

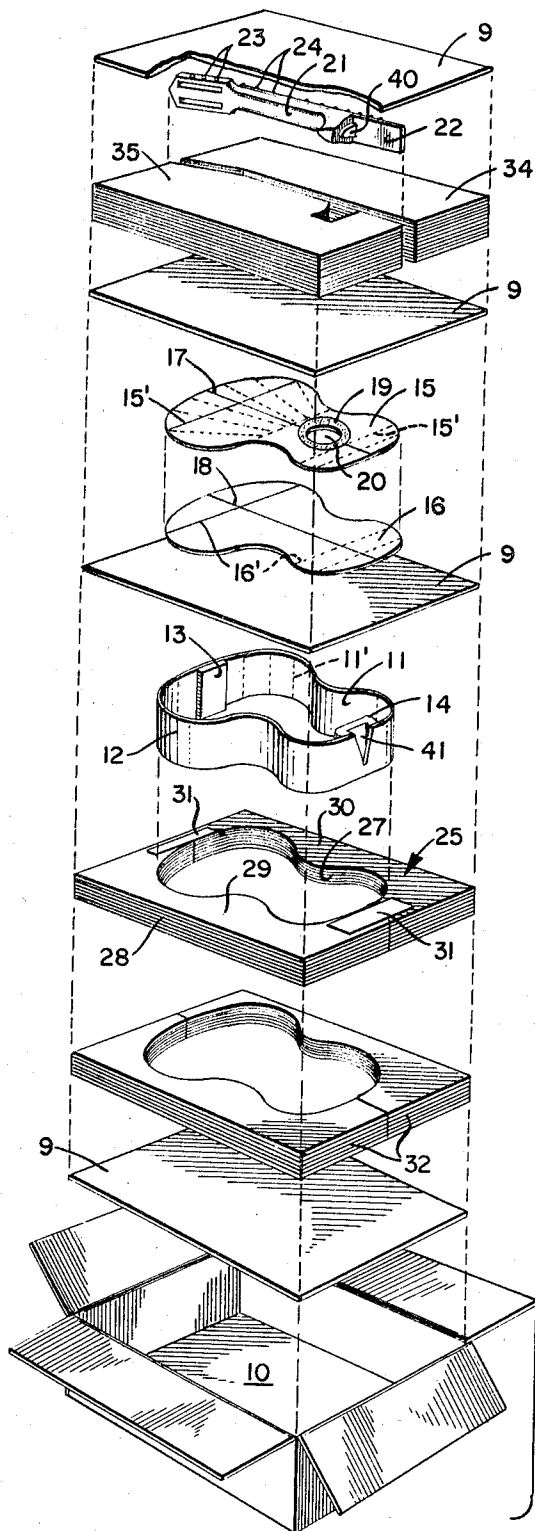
**Jan. 28, 1969**

D. MACK ET AL

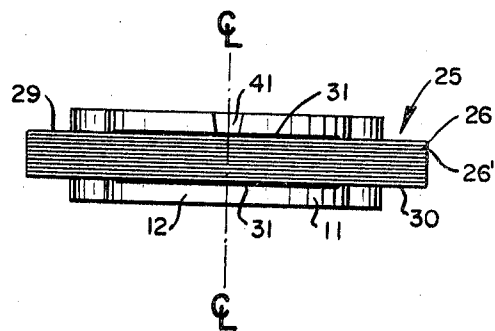
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GUITAR KIT

Filed Oct. 12, 1967.

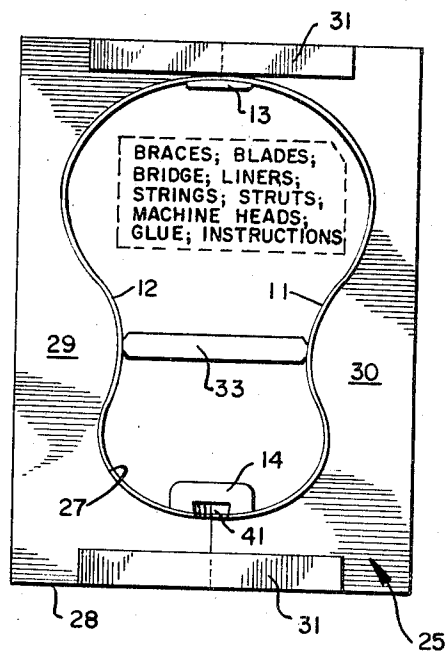


**FIG. 2**



**FIG. 1**

FIG. 3



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## GUITAR KIT

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Filed Oct. 12, 1967, Ser. No. 674,950

U.S. Cl. 84-290

Int. Cl. G10d 3/00

11 Claims

### ABSTRACT OF THE DISCLOSURE

Disclosed hereinafter are the details of a guitar-making kit including a disposable, lightweight guitar mold or form which is used for the formation and preservation of the general shape of thin hardwood guitar side walls in the manufacture and assembly of a high quality, acoustic guitar. More specifically, the mold is fabricated from laminated corrugated container board, expanded plastic foam, or a like inexpensive, lightweight, disposable packaging material.

Although the guitar-making art is at least several centuries old, heretofore it has been practiced with success only by experienced professional luthiers. Nevertheless, with the constantly increasing popularity of the guitar, especially the acoustic or Spanish guitar (i.e., a hollow bodied wooden instrument absent electrical pick up apparatus), many amateur craftsmen have expressed a desire or have attempted to construct acoustic guitars by themselves. However, the production by an amateur guitar maker of a "quality musical instrument," that is to say, an instrument having excellent tonal qualities and being capable of generating a full range of superior sounds, has been impractical and virtually impossible. It is, therefore, the major object of the present invention to provide a new and improved guitar kit from which a quality wooden musical instrument may be constructed in a reasonable amount of time and without undue difficulty by amateur luthiers.

Specifically, the guitar kit of the present invention includes those components universally found in any "quality acoustic guitar," several of which components have been prefabricated from exotic woods in a unique manner to eliminate for the amateur luthier the most difficult, most critical, and most time consuming guitar-making steps. For example and in accordance with an important aspect of the invention, the kit includes a pre-carved guitar neck which includes a tapered dovetail element which is adapted to mate with a pre-formed dovetail slot in the neck end block of the body. The utilization and prefabrication of a tapered dovetailed neck-body joint virtually assures the amateur guitar maker of trouble-free, simple, and perfect union of the neck and body of the guitar, a step that would otherwise be almost impossible for the amateur to properly perform.

In the manufacture of a quality, wooden stringed instrument such as a guitar, it is absolutely necessary that the relatively thin and consequently easily warped body walls of the instrument be formed in a rigid mold, which mold is thereafter used to maintain the shape of the thin wooden walls and to support them during the subsequent assembly operations, including the attachment of the upper and lower diaphragms (the face and back of the instrument) thereto. It is conventional practice among luthiers to make such molds from solid blocks of wood several inches thick or from built up laminations of relatively heavy and thick (approximately one inch) pieces of wood. The inner contours of the conventional molds duplicate the desired shape of the finished guitar body. As may be appreciated, the great expense involved and time required

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for the construction of such a guitar mold, which mold most likely will be used only once by the amateur, have been major deterrents to the construction of a quality guitar by an amateur craftsman.

In accordance with a further and most important aspect of the present invention, the thin wooden sides of the guitar body for the new and improved kit are pre-formed and supplied in a unique mold or form, which is provided as an integral element of the kit and which, as mentioned above, is the sine qua non of obtaining an acceptable quality instrument. More specifically, the new mold is fabricated from a lamination of a plurality of packaging corrugated container boards (each container board comprising a paperboard corrugation pasted to a flat sheet of paperboard or sandwiched between two flat sheets of paperboard) or from a conventional packaging material having comparable strength and rigidity, such as rigid, expanded polyurethane or polystyrene. Accordingly, the new guitar mold is inexpensive, is readily disposable after a single usage, and may be readily manufactured economically on a large scale basis. Moreover and as a further important aspect of the invention, the new mold serves an important packaging function in the assembly, shipment, and storage of a complete guitar kit. That is to say, the new and improved guitar mold protects the prefabricated guitar sides from warping, distortion, damage, and other deleterious effects of shipping and rough handling. To that end and as a still further aspect of the invention, the outer contours of the kit mold are generally conformed to those of the container housing all of the components of the guitar kit.

For a more complete understanding and appreciation of these and other attendant advantages of the present invention, reference should be made to the following detailed description of the new guitar kit in conjunction with the accompanying drawing, in which:

FIG. 1 is an exploded, perspective view of a new and improved guitar kit embodying the principles of the invention;

FIG. 2 is an end elevational view of the new and improved, disposable, lightweight guitar mold showing the prefabricated, thin wooden guitar sides retained therein; and

FIG. 3 is a plan view of the mold and pre-formed guitar sides of the new guitar kit.

Referring now to FIG. 1, the elements of the guitar kit of the present invention are advantageously packaged in three tiers defined by paperboard separators 9 in a conventional rectangular carton 10. Specifically, the guitar neck and finger board are in the upper tier; the guitar face and guitar back are sandwiched between a pair of separators 9 in the middle tier; and the guitar body sides retained within the new and improved mold along with the remaining components are in the lower tier. This general arrangement has been found to be most effective in protecting the various wooden components from warping and other potential harm.

As will be understood by those skilled in the guitar-making art, the most critical and most difficult steps of making a quality guitar and the steps least likely to be performed by an amateur craftsman, are the steps of manufacturing a mold; building and forming the guitar sides within the mold; accurately joining the guitar sides with the tail end block and the neck end block; splitting and accurately joining the two halves of the upper and lower diaphragms; graduating the finger board and attaching fret wire thereto; joining the fret board with the neck; and forming the neck itself and a dovetail joint in the heel of the neck through which the neck may be properly connected to the body.

The major body components of the new guitar kit

include a pair of generally pre-formed, thin wooden guitar sides 11, 12, which have been adhesively united with a tail end block 13 and a neck end block 14 in the traditional guitar shape, as shown in FIG. 1. In accordance with accepted, "quality" guitar-making practice, the sides of the guitar body are made from exotic hardwoods, such as mahogany, walnut, rosewood, or the like. As shown, the kit also includes generally pre-formed upper and lower diaphragms or sound boards 15, 16, respectively, which are similar in shape but are slightly larger in size than the horizontal cross-sectional configuration of the finished guitar body. In accordance with accepted quality guitar-making practice, the upper diaphragm or guitar face 15, is made from two pieces of split softwood, for example, spruce or pine, which are symmetrically joined along a center line 17 which is to coincide with the center line of the constructed instrument. The lower diaphragm or back 16 of the guitar body is also generally pre-formed and is made from two pieces of split hardwood, of the species of hardwood selected for the guitar sides, which pieces have been symmetrically joined along a center line 18 which will also be coincident with the center line of the constructed instrument. Advantageously, the back 16 includes a purfling strip coincident with the center line. As shown in FIG. 1 and in accordance with an important aspect of the invention, the inner faces of the diaphragms 15, 16 carry index markings 15', 16', respectively, upon which appropriate reinforcing members may be glued, as will be described hereinafter. The upper sound board of the instrument includes a sound hole 20 around which a decorative circular inlay 19 is mounted.

The neck 21 of the new guitar kit is carved into the traditional shape illustrated in FIG. 1, and as shown, mounts a finger board 22. In accordance with the invention, the heel of the neck has a convergently tapered dovetail 40 formed thereon, while the head of the neck includes predrilled holes 23 into which conventional machine heads with tuning pegs may be simply inserted. In accordance with the accepted, quality guitar-making practice, the neck is formed from exotic hardwoods such as rosewood, mahogany, maple, walnut, or the like, and the fret board is fabricated from a hard hardwood such as ebony or the like. As a further important aspect of the invention, conventional wire frets 24 are pre-installed in their proper position in appropriately established slots in the finger board 22. The proper graduation and prefabrication of the finger board insures the proper functioning of the finished instrument and precludes the possibility of its playing out of tune.

As a most important aspect of the new and improved guitar kit, a disposable lightweight mold 25 is included for the benefit of the amateur guitar maker. The mold advantageously is fabricated from a lamination of corrugated container boards 26. Each layer of the lamination may be either single-faced board or double-faced board, and any suitable adhesive laminant 26' may be used to unite the individual layers, as shown in FIG. 2. Alternatively, and as should be understood, the mold 25 may be fabricated from an expanded plastic material such as polyurethane foam or any other rigid, lightweight, and inexpensive packaging material. The depth of the mold, as shown in FIG. 2, is less than the depth of the guitar body, so that the upper and lower edges of the guitar sides may project outwardly therefrom. The inner surfaces 27 of the mold, as shown in FIG. 1 and FIG. 3, are definitive of the traditional shape of the guitar body, as will be understood. In accordance with the invention, the outer surfaces 28 are generally similar to the shape of the container 10 in which the elements of the kit are to be packaged. Thus, the mold 25 may be stationarily positioned in the carton 10 to protect and preserve the shape of the guitar side walls during shipment and handling of the kit. More specifically, the mold 25 comprises two symmetrical halves 29, 30, which are joined and maintained in an abutted relation along the centerline of the

guitar body by bands of adhesive tape 31 at the top and bottom. To insure the shape retention of the sides 11, 12, a demovable spacer 33 (FIG. 3) is temporarily wedged between the waist portions thereof to hold the thin walls in contact with the mold surfaces 27.

For complete protection of the guitar sides 11, 12 in the kit, a pair of supplemental packaging members 32 similar to the mold halves 29, 30 are included in the lower tier of the kit. The thickness of the members 32 is sufficient to equal the difference between the depth of the side walls 11, 12 and the thickness of the mold 25. Similar complete protection is afforded the neck finger-board sub-assembly by laminated packaging members 34, 35 (FIG. 1).

The new and improved guitar kit also includes rough cut flexible liners, strips, and slats of softwood which are intended to be cut to size, shaped, and appropriately glued to guitar body members to reinforce and brace the same. To that end and as a further aspect of the invention, the inner surfaces of the side walls 11, 12 and the inner surfaces of the guitar face 15 and guitar back 16 carry appropriate indicia 11', 15', 16', which show the exact location of each reinforcing brace or strut, the proper position of the bridge, and the proper alignment for correctly registering the face 15 and back 16 with the side walls before gluing. The new kit also includes a conventional pre-assembled machine head and a pre-assembled bridge which may be packaged in the lower tier of the kit along with the liners, strips, slats, and guitar strings within the guitar body as indicated in FIG. 3.

In accordance with the invention, a quality guitar may be constructed by an amateur craftsman in reasonable time following conventional guitar-making practice. Initially, the flexible liner strips are glued along the interior peripheries of the guitar sides to establish surfaces to which the diaphragms 15, 16 may be adhered. As should be understood and as an important aspect of the invention, the guitar sides are supported in the mold 25, as shown in FIG. 2, throughout the construction of the guitar body to preserve exactly the traditional guitar shape. Thereafter, the diaphragms 15, 16 and the side walls 11, 12 are reinforced by gluing appropriately sized bracing and strut members in the positions indicated by the indicia 11', 15', 16'. Subsequently, the spacer 33 is removed and the slightly oversized face 15 and back 16 are fitted and glued to the lined and reinforced side walls 11, 12 using the appropriate indicia to aid in the correct alignment. When the face and back members 15, 16 are securely in place, any excess wood that overlaps the side walls may be trimmed and/or sanded away. At this stage, the shape of the guitar body will have been permanently established and it may be safely and easily removed from the mold 25 by severing or removing the tapes 31.

As an important aspect of the invention and as will be appreciated, the aforementioned cutting to size and trimming of reinforcing members and the sound boards 15, 16 may be accomplished without difficulty using an ordinary single edged razor blade or any like, inexpensive instrument having a comparable sharp cutting edge. Holding of the various reinforcing members in place during gluing may be effected with available weights (e.g., heavy books) and/or with simple spring-loaded clothes pins and simple clamps. Thus, a kit for an entire guitar may be "self-contained" in accordance with the invention, by the inclusion therein of a bottle of glue, several razor blades, several simple clamps, spring-loaded clothes pins, a few sheets of sandpaper, and an instruction booklet containing the sequence and details of assembly.

When the hollow body has been completed, the neck, which, in accordance with the invention, has a convergently tapered dovetail 40 pre-formed thereon, may be permanently attached to the body through a mating tapered dovetail slot 41 pre-formed in the neck block 14. As will be appreciated, the prefabrication of the tapered

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dovetail on the heel of the neck and the prefabrication of the mating slot, in and of themselves an extremely difficult undertaking for experienced luthiers, enables the amateur craftsman to apply glue and insert the dovetail in the neck block to join the neck to the body in proper and permanent alignment. Thereafter, the bridge may be glued in place on the face 15 in the position indicated by the transverse index mark 15'.

At this stage of construction, the exposed surfaces of the guitar may be appropriately finished and polished, as desired, in accordance with standard wood finishing techniques.

The guitar may be completed by mounting the machine heads in the holes 23 and conventionally stringing the guitar strings between the bridge and individual tuning pegs of the machine heads.

It will be appreciated that the new and improved guitar kit of the present invention, including a lightweight disposable mold, enables an amateur craftsman to build a quality guitar having excellent tonal qualities. While a substantial portion of the labor of guitar construction is left to the kit builder, a quality end product is insured by virtue of the pre-performance, in accordance with the inventive principles, of what have been determined to be the most critical and most difficult guitar making steps for an amateur. Thus, with the new and improved kit, anyone with the bare minimum skill required to align, cut, trim, and glue in accordance with simple instructions can build, at moderate and reasonable expense, a quality guitar that has heretofore been available only at extremely great cost.

We claim:

1. An assembly kit for a stringed instrument including
  - (a) a pair of shaped, thin hardwood body side walls;
  - (b) a lightweight mold having inner surfaces definitive of a predetermined body profile and fabricated from disposable packaging material;
  - (c) said body side walls being retained within said mold;
  - (d) an elongated neck having a convergently tapered dovetail formed on heel portions thereof;
  - (e) a neck block and a tail block uniting said body side walls;
  - (f) said neck block having a slot formed therein adapted to matingly receive said dovetail and to align said neck with said body side walls; and
  - (g) upper and lower diaphragm members similar in shape to said body profile.
2. An assembly kit in accordance with claim 1, in which
  - (a) said mold is fabricated from laminated corrugated container board.
3. An assembly kit in accordance with claim 2, in which
  - (a) said mold includes two halves united by readily severable tape means.
4. An assembly kit in accordance with claim 1, in which
  - (a) said mold is fabricated of rigid lightweight plastic.
5. An assembly kit in accordance with claim 1, in which
  - (a) said body side walls and diaphragm members in-

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clude indicia designating the proper positions upon which reinforcing means may be mounted and the positions of proper registry of said diaphragms with said body walls.

6. A disposable, lightweight mold for a stringed instrument body comprising
  - (a) a plurality of superimposed corrugated container boards;
  - (b) means uniting said boards in a rigid laminar structure having an overall thickness less than that of said stringed instrument body or the like;
  - (c) said structure having inner portions removed to leave inner surfaces generally definitive of a predetermined shape of a stringed instrument body;
  - (d) said structure being divided into two halves along a predetermined axis;
  - (e) readily severable tape means maintaining the halves of said structure in an abutted, predetermined shape defining relation.
7. The mold of claim 6, which includes
  - (a) stringed instrument body side walls pre-formed in said predetermined shape;
  - (b) transverse spacer means engaging inner surfaces of said body side walls and urging the outer surfaces of said side walls into contact with the inner surfaces of said mold.
8. The mold of claim 6, in which
  - (a) the outer surfaces of said laminar structure generally conform with the inner configuration of a packaging container.
9. A guitar-making sub-assembly comprising
  - (a) a disposable, lightweight mold having inner surfaces definitive of a predetermined acoustic guitar shape;
  - (b) said mold being divisible into two halves;
  - (c) preformed hardwood side walls united by end blocks in said predetermined shape; and
  - (d) means urging said hardwood side walls into shape-retaining contact with said inner surfaces of said mold.
10. A guitar-making sub-assembly in accordance with claim 9, in which
  - (a) said mold comprises two symmetrical halves;
  - (b) each of said halves is fabricated from laminated corrugated container board; and
  - (c) retaining means maintain said halves in abutted, guitar shape defining relation.
11. A guitar-making sub-assembly in accordance with claim 9, in which
  - (a) said mold is fabricated from rigid plastic foam.

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