

No. 751,755.

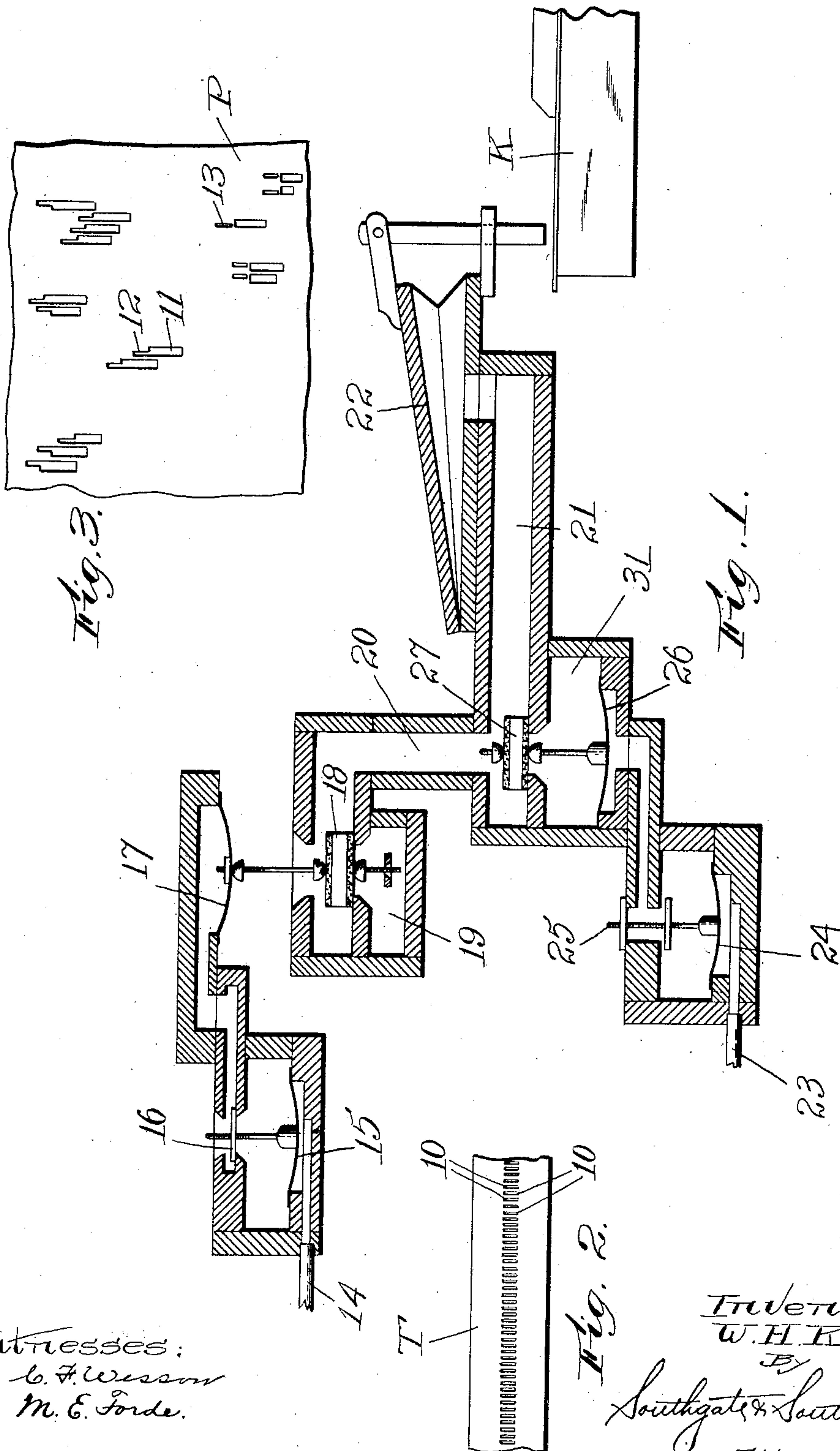
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W. H. REES.

AUTOMATIC PLAYING ATTACHMENT FOR MUSICAL INSTRUMENTS.

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NO MODEL.



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# UNITED STATES PATENT OFFICE.

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## AUTOMATIC PLAYING ATTACHMENT FOR MUSICAL INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 751,755, dated February 9, 1904.

Application filed September 18, 1902. Serial No. 123,821. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. REES, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Automatic Playing Attachment for Musical Instruments, of which the following is a specification.

This invention relates to that class of playing attachments for musical instruments in which keys are operated by pneumatics.

The especial object of this invention is to provide a simple and efficient construction by means of which individual notes of a musical composition may be differently accented.

To this end this invention consists of the playing attachment for musical instruments and of the combinations of parts therein, as hereinafter described, and more particularly pointed out in the claims at the end of this specification.

In the accompanying drawings, Figure 1 is a sectional view of sufficient parts of a playing attachment for musical instruments to illustrate the application of my invention thereto. Fig. 2 is a fragmentary plan view of the tracker-board; and Fig. 3 is a fragmentary plan view of part of a strip of perforated paper, showing two styles of perforations which may be employed for controlling an apparatus constructed according to this invention.

Automatic playing attachments which are now employed for operating the keys of pianos, organs, and similar musical instruments are usually constructed so that all the notes are struck with uniform force—that is to say, while different parts of a musical composition may be somewhat-differently accented by varying the bellows-pressure all notes in a chord or all notes which are struck simultaneously are necessarily struck and held down with the same force.

To produce the most pleasing effects, in nearly all musical compositions it is necessary that certain notes should be given greater prominence than others—that is to say, it is necessary, to produce the best results, that certain individual notes should be accented, while other notes should be struck more softly. In an apparatus constructed according to my

invention this result is accomplished by providing each of the main pneumatics with two distinct sets of air passages or connections and by controlling said passages so that the pneumatic will be operated to strike a note softly or to strike the same with heavier pressure. To control the two sets of air-passages for each of the main pneumatics, I preferably provide a specially-perforated music-sheet. The tracker-board is preferably provided with double the number of perforations ordinarily used—that is to say, the tracker-board contains two channels or passages for each note to be controlled on the keyboard, and the note which is to be struck will be sounded softly or loudly, as desired, according to whether one or the other channels corresponding therewith in the tracker-board is first opened.

If desired, the perforations in the music-paper may be made simply wide enough to cooperate with one of the channels of the tracker-board, although in practice I prefer to have the body portion of each perforation wide enough to open both channels in the tracker-board, so that after a key has been once operated, whether under high tension or low tension, to sound the note either loudly or softly it will be held down with a maximum pressure, thus preventing any possibility of the note not being sounded at all on account of imperfect alinement of the paper with the tracker-board.

Referring to the accompanying drawings for a detail description of sufficient parts of an instrument to understand the application of my invention thereto, as shown in Fig. 2, the tracker-board T is provided with channels or air-passages 10, which are narrower than in most track-board constructions; two perforations 10 being used for each key of a keyboard which is to be controlled.

The styles of perforations which may be employed are most clearly illustrated in Fig. 3. As shown in this figure, the strip of paper P may be provided with main perforations of sufficient width to open both channels in the tracker-board which correspond with any one note, and in advance of the body portion of each perforation 11 is a leading notch or supplemental perforation 12, which is located



either to the right or to the left, according to whether the note is to be struck heavily or softly, as the case may be.

In some instances the leading perforations 12 may be cut directly with the main perforation 11, as shown in the upper part of the strip of paper, or, if desired, entirely distinct perforations 13, located either to the right or to the left of the main perforations 11, may be used, as shown in the lower part of the sheet of paper. One of the channels 10—for example, the channel which is designed to sound the note softly—is connected by a pipe 14, so that when pressure is admitted therein a primary pneumatic 15 will be operated, raising a valve 16, so that a valve-operating pneumatic 17 will serve to raise a controlling-valve 18. The lifting of the controlling-valve 18 will cut off the atmospheric pressure from a passage 20 and will connect said passage with the chamber 19, having low tension or partial vacuum. The passage 20 opens into a passage 21, connected to a main pneumatic 22. As herein illustrated, the main pneumatic 22 is provided with a striker for depressing one of the keys K of a keyboard. It is to be understood, however, that the relation of the main pneumatic to the keyboard, which is herein shown, is only one of a number of arrangements which may be employed.

When the body portion 11 of one of the perforations passes over the tracker-board, it will also open the other tracker-board passage 10 corresponding with the note to be struck and pressure will be admitted through pipe 23 to the primary pneumatic 24 to lift a valve-stem 25, bringing into operation a valve-operating pneumatic 26, which will lift the valve 27, cutting off the low-pressure passage 20 from the passage 21 and connecting the passage 21 with the high-tension chamber 31, so that the pneumatic will be held down with maximum tension; but as the note has already been sounded softly by low tension this increase of tension in the main pneumatic will simply insure the key being held down for the desired length of time and will not increase the loudness of the tone produced thereby. On the other hand, when the accented passage in the tracker-board is the first one to be opened high tension will be admitted to the main

pneumatic in the first instance, so that a loud or accented effect will be produced.

Any desired means may be employed for maintaining the different tensions in the high-tension chamber 31 and low-tension chamber 19. In practice a single set of bellows may be employed for this purpose and the difference in tension regulated by any of the ordinary pressure-regulating valves or connections in the ordinary manner, which need not be herein shown or described at length, the especial aim of this invention being to provide connections for operating a main pneumatic with two different tensions, so as to produce an accented or soft effect, as desired.

I am aware that numerous changes may be made in practicing my invention by those who are skilled in the art without departing from the scope of my invention as expressed in the claims. I do not wish, therefore, to be limited to the construction I have herein shown and described; but

What I do claim, and desire to secure by Letters Patent of the United States, is—

1. In a construction of the class described, the combination of a main pneumatic, connections for operating the same under high tension, and for operating the same under low tension respectively, and means for controlling said connections so that the pneumatic will be operated from high tension alone when a note is to be accented, and so that the pneumatic will be acted upon by the low tension and high tension in succession when a note is to be played softer.

2. In an automatic playing attachment for musical instruments, the combination of a main pneumatic and a tracker-board having two channels for controlling said pneumatic connections whereby one of said channels effects the operation of the main pneumatic under low tension and connections whereby the other channel effects the operation of the main pneumatic under high tension.

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

WILLIAM H. REES.

Witnesses:

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A. H. SMYTHE.