No. 808,510. PATENTED DEC. 26, 1905.

G. P. BUCHANAN.

KEYBOARD FOR STRINGED INSTRUMENTS.

APPLICATION FILED OCT. 13, 1904.

2 SHEETS—SHEET 1.

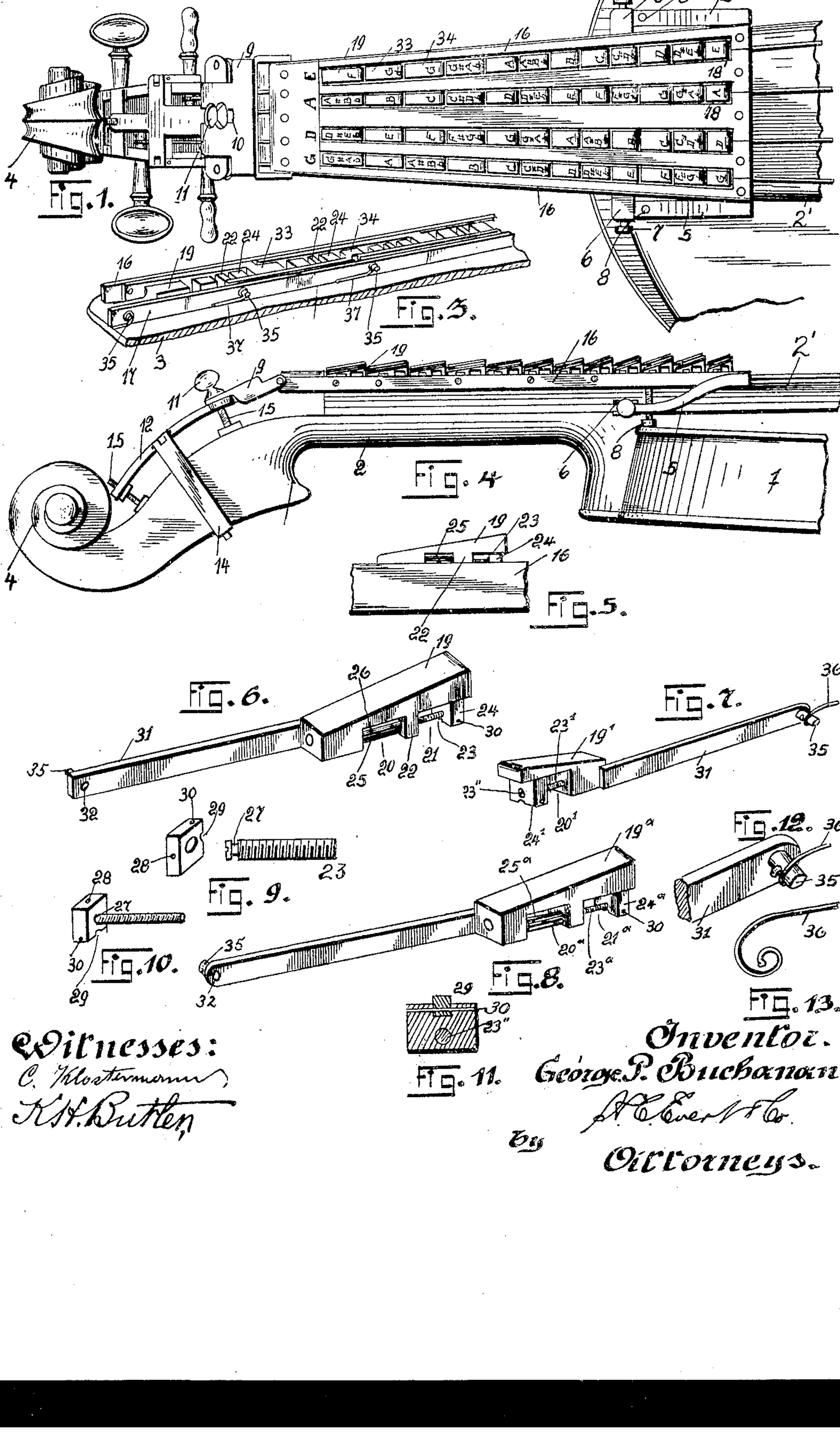

Fig. 1.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

Fig. 9.

Fig. 10.

Fig. 8.

Fig. 12.

Fig. 13.

Fig. 11.

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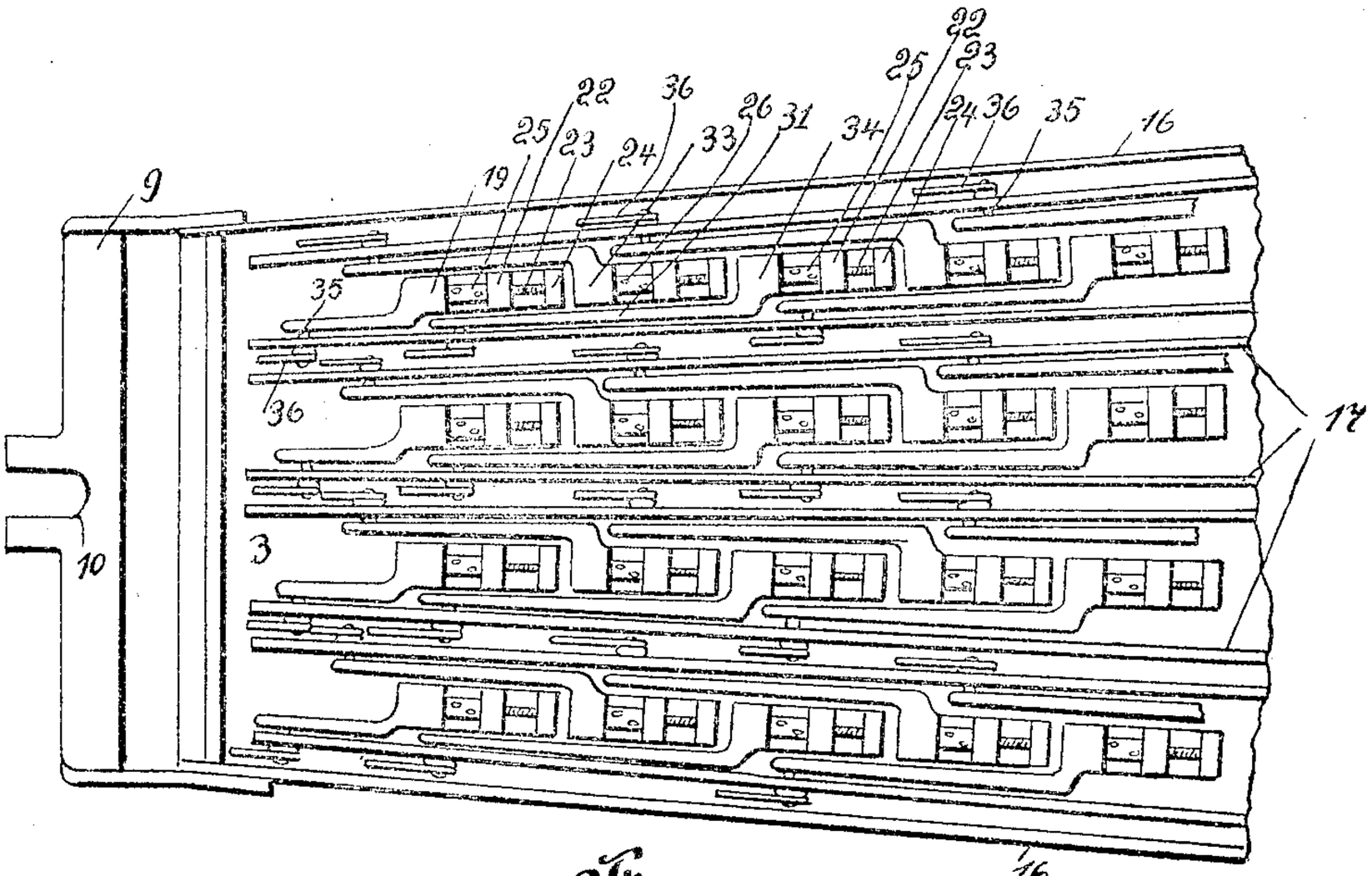

Fig. 2.

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UNITED STATES PATENT OFFICE

GEORGE P. BUCHANAN, OF ALLEGHENY, PENNSYLVANIA.

KEYBOARD FOR STRINGED INSTRUMENTS.

No. 808,510. Specification of Letters Patent. Patented Dec. 26, 1905.

Application filed October 13, 1904. Serial No. 228,270.

To all whom it may concern:

Be it known that I, GEORGE P. BUCHANAN, a citizen of the United States of America, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Keyboards for Stringed Instruments, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention has relation to certain new and useful improvements in stringed instruments; and it relates more particularly to violins, violas, violoncellos, bass, and double-bass instruments.

The present invention consists of a keyboard which may be easily attached to and detached from the finger-board of a violin or stringed instrument, and this keyboard is so constructed that it will be an easy matter to play in any difficult position upon the violin, not only the first, third, fifth, seventh positions, but also the second, fourth, and sixth positions.

My invention further contemplates a device of the above-described character that may be readily adjusted to conform to the plane of the strings; furthermore, to provide a series of keys that will have a great leverage to produce the higher notes upon the strings, the latter being particularly desirable upon instruments upon which a high bridge is employed, for the reason that it requires a greater pressure to produce the high notes, as is well known in the art.

The invention broadly consists in the removable keyboard attached to the finger-board of a violin and having keys resting upon the strings thereof, which keys are pressed to produce harmonics by changing the vibration length of the string to alter the pitch. The keyboard is further constructed whereby beginners in learning to manipulate the instrument will be aided in the perfect handling of the keyboard, and positive notes may be produced from the violin by the exact fingering of the keyboard facilitated by my improved attachment.

With the above and other objects in view the invention finally resides in the novel construction, combination, and arrangement of parts, which will be hereinafter more fully described and then specifically pointed out in the claims, and, referring to the drawings accompanying this application, like numerals of reference designate corresponding parts throughout the several views, in which—

Figure 1 is a top plan view of my improved keyboard attached in position upon the neck of a violin, the latter being broken away. Fig. 2 is an enlarged fragmentary underneath view of my improved keyboard. Fig. 3 is a fragmentary perspective view of my improved keyboard. Fig. 4 is a perspective view of my improved keyboard attached in position upon the neck of a violin, the latter being shown in side elevation and partly broken away. Fig. 5 is a side elevational view of a portion of the keyboard. Figs. 6 to 8, inclusive, are detail perspective views of different forms of keys which I may employ in connection with the keyboard; and Figs. 9 to 13, inclusive, are detail views of the appurtenant parts of the keys illustrated in Figs. 6 to 8, respectively.

In the drawings the reference-numeral 1 designates the body portion of the violin, to which is attached the usual form of neck 2, upon which is secured the finger-board 2′ and the keyboard 3, the forward portion of the neck carrying the head 4. The rear end of the keyboard is provided upon each side with forwardly-depending bars 5 5, and each one of these bars is provided with a gripping-yoke 6, which is actuated by a set-screw 7, that passes through the bars 5 and engages the yoke to force the same inwardly against the neck 2 of the violin. The bars are also provided with set-screws 8, the heads of which are adapted to rest upon the body portion of the violin, and the rear end of the keyboard 3 may be elevated by adjusting said screws. In securing such adjustment set-screws 7 are loosened, so as to release the gripping-yokes 6 from engagement with the edges of the finger-board, and the screws then are turned one way or the other until the keyboard is adjusted to the proper height above the strings of the instrument. The screws 7 are then tightened, so as to bring the gripping-yokes 6 again into contact with the edges of the finger-board. The forward end of the keyboard is provided with a hinged yoke 9, having a slot 10 formed therein, and this hinged yoke is secured by a set-screw 11 to a member 12, which is substantially of a double-T shape. This member is secured to the head 4 of the neck by the hinged straps 14, which engage the underneath face of the head. The member 12 is

further held upon the head by the screws 15 15, which elevate the member 12 and cause the straps 14 to engage the under face of the head and rigidly hold said member upon the head 4 of the violin.

The keyboard comprises a plate of metal, which is preferably of aluminium, and the sides of said keyboard are flanged, as indicated at 16 16. The plate is also provided with sets of ribs or partitions 17 17 17, which extend longitudinally of the keyboard, and on account of the keyboard being wider at one end than at the other the space between said partitions will be tapering, and between each set of partitions and the side walls I intend to mount the keys of my improved attachment for violins. Between each set of partitions the slots 18 18 are formed, and in said slots the keys are mounted. In Figs. 5 to 8, inclusive, I have illustrated different forms of keys that may be used, and I will first describe the preferred form of key and the manner of mounting the same upon the keyboard. Reference now being had to Figs. 1 to 6, inclusive, the reference-numeral 19 designates one of the keys, which is mounted above the E-string of the violin. The keys of my improved finger-board are substantially identical in construction, with the exception that some of the keys are provided with a greater leverage than the other keys, and the key-head is provided with adjustable features, which are clearly shown in Fig. 6 of the drawings. The reference-numerals 20 and 21 designate two cut-away portions formed in the under face of the key-head, these cut-away portions forming a depending lug 22, and in said lug is mounted a screw 23. This screw is adapted to carry the compressing-block 24, and I have provided said screw whereby this block may be adjusted to accurately engage the strings of the violin at the proper place to sound a perfect note. In Fig. 6 of the drawings I have illustrated a corrugated turn-nut 25, which is provided with openings 20, whereby if the same cannot be rotated by hand a pin may be inserted in one of the openings to slightly rotate the same. The compressing-block 24 may be detachably secured upon the screw 23 by providing said screw with a head 27 and passing a pin 28 through the compressing-block 24 to engage the slotted end 27 of the screw. These compressing-blocks are also provided with a concavity 29 in their under face, and in this concavity a piece of rosin or hard substance may be secured by a pin 30, this rosin or hard substance assuring a better and more perfect note from the string which it engages when the bow is drawn across said string. The reference-numeral 31 designates the shank of the key, which is provided with an opening 32, in which is fixed a pin 35, whereby the same may be hinged between the partitions of the keyboard. Before describing the manner of mounting the keys within the keyboard reference will be had to Figs. 7 and 8, wherein another form of independent adjustment is provided for the compressing-blocks of the keys. I do not care to limit myself to the specific form of adjustment shown in Fig. 6. Therefore I have illustrated in Figs. 7 and 8 a modified form of construction which accomplishes practically the same results as the adjustment illustrated in Fig. 6. The under face of the key in Fig. 7, as designated by 19′, is cut away, as indicated at 20′, and in this cut-away portion is mounted the compressing-block 24′, that is similar in all respects to the compressing-block 24, heretofore described, with the exception that the screw 23′ is threaded in said block and the end of the screw provided with a slot 23″, whereby the screw may be rotated to move in the head to adjust the position of the compressing-block 24′. In Fig. 8 still another form of adjustment is illustrated, which embodies the features of adjustment illustrated in Figs. 6 and 7. The key 19ª in this figure is provided with recesses 20ª and 21ª, and a compressing-block 24ª is mounted in the recess 21ª by a screw 23ª, and a nut 25ª may be employed for adjusting the compressing-block 24ª; but in case it is not convenient to use said nut the screw 23ª may be rotated by the slotted end of said screw.

As heretofore stated, the keys are practically identical in construction with the exception of the leverage of each key, and by referring to Figs. 2 and 3 of the drawings it will be seen that the shank portion of the key 19 is considerably shorter than the shank portion of the next succeeding key 33 and that the shank portion of the next key, as indicated by the reference-numeral 34, is longer than any of the keys 19 and 33. Every succeeding key after the third set of keys, as designated by the reference-numerals 34, is constructed with the long shanks 31, and by referring to Figs. 3 and 6 of the drawings it will be seen that these shank portions are constructed at one side of the body portion or head of each key. This construction is employed whereby the keys may be mounted in a compact form and yet have a sufficient leverage. The shank portion of each key is hinged in the partitions by pins 35, and each pin is provided with a spring 36, the one end of said spring being held in the pin, while the other end is wrapped around the pin and engages the keyboard 3, as designated by the reference-numeral 37. These springs positively insure the return movement of the key when the same has been depressed, and said springs are mounted between each set of partitions 17 and the side flanges 16. The manner of arranging the keys is clearly shown in Figs. 2 and 3 of the drawings, and it will be observed from these figures that the shank portions of every other

key—for instance, the keys designated by the notes F, G, A, B, C-sharp, and D-sharp—are pivoted upon one side, while the keys between these keys and designated by the notes F-sharp, G-sharp, A-sharp, C, D, and E are pivoted upon the opposite side, this construction insuring a compact form and a sufficient leverage to each key to operate the same. Owing to the fact that to play the notes G D A E of the seventh position a greater depression of the key is required, it is necessary that these keys have a greater leverage than the keys of the first position, this being on account of the strings of a violin being a greater distance away from the neck of the violin in the seventh position than in the first position.

It will be observed from Fig. 1 of the drawings that I have provided each key with a symbol of the note which will be played by depressing said keys, this feature assisting beginners in the art of playing a violin to learn the same. It will also be seen by the construction of the keyboard that it can be readily attached to and detached from the neck of a violin by loosening the screws 7 7 and the screw 11, thus providing a violin in its natural condition.

It will be noted that various changes may be made in the details of construction without departing from the general spirit and scope of the invention.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a removable keyboard for stringed instruments, the combination of a plurality of independently-mounted spring-pressed key-levers, a key carried by each lever and extending above the upper surface of the keyboard, a movable compressing-block carried by each key, means for adjusting each compressing-block longitudinally of the key by which it is carried and means for securing the keyboard to an instrument, substantially as described.

2. The combination with a stringed instrument, of a removable keyboard attached to said instrument, a plurality of spring-sustained key-levers, each independently mounted in said keyboard, a key carried by each said key-lever, an adjustable compressing-block carried by each key, means for positively adjusting each compressing-block longitudinally of the key on which it is carried, means for securing said keyboard to an instrument and means for vertically adjusting the keyboard on the instrument, substantially as described.

3. The combination with a stringed instrument, of a keyboard, a clamp carried by the inner end of said keyboard, comprising outwardly-extending, downwardly-curved arms, and horizontal screws extending through said arms and adapted to bear against the finger-board of the instrument, means for vertically adjusting the inner end of the keyboard relatively to the finger-board of the instrument, a second clamp adapted to engage the head of the instrument, an adjustable connection between said last-named clamp and the outer end of the keyboard.

4. The combination with a stringed instrument, a keyboard arranged on the neck thereof, a clamp carried by the keyboard and adapted to engage the finger-board of the instrument, means for vertically adjusting the keyboard relatively to the finger-board of the instrument, a clamp secured to the head of the instrument, a hinged and slotted yoke connecting said keyboard to said last-named clamp.

5. The combination with a violin and a keyboard, of a clamp secured to the head of said violin, a slotted yoke for detachably securing said keyboard to said clamp, means for detachably securing one end of said keyboard to said violin, and means for vertically adjusting the inner end of said keyboard, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

GEORGE P. BUCHANAN.

Witnesses:

H. C. EVERT,

E. E. POTTER.