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MUSICAL INSTRUMENT

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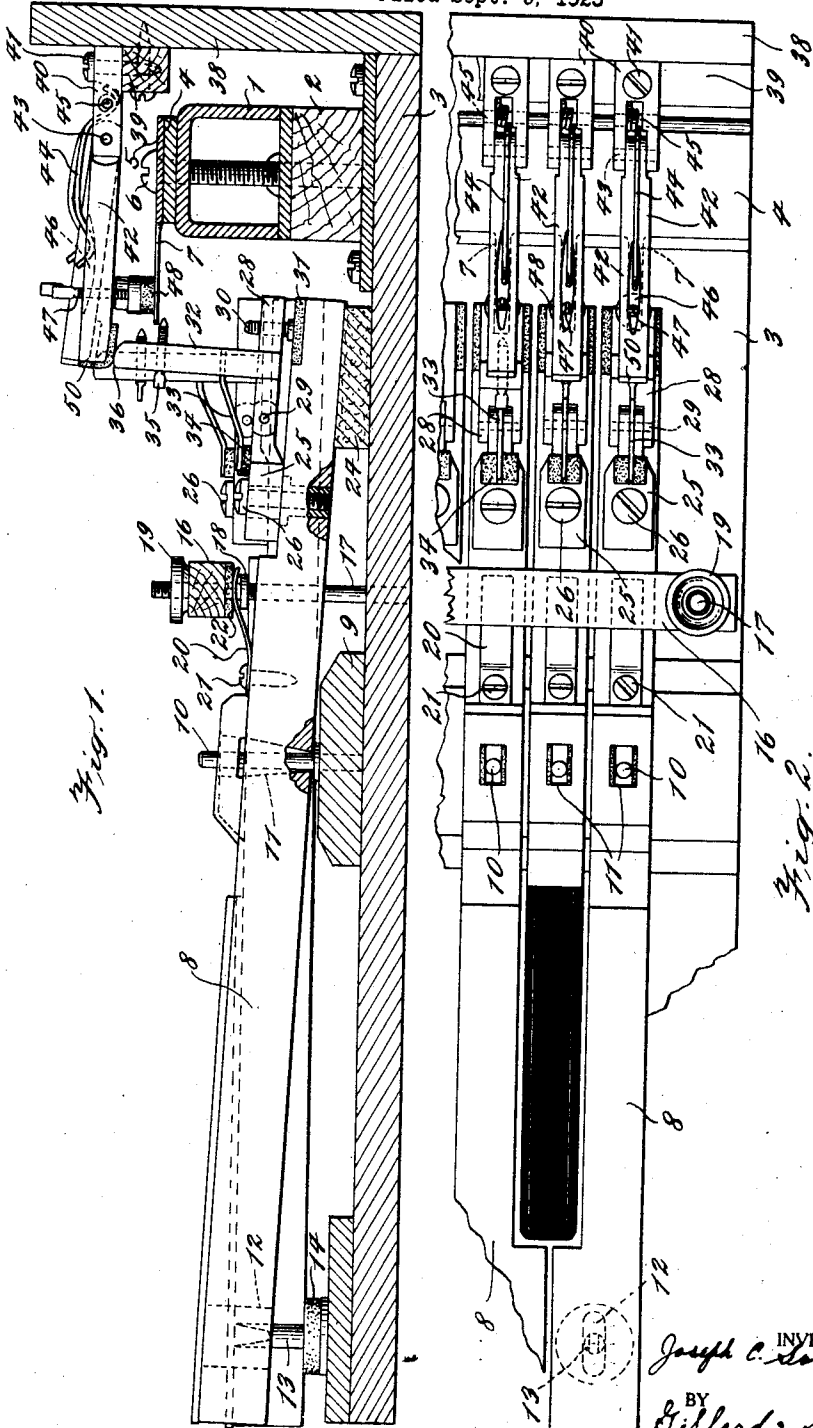


Fig. 1.

Fig. 2.

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MUSICAL INSTRUMENT.

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This invention relates to a device by which musical compositions can be played in a manner similar to the way pianos are played, or the device can be used for practicing piano lessons in order for the performer to become proficient in playing pianos. By this invention tongues or teeth which may be vibrated to produce musical notes can be struck by a picker or the like by bringing the same into contact with the tongue while passing by it in one direction, and the picker can be restrained or prevented from striking the tongue when passing by it in the other direction. Also, means are provided by which the tongues can be damped to stop their vibration promptly after the key which causes the tongue to vibrate has returned to its normal position. The keys for vibrating the tongues may be arranged in the same way as the keys of a piano, and present very much the appearance of the keyboard of a piano.

The invention will be understood from the description in connection with the accompanying drawings, in which Fig. 1 is a side view of the device and Fig. 2 is a plan view of the same, partly broken away.

In the drawings, reference character 1 indicates a sounding box that is preferably made of metal, although other appropriate material may be used. This box is mounted upon a support 2 which is, in turn, mounted upon the base 3 of the instrument. A metal strip 4, which may be made of brass or other metal of proper thickness, is placed upon the sounding box 1 and a metal plate 5 with integral tongues 7 extending along one edge, somewhat like the teeth of a comb, spaced the same distance apart, is attached thereto by passing screws 6 through the same and into the support 2. These tongues 7 are so formed that they will vibrate at different frequencies so as to produce different tones. This is preferably accomplished by having the tongues of different lengths, the shorter ones toward the right-hand end of the instrument and the longer ones to give the lower tones toward the left-hand or base end of the instrument. Instead of making the tongues of different lengths so as to provide different tones, these tongues may be made of different widths or thicknesses for the same purpose.

A plurality of keys 8, similar to the keys of a piano and preferably arranged to duplicate the same, are pivoted on a cross piece

9 that is mounted upon the base 3. Pins 10 project upwardly from the cross piece 9 through elongated holes 11 in the keys 8, which holes may be lined with felt or the like to prevent noise. Other elongated holes 12 are provided near the front ends of the keys 8 on the lower side thereof into which upright pins 13 attached to the base 3 project. The holes 12 may also be lined with felt. Padding 14 of felt or the like is provided around these pins 13 to limit the downward travel of the front ends of the keys 8. A bar 16 extends transversely across the base 3 and is retained a short distance above the keys 8 by means of the posts 17 which are anchored in the base 3, and whose upper ends are threaded and provided with nuts 18 and 19 to clamp the bar 16 in position and adjust the same upwardly or downwardly when desired. The keys 8 are provided along their top sides with springs 20 attached to the keys by screws 21, these springs bearing against the lower side of the padding 22 along the bottom side of the bar 16, so that the keys are normally held by the springs 20 with their front ends, or left-hand ends, as shown in Fig. 1, in an elevated position. Each key 8 is provided with a pivot lug 25 that is screwed thereto by means of the screw 26. A lever 28 is pivoted by means of the cross pin 29 to each lug 25, and an adjustable screw 30 whose head rests upon the pad 31 on lever 8 limits the downward travel of the outer end of the lever 28. An upright standard 32 is rigidly connected to each lever 28, and a wire spring 33 is inserted in each standard 32 and bears against a pad or rest 34 on the lug 25, so as to tend to keep the standards 32 turned to the right, as seen in Fig. 1. Each standard 32 carries an adjustable picker or screw 35, the ends of which are rounded or conically shaped where they strike the tongues 7.

The back side 38 of the case of the instrument is provided with a longitudinal rest piece 39, which may be screwed or fastened thereto in any convenient manner. The rest piece 39 is provided with a plurality of pivot lugs 40 that are fastened thereto by means of screws 41. A lever 42 is pivoted by means of the cross pin 43 to each lug 40, and a spring 44, one end of which is anchored in the lug 40 by being bent around the pin 45 and having its extreme end resting against a shoulder, has its opposite end bearing in a slot 46 along the upper side of the lever 42

so as to press the same downwardly. Adjustable screws 47 pass through levers 42, and the lower ends thereof carry dampers 48 for striking the tongues 7. The outer ends of the levers 42 may be provided with wear pieces 50 of leather, for example, which contact with the upper rounded ends 36 of the upright standards 32.

The operation is as follows: When the operator depresses the end of any key 8 so as to cause the same to turn upon the cross piece 9, the other end of this key is raised, thus causing the standard 32 carrying the picker 35 to move upwardly, whereupon the end of the picker strikes the tongue 7 and causes the same to vibrate, as the damper 48 is simultaneously raised off of the tongue 7 by the standard 32 pressing upwardly against the wear piece 50. As the upper rounded end 36 of the standard 32 travels in the arc of a circle, it slides slightly on the wear piece 50 away from the pivot 43, and when pressure upon the left-hand end of the lever 8 is released, the spring 20 causes the other end to descend, and as the upper rounded end 36 of the standard 32 is frictionally held by the wear piece 50, it does not travel back along the same arc of a circle, but turns in an anti-clockwise direction with respect to key 8 around the pivot 29, so that the end of the picker 35 is held sufficiently far to the left to prevent it from striking the end of the tongue 7 as the picker 35 descends. As soon as the lever 42 urged downwardly by gravity and also by the spring 44 descends sufficiently for the damper 48 to rest upon the tongue 7, the tongue is caused to cease vibrating, if it has not already done so, and the lever 42 is stopped. A slight farther downward movement of the standard 32 takes its upper end out of contact with the wear piece 50, so that the spring 33 is free to turn the same in a clockwise direction around the pivot 29, thus bringing the end of the picker 35 into position ready to strike the tongue 7 again on upward travel. The screws 30 and 47 can be easily adjusted so as to cause the upper end of the standard 32 and the wear piece 50 to disengage just before the end of the key 8 strikes the stop pad 24, and the picker 35 can be adjusted longitudinally so that it will strike the tongue 7 properly on its upward travel.

I claim:

1. In a device of the character described, a plurality of members capable of producing different tones when vibrated, means for striking said members when moving relative thereto in one direction, and means operated by sliding friction to prevent said members from being struck by said striking means when it moves in the opposite direction.

2. In a device of the character described,

a plurality of tongues capable of producing different tones when vibrated, a striker to vibrate each of said tongues by an upward movement, and means to prevent said tongues from being struck when the strikers move downwardly.

3. In a device of the character described, a plurality of tongues capable of producing different tones when vibrated, said tongues being mounted side by side on a sounding box, means for striking the ends of said tongues when moving transversely thereto in one direction, and means operated by sliding friction to prevent said tongues from being struck by said striking means when it moves in the opposite direction.

4. In a device of the character described, a plurality of tongues capable of producing different tones when vibrated, means for striking the ends of said tongues when moving transversely thereto in one direction, means to prevent said tongues from being struck by said striking means when it moves in the opposite direction, and dampers for said tongues carried by said preventive means.

5. In a device of the character described, a plurality of tongues capable of producing different tones when vibrated, pivoted levers carrying means near the ends thereof for striking the ends of said tongues when moving transversely thereto in one direction, and means to prevent said tongues from being struck by said striking means when it moves in the opposite direction.

6. In a device of the character described, a plurality of tongues capable of producing different tones when vibrated, pivoted levers carrying adjustable screws for striking the ends of said tongues when moving transversely thereto in one direction, and means to prevent said tongues from being struck by said striking means when it moves in the opposite direction.

7. In a device of the character described, a plurality of tongues capable of producing different tones when vibrated, spring pressed pivoted levers for striking the ends of said tongues when moving transversely thereto in one direction, and means operated by sliding friction to prevent said tongues from being struck by said striking means when it moves in the opposite direction.

8. In a device of the character described, a plurality of tongues of different lengths mounted upon a sounding box, a key for vibrating each tongue, each key having a lever pivoted thereon, said levers carrying pickers to strike said tongues in one direction, and pivoted levers above said tongues to prevent the same from being struck as the pickers move in the opposite direction.

9. In a device of the character described, a plurality of tongues of different lengths mounted upon a sounding box, a key for

vibrating each tongue, each key having a lever pivoted thereon, said levers carrying pickers to strike said tongues in one direction, and pivoted levers above said tongues to prevent the same from being struck as the pickers move in the opposite direction, said last named levers carrying dampers to contact with said tongues.

10. In a device of the character described, a plurality of tongues of different lengths mounted upon a sounding box, a key for vibrating each tongue, each key having a lever pivoted thereon, said levers carrying pickers to strike said tongues in one direction, pivoted levers above said tongues to prevent the same from being struck by said pickers

as they move in the opposite direction, and means for adjusting the positions of said levers on said keys.

11. In a device of the character described, a plurality of tongues of different lengths mounted upon a sounding box, a key for vibrating each tongue, each key having a lever pivoted thereon, said levers carrying pickers to strike said tongues in one direction, and pivoted levers above said tongues to prevent the same from being struck by said pickers as they move in the opposite direction, the upper ends of said first named pivoted levers being rounded where they contact with said second named levers.

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