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BRIDGES FOR STRINGED MUSICAL INSTRUMENTS

Original Filed May 15, 1950

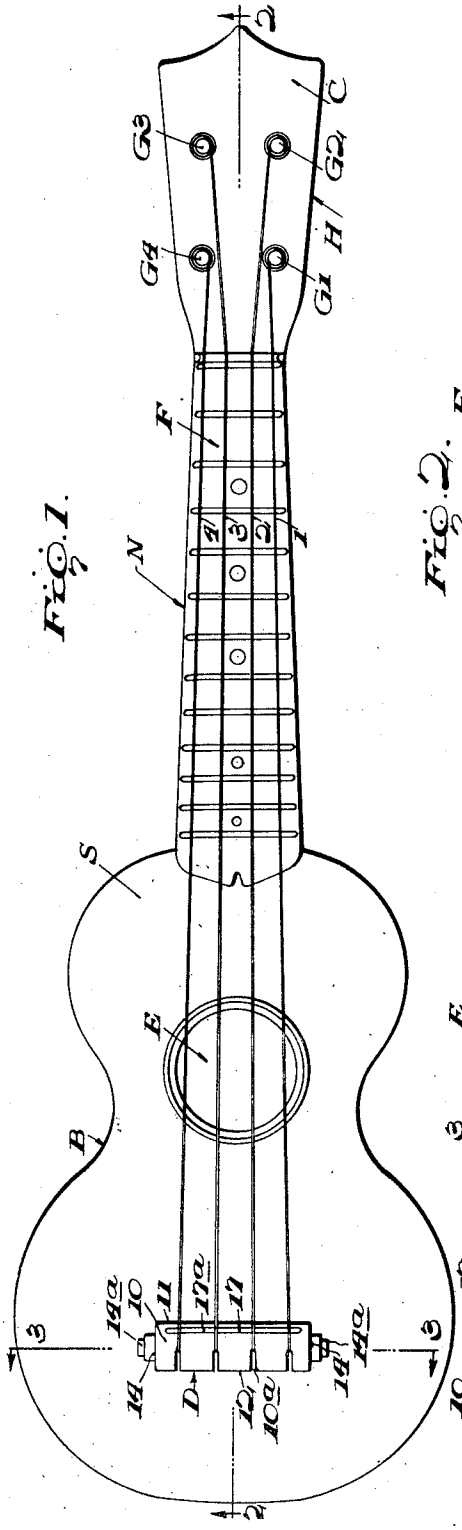


FIG. 1.

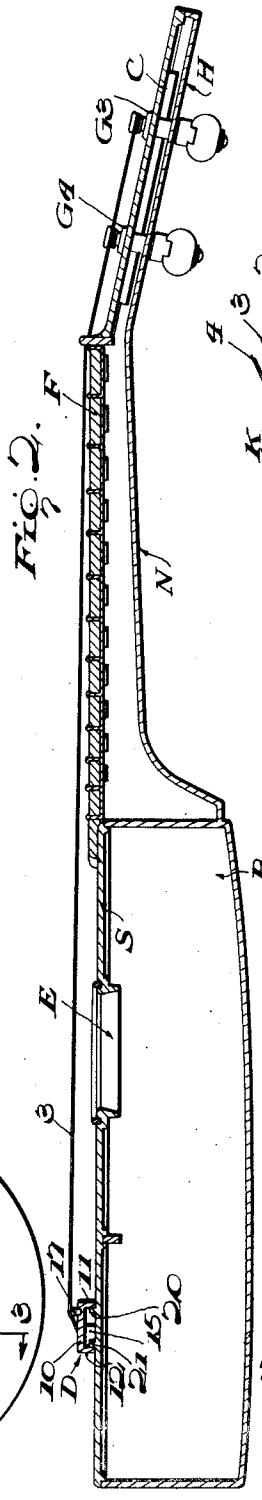


FIG. 2.

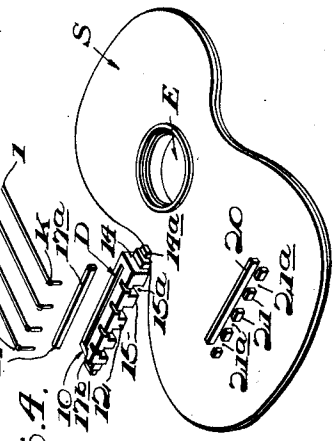


FIG. 4.

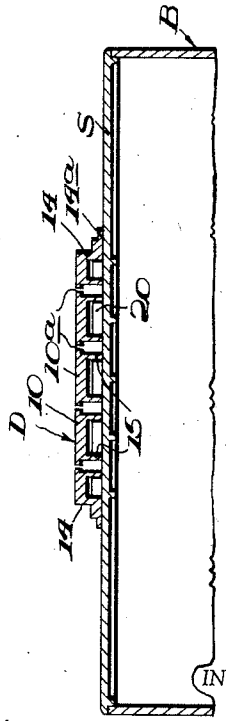


FIG. 3.

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BRIDGES FOR STRINGED MUSICAL INSTRUMENTS

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Original application May 15, 1950, Serial No. 149,741, now Patent No. 2,597,154, dated May 20, 1952. Divided and this application December 29, 1951, Serial No. 264,133

3 Claims. (Cl. 84—298)

1

My invention relates to certain improvements in bridges for stringed musical instruments, and more specifically to such a bridge formed of plastic for a plastic sounding board on which it is positioned for releasable attachment thereto of the instrument strings; and the nature and objects of the invention will be readily understood by those skilled in the musical instrument art in the light of the following detailed description and explanation of the accompanying drawings illustrating an embodiment of the invention from among various other embodiments, forms, constructions, arrangements and combinations of which the invention is capable within the broad spirit and scope thereof as defined by the claims hereto appended.

This application is filed as a division of my copending application filed March 15, 1950, Serial No. 149,741, now U. S. Patent No. 2,597,154 dated May 20, 1952, for Stringed Musical Instruments.

The invention is directed to bridges utilized in those types of instruments characterized by a resonant body or bell having a sounding board secured over the upper or outer side of the body, with a finger board mounting neck extending from one end of the body and terminating at its outer end in a head for mounting thereon the string tuning keys or pegs. In such instruments spaced strings are secured to the head mounted keys and are extended inwardly therefrom along and over a finger board mounted on the neck and across the sounding board to a bridge positioned on the board and to which the strings are releasably attached. More specifically my invention is concerned with such instruments when formed of plastic, such as an instrument of my above identified copending aforementioned application Serial No. 149,741, or an instrument having the sounding board thereof formed of plastic, although my invention in its broader aspects is not limited to instruments, or to the sounding boards thereof, formed of any particular material or materials.

An object of the invention is to provide an improved bridge structure of simplified design for facile attachment thereto and release therefrom of the ends of the instrument strings.

Another object is to provide a bridge structure which will securely maintain the string ends in attached position against inadvertent displacement under the tension loads imposed by the tautly stretched strings attached thereto.

Another object is to so design a bridge as to insure an equal distribution to and across the sounding board of the loads imposed on the bridge by the tensioned strings.

2

A further object is to provide such a bridge as a generally box-like rectangular structure having a string engaging and positioning rib thereon and string receiving and positioning slots formed and located in the walls of the structure relative to the string engaging rib for facile attachment and release of the strings without obstruction of or interference with the string engaging rib.

And a further object is to provide such a bridge having the foregoing characteristics and features, as a one piece plastic unit formed of a thermoplastic material.

With the foregoing and various other features, objects and results in view which will be readily apparent from the following detailed description and explanation, my invention consists in certain novel features in design, construction, materials and arrangements of parts and in the combination thereof, all as will be more fully and particularly referred to and specified hereinafter.

Referring to the accompanying drawings in which similar reference characters refer to corresponding parts and elements throughout the several figures thereof:

Fig. 1 is a view in top plan of a stringed musical instrument of the ukulele type provided with a bridge of my invention positioned on the sounding board of the instrument.

Fig. 2 is a view in longitudinal section through the instrument of Fig. 1, taken as on the line 2—2 of Fig. 1.

Fig. 3 is a view in transverse section through the body of the instrument and longitudinally through the bridge thereof, taken as on the line 3—3 of Fig. 1.

Fig. 4 is a detail view in perspective of a portion of the sounding board and bridge in separated relation.

I have selected and illustrated and described herein, purely by way of example and not in all respects by way of limitation, a stringed musical instrument of the ukulele type formed of a moldable thermoplastic material having a sounding board incorporating thereon an embodiment of bridge of my present invention. It is to be understood, however, that a bridge of the invention is not limited to embodiment for and use with stringed musical instruments of the ukulele type or to instruments formed of thermoplastic material, as the invention is adapted to and intended for use generally with stringed musical instruments.

The example instrument incorporating an embodiment of bridge of the invention, is illustrated in the accompanying drawings as including a hollow, resonant body or bell B having a sound-

ing board S over and closing the upper or outer side thereof. The sounding board B is formed with a sound opening E therethrough. A neck N extends from one end of the body B and terminates at its outer end in a tuning key mounting head H. A fretted finger board F is mounted on and over the neck N and extends between the inner end of head H and the adjacent end of body B and sounding board S. A cover plate C is in this instance mounted on and covers the upper or outer side of head H. A bridge D embodying my present invention is secured in transversely disposed position on the outer side of the sounding board S between the outer end of the body B and the sound opening E. In the ukulele type of instrument four (4) strings are usually provided, as in the example instrument hereof, and four (4) string tension adjusting and tuning keys G1, G2, G3 and G4 are journaled in and extend transversely through head H and the cover plate C, to which keys are attached the ends of the strings 1, 2, 3 and 4, respectively. Such strings may be of any suitable material, although in the present instance they may be considered to be of a suitable plastic such as nylon.

The strings 1, 2, 3 and 4 are stretched from the tuning keys in somewhat parallel relation inwardly across the finger board F, sounding board S and the sound opening E therein, to the bridge D to which they are attached and secured in spaced relation, as will be clear by reference to Fig. 1. The strings 1, 2, 3 and 4 are stretched between the tuning keys and the bridge D under considerable tension, which tension may be varied by the rotatable keys to thereby tune the strings.

The body B, the neck N and the head H are formed in the example instrument as a one-piece, unitary, injection molded component of a polystyrene plastic, in accordance with the disclosures of my above identified copending application Serial No. 149,741.

The bridge D which embodies a specific adaptation of my present invention as applied to the example instrument, is formed by a hollow, generally rectangular structure on the sounding board S in a position disposed transversely thereof and upstanding therefrom between the outer end of the bell B and the sound opening E. This bridge member D is comprised of an upper or outer wall 10, front longitudinal wall 11, rear longitudinal wall 12, and the opposite end closing walls 14, all extending outwardly from the outer side surface of sounding board S. If desired, as in this example, opposite end bases 14a may extend outwardly from the opposite end walls 14.

Bridge member D of this particular example is open at its under or inner side between the opposite end walls 14, and a series of box-like structures 15 is provided depending from the upper wall 10 and being spaced equal distances apart within and longitudinally of the bridge. (See Fig. 3.) These box structures 15 are each open at their outer side through the outer or rear longitudinal wall 12 to provide the string end openings 15a through such wall of the bridge. The upper or top wall 10 of the bridge is provided with string slots 10a disposed transversely thereof and opening into the box structures 15, respectively, through the outer edge of top wall 10 and the outer or rear longitudinal wall 12. These slots terminate at their inner ends spaced a distance from the forward longitudinal wall 11 of the bridge D. The openings or slots 15a formed through the rear wall 12 are greater width at their inner portions than the width of the slots 10a in the outer or top wall 10 of the bridge.

Thus, the ends of the strings 1, 2, 3 and 4, which may be provided with knots K or equivalent enlargements thereon or attached thereto, can have such knots passed through the wider slots or openings 15a and engaged against the under side of top wall 10 with the strings then received in and extended outwardly through the slots 10a in such top wall. In this manner the strings are held firmly anchored and attached to the bridge D when stretched under tension between the tuning keys and the bridge.

In accordance with a feature of the invention, the upper or top wall 10 of the bridge is provided with a string contact rib or strip 17 thereon in position disposed longitudinally of top wall 10, parallel with but spaced inwardly from the upper front edge of front wall 11. Contact rib or strip 17 has a relatively narrow width and projects outwardly a distance from the upper surface of top wall 10 to provide a relatively thin but rounded edge 17a to be engaged by and over and across which the strings 1, 2, 3 and 4 are extended under tension from slots 10a of the bridge D to the keys G1, G2, G3 and G4, respectively. In the specific example hereof, the rib or strip 17 is formed of a separate member and a groove 17b is formed in and opening through the top wall 10 into which strip 17 is suitably secured, as by cementing. If desired or found expedient the rib 17 may be formed integral with and as a permanent part of top wall 10.

The bridge D and the contact strip 17 are in this instance formed of a polystyrene plastic by injection molding, as separate components from the sounding board S of the example instrument which is also an injection molded component of polystyrene. The hollow, rectangular bridge structure D is suitably cemented in position on and to the upper surface of the sounding board S to thereby become fused or welded thereto and in effect become an integral part of the polystyrene sounding board S in a manner familiar to those skilled in the plastics art.

Following a further teaching of the invention as expressed in this example, where the bridge D is formed as a separate member cemented to the sounding board S, I provide on the outer side of the sounding board a rib 20 and a series of relatively short, spaced ribs or lugs 21 parallel with but spaced outwardly or rearwardly from rib 20, as will be clear by reference to Fig. 4. Ribs 20 and 21 are molded as integral components of the sounding board S in position disposed transversely thereof and projecting outwardly therefrom. These ribs 20 and 21 are so dimensioned and positioned relative to the bridge D and to the sounding board S as to permit of the bridge being fitted down thereover into mounted position on the sounding board with the ribs holding the bridge against lateral or longitudinal displacement. When thus positioned the bridge structure D may then be cemented to the sounding board to provide a permanent fixed part thereof.

The ribs 21 are each of such a length that when the bridge structure D is in position thereover on the sounding board S, the spaces 21a between the ribs will align with and open into the openings 15a through rear wall 12 into the bridge structure. Thus, the knots K or equiva-

lent elements on the strings may be freely passed through the sets of aligned openings 15*a*—21*a*, respectively, with the strings received in and extending outwardly through the slots 10*a* of the upper wall 10 of the hollow, rectangular bridge structure D.

It will also be evident that various other forms, designs, embodiments, substitutions, eliminations, additions and combinations may be resorted to without departing from the broad spirit and scope of the appended claims, and hence I do not wish to limit myself in all respects to the exact and specific disclosures hereof, except as may be required by specific intended limitations thereto appearing in the appended claims.

What I claim is:

1. In a stringed musical instrument, in combination, a resonant, hollow body closed at one side thereof by a sounding board having a sound opening therethrough; a bridge member comprised by a hollow, rectangular structure on said sounding board located in position disposed transversely thereacross between said sound opening and the adjacent end of said body, said bridge member structure including front and rear walls, a top wall and opposite end closing walls, said top wall being formed with string receiving slots therethrough disposed transversely and spaced apart longitudinally thereof, said top wall slots terminating at their forward ends spaced inwardly from the forward edge of said front wall and at their rear ends extending through the rear edge of said top wall; said rear wall of said bridge structure being provided with slots therethrough aligned with and opening at their outer ends into said top wall slots; and said rear wall slots at their inner ends adjacent said sounding board being formed of a width greater than the width of the string receiving slots in said top wall.

2. In a stringed musical instrument, a sounding board, a transverse rib on the outer side thereof disposed transversely of the board, a series of spaced lug members on the outer side of said board disposed transversely thereof and being spaced from and substantially parallel with said rib, a bridge member fitted down over said rib and spaced lug members, and said bridge member being formed with string receiving openings therein aligned with and opening into the spaces, respectively, between said spaced lug members.

3. In a stringed musical instrument, a sounding board formed of thermoplastic material, said sounding board having a sound opening therethrough, a transversely disposed rib member formed integral with said board at the outer side thereof spaced between said sound opening, and an end of the sounding board, spaced lug members formed integral with said board at the outer side thereof substantially parallel with said rib between the rib and the adjacent end of said board, said lug members being spaced from said rib, a bridge structure of thermoplastic material secured on the outer side of said sounding board in position fitted over said rib and lug members, said bridge structure being formed with openings therethrough, aligned with and opening into the spaces, respectively, between said lug members, and said bridge structure being formed with string receiving slots opening into said bridge structure openings, respectively.

MARIO MACCAFERRI.

REFERENCES CITED

The following references are of record in the file of this patent:

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Number	Name	Date
1,170,999	Schultz	Feb. 8, 1916

FOREIGN PATENTS

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