



Vintage radio item with little-known facts or lore.

Category: 1920s American made broadcast receiver.

Sumter Radio Manufacturing Co.

Sumter, South Carolina

Late 1922 to mid 1923?

Presented by : Robert Lozier – KD4HSH

kd4hsh@carolina.rr.com --- January 2022

[01]

This is really a hints & kinks presentation as a result of working on restoration of radios made by the Sumter Radio Manufacturing Co. of Sumter, SC around 1922/24. As far as I can tell, they may have been the first and only maker of name brand broadcast receivers in this state in the 1920s.

These works- our reward for QUALITY and Honest Dealing

1907

The Sumter Telephone Manufacturing Company, Sumter, S. C.

INDEPENDENT PROGRESSIVE FAITHFUL

Peak employment 400

Years ago, I had heard that telephones were manufactured in Sumter, South Carolina. Company founded by Charles Thomas Mason, Jr – locally known as ‘The Edison of the South’ having earned 100 patents before his passing in 1928. In partnership with Frederick Claude Manning That company began around 1896 making telephones to sell to the hundreds of independent telephone systems not associated with the Bell Telephone interest. By 1900 they were offering manual switchboard office equipment and several models of magneto subscriber telephone instruments. Peak employment was said to reach 400 in 1909. This postcard shows the two-story brick faced main building fronting Harvin Street with single story brick building facing Telephone St. (These buildings survive and have been restored and repurposed in the past decade.) By 1913, the telephone business was sold to the Dean Electric Company of Ohio and manufacturing of telephones ceased. There had been a parallel business of manufacturing magnetos for stationary, marine and aviation engines. The "Three M Magneto Company" produced the Dixie magnetos developed by Mason. Manning and McCown and many were used in World War I airplanes The Splitdorf Electrical Company of Newark, New Jersey gradually bought controlling interest in “Three M” All manufacturing was transferred to Newark and operations at the Sumter plant are said to have ceased by 1920.

So was there anything going on in the complex after 1920?
I don't know.



[03]

Then in 1922 comes the Sumter Radio Manufacturing Co.

Principals named in *Manufacturer's Record*, Vol. 81, Issues 14-26

C. H. Wilson (president) has charge of the Sales department and general management of the business.

H. C. Tucker (V.P.) is in charge of the designing department.

L. E. Rhame (Secretary)

Reid Ard has charge of the tool making and machine shop production.

B. Randall is in charge of the stock department.

Is said to have been a relatively small operation occupying rooms in the old Sumter Telephone complex.

Radio News for February, 1923

SUMTER VARIABLE CONDENSER

Desiring to obviate the necessity for drilling mounting holes, the Sumter Radio Mfg. Co., 103 S. Harvin Street, Sumter, S. C., offer their condenser which needs but one hole to be drilled for its mounting on a panel. A single bushing with two locknuts, entirely insulated from the shaft itself, is used to mount the condenser.

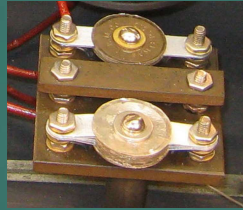
The end plates are of hard rubber composition and serve to support the condenser elements of moulded construction. A spring lever adjusts the tension on the shaft. Binding posts are provided to facilitate connections. The shaft accommodates a $\frac{1}{4}$ " bore dial.



As measured on a capacity bridge the capacitance of this 23 plate condenser was found to be 387.9 mmf. at maximum setting and 14.35 mmf. at minimum setting, measured at 1000 cycles. The equivalent dielectric resistance was 15 ohms at each setting. The phase angle differences corresponding to these readings were 1' and 20', respectively.

Arrived in good packing with descriptive literature.

AWARDED THE RADIO NEWS LABORATORIES CERTIFICATE OF MERIT NO. 50.



[04]

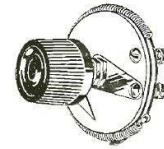
Mica washer insulated RF coupling and bypass capacitors. Top plates are die-stamped. S. R. M. CO. SUMTER S. C.

Variable Capacitors have no identifying marks.

- 60 Sumter Radio Manufacturing Co., Sumter, S. C., Rheostat.
- 61 Sumter Radio Manufacturing Co., Sumter, S. C., Potentiometer.
- 62 Precision Equipment Company, 2437 Gilbert Ave., Cincinnati, O., LC Lever Switch.
- 63 National Airphone Corp., 16 Hudson St., New York City, Gold Grain Detector.
- 64 Hartman Electric Manufacturing Co., Mansfield, O., Variable Condenser.
- 65 Mazda Radio Manufacturing Co., 1830-1840 E. 35th St., Cleveland, O., Rheostat.

Certificates

SUMTER RHEOSTAT, TYPE 30-M.
Adequate heat-dissipating facilities are present in this 3 ohm rheostat made by the Sumter Radio Manufacturing Com-



pany, 103 South Harvin Street, Sumter, South Carolina.

The resistance element of heavy gauge wire is wound into a spring and stretched over the periphery of the fibre base, resting securely in a groove. The german-sil-

An undated, presumed to be from a 1922 Sumter newspaper article says that the business had a well-equipped machine shop with a punch press, screw machine lathes, and facilities for molding molten metal around the center and ends of spaced stacks of aluminum plates that make up the tuning capacitors. Was this machinery left in place after magneto manufacturing was ended in 1920? I don't know... There is no specific mention of building audio transformers although an article mentioned that a Mr. Tucker had applied for a patent on a special transformer that would enable the radio to drive a telephone line.... There is no record of such a patent, or any other patent being granted to Mr. Tucker or assignment to a Sumter named entity. However, there are mentions of these company products in 1923 issues of Radio News magazine. The local article also mentions product approvals in the "The New York Evening Mail Radio Institute". But I can find no mention of the manufacture of audio transformers...



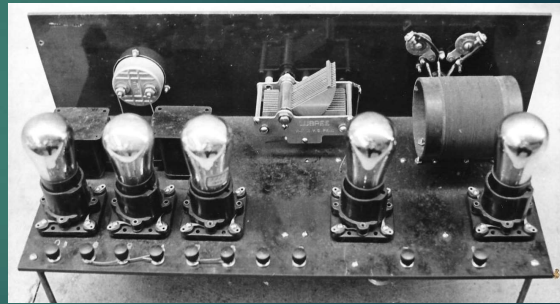
[05]

Presume first sets made 1922.
Photos as found in 2022.

Apparently, by 1922 part of the main factory building was being rented or leased to a business named the Sumter Radio Manufacturing, Co. It may have been the same location of the Sumter Machinery Co. and a sub-contractor for their parts. At this point there are four of these sets known to be in existence and there is one in the South Carolina state museum. None of the versions are identical. Serial number tags suggest that there may have been about 500 sets built over maybe a two-year period. The three I know about are in poor to awful condition.



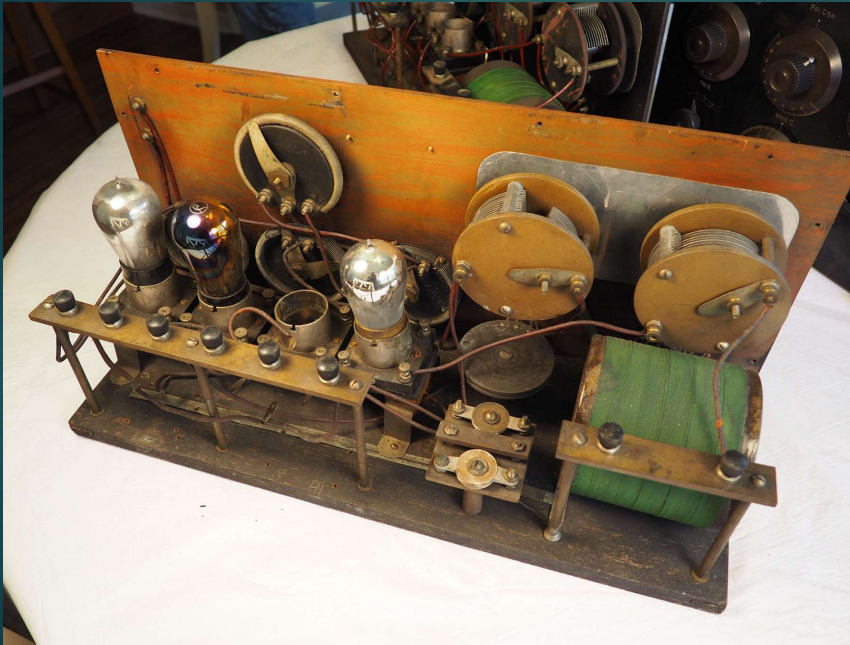
There is supposed to be another Sumter radio, but the owner has not permitted any pictures to be made or provide a description. They presume it is very valuable and is expecting an outrageous price. These photos, presumably made the 1960s, show a "Sumter Balanced Five Receiver" Serial # 510 It is not known if it still survives. There are no clues as to whether this could be the mystery fifth set.



[06]

Apparently, by 1922 part of the main factory building was being rented or leased to a business named the Sumter Radio Manufacturing, Co. It may have been the same location of the Sumter Machinery Co. and that business being a sub-contractor for their parts.

At this point there are four of these sets known to be in existence. None of the versions are identical. Serial number tags suggest that there may have been about 500 sets built over less than a two-year period. These are all in poor to awful condition. There is supposed to be another Sumter radio, but the owner has not permitted any pictures to be made or provide a description. They presume it is very valuable and is expecting an outrageous price. These photos, presumably made the 1960s, show a "Sumter Balanced Five Receiver" Serial # 510 It is not known if it still survives. There are no clues as to whether this could be the mystery fifth set.



All appear to be sets with one stage of TRF, a non regenerative detector and two stages of audio. All front panels are hard rubber in either gloss black or faux wood grain like this pictured version. The tuning capacitor end plates and terminal strips are also hard rubber.

[07]

All appear to be sets with one stage of TRF, a non regenerative detector and two stages of audio. All front panels are hard rubber in either gloss black or faux wood grain like this pictured version. The tuning capacitor end plates and terminal strips are also hard rubber. There are B&W photos probably made in the 1950s or 60s of another model receiver named the "Sumter Balanced Five Receiver" It has a serial number of 510 and appears to be a slightly more advanced design. It is not known if this receiver still survives.

The hard rubber panel is warped, rough and encrusted around hardware; everything must be removed.

Corrosion and soldering heat have threaded contacts frozen in place. How to grasp for removal? A make-shift locking collet to grasp and unscrew contacts.

A length of 3/8" diameter fiberglass rod. Drill a hole in the center of the rod end just a little bit less in diameter than the diameter of the frozen contact. Use a hacksaw to make two cross cuts across the end to form four fingers. The rod fingers are forced over the contact. (I forgot to take a picture here.) The fingers do not grasp the contact tight enough. I used a very thick metal washer the i.d. of the rod and forced it down as far as possible onto the fingers. It was now possible to unscrew the contact without damaging the contact.



[08]

Rotary stops were beyond salvage. New parts made and nickel plated.

The hard rubber panel is warped, rough and encrusted around hardware so everything must be removed.

Corrosion and soldering heat have the threaded contacts frozen in place. How to grasp for removal?

I made a Make-shift locking collet to grasp and unscrew contacts. I had a length of 3/8" diameter fiberglass rod. I drilled a hole in the center of the rod end just a little bit less in diameter as the diameter of the frozen contact. I used a hacksaw to make two cross cuts across the end to form four fingers. The rod fingers are then forced over the contact. I forgot to take a picture here. The fingers do not grasp the contact tight enough. I had to take a very thick metal washer the i.d. of the rod and force it down as far as possible onto the fingers. It was now possible to unscrew the contact without damaging the contact.

The steel Rotary stop pins are rusted beyond salvage. I had to turn new ones on the lathe.



As said, All these hard rubber front panels are warped. The safest way to flatten old hard rubber is gentle, dry heat. These panels are unpredictable in how much heat they can tolerate, and the heat must be applied very evenly. My kitchen oven temperature swings wildly as it cycles... I've measured 50-degree F temp swings, much too risky for these irreplicable items. This is the third time I have used a makeshift solar oven to heat the hard rubber panel enough to soften so it can be clamped between two sheets of MDF shelving for cooling. It is easy to make and use if you have a sturdy camera tripod. I have a piece of scrap plywood maybe 14 inches square. In the center I drilled a hole to take a 1/4x20 T-Nut.... They are made for 3/4" thick lumber, so I had to add a little square of 1/4" plywood to make sure the threaded barrel would not extend beyond the surface.... As you can see, I attached this panel to the bottom of a cardboard box using zip ties. This screws onto the standard camera tripod mount. In the bottom of the box, I placed a scrap sheet of Styrofoam insulation to limit heat loss. The idea is to prop the warped panel up against the Styrofoam panel in the bottom of the box and cover the box with a thin sheet of clear polyethylene film. I use a disposable poly drop cloth. I happen to have a multimeter with a switch setting to take dirt cheap K-Type thermocouples. So, I place the thermocouple tip between the panel and the Styrofoam sheet. If the air temperature is approaching 60 degrees F and sun shining bright, the temperature on the back side

of the rubber panel should rise to above 140 F in about 15 minutes. Make sure that the box is oriented directly at the sun. After a 20-minute soak, put on a pair of cotton gloves and quickly remove the panel and immediately clamp between two pieces of MDF shelving. Double check that you have adjusted your clamps so that the boards are perfectly parallel meaning that all parts of your rubber panel are receiving pressure. Wait more than 30 minutes before removing the clamps so that the panel can return to ambient temperature when out of the sun.



So here is the hard rubber panel after flattening using the solar oven. I know of no way to determine how deep the rubber oxidation penetrates after a hundred years. It took a LOT of elbow grease to brighten this panel to this point. I simply lost nerve to try and go deeper by sanding even though I know the color striations go through the entire panel. I used Go-Jo and steel wool. You wipe away the Go-Jo with mineral spirits before judging your progress. Never, ever use any cleaner containing water on old hard rubber, even worse if it is caustic in nature like many automotive degreasers.. I finished using a car wax containing a mild abrasive (often described as deep cleaning)



So, the warping is only one of the many problems with these surviving sets. They are completely wired with 18-gauge solid wire covered with varnished cambric tubing. All the components had to come off the panel for flattening. All the other parts of the set were equally awful with rust, oxidation and pure old crud.



[12]

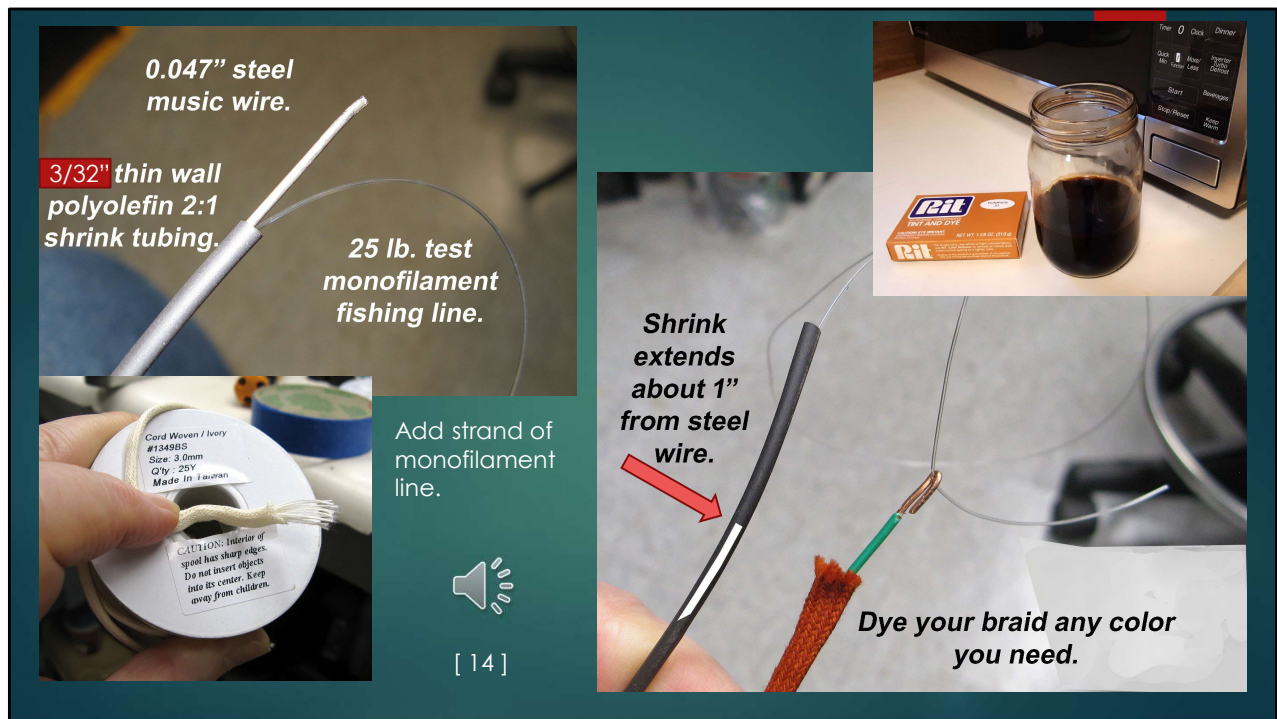
This dry rot tubing is as brittle as glass and would not respond to any cleaning at all; this tubing coating now being embedded with crud. These are scarce artifacts and I want to do my work faithful to the original.... In each radio there is some 12 to 14 feet of this tubing required! I was confident I had a solution.



A few years ago, I developed a method to make replica varnished cambric tubing for the Atwater Kent breadboard receivers. It worked but there was a problem with two steps in the procedure. I now have a better way.

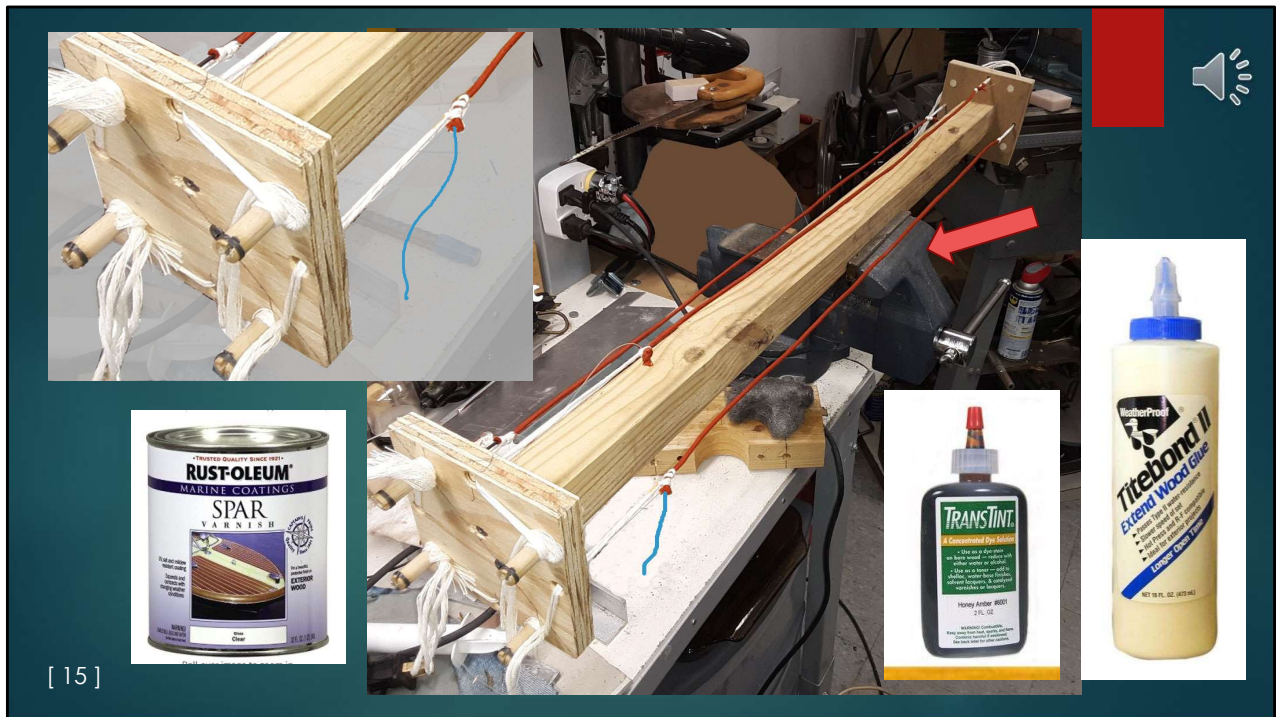
[13]

A few years ago, I developed a method to make replica varnished cambric tubing for the Atwater Kent breadboard receivers. It worked but there was a problem with two steps in the procedure. For the current project I set out to develop a better way with higher productivity.



The technique involves using 3/32" thin wall polyolefin 2:1 shrink ratio tubing. I insert a length of 25-pound test monofilament fishing line down through the tubing being sure to allow about a foot extra sticking out each end. Then you insert a length of 0.047" diameter steel music wire into the tubing. You can get this at hobby shops that have model airplane supplies.... You can also buy reels of this wire, but it is a pain to straighten. The hobby shop lengths come in 3-foot lengths but cut it to about 28" Then insert so that the tubing extends about an inch from the music wire on each end. Use a hot-air gun with a temperature control to use the minimum heat to shrink the tubing completely. Pull very gently on the monofilament line as you go. The gaps between the music wire and the monofilament wire allow air to escape. Fire Mountain Beads and Gems is an on-line crafts store. They have finely braided 3mm diameter cotton cord. Beware! You will find on Amazon other 3mm cord that is NOT made of cotton and may be more coarsely braided. It can even say at the top of its listing that it is made of cotton in BOLD PRINT. But in the fine print it will say 100% polyester. Crazy, but Amazon says that the listing heading is only a "product name". It is not a product description. That is in the fine print.... Anyway, you need cotton fibers to dye with common RIT fabric dye. All that is necessary to dye the braid is a cup of water and a ¼ teaspoon of dye heated in a microwave. Drop a washed hank of the white braid in a jar of the hot dye and stir for a few minutes with a stainless steel

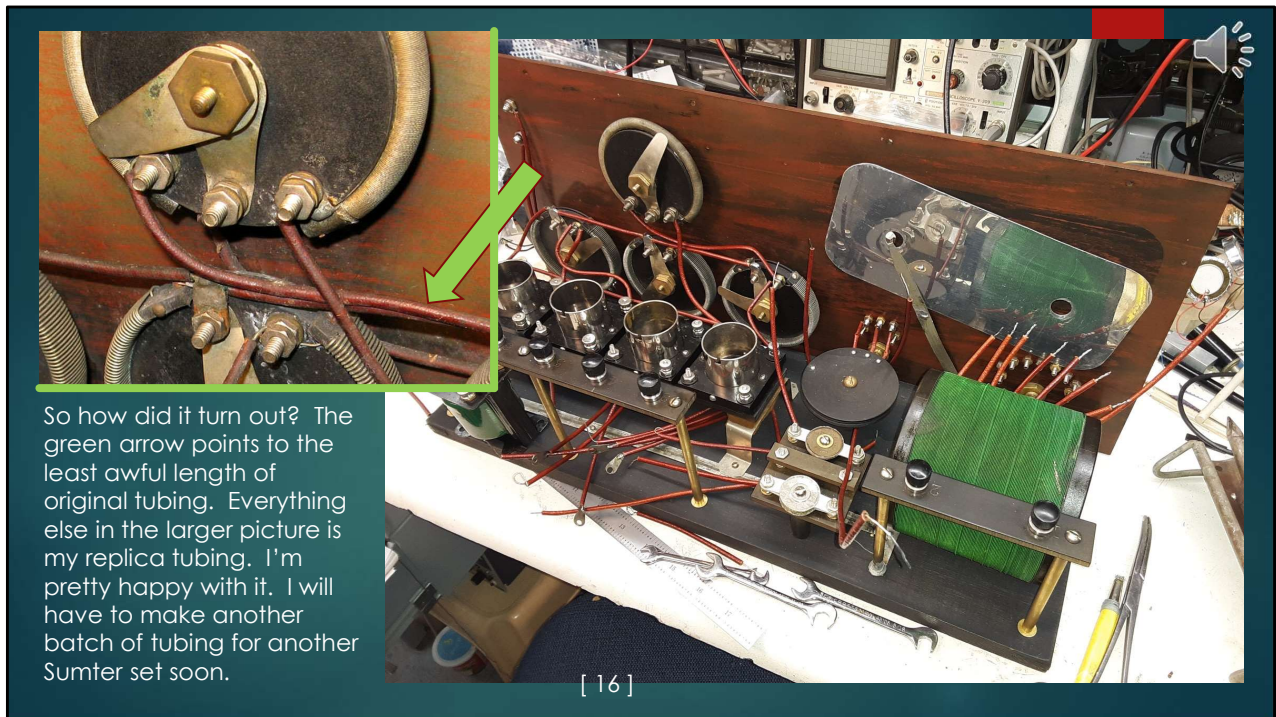
or plastic spoon.... Wait 5 minutes or so, stir again and place back in the microwave for a 30 second zap... A quick stir and wait 20 minutes or so before lifting the hank of tubing out of the dye. Use a kitchen sprayer with cold water to flush away the excess dye then allow the braid to dry. You then fish a wire through the braided tube and crimp on the end of the monofilament to pull the braid over your heat shrink tubing. Allow your dyed braid to extend at least $\frac{3}{4}$ " past the ends of the music wire and take the time to stretch the braid as tightly as you can.... It sounds complicated but it is really quite easy to do. Straightforward and does not take a lot of time to this point once you have your materials at hand.



[15]

So, since I had so much tubing to make, I came up with this simple fixture to process multiple lengths of tubing... It is made from a scrap length of 2" x 2", a couple of end plates of 3/4" plywood scrap about 5" square and some 3/8" poplar wood dowels. I hope you can see that I take scrap string and lash the ends of the braid as tight as I can. Then, at the far end of the fixture I tie the strings to dowel pegs. On the near end dowel pins, I added a cross wise 1/8" hole for fishing through the string and then tie a knot. I've cut a slot in the ends of the dowels and reinforced the slot with some iron wire. I can insert a screwdriver blade and turn to take up the slack in my tubing assembly. I run my fingers back and forth along the braid to make sure it is pulled as tightly as practical. Maybe you can see that the fixture is supported in the middle by a bench vise. This gives me easy access to two of the tubing lengths. Then the 2x2 is rotated 180 degrees to give you easy access to the other two tubing length. You are ready to coat the cotton braid.... This is done with TiteBond 2 slow set glue colored with TransTint dye available at Woodcraft shops... For this tubing I added two drops of dye to a teaspoon of glue and thoroughly mix it. I used a stiff artist brush to paint the glue on the braid.... This is a messy process but no matter... You simply take a pad of kitchen plastic wrap and drag it back and forth along the braid to even –out the glue.... You are trying to saturate the braid but remove excess... Once the glue saturates the braid you may need to tighten the dowel pegs slightly...

Allow the glue to dry for several hours....Then apply a liberal coat of marine spar varnish and allow to dry completely.. Before applying a second and final coat, drag a pad of #0000 steel wool along your tubing to cut off any bumps or cotton fuzz on the tubing... Then apply that final coat. Once you have the lengths finished, untie the pull strings on each end. Clamp one end of the monofilament line in a vise and gently pull the line out... If you get too much resistance, switch to the other end of the monofilament. It should now pull free of your tubing.... Now cut away a bit of tubing from one end to expose the end of the music wire. Clamp that end of the music wire into the vise. You should have little trouble in pulling your tubing off the steel wire. And presto, you are done. If you make sharp bends in your wire with its new tubing, you may note a little cracking of the finish. That can be quickly be touched-up with a little more varnish.



So how did it turn out? The green arrow points to the least awful length of original tubing. Everything else in the larger picture is my replica tubing. I'm pretty happy with it. I will have to make another batch of tubing for another Sumter set soon.



[17]

Three of the four radios I am aware of are missing their two audio transformers. The fourth radio has a Federal brand and a Jefferson brand audio transformer. The mounting holes of these transformers do not match the original part mounting holes. So, what transformers were used? Were they Sumter brand products? If so, I have not found any evidence. Making audio transformers was an exacting task and historians know that numerous brands of audios have a reputation for early failure. Was that the reason there are no original audios in place? They being removed for testing and the radio man never having found suitable replacements? What I do know is the footprint dimensions left by wood screw holes in the radio baseboard. I posted queries on a few Internet sites asking folks to see if they had any transformers that matched this mounting dimension. The only one I have that fits is the one pictured on the far left. It is made by Peerless in Newton Lower Falls, Massachusetts.

Three of the four radios I am aware of are missing their two audio transformers. The fourth radio has a Federal brand and a Jefferson brand audio transformer. The mounting holes of these transformers do not match the original part mounting holes. So, what transformers were used? Were they Sumter brand products? If so, I have not found any evidence they were made by Sumter Radio. Making audio transformers was an exacting task and historians know that numerous brands of audios have a reputation for early failure. Was that the reason there are no original audios in place? They being removed for testing and the radio man never having found suitable replacements... I do not know.... What I do know is the footprint dimensions left by wood screw holes in the radio baseboard. I posted a query on a few Internet sites asking folks to see if they had any transformers that matched this mounting dimension. The only one I have that fits is the one pictured on the far left. It is made by Peerless in Newton Lower Falls, Massachusetts. One respondent had one in his junk box and provided a photograph. From that I used Photoshop to create a replica decal. I was not absolutely certain about image proportions but came pretty close.



One way to make a replica decal.

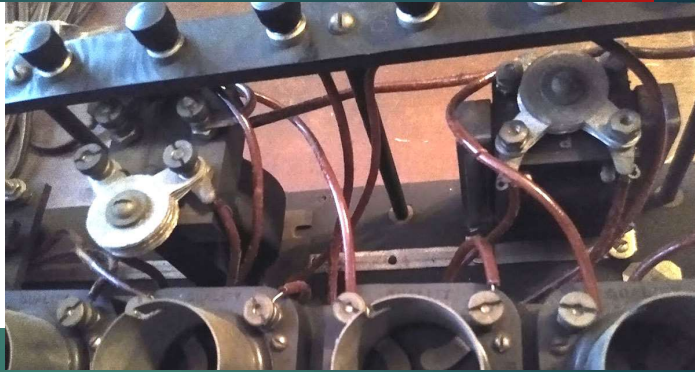


One respondent had one in his junk box and provided a photograph. From that I used Photoshop to create a replica decal. I was not absolutely certain about image proportions but came pretty close. There are specialty decal papers in metallic gold that can apparently be printed on using a laser printer. I had none available and stumbled across this thin "metallic gold vellum" sheet at the local craft store. It is translucent but I realized that it could be sprayed on the back side with gold paint. The back side could then be sprayed with Scotch 77 contact cement. It produced excellent results.

A friend on ARF and another on Facebook sold me three transformers that I could refinish. Once in hand I could correct the proportions of my decals to near perfect.

[18]

I needed to make a black on gold replica decal. There are specialty decal papers in metallic gold that can apparently be printed on using a laser printer. I have no experience with that, and I was looking for a quick solution. I thought my local craft store might have rolls of gold wrapping paper or sheets of gold paper for scrap booking. However, there was nothing even close to the look of the gold used on vintage decals. Just as I was about to give up, I came across a product identified as vellum gold metallic. It is thin as regular paper, but it is translucent. I thought that would not meet my needs at all, I bought a few sheets anyway. I tried running the sheet through my Brother laser B&W printer and the image was good and crisp. I then realized that I could simply spray the back of this vellum with gold enamel to make it opaque. That worked perfectly. I could then carefully cut out my replica and hold it upside down with a pair of needle nose tweezers in order to spray on a thin and even coat of Scotch 77 contact cement. This worked very well indeed. A friend and a guy on one of the Facebook groups provided me with three audios. Once I had them in hand, it was very easy to resize my image to near perfect dimensions.



One example of this receiver has replacement transformers. A Federal on the left and a Jefferson #41 on the right... These transformers have different mounting holes. It appears that both primaries are bypassed with these Sumter branded Mica dielectric capacitors. It is presumed that the value is approximately 1,000 pf. I am not going to be able to die stamp these parts, but I can be tricky.

[19]

One example of this receiver has obvious replacement transformers. A Federal on the left and a Jefferson #41 on the right... These transformers have different mounting holes. It appears that both primaries are bypassed with these Sumter branded Mica dielectric capacitors. It is presumed that the value is approximately 1,000 pf. I am not going to be able to die stamp these parts, but I can be tricky.



So, I needed to make replica parts. I had already used this technique to make custom forked crimp terminals. Strips of aluminum were hand punched with two holes. The big hole fits over a piece of scrap tubing that is press fit into a scrap of MDF shelving. A tight-fitting wood screw binds the other end of the strips into a rigid stack. A piece of scrap bar stock the diameter of the large end serves as a band saw blade guide to easily and smoothly cut the large radius. A little final dressing with a file and you have a stack of precise replica parts.

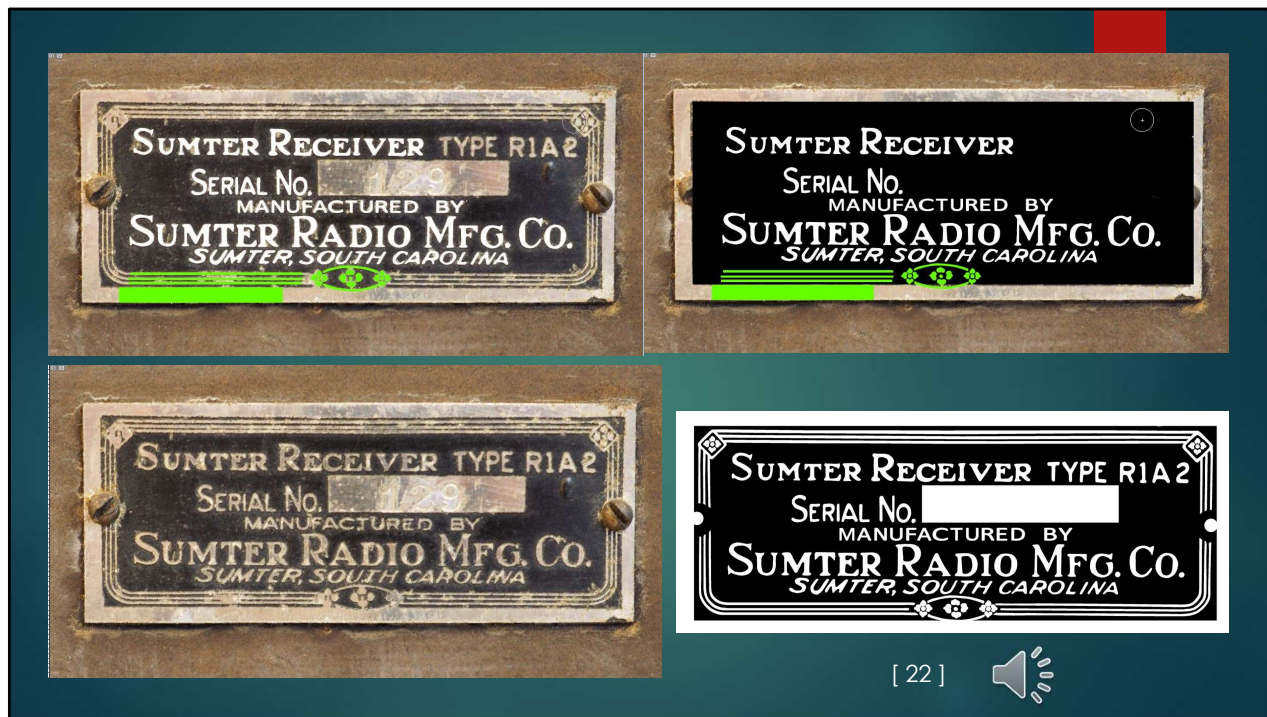


The passage of 100 years has not been kind to these radios.... Much of the nickel plate was destroyed. The tap switch replica parts needed to be polished and plated. This is a straightforward process I have done many times. The leaf contacts and knob pointers are pitted, I did not attempt to fill the pits.

[21]



The passage of 100 years has not been kind to these radios.... Much of the nickel plate was destroyed. The tap switch replica parts needed to be polished and plated. This is a straightforward process I have done many times. The leaf contacts and knob pointers are pitted, I did not attempt to fill the pits.



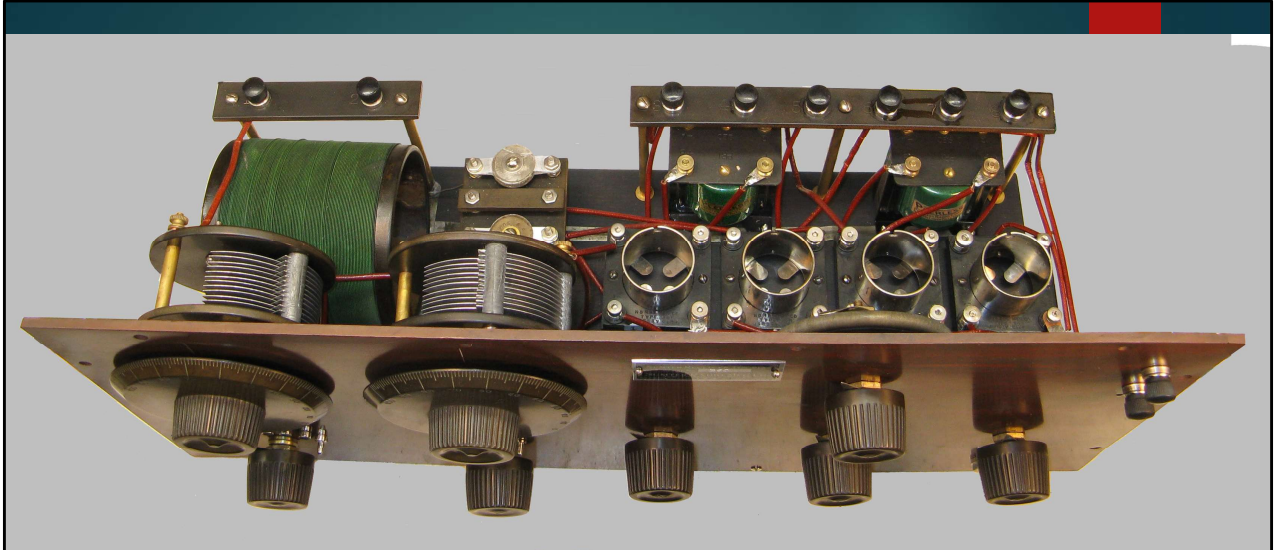
The builder plate on each of the four examples is identical and this is the best surviving example, Since this radio was going to require radical restoration, I decided to create a new graphic using Photoshop. These photo etched plates were not of the best quality to begin with.... I spent considerable time in determining the true boundaries of the hand drawn text. I had presumed that a modern recreation of the plate would be done on a laser engraving machine. A job shop suggested that a dye-sublimation print would provide an accurate results. To make a laser etched plate would have required a couple hours of professional manual labor to produce a vector graphic required to guide the laser. I think the results of the dye print will be satisfactory.



The undated Sumter newspaper article states that the cabinets are finished in mahogany color. When found this cabinet had already been partially stripped. In cleaning, I was able to determine that a brown mahogany stain had been used. The actual wood is presumed to be gum wood. A wood that had been used in the old Sumter Telephones. The 1909 postcard details a wood shop in the complex. I don't know if there was a wood shop in operation in then. The hard rubber knobs are actually black hard rubber. Here going after all the oxidized rubber would have eliminated the numbering. One surviving example has identical knobs molded in the same faux mahogany colored hard rubber. So, I had restored the chassis and the cabinet and after weeks was finally ready to slide the chassis assembly into place and discovered that the panel would not fit.... With all my careful work, I had failed to note that the top-left corner was out of square enough to completely prevent four panel screws from going into place. After three to four hours of labor over two days, I had a workable solution....



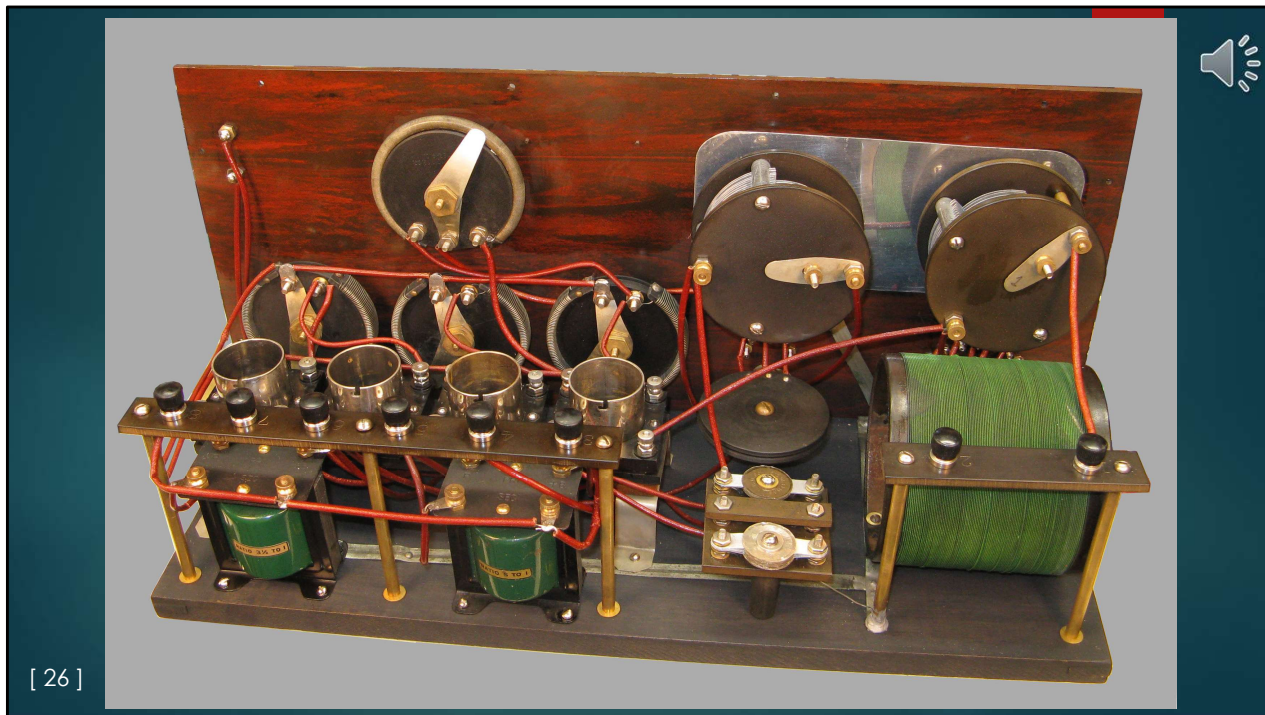
This cabinet did not have an original tag in the lid. One of the other surviving sets has an original tag but it does not mention usage of tow of the rheostats. I used the tools in Photoshop to correct the perspective errors in this image and could then use it as a template for new text. Fortunately, the original had been created on a linotype machine with a standard Times New Roman font making it easy to create and exact overlay. I added text to cover the two rheostats. I do have small text in the lower corner "Card I.T.S.O. Similar" Meaning Card In The Style Of Similar.



This radio must have been made after October 1922 because the card in the lid says to use UV-201-A tubes for storage battery lighting of tubes or UV-199 tubes, in adapters, for dry cell filament power.



[25]



At least one receiver has been properly conserved to the point it can be placed on exhibition. There is still the admission that we cannot say for certain what brand of audio transformers were used. But these Peerless brand transformers are unquestionably appropriate for the time and application.

This Sumter Radio Manufacturing Company artifact from 1922/23 serves as scarcely a footnote to the radio industry history of the United States. It does serve to illustrate, however, that there was indeed some interest in this new technology far from the centers of industrial technology in the Northern states of the day.

Sumter Radio Manufacturing Co.
Sumter, South Carolina
Late 1922 to mid 1923?

The End

Presented by : Robert Lozier – KD4HSH

kd4hsh@carolina.rr.com --- February 2022



[27]

This Sumter Radio Manufacturing Company artifact from 1922/23 serves as scarcely a footnote to the radio industry history of the United States as a whole. It does serve to illustrate, however, that there was indeed some interest in this new technology far from the centers of industrial technology in the Northern states of the day.