLIAM F. EWELL, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO THE MUNROE ORGAN REED COMPANY, OF SAME PLACE.

IMPROVEMENT IN REED-ORGAN TREMOLOS.

Specification forming part of Letters Patent No. **206,008**, dated July 16, 1878; application filed January 19, 1878.

To all whom it may concern:

Be it known that I, WILLIAM F. EWELL, of Worcester, in the county of Worcester and State of Massachusetts, have invented an Improved Tremolo for Reed-Organs, &c., of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of my improved tremolo applied to the top of the wind-chest of an organ. Fig. 2 is a longitudinal vertical section through the center of the same. Fig. 3 is a transverse section on the line *x x* of Fig. 2. Fig. 4 is a modification to be referred to.

Devices of various construction for breaking and varying the force of the air passing through the reeds of an organ, and ordinarily termed "tremolos," have been applied with different results. A flat valve provided with an adjustable weight is objectionable for the following reasons: Where a quick tremolo is required the weight of the valve must be increased by moving toward it the adjustable device upon a stem leading therefrom, in order to insure the rapid return of the valve to its seat, and with this additional weight it is difficult and often impossible for the currents of air passing through the smaller reeds to raise the valve, thereby rendering the tremolo inoperative; beside which the contact of the valve with its seat occasions considerable noise, which mars the effect of the tremolo, and the adjustment of the weight on the stem of the valve to change the character of the tremolo to suit the ear of the player requires the removal and replacement of some portions of the casing of the organ.

A rubber valve resting with its entire weight on a horizontal seat surrounding the opening communicating with the wind-chest is also difficult and frequently impossible to raise, and, furthermore, is not provided with any means of adjustment for altering the character of the tremolo, the valve leaving and returning to its seat always with the same weight when acted on by currents of air of different force.

Fan-tremolos, although noiseless and more readily adjusted, are complicated and necessarily expensive.

To overcome the above-mentioned objections is the purpose of my invention, which consists in a tremolo-box having a vertical or inclined partition provided with a valve-seat, in combination with a valve of spherical or other suitable form, suspended by a cord or its equivalent in such manner that but a portion of the weight of the valve will bear against its seat, by which construction the weaker currents of air are enabled to move the valve therefrom as required, in combination with a ready means of adjusting the point of suspension of the valve so that it may bear with greater or less force upon its seat, and thereby be made to move quicker or slower therefrom, as required, a tremolo-valve constructed in accordance with my invention being not only noiseless and prompt in its action, but capable of instant adjustment from the outside, and applied at a trifling cost.

To enable others skilled in the art to understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings, A represents a portion of the top of the wind-chest forming the sounding-board of an organ; B, a vertical partition, which subdivides the wind-chest into two separate and independent air-chambers, *a b*, and *c d* are two openings formed in the tops of these chambers, over which is located the tremolo-box C. The interior of this box is provided with an inclined partition, *e*, which extends from the top of one end of the box to a point at its bottom directly over the top of the partition B in the wind-chest. This inclined partition *e* divides the tremolo-box into two compartments, *h i*, one, *h*, communicating with the chamber *a* of the wind-chest through the opening *c*, and the other, *i*, communicating with the chamber *b* through the opening *d*.

This inclined partition *e* is provided with a circular opening, *k*, the edge or periphery of which forms the seat of a spherical rubber or ball valve, D, which is suspended within the compartment *i* by a cord, *l*, from a cylindrical rod or spindle, *m*, which passes from the out-

side of the box through the partition *e* and a flat strip or guide, *n*, placed in the top of the box in contact therewith, the spindle being free to be slid back and forth from the outside by the application of the hand thereto. This guide *n* is slightly inclined from the horizontal in order that the point of suspension of the valve D may travel in a path coinciding as nearly as possible with the arc of a circle struck from the middle of the valve as a center. This guide *n* projects over beyond the foot of the inclined partition *e*, and is provided with a slot, *p*, in order that the cord may be attached to and hang freely from the sliding spindle *m*. The direction of the cord and that of the partition form an acute angle with each other, in order that the spherical surface of the ball may rest upon its circular seat and snugly close the opening *k*, a pressure due to a portion only of the weight of the valve being thus exerted thereon. The valve is thereby rendered extremely sensitive and capable of being moved by a very slight current of air.

By sliding the rod *m* in or out, the inclination of the cord *l* can be varied so as to cause the ball D to bear with more or less weight on its seat, and thus enable it to offer more or less resistance to the passage of the air in order to vary the action of the tremolo, as may be desired. The sliding rod *m* may be operated by a lever or other device within reach of the player.

The compartment *i* is lined with felt to prevent any noise from the contact of the valve D therewith, and this valve may be formed of non-elastic material, if preferred, and may be of any desired form.

The partition *e*, instead of being inclined at an angle, as seen in Fig. 2, may be arranged in a vertical position, as seen in Fig. 4.

I am aware that suspended valves are not of themselves new, nor do I lay claim to such as my invention.

What I claim as my invention, and desire to secure by Letters Patent, is—

In a tremolo attachment for reed-organs, the suspended valve D, in combination with a means of adjusting its point of suspension, substantially as and for the purpose set forth.

Witness my hand this 15th day of January, 1878.

WILLIAM F. EWELL.

In presence of—
CHAS. P. FISHER,
DAVID MANNING, Jr.