

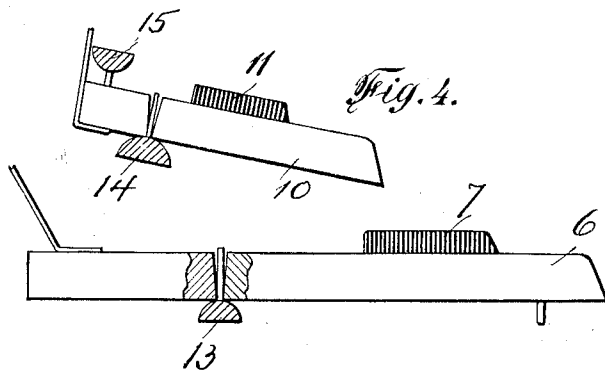
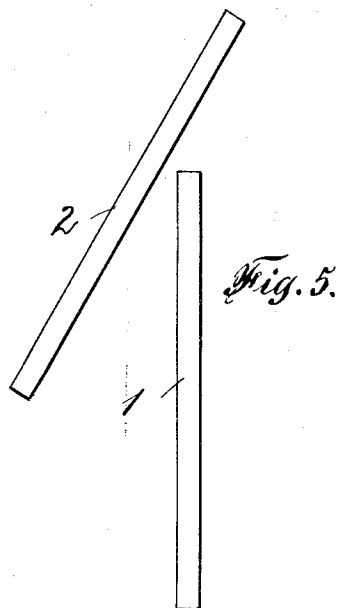
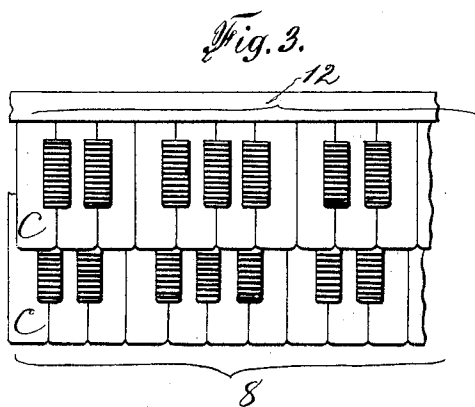
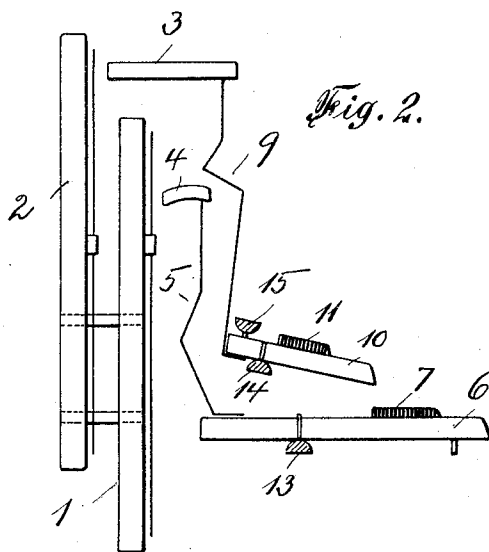
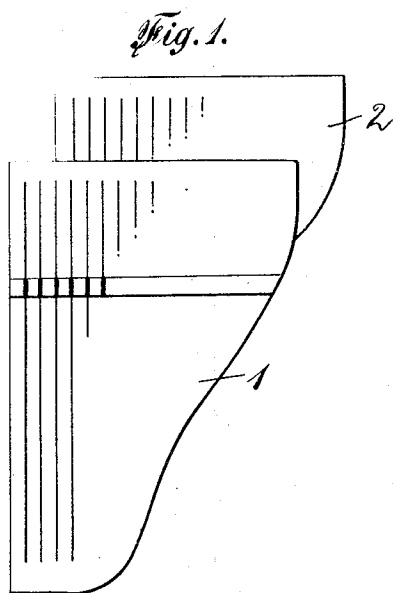
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M. STOEHR

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KEYBOARD MUSIC INSTRUMENT

Filed May 31, 1924



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## UNITED STATES PATENT OFFICE

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## KEYBOARD MUSIC INSTRUMENT

Application filed May 31, 1924. Serial No. 716,864.

My invention has reference to pianos and similar keyboard instruments, and the object of my invention is to produce a keyboard instrument which is equipped with two string-frames whereby the number of strings usually formed in such an instrument is doubled. The strings of the second string-frame are tensioned so as to be a little higher pitched than the strings of the usual string-frame, so that an instrument is obtained on which quarter-tones can be produced, while on the keyboard instruments now in use as is well known, only half-tones can be produced. In combination with the second string-frame, there is, of course, provided also a separate set of hammers, and these hammers are operated by keys of a special keyboard, which is preferably arranged somewhat above and behind the keys of the usual keyboard. The instrument thus is a double keyboard instrument.

For a better understanding of my invention I refer to the accompanying drawing in which the invention is diagrammatically illustrated and in which Fig. 1 shows the two string-frames arranged one behind the other; Fig. 2 is a side view of the two string-frames showing also the hammer-action and the keys cooperating therewith; Fig. 3 is a top-view of the double keyboard, Fig. 4 shows the disposition of the keys of the two keyboards on an enlarged scale; Fig. 5 shows a modification in the relative position of the two string-frames.

In the preferred embodiment of my invention, I arrange the two string-frames 1, 2 parallel to each other, one behind the other, the rear string-frame being elevated relative to the front string-frame so as to enable the hammers 3 to strike the strings as shown in Fig. 2. The sounding boards and other parts of the instrument have been entirely omitted as not forming any part of this invention. In fact, except for the addition of the second string-frame, the second set of hammers and the additional row of keys, the construction of the instrument is not changed in any particular.

The strings drawn across the front string-frame, which is the usual string-frame, are

struck by the hammers 4 (Fig. 2), which are operated in the well-known manner, by means of the hammer-action 5 by the white or black keys 6 and 7 respectively of the ordinary keyboard 8 (Fig. 3). The hammers 3, intended to strike the strings of the rear string-frame, are operated by means of the hammer action 9 by the white and black keys 10 and 11 respectively of the upper keyboard 12. As shown in Fig. 2, the keys of the upper keyboard are preferably slightly inclined toward the keys of the lower keyboard to facilitate their manipulation. 13, 14 and 15 designate the rails provided for the keys of the two keyboards. Fig. 4 shows the relative arrangement of the keys of the two keyboards on a larger scale.

As shown in Fig. 3, the keys of the upper keyboard 12 are slightly offset relative to the keys of the lower keyboard 8 to thereby indicate that the strings set in vibration by the depression of the keys of the upper keyboard are pitched a little higher than the strings set in vibration by the keys of the lower keyboard. In the present instance, referring to an upright piano, the difference between the pitch of the string corresponding say to the key C of the upper keyboard is a quarter-tone higher than the pitch of the string corresponding to the same key in the lower keyboard, and so on, throughout the entire range of keys. Thus, the chromatic range of the tones capable of being produced by such a piano, in accordance with the present invention is double that of an ordinary piano, on which by the use of the black keys only half-tones can be produced.

As the keys are arranged in two separate keyboards controlling separate sets of hammers, anyone desiring to do so can play the piano like any other piano by using only the keys of the lower keyboard 8. By the addition of the upper keyboard, 12, the second set of hammers thereby controlled and the second string frame, a keyboard instrument is produced, which in variety of tones and tone-combinations approaches a string instrument, such as a violin or violin-cello, on which the production of tones is varied by the position of the fingers of the performer.

Instead of arranging the two string-frames parallel to each other as shown in Fig. 2, the string-frames may also be arranged as indicated in Fig. 5, where the rear string-frame 2 is shown at an angle relative to the front string-frame 1.

In the actual manufacture of such an instrument other changes may recommend themselves which do not affect the essence of my invention which I claim:

1. In a keyboard music instrument, the combination of two relatively displaced string-frames arranged one behind the other, two separate sets of hammer actions disposed in front of the first string frame, two separate keyboards each comprising a full set of black and white keys, and separate mechanisms for transmitting the movements of the keys of each keyboard to the hammers of the corresponding hammer action.

2. In a keyboard music instrument, the combination of two relatively displaced string-frames, one behind the other, and the second frame being higher than the first frame, two separate sets of hammer actions disposed in front of the front frame, two separate keyboards arranged in terrace form and each comprising a full set of black and white keys, and separate mechanisms for transmitting the movements of the keys of each keyboard to the hammers of the corresponding hammer actions.

3. A keyboard instrument as set forth in claim 1, in which the keyboard for the rear string-frame is elevated relative to the other keyboard and the keys of said elevated keyboard are offset relative to the keys of the other keyboard.

In testimony whereof I affix my signature.

MORIZ STOEHR.