

W. A. WATSON.

KEY BOTTOM.

APPLICATION FILED MAY 29, 1906.

967,866.

Patented Aug. 16, 1910.

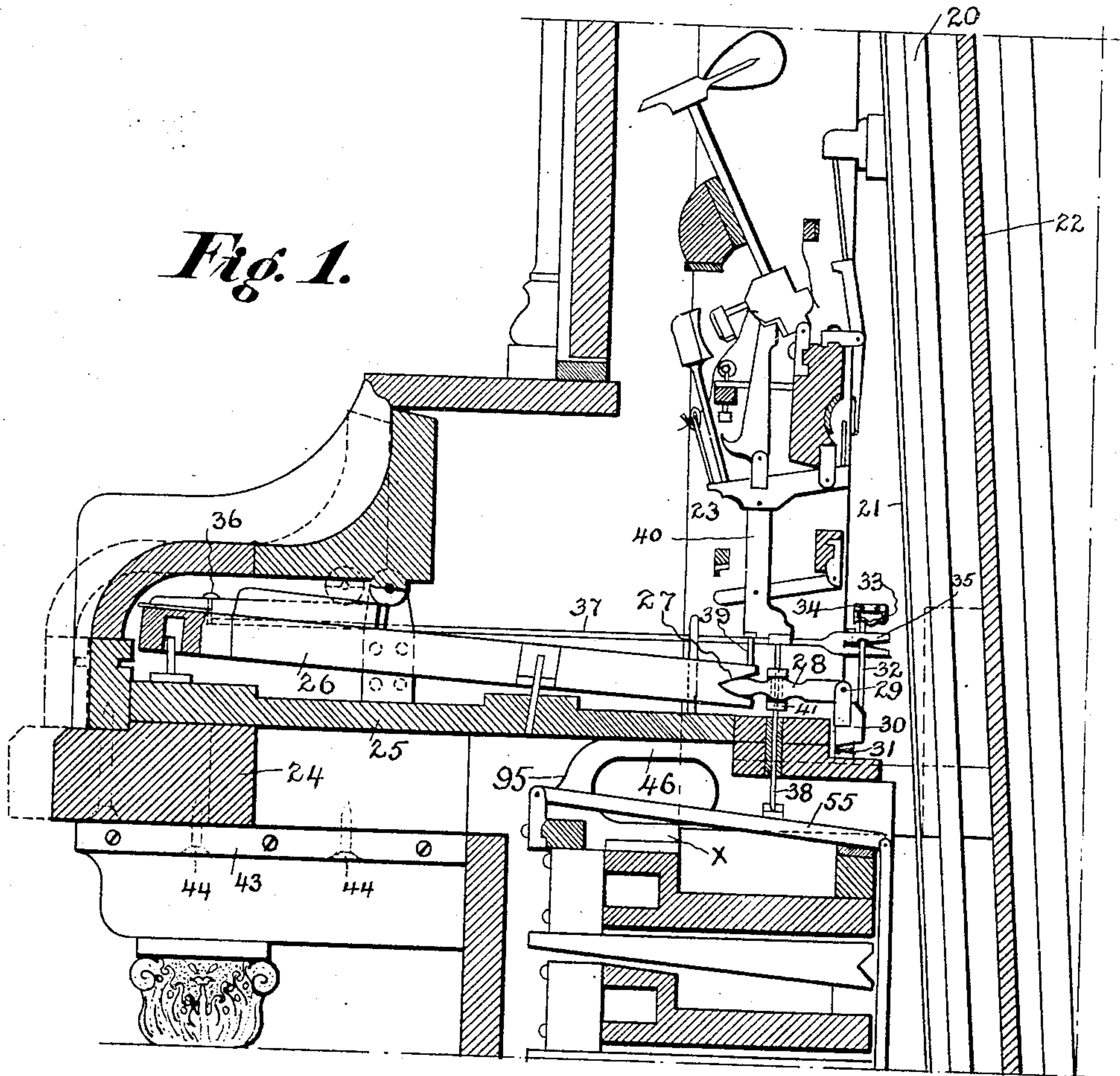
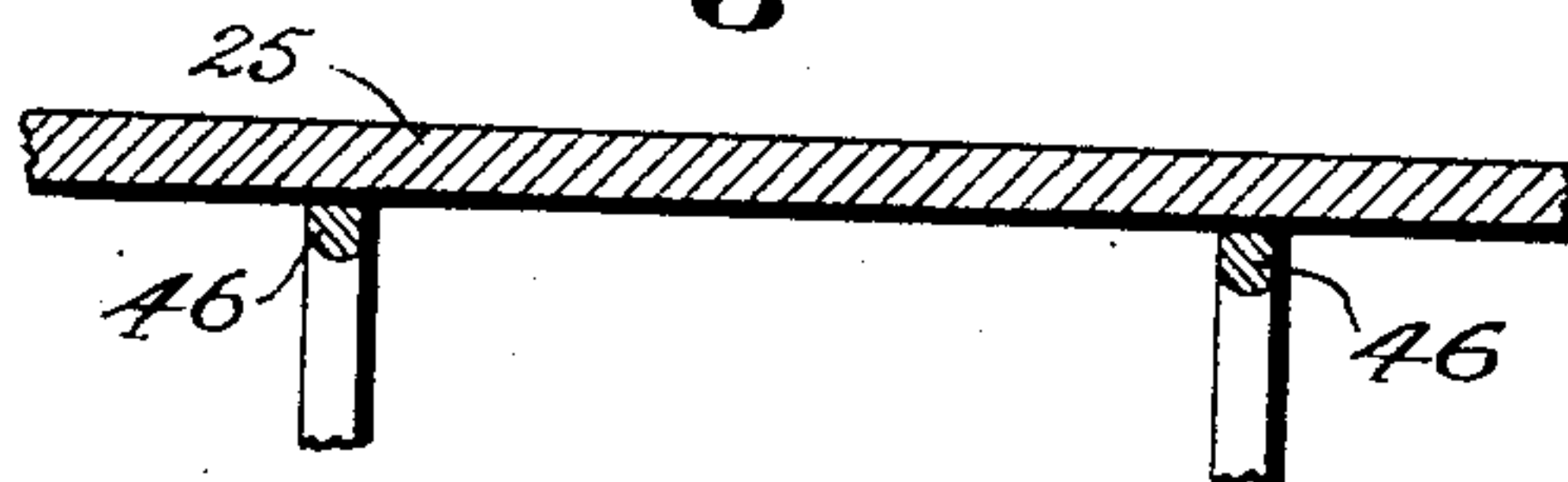


Fig. 2.



WITNESSES:

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KEY-BOTTOM.

967,866.

Specification of Letters Patent.

Patented Aug. 16, 1910.

Original application filed September 8, 1905, Serial No. 277,490. Divided and this application filed May 29, 1906. Serial No. 319,259.

To all whom it may concern:

Be it known that I, WILLIAM A. WATSON, of Medford Hillside, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Key-Bottoms, of which the following is a specification.

This invention relates primarily to pianos and other musical instruments of similar type, and in particular to the key bed or bottom thereof.

The principal object of the invention is the provision of a key bed or bottom which is so arranged as to permit of its being inserted or removed, as a unit, from the instrument, without disarranging other parts of the mechanism of the instrument.

A further object is the provision of means whereby the keys may be operated either by a player or by the mechanism of a self-playing attachment.

A further object is the provision of means for guiding the inner portion of the key bed or bottom during its insertion into position. Other and further objects will appear as the invention is hereinafter disclosed.

The invention consists in the improved construction and combination of parts hereinafter fully described, particularly pointed out in the appended claims and illustrated in the accompanying drawings, in which the figure represents a vertical section through so much of a self-playing piano as is necessary to illustrate the construction of the particular invention herein disclosed.

Of the accompanying drawings:—Figure 1 represents a vertical section through a portion of a complete instrument embodying my invention. Fig. 2, represents a detail section on line 2—2 of Fig. 1.

The subject-matter of the invention herein disclosed is a division of that shown in my application No. 277,490, filed September 8, 1905, and the parts shown in the drawing, other than the usual action and the parts herein particularly described as forming part of this invention, are those forming parts of other inventions particularly described in said application No. 277,490.

In describing the present invention, it will be necessary to refer but briefly to the general construction of the additional parts

shown. These comprise the frame or plate 20, the strings 21, the sounding-board 22, and the piano-action as a whole indicated at 23. These parts are of any preferred construction, with such exceptions as may be noted herein. A pneumatic carrying-frame is indicated at α , on which are mounted the pneumatics and tube-boards of the self-playing mechanism, of which 55 represents one of the pneumatic levers, hereinafter referred to, while the carrier or bracket α is provided with a handle 46, the front portion 95 of which is curved to form a guide for the key bed or frame when being inserted. The pneumatic mechanism forms the subject-matter of the application No. 277,490, and is not further disclosed herein.

24 designates the key-bottom and 25 the key-frame. The key-bottom is cut away at the rear as shown, being of much less depth than in the ordinary piano, thereby providing space for the pneumatic units of the attachment, and at the same time provides less obstruction for the passage of sound waves from the piano. Each key 26 is of the usual general construction, excepting that its rear end is preferably formed with a recess or mouth 27 to receive the tongue 28 of a coupling device hereinafter described. It will be understood that a tongue 28 is provided for each key, and the series of tongues is pivoted at 29 to the rail 30, the front end of each tongue entering the mouth or recess 27 of the opposing key. The rail 30 is hinged at 31 to a suitable strip or bar that is carried by the pneumatic unit, and said rail is provided with an upwardly projecting arm 32 at one end, said arm having its upper end engaged with the under surface of a cam-spring 33 consisting of an undulating piece of resilient metal secured at its ends to the bracket 34. Said spring is formed with two raised portions so that when the arm 32 is in either one of the raised portions of the spring 33, the rail will be held in one of two positions, viz.: in the position shown in the drawing with the tongue in engagement with its recess, or in a rearward position when the tongues will be out of engagement with the mouths or recesses 27. In the former case, the keys may be operated either by the player or by

the playing attachment, while in the latter case the keys will be actuated only by the player, the piano in such case being used in the same manner as an ordinary piano.

5 When the key is used as in the ordinary piano, its movement actuates the sticker 40 of the action through the capstan 39. When used in connection with the self-playing attachment, the movement of the tongue, under the action of the pneumatic lever 55, communicated by means of the capstan 38, causes the key to be moved automatically, the capstan 38 however still being the direct factor for operating the sticker. This provides for one of the objects of the self-playing attachment described in the parent application, viz., to permit of the operation of the action while the keys are removed. The capstan 38 is extended upwardly into contact with the sticker (the lower portion or foot of which is widened to operatively engage both capstans 38 and 39) and the movement of the tongue is designed merely to couple the key into action for spectacular effect, but not to operate the sticker. The capstan 39 actuates the sticker only in manual practice.

The rail 30 may be swung on its pivot in any preferred manner, but I show herein a clip 35 having spring jaws adapted to engage an off-set portion of the arm 32, said clip 35 having a forwardly extending portion or rod 37 which terminates in a handle or knob 36 that is in easy reach of a person at the front of the instrument when the cover is raised. Any suitable means may be provided for supporting and guiding the rod 37. This form of operating means is preferred as it enables the clip to be readily detached from the off-set portion of the arm when the key bottom unit is to be removed from the instrument, as presently described.

The connection by means of which the tongue is actuated by the capstan 38, is provided by the formation of a slot in the tongue, through which the capstan passes and is positioned, relatively to the tongue, by means of the regulating buttons 41 above and below the tongue.

43 represents one of the supporting guides which support the key-bottom 24 and the parts superposed thereon, screws 44 passing through the guides 43 into said key-bottom and the end-blocks thereof. When the screws 44 are removed, the key-bottom 24, key-frame 25 and the keys 26, together with the cover of the key-board, being connected together as a unit, may be readily drawn out from the piano-casing, the mouths or recesses 27 of the keys readily leaving the tongues 28, and the clip 35 separating from the arm 32. At the same time the key frame

draws away from its rear supporting guides, the handles 46 which are, of course, spaced at suitable intervals. As the key-frame is supported on the handles 46 as shown in Fig. 2, it will be readily understood that if, during the replacing of the key-bottom unit in the piano, the key-frame is insufficiently raised, the contact of said frame with the inclined surface 95 of the handle will serve to guide said frame on to its support and thereby insure a proper positioning of the parts vertically.

From the above it will be readily understood that I have provided a key-bottom or bed with superimposed parts which are so connected together as to permit of their being detached and replaced as a unitary structure, the removal permitting a free access to the interior of the piano and that during such removal there is no liability of the component parts of the unit becoming separated and misplaced; hence there is no requirement of adjusting of the parts when being replaced, the arrangement being such that they retain their relative positions in the unit at all times. Also that, since key-bottom 24 is cut away at its rear portion, the key-frame 25 is supported only at the front on the remaining portion of the key-bottom and at its rear at spaced intervals on the handle portions 46 of the alining brackets of the pneumatic banks. Therefore there is no key-bottom under the intermediate portion of the key-frame because the front and rear supports for said frame are separated, leaving said intermediate portion practically exposed.

Having now described my invention, what I claim is:

1. A piano having a removable key bed or bottom, a key frame mounted thereon, and supports for the key frame at the rear independent of the key bottom.

2. A piano having a removable key-bottom cut away at its rear portion, a key frame mounted thereon, and supports for the key frame at the rear independent of the key bottom.

3. A piano having a removable key-frame, said key-frame having the under face of its intermediate portion exposed, the supports for said key frame permitting it to be removed in a horizontal direction.

4. A piano having a key-frame supported at its front and at spaced intervals along its rear.

5. In a piano, a removable key-bottom, a key-frame and keys supported by said key-bottom and removable with it, and means independent of the key bottom for supporting the rear of the key frame.

6. In a piano, the combination with a

removable key-frame and a narrow key-bottom supporting its front portion, of spaced supports for the rear portion thereof.

5 7. In a piano, the combination with a removable key-bottom, of brackets having inclined surfaces forming guides to facilitate the proper introduction of the key-board to place, the said brackets having horizontal

upper portions to form a support for the key-frame.

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

WILLIAM ARTHUR WATSON.

Witnesses:

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