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2,634,649

COMB FOR MUSICAL INSTRUMENTS

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Fig. 1.

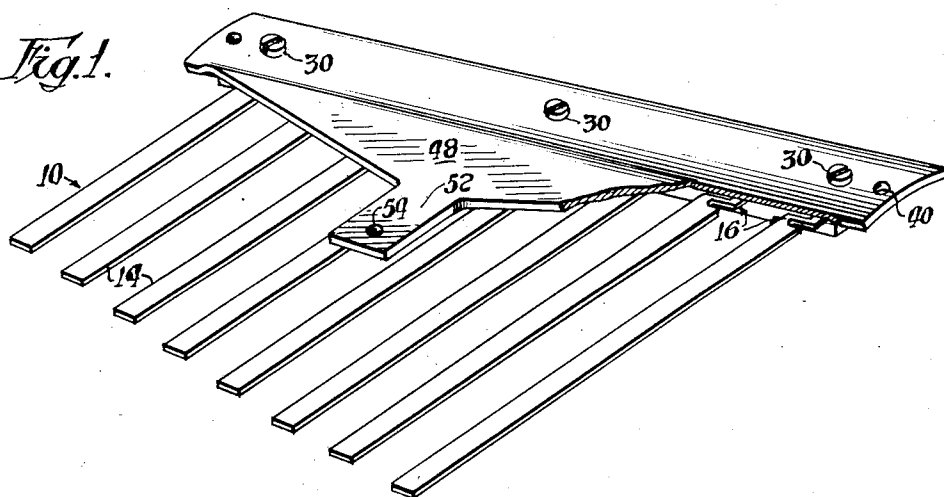


Fig. 2.

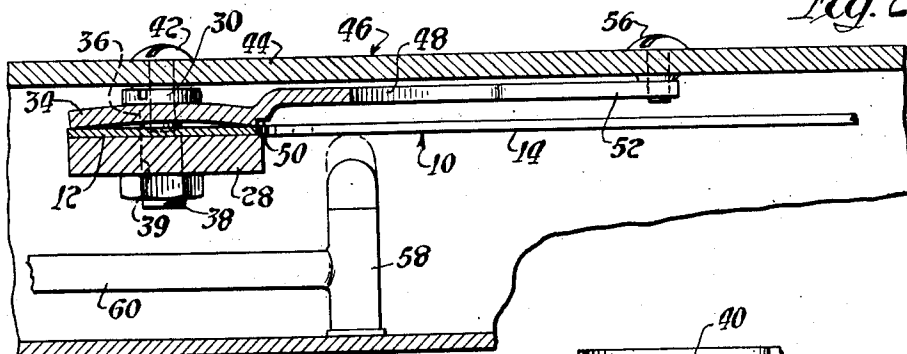


Fig. 3.

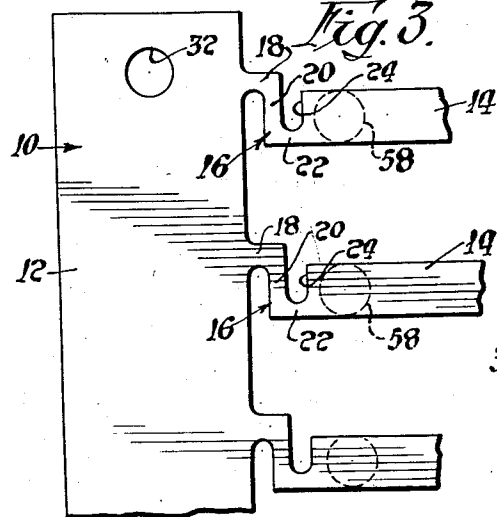
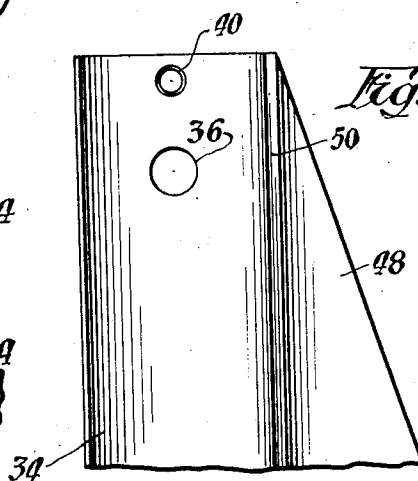


Fig. 4.



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COMB FOR MUSICAL INSTRUMENTS

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3 Claims. (Cl. 84-408)

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This invention relates to a musical instrument and more particularly to a musical instrument of the percussion type such as a toy piano.

The primary object of the invention is to facilitate the construction of musical instruments employing vibrating reeds or tines of exceptionally accurate tone quality by modern mass production methods.

Another object is to preserve in instruments employing musical combs accurate tonal quality and adequate resonance to render audible the tones produced by the vibration of the tines.

Still another object is to preserve the simplicity of design of the mechanism of percussion musical instruments such as toy pianos and at the same time secure accurate tone qualities at a minimum of expense.

The above and other objects may be attained by employing this invention which embodies among its features a musical comb of the type having an elongated comb back and tines carried by said comb back, means for governing the pitch of a musical tone produced by a tine comprising a neck connected to each tine and to the comb back, and each neck having recesses opening from opposite sides thereof.

Other features include a group of hammers mounted to move upwardly, a musical comb mounted above said hammers and having tines which lie in the path of movement of the hammers.

Still other features include a resonator carried by said comb above said tines, and a sounding board connected to the resonator in spaced relation thereto.

In the drawings:

Figure 1 is a perspective view, partly in section, illustrating a musical comb and resonator embodying the features of this invention:

Figure 2 is a fragmentary sectional view through a percussion instrument illustrating this improved comb, and resonator in proper relation to the hammers by which the tines of the comb are struck;

Figure 3 is a fragmentary top plan view of the comb; and

Figure 4 is a fragmentary bottom plan view of the resonator and clamp plate.

Referring to the drawings in detail a musical comb designated generally 10 comprises a back 12 of elongated rectangular formation from one longitudinal edge of which extends a group of tines 14. As is customary with musical combs of the type to which this invention relates, the tines 14 progressively increase in length as the approach one end of the back 12.

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In the preferred form of the invention, the tines are joined to the comb back by connectors designated generally 16 each of which comprises an arm 18 which is formed integrally with the comb back 12 and projects perpendicularly therefrom. Formed integrally with the arm 18 at the end thereof remote from the comb back 12 is an extension 20 which lies substantially parallel with the comb back 12 and terminates in an angularly extending neck 22 which lies perpendicular to the comb back and is integral not only with the extension 20, but with its respective tine 14. In forming the neck 22, the depth of the notch 24 formed between the extension 20 and the tine 14 is varied in order to alter the rapidity of vibration of its respective tine so as to control the pitch of tone produced by such vibrations. Also the notch 26 formed between the comb back 12 and the extension 20 may be varied in proportions to further modify the vibration of the tine 14 in order to produce accurate tonal quality in the musical tone produced by its respective tine. Hence by correctly proportioning the notches 24 and 26 so as to produce in the tine 14 an accurate musical tone, it is evident that by stamping out of a sheet of material possessing substantially uniform physical characteristics, the combs 10 can be manufactured in volume, with all of the same possessing substantially identical tonal qualities when their tines are vibrated.

In order to supply adequate weight to the comb 10 to bring about audibility when the tines 14 are vibrated, I provide a base plate 28 having bolt receiving openings 30 extending there-through which register with bolt receiving openings 32 formed in the comb back 12 so that the base plate 28 may be clamped to the comb back as suggested in Figure 2. In order to hold the comb back 12 on the base plate 28 I also provide an elongated clamp plate 34 which is arched transversely so that when it is placed on the comb back 12 on the side thereof opposite the base plate, it will engage the comb back 12 adjacent opposite side edges thereof. The arched clamp plate 34 is provided with spaced openings 36 which align with the openings 30 and 32 to receive clamping screws 38 by which the base plate, comb and clamping plate are held in assembled relation as will be readily understood upon reference to the drawings. As illustrated in the drawings opposite ends of the clamp plate 34 extend slightly beyond the ends of the comb back 12 and are provided with openings 40 for the reception of attaching screws 42 by means of which the assembled parts may be attached to the sounding board 44 of a musical instrument

designated generally 46. In the preferred form of the invention, the clamp plate 34 carries along one side edge a resonator 48 which overlies the tines 14 in spaced relation thereto. The junction of the resonator with the clamp plate 34 is relieved as at 50 so as to avoid interference with the vibrations of the tines. As illustrated in Figure 1, the resonator 48 is provided with a laterally extending tongue 52 which projects substantially perpendicular to the clamp plate 34 and formed in the tongue 52 adjacent the end thereof remote from the clamp plate 34 is an opening 54 for the reception of an attaching screw 56 by means of which the tongue may be connected to the sounding board 44 in spaced relation thereto.

In order to vibrate the tines 14 in proper sequence to produce the musical scale, or various tunes, I provide beneath the tines 14 a row of hammers 58 which are adapted to be moved upwardly with one hammer aligning with a tine so that as it is moved upwardly, a tine will be struck thereby and set into vibration to produce the desired musical tone. Upward movement of the hammers is effected by arms 60 which may be connected directly to piano keys, or actuated in any other manner to bring about upward movement of their respective hammers 58.

In use it will be evident that upon moving a hammer 58 upwardly it will strike the tine beneath which it is located, thus setting said tine into vibration which is transmitted through the neck 22 to the comb back 12 and its volume amplified into an audible tone by the base plate 28 and resonator 48. It is evident that by adjusting the depth of the notches 24 and 26 and consequently altering the dimensions of the arm 18 and neck 22, the frequency of vibration of the respective tines 14 may be varied in order to produce accurate musical tones. Obviously once having established the correct depth of notch 24 or 26, a die may be constructed by which musical combs of accurate tonal quality may be produced with precision and in quantity. Hence it is possible to produce musical toys, particularly toy pianos having accurate tonal qualities on a basis that will have a popular appeal. By thus producing musical instruments of accurate tonal quality, it is evident that musical education of a large number of people can be accomplished with but a minimum financial contribution by each.

While in the foregoing there has been shown and described the preferred form of this invention, it is to be understood that minor changes in the details of construction, combination and arrangement of parts may be resorted to without

departing from the spirit and scope of the invention as claimed.

I claim:

1. In a comb type of musical instrument, a plate of spring metal formed to provide an elongated back portion and tines carried by said back portion along one longitudinal edge thereof, means for connecting each tine to the back portion to govern the pitch of a musical tone produced by its respective tine comprising an arm integral with and projecting perpendicularly from the said one longitudinal edge of said back portion, an extension integral with said arm and projecting therefrom in spaced parallel relation to the back portion, and a neck integral with the arm, said extension and its respective tine, said neck projecting outward at right angles from said extension.

2. In a musical instrument, a row of hammers mounted for individual upward movement, a musical comb mounted above said hammers, said comb having an elongated back portion and tines extending therefrom which lie in the path of movement of the hammers, a base plate engaging the underside of the hammers, an upwardly arched clamp plate engaging the upper side of the back portion adjacent the opposite longitudinal edges thereof, and a resonator extending outward from the clamp plate above the tines in spaced relation thereto.

3. In a musical instrument a row of hammers mounted for individual upward movement, a musical comb mounted above said hammers, said comb having an elongated back portion carrying tines which lie in the path of movement of the hammers, a base plate engaging the underside of the back portion, an upwardly arched clamp plate engaging the upper side of the back portion adjacent the opposite longitudinal edges thereof, a resonator carried by the clamp plate and extending partially over the tines in spaced relation thereto, a sounding board positioned above said comb and the resonator, and means for connecting the extended portion of the resonator to the sounding board.

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