April 9, 1929. E. S. VOTEY 1,708,643

INSTRUCTION DEVICE FOR MUSICAL INSTRUMENTS

Filed Aug. 28, 1926 2 Sheets-Sheet 1

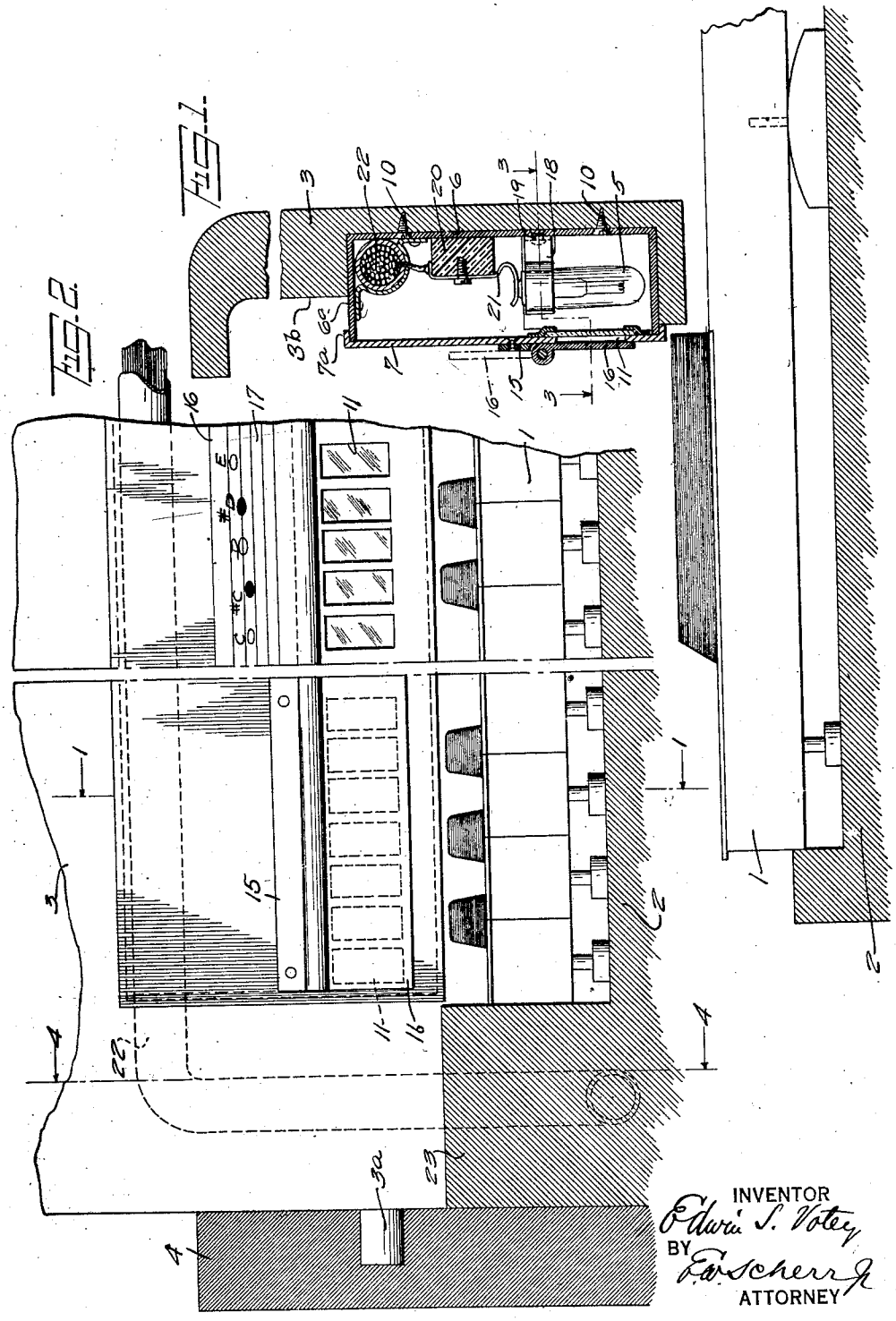

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FIG. 3.

FIG. 4.

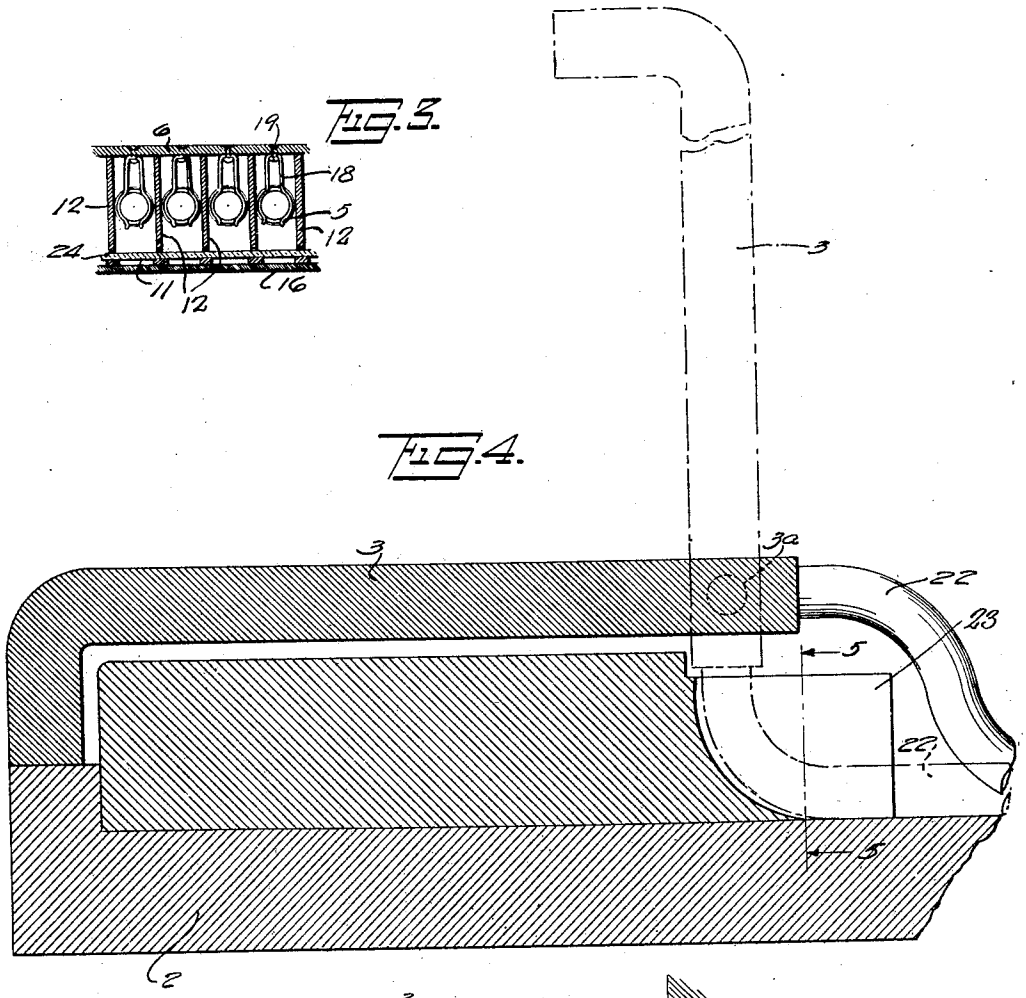
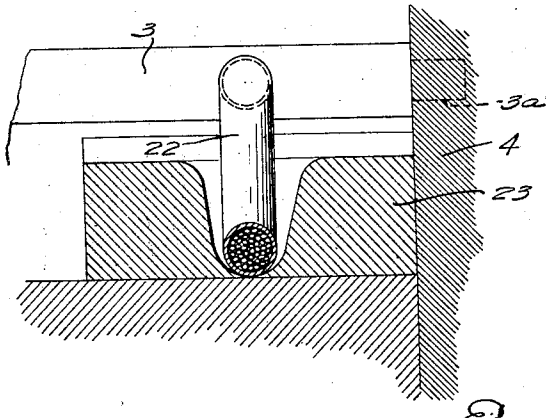


FIG. 5.



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Patented Apr. 9, 1929. 1,708,643

UNITED STATES PATENT OFFICE.

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INSTRUCTION DEVICE FOR MUSICAL INSTRUMENTS.

Application filed August 28, 1926. Serial No. 132,279.

My present invention relates to improvements in means for teaching the playing of a musical instrument such as a piano or organ or the like, by actuating signals at the keys from a music-roll or record to indicate the keys to be played, my invention specifically relating to combining said signaling means with the fall-board of the instrument, and further relates to other inventive features which will be disclosed by the following description in connection with the drawings which show an embodiment of my invention in a form which I at present prefer.

In said drawings, Fig. 1 is a vertical fore and aft section partly in elevation through the keybed and fall-board of a piano, said fall-board etc. being equipped with my invention; or stated differently, is a section partly in elevation on the line 1—1 in Fig. 2 looking in the direction of the arrows; Fig. 2 is a front elevation partly in section of the keyboard portion of the piano, both at one end and at the middle thereof, the former showing the hinge-flap 16 down and the latter showing it in its up position; Fig. 3 is a horizontal section partly in plan on the line 3—3 in Fig. 1; Fig. 4 is a vertical section partly in elevation on the line 4—4 in Fig. 2 looking in the direction of the arrows, with a supplemental schematic showing of the fall-board in both its up and down positions; and Fig. 5 is a vertical section partly in elevation on the line 5—5 in Fig. 4 looking in the direction of the arrows.

I will now describe my invention by reference to the preferred embodiment thereof shown in the drawings without, however, unnecessarily limiting the scope of my invention to the details of said embodiment either as shown or as described.

The piano keys 1 are pivotally supported as usual upon the keybed 2. 3 is the so-called fall-board of the piano having end-trunnions 3^a received into bearing holes in the left and right cheek pieces 4 of the piano frame whereby, as usual, said fall-board may be swung from a down or closed position (wherein it covers the exposed portion of the keys) into an up position wherein it stands substantially vertically at the rear of the exposed portions of the keys, as shown by the sectional view (Fig. 1) and the front elevational view (Fig. 2).

5—5 designate signal lamps supported in a horizontal row one over each piano key in a preferably sheet metal long narrow rectangular box 6 whose depth is less than the thickness of the fall-board, said box being let into a correspondingly shaped recess formed in the fall-board. From Fig. 2 it will be seen that the long dimension of said box 6 extends across the keys for nearly the full length of the fall-board. Further, it will be noted that said box 6 is located at or near the pivoted edge and away from the free edge of said fall-board so that when the fall-board is in its raised vertical position the said box is located so that its contained lamps 5 are in a horizontal row immediately above the piano keys.

The sides 6^a of said box project slightly beyond the face 3^b of the fall-board and are enclosed by the rim 7^a of a metal cover 7 held removably in place on the box 6 by any suitable means, not shown. The said box in turn is secured in the fall-board recess by a series of screws 10.

The aforesaid cover 7 adjacent the row of lamps 5 is pierced with a horizontal row of rectangular openings or windows spaced to correspond and register with the lamps so that the light therefrom will illuminate the related piano keys.

The horizontal sectional view of Fig. 3 shows partitions 12 located between the lamps and secured to the inside of the box and having their free edges located adjacent the cover 7 so that the light from the lamps will show preferably only through the windows 11 belonging thereto and not to any substantial extent through the adjacent windows. Preferably a strip of glass or a strip of other suitable transparent material 24 will be mounted so as to extend across all of the window openings 11.

Further I provide a very long metal hinge, as long in fact as the entire row of window openings 1. The pintle of said hinge extends lengthwise of the box cover 7 with one flap 15 of the hinge riveted to said cover and with its other flap 16 free so that it can be hinged into a positon against the window openings 11 to completely conceal same when the fall-board is up, or can be hinged up and away from said window openings into the dotted line position shown in Fig. 1. Upon the then exposed surface of said flap 16 when in its latter position I imprint or attach a represen-

tation in musical notation 17 (Fig. 2) of the notes corresponding to the respective underlying piano keys.

The lamps 5 are detachably supported by clips 18 which individually embrace and clamp the metal bases of the respective lamps. These clips in turn are secured by metal rivets 19 or the like to the box 6, the box thereby serving as the common return in the electrical circuits for all of the lamps.

20 is a strip of fiber or other suitable insulating material anchored within the box and extending substantially the entire length thereof. 21 is a contact (Fig. 1) of which there are as many as there are lamps, secured to said strip 20 in a row so as to be insulated from one another and so as individually to contact with the end terminal of the respective lamps as shown in Fig. 1. A separate insulated wire runs from each of these contacts 21, all of said wires being collected to form a cable 22 extending lengthwise within the box 6 through one end thereof (see left side of Fig. 2) whereupon the cable makes a right angle turn and extends through a similarly shaped passage in the fall-board and thence projects out through the rear or pivoted edge of said board and thence downwardly through a hole or recess in the block 23 forming part of the piano case immediately adjacent the end of the keyboard. The cable then extends back into the interior of the piano for connecting its individual wires in any way already known in this art to means (not shown) for selectively energizing the lamps to teach the pupil to play.

Fig. 4 shows that the above described means for bringing the cable 22 out of the movable fall-board is entirely satisfactory in that for either the up or the down position of the fall-board no destructive twist or strain is put upon the wires making up said cable. The foregoing means for bringing the cable out of the fall-board is superior to bringing the wires out in two cables, one through each fall-board trunnion, said trunnions being made hollow for the purpose because the said latter means does lead to destructive twisting strains on the wires and their insulation when the fall-board is raised and lowered.

What I claim is:

1. In combination, a musical instrument keyboard; a movably supported fall-board movable into a down positon over said keyboard, and into an up position in which it exposes said keyboard; and a series of selectively operable signals carried by said fall-board and located so that when the fall-board is up said signals are located severally adjacent the respective keys of the keyboard to indicate the keys to be manually played.

2. In combinaiton, a musical instrument keyboard; a movably supported fall-board movable into a down positon over said keyboard, and into an up positon in which it exposes said keyboard; and a series of selectively energizable electric lamps carried by said fall-board and located so that when the fall-board is up said lamps are located severally adjacent the respective keys of the keyboard to indicate the keys to be manually played.

3. In combination, a musical instrument keyboard; a movably supported fall-board movable into a down position over said keyboard, and into an up position in which it exposes said keyboard; and a series of selectively energizable electric lamps carried by said fall-board and located so that when the fall-board is up said lamps are located severally adjacent the respective keys of the keyboard to indicate the keys to be manually played; and cover means movable either to cover or to expose said lamps.

4. In combination, a musical instrument keyboard; a movably supported fall-board movable into a down position over said keyboard, and into an up position in which it exposes said keyboard; a series of selectively energizable electric lamps carried by said fall-board and located so that when the fall-board is up said lamps are located severally adjacent the respective keys of the keyboard to indicate the keys to be manually played; and cover means movable either to cover or to expose said lamps, said cover means carrying musical notations descriptive of the adjacent keys and visible to the performer when the cover means is in its lamp-exposing position.

5. In combination, a musical instrument keyboard; a hinged fall-board movable into a down position over said keyboard and into an up position in which it exposes said keyboard; a series of selectively energizable electric lamps carried by said fall-board and located so that when the fall-board is up said lamps are severally adjacent the respective keys of the keyboard to indicate the keys to be manually played; and electric wires for said lamps formed into a cable projecting from the rear longitudinal edge of the fall-board adjacent the end thereof.

6. In combination, a musical instrument keyboard; a hinged fall-board movable into a down position over said keyboard and into an up position in which it exposes said keyboard; a series of selectively energizable electric lamps carried by said fall-board and located so that when the fall-board is up said lamps are severally adjacent the respective keys of the keyboard to indicate the keys to be manually played; and electric wires for said lamps formed into a cable projecting from the rear longitudinal edge of the fall-board adjacent an end thereof, and thence extending downwardly and rearwardly into a slot or recess in a block forming part of the case of said musical instrument at the end of the keyboard thereof.

7. In combination, a musical instrument keyboard; a movable supported fall-board

movable into a down position over said keyboard and into an up position in which it exposes said keyboard; a series of selectively energizable electric lamps contained in a recess in said fall-board located so that when the fall-board is up said lamps are severally adjacent the respective keys of the keyboard to indicate the keys to be manually played; and a stationary cover over said lamps provided with window openings respectively corresponding thereto.

8. In combination, a musical instrument keyboard; a movably supported fall-board movable into a down position over said keyboard and into an up position in which it exposes said keyboard; a series of selectively energizable electric lamps contained in a recess in said fall-board located so that when the fall-board is up said lamps are severally adjacent the respective keys of the keyboard to indicate the keys to be manually played; a stationary cover over said lamps provided with window openings respectively corresponding thereto; and a movable cover hinged to said stationary cover movable into and out of concealing position relative to said window openings.

9. In combination, a musical instrument keyboard; a hinged fall-board movable into a down position over said keyboard and into an up position in which it exposes said keyboard; a series of selectively energizable electric lamps carried by said fall-board and located so that when the fall-board is up said lamps are severally adjacent the respective keys of the keyboard to indicate the keys to be manually played; and electric wires for said lamps projecting from the rear longitudinal edge of the fall-board.

Signed at New York, in the county and State of New York, this 23d day of August, 1926.

EDWIN S. VOTEY.