Oct. 12, 1926. 1,602,409

A. D. GROVER

BANJO CONSTRUCTION

Filed Nov. 4, 1922

Fig. 1.

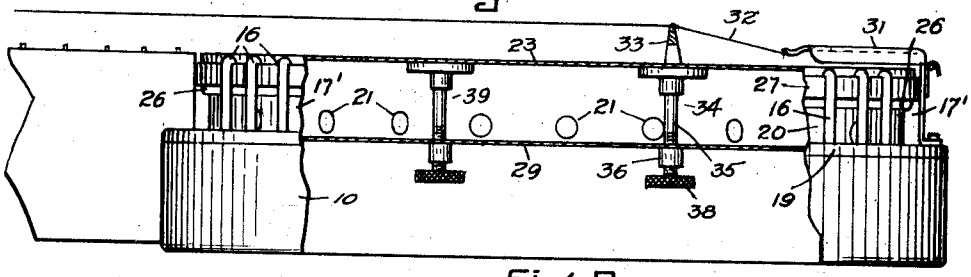



Fig. 2.

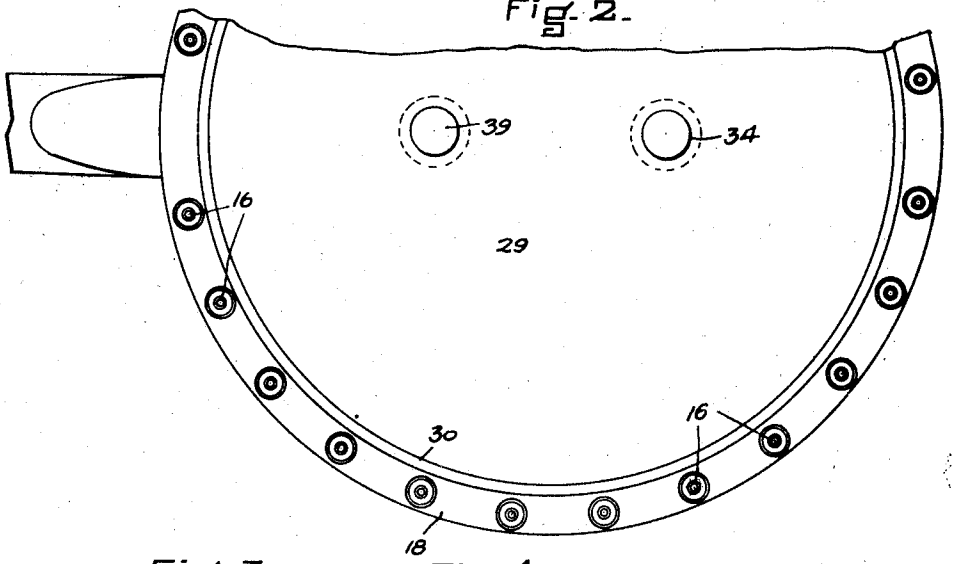



Fig. 3.

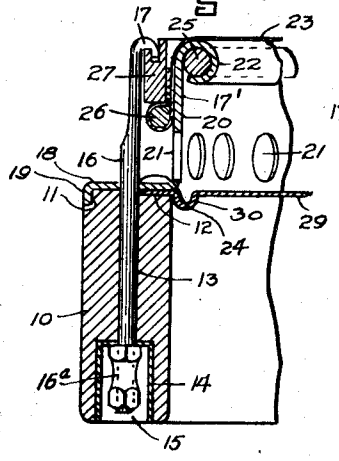



Fig. 4.

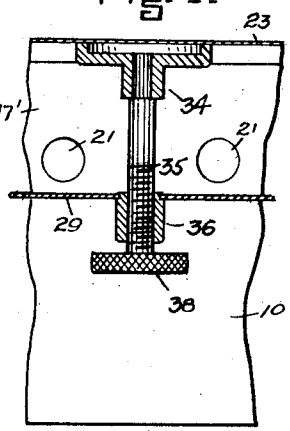
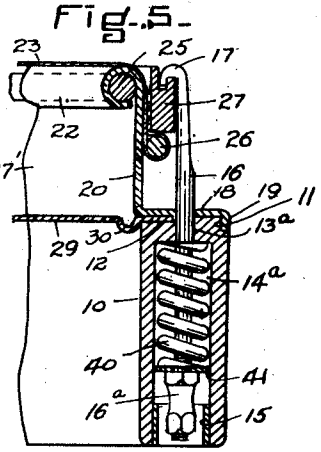



Fig. 5.




INVENTOR.

Albert D. Grover,

by Otto Munn his Atty.

Patented Oct. 12, 1926. 1,602,409

# UNITED STATES PATENT OFFICE.

ALBERT D. GROVER, OF LONG ISLAND CITY, NEW YORK.

## BANJO CONSTRUCTION.

Application filed November 4, 1922. Serial No. 599,000.

My invention relates to improvements in banjo construction; and has for its object to provide a musical instrument of this character which will render a full, clear, loud tone when played.

Further objects of the invention are, to provide a banjo with separable base and head supporting sections and partially concealed tensioning hooks carried by the base section; to provide the head supporting section with a curved upper bearing edge over which the head is drawn; to afford rigid support for the curved bearing edge; and to further increase the tone volume of the instrument by the provision of a diaphragm interposed between the base and head supporting sections and a plurality of openings in the wall of the latter section to permit the escape of tones from the otherwise closed chamber.

The invention consists in the features of construction, combinations of elements and the arrangement of parts which are described in the following specification, set forth in the appended claims and illustratively exemplified in the accompanying drawing, in which, Figure 1 is a side elevational view of a banjo head portion thereof being broken away to disclose otherwise hidden parts; Figure 2 is a partial plan view of the banjo base and head supporting sections showing the relative positions of the mute and supporting devices; Figure 3 is a substantially vertical sectional view on the lines 3—3 of Figure 2; Figure 4 is a substantially longitudinal sectional view on the lines 4—4 of Figure 2; and Figure 5 is a sectional view similar to Figure 3 except that the tensioning hook is shown as being yieldingly supported and the diaphragm and opening in the wall of the head supporting section are omitted from the construction.

Referring to the drawings, 10 denotes the base section or rim of a banjo which consists of an annular wooden member having a shoulder 11 disposed about its upper outside periphery and a flat shallow marginal recess 12 cut into the face of the upper edge from the inner periphery thereof towards the center of the rim. The wooden rim 10 is further provided with a plurality of longitudinal openings 13 about the rim and extending from the upper edge thereof toward the opposite or lower edge and terminating in enlarged countersunk openings 14. The axes of the openings 13 and 14 are disposed about a circle extending through a point about one half the width of the rim itself. Mounted in the enlarged openings 14 are metal thimbles 15, clearly shown in Figure 3, having an opening in the closed end of each to register with the bore 13. A straining screw 16 is mounted in each of the openings 13, the upper end of the screw being provided with a hook 17 projecting substantially above the face of the rim 10. The opposite or lower end of the screw is threaded and projects into the thimble 15. The screw 16 is adjustable in the opening 13 and such adjustment is effected by a nut $16^a$ which screws over the threaded end of the screw and bears against the closed end of the thimble 15.

The head supporting section 17′ which is mounted on the wooden rim 10 comprises an angular metal ring having a flange 18 disposed to lie over the upper edge of the rim 10. The free end of the flange 18 is turned downwardly to form a bead 19 which is adapted to seat against the shoulder 11 in the rim. The upright portion 20 of the ring 17 is provided with a plurality of openings 21 closely adjacent the lower end thereof, and the upper free edge of the upright portion 20 is rolled inwardly to provide a bearing surface 22 for the banjo head 23. In order to hold the ring 17 in position the flange 18 is provided with openings 24 adapted to register with the openings 13 in the wooden rim 10 and to receive the hoop screws 16 therethrough. The rolled rim of the upright portion 20 is reenforced by an annular wire 25 which seats firmly against the inside curved surface of the rim, as shown in Figure 3.

The calfskin head 23 is stretched over the supporting section 17 in the usual manner and the edges drawn downwardly about the rolled edge 22 and then wound about a flesh hoop 26. A hoop 27 is then placed over the supporting section 17, the said hoop comprising an annular member having a square lower edge adapted to rest on the covered ring 26, and being provided with a continuous groove 28 in its upper edge to receive the hook end 17 of the straining screws 16. Relative movement of the hoop 27 with respect to the supporting section 17

by adjustment of the nuts 16ª will cause the head to be drawn tightly over the crown of the curved section 22.

In order to utilize the tone vibrations within the instrument and thereby increase their volume, a metal diaphragm 29 may be mounted in the marginal recess 12 of the upper edge of the base section 10, as clearly shown in Figure 3. The diaphragm 29 comprises a thin metal disc which may have one or more concentrically disposed ribs 30, the outermost of which seats against the inner periphery of base section 10. The effect produced by the interposition of such a diaphragm will be to set up sympathetic vibration in the latter, i. e., vibrations which are synchronized with the vibration of the entire instrument.

The instrument is provided with the usual tail piece 31, strings 32 and bridge 33. A vertically adjustable mute 34 is carried by the diaphragm 29 and is adapted to bear up under the head 23 in line with the bridge 33. The mute 34 comprises a threaded stem 35 mounted in a threaded thimble 36 projecting from the body of the diaphragm. The lower end of the stem is provided with a knurled head 38 and the opposite end carries a loosely disposed annular head in contact with the under surface of the head 23. The head 23 is additionally supported by a supporting member 39 which is similar to the mute 34 in construction and is likewise supported by the diaphragm 29.

Referring particularly to Figure 5, in which the construction of the base section is slightly modified, the countersunk portion or enlarged bore 14ª is projected upwardly to a point short of the upper face of the section 10. The hoop screw 16 projects through an opening 13ª, continuous with the bore 14ª, to the exterior thereof. In this form the bore 14ª becomes a spring chamber, which enclosed a spiral compression spring 40 surrounding the stem of the hoop screw 16 and bearing at one end against the upper end of the bore and at its opposite end against a washer 41 slidable on the hoop screw 16. A nut 16ª is adjustable over the hoop screw 16 and bears against the washer 41. This construction provides a yieldable downward pull on the hoop or straining screws 16 so as to draw the rim 27 tightly against the ring 26 and head 23. It will be noted that in Figure 5, the openings 21 in the head supporting section 17′ are omitted and that without such openings no diaphragm 29 is used.

By providing the hoop screws 16 with spring members to automatically equalize the tension exerted against the banjo head 23, it has been found that relatively large heads may be used, because the large calfskin required for such an instrument is difficult to keep taut, especially in damp weather. By virtue of the constant action of the springs 40 to exert a yieldable downward pull upon the head, the latter may be held constantly under tension without regard to the changes which take place in the calfskin. The provision of the curved crown over which the head is stretched prevents the latter from being cut or otherwise mutilated during expansion and contraction of the parts or the head itself.

Having described my invention, what I claim and desire to secure by Letters Patent is:—

1. In a banjo, a rim comprising a wooden base section having a plurality of axial bores therein each terminating in a lower countersunk chamber, a head supporting section attached to said base section, a head stretched over the head supporting section, a flesh hoop engaging the edge of said head and clamping the latter to the head supporting section, a hoop for adjusting the said flesh hoop, said hoop having a continuous groove in its upper face, a series of hook members extending through said bores, each hook member having a smooth shank throughout the entire length of said bore, a threaded end within and not extending beyond the countersunk chamber and a hook end engaging the groove in the hoop, and means adjustable against said base section and over the threaded end of the hook member to adjust the flesh hoop.

2. A banjo, as claimed in claim 1, in which the head supporting section is provided with an angular flange which engages over the edge of the base section, substantially as described.

3. A banjo, as claimed in claim 1, in which the head supporting section is provided with a laterally projecting annular flange, a depending portion thereof closely embracing the outside wall of the base section, the flange being provided with openings registering with the openings in the base section to receive the hooks therethrough, substantially as described.

4. In a banjo, the combination with a rim comprising a wooden base section, a perforated head supporting section, and means for holding said sections in close relative fixed position, of a diaphragm interposed between the said base and head supporting sections, whereby sound will escape through said perforations to the outside of the instrument.

5. A banjo, as claimed in claim 4, in which said diaphragm is provided with a concentric ridge, adapted to fit within the inner periphery of the wooden base section, substantially as described.

6. In a banjo, the combination with a rim comprising a wood base section, a perforated head supporting section and head therefor of means for holding said sections in

close relative fixed position, a diaphragm interposed between the said base and head supporting section, and a mute adjustable through and carried by said diaphragm and comprising a portion adapted to engage the head.

7. In a banjo, the combination with a rim comprising a wood base, perforated head supporting section and head therefor, of means for holding said sections together, a diaphragm interposed between the said base and head supporting section, a mute adjustable transversely through the diaphragm and against the under side of the head, and a head supporting member adjustable through and carried by the diaphragm and spaced from the mute, the said member being disposed against the under face of the head.

8. In a banjo, the combination of a rim comprising a wood section having a plurality of axial bores therein each terminating in a lower countersunk chamber and a metal section disposed on the wood section, a head for the metal section, a flesh hoop engaging the head to stretch the latter, a hoop for adjusting said flesh hoop, and adjustable means yieldably supported in the countersunk chambers for engaging the hoop adjusting the flesh hoop.

In testimony whereof I affix my signature.

ALBERT D. GROVER.