Gibson Banjo Construction Evolution: 1918 to 1938

Many interesting changes occurred in the development of the Gibson banjo line between its inception in October 1918, and the end of its "pre-war" era in 1938. (For a glimpse at the sequential development, see Chronology of Gibson Banjos.)

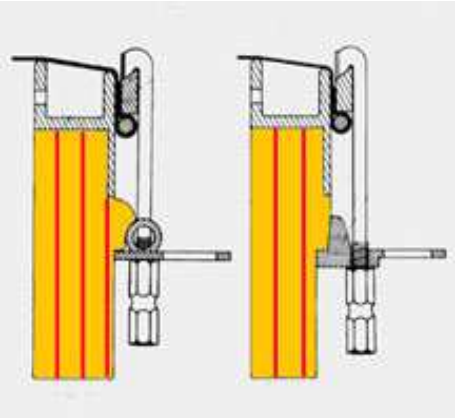
Following are details of construction features that occurred during this period:

Model designations: The banjo models were given letter codings to indicate the type of stringing: TB referred to a tenor banjo, PB stood for plectrum banjo, GB described a guitar banjo, MB was applied to a mandolin banjo, UB denoted a ukulele banjo, and RB indicate a regular (5-string) banjo. The letters were followed by a number indicating the grade or quality of the instrument: -00 (double zero) was bottom of the line (although there was a short-lived "Jr." model which was the least expensive); -0 was next; -1 was slightly better, and usually meant nickel plating and plain-colored finish; -11 (double 1) was a secondary inexpensive version; -2 followed with fancier inlays and extra binding; -3 was fancier; -4 fancier yet; and -5 (for a brief period) was the fanciest model boasting gold plating, choice curly maple, and elaborate inlay designs. Thus a TB-5 was a tenor banjo with -5 grade fancy trimmings.

From 1925 to 1930, several fancy modes made their debut; the style -6 with fancy black-and-white binding (or sometimes gold-speckled binding); the TF or Florentine; the TG or Granada; the Bella Voce (which means "beautiful voice" in Italian); and the All American -- an elaborate instrument with a carved eagle on the peghead.

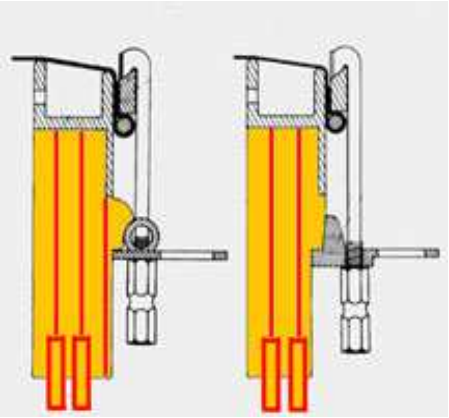
For detailed descriptions of banjo models, see Gibson Banjo Models

Rims: Except for the very first Gibson banjos, all of the rims for this period have been made of steamed, rolled, and laminated maple. Maple was selected for its superior bending qualities compared to other woods in it's weight/mass class (cherry, oak, etc.) at approximately 35-40 pounds per cubic foot.



Depending on the model, there were either of three or four plies: three plies of 1/4" maple to make up a 3/4" rim machined down for one-piece flange models, and four plies of 1/4" rim to make up the heavy rim used for tube-and-plate models. All of the laminate ends were taper-cut, a method of angling the joining ends of each laminate so that they would overlap rather than joint flat end-to-end.

The added mass of the fourth ply on tube-and plate rims contributed to the brightness and amplitude of these banjo models.



To the inexperienced observer, some rims appear to have been made of five thinner plies; but this is a misconception caused by a practice still in use today. The bending and lamination process is a difficult one and several rims might come off the mold with unsightly glue joints. To improve the cosmetic appearance, a poorly glued three-ply rim would be placed on a lathe and a "cut" made into the glue joints. Then, thin filler strips would be glued into the cuts and then machined flush, resulting in a multiply appearance, while still basically a three-ply construction.

One-piece flange models required that the rim be machined down so that the flange could slip over the rim. This resulted in a 9-1/2" inside diameter and approximately 10-1/4" outside diameter, and thus the lower portion of the rim had thin walls approx 9/16" thick. The tube-and-plate models required an added lip to support the tube and did not require machining down of the rim, leaving the tube and plate rims to be a full 3/4" thick.

Flanges: The tube was the first non-shoe system used by Gibson to secure the tension hooks (that tighten the head). At the first introduction of the full resonator models, a stamped "plate" was added beneath the tube to fill the opening between the rim and the lip of the resonator. This plate had stamped perforations around its surface. At one point, the lesser models had hex-shaped openings in the flange compared to the classic Mastertone arched opening with rounded ends. The first models used small hex-head screws that went through a hold the flange to hold the flange and rim assembly to the resonator. This was later changed to the hex-head screw going through a separate bracket below the flange that was attached to the rim, and still later to a serrated thumbscrew replacing the hex-head screw.

Coordinator rods: One of Gibson's developments for attaching the neck to the rim was the "coordinator rod" system; two brass rods that attached to two screws in the heel of the banjo neck. The rods secured the neck to the rim and provided a means for correcting the "action" (height of strings above the fretboard). By selectively tightening the nuts at the tailpiece-end of the rods, the angle of the neck could be changed to adjust the neck's angle. Gibson's first banjos had a nut on the top neck screw and only one rod on the lower neck screw. The earliest banjos with the double-rod coordinator rod sytem had one lag screw threaded into the neck and one "L"-shaped lag screw embedded into the bottom of the neck's heel (these were permanently glued in and could never be removed).

Tone chambers: The "tone chamber" was a metallic device that sat on top of the wood rim to enhance the vibrations of the (then) skin head. Several variations were created by Gibson, and these can be followed in the Evolution of Gibson Banjo Rim Assemblies. It has been thought that the spring loaded "ball bearing" tone chamber was designed to counter the effects of weather changes on the skin heads. This is not true, especially since a vertical change in the head's position would cause improper playing. The springs were employed to improve the resilience (springiness) of the tone chamber. This design feature is attributed to Lloyd Loar.

Gilbson's spring-loaded ball-bearing tone chamber system was a marvelous engineering feat of wood and metal parts. The assembly included (left to right) a grooved stretcher band, exterior tone chamber rim, tone tube with integral lip and arched upper ring, tube and plate assembly, 24 ball bearings, 24 coil springs, and 48 flat washers. Each spring was rated at 460 pounds per inch.

Of the 48 washers, 24 were placed below the springs, and 24 were countersunk - to hold the ball and keep it centered - and placed above the washers. Each spring, washer, and ball assembly went into a hole drilled in the rim. To ensure accurate height and contact of the balls to the tone tube, thin paper shims were placed beneath the bottom-most washer and the rim. (The shims are often discarded and rarely found on banjos today, except on those rare banjos that were never disassembled before.)

With all the springs in place, the rim is finally ready to have the tone tube installed. The assembly of these rims was very time consuming and it is no wonder that the Company eventually favored a one-piece tone chamber and lastly, a one-piece cast flange.

The ball-bearing tone chamber was followed by its look alike (from the outside) cast one-piece arch-top tone chamber, and later by the wider active surface of the flat-top tone chamber.

Woods: Each of the model designations indicated a particular species of wood used for that model (see Banjo Model Features, below). The lower numbers indicated that plain maple was used with a colored finish such as "dark mahogany" stain used over maple. Curly maple, burl walnut, and Honduras mahogany were available on their respective models. Other woods such as white holly, were available on fancy models like the Florentine and Bella Voce. In all cases, the rims were made of maple, and the majority of fretboards were made of Brazilian rosewood -- not ebony as commonly believed. Only the pre-1925 (trapdoor period) and style -6 banjos had ebony fretboards. Except for the earliest models, all of the banjos made from 1925 to 1935 (in fact, until around 1969) had one-piece necks (however, pegheads were fitted with laminated "ears" to give them the necessary width, and the earliest models had a veneer over the back of the peghead to cover up the ear glue joints).

Banjo serial numbers: During the 1920s, Gibson instruments were made in lots of 40s (for the most part, this procedure continues today). the bins that were used to move instruments from

department to department had 40 cubbyholes. An entire bin was a "lot" and would contain instruments of the same model. Sometimes two or three bins or lots of the same model would be made at one time. To assure that parts would fit together and that the finish color would match, the serial number of each banjo was stamped inside its rim, penciled on the neck heel, and chalked or painted in white or red on the inside surface of the resonator (with red numbers most often being painted along the inner edge of the resonator so they could be read through the holes in the plate or flange, yet the red would not be obviously visible).

The number was in two parts: first a four digit number to indicate the factory order number or lot number, and then a second series (usually two digits) to designate that particular banjo within the lot. Banjos made prior to February 1925 were numbered in the 11,000s. With the introduction of the new full-resonator models in February 1925, a new prefix was assigned to the banjo line, beginning with 8,000. Around 1935, when the series reached the 9,900s, it was again changed to a whole variety of numbers whoe dates have been difficult to document or verify. Although each new year did not precisely mark a change in the numbering system, the following chart will serve as a close guide to Gibson's early serial numbers and their approximate date:

1925.....#8,000	1928.....#8,800	1931.....#9,400	1934.....#9,800
1926.....#8,350	1929.....#9,000	1932.....#9,600	1935.....#9,900
1927.....#8,600	1930.....#9,200	1933.....#9,700	1936.....various

Platings: Instruments were offered in three basic plating finishes; nickel, chrome (them called "chromium"), and gold. The gold plating was often referred to as "triple-gold plating" -- a description of the length of time pieces were left in the plating bath (and not an indication that three separate plating processes were done). Some of the gold-plated models were "Florentined," a burnishing technique that dulled the plated surface to produce a matte background.

The Golden Years:

1918 to 1938

Gibson's banjo models
design and
flanges, resonator
marquetry, inlay,

featured a robust series of changes in the implementation of tone-chambers, rims, designs, platings, woods, bindings, hardware, engravings and finishes.

Most all of the Gibson
plectrum banjo (PB),
ukulele banjo (UB),
few were available in a
string scale was

Banjos were available in tenor banjo (TB), guitar banjo (GB), mandolin banjo (MB), and regular (5-string) banjo (RB) models. A half-breed plectrum/tenor (PT) whose halfway between plectrum and tenor.

The following is a brief description of the changes made during Gibson's1918-1938 Golden Year era.

All American: A richly- decorated banjo model with a carved and colored eagle on the resonator back, and a three-dimensional eagle carved on the peghead. The fretboard was hand-painted with scenes depicting the development of American history. Gold-plated engraved hardware, pearloid fretboard, burl walnut, and white holly woods.

Florentine: An elaborate instrument boasting Italian Renaissance motifs. The pearloid painted with multi-colored scenes and the carved and colored with a fancy crown-and-peghead was veneered in pearloid, inlaid and rhinestones. The hardware was gold-plated Available in burl walnut, curly maple, Brazilian woods. (Some had white-painted maple.)

fretboard was hand
resonator back was
crest design. The
bordered in colorful
and richly engraved.
rosewood, or white holly

Bella Voce: Similar to the Florentine model, except the Bella Voce featured a rosewood fretboard with mother-of-pearl inlays, and a lyre design carved and painted on the resonator back. The first models had an ebony-veneered peghead with two variations of elaborate mother-of-pearl inlays, later changed to the same peghead as the Florentine model. "fiddle" headstock.

curly maple neck and
burnished (dulled)
rosewood and the
flowers" design. The
design when the

Granada: The very first Granada model had a resonator, with gold-plated, engraved, and hardware. The fretboards were Brazilian instrument was inlaid in the "hearts and inlay pattern was changed to the "eagles" "double-cut" headstock was introduced.

Style -75: This model was the top-of-the-line of the standard models during the latter part of the 20 Golden Years(other than the higher numbered top-tension models). It was constructed of Honduras mahogany, with a rosewood fretboard and rather plain inlay designs. The headstock was inlaid in a fancy, but not overly decorative motif; and the hardware was nickel plated.

Style -18: The best of the top-tension models. this instrument featured an arched (radiused) rosewood fretboard, large art-deco inlays, a new art-deco peghead design bound in white/black/white, and a carved (rather than laminated) heavy resonator whose outer surface was turtle-shell shaped. The top-tension model was the first official announcement of the flattop tone chamber design (although it was previously available on special order). Hardware was gold-plated and engraved, and the neck and resonator wood was curly maple. The resonator on top-tension models was machine carved from a solid piece of wood, instead of being laminated as on other models. The extra bulk, of hardware, plus the solid resonator made this model the heaviest of the Gibson banjo line (which served to provide great power). Tuning pegs had a large square housing which reflected the designs of the art-deco period.

Style -12: The middle of the top-tension models. Virtually the same as the style -18 except the style 12 was chrome plated, not engraved, and featured black walnut as a neck and resonator wood. The instrument was finished in a dark sunburst with dark regions around the outside back of the resonator, at the neck heel, and at the back of the peghead. Most of the top-tension models had three-digit serial numbers.

Style -11: A lower-priced standard model with pearloid fretboard, peghead, and resonator back all of which were silk screened in a multi-colored floral motif. Hardware was nickel-plated. This model had a 1/4" brass rod as a "tone chamber" rather than the cast tone on better models. Some versions had necks that were painted royal blue.

Style -7: The bottom of the top-tension line. This style was made of plain maple and The hardware was nickel-plated and the inlay "bowtie" pattern used in the style -250 banjos the style-7 had several slots cut into the sides

finished in dark brown. design was similar to the of the late '50s (although of each inlay piece).

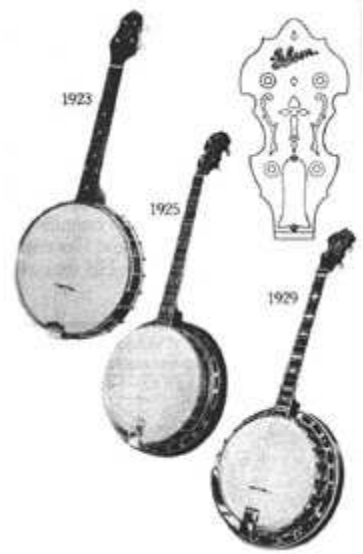
Style -6: This banjo was a handsome combination of curly maple woods and flashy binding. The first models boasted black and white checkerboard-like binding. A variation of the style was introduced as the PT, an instrument with gold-speckled binding and a string scale length halfway between that of tenor and plectrum.

After the PT's short tenure (two years of production), several style-6 banjos were made with the same gold-speckled binding. The style -6 had hearts and flowers inlays, rosewood (later ebony) fretboards, gold-plated and engraved hardware, and a yellow-orange finish called "Argentine Grey."

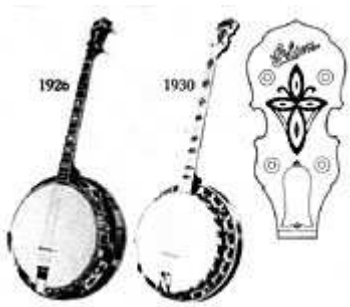
Style -5: The style -5 was available in two distinct models. First as one of the early "trap-door" and Pyralin resonator banjos. The tone chamber at that time was the plain ball-bearing type. Fretboard inlay pattern was a fancy floral pattern, and the hardware was gold-plated. In 1925 with the introduction of the spring-loaded ball-bearing tone chamber, this style was introduced with a full resonator, "wreath" inlay design, gold-plated and engraved hardware, figured walnut neck and resonator wood, ivroid binding, wood-inlay marquetry on the back of the peghead, and fancy purfling.

Style -4: This style was the top of the standard (not engraved, carved, or gold-plated) line. introduced in 1923, featured silver plating, pearl dots, curly maple neck wood, and Pyralin featured a Honduras mahogany neck and hardware, Brazilian rosewood fretboard, design, and white/black/white binding. In changed to the same "eagles" inlay pattern as period. The wood was changed to burl walnut, to chrome.

The first version, ebony fretboard with resonator. In 1925 it resonator, nickel-plated hearts-and-flowers inlay 1929, the style -4 was the Granada of that and the plating changed

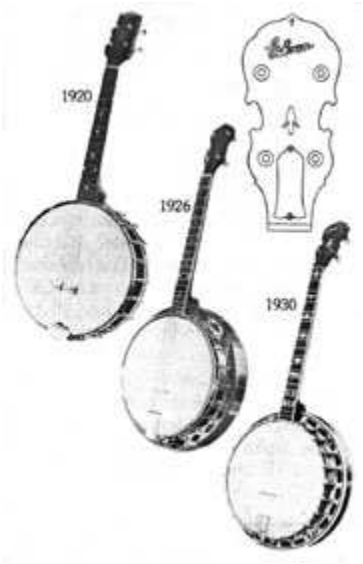


Style -3: The first style -3 was introduced in 1923 and boasted nickel plating, an ebony fretboard with dot inlays, and plain maple neck wood. In 1925 the style -3 featured "snowflake" inlays, nickel plating, plain maple neck and resonator wood, and was finished in a dark-reddish brown mahogany color. In 1929, the inlay was changed to large, fancy designs. In 1937, a variation of this style became the style -75 (see above).



Style -2: The 1920 version had dot inlays, an ebony fretboard, and no resonator. In 1925 it featured a full resonator, shoes with a wavy-

shaped flange, simple inlay designs, rosewood fretboard, and an amber-brown finish. In 1926, the openings in the flange were changed to diamond-shaped. The versions after 1930 had one-piece flanges, silk screened decorations, walnut resonators, and pearloid fretboards.



Style -1: This banjo was introduced in 1922 with nickel plating, an ebony fretboard with pearl dots, and a "trap door" resonator. In 1925 the fretboard was changed to rosewood with fancy inlay shapes, the resonator was deleted, and a 10-1/2" head was featured. In 1926, the style changed to a full-resonator model with shoes-and-plate flange and an 1" head. In 1930 it further changed to a dark mahogany (stain over maple) finish, and "bat" inlays, In 1936 the inlay pattern changed again to simple dots.

1926 it was changed to an antique mahogany

Style -0: The style -0 was introduced in 1925 with an "ebonized maple" fretboard, dot inlays, no resonator, and a 10-1/2" head. In an 11" head. The finish during both years was stain over maple.

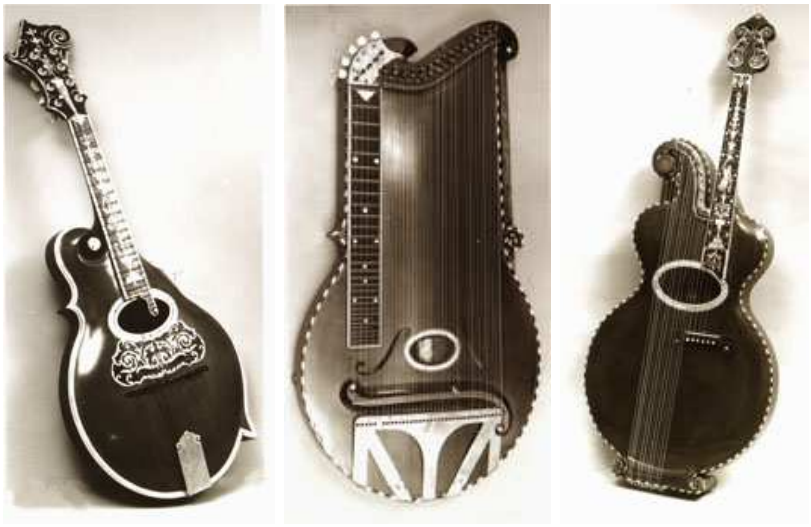
Style -00: This was the bottom of the line when it was introduced in 1935, it was made with a rosewood fretboard, dot inlays, nickel plating, white binding, and plain maple wood finished in a light walnut stain. This instrument had a round rod (rather than cast) tone chamber and a one-piece cast flange.

Orville H. Gibson was born in 1856 on a farm near the small town of Chateaugay, New York, in an area known as "Earlville," about one hour north of Lake Placid and about an hour south of Montreal. The youngest child of John W. and Amy Nichols Gibson, Orville was one of five children sharing a home with sisters Pluma and Emma, and brothers Orzo and Lovell. John, Orville's father, was an immigrant of England and his mother Amy was from Peru, New York.

It is unclear why Orville traveled to Michigan or what drew him to Kalamazoo, a small industrial city in the southwestern part of the state. But by 1890, Orville had settled in Kalamazoo and had taken up the hobby of making musical instruments. In 1885, Orville had a job as a clerk at A.P. Sprague's shoe store at 118 East Main Street, and by 1893 he was working as a clerk at Butters

Restaurant on 216 East Main. His day jobs were supporting his hobby, and his hobby was soon to play a totally different role in his life.

On May 11, 1896, Orville filed for his first and only patent. That document, U.S. Patent No. 598,245, was issued on February 1, 1898 and contained his ideas for the construction of a mandolin with a carved top and back, and with sides that were cut from a solid piece of wood rather than being bent from thin strips. Orville felt that the bent and multi-pieced back of the then popular bowl-back mandolins did not possess "that degree of sensitive resonance and vibratory action necessary to produce the power and quality of tone and melody found in" his instruments. A further embellishment of his patent was that the heel of the neck was hollowed out to provide an additional sound chamber which he hoped would offer improved tonal qualities.



Orville's earliest instruments were quite unusual and featured carved soundboards, black painted surfaces, elaborate inlays, and rims ("ribs") cut from a solid piece of wood rather than being bent into their final shape.

During the following years, Orville continued to make instruments in his meager shop. Early in 1900, he met several businessmen who wanted an opportunity to manufacture mandolins and guitars of his design, and to do so under the protection of Orville's singular patent.

Inside the sound hole of Gibson's early instruments can be found a wonderful array of labels, each which tells a story of its own. The "lyre label" boasted a picture of Orville and what appears to be a lyre. Click here to learn more about the Saga of the Lyre Labels.

On the afternoon of October 11, 1902, Sylvo Reams, Lewis A. Williams (for more on Lewis, see Lloyd Loar), LeRoy Hornbeck, John W. Adams, Samuel K. Van Horn, and Orville H. Gibson met at the County Clerk's office to form a "Partnership Limited Association" (fundamentally, a business structure in which various investing members had limited liabilities) for the "Gibson Mandolin-Guitar Manufacturing Co., Limited." Adams, VanHorn, and Hornbeck were lawyers practicing in

Kalamazoo. Reams and Williams were both in the retail music business, and all saw the opportunity to capitalize on Orville's creative talents.

Strangely, Orville's name was not listed as a member of the Partnership -- he was at the meeting to sell his patent rights and to formally agree to the terms and conditions of the new organization. In 1904, another agreement followed which documented the payment of $2,500 from the Partnership to Orville Gibson for the exclusive rights to his patent. Through this arrangement, Orville sold his rights for a sum that would be equal to approximately $250,000.00 today.

This photo of Orville has received wide attention. Among the most interesting aspects is that it demonstrates Orville playing a slotted-peghead classical guitar, left-handed -- an attribute that might account for Orville's instruments having pick guards that go completely across the instrument's face to accommodate both right- and left-handed musicians. Further, realizing Orville's familiarity with the guitar, he was obviously well-versed in guitar construction when he developed his designs for a carved top and carved back instrument with a solid rim. I discovered Orville's left-hand attribute while looking at prints made from the original *tintypes* -- an early photographic process that resulted in images being "flopped." The parting of Orville's hair and the buttoning of his suit verified that he was a lefty (contrary to "flopped" copies of this photo in Jullius Bellson's books which depicted Orville as right-handed). Julius was the first to know, and we shared many a laugh over this discovery. (The photo, originally black and white, has been hand-colored.)

Beyond the sale of his patent, Orville's contribution to the Gibson Company in the following few years is unclear, but it does appear that there was question about the quantity and quality of time he spent at the plant. Within a short period after the foundation of the company, the Board passed a motion that "O. H. Gibson be paid only for the actual time he works for the Company." After that time, the records do not clearly indicate whether he was a full-time employee, a consultant, or just an occasional visitor to the factory.

When the Company began raising capital to fund its growth and development, one of the first

investors was Orville Gibson himself -- he purchased 60 shares of stock in the company of his own name on November 1, 1902.

Orville continued his arms-length association with the Company through 1907 earning most of his income from royalties. He worked on various projects as an inventor and for a period of time, was even listed in the town directory as a music teacher. In 1908, the Board agreed to pay Orville an annual fee of $500 (equating to a value of about $50,000, today).

But Orville's health was failing during the time the Company was getting underway. Various medical records suggest that he was suffering from a chronic disease, and possibly a mental illness, (and one can only surmise that he may have been drawn initially to nearby Battle Creek to seek therapy at a world-famous health spa run by Dr. John Harvey Kellog). Orville was a patient in Kalamazoo Hospital for extended periods in 1907 and 1909, and he eventually left Kalamazoo to travel back to New York State. There he was in the care of a Dr. Madill in Franklin County, in 1911. He was treated at the St. Lawrence State Hospital in Ogdensburg N.Y. (on the St. Lawrence River, about 80 miles west of Chateaugay), and discharged after eight days on August 26, 1911. He returned to the hospital in 1916 and was discharged after another six days of care.

There has been much supposition about this photo of Orville (left) in costume. And one could surmise that he was involved with one or more of the early bands who entertained in similar garb during this period (above right).

It is not known whether Orville returned to Kalamazoo, his instrument work, or the company that bore his name during the period of 1911 to 1918. On August 21, 1918, at 10:10am, Orville H. Gibson died of a disease diagnosed as chronic endocarditis. He succumbed while a patient at the St. Lawrence State Hospital, in Ogdensberg, N.Y., then a hospital for major diseases (today known as the St. Lawrence Psychiatric Center - an institution for mental care). Orville's funeral services, followed by his burial, were held on August 22, 1918. His death certificate indicates his occupation as "musician."

Orville was buried in his brother Lovell's family plot, along with several other Gibsons, in Morningside Cemetery in Malone, about 30 miles from his birthplace. There, on a grassy knoll overlooking a peaceful lilly pond, a small square stone says only "O. H. Gibson, 1856-1918" and marks the resting place of this giant who planted a musical seed for so many of us to enjoy.

It is clear that Orville had little to do with the development of the Gibson banjo line. However, the leading members of the Company obviously were aware of the new interest in banjo that was occurring at the time, and made every attempt to get their fair share of that new market.