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B. E. MILLS

KEY MANUAL FOR ELECTRIC MUSICAL INSTRUMENTS

Original Filed June 14, 1922

Fig. 1.

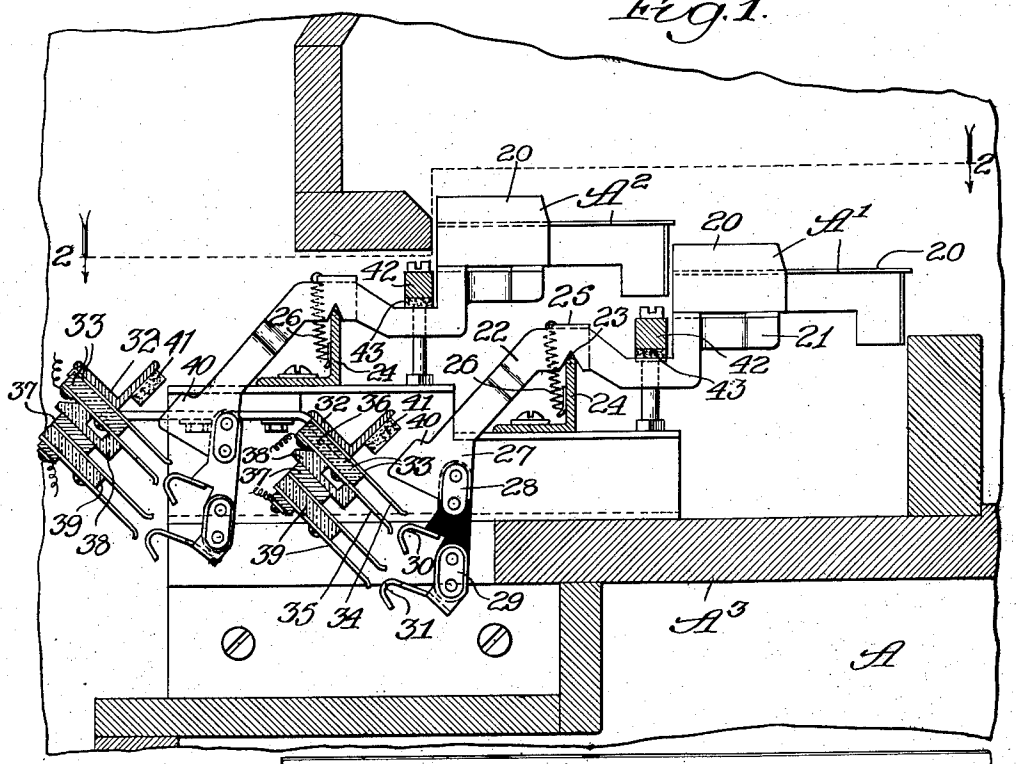
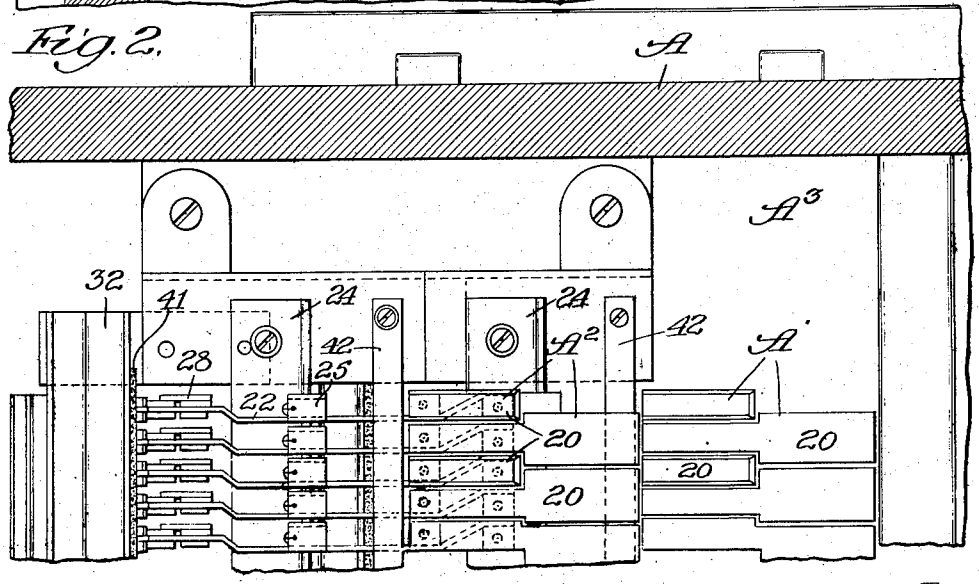


Fig. 2.



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UNITED STATES PATENT OFFICE.

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KEY MANUAL FOR ELECTRIC MUSICAL INSTRUMENTS.

Original application filed June 14, 1922, Serial No. 568,248. Divided and this application filed March 31, 1924. Serial No. 703,177.

To all whom it may concern:

Be it known that I, BERTIE E. MILLS, a citizen of the United States, residing at Oak Park, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Key Manuals for Electric Musical Instruments, of which the following is a specification.

This invention relates particularly to a key-manual for use in playing musical instruments wherein the note-sounding means are controlled by electro-magnets having circuits controlled by the keys of the manual. The present application constitutes a division of my application No. 568,248, filed June 14, 1922, and the improvement herein described and claimed is well adapted for use in a console as a part of equipment for the remote control of the playing of stringed instruments of the viol class.

The invention is illustrated in the accompanying drawing, in which—

Fig. 1 is a broken vertical sectional view of a console equipped with the improved key-manual; and Fig. 2 is a broken horizontal sectional view taken as indicated at line 2—2 of Fig. 1.

In the construction illustrated, A represents a portion of the frame of a console which is provided with two key-manuals, or two banks of keys, A' and A^2, mounted upon a key-board A^3 and arranged in stepped relation. Each key-manual comprises keys 20, the longer keys being white and the shorter ones black, as is usual. Each of the keys controls the playing of a corresponding note upon a violin or a plurality of violins, as more fully explained in the above-designated application.

Each of the keys 20 is mounted upon a head 21 at the forward end of a key-lever 22. This lever is provided with a fulcrum notch 23 resting upon the upturned edge of an angle bar 24 extending across the console. This angle bar serves as a fulcrum bar for an entire bank of keys. Approximately above the notch 23 the lever 22 is formed with an overhanging projection 25 extending rearwardly of the notch. From this projection a coil spring 26 extends downwardly to and is secured at its end to the bar 24 and this spring aids in holding the keys 20 in normal inoperative position. The rear portion of the lever 22 extends obliquely downwardly and to its end 27 are rigidly secured, by suitable insulated mountings 28 and 29, the metallic contact members 30 and 31. An angle bar 32 is mounted to extend across the console and to it are secured a plurality of contact jacks 33, one of which corresponds to the contact member 30 of each of the key-levers 22. These contact jacks consist of spring contact members 34 and 35 spaced apart by a suitable insulating material 36. The contact jacks 33 are so secured to the angle bar 32 that there is direct metallic contact between the spring contact member 34 and the angle bar, so that the angle bar 32 serves as a common electrical conductor for all of the contact jacks 33. A metallic bar 37, separated from the jacks 33 by suitable insulating material 38, likewise extends across the console and to it are secured the contact jacks 39, each of which corresponds to the contact member 31 of one of the key-levers. One of the contact members of each of the contact jacks 39 is in direct metallic contact with the bar 37, so that the latter serves as a common electrical connection for these contact jacks. In the form illustrated the contacts 30 and 31 and the contact jacks 33 and 39 are so disposed that the contact members close the circuits through the contact jacks simultaneously. At the same time that these contacts are closed by depression of the key, a projecting head 40 on the key-lever engages a cushioning member of felt or the like indicated by numeral 41, secured to the angle bar 32. When the key is depressed, its return movement is effected by the spring 26, as is readily apparent. Cushioned stops are provided to soften the return movement of the key-levers, these being conveniently formed as bars 42 extending across the console and above each bank of key-levers and provided on their under sides with cushions 43 of suitable material, such as felt. It is apparent that depression of a key results in the closure of two circuits, one through the jacks 33 and the other through the jacks 39. One of these circuits may, for example, control the mechanism (sounder-depressing and string-fretting devices, for example) upon the stringed instrument in operation for sounding the particular note corresponding to the key struck and the other contact may, for example, control a tremolo device. According to the length and position of the contact members 30 and 31, the note and

the tremolo circuit may be simultaneously closed or the note circuit may be closed by a partial depression of the key and the tremolo circuit by its further depression.

In practice, the keys of each manual may be arranged in groups so arranged, for example, that keys for the lower position notes of the G string are in a group at the left-hand end of the lower manual, followed by a group of lower position keys for the D string, while the upper position keys of the G string are in a group in the upper manual and just above the lower position keys of the D string. This principle is carried out in dealing with the keys for the successive strings; and full manuals may be completed by providing at the left-hand end of the upper manual a duplicate group of lower-position G keys and by providing at the right-hand end of the lower manual a duplicate set of upper-position E keys, as shown in the above-mentioned application.

What I regard as new, and desire to secure by Letters Patent, is:

1. In a device for the remote control of the playing of musical instruments, a key-manual comprising a plurality of keys, a fulcrumed key-lever for each key upon one end of which the key is mounted, and a contact member mounted upon and insulated from the other end of said key-lever.

2. In means for the remote control of the playing of stringed instruments of the viol class, a key-manual comprising a plurality of keys, key-levers corresponding to each of said keys, said key-levers having heads at one end upon which said keys are mounted, a horizontal bar upon which said key-levers are fulcrumed, and a plurality of contact members secured to and insulated from the other end of each key lever.

3. A console for controlling the playing of stringed instruments, comprising a horizontal metallic bar, a plurality of circuit jacks secured to said bar, said bar serving as a common conductor thereof, a second bar parallel to said metallic bar, a plurality of key-levers fulcrumed upon said second bar, each of said key-levers being provided at one end with an insulated contact member for closing the circuit through one of said jacks, and a key mounted upon the other end of each key-lever.

4. A console for controlling the playing of stringed instruments, comprising two parallel horizontal metallic bars, each carrying a plurality of circuit jacks, one contact member of each circuit jack being mounted directly on the corresponding metallic bar and the other contact member being separated from the companion contact member by an insulating strip, whereby each of said metallic bars serves as a common conductor for the attached contact members of the jacks, a fulcrum-bar extending parallel with said first-mentioned bars, a plurality of key-levers fulcrumed on said fulcrum-bar, each of said key-levers being equipped at one end with a pair of contact members adapted to close the circuits through one of the jacks mounted on each of said metallic bars, and a key mounted upon the other end of each key-lever.

5. In means of the character set forth, a metallic bar, a series of jacks mounted thereon, one contact member of each jack being in direct contact with said bar, an insulating bar mounted back of said jacks, a second metallic bar mounted back of said insulating bar, a plurality of jacks mounted on said second metallic bar, one contact member of each of said last mentioned jacks being mounted directly on said last-mentioned metallic bar, a plurality of suitably fulcrumed key-levers, each equipped with a pair of circuit closers corresponding with a jack on each of said metallic bars, and keys mounted on the other ends of said levers.

6. In a device of the character set forth, the combination of a fulcrum-bar, a plurality of key-levers provided with fulcrum-notches engaging said bar, a key mounted on the front end of each key-lever, and a pair of contact members insulatingly mounted on the rear end of each key-lever.

BERTIE E. MILLS.