T. P. BROWN.

MUSICAL INSTRUMENT.

APPLICATION FILED MAY 15, 1911.

1,030,715. Patented June 25, 1912.

Fig. 1.

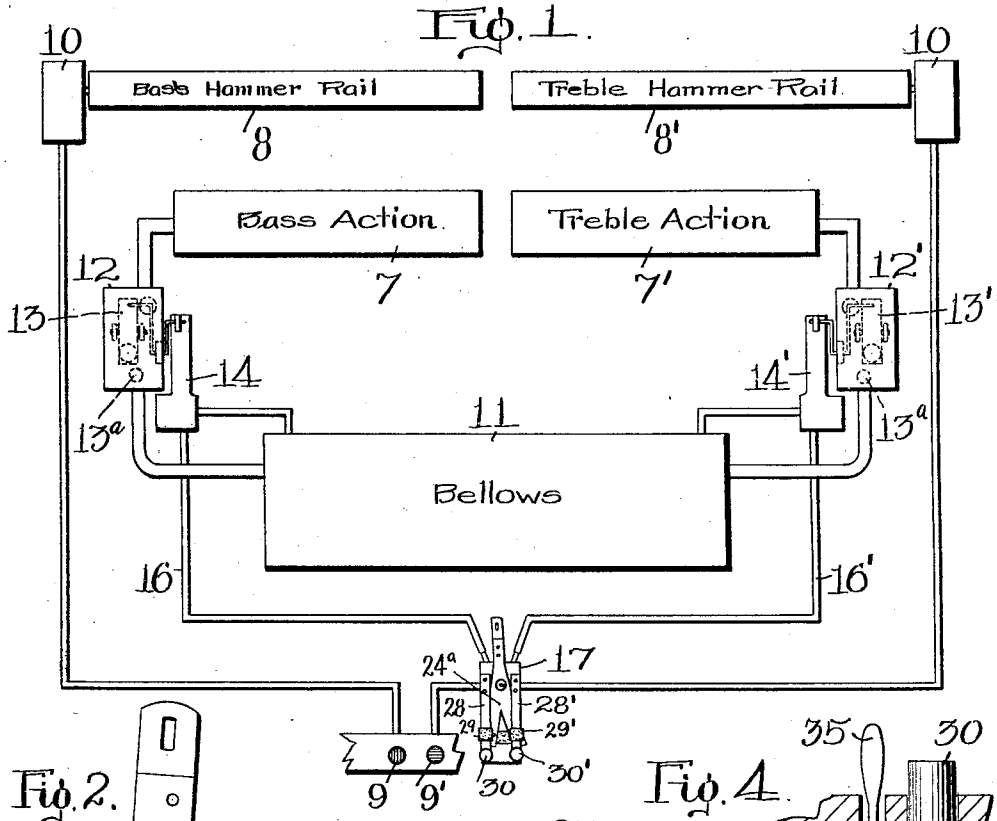


Fig. 2.

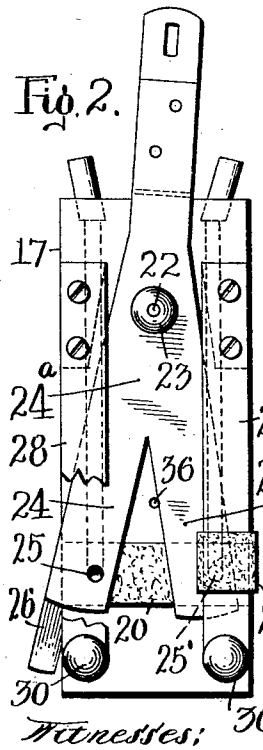


Fig. 3.

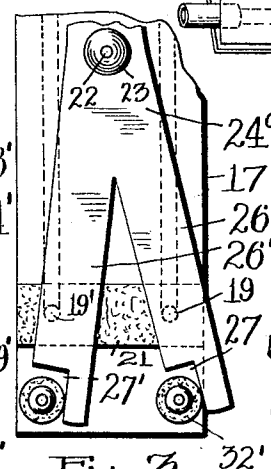


Fig. 4.

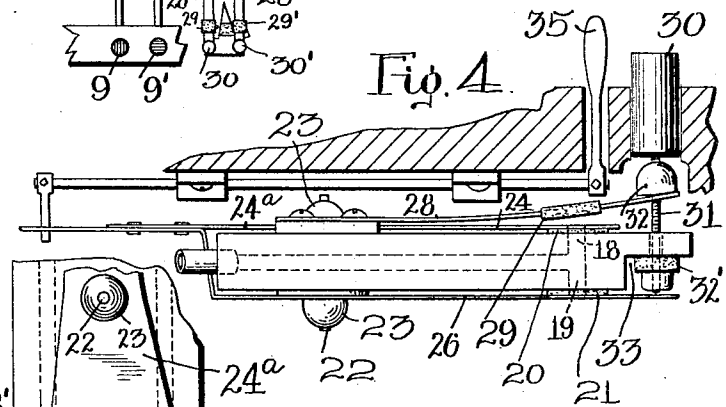
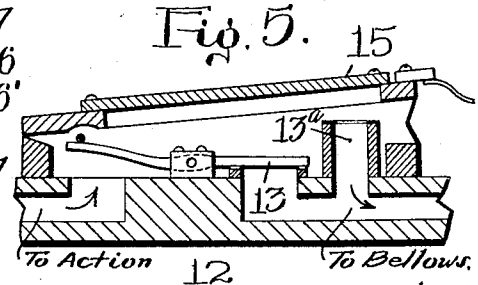


Fig. 5.



Witnesses:
C. F. Wesson
C. A. Hartnett

Inventor:
T. P. Brown
By Attorneys
Southgate & Southgate.

UNITED STATES PATENT OFFICE.

THEODORE P. BROWN, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO SIMPLEX PLAYER ACTION CO., OF WORCESTER, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

MUSICAL INSTRUMENT.

1,030,715. Specification of Letters Patent. Patented June 25, 1912.

Application filed May 15, 1911. Serial No. 627,231.

To all whom it may concern:

Be it known that I, THEODORE P. BROWN, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Musical Instrument, of which the following is a specification.

This invention relates to pneumatic musical instruments.

Although some features are of general use, the principal objects of the invention are to provide simple, convenient, and effective accenting or modulating means, whereby by the mere operation of a push-button the bellows or feeders may be connected directly and at full exhaust or pressure with the action, or a portion thereof, to accent a note or a plurality of notes, and if the bellows is directly connected already with the section or action the push-button can be operated to effect the reduction of the exhaustion or pressure, thus modulating a note or notes.

The invention also involves an improved form of controlling device for an air channel or conductor.

Reference is to be had to the accompanying drawings, in which—

Figure 1 is a plan, partially diagrammatic, of a piano action with a preferred form of this invention applied thereto; Fig. 2 is a plan of the controlling device on enlarged scale. Fig. 3 is a bottom plan thereof; Fig. 4 is a side view of the same; and Fig. 5 is a longitudinal sectional view of a choker shown in Fig. 1.

The invention is shown as applied to a well-known type of action, although the action is not illustrated in detail. For the purpose of illustration the action is shown as divided into two parts, the base 7 and treble 7′. It is to be understood, however, that the invention can be applied to the whole action or to any other division thereof than the one indicated. In the form shown, the hammer rail is similarly divided each half 8, 8′ being controlled pneumatically in a well known way through a button 9, 9′ and pneumatic 10. Each section of the action is connected with the bellows 11, or feeders or the like, through a choker 12 or 12′ so that the full degree of exhaustion or pressure of the bellows or feeder will not ordinarily be transmitted to the action. This choker comprises, as usual, a release valve 13 operated by a pneumatic 14. When the pneumatic is connected with the atmosphere its spring holds it open and the valve 13 is closed so as to permit only a small amount of air to pass through the open passage 13ª, which is choked by the automatic pneumatic 15 as usual. When the pneumatic 14 is connected with the exhaust it causes the valve 13 to open thus establishing an unrestricted flow of air, and the note or notes will be accented. On the other hand if it is desired to use this invention for modulating instead of accenting, the valve 13 can be arranged to be open normally and to be closed by the operation of the pneumatic when a note, or notes, is to be modulated.

The two pneumatics 14 and 14′ are connected with the external air through conductors 16 and 16′ which communicate with channels in a plate 17. Each of these channels is provided with two ports 18 and 19—19′ in the opposite, that is, the upper and lower faces of the plate 17. The ports open to the air through sheets of sheep-skin 20 and 21. It will be understood of course that when the instrument is not divided into sections one set of these connections will be sufficient.

Mounted on the plate 17 is a pivot pin 22 transverse to the surfaces through which these ports open, in the present instance being located vertically. Held by nuts 23 on the pivot pin is a movable member 24ª. This member consists of resilient sheet metal or other material and comprises two portions or arms. The upper arm is shown as provided with two parts 24 and 24′ having two perforations 25 and 25′ respectively, and the lower arm is shown as provided with two parts 26 and 26′, each having an extension at one side providing a notch 27 and 27′ respectively. This member is mounted to swing on its pivot with the two arms substantially in the planes of the opposite surfaces of the plate 17 and bearing on the pieces of sheep skin which are employed to

reduce the friction and form a good joint with the movable sheet metal regulating device.

Over each of the ports in the upper surface of the plate 17 is located a spring 28—28′. These springs are provided with pads 29—29′ for covering the ports over which the springs extend. At the ends of the springs are movable push buttons 30 and 30′ each mounted on a vertical pin 31 and held in adjustable connection with the spring by nuts 32 and 32′. They extend below the top of the plate 17 in a recess 33 therein in position to engage the ends of the arms 26—26′ when they are in one position and to pass into the notches 27—27′ when the arms are in another extreme position. The member 24ª can be operated in any desired way as by a lever 35. Its motion is limited in each direction by a stop 36.

The operation of this device is very simple. The action being divided as indicated above, the air normally flows to the bellows from each action through the choker 12—12′. When it is desired to accent a note the regulating device must be manipulated so as to admit air to the pneumatics 14 or 14′, collapse it, and open the desired valve 13 or 13′. This is done by turning the regulating member to such position that the members 24 and 24′ cover the upper ports. At this time, of course, the members 26—26′ will also cover the lower ports as they always do when the buttons are not depressed. Now when it is desired to accent the note, the button corresponding with the section in which the note occurs is depressed. This results in pushing the arm 26 or 26′ downwardly away from the port which it covers and opening that port. The port will remain open as long as the pressure on the push button is retained, and when it is released will immediately be closed by the reverse action of the spring. It is to be observed that at this time the notches 27 and 27′ in the arms 26 and 26′ are necessarily out of registration with the projecting portion of the two push buttons. Now if it is desired to operate in the other way, that is to modulate a note or notes, the connections will be as has been explained above, such that the air will pass normally by the open valve 13—13′ into the bellows and modulation will take effect when this valve is closed by cutting the pneumatics 14—14′ off from connection with the outer air. In this way the pneumatics 14 or 14′ are connected with the outer air normally to keep them collapsed and therefore the position of the regulating member is reversed from that just above described into such position that the openings 25—25′ will register with the ports in the top of the plate 17. Now at this time the springs normally hold the push buttons up so that there is no interference with the passage of air into these upper ports. The lower ports are closed by the arms 26—26′. Now when one of the push-buttons is depressed the pad on the spring thereof closes the upper port. At the same time the projection on the bottom of the push-button passes into the notch 27 or 27′ and has no effect on the lower port.

It is to be understood that while the invention has been shown and described as applying to two sections of the action it is equally applicable to the whole action, or to a single section, or even to a large number of sections, the number of individual sets of connections being altered accordingly.

I am also aware that the controller is capable of general use and that many other modifications can be made in the apparatus for carrying out this invention without departing from the scope of the same as expressed in the claims. Therefore I do not wish to be limited to all the details herein shown and described, but

What I do claim is:—

1. In a pneumatic musical instrument, the combination with the bellows or feeder and the action, of a choker for connecting the bellows or feeder with the action and reducing the degree of exhaust, means for directly connecting the bellows or feeder with the action at full exhaust, a pneumatic for operating said means, a push button, and adjustable means whereby when the push button is operated with said means in one adjusted position atmospheric air will be cut off from the pneumatic, and whereby when in another adjusted position the operation of the push button will admit air to the pneumatic.

2. In a pneumatic musical instrument, the combination with the bellows or feeder and the action, of a choker pneumatic having a port for connecting the bellows or feeder with the action at full exhaust and a port for connecting them at a reduced degree of exhaust, a release valve for the first named port, a second pneumatic for operating said valve, a controlling device movable to two positions, and means whereby when the controlling device is operated in one of its positions the second pneumatic is caused to operate the release valve to connect the bellows or feeder directly with the action at full exhaust through the first named port and when the controlling device is operated in the other of its positions the bellows or feeder is connected with the action at reduced and regulated exhaust through the second port.

3. In a musical instrument, the combination with a bellows or feeder and the action, of means for connecting the bellows or feeder with the action and reducing the de-

gree of exhaust transmitted to the action, means for directly connecting the bellows or feeder with the action at full exhaust, a pneumatic for operating the last named means, and means for controlling the operation of said pneumatic comprising a channel or conductor leading from the pneumatic and having two opposite inlet ports, a push button, a movable device for controlling said ports, and means whereby when said movable device is in one extreme position said ports will normally be closed and the depression of the push-button will open one of them, and whereby when the movable device is in the other extreme position one of said ports will normally be opened and the depression of the button will close it.

4. In a pneumatic musical instrument, the combination with the bellows and action, of means for connecting the bellows with the action and reducing the degree of exhaustion or pressure transmitted to the action, means whereby the bellows can be connected directly with the action without such reduction, and means for controlling the last named means comprising a plate having a duct therein opening to the atmosphere on opposite sides of the plate, a movable valve member having two parts, one movable over one of said openings in position to keep it closed, and the other movable over the other opening and being adapted to open it when in one extreme position and to close it when in another, and a resilient member having a push-button for operating it and provided with means for closing the opening opened by said movable valve when the resilient member is pushed toward the surface of the plate, and having means for engaging the other portion of said valve when in one extreme position, so that when the push button is pushed down it will move said valve bodily away from the other opening.

5. In a device of the character described, the combination with a regulating pneumatic, of a channel or conductor connected therewith for conducting atmospheric air thereto, a channel plate having two opposite ports both connected with said channel or conductor, a flat resilient regulating member mounted on the surface of said channel plate, adapted to swing on a pivot perpendicular to the surface of said channel plate, and adapted to cover one of said ports in one position and open it in another position, said member having an extension on the other side of the channel plate movable with it and adapted to cover the other of said ports in all of its positions on its pivot, a push-button, a spring on the channel plate for normally holding the push button in one extreme position over the flat member, and means connected with the spring for closing the port in that side of the channel plate when the push button is operated, said extension being arranged to be operated by the push button when in one extreme position and to be cleared by the push button when in the other extreme position.

6. In a device of the character described, the combination of a channel plate having a channel therein provided with two ports opening opposite each other in two opposite surfaces of the plate, a regulating member composed of flat resilient material and comprising two members one on each of the opposite surfaces of said channel plate in which said ports open, said member being mounted to swing on an axis perpendicular to the said surface, the member on one side of the plate having a perforation for opening one of said channels when in one extreme position, the member on the other side of the plate being in position to close the other channel in all positions, a push-button in position to engage the last named member and move it transversely away from the port which it covers when the push-button is operated, and a spring for moving said push-button to inoperative position having means for covering the other port when the push-button is operated.

7. In a device of the character described, the combination of a channel plate having two channels therein, each having two ports connected therewith opening in opposite faces of the channel plate, a member connected with the channel plate and oscillating on an axis perpendicular to said surfaces and comprising two arms, one lying along each of said surfaces, one of said arms being adapted to cover the two ports in one side of the plate, and the other arm being constructed and adapted to close the ports in one extreme position and open them in the other, a pair of push-buttons, means whereby when either of said push-buttons is operated it will either cover the port in the surface of said plate on which the first named arm is located or move the other arm away from the port in the other surface.

8. In a device of the character described, the combination of a channel plate having two channels therein, each having two ports connected therewith opening in opposite faces of the channel plate, a member connected with the channel plate and oscillating on an axis perpendicular to said surfaces and comprising two arms, one lying along each of said surfaces, one of said arms being adapted to cover the two ports in one side of the plate, and the other arm being constructed and adapted to close the ports in one extreme position and open them in the other, a pair of push-buttons, means whereby when either of said push-buttons is operated it will either cover the port in the surface of said plate on which the first

named arm is located or move the other arm away from the port in the other surface, said arms being so arranged that if both push buttons are operated at once they will have the same effect on their respective ports.

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

THEODORE P. BROWN.

Witnesses:
ALBERT E. FAY,
C. FORREST WESSON.