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2,519,306

TOY PIANO

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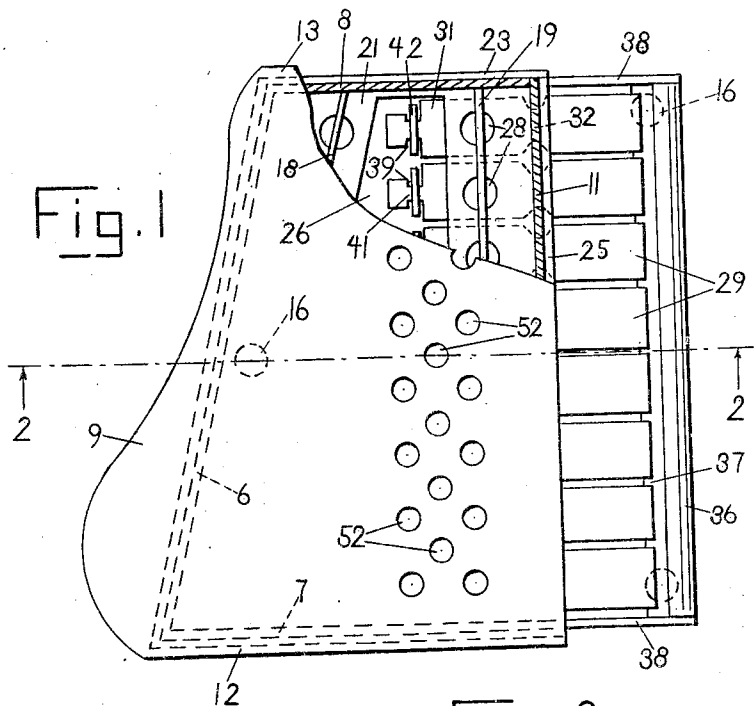


Fig. 2

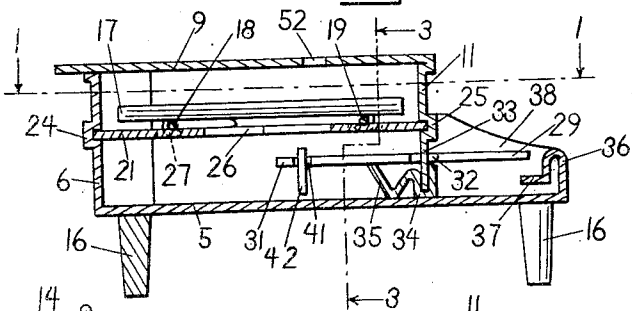


Fig. 4

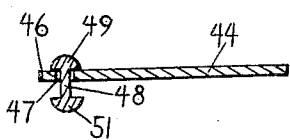


Fig. 5

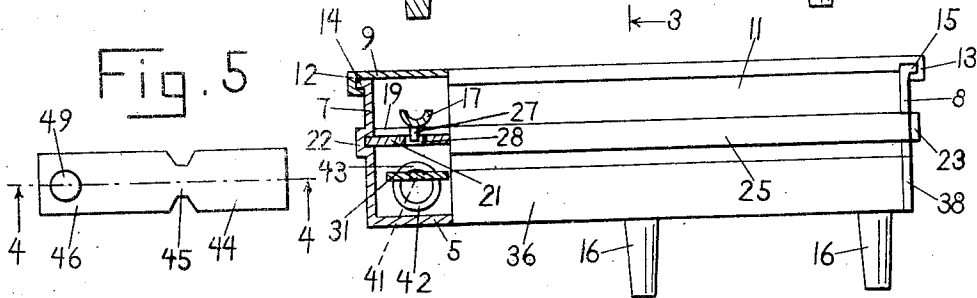


Fig. 3

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My invention relates to musical toys simulating pianos, and one of its objects is to provide an amusing and educational toy adapted for playing a melody by striking keys.

Other objects are to suspend a striking member on a key in the position of rest, to avoid any permanent connection or contact between this member and the key and, in the striking position, this member is freely movable within certain limits, to push this member by the key toward a sounding element or tone bar whereby this member strikes the bar and, in the striking position, is free of any contact other than that with the bar, and thereby to produce a tone that is clear, well ringing, of a definite quality and not impaired by contact or connection of the striking member with any other body than the bar.

Further objects are to provide the striking member with considerable weight whereby the stroke will have considerable strength, to distribute this weight so that the member's center of gravity is lower than the surface of the key supporting the member in the position of rest, thereby to reduce that height of the member which extends over the key and to reduce the necessary distance between the key and the sounding element, to provide a stable and reliable suspension of the striking member, and to guide the member into the suspended position when it rebounds from the striking position.

Still other objects are to provide a resilient stop supporting the key in the position of rest, thereby to avoid disturbing vibrations or knocking noises made by the back falling key and by the rebounding striking member, and thereby to make possible the use of a casing made of sheet metal without undesired by-sounds arising from the casing.

Still further objects are to obtain these results with simple and inexpensive means and with a structure that requires little space, and to provide a toy of the type described that can be easily made, assembled, inspected and repaired.

Still other objects and advantages will appear from the following description of exemplifying embodiments of my invention, from the appended claims and from the accompanying drawing in which:

Fig. 1 shows a partially sectional top view of an illustrative embodiment of my invention, the sectionally represented part being cut along the line 1-1 in Fig. 2, the tone bars being omitted.

Fig. 2 shows a cross-section of the same embodiment, taken along the line 2-2 in Fig. 1.

Fig. 3 shows a partially sectional front view of

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the same embodiment seen from the right side in Fig. 1 or Fig. 2, the sectionally represented part being cut along the broken line 3-3 in Fig. 2.

Fig. 4 shows a cross-section of a modified key and striking member which may be used instead of the corresponding parts of the embodiment shown in Figs. 1 to 3, this cross-section being taken along the line 4-4 in Fig. 5.

Fig. 5 shows a top view of the parts shown in Fig. 4.

Referring to Figs. 1 to 3, numeral 5 indicates the bottom, 6 the back wall, 7 a lateral wall, 8 another lateral wall, 9 the top and 11 the front wall of a casing. The bottom 5 and the walls 6, 7 and 8 form one preassembled unit, and the top 9 and the front wall 11 belong to another preassembled unit. In assembled condition, these two units are connected by bending lateral rims 12 and 13 of the top around laterally projecting rims 14 and 15 of the walls 7 and 8. Preferably, the casing comprising the parts 5 to 15 is made of sheet metal. The casing or its bottom 5 may be supported by legs 16.

A row of tone bars 17 is positioned in the casing and supported by the same in, preferably, horizontal and parallel positions. For example, the bars 17 may rest on strings 18 and 19 which, in turn rest on a flat frame 21 having lateral edges inserted in inner grooves formed by correspondingly bent bulges 22 and 23 of the walls 7 and 8. The back wall 6 may have a similar bulge 24 forming a groove receiving the back edge of the frame 21. The front wall 11 may have a bulge 25 for the insertion of the front edge of this frame.

The frame 21 has a window or opening 26 positioned between the strings 18 and 19 and bridged over by the bars 17. The sides of this window run preferably parallel to the outer edges of the frame. The left wall 7 may reach farther to the rear side than the right wall 8 whereby the horizontal cross-sections of the casing, of the frame and of the window form trapezoids adapted for the arrangement of a row of differently long tone bars.

The bars 17 may be affixed to the strings 18 and 19 in any suitable manner. For example, each bar has two hooks 27 connected to its lower side and bent around the strings. The frame is provided with openings 28 into which the hooks 27 reach.

A row of keys 29 is positioned at a level lower than the frame 21. Each key 29 has an inner end 31 positioned under one of the bars 17 and has a narrower portion 32 passing through a

slightly higher opening 33 of the front wall 11 whereby the key is turnable and hinged to the wall 11. The lower part of this wall is wedged in a fold of a ledge 34 of about W-shaped cross-section. The rear wall 35 of the ledge 34 forms a resilient tongue supporting the key end 31 in the position of rest.

The front side of the bottom 5 is bent up and forms a front ledge 36 terminating in an inwardly projecting rim 37 which forms a resilient stop for the keys 29 when the same are struck. The lateral ends of the ledge 36 contact and may be connected to front extensions 38 of the lateral walls 7 and 8.

Each key end 31 has lateral recesses 39 positioned at both sides of a neck 41 which is narrower than the adjoining parts of the key. A ring 42 surrounds each neck 41, is preferably made of metal and relatively heavy. The highest arc 43 of each ring 42 extends substantially horizontally and contacts, in the shown position of rest, the upper edges of the corresponding neck 41 whereby the ring is suspended on the key end 31 and has a center of gravity positioned lower than the arc 43.

Instead of the keys 29 and the rings 42, the modifications shown in Figs. 4 and 5 may be used. These figures show a key 44 having a narrow portion 45 identical to the portion 32 of the keys 29 whereby each key 44 can be hinged to the wall 11 in the same manner as the keys 29. The inner end 46 of the key 44 has an opening 47 surrounding, with clearance, the median part of a member 48. The upper end of the member 48 forms a head 49 which is broader than the opening 47. A similar head 51 may form the lower end of the member 48. The member 48 may be made of metal, may be relatively heavy and has a center of gravity positioned under the head 49.

The member 48, as well as the member or ring 42, is free of any permanent connection with any other body and is freely movable within certain limits. The key 44 and the member 48, as well as the key 29 and the ring 42, form two elements interlocking each other with clearance.

When the player strikes a key 29 or 44, the inner end 31 or 46 of the struck key moves up and pushes the suspended member 42 or 48 upwardly in the direction to a tone bar 17. Thereby the pushed member is thrown through the opening 25 of the frame 21, loses contact with the key and strikes the bar 17 positioned over the struck key. Thereby a clear and loud tone is produced. The top 9 of the piano may be provided with openings 52 in order to make the produced tones better audible.

After having struck the bar, the member 42 or 48 rebounds and falls back on the key end 31 or 46 where this member remains suspended until the key is struck again. At the same time, the key returns into the position of rest in which the key is stopped resiliently by the tongue 35.

In order to inspect or to repair the inner elements of the piano, the top 9 may be disengaged from the lateral walls 7 and 8. This can be done by bending the rims 12 and 13 of the top a little outwardly or, simply, by slightly pressing the upper parts of the walls 7 and 8 against each other, these walls being sufficiently resilient to give way under pressure as far as necessary to disengage the rims 14 and 15 from the rims 13 and 14. Then, the unit comprising the top 9, the front

wall 11, the ledge 34, the keys 29 and the striking members 42 or 48 is drawn to the front side in slightly rising direction whereby this unit is easily separated from the remaining body of the piano. In thus separated condition, all elements are conveniently accessible. The piano can be easily re-assembled by reverse procedure.

I desire it understood that my invention is not confined to the particular embodiments shown and described, the same being merely illustrative, and that my invention may be carried out in other ways without departing from the spirit of my invention as it is obvious that the particular embodiments shown and described are only a few of the many that may be employed to attain the objects of my invention.

Having described the nature of my invention, what I claim and desire to protect by Letters Patent is:

1. In a toy piano, a tone bar disposed in a substantially horizontal plane, a key having an upwardly movable end underlying said tone bar and spaced below the latter, and a striking member loosely engaging said upwardly movable end of said key and movable vertically relative to the latter, said striking member being symmetrical about a horizontal axis and formed with portions adjacent the top and bottom thereof engageable with said end of said key and limiting the vertical movement of said member relative to said key, said portion adjacent the top of said member engaging said end when the key is at rest thereby suspending said member from said end with the center of gravity of said member disposed below said end, said key and said member being so shaped and positioned that upward movement of said end effects upward throwing of said member into striking contact with said bar, and so that said member, when dropping away from said bar, falls back into said suspended position.

2. In a top piano, a substantially horizontally disposed tone bar, a key having an upwardly movable end underlying and spaced downwardly from said bar, and a striking member formed symmetrical about a horizontal axis, said key end and said member forming a pair of elements interlocking with substantial clearance, one of said elements having an opening and the other of said elements having a neck passing loosely through said opening, said member being formed with portions adjacent the top and bottom thereof engageable with said key end and adapted to limit the vertical movement of said member relative to said end, said member being suspended by said portion adjacent the top thereof from said end when said key is at rest with the center of gravity of said member disposed below said end.

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