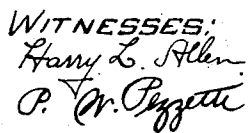


1,061,430.

FIG. 1 is a cross-sectional view of a mechanical assembly. It shows a top horizontal member (15) with a central section (24) and end sections (25). The top member is secured by fasteners (26) at the ends and (17) in the middle. Below the top member is a middle horizontal member (14) and a bottom horizontal member (18). The middle member has a central section (23) and end sections (20). The bottom member has a central section (16) and end sections (21). The assembly is shown in a cross-section with dashed lines indicating internal components and connections. FIG. 2 is a cross-sectional view of a similar mechanical assembly. It shows a top horizontal member (15) with a central section (24) and end sections (25). The top member is secured by fasteners (26) at the ends and (17) in the middle. Below the top member is a middle horizontal member (14) and a bottom horizontal member (18). The middle member has a central section (23) and end sections (20). The bottom member has a central section (16) and end sections (21). The assembly is shown in a cross-section with dashed lines indicating internal components and connections.



COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM ARTHUR WATSON, OF MEDFORD, MASSACHUSETTS, ASSIGNOR TO NATIONAL PIANO COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MAINE.

KEY-RAIL FOR PLAYER-PIANOS.

1,061,430.

Specification of Letters Patent.

Patented May 13, 1913.

Application filed August 18, 1911. Serial No. 644,830.

To all whom it may concern:

Be it known that I, WILLIAM ARTHUR WATSON, a citizen of the United States, and resident of Medford, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Key-Rails for Player-Pianos, of which the following is a specification.

This invention relates to player pianos which include the usual keyboard and which also include automatic mechanism for operating the hammers whereby a perforated sheet may be employed for causing the operation of the hammers when the piano is not played manually.

The particular element of a player piano to which the present invention relates is the rail which extends transversely in front of the keys and which is commonly known as the key rail. In a player piano the key rail is usually mounted upon hinges, or else it is cut into sections, one of which is mounted upon hinges so that it may be let down in order to expose for manipulation the customary controllers by which the automatic mechanism is manually controlled.

The primary object of the present invention is to mount the key rail in such manner that it may be used as a desk when opened to expose the controllers. In its capacity as a desk it is adapted to support the hand or hands which manipulate the controllers, and it is adapted to support the usual box in which each roll of perforated paper is kept when not in use. It is adapted to support other articles, such as pencils and erasers, which are oftentimes used by an operator of a player piano.

The key rail possesses one novel feature of construction, namely, a lip which is adapted to conceal the shield in front of the keys when the key rail is closed and which is adapted to prevent articles rolling off the rail when the rail is opened and used as a desk.

Aside from the construction of the key rail itself, an improved feature is the manner of mounting it whereby it is adapted to have a rectilinear movement from front to rear and a swinging movement from a plane above the key bed to a position wherein its upper face will extend horizontally in the horizontal plane of the key bed.

The invention also consists in manually operative means for moving the key rail whereby it may be opened and closed.

Of the accompanying drawings: Figure 1 represents a top plan view of the front of a key bed provided with controlling members and with a movable key rail constructed and mounted in accordance with this invention. Fig. 2 represents a vertical section of the structure as shown by Fig. 1, the plane of the section being indicated by line 2—2 in Fig. 1. Fig. 3 represents a similar vertical section shown the key rail in closed position.

The same reference characters indicate the same parts wherever they occur.

The key bed is indicated at 10, and the keys, one of which is indicated at 11, are mounted as usual upon a balance rail above the key bed panel 13. A shield 14 extends transversely in front of the keys in close relation thereto. The shield is a thin strip which stands on edge upon the key bed and is affixed to the usual key frame 15.

For present purposes it is not necessary to include in the drawings any part of the automatic mechanism for operating the hammers. It may be assumed, however, that the structure illustrated is a part of a piano which is equipped with suitable automatic mechanism for that purpose. The drawings include manually operative members of well known construction and arrangement whose function is to control the automatic mechanism so as to give the desired expression to the playing. Four of such members are illustrated in Fig. 1. Each controller, indicated at 16, is in the form of a finger lever and is affixed to the forward end of a rock shaft 17 which extends from front to rear. Each rock shaft 17 is intended to be connected by suitable connections (not shown) with the automatic mechanism which it is intended to control. The rock shafts extend under the keys, and the finger levers are arranged in front of the keys and in front of the fixed shield 14.

The movable key rail, indicated at 18, is adapted to occupy two positions, which are indicated respectively by Figs. 2 and 3. When it is in the position shown by Fig. 2 it exposes the controllers 16, but when it is in the position shown by Fig. 3 it conceals the controllers. Recesses 16* are formed in

the key rail for the reception of the controllers when the key rail is closed as shown by Fig. 3. The key rail is provided with a lip 19 which is adapted to extend over the shield 14 and conceal the shield so that the shield and controllers will all be concealed when the key rail is closed, and the front of the keyboard will have the same appearance as a piano which has no automatic mechanism.

Disregarding the lip 19, the cross section of the key rail is oblong. The movement imparted to the key rail by the mechanism hereinafter described causes rectilinear sliding movement on the top of the key bed, said movement being from front to rear or vice versa. When the key rail is on top of the key bed, its major sides are vertical; but when it is swung into the position shown by Figs. 1 and 2, its major sides are horizontal, thus affording a broad surface to serve as a desk upon which the spool box and other articles may be placed. The lip which is at the top of the key rail, and which conceals the shield when the key rail is in the position shown by Fig. 3, stands at the front of the rail when the rail is opened. It is thus adapted to keep articles which may be placed upon the rail from falling off. One or more fingers of the hand which is manipulating a controller may be placed behind the lip so as to prevent the hand from slipping over the edge of the rail.

The key rail is pivotally mounted upon a plurality of members 20, which are provided with hinges 21, the rail being affixed to the swinging leaves of the hinges. The members 20 are movable horizontally upon the key bed from front to rear, and when they are moved forwardly the key rail slides upon the top of the key bed until the movement of the members 20 is arrested as hereinafter explained. The key rail may thereafter continue to move, but further movement is a swinging movement about the hinges whereby the face of the rail which first slides upon the top of the key bed thereafter swings into abutting relation with the front face of the key bed and limits the swinging movement of the rail so that the rail will occupy a position in which one of its broad faces will be horizontal and will stand in the horizontal plane of the top of the key bed, thus cooperating with the top of the key bed in forming a relatively broad desk.

The members 20 are connected together so that they will move in unison when moved at all. A rock shaft 24 is mounted in suitable bearings below the key bed panel and is provided with a plurality of arms 25, one for each member 20. The arms are affixed to the rock shaft and their free ends are connected in any suitable way with the members 20. The connections shown are pivoted links 26. The key rail may be moved

by manual engagement, or it may be moved by oscillating the rock shaft. The forward movement of the members 20 is arrested by stop screws 22 which are arranged to be engaged by the arms 25. The stop screws are threaded in a strip or bar 23 affixed to the under side of the key bed, and may be readily adjusted with a screw driver to compensate for swelling and shrinking of the key bed. A hand lever 27 is affixed to the rock shaft so that the key rail may be operated without being manually engaged.

The downward swinging of the key rail is caused by gravity when the members 20 are in their extreme forward position, but the key rail is adapted to be swung upwardly because of its engagement with the key bed when the members 20 are moved to the rear. The swinging movement of the key rail is limited to an arc of 90 degrees.

I claim:

1. In a player piano, a key bed and keys thereon, a shield in front of the keys, a controller in front of the shield, a movable key rail adapted to conceal the controller, said rail having a lip adapted to extend over and conceal the shield when the rail is in position to conceal the controller, and means connecting the key rail with the key bed for guiding the key rail so that it may move bodily forward from the keys and swing downwardly against the front of the key bed, said means being adapted to support the rail flush with the top of the key bed and with said lip extending upwardly from its forward edge.

2. In a player piano, a key bed and keys thereon, a controller in front of the keys, a movable key rail adapted to conceal said controller, a plurality of sliding members movable from front to rear and vice versa upon the key bed, said key rail being pivotally mounted upon said sliding members, and means connecting said sliding members to cause them to move in unison, said key rail being adapted to swing downwardly from its plane of bodily movement with said slides.

3. In a self-playing instrument, a key bed and keys, a controller in front of the keys, a bodily movable key rail, a plurality of members mounted to slide upon the key bed, means pivotally connecting said key rail to each of said sliding members, so that the key rail may swing downwardly in front of the key bed, and a single operating means below the key bed for moving said sliding members in unison forward and back.

4. In a self-playing instrument, a key bed and keys, a controller in front of the keys, a movable key rail, means mounted to slide upon the key bed, means pivotally connecting said key rail to said sliding means, so that the key rail may swing downwardly

in front of the key bed, and means entirely below the key frame for moving said sliding means forward and back.

5 In a self-playing instrument, a key bed, a key frame and keys, a controller in front of the keys, a movable key rail, and means entirely below said key frame for moving the key rail forward and back, the key rail being pivotally connected to said means so
10 that it may swing downwardly in front of the key bed.

6. In a self-playing instrument, a key bed, a key frame and keys, a key rail, a controller between the keys and key rail, sliding means
15 below the key frame, means pivotally connecting said sliding means and the key rail, and means pivotally mounted on the key bed for moving said sliding means forward and back.

20 7. In a self-playing instrument, a key bed and keys, a controller in front of the keys, a key rail in front of the controller, said key rail being movable forwardly and downwardly against the front of the key
25 bed, and means for moving and guiding the key rail as specified, said means being adapted to support the key rail in its forward and downward position against the key bed and being disposed entirely below
30 the key frame.

8. In a player piano, a key bed and keys thereon, a controller in front of the keys, a movable key rail adapted to conceal said
35 controller, bodily movable hinges for mounting said key rail, and means connecting said hinges for causing them to move forward and back in unison, said hinges rendering

said rail capable of swinging downwardly in front of the key bed.

9. In a player piano, a key bed and keys 40 thereon, a controller in front of the keys, a movable key rail adapted to conceal said controller, bodily movable hinges for mounting said key rail, means concealed behind the key bed and connecting said hinges for
45 causing them to move in unison, and means below the key bed for imparting forward and backward movement to said key rail.

10. In a self-playing instrument, a key bed and keys, a controller in front of the
50 keys, a key rail in front of the controller, said key rail being movable forwardly and downwardly against the front of the key bed, and means connecting the key rail with the key bed for guiding the key rail so that
55 it may move as specified, said means being adapted to support the key rail against the front of the key bed.

11. In a self-playing instrument, a key bed and keys, a movable key rail, a movable
60 handle, and means connecting said handle with said key rail at a plurality of points for moving the key rail bodily toward the front or rear, said connecting means preserving the alinement of the key rail and
65 including hinging means whereby the key rail is adapted to swing downwardly in front of the key bed.

In testimony whereof I have affixed my signature, in presence of two witnesses.

WILLIAM ARTHUR WATSON.

Witnesses:

W. P. ABELL,

P. W. PEZZETTI.