

Sandpaper



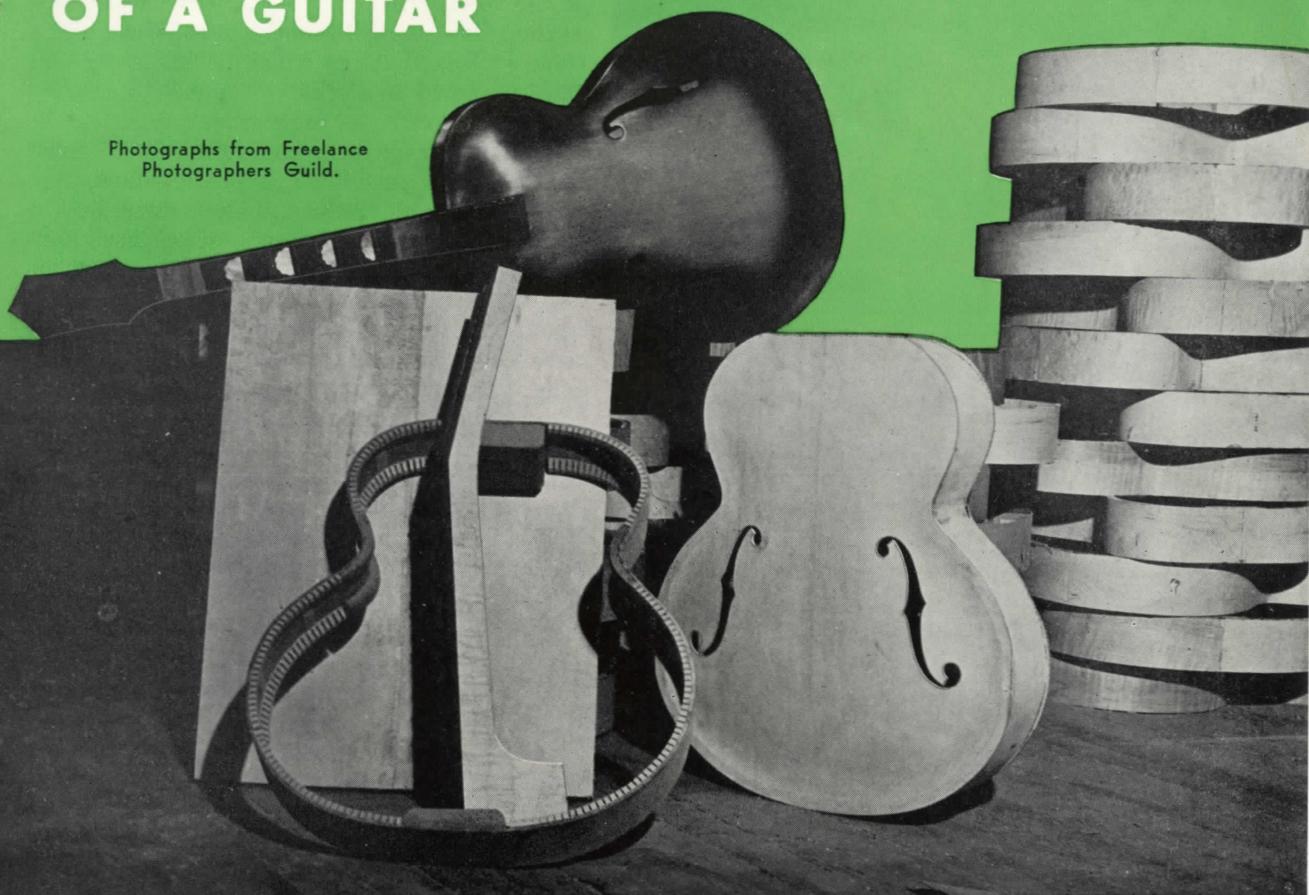
# OIL-POWER

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# A PICTURE STORY OF THE MAKING OF A GUITAR

Photographs from Freelance Photographers Guild.



The beginning of a guitar—a blank for the top in the rough, the sides, the neck blank, a body. Above is a practically completed instrument.

OF ANCIENT ORIGIN is the guitar. It was known in Biblical days. The ancient Greeks esteemed it. Beethoven called it "a complete orchestra in itself." It has become, however, as American as apple pie. For the pioneer songs of the gold-rush era, for the hill-billy ballads and cowboy laments featured on today's radio, the guitar has offered willing and appropriate accompaniment. Orchestra leaders call upon it for service as a solo instrument.

In New York City is a modern guitar factory—Epiphone, leading maker of first-grade fretted instruments—and it was here that these pictures, showing some of the many operations in the manufacture of modern guitars, were made.

Various types of wood are purchased well in advance of use—some have to be seasoned for

years. Short lengths are kiln-dried for from three to five weeks. Hard maple and mahogany are used for the necks of the instruments, spruce for the tops and hard maple for backs and sides. Fingerboards are usually rosewood.

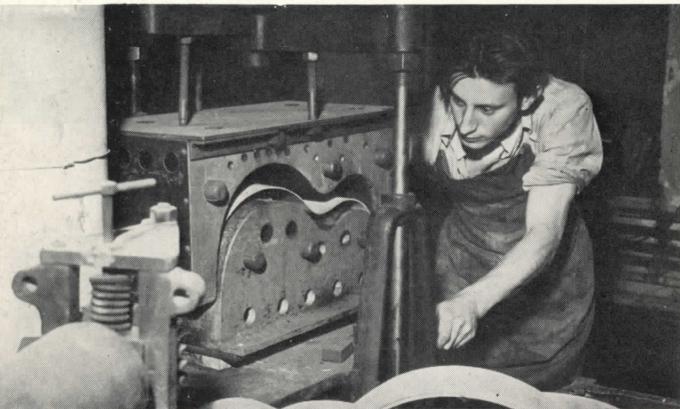
Sides, tops, backs and necks are shaped simultaneously in different parts of the plant. Each operation, begun by machine, is completed by expert hand-finishing. Frames are cut from strips of lumber an eighth-of-an-inch thick, soaked in hot water and brought to the desired form in heated molds. Two half-frames are then glued together to form the complete frame. Special reinforcement blocks are clamped into position to provide more surface for the gluing of the tops and backs. Many of the tops and backs are shaped from solid wood, an inch thick



The wood is dried for three to five weeks in a kiln. Tops and backs are also dried before being glued to the frames.

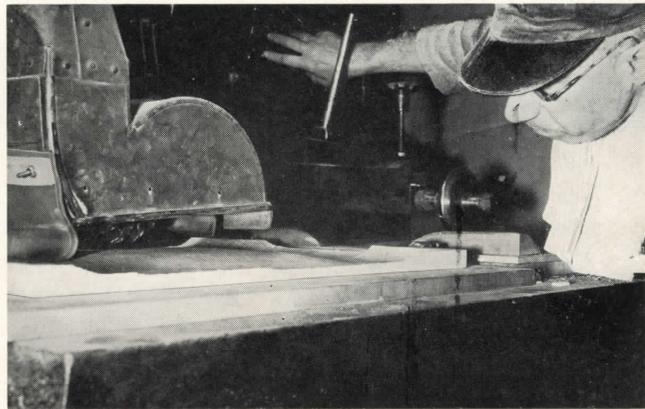
at the beginning, carved and reproduced according to a model. Some, however, are made from plywood, cut to shape on bandsaws, the material being hand-finished to exact measurements. Elasticity for tone reproduction is obtained by leaving the backs solid but "F" holes in the tops to permit the escape of sound.

The tops and backs are now glued to the frames and kept in a press for at least four hours. The neck is formed from long, wooden blocks taken from the kiln in halves and glued together with the grain of the woods in opposition. Thus the grain of one half counteracts the other half to eliminate the effect of warpage on the instrument's tone. Fret and pearl positions are marked and inserted by hand on the finger-board. A tempered steel master gauge insures accuracy in the music scale. The neck is then dove-tailed and squeezed securely into place on the body to form a guitar in the rough. A gloss



Sides of  $\frac{1}{8}$ th inch hard woods are first softened in water, then pressed to shape on heated forms.

Reinforcement blocks are added before tops and backs are glued in position.



The rough carving of tops and backs is by machine. Hand operations complete the job.

The pattern is placed over  $\frac{1}{16}$  inch sheets of wood which will be cut to shape and glued together.

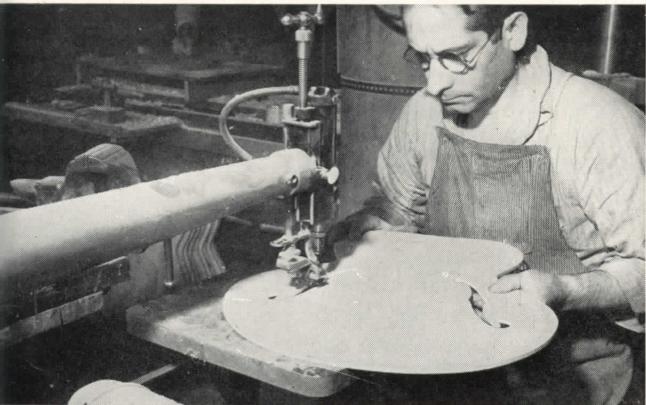




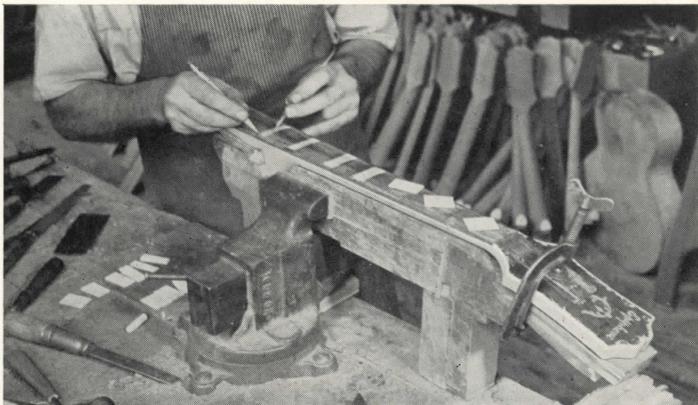
Tops and backs, shaped by machine, finished by hand.



Hand-carving the neck.



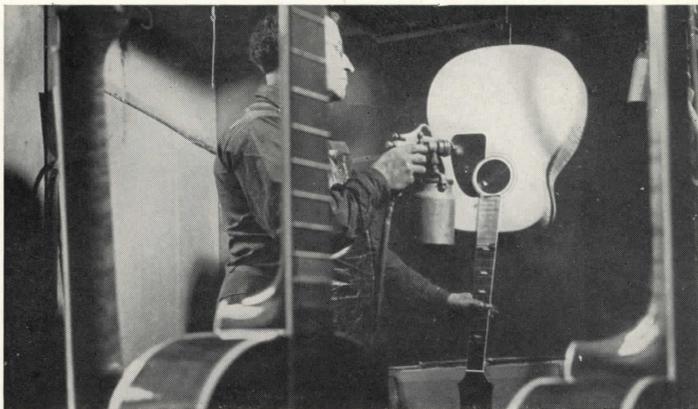
Sawing the "sound holes."



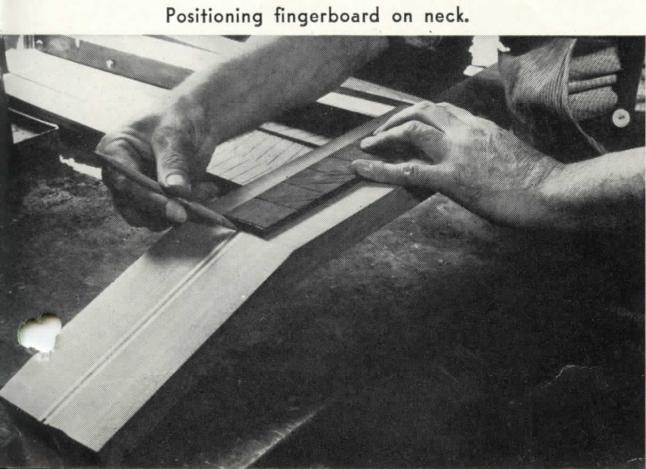
Position marks, mother-of-pearl, are fitted or inlaid.



Gluing tops and backs to sides.



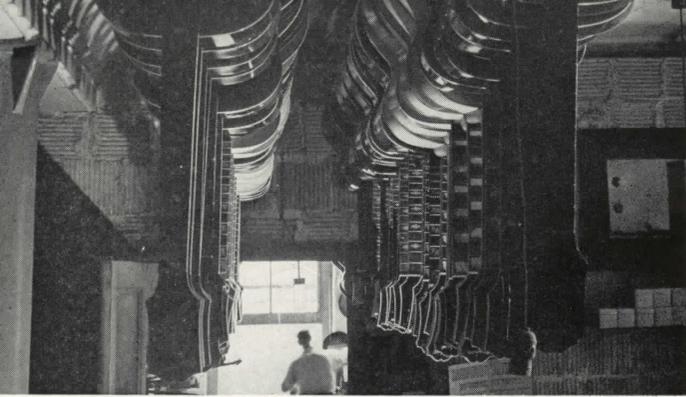
Spraying the body.



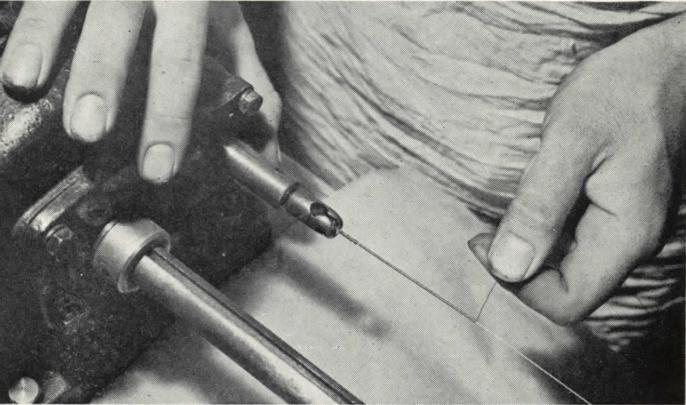
Positioning fingerboard on neck.



Hand-rubbing brings out the beauty of the wood.



Ready for the assembly department. The guitars, lacquered and hand-rubbed, dry for at least two weeks.

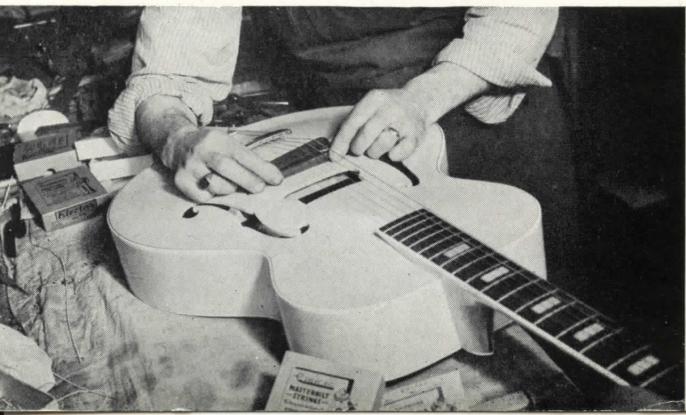


Hand-feeding an alloy wire to the machine which winds it around an interior music wire.



Fitting the bridge to a flat top guitar.

Fitting the bridge on the Electar (Electric) Spanish guitar.



finish is given the guitar by means of spraying with dyes and lacquers and hand-rubbing. The guitar is dried for a fortnight before being sent to the assembly department.

To each guitar must be added a bridge, tail-piece, strings, tuning pegs, and professional adjustments. Epiphone experts manufacture each of these separately.

Strings are cut from music wire, which consists of a very high-grade steel. Various degrees of thickness produce different tones. "Wound strings," however, have an additional strand of brass alloy wound around the music wire. The alloy is hand-fed to a winding machine by an expert, who after many years has acquired the "feel" of tautness necessary to the string.

The position of the bridge is checked according to strict measurements and fitted carefully. Strings are then placed on the guitar and it is ready for testing.

Electrical guitars employ additional features which are assembled to the completed instruments in another department. Of primary importance is the magnetic "pick-up" which consists of a coil and magnet of patented design. The "pick-up" translates the vibration of a string into electrical impulses which are sent through a power amplifier. The tone can be magnified to any required volume and the sweet sounds of a small guitar can be made to fill a convention hall.

Testing for musical accuracy with the resonoscope which visually compares the tone with a standard

