

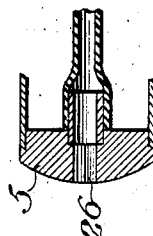
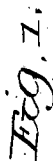
TEMPO CONTROLLER FOR PIANO PLAYERS.

APPLICATION FILED SEPT. 18, 1911.

1,056,234.

Patented Mar. 18, 1913.

2 SHEETS—SHEET 1.



Witnesses
Orr. Vermick

Inventor
by Eugene T. Turney
Benjamin and Rodhouse
Attos

E. T. TURNEY.
 TEMPO CONTROLLER FOR PIANO PLAYERS.
 APPLICATION FILED SEPT. 18, 1911

1,056,234.

Patented Mar. 18, 1913.

3 SHEETS-SHEET 2.

Fig. 3.

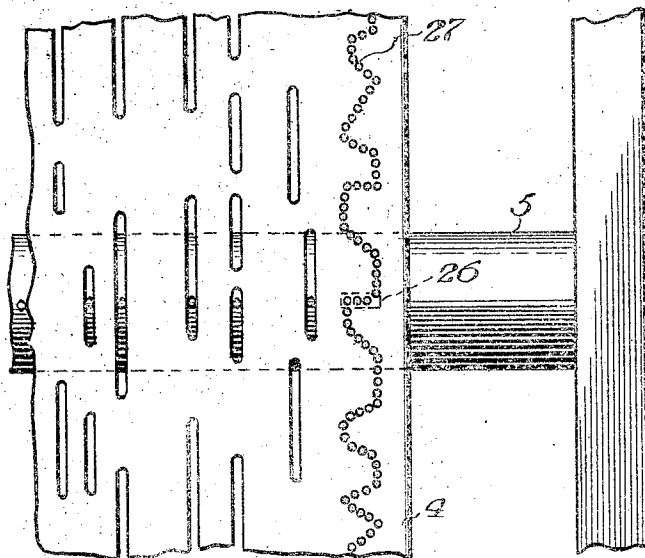


Fig. 4.

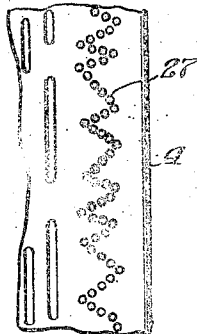


Fig. 5.

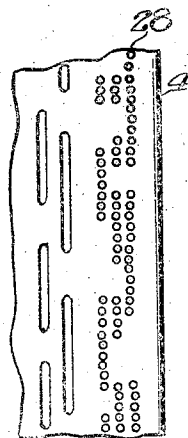
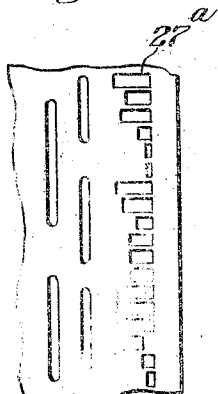


Fig. 6.



Witnesses
 O. M. Weirnich
 C. E. Rodden

Inventor
 Eugene T. Turney
 by Benjamin and Kershaw
 Attys

UNITED STATES PATENT OFFICE.

EUGENE T. TURNEY, OF NEW YORK, N. Y., ASSIGNOR TO AMERICAN PNEUMATIC ACTION COMPANY, OF DAVENPORT, IOWA, A CORPORATION OF WEST VIRGINIA.

TEMPO-CONTROLLER FOR PIANO-PLAYERS.

1,056,234.

Specification of Letters Patent.

Patented Mar. 18, 1913.

Application filed September 18, 1911. Serial No. 649,850.

To all whom it may concern:

Be it known that I, EUGENE T. TURNEY, a citizen of the United States, and a resident of New York, in the borough of Manhattan and State of New York, have invented a new and useful Tempo-Controller for Piano-Players, of which the following is a specification.

My invention relates to the provision of mechanism for mechanically varying and controlling the rate of succession of the notes or tempo, of the production, and consists of the provision of a pneumatic for controlling the amount of power actuating the motor, and the control of the pneumatic by admitting thereto varying quantities of air by an arrangement of perforations in the music roll.

I attain the above results by the mechanism illustrated in the accompanying drawing in which,—

Figure 1 is an elevation of my invention partially in section; Fig. 2 is a transverse section through the control aperture in the tracker board; Fig. 3 is a partial elevation of a tracker board and music sheet with one arrangement of control perforations therein; Fig. 4 is a fragmental view of a music roll with a slightly modified arrangement of control perforations therein; Fig. 5 is a fragmental view of a music roll with a further modified arrangement of control perforations, and Fig. 6 is a fragmental view with still another modification of control perforations.

The reference numerals 2, and 3, designate respectively the upper and lower spools for a music roll, 4, in the usual relation to which is located a tracker board, 5. The spools 2 and 3, are connected by any suitable wind and rewind mechanism, 6, to a motor, 7, which is connected by a tube, 8, with a compartment, 9, one of two contiguous compartments, 9 and 10, which are located in a casing, 11, and separated by a partition, 12.

A port, 13, in the partition, 12, connects the compartments, 9 and 10, and directly opposite this port, 13, in the compartment, 9, is a block, 14, having a channel, 15, therein which is positioned axially with relation to said port. Mounted to slide in said channel, 15, is a valve stem 16, which extends through and outside of the compartment, 10. Upon the valve stem, 16, is mounted a valve, 17, adapted to close the port, 13, and about the

valve stem 16, and between the valve, 17, and block, 14, is provided a spring, 18, which yieldingly maintains the valve, 17, off the port, 13. A tubing, 19, connects the compartment, 10, with any suitable pumping apparatus (not shown).

Mounted upon the casing, 11, adjacent the point at which the valve stem, 16, projects therefrom is a bellows or pneumatic, 20, the movable member of which carries an arm, 21, which engages the top of said valve stem, 16.

A small channel, 22, connects the compartment, 10, with the interior of the pneumatic, 20, and this channel is closed by a parchment or other suitable medium, 23, in which there is a reduced opening or bleed hole, 24. A suitable tube, 25, also connects the interior of the bellows, 20, with an aperture, 26, in the tracker board.

The above described mechanism operates as follows: Air is drawn from the motor through the tube 8 into the compartment, 9, thence through the port, 13, to the compartment, 10, and through the tube 19 to the pump. This will cause the movement of the motor, but the partial vacuum or rarefaction of the air in the compartment, 10, will exhaust air through the bleed hole, 24, from the bellows, 20, which being collapsed by the atmospheric pressure, will, through the arm, 21, depress the valve stem, 16, against the action of the spring, 18, and force the valve 17 to close the port 13. This would close off the passage to the motor if air was not admitted from the tracker board through the tube 25 to the interior of the bellows so as to permit the spring, 18, to force the valve 17 out of the port, 13.

The means I provide for graduating, or increasing and diminishing, the air admitted to the interior of the bellows, 20, from the tracker board and thereby controlling the speed of the motor and tempo of the piece is as follows:—The hole, 26, in the tracker board is extended longitudinally of the tracker board or transversely with respect to the music roll (as clearly shown in Fig. 3,) so that a number of perforations, or perforations of different size, may be coincident with it at the same time.

In Fig. 3, I have shown a meandering line of perforations, 27, provided in the music roll, 4, and it will be seen that when this line of perforations, 27, approaches the aperture, 26, at right angles a less number of

perforations in the line will register with the aperture than when the line is more or less oblique with the aperture, and that the number of perforations registering with the aperture will increase with the obliquity of the line.

In Fig. 4, the line of perforations are zig zag backward and forward across the opening more sharply than shown in Fig. 3, but in this case also the obliquity of the line of perforations to the aperture would also determine the amount of air admitted to the bellows, 20, although the perforations employed in the arrangement shown in Fig. 4 should be smaller and more numerous than with the arrangement shown in Fig. 3.

In Fig. 5 a plurality of parallel rows, 28, of perforations are employed. One or more of the rows being discontinued to reduce the amount of air admitted to the bellows, 20.

In Fig. 6 is shown an arrangement with different size perforations, 27^a, the larger the perforations, the more air would be admitted to the bellows.

In my application No. 649,851 of September 18, 1911 I have shown and claimed the undulating perforations above described.

The pneumatic 20 will stand more or less open as the opening through the controlling aperture 26 is made greater or less by the perforations 27 of the music sheet. The aperture 26 in fact constitutes an admission port to the pneumatic 20 which port is varied in area automatically as the sheet advances and the different portions of the perforated line pass over the aperture. The suction pipe 19 in which there is always a partial vacuum acts continuously to draw air through the bleed hole 24 which constitutes the exhaust port of the pneumatic. The result is an undulating pressure or suction in the pneumatic varying in degree in accordance with the opening of the admission port 26. Thus we have in the single pneumatic 20 a graduated action; as distinguished from previous controlling devices in which the pneumatics have been employed which were shifted alternately to full pressure (or suction) or no pressure.

Having thus described my invention what I claim as new, is:—

1. In a player for pianos, in combination, a music sheet, a motor for moving said sheet, a single pneumatic device movable to a variable extent for controlling the speed of said motor and means controlled by said sheet for varying the quantity of air admitted to said pneumatic controlling device and the extent of movement thereof.

2. In a player for pianos, in combination, a tracker-board, a music sheet, a motor for moving said sheet, a single pneumatic device movable to a variable extent for con-

trolling said motor, said pneumatic device communicating with said tracker-board, and said tracker-board being apertured to provide communication of said pneumatic device with the atmosphere, said sheet being apertured to admit air through said tracker-board to said pneumatic device in varying quantities to cause a movement thereof to a variable extent as the sheet is moved.

3. In a player for pianos, in combination, a music sheet, a suction motor for moving said sheet, a pump tube through which the suction is transmitted to said motor, a single pneumatic controlling the extent of communication between said pump tube and motor, said pneumatic having a bleed hole connection with said pump tube, and means controlled by said sheet, for admitting air in varying quantity to said pneumatic so as to cause a varying movement thereof, whereby to vary the speed of the motor.

4. In a player for pianos, in combination, a tracker-board, a music sheet movable over said tracker-board, a motor for moving said sheet, a pneumatic device controlling said motor, said tracker-board having a single aperture communicating with said pneumatic device and said sheet having perforations adapted to pass over said aperture and to vary the quantity of air admitted there-through.

5. In a player for pianos, in combination, a tracker-board having a single aperture therein, a music sheet adapted to pass over said tracker-board, and having perforations adapted to pass over said aperture and arranged to vary the quantity of air admitted thereto through the sheet, and means controlled by such quantity of air for moving the sheet.

6. In a player for pianos in combination a motor and means for controlling the speed thereof including a pneumatic having air admission and exhaust ports, means for varying the relative areas of said ports and continuously acting means for causing a flow of air through one of said ports.

7. In a player for pianos in combination a motor and means for controlling the speed thereof including a pneumatic having air admission and exhaust ports, said exhaust port being of fixed area, means for automatically varying the area of said admission port and a continuously acting suction device for sucking air through said exhaust port.

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

EUGENE T. TURNEY.

Witnesses:

EDNA M. HALL,
FRANCIS CH. JEGGER, Jr.