

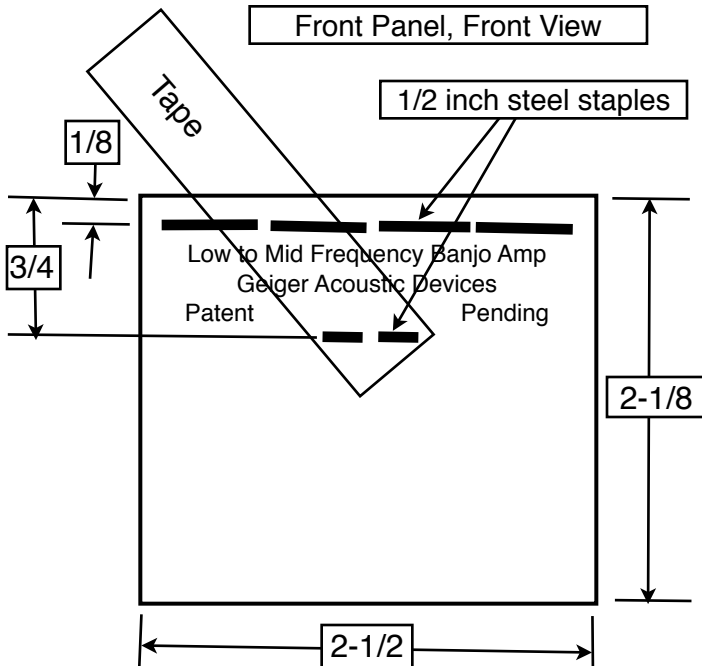
Drawing: Dual Low and High Frequency Surface Acoustic Wave Amplifiers For All Banjos and Similar Acoustic Stringed Musical Instruments

Inventor: John F. Geiger, 190 Berwick Drive, Sandy Springs, GA 30328-1205
 Date of Invention: March 4, 2019

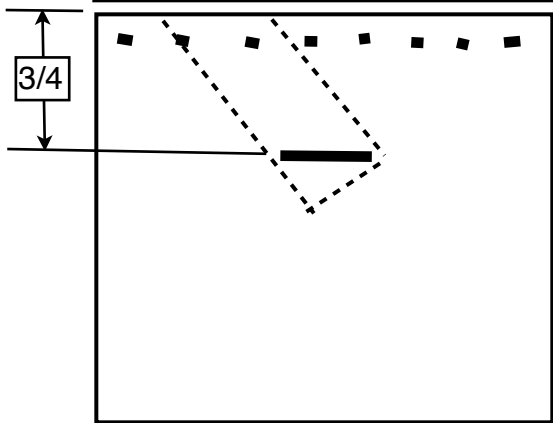
Concept: This device consists of separated, dual surface acoustic wave pickups for high and low frequencies that are located by the player a variable distance apart on the inside surface of a banjo's rim. Once in place and when the banjo is played these devices pick up surface acoustic waves from the rim, amplify them optimally for frequency and convert them into audible sound waves which merge in the air of the banjo's sound chamber to produce high volume sound of noteworthy quality and desirable duration over a wide range of frequencies.

Low to Mid Frequency Range Amplifier

Front Panel, Front View

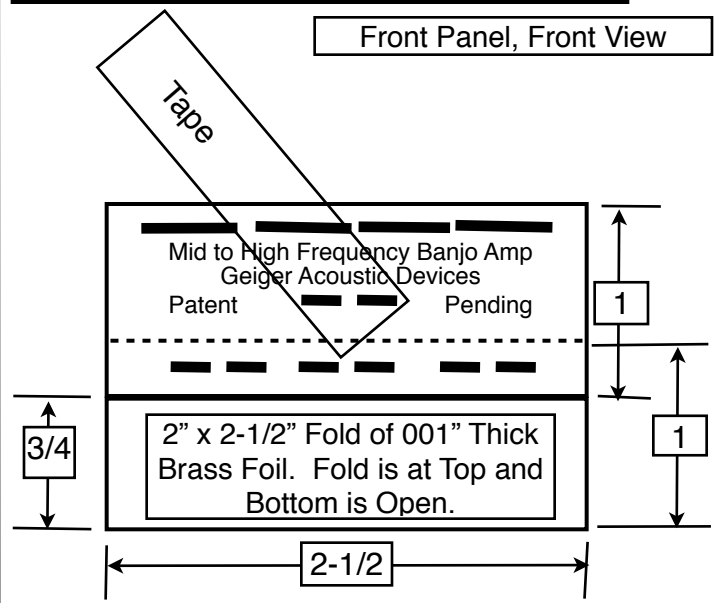


Front Panel, Rear (X-ray) View

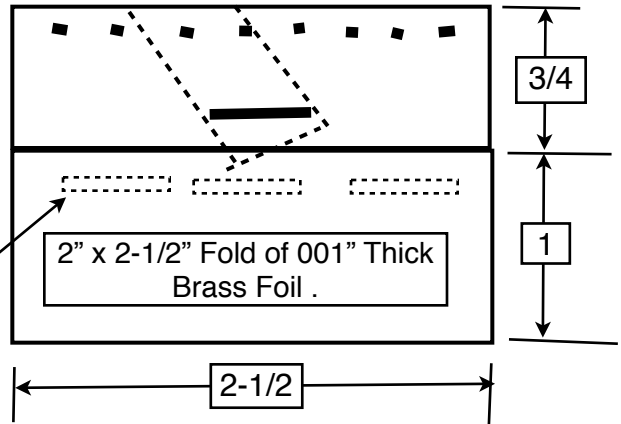


Mid to High Frequency Range Amplifier

Front Panel, Front View



Front Panel, Rear (X-ray) View

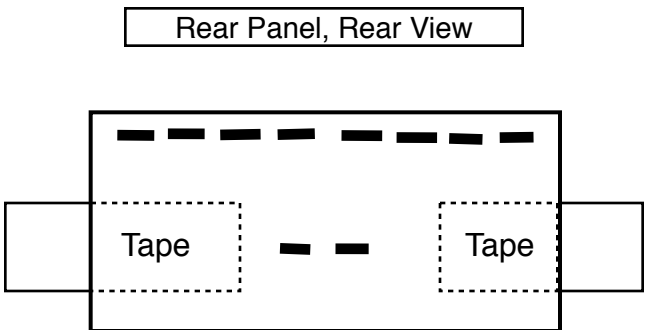
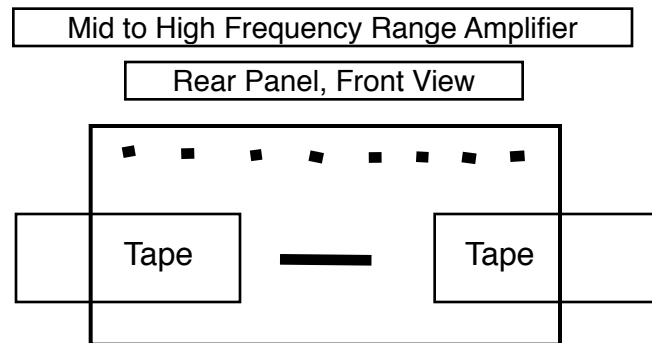
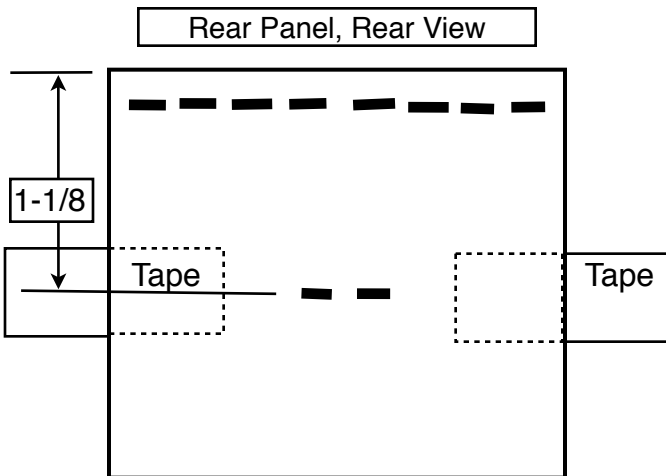
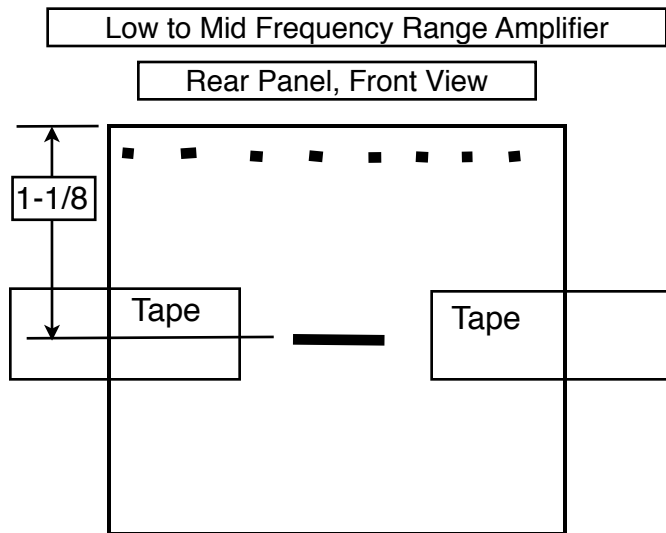


This Row of Staple Flats Is Below The Top Fold of Brass Foil In This View.

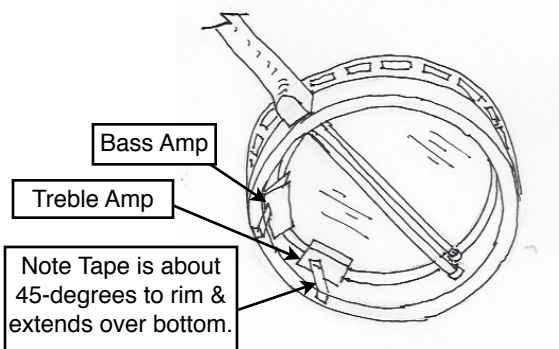
**Continuation of Drawing: Dual Low and High Frequency Surface Acoustic Wave Amplifiers
For All Banjos and Similar Acoustic Stringed Musical Instruments**

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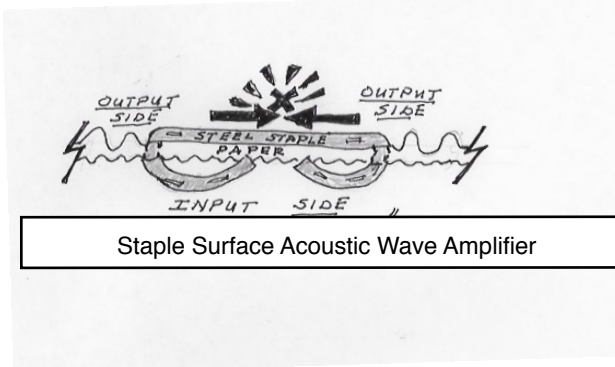
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Typical Installation in Banjo



Detail of Staple Amplifier



Materials: **Staples** are "Swingline" Brand "S.F. 4 Premium Professional Plus Series"; **Panels** are cut from seamless fronts of four "Uline" Brand Small size (3-1/2" x 2-1/4") Kraft Paper Coin Envelopes; **Tape** is 1/2 inch wide 3M Brand #300 Transparent (Acrylic) Tape, (a proven conductor of surface acoustic waves); Tape can touch bottom of rim but not outside surface; **Brass Foil** is .001-inch thick soft brass.