J. C. DEAGAN.

MUSICAL BARS.

APPLICATION FILED OCT. 2, 1911.

1,166,746. Patented Jan. 4, 1916.

Fig. 1.

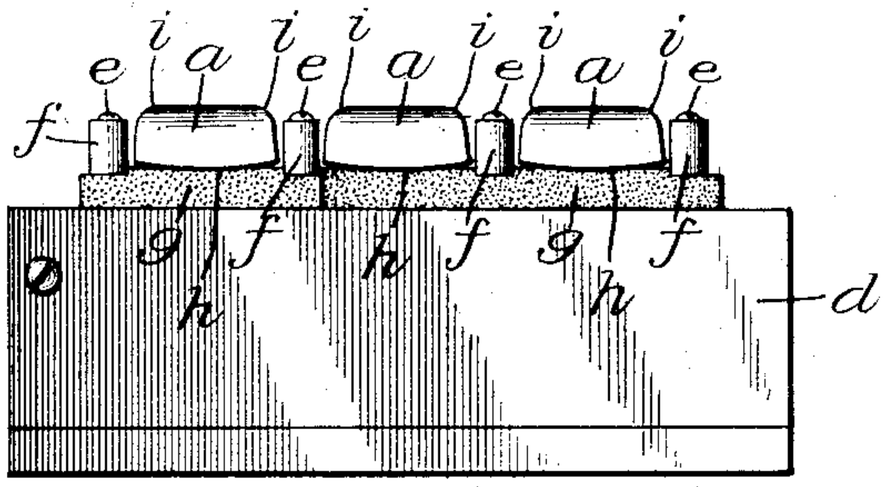
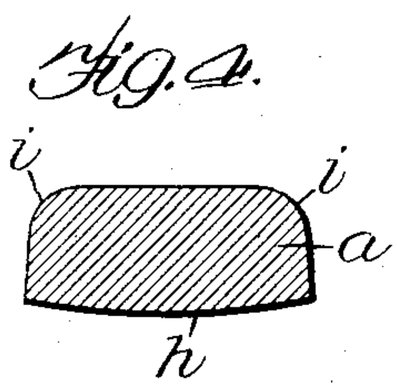


Fig. 4.



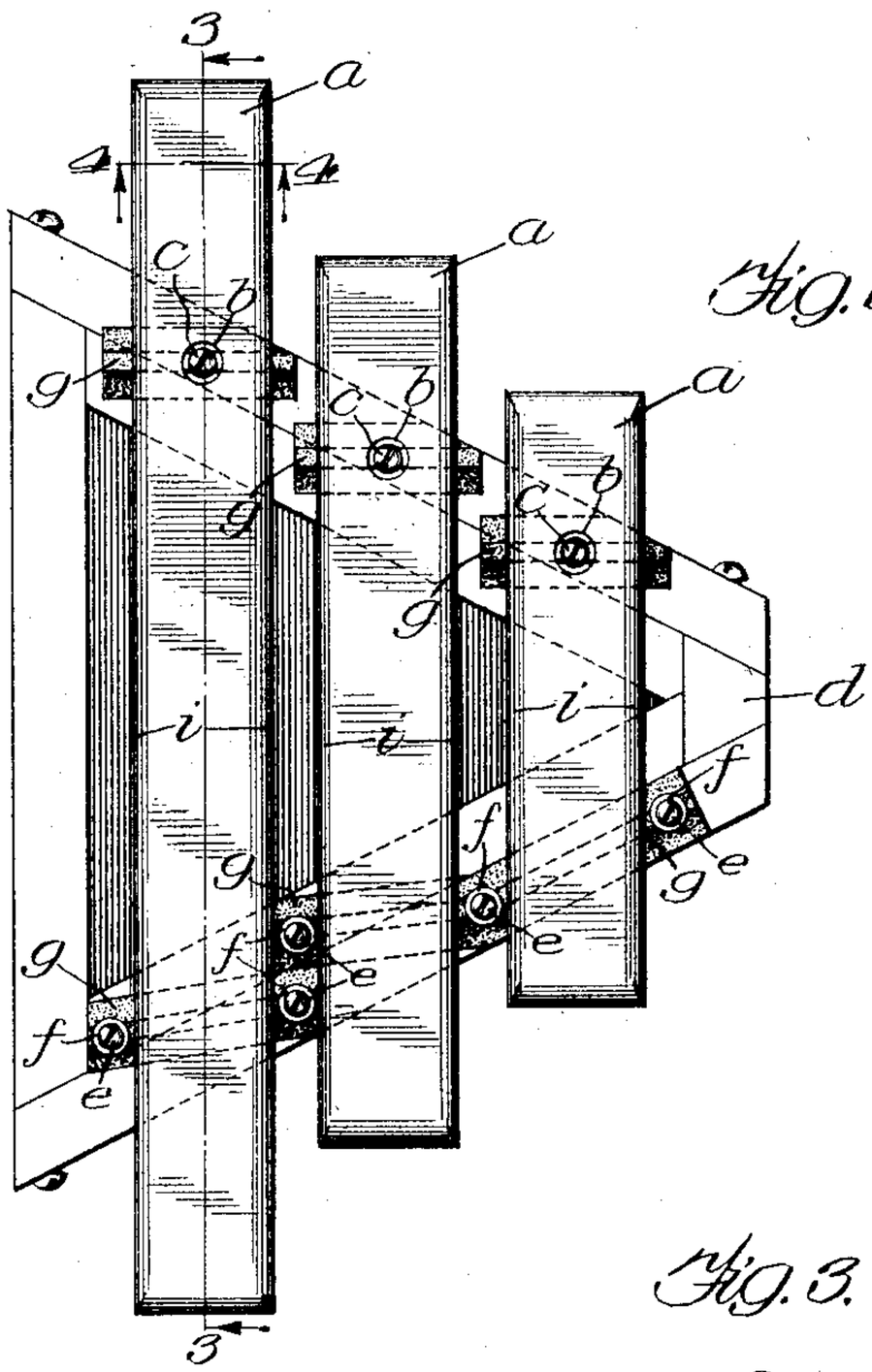
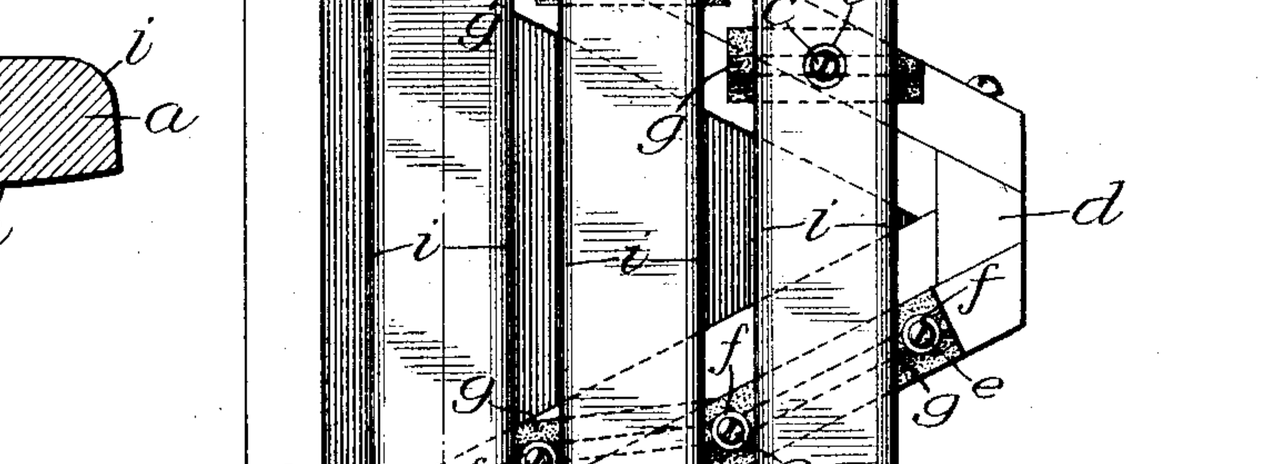


Fig. 2.

Fig. 3.



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MUSICAL BARS.

1,166,746. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed October 2, 1911. Serial No. 652,409.

To all whom it may concern:

Be it known that I, JOHN C. DEAGAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Musical Bars, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to musical instruments or musical bars adapted when struck or otherwise operated upon to be set into vibration thereby to produce sound. One embodiment of my invention is in the form of a xylophone or a set of metal bars, and when the invention is thus embodied the bars are caused to have limited area of contact with the sound insulating bar supports or engaging elements, this result being secured by convexing the longitudinal face of the bar that is opposed to the sound insulating material. The sound-insulating elements that support or engage the bars are themselves also preferably so formed that they present engaging faces to the bars of reduced area.

Another feature of my invention resides in replacing the sharp or angular upper or outer longitudinal edges of the metal bars by bevels or curved surfaces, that is the said edge portions of the bars are curved whereby these edge portions of the bars present surfaces that may be effectively hit by the operator's hammer properly to set the bars in vibration, a result which could not be assured with prior designs where said longitudinal edges were so sharp or angular as there to afford very limited area of contact with the hammer when the hammer was caused to strike glancing blows.

The characteristic of my invention which is now being described is of particular advantage in connection with a set of metallic sound producing bars as the spaces between the bars are materially increased to permit of better access of the operating hammer to the contiguous surfaces of adjacent bars. Moreover the operating hammer in being caused to slide over the bars has opportunity better to strike each bar individually owing to the reception of the hammer within the spaces between adjacent bars that are increased by means of my invention. In other words the bars are set into proper vibration irrespective of the angles at which the hammer strikes the same owing to the shape described.

I will explain my invention more fully by reference to the accompanying drawing showing a row of horizontally disposed bars, and in which drawings—

Figure 1 is a side elevation of a musical instrument as constructed in accordance with one embodiment of the invention; Fig. 2 is a plan view of the structure shown in Fig. 1; Fig. 3 is a longitudinal sectional view on line 3 3 of Fig. 2; and Fig. 4 is a cross sectional view of one bar on a somewhat larger scale of illustration.

Like parts are indicated by similar characters of reference throughout the different figures.

The instrument which I have shown is one that includes three metal bars *a*, though it is understood that in practice the number of bars may vary and that the musical tones produced thereby may be musically different. Each bar is shown as being provided with an aperture *b* for receiving a positioning pin *c* that projects upwardly from a base structure *d*, the aperture being sufficiently large to permit the pin to pass freely therethrough to prevent interference, as far as possible, with the vibration of the bar. Distance preserving pins *e* also project upwardly from the base structure and are interposed between adjacent bars, sufficient clearance intervening between these latter pins and the bars so that the bars may be free thereof so as freely to vibrate when operated upon. The pins *c* and *e* are surrounded by sleeves of rubber or other suitable material *f* so that the vibrations of the bars may not be in communication with the pins. Each pin is provided, at its upper end, with a head, as indicated for example in Fig. 3. The bore of each rubber sleeve *f* is less than the diameter of the pin head so that the sleeve cannot be dislodged. The base structure *d* also carries ridges or strips *g* of sound-insulating material that are preferably substantially triangular in cross section, the triangular formation desirably being pyramidal. The tops of the ridges *g* of felt or other sound insulating material are desirably slightly flattened so that these portions of the elements *g* will not be spread into wider contact with the bars *a* that rest thereupon. The points of contact of the elements *g* with the bars are preferably at nodal points of the bars. By the construc-

tion of the supporting elements *g* just described the areas thereof that are presented for contact with the bars *a* are reduced to the lowest limit.

I reduce the contact areas of the bars that are presented to the ridges *g* by convexing the bottom faces of the bars as indicated at *h*. As illustrated in Fig. 3, the cross section of the bars is uniform throughout, being substantially oblong and rounded along their upper edges and convexed at their bottom sides, though I do not wish to be limited to this characteristic especially since it is now the practice in doing certain tuning of the bars to partially remove material at the bottom faces thereof. The described formation of the bottom faces of the bars further reduces the contact areas of the bars with the elements of sound insulating material that support the same. When the bars are formed of metal I curve the longitudinal edges thereof, as indicated at *i*, so that hammer blows may be properly received by any part of the bar to which the hammer has access, the bars properly and efficiently vibrating when the curved portions are struck, a result that was not assured when the bars were provided with sharp or angular longitudinal edges upon the bar receiving glancing hammer blows. By curving the longitudinal edges of the bars, as indicated at *i*, additional hammer receiving space is afforded between the bars so that the hammer, when run over the bars, is able to fall farther between the bars and thereby give the individual bars more forceful blows, each blow being efficient, as stated, to set up proper sound-producing vibration.

I used the word "bar" herein meaning a bar that is polygonal in cross section, since my invention concerns bars of such shape and has been devised to overcome some of the undesirable characteristics of bars of such shape.

The device of my invention is thus seen to have three distinct characteristics, one residing in the formation of the bottom face of the bar, another in the formation of the longitudinal upper edges of the bar, and the third in the formation of the sound-insulating supporting or contacting element for the bar. I do not wish to be limited to the embodiment of various characteristics in a single organization.

My invention has been particularly described in connection with a bar that is horizontally disposed, in which case the bottom face of the bar is the portion thereof that is permanently engaged. Obviously the bar may be vertically disposed and its convex longitudinal face may be opposed to a sound-insulating body with advantages that are obvious from the above description.

It will be seen that the instrument which I have herein described includes a plurality of adjacent substantially parallel bars, each bar having a convex side which is engaged to position the bar; substantially parallel sides adjacent the convex side, and a remaining side intervening between the latter two sides, the corner portions between the remaining side and the sides which intervene between the same and the convex side being curved.

Having thus described my invention I claim as new and desire to secure by Letters Patent the following:—

A musical instrument including a sound-producing bar and a support therefor, the bar being substantially oblong in cross section and having one of its two broader longitudinal faces convex and resting upon said support, while the longitudinal corners adjacent the opposite broad longitudinal face are rounded.

In witness whereof, I hereunto subscribe my name this 9 day of September, A. D. 1911.

JOHN C. DEAGAN

Witnesses:
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