Supercharged, Movable, Tunable Tone Amplifier For All Banjos
How It Works by Frank Geiger, June 10, 2018

On June 2, 2018 I had three wonderful ideas about ways to improve the sound of my "Movable, Tunable Tone Amplifier for All Banjos", and all in a period of about 10 to 15 minutes! I immediately tried them out on my banjo, one at a time, and they all worked! Then about an hour later I thought of another idea, tried it, and it worked, too! I had never experienced anything like this cascade of good ideas before. And the four ideas were all about the same thing - different ways which work together to replace the sound surface wave input tape on my "Movable, Tunable Tone Amplifier For All Banjos", a banjo accessory which I had been selling for months and which has been very favorably received by many who have tried it.

Taken together, the four ideas create what might be called a "sound surface wave supercharger" which greatly amplifies, timbre-modifies and tunes sound surface waves taken from the inside surface of the banjo's rim, and also those surface waves which the supercharger creates from impacts of sound air pressure waves in the banjo's sound chamber.

Much like a car supercharger compresses air before it enters the car's engine, this new supercharger for a tone amplifier greatly amplifies and "tunes" sound surface waves from the banjo's rim, which is the banjo's input, before they enter the body of the tone amp. One could say, and with justification, that I should have called it a "turbocharger" because it also uses the banjo's output, the banjo's air pressure waves of audible sound in the sound chamber, to create sound surface waves when they impact the tape and braided cord to create sound surface wave inputs. Which is true. So it is really both a supercharger and turbocharger. I've called it a supercharger for simplicity.

When I made the "Supercharger" and attached it to the Tone Amplifier, (which was unchanged except for the added staple attaching the supercharger cord), (see Drawing), and played the banjo, I was struck by the beautiful sound of all frequencies over a very wide volume range and the wonderful sustain which seemed ideal for playing solos.

The "supercharger" (See Drawing) consists of: (1) a 4-3/4-inch long piece of waxed, braided nylon cord, 2-1/4 inches of which is covered with 3M's Model 600 clear acrylic tape. (2) The tape, which sticks the cord to the wood rim and, more important, adds surface waves to the cord <u>all along the tape's contact length</u> with the surface wave-amplifying, waxed, braided cord. (The braided cord amplifies waves on its fibers because the fibers intersect at an angle causing their waves to intersect at an angle and be amplified by the physics principle of "constructive interference".); (3) a size #1 steel paper clip (the standard size) at the far tape-free end of the cord which provides 3 small amplifying steel loops to the surface waves on the cord, (small loops amplify), and also amplifies waves on the fibers of the cord by compressing the fibers causing the waves to intersect and amplify, (constructive interference, again), and adds brightness to the banjo's sound from the steel; and, (4) a staple at the tone amp end of the cord which compresses the fibers of the cord causing surface waves on the fibers to intersect and amplify and which also attaches the cord securely to the top of the cross on the tone amp.

One "standard" paper clip 1-3/8 inches long gives great volume with beautiful high quality sound and just the right amount of sustain for solos on my tenor banjo. A larger 2-inch long steel paper clip gave my banjo a very strong sound but with less sound quality and sustain, perhaps better sound for a 5-string banjo. More than one paper clip may or may not give a better sound but should be tried because trying is as easy as adding a paper clip to a cord.

I'm glad that I did not post any recordings before thinking of this supercharged tone amp because it is going to make my playing sound a whole lot better for demos, and my playing needs all the help it can get!