G. CLOETENS.

TREMOLO DEVICE FOR ORGANS.

APPLICATION FILED APR. 16, 1914.

1,262,640. Patented Apr. 16, 1918.

Fig. 1.

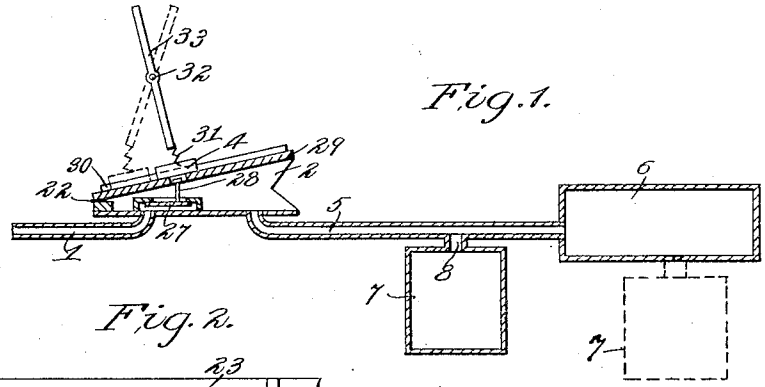


Fig. 2.

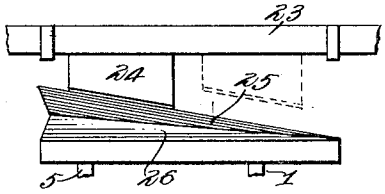


Fig. 3.

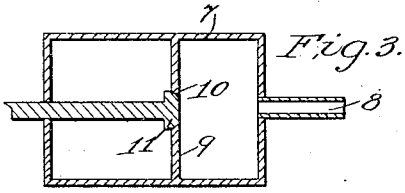


Fig. 4.

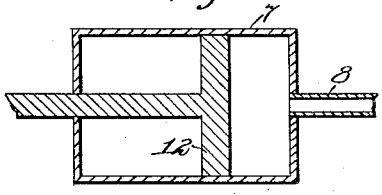


Fig. 5.

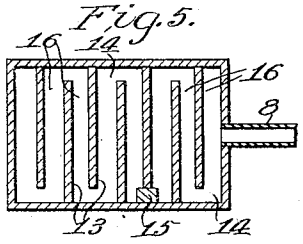


Fig. 6.

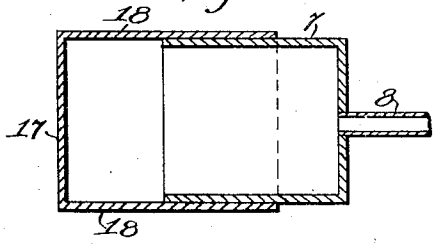


Fig. 7.

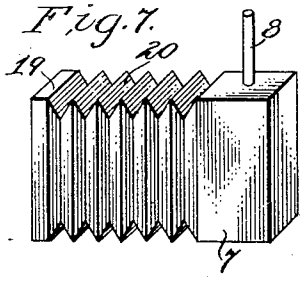
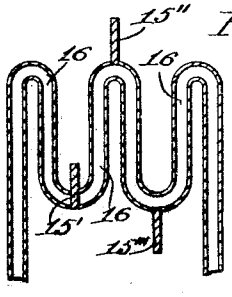


Fig. 8.



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UNITED STATES PATENT OFFICE.

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TREMOLO DEVICE FOR ORGANS.

1,262,640. Specification of Letters Patent. Patented Apr. 16, 1918.

Application filed April 16, 1914. Serial No. 832,291.

To all whom it may concern:

Be it known that I, GEORGES CLOETENS, dealer in organs, a citizen of the Kingdom of Belgium, and resident of Brussels, Belgium, have invented certain new and useful Improved Tremolo Devices for Organs; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked therein which form a part of this specification.

In wind instruments such as organs, harmoniums, and so on, vibratos and tremolos are usually produced by providing, at a given point in the air passage, a device which allows a certain quantity of air to escape through a movable clack valve, the movements of which may be more or less limited; a vibratory movement is then given to the clack valve, which produces the effect desired.

The arrangement which forms the subject of the present invention possesses the advantage over these known arrangements that it produces tremolos and vibratos while avoiding the disadvantage of allowing compressed air to escape.

This result is obtained by utilizing for the production of tremolos the rapid oscillations or vibrations which occur when the regulating bellows is not properly adjusted to the pressure supplied by the blowing apparatus, and by converting these oscillations into vibrations which may be employed musically.

To this end, a closed chamber is connected to the air passage of the regulator, the content of air of which chamber serves to change the nature of the oscillations produced by the regulator.

This arrangement moreover enables the frequency of the vibratos and tremolos to be varied by altering the volume of the air chamber aforesaid, the frequency diminishing as the volume increases. It also allows the frequency of the vibrations to be varied by altering the conditions of the vibrations of the regulator itself. These conditions of the vibrations of the regulator may notably be varied by modifying the length of the regulator or by modifying the pressure to which it is subjected.

The drawings show by way of example a certain number of forms of construction of the invention.

Figure 1 is a diagram showing one form of construction in section.

Fig. 2 is a side view of a regulating bellows employed in a second form of construction.

Figs. 3, 4, 5 and 6 are sectional views of arrangements employed in a third form of construction, and a fourth, fifth and sixth form of construction.

Fig. 7 is a perspective view of the arrangement employed in a seventh form of construction.

Fig. 8 is a sectional view in an eighth form of construction.

In the form of construction shown in Fig. 1, the air coming from the blowing apparatus, not shown, is led through the pipe 1 to the regulating bellows 2 with a flat or conical valve 27 connected by stem 28 to the top wall 29 of the bellows. This regulator is provided with a weight 4 which serves to regulate its pressure. The air passing out of the regulator by the pipe 5, proceeds to the wind chest 6 or valve chambers of the organ.

The principle of the invention consists in utilizing a weight 4 selected in such a manner that the pressure of the regulating bellows is not adjusted in the proper degree for the pressure supplied by the blowing apparatus. A vibratory or oscillatory movement of the regulating bellows is thus produced, and this is employed for the production of tremolos or vibratos. For this purpose, a closed chamber 7 is used, and this is attached either at a point in the pipe 5 as shown in full lines in Fig. 1 or on the wind chest 6 of the organ as shown in dotted lines in Fig. 1; the pressure of a body of air accumulated in this chamber 7 in communication with the apparatus suffices to modify the oscillations of the air producing tremolo effects in the organ pipes.

Variation of the frequency of the tremolos may be obtained either by acting on the volume of the chamber 7, or on the regulator itself.

In the first case, if the volume of the chamber 7 be increased, the frequency of vibration is diminished; in practice, the tremolo may be entirely suppressed by supplying the chamber with a sufficient volume of air. In order to obtain the variation in the capacity of the chamber, any one of the devices shown in Figs. 3 to 7 may be employed.

In the device in Fig. 3, the chamber 7 is divided into two compartments by a partition 9 provided with an opening 10 which may be closed by means of a valve 11.

Fig. 4 shows a device in which the chamber 7 is provided with a piston 12 which may be moved in this chamber.

In the device shown in Fig. 5, the chamber 7 is internally provided with partitions 13 having openings 14 arranged in baffle fashion. Each of the openings may be closed by means of a register, such as 15, in order that the number of compartments 16 communicating with the pipe 8 may be increased at will.

The device shown in Figs. 6 and 7 comprises a chamber 7 the bottom of which may be moved to a greater or lesser distance from the opening of the pipe 8. In the case of Fig. 6, the bottom 17 is integral with the sides 18, which slide along the sides of the chamber 7; in the case of Fig. 7, the bottom 19 is connected to the sides of the chamber by a bellows device 20.

The device shown in Fig. 8 is similar to that shown in Fig. 5, and differs from it by the fact that the different chambers are formed by the portions of a worm pipe. Various registers 15, 15′, 15″, etc., allow these chambers 16 to be isolated or to communicate with each other.

In the case of the variation of the tremolos being effected by altering the conditions of the vibration of the regulating bellows, the capacity of the chamber 7 may remain constant, while the devices shown in Figs. 1 and 2 are employed on the regulator.

In the device of Fig. 1, the weight 4 may be displaced by some suitable means, in order to be capable of being moved toward or away from the axis of oscillation 22 of the bellows. Thus the action which it exerts on the regulator is modified. For instance, as shown in dotted lines, the weight 4 may be movable between guides 30, one on each side thereof, and the weight is connected with the manually operable lever 33 pivoted at 32 by means of a spring connection 31.

Fig. 2 shows a device in which the extent of the opening of the regulating bellows 26 may be modified by sliding a rod 23 toward the right, on which rod, a block 24 which is faced with felt and against which the upper surface of the bellows strikes, is fastened. This has the effect of limiting the oscillation of the bellows, the length of the oscillating stroke depending upon the position of the block 24. The position of the weight 4 or of the block 24 may be very rapidly changed by the musician himself when playing a piece.

It should be mentioned that the system of variation by the modification of the capacity of the chamber 7 and that by the modification of the vibrations of the regulating bellows may be simultaneously employed.

In all cases, the device employed for producing and varying the tremolos and vibratos is connected, by suitable mechanical means to a control, such as a stop, pedal or knee control placed within the reach of the player.

What I claim is:

1. In an organ or similar wind instrument, having a blowing apparatus, the combination of a regulating bellows connected to the blowing apparatus, means for controlling the sensitiveness of said bellows, a wind chest, a pipe connecting the regulating bellows with the wind chest and an air chamber communicating with said pipe.

2. In an organ or similar wind instrument, having a blowing apparatus, the combination of a regulating bellows connected to the blowing apparatus, means for regulating the sensitiveness of the movable member of said bellows, a wind chest, a pipe connecting the regulating bellows with the wind chest, an air chamber communicating with said pipe, and means for varying the volume of said air chamber.

3. In an organ or similar wind instrument, having a blowing apparatus, the combination of a regulating bellows connected to the blowing apparatus, a displaceable weight on the movable member of the bellows for regulating the inertia thereof, a wind chest, a pipe connecting the regulating bellows with the wind chest, an air chamber communicating with said pipe, and means for varying the volume of said air chamber.

4. In an organ or similar wind instrument, having a blowing apparatus, the combination of a regulating bellows connected to the blowing apparatus, a wind chest, a pipe connecting the regulating bellows with the wind chest, an air chamber communicating with said wind chest, and means for varying the volume of said air chamber.

5. In an organ or similar wind instrument, having a blowing apparatus, the combination of a regulating bellows connected to the blowing apparatus, a displaceable weight

on the movable member of the bellows for regulating the inertia thereof, a valve chamber, a pipe connecting the regulating bellows with the wind chest, an air chamber communicating with said wind pipe, and means for varying the volume of said air chamber to influence the sensitiveness thereof.

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

GEORGES CLOETENS.

Witnesses:
N. DEFÉORIMONT,
PAUL CART.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."