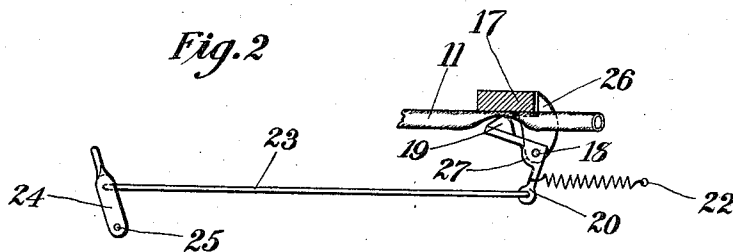
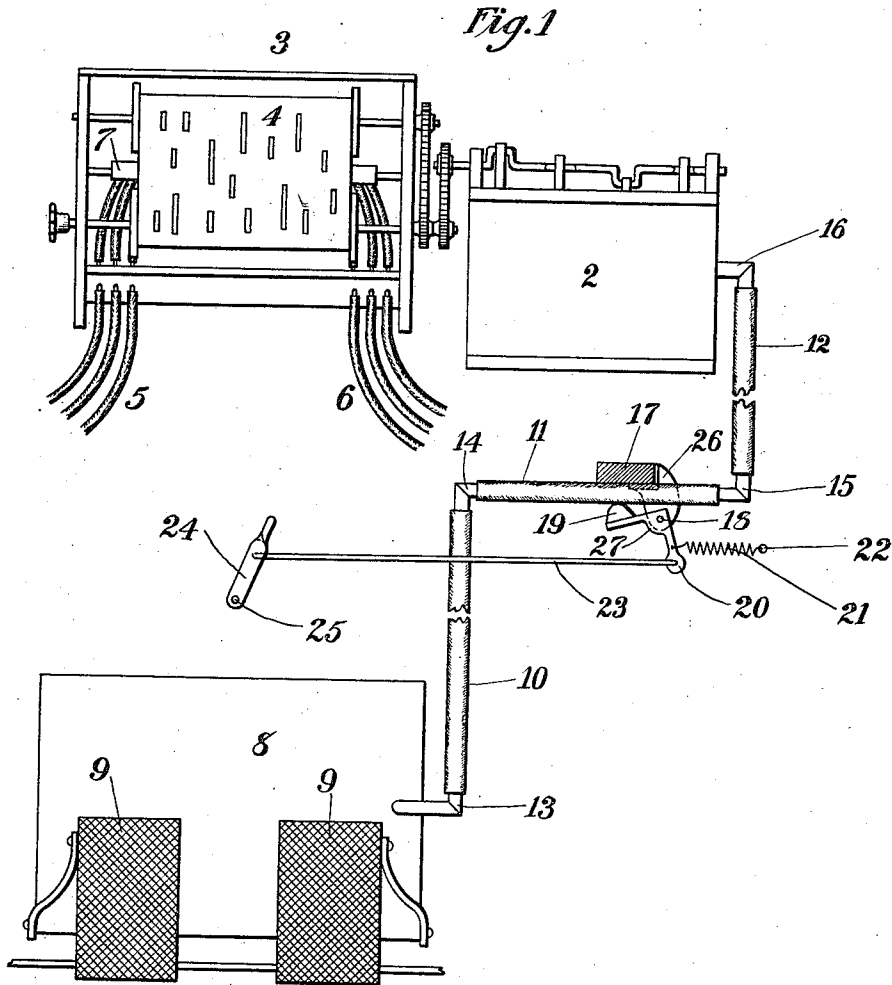


J. O'CONNOR.
 TEMPO REGULATOR FOR PNEUMATIC PIANO PLAYERS.
 APPLICATION FILED NOV. 9, 1910.

1,060,783.

Patented May 6, 1913.



Witnesses:

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UNITED STATES PATENT OFFICE.

JAMES O'CONNOR, OF NEW YORK, N. Y.

TEMPO-REGULATOR FOR PNEUMATIC PIANO-PLAYERS.

1,060,783.

Specification of Letters Patent.

Patented May 6, 1913.

Application filed November 9, 1910. Serial No. 591,421.

To all whom it may concern:

Be it known that I, JAMES O'CONNOR, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Tempo-Regulators for Pneumatic Piano-Players, of which the following is a specification.

This invention relates to pneumatic self playing musical instruments and particularly to tempo regulators therefor.

The object of my improvements is to provide means, simple in construction and operation for governing and regulating the tempo in playing the class of instruments specified.

To these ends my improvements comprise mechanisms and combinations illustrated in their preferred form in the drawings accompanying this specification wherein—

Figure 1 is a diagrammatic front elevation of a portion of the mechanism of a pneumatic self playing piano embodying my improvements. Fig. 2 is a detail of a portion of what is shown in Fig. 1 but showing the parts in different positions.

Tempo regulators for automatic pianos and the like are well known but all of which I have knowledge are in the nature of sliding valves or of such other character as permit only of coarse gradations of movement and therefore cause abrupt and more or less jerky shifts from one tempo to another. By my improved mechanism the tempo may be changed with perfect smoothness from the maximum speed of which the instrument is capable to an actual pause or vice versa and as rapidly as desired without any jerkiness in effect and without skill and with slight effort by the operator.

Referring now more particularly to the drawings the usual suction motor 2 is operatively connected to the driving mechanism 3 for note sheet 4.

At 5 and 6 are indicated in a general way a portion of the flexible connections from tracker bar 7 to the playing pneumatics, not shown.

At 8 is diagrammatically indicated the usual exhaust bellows operated by pedals 9, and the usual flexible tubing 10, 11, 12 and

rigid elbows 13, 14, 15, 16 are shown connecting bellows 8 and motor 2.

As the present invention has no relation to the actuation or operation of the playing pneumatics all means to those ends are omitted from the drawings.

Governing means for the pneumatic connection between bellows 8 and motor 2 comprises compression mechanism for a portion of the flexible tubing as 11. Abutment 17 may be rigidly secured in the frame of the instrument, not shown, and adjacent to said flexible tube 11. Conveniently pivoted at 18 to bracket 26 of abutment 17 is bell crank 27 having a compression member 19 on one arm thereof and having the other arm 20 thereof connected by link 23 to lever 24 pivoted at 25 to the frame of the instrument, not shown, and convenient to the hand of the operator. A spring 21 connecting arm 20 of bell crank 27 with fixed post 22 serves to urge said bell crank to its idle position.

When the parts of the mechanism are as shown in Fig. 1 the maximum passage through flexible tube 11 is provided but by moving lever 24 to the left (Fig. 2) bell crank 27 is operated to force member 19 toward abutment 17 and thereby compress tube 11 therebetween thus throttling the passage therethrough. Said flexible tube 11 is preferably made of rubber and the resilience thereof under compression by member 19 conduces to a smooth and even change in the size of said passage and thus to a smooth and even change in the amount of air permitted to flow through said passage. I thus am able to vary in infinitesimal increments the flow of air through said passage and therefore the speed of motor 2 and that of note sheet 4 driven thereby. Furthermore the nature of my improvements is such that said infinitesimal gradations of change in speed are not dependent upon similar minute gradations in the movement of manually operated lever 24 as, even though that lever be moved more or less abruptly and unevenly, the resultant compression of tube 11 is smooth and even and the passage therein is throttled in infinitesimal increments, thereby modifying the tempo of the played instrument without breaks, unevenness or

sudden jumping from one speed to another. Whereas in all valves having rigid members sliding or rotating in relation to one another it is impossible to so manipulate the operating means therefor as to produce gradations of throttling in any way comparable in minuteness with the infinitesimal gradations easily obtainable by my improved mechanism.

10 I am conversant with British Patent 2,470 of 1860 to Stidolph in which a wind organ pallet includes a rubber tube normally collapsed and held closed by a lever under spring pressure, and which lever is drawn
15 back by suitable connection with the organ key to allow the air to be forced through said tube to the organ pipe. I do not

broadly claim as new a valve of this character.

What I do claim as my invention is:

20 The combination with a pneumatically operated motor for self playing pianos of a flexible tube and manually actuated means for compressing said tube for varying in infinitesimal increments the pressure supplied to said motor. 25

Signed at New York, N. Y., U. S. A., this 7th day of November 1910 before two subscribing witnesses.

JAMES O'CONNOR.

Witnesses:

C. G. MURISON,

H. C. LUCKEY.

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