

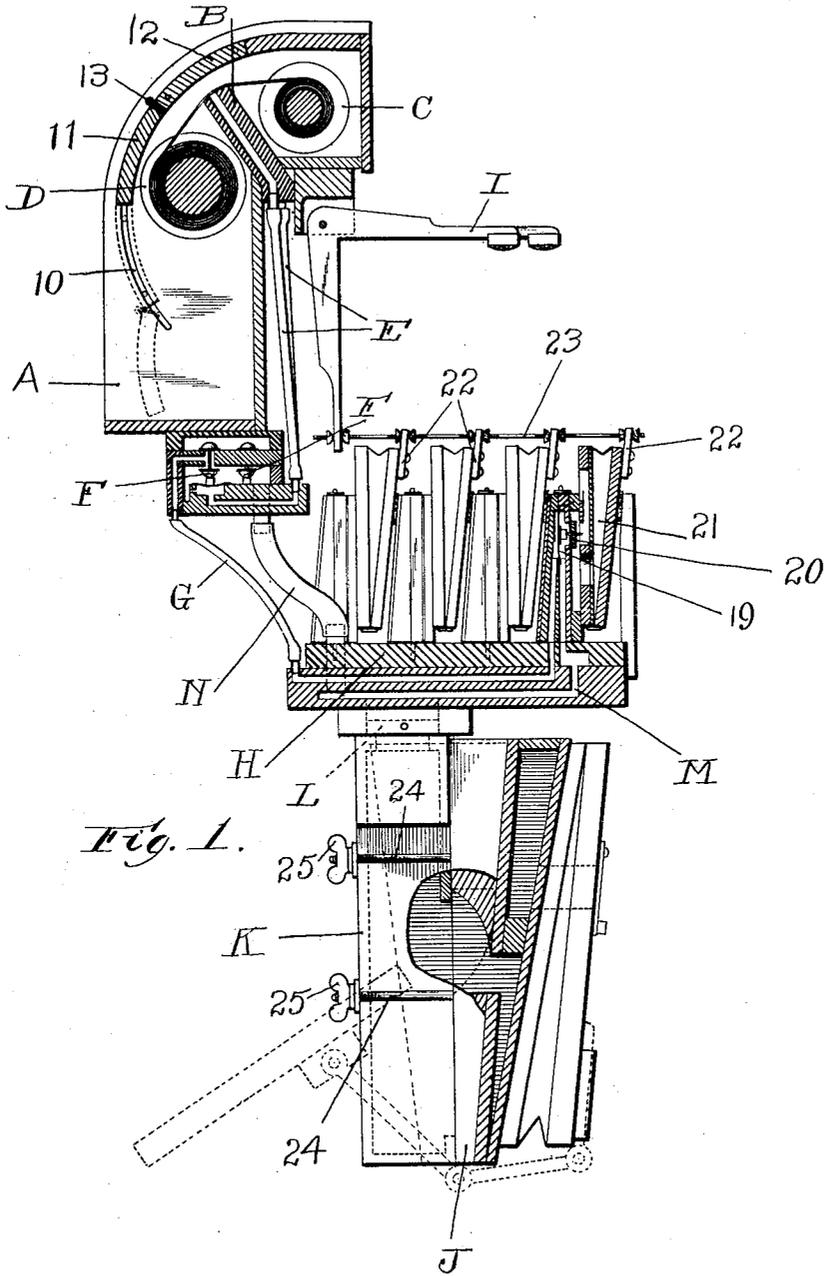
P. WELIN.

AUTOMATIC PLAYING ATTACHMENT FOR MUSICAL INSTRUMENTS.

APPLICATION FILED MAY 3, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



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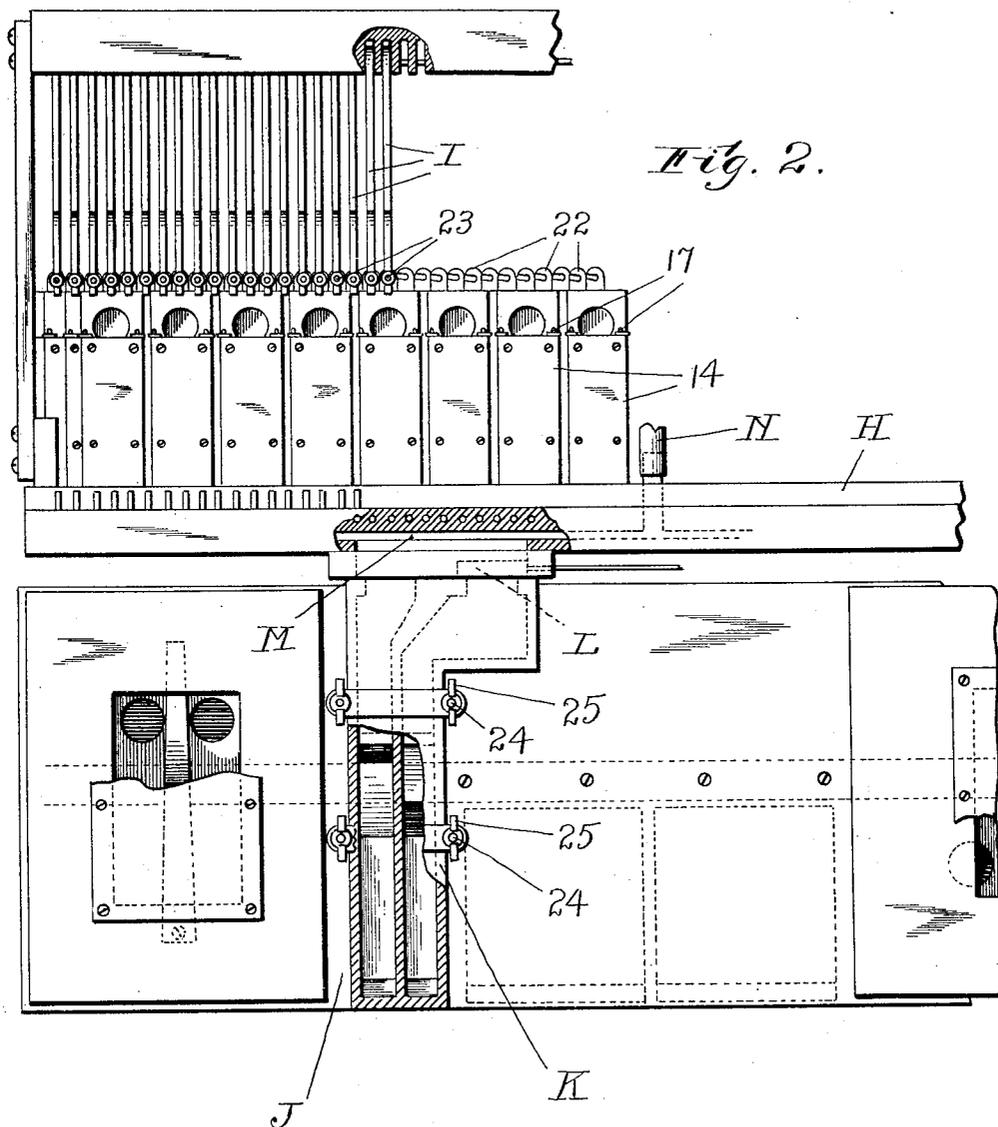
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3 SHEETS—SHEET 2.



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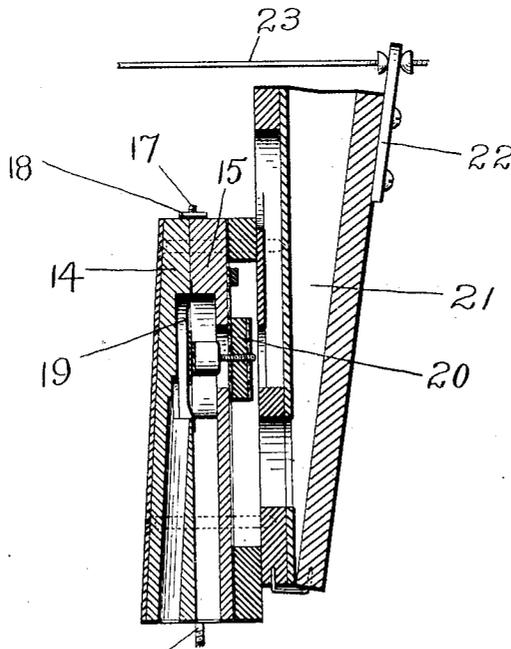
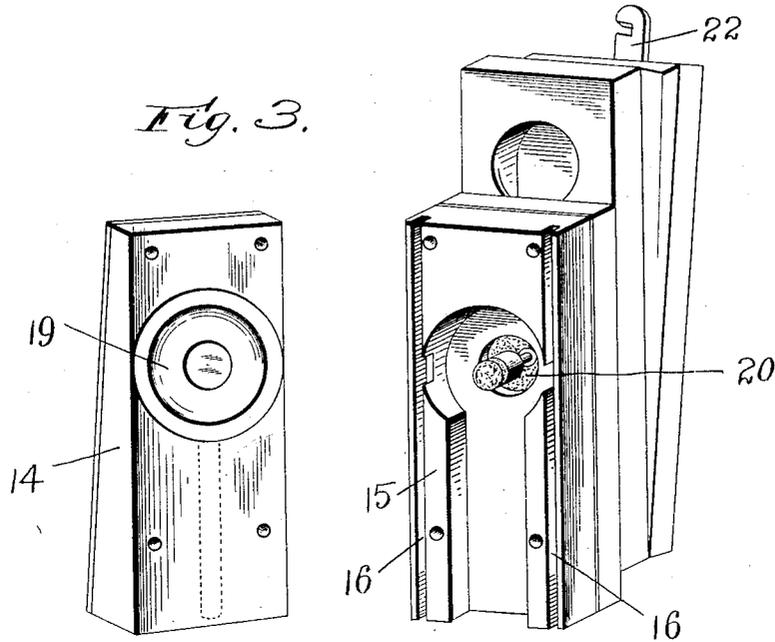
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3 SHEETS—SHEET 3.



Witnesses;
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UNITED STATES PATENT OFFICE.

PETER WELIN, OF WORCESTER, MASSACHUSETTS, ASSIGNOR OF ONE-HALF
TO THEODORE P. BROWN, OF WORCESTER, MASSACHUSETTS.

AUTOMATIC PLAYING ATTACHMENT FOR MUSICAL INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 748,126, dated December 29, 1903.

Application filed May 3, 1902. Serial No. 105,766. (No model.)

To all whom it may concern:

Be it known that I, PETER WELIN, 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 automatic playing attachments which are controlled by perforated paper and are employed for playing pianos, organs, or similar keyed instruments.

The especial object of my present invention is to provide a pneumatically-controlled automatic playing attachment for musical instruments, in which each main pneumatic is fastened in place by independent detachable fastenings, so that any one of the main pneumatics may be removed to be repaired or to allow the pneumatic to be replaced by a new one without otherwise dismantling or taking the instrument to pieces.

Further objects of this invention are to provide a compact and efficient construction for mounting the fall-board, which permits access to the winding-rolls, and to provide an adjustable connection between the bellows and the action of the instrument, so that the bellows can be secured in fixed place in the frame of the apparatus and the action set to different heights to cooperate with different heights of keyboards.

To these ends this invention consists of the automatic 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 three sheets of drawings, Figure 1 is a transverse sectional view of sufficient parts of an automatic playing attachment for musical instruments to illustrate the application of my invention thereto. Fig. 2 is a partial front view of the same, the paper-winding mechanism and primary pneumatics being removed. Fig. 3 is an enlarged perspective view of one of the removable main pneumatics and parts connected therewith for operating one of the key-levers,

and Fig. 4 is a transverse sectional view of the same.

In that class of automatic playing attachments to which this invention relates the key-levers are controlled by connections from main pneumatics, each main pneumatic being connected to control one key-lever. In the construction of this class of instruments, so far as I am familiar with the same, the main pneumatics heretofore have all been permanently secured to their supports, so that in order to repair any one of the pneumatics it has been necessary to remove the entire bank of main pneumatics from the casing of the machine, and even when the entire bank of main pneumatics has been removed from the casing of the machine for the purpose of repair it is a matter of considerable difficulty, and in some cases substantially impossible, to remove any of the main pneumatics from their supports without disfiguring and substantially destroying the construction.

The especial object of my present invention is to improve this class of instruments by providing a construction in which each of the main pneumatics is detachably secured in place, so that it can be removed for repairs and again replaced without disturbing any of the other operating connections, or certain ones of the more frequently used main pneumatics may be replaced as frequently as the same wear out. To accomplish this object, an automatic playing attachment for musical instruments constructed according to my invention comprises the combination of a bank of independent pneumatics, each one of which is secured in place by detachable fasteners, so that it can be taken out without disturbing the rest of the pneumatics.

In practice I preferably clamp each of the main pneumatics in place upon a base-board by means of two clamping-rods, and the movable part of each of the main pneumatics is preferably provided with a hook for connecting the same with the operating-rod which leads to the key-lever.

In order to allow access to the winding-rolls, the front of the casing of instruments constructed according to this invention have heretofore been provided with different forms

of openings or doors. For this purpose I preferably provide an automatic playing attachment constructed according to my invention with a "fall-board" made in sections, 5 which are hinged together. At its ends the fall-board is supported in curved ways, so that when the fall-board is moved down to open the instrument the sections of the fall-board may swing with respect to each other 10 to occupy as little room as possible.

The bellows of an automatic playing attachment constructed according to my invention preferably occupy a fixed position, and in order to permit the action to be raised and 15 lowered to adapt the same to different heights of keyboards I preferably provide an adjustable connection between the bellows-casing and the pipes or passages which connect thereto.

Referring to the accompanying drawings for a detail description of an automatic playing attachment constructed according to my invention, A designates the casing or frame which contains 20 the paper-winding devices. Extending into the casing A is a tracker-board B, and cooperating with the tracker-board B are the paper-winding rolls C and D, which cooperate to draw a strip of perforated paper over the 25 tracker-board in the ordinary manner. The front of the casing A, as herein illustrated, is closed by a fall-board formed by two sections 11 and 12, connected together by hinges 13. The fall-board is guided at its ends in 30 curved ways 10, which may be formed in the casing A or in the guide-plates secured thereto. By means of this construction when the fall-board is lowered to open the front of the casing A the sections 11 and 12 may swing 35 with respect to each other as indicated by dotted lines, so that an exceedingly compact arrangement is provided. Extending down from the tracker-board B are the pipes E, which connect to primary pneumatics operating the valves F. Controlled by the valves 40 F are pipes G, which connect to passages leading to the valve-boxes of the main pneumatics.

The construction of a main pneumatic and the means for detachably securing the same 45 in place are most clearly illustrated in the third sheet of drawings. As shown in Fig. 3, the support for each pneumatic is formed by pieces 14 and 15. Cut into the face of the piece 15 are grooves or saw-cuts 16. When 50 the pieces 14 and 15 are glued together, the saw-cuts 16 form the holes for receiving the fastening-rods 17, which fastening-rods 17 may be threaded or otherwise secured in the base-board H, as shown in Fig. 1. Threaded 55 onto each of the fastening-rods 17 is a securing-nut 18. In each of the supports formed by the pieces 14 and 15 is a valve-operating pneumatic 19, operating a swinging valve 20 to connect the main pneumatic 21 with the 60 bellows or with the external air. The movable section of each of the main pneumatics 21 is provided with a hook-piece 22 for de-

tachably receiving the operating-rod 23. The operating-rods 23 are connected at their opposite ends to the bell-crank key-levers I. 70

As shown in Fig. 1, J designates the bellows box or casing, and adjustably clamped onto the bellows-box J is a piece K, containing passages leading to an exhaust-chamber M. The main exhaust-chamber M is connected 75 by a pipe N to an exhaust-chamber located above the primary pneumatics.

As shown most clearly in Fig. 2, a double bellows-box is employed, and the piece K is provided with two passages controlled by a 80 slide-valve L. By means of this construction one of the bellows and one half of the bellows-box may be used for maintaining a different pressure from the other bellows and the other half of the bellows-box, and the 85 valve L may be used to modulate or change the pressure, as desired. It is to be understood, however, that this construction for varying the pressure under which the instrument may be operated forms no part of my 90 invention, and is not herein claimed.

The clamping mechanism for securing an adjustable connection between the bellows-box J and the exhaust-passages K may comprise the clamping-rods 24, which are arranged 95 in pairs connected by a clamping-strip, which may be fastened by wing-nuts 25, threaded onto the clamping-rods 24. By means of this construction the bellows-box may be located in a fixed position, and the adjustable connection between the bellows-box and the pas- 100 sages leading therefrom will permit the action to be raised to different elevations to cooperate with different keyboards.

The operation of an automatic playing attachment constructed according to my invention is substantially the same as that of other instruments of a similar class—that is to say, as the paper is drawn over the tracker-board perforations in the paper will admit 110 atmospheric air to the primary pneumatics, thereby operating the primary valves and admitting external air to operate the valve-operating pneumatics, so as to connect the desired main pneumatics to the elbows, which 115 main pneumatics will operate the desired key-levers.

In the actual use of automatic playing attachments of this class it has been found in practice that certain ones of the main pneu- 120 matics are used much more frequently than some of the other main pneumatics, and on this account it has been found that the frequently-used main pneumatics in some cases wear out before the rest of the instrument is 125 worn to any noticeable degree.

By the use of my construction I have provided a form of self-playing attachment which may be readily repaired, and worn pneumatics may be taken out and replaced or repaired 130 without affecting the other parts of the action, and this I regard as an especially important feature of my construction, as I am thus enabled to prolong the life of a self-play-

ing attachment of this kind and am much more readily enabled to keep the same in good condition than has been possible with other devices heretofore employed.

5 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 thereof 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—

15 1. The combination in an automatic musical instrument of a main pneumatic and a controlling-pneumatic therefor, said parts being combined in an element detachably secured in place so that the same may be removed without otherwise dismantling the construction.

20 2. The combination in an automatic musical instrument of a main pneumatic, a valve-box and a controlling-pneumatic for the main pneumatic, said parts being combined in an element detachably secured in place so that the same may be removed without otherwise dismantling the construction.

25 3. In an automatic playing attachment for musical instruments, the combination of a base-board or support, valve-boxes, each formed from two blocks, one of said blocks being provided with channels or saw-cuts, clamping-rods fitting into said saw-cuts to detachably secure each of the valve-boxes in place, and a main pneumatic carried by each of the valve-boxes.

30 4. In an automatic playing attachment for musical instruments, the combination of a horizontal base-plate or support, vertical valve-boxes, each formed by two blocks, one of said blocks being provided with grooves or saw-cuts, clamping-rods fitting into the grooves or saw-cuts, nuts threaded onto the rods for detachably clamping each of the valve-boxes onto the base-plate or support, and a vertically-arranged main pneumatic carried by each of the valve-boxes.

35 5. In an automatic playing attachment for musical instruments, the combination of a key-lever, an operating-rod therefor, a main pneumatic, and a connecting-hook secured on the movable part of the main pneumatic so that the same may be moved laterally out of engagement with the operating-rod.

40 6. In an automatic playing attachment for musical instruments, the combination of the key-levers, the operating-rods, main pneu-

matics, means for independently clamping each of the main pneumatics in place so that it may be removed without disturbing the other pneumatics, and a hook mounted on the movable section of each main pneumatic for connecting the same with an operating-rod.

45 7. In an automatic musical instrument, the combination of a casing containing paper-winding rolls, a fall-board, end pieces having curved guideways for the fall-board, said fall-board comprising sections hinged together so that the sections may swing with respect to each other when the casing is open.

50 8. In an automatic musical instrument, the combination of the casing containing paper-winding rolls, a fall-board comprising two pivotally-connected curved sections and end pieces having guideways for the end of the fall-board, said parts being combined so that the fall-board sections are in line with each other when the casing is closed and the lower fall-board swings or curves out of line with the curved guideways when the casing is opened.

55 9. In an automatic playing attachment for musical instruments, the combination of a bellows-casing, an action, and passages for connecting the bellows-casing therewith, and an adjustable connection between the bellows-casing and its passages arranged so that the bellows-casing may be set to fixed position and the action adjusted to different elevations to cooperate with different heights of keyboards.

60 10. In an automatic playing attachment for musical instruments, the combination of a bellows-casing, an action, and passages for connecting the bellows-casing therewith, and means for adjustably connecting the bellows-casing with said passages, whereby the bellows-casing may be set to fixed position, and the action set to different elevations to cooperate with different heights of keyboards, comprising clamping-rods extending out from the bellows-casing, a clamping-strip connecting each pair of the clamping-rods, and wing-nuts threaded onto each of the clamp-

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

PETER WELIN.

Witnesses:

PHILIP W. SOUTHGATE,
JOHN F. CROWELL.