

Feb. 14, 1950

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2,497,116

STRINGED MUSICAL INSTRUMENT

Filed Jan. 14, 1949

2 Sheets-Sheet 1

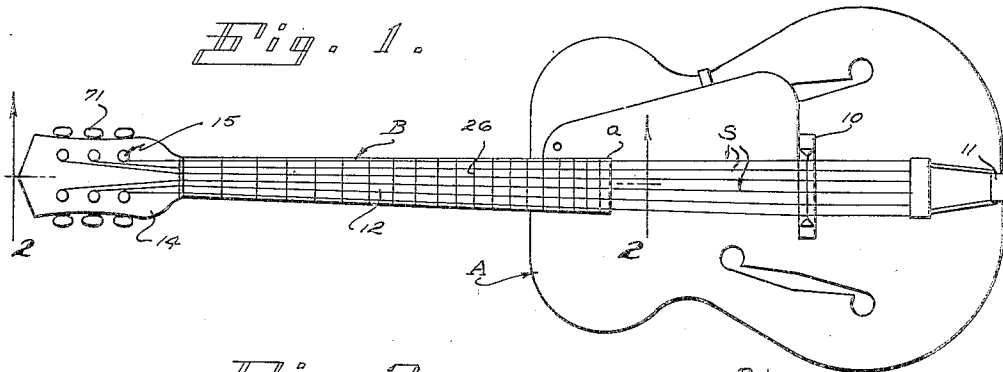


Fig. 1.

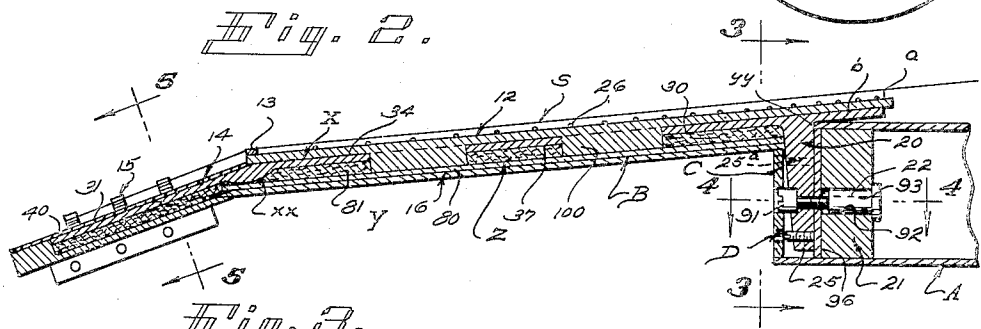


Fig. 2.

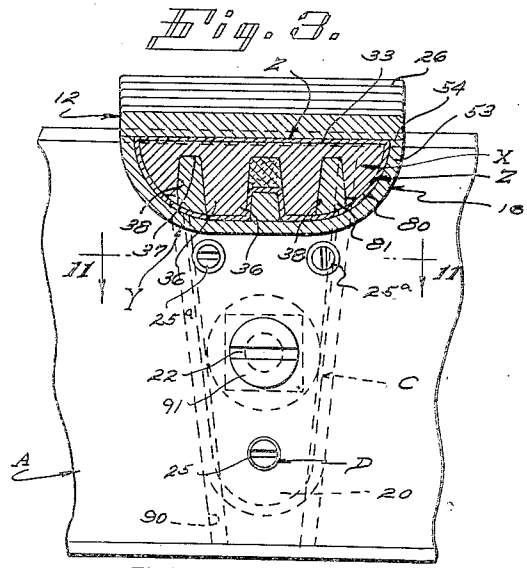


Fig. 3.

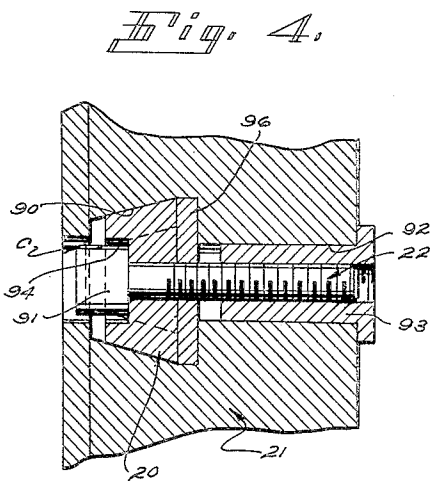


Fig. 4.

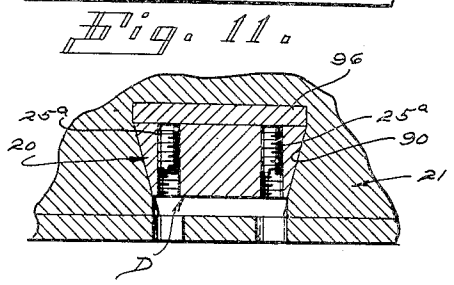


Fig. 5.

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2 Sheets-Sheet 2

Fig. 5.

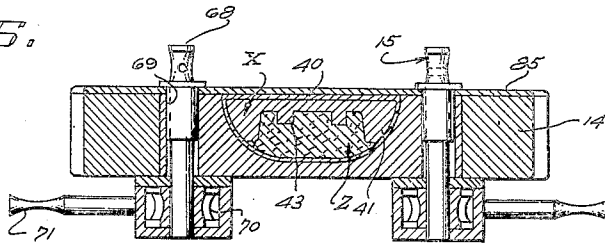


Fig. 6.

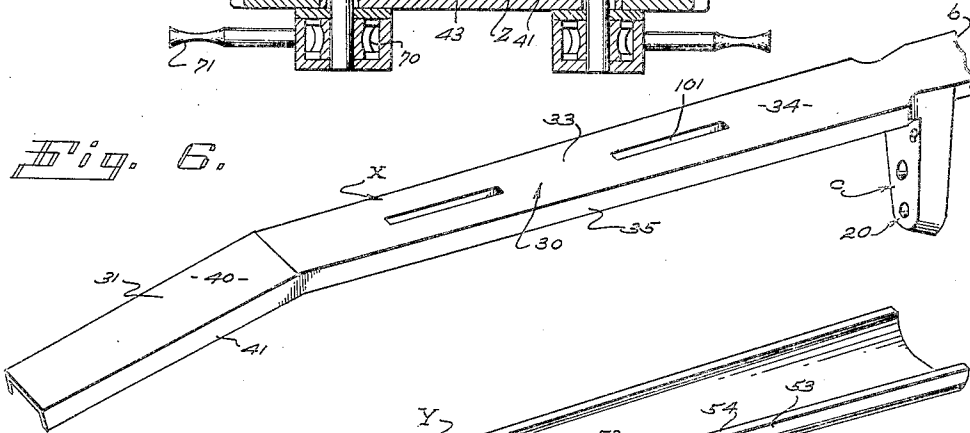


Fig. 7.

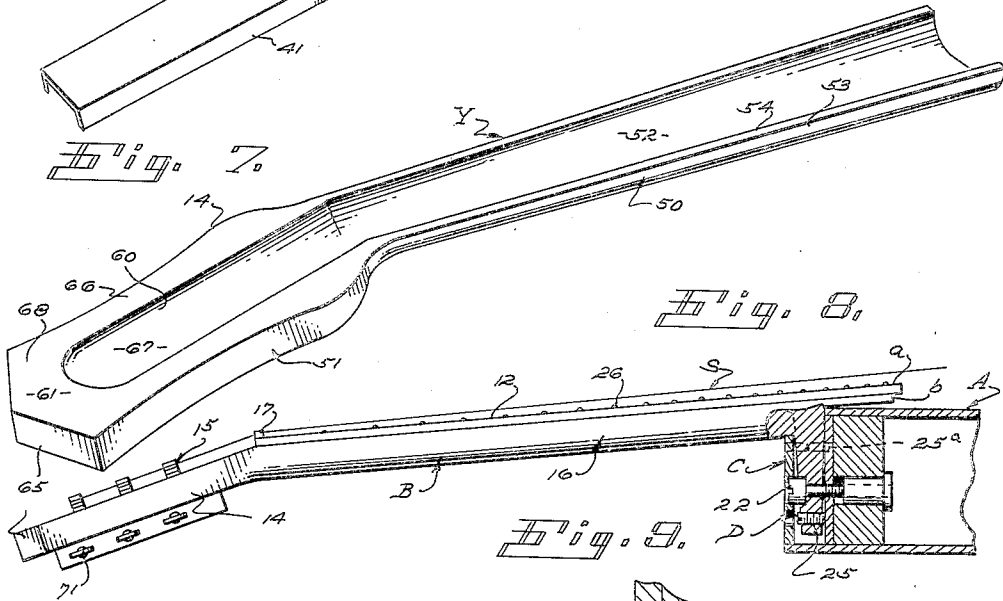


Fig. 8.

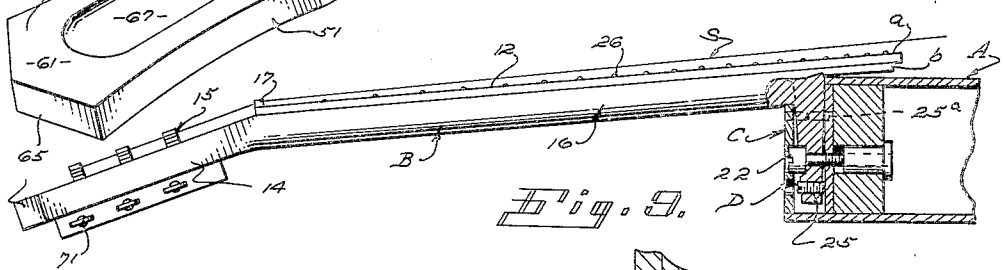


Fig. 9.

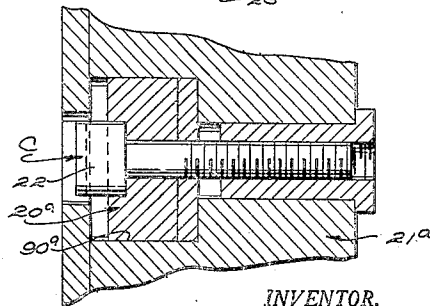
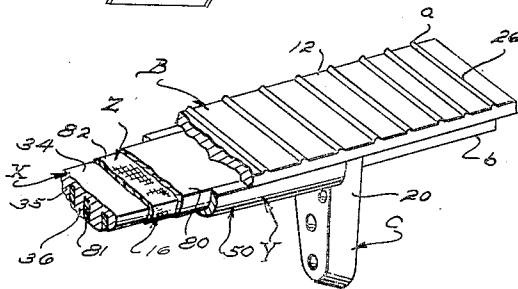


Fig. 10.



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UNITED STATES PATENT OFFICE

2,497,116

STRINGED MUSICAL INSTRUMENT

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Application January 14, 1949, Serial No. 70,971

31 Claims. (Cl. 84—293)

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This invention is concerned with stringed musical instruments such, for example, as guitars, or the like, and it is more particularly concerned with the joinder of the neck with the body of the instrument. A general object of the invention is to provide a simple, effective, improved structure of the character stated.

Stringed musical instruments having projecting necks are subject to certain inherent difficulties. For example, the necks have a marked tendency to warp, they must be of substantial or heavy construction to have the desired rigidity, and they must be shaped or formed to allow freedom of movement of the player's hand, etc. Improved neck constructions have been provided combining metal or inorganic materials intended to give strength and rigidity with organic materials, such as wood, or the like, affording surfacing, ornamentation, etc. Constructions of this general character have met with success. However, they are generally expensive of construction, have not been such as to advantageously utilize certain materials, and have provided the instruments with limitations such as are generally characteristic of structures wherein an ordinary wooden neck is permanently fixed to the body of the instrument.

The present invention is concerned, generally, with a neck construction combining organic and inorganic materials, and in its preferred form it combines, generally, a core of metal such as a casting and a shell of organic materials such as wood, or the like, which encases the core.

The present invention has for a general object the provision of a neck construction which makes safe and practical the utilization of a cast magnesium core in the neck. The invention provides a core that can be advantageously formed of magnesium and on which a minimum number of finishing operations are required, all with the result that a magnesium casting may be employed without the hazards or dangers which commonly attend the use of such material.

Another object of the invention is to provide a neck construction for instruments of the character referred to, which is slim and light in spite of the inclusion within the construction of a metal core. The neck of the present invention may be uniform in size and shape throughout its length, and it may be slim so that the player's hand is conveniently accommodated.

It is a further object of the invention to provide a neck of the general character referred to so combined or related to the body of the instrument as to be adjustable, enabling the player to

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locate the strings in the desired spaced relation relative to the fingerboard.

Another object of the invention is to provide a construction by which the neck of the guitar can be conveniently and accurately adjusted in two directions, for example, vertically and also horizontally.

A further object of this invention is to provide a neck of the general character referred to combining a metallic core and a non-metallic shell in which structure the core is, taken alone or in and of itself, sufficiently strong and rigid to effectively withstand the loads or strains imposed upon it, all without reinforcement or support of any kind whatsoever.

A further object of the invention is to provide a neck of the general character referred to provided with a heel portion applicable to the dovetailed recess common to the usual or standard instrument body.

It is a further object of the invention to provide a neck of the general character referred to having a core extending into the head at the free or outer end of the neck, which portion of the core is narrow, leaving the shell with wide flange-like parts forming the sole support for the key units to which the strings are attached and which are operable to tension the strings.

Another object of this invention is to provide a neck of the general character referred to wherein the portion of the wooden shell occurring at the head of the neck is so engaged with or related to the core portion at that part of the neck that strain applied through tension of the strings serves to merely tighten the engagement between the core and shell rather than to loosen or separate these parts.

It is another object of this invention to provide a neck construction of the general character referred to utilizing a wooden shell combined with a metal core, which shell may be advantageously formed of a thin board or body of wood without resorting to heavy seasoned woods or special woods, such as have generally been required in elements of this character. With the structure of the present invention thin boards of various woods generally not useful in the necks of musical instruments can be used to advantage.

It is a further object of this invention to provide a fabricated neck involving a core of metal and a shell of wood, or the like, which is solid so that it is not subject to collapse or indentation, and so that it is without any hollow sound such as may occur in a structure wherein there are openings or voids.

Another object of this invention is to provide a neck of the general character referred to wherein there is a filler between the core and shell joining these parts and making it unnecessary to accurately fit the core and the shell and, consequently, making the structure inexpensive of manufacture.

It is a further object of this invention to provide a neck of the general character referred to including a filler between the core and shell, which filler includes or involves a pad of fabric, or the like, positively assuring the structure against rattle and deadening it so that the neck, as such, does not give to the entire instrument any particular characteristic sound or resonance.

It is a further object of this invention to provide a construction of the general character referred to in which the neck is applicable to the body of the instrument without the use of glue or any other adhesive, but rather, through means which enables the neck to be applied to or detached from the body at will.

Another object of this invention is to provide a construction of the general character referred to including means by which the angular relation between the neck and the body may be adjusted at will in order to vary the spacing of the strings from the fingerboard. This feature of the invention is particularly important in guitars of the flat top type, or where the bridge is without means of adjustment.

It is a further object of this invention to provide a neck construction of the general character referred to wherein there are but three principal elements, namely, the metallic core, the wooden shell, and the fingerboard, the shell being one integral or continuous body of wood, making a satisfactory structure that is easily assembled and which may be readily finished in a suitable manner.

The various objects and features of my invention will be fully understood from the following detailed description of typical preferred forms and applications of my invention, throughout which description reference is made to the accompanying drawings, in which:

Fig. 1 is a top plan view of a typical stringed instrument embodying the present invention. Fig. 2 is an enlarged longitudinal sectional view of a part of the structure shown in Fig. 1, being a view taken as indicated by line 2—2 on Fig. 1. Fig. 3 is an enlarged sectional view of the structure shown in Fig. 2, being a view taken as indicated by line 3—3 on Fig. 2. Fig. 4 is an enlarged plan section taken as indicated by line 4—4 on Fig. 2. Fig. 5 is an enlarged detailed transverse sectional view taken as indicated by line 5—5 on Fig. 2. Fig. 6 is a perspective view of the core element of the neck showing it separate from the other parts. Fig. 7 is a perspective view of the shell element of the neck, showing it separate from the other parts. Fig. 8 is a view similar to Fig. 2 showing the parts in a slightly different position, that is, with the neck adjusted relative to the body to vary the spacing of the strings relative to the fingerboard. Fig. 9 is a view similar to Fig. 4, showing another form of construction such as may be used in carrying out the invention. Fig. 10 is a fragmentary perspective view of the neck portion of the instrument with parts successively broken away, showing the construction thereof. Fig. 11 is a sectional view taken on line 11—11 on Fig. 3.

The present invention provides various struc-

tural features applicable, generally, to musical instruments, that is, to stringed musical instruments. The invention is particularly practical as applied to instruments of the guitar type and, therefore, for purpose of example, I have elected to illustrate the invention as applied to a guitar of the type ordinarily referred to as a Spanish guitar.

The particular instrument illustrated in the drawings involves, generally, a body A, a neck B, mounting means C attaching the neck to the body, and adjusting means D varying the angular relationship between the neck and the body.

The body A is an elongate box-like structure supporting a bridge 10 engaged by the several strings S of the instrument and having a tail piece 11 at one end to which the strings are anchored. The body may, of course, carry or have combined therewith suitable amplifying means or accessories of various kinds in the manner common to devices of this general character.

The neck B is an elongate element involving, generally, a finger-board 12 over which the strings S extend, a nut 13 supporting the strings, a head 14 carrying key units 15 to which the strings are attached and which are operable to tension the strings, and a main shaft portion 16 held by the means C and supporting the various other elements named.

The mounting means C involves, generally, an extension 20 on the inner end of the neck projecting laterally therefrom and engageable with a block 21 incorporated in the body A as a permanent part thereof. The means C further includes a screw type fastener 22 coupling the extension 20 and the block 21.

The adjusting means D serves to vary the angle at which the neck projects from the body A, and in its preferred form it involves an adjusting screw 25 cooperatively related to the extension 20 and a suitable abutment supported by the block 21 to effect vertical adjustment of the neck relative to the body and adjusting screws 25^a cooperatively related to the extension and block to effect lateral adjustment of the neck relative to the body.

The neck, as provided by the present invention, is characterized by a metal core X, a jacket Y and a filler Z, which elements are fabricated or combined to establish a rigid unitary structure supporting the fingerboard 12 and forming the head 14 and which may be effectively joined to the body A by the means C.

The fingerboard 12 may, with the structure provided by the present invention, be a thin flat element formed of various materials. In the form illustrated it is an elongate strip slightly tapered, and it carries the several frets 26 forming the fingerboard of the instrument. With the present invention the fingerboard 12 may be considerably lighter or thinner or of a weaker material than is possible with ordinary construction, since the core and the shell Y combine to afford a full, continuous, uninterrupted support for the fingerboard throughout its length, even at the end portion that projects over the body as at *a*.

The core X provided by my invention is preferably a single integral unit or casting of metal, and in practice it may broadly be any light metal, although more specifically it is preferred that it be a magnesium casting. The core involves, generally, a shank portion 30 and a head portion 31.

The shank portion 30 of the core is characterized by an elongate flat plate 33 having a con-

tinuous uninterrupted flat top face 34 on which the fingerboard rests and is secured, as by the filler Z hereinafter described. The plate 33 extends continuously from where the neck is joined to the body A to the point XX where the shank joins the head portion. In the particular instrument illustrated the plate is slightly tapered or convergent as it projects outwardly from the body, being somewhat narrower at its outer end where it joins the head portion 31 than where it is held by the means C.

The shank portion 30 of the core further includes depending side flanges 35 which depend from the side edges of the plate 33 and extend continuously from one end of portion 30 to the other. The portion 30 also includes one or more intermediate or central ribs 36 which depend from the lower side 37 of the plate 33 and are located between the flanges 35. The ribs 36 extend continuously and preferably uniformly from one end of portion 30 to the other. Where two center ribs are used, as shown in the drawings, they are spaced apart. Through the shank formation just described longitudinally disposed downwardly opening grooves or channels 38 are provided in the under side of the plate 33 between the ribs that project from the plate while the plate is effectively stiffened and reinforced through or by means of the members 35 and 36, to the end that it will remain in shape and will not twist or warp under pressures such as are applied to it in the course of use. The outer surfaces of the ribs 35 and 36 are rounded or curved so that they follow or conform to the shape or contour of the lower or under side of the neck.

The head portion 31 of the core involves, generally, a plate 40 joined to and continuing from the plate 33 and disposed at an angle thereto so that it extends downward as well as outward from the outer or projecting end of portion 30. The portion 31 is also provided with side flanges 41 which depend from its edges and are preferably integrally joined with, to be, in effect, integral continuations of, the flanges 35. Further, the head portion 40 is provided with a central downwardly projecting or depending rib 43 which is joined to and is, in effect, a continuation of the rib 36. The rib 43 extends longitudinally of the plate 40 from the point XX where the plate joins the shank 30, and it dies out or terminates before reaching the outer end of the head (see Fig. 2 of the drawings).

The plate portions 33 and 40, above referred to, combine to provide the core with a plain structure that is slightly tapered in plan configuration from one end to the other, so that it is somewhat narrower at the end located at the head 15 of the neck than it is at the body A. It will be apparent that the core construction that I have provided is of very simple form and design, that it is strong and rigid, and that it affords a part of such shape and character as to readily receive the other parts of the structure. It is to be noted that the core is straight from one end to the other, except for the slight curve that occurs at the point XX, at which point there is a simple bend and at which point the structure may be slightly thickened, if desired.

The jacket Y is preferably a unitary body of non-metallic material such as wood, or the like, and in the case illustrated it is in a form particularly practical for wooden construction. The shell is characterized by a straight shank portion 50 and a head portion 51 joined to and project-

ing from the shank portion at a slight angle thereto, just as the head portion 31 of the core is angularly related to the shank portion thereof. The shank portion of the jacket is substantially U-shaped or is trough-like in cross-sectional configuration so that it has a bottom 52 engageable under the core and has upwardly projecting sides 53 that project upwardly at the sides of the core so that their upper edges 54 are flush with the top face 34 of the core. It will be apparent how the trough-like structure just described may be shaped and proportioned or rounded to suitably fit or fare with the other elements of the structure, and it will be apparent that a shell part of this shape is such that it can be very easily and economically manufactured.

The head portion 51 is a flat wide structure or element with a central depression or socket 60 formed in it from its top side 61.

The socket 60 joins to and continues from the trough-like shank so that it is, in effect, a continuation of the trough-like opening established by the shank 50, and it extends a substantial distance lengthwise of the head portion 51 terminating short of the outer end 65 of portion 51. Through the construction and formation just described the head portion 51 has outwardly or laterally projecting flange portions 66 at each side of the socket 60, a web portion 67 at the bottom of the socket and joining the flange portions, and an outer end part 68 which extends between and joins the flange parts. It will be observed from the drawings, and particularly from Fig. 7 of the drawings, that the flange parts 66 are of substantial width and are of appreciable thickness so that they afford parts effective for carrying the key units 15 that handle the strings S. It will be understood, of course, that the key units may vary widely in form and construction. For instance, as shown in the drawings, they may involve string posts 68 which project vertically through openings 69 in the flanges 66 and suitable gear drives 70 may be provided for operating the posts from handles or keys 71.

It is to be understood, of course, that the shell unit Y, above described, though treated and handled as an integral unitary part, need not be formed of one solid or continuous body of wood, but that it may be fabricated or glued up of suitable parts in accordance with methods of manufacture usual for such elements.

The filler Z provided by the present invention involves, principally, a body 80 of a material that may be applied in a soft or plastic state, but which sets or hardens and which, when set, forms an effective binder or bonding medium between the shell and core. The filler may also involve suitable inserts 81 filling large openings or cavities such as the channels 38 that may occur in the structure between ribs of the core. The fillers may be advantageously formed of wood, or the like, and may either wholly or partially fill the cavities. Further, in accordance with the invention it is preferred that the filler Z include a pad 82 of fabric, or the like, preferably engaged or wrapped around the core to occur between the core and the shell. In practice it has been found advantageous to employ a pad of linen, or the like, and when a suitable resin glue is used such a pad may be saturated with glue and as the parts are assembled there may be an excess of glue present, so that as the core is pressed firmly into the trough of the shank and the socket of the head, the lack of

fit between the core and the shell is compensated by the presence of the filler, to the end that the neck resulting is solid throughout. When the core is fully engaged or is in position in the shell the top 34 of the core shank is flush with the upper edges 54 of the shell so that these parts form a satisfactory seat for the fingerboard, while the top of the plate 40 of the head of the core is flush with the top of the flanges at the head of the shell, so that a suitable cap or surfacing 85 may be applied to these parts, if desired.

The means C involves the depending or laterally projecting extension 20 at the inner end portion of the neck, which extension is preferably cast with or is integrally joined to the core of the neck and is, therefore, a metal part. The lateral extension 20 preferably joins the casting forming the core of the neck at a point removed from the innermost end of the neck so that the portion a of the fingerboard overhanging the body is supported by a portion b of the core.

It is preferred, in practice, that the neck of the present invention be applied to the body through a block 21 of conventional construction, in which case the extension 20 is applied to the vertically disposed dove-tailed recess 90 provided in the block 21 and the extension is fitted to the block to have suitable seated engagement in the dove-tailed recess. From the drawings it will be apparent how the extension enters the dove-tailed recess in the block 21 and is retained in a general way in the desired position through the mere engagement of the extension with the block.

The screw fastener 22 of the means C is not a mere screw engaging the extension 20 and threaded into the wood of the block 21, but rather, it is a through fastener, that is, it is a nut and bolt construction engaged completely through the extension 20 and the block 21. In the case illustrated this fastener includes a bolt 91 engaged through an opening in the extension 20 and continuing into an opening 92 in the block 21, in which opening a suitable nut member 93 is held against rotation. The head 94 of the bolt is accessible at the exterior of the body so that it is a simple matter to arrange the bolt in place and tighten it in order to suitably secure the extension 20 in the dove-tailed recess 90 in block 21. The head 94 may be countersunk in the extension 20, as shown in the drawings.

The adjusting means D is provided to enable the operator to vary the angular position of the neck relative to the body A. It is to be understood that in practice a very slight shifting of the neck relative to the body will effectively vary the strings relative to the fingerboard and, therefore, the means D needs only operate to move the neck a very slight amount relative to the body A.

In the form of the invention illustrated the means D involves a screw member 25 threaded in the extension 20 outward of the fastener 22. The screw is operable to engage an abutment in the form of a plate 96 of metal, preferably located in the bottom of the recess 90. When the screw 25 is tightened against the plate the outer end of the extension 20 is forced away from the plate and, consequently, the neck is caused to, in effect, rock about the upper end portion of the extension 20 which is supported by the upper end portion of the plate 96. In Fig. 2 of the drawings the extension is shown seated squarely against the plate 96, whereas in Fig. 3 the screw is shown operated somewhat so that the outer end of the extension is spaced from the plate, with the result that the outer end of the neck as

a whole is elevated relative to the body. The construction just described provides for vertical adjustment of the neck relative to the body.

To provide for lateral adjustment of the neck relative to the body the upper end portion of the extension 20 does not bear or engage directly on its support but, rather, laterally spaced adjusting screws 25^a act between the extension and its support. The screws 25^a are shown threaded in openings 25^b in the extension 20. By operation of the screws 25^a the neck can be swung laterally or horizontally relative to the body should such adjustment be necessary.

In the form of the invention shown in Fig. 9 the extension 20^a is engaged in a recess 90^a in the block 21^a, which recess has plain or flat sides instead of being dovetailed, as shown in Fig. 4. This construction allows the extension 20^a to rock freely under the action of the adjusting screw. However, it is to be understood in the case of the invention first described that the metal extension 20, being engaged in a wooden block, may be forced by the screw 25 enough to gain the desired adjustment of the neck relative to the body. Ordinarily, in practice, the several parts of the means C are not closely finished and, consequently, there is some play or clearance, allowing for the desired adjustment. However, when the screw 25 and the fastener 22 are both set snugly, the neck is firmly set relative to the body A.

In the structure illustrated the fingerboard is not only secured to the other parts, as by means of an adhesive, but it is positively anchored to the core by anchor lugs 100 depending from the fingerboard and received in sockets 101 in the core.

It will be apparent from the foregoing description how the core and shell combine through the filler to form a simple, yet strong, rigid structure, and it is to be noted, in particular, that the construction at the head of the neck characterized by the narrow core part and the side flanges of the shell afford ample support for the string carrying key units by means of the flanges of the shell. This construction makes it unnecessary to machine or apply the units 15 to the magnesium parts. Further, when the instrument is in use and the strings are under tension the head portion of the shell is pressed or urged tightly up under the head portion of the core so that the string carrying parts are effectively supported and the assembly remains intact without tearing or pulling apart.

Having described only typical preferred forms and applications of my invention, I do not wish to be limited or restricted to the specific details herein set forth, but wish to reserve to myself any variations or modifications that may appear to those skilled in the art and fall within the scope of the following claims.

Having described my invention, I claim:

1. A string carrying neck having a shank portion and a head on the outer end of the shank portion and including, a unitary metal core extending continuously through the shank portion and into the head, and a wooden shell extending continuously from one end of the neck to the other and embracing the core at both the shank portion and head.
2. A string carrying neck having a shank portion and a head on the outer end of the shank portion and including, a unitary metal core extending continuously through the shank portion and into the head, a wooden shell extending continuously from one end of the neck to the other

and embracing the core at both the shank portion and head, and a filler between the core and shell bonding them together and filling all spaces between them.

3. A string carrying neck having a shank portion and a head on the outer end of the shank portion and including, a unitary metal core extending continuously through the shank portion and into the head, a wooden shell extending continuously from one end of the neck to the other and embracing the core at both the shank portion and head, and a filler between the core and shell bonding them together and filling all spaces between them, the filler including a resin glue.

4. A string carrying neck having a shank portion and a head on the outer end of the shank portion and including, a unitary metal core extending continuously through the shank portion and into the head, a wooden shell extending continuously from one end of the neck to the other and embracing the core at both the shank portion and head, and a filler between the core and shell bonding them together and filling all spaces between them, the filler including a wrapping of fabric on the core and a body of glue.

5. A string carrying neck having a shank portion and a head on the outer end of the shank portion and including, a unitary metal core extending continuously through the shank portion and into the head, and a wooden shell extending continuously from one end of the neck to the other and embracing the core at both the shank portion and head, the shell having string carrying portions at the head.

6. A string carrying neck having a shank portion and a head on the outer end of the shank portion and including, a unitary metal core extending continuously through the shank portion and into the head, and a wooden shell extending continuously from one end of the neck to the other and embracing the core at both the shank portion and head, the shell having flanges at the sides of the core and a head to carry string holding devices.

7. A string carrying neck having a shank portion and a head on the outer end of the shank portion and including, a unitary metal core extending continuously through the shank portion and into the head, and a wooden shell extending continuously from one end of the neck to the other and embracing the core at both the shank portion and head, the shell having a trough-like opening at the shank carrying the core and having a socket at the head continuous with the said opening, terminating short of the outer end of the head and carrying the core at the head.

8. A string carrying neck having a shank portion and a head on the outer end of the shank portion and including, a unitary metal core extending continuously through the shank portion and into the head, and a wooden shell extending continuously from one end of the neck to the other and embracing the core at both the shank portion and head, the portions of the core at the shank and at the head having plate portions directly joined end to end and angularly related to each other.

9. A string carrying neck having a shank portion and a head on the outer end of the shank portion and including, a unitary metal core extending continuously through the shank portion and into the head, and a wooden shell extending continuously from one end of the neck to the other and embracing the core at both the shank portion and head, the portions of the core

at the shank and at the head having plate portions directly joined end to end and angularly related to each other, and the core having depending side flanges extending continuously from one end of the core to the other.

10. A string carrying neck having a shank portion and a head on the outer end of the shank portion and including, a unitary metal core extending continuously through the shank portion and into the head, and a wooden shell extending continuously from one end of the neck to the other and embracing the core at both the shank portion and head, the portion of the core at the shank and at the head having plate portions joined in angular relation to each other, the core having a central flange depending from the plate portions and having side flanges depending from the plate portions.

11. A string carrying neck having a shank portion and a head on the outer end of the shank portion and including, a unitary metal core extending continuously through the shank portion and into the head, and a wooden shell extending continuously from one end of the neck to the other and embracing the core at both the shank portion and head, the portion of the core at the shank and at the head having plate portions joined in angular relation to each other, the core having a central flange depending from the plate portions and extending continuously from one end of the core to the other.

12. A string carrying neck having a shank portion and a head on the outer end of the shank portion and including, a unitary magnesium core extending continuously through the shank portion and into the head, and a wooden shell extending continuously from one end of the neck to the other and embracing the core at both the shank portion and head, the shell having flanges at the sides of the core and a head to carry string holding devices.

13. A string carrying neck having a shank portion and a head on the outer end of the shank portion and including, a unitary metal core extending continuously through the shank portion and into the head, and a wooden shell extending continuously from one end of the neck to the other and embracing the core at both the shank portion and head, the core being substantially the same width at the head and at the shank where it joins the head.

14. The neck of a stringed instrument including a metal core with a shank and a head on the shank, a shell around the core with a shank portion at the shank of the core and a head portion at the head of the core, a fingerboard supported by the core and shell, and string carrying units supported wholly by the head portion of the shell.

15. The neck of a stringed instrument including a metal core with a shank and a head on the shank, a shell around the core with a shank portion at the shank of the core and a head portion at the head of the core, a fingerboard supported by the core and shell, the shell having flanges at the sides of the head of the core, and string carrying units supported by said flanges.

16. In a stringed musical instrument a body having a block, a neck, and means attaching the neck to the body including, an extension on the neck engaged with the block at the upper end portion thereof, a bolt-type fastener below the point where the extension engages the block and securing the extension to the block and operable

to swing the extension toward the block, and means stopping movement of the extension toward the block of the body including a stop screw below the fastener and substantially parallel therewith.

17. In a stringed musical instrument a body having a block, a neck, and means attaching the neck to the body including, an extension on the neck engaged with the block, a bolt-type fastener securing the extension to the block, and a screw carried by the extension stopping movement of the extension toward the block of the body, the screw being below the fastener and substantially parallel therewith.

18. In a stringed musical instrument a body having a block having a recess therein, a neck with a lateral extension tie, means extending through the block to the inner side thereof and attaching the extension of the neck in the recess in the block to shift relative thereto, and means separate from the means adjusting the angle of the neck relative to the block including a screw carried by the extension and bearing against the outer side of the block.

19. In a stringed musical instrument a body having a block having a recess therein, a neck with a lateral extension, means attaching the extension of the neck in the recess in the block to shift relative thereto, and means adjusting the angle of the neck relative to the block including a screw carried by the extension and reacting against the block, there being a bearing plate in the bottom of the recess engaged by the screw.

20. A core for the neck of a stringed instrument including, an elongate shank, a head on the outer end of the shank and side flanges projecting from and extending longitudinally of the shank.

21. A core for the neck of a stringed instrument including, an elongate shank, a head on the outer end of the shank and side flanges projecting from and extending longitudinally of the shank and continuing along the head.

22. A core for the neck of a stringed instrument including, an elongate shank, a head on the outer end of the shank, side flanges projecting from and extending longitudinally of the shank, and a central rib on the shank between the flanges.

23. A core for the neck of a stringed instrument including, an elongate shank, a head on the outer end of the shank and side flanges projecting from and extending longitudinally of the shank, the head being of substantially the same width as the shank where it joins the head.

24. A core for the neck of a stringed instrument including, an elongate shank, an elongate head on the outer end of the shank and side flanges projecting from and extending longitudinally of the shank, the head and shank each being slightly and substantially uniformly tapered from one end to the other.

25. A core for the neck of a stringed instrument including, an elongate shank, and an elongate head on the outer end of the shank continu-

ing therefrom, both the head and shank each being slightly and substantially uniformly tapered from one end to the other.

26. A core receiving shell for the neck of a stringed instrument including, a trough-shaped shank portion, and a head projecting from the shank portion and having a core receiving socket continuing from the shank portion and terminating short of the outer end of the head leaving the head with side flanges to carry string fasteners.

27. A string carrying neck having a shank portion and a head at the outer end of the shank portion and including, a unitary metal core formed of an elongate plate with depending side flanges and a plurality of parallel center flanges spaced apart and located between the side flanges, a shell engaged with the shank portion, and a fingerboard carried on the plate.

28. A string carrying neck having a shank portion and a head at the outer end of the shank portion and including, a unitary metal core formed of an elongate plate with depending side flanges and a plurality of parallel center flanges spaced apart and located between the side flanges, a curved shell engaged with the shank portion, and a fingerboard carried on the plate, the outer surfaces of the flanges being curved to conform to the contour of the shell.

29. In a stringed musical instrument a body, a neck, means attaching the neck to the body, and means adjusting the neck relative to the body including a plurality of adjusting screws carried by the neck and engaging the body.

30. In a stringed musical instrument a body, a neck, means attaching the neck to the body, and means adjusting the neck relative to the body including adjusting screws having cooperative engagement with the neck and body, there being laterally spaced screws operating to adjust the neck laterally of the body.

31. In a stringed musical instrument a body, a neck, means attaching the neck to the body, and means adjusting the neck relative to the body including adjusting screws having cooperative engagement with the neck and body, there being laterally spaced screws operating to adjust the neck laterally of the body and a third screw spaced vertically from the laterally spaced screws operating to adjust the neck vertically.

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