

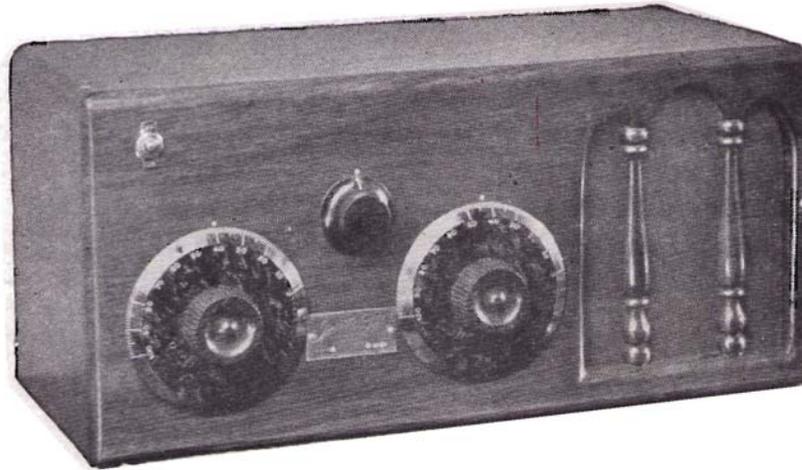
# Jackson-Bell Model 4, Presentation WEB Version

This presentation was first given at the  
Southern California Antique Radio Society  
Annual Meeting, November 20, 2009

The presentation was narrated by the author

This version is adapted with annotations in **Blue**  
Please Hit 'Control' & 'C' together for full screen  
Use the Arrow Keys to control the slides





# **Jackson-Bell Model 4**

The first Jackson-Bell offering

The first Los Angeles AC Set

# December, 1926

Six months before RCA introduces the  
26 Amplifier, 27 Detector, AC filament tubes  
and 80 Rectifier, tube

A Radio Manufacturer enters the Los Angeles market

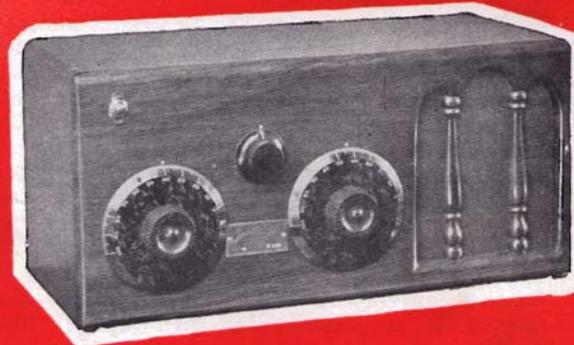
The Jackson-Bell Model 4 is no copy,  
it's a revolutionary design:

Small; Self Contained; Line Socket Powered

Original Brochure  
bought on the  
Internet in 2004

# Jackson-Bell Radios

Operate from  
Light Socket



Price \$69.50 (Complete)

No Accessories to buy  
Loud Speaker built in



**JACKSON-BELL COMPANY**

Sales Dept.

1617 WEST SEVENTH ST.  
LOS ANGELES, CALIF.

Phone DUnkirk 2055

# JACKSON BELL

*Operate from light socket*

**RADIOS**

*No "A" or "B" batteries*

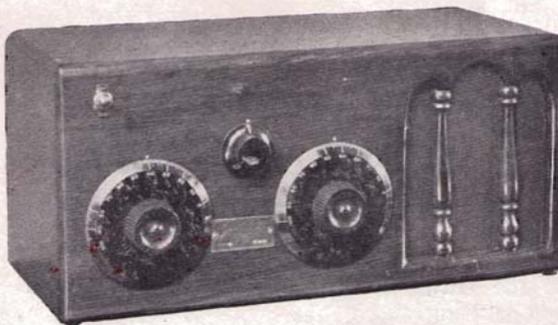
**T**HE JACKSON-BELL 4-tube Radio at the astoundingly low price of \$69.50 complete with Baldwin Loud Speaker built in, is the result of two years of constant research and efforts confined to a compact and economical set to operate from the Light Socket—cost for current less than 1 cent for five hours. We do not hesitate to say that within a year Radios with Batteries will be as obsolete as automobiles without self-starters. Tone quality in a Jackson-Bell is incomparable to any Radio except in sets selling for several hundred dollars. This is accomplished by the use of the best speaker unit made, "a Baldwin," and large "A" tubes which battery sets must avoid to keep battery consumption at all within reason. Not only does the Jackson-Bell give superior tone quality, but a new engineering scheme has been worked out which gives perfect volume control from a mere whisper to the boom of a megaphone by merely turning the control. This new volume control does not affect the electrical character of the set in any way, therefore the tone quality remains the same. This feature of perfect volume control will be greatly appreciated by those living in multiple dwellings and in single dwellings when some of the home folks retire and you wish to enjoy some real good late program. Operation of set is so simple that your smallest child can operate it; no electrical controls whatever. They are all unnecessary, as your current supply is uniform and comes from your light socket. Two dials for tuning, one vol-

ume control, and an On and Off switch constitute the entire control of this simplified and easy-operating set.

When Jackson-Bell makes a good radio mechanically, they are not finished. To be entirely satisfied with our product, we housed it in a handsome hardwood cabinet with the new-style round corners, and a speaker grill of artistic design to match the balance of the cabinet. The finish shows the natural grain of the hardwood, still dark enough to match any furniture. Yes, it is compact, being only 17 inches long, 8 inches high and 9 inches deep; weight, 22 pounds. Any small table, such as a book-end table, has sufficient room and strength for this compact little set.

When it is time to move, you will not have to call the expressman to move your Jackson-Bell. It is as easy to move as your suitcase. Buyers of the Jackson-Bell tell us that it is uncanny to think that so much quality can come from such a small instrument at such a small first cost and, best of all, the unheard-of small operating cost.

You will never get the real thrill of a Radio until you operate it yourself. Give yourself this thrill: Just turn the Volume Control on the Jackson-Bell at our convenient sales room at 1617 West Seventh Street, or, if you prefer, in your home. At our show room, of course, we have our full line—and you won't be urged to buy. A Jackson-Bell just throws Loneliness into the discard. Use it as much as you want. It won't cost you as much to operate per month as the price of one picture show.



### SPECIFICATIONS

**CABINET:** Hardwood, 17 inches long, 8 inches high and 9 inches deep. Beautiful hand-rubbed lasting finish.

**CURRENT SUPPLY:** From house lamp socket. Less than 1 cent for five hours.

**NUMBER OF TUBES:** Four large "A" tubes. "A" and "B" Eliminator built into set.

**SPEAKER:** Baldwin Unit built in Cabinet.

**CONTROL:** 2 Bakelite Dials, 1 Vol. Control.

**WEIGHT:** 22 lbs.

**PRICE:** \$69.50 complete.

All prices subject to change without notice.

Operates With Loop—No Aerial—  
No Ground Wires.

**JACKSON-BELL COMPANY**

**Manufacturers**

Sales Room:

1617 West Seventh St.

Phone DU. 2055

LOS ANGELES, CALIF.

# Discovery

After reading articles I had written for the Gazette, The late Emory Hiebert contacted me about an unusual Jackson-Bell radio he had.

I visited him in January of 1996; he wanted to keep the set, however he allowed me to document his radio. The following is excerpted from my report.

# Jackson-Bell Model 4 Notes, 21JAN1996 RAG

I believe this may be the first Commercial Jackson-Bell radio. In many Advertisements, Herbert Bell, referred to his

company as, 'All Electric, since 1926'. So, I would assume this is what he considered his first set.

This radio is very crudely built. One would think it was the only one built. However the Serial Number on the tag, says 1361. Assuming numbering began at 1000, many were made? However, because the performance must have been substandard, and the look, ugly; it is not surprising few exist today!

The Electrolytic Rectifier would have been a very unpleasant feature of this radio. The toxic gases that are released must not have been well received by the user. The electrodes would require replacement often. Requiring the handling of concentrated Caustic Soda (Sodium Hydroxide). It is worthy of note that for the next 3 years, after this set, Jackson-Bell used packaged power supplies, from others!

The claim of 'All Electric' may not have included the fact that there probably was a 'C' battery, since the battery life would be several years.

The sensitivity, and selectivity is probably very poor. So if the user lived near one radio station, I assumed that is the only station they could get. If they lived several miles from any station, they probably got nothing!

## Observations:

- Very compact, space is well filled in three dimensions

- Simple appearance

- Nice Label

- Very Crude construction

- Poor fasteners

- Sloppy workmanship

- Power Transformer looks custom built

- Loop antenna is missing (Antenna Jack on top of cabinet)

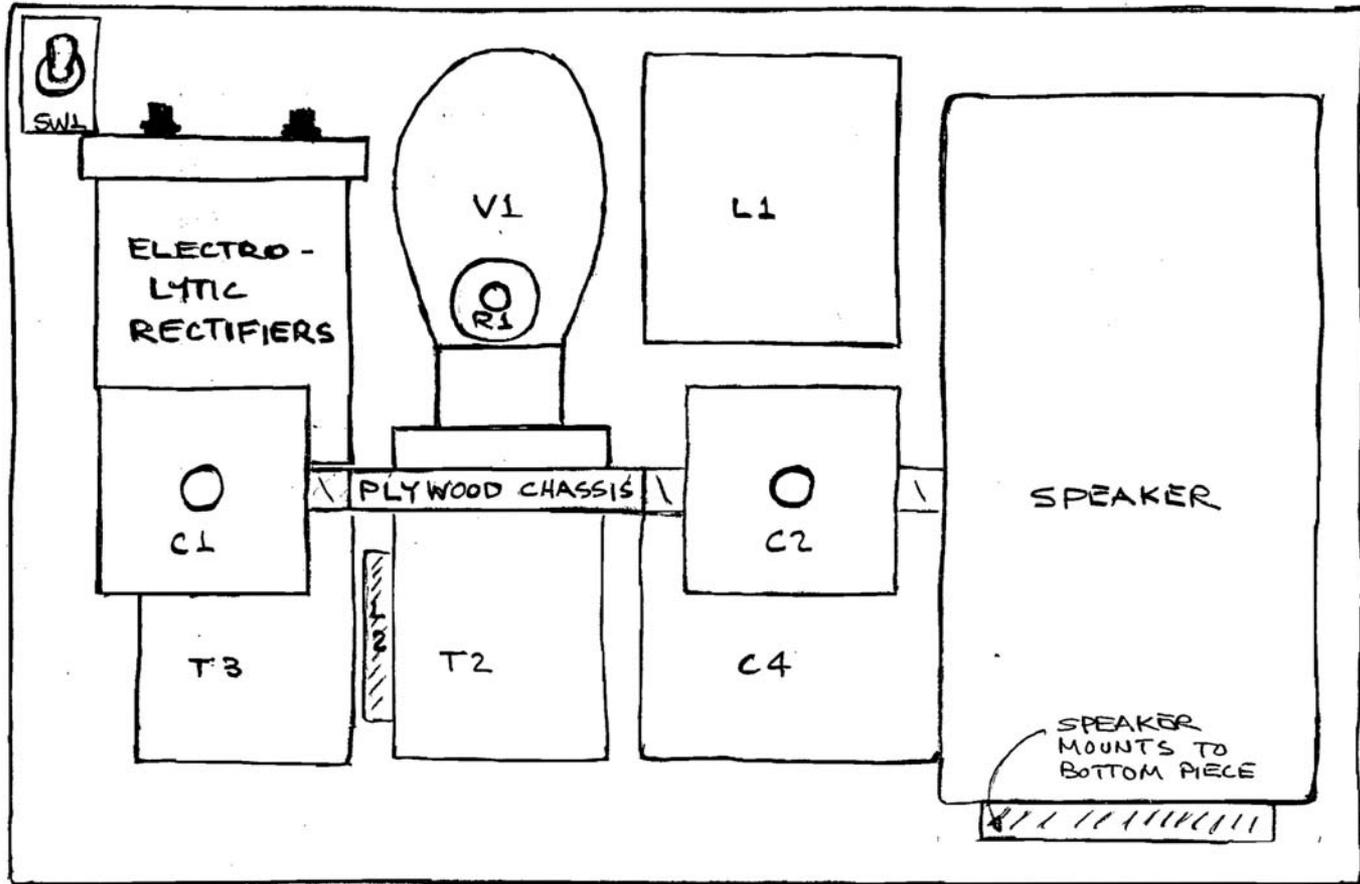
- Unit could not be tested, bad transformers, etc.

As first examined  
Photographs & Sketches  
from 1996

Notice the Front Panel is  
cracked down the middle



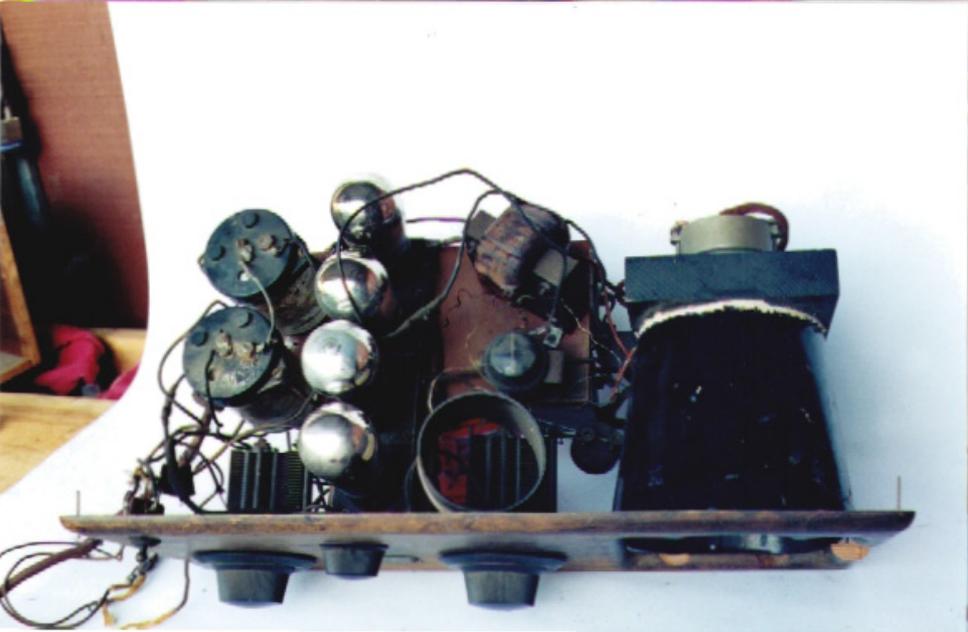
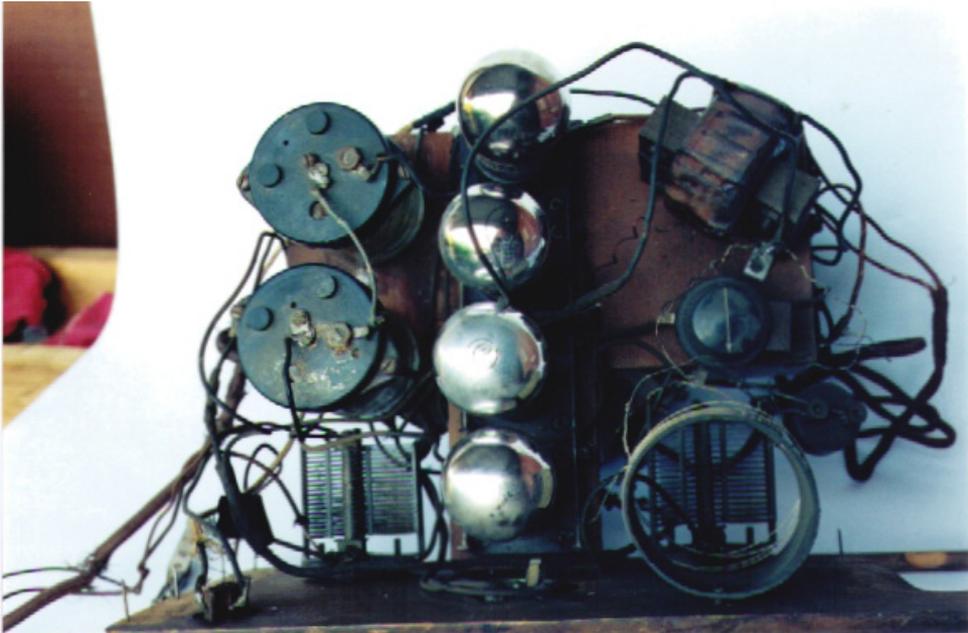
JACKSON-BELL MODEL 4 (FALSE CUTAWAY FRONT VIEW)  
(NOT TO SCALE)



THIS VIEW CANNOT BE SEEN SINCE THE FRONT PANEL & PLYWOOD CHASSIS ARE PERMANENTLY JOINED TO FORM AN ASSEMBLY. THIS VIEW DOES ILLUSTRATE THE PARTS PLACEMENT.

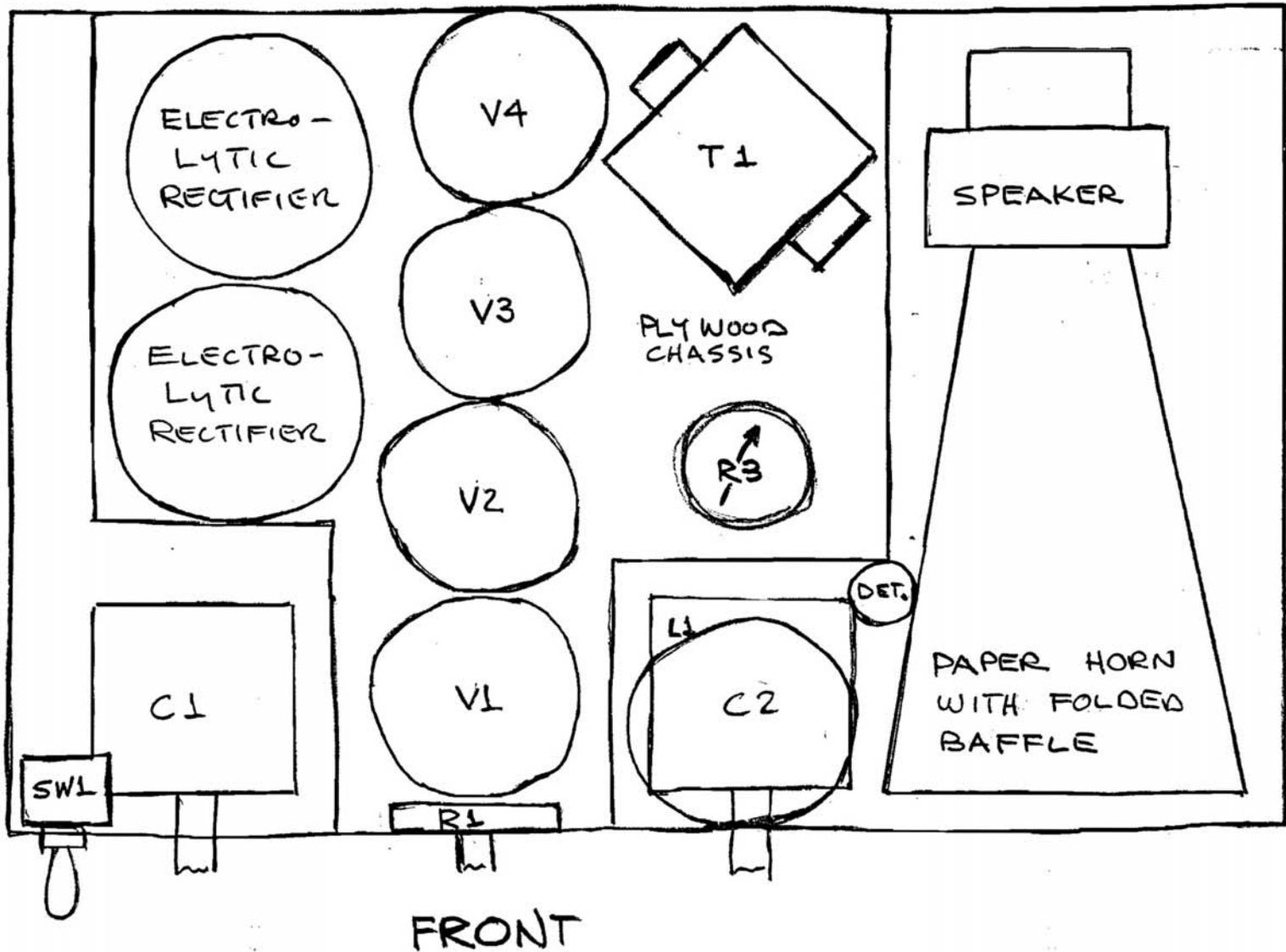
**Top View**

**The two jars are the  
Electrolytic Rectifiers**



# JACKSON-BELL Model 4 (TOP VIEW)

(NOT TO SCALE)

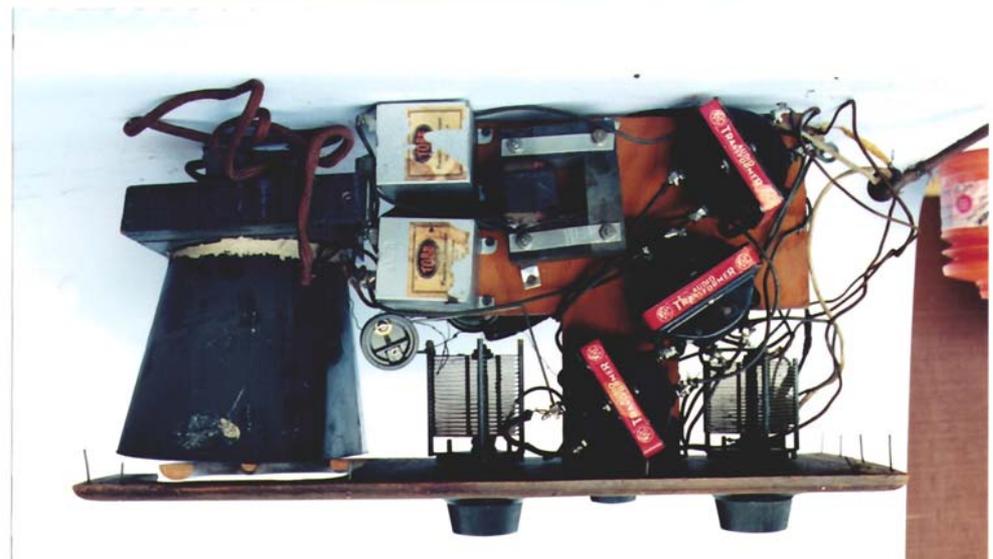
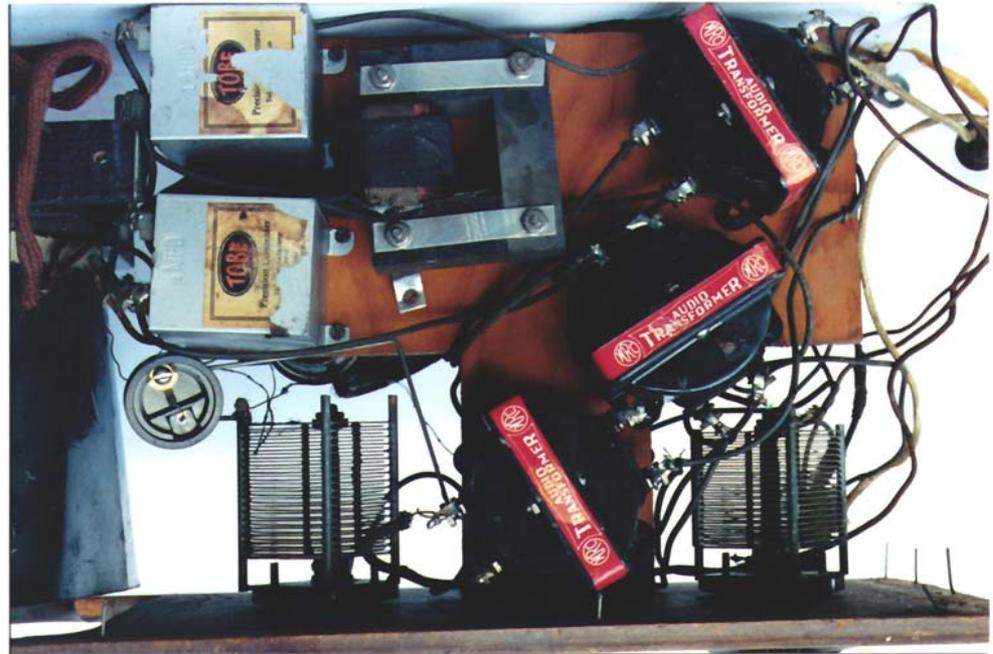


## Bottom View

### Notice:

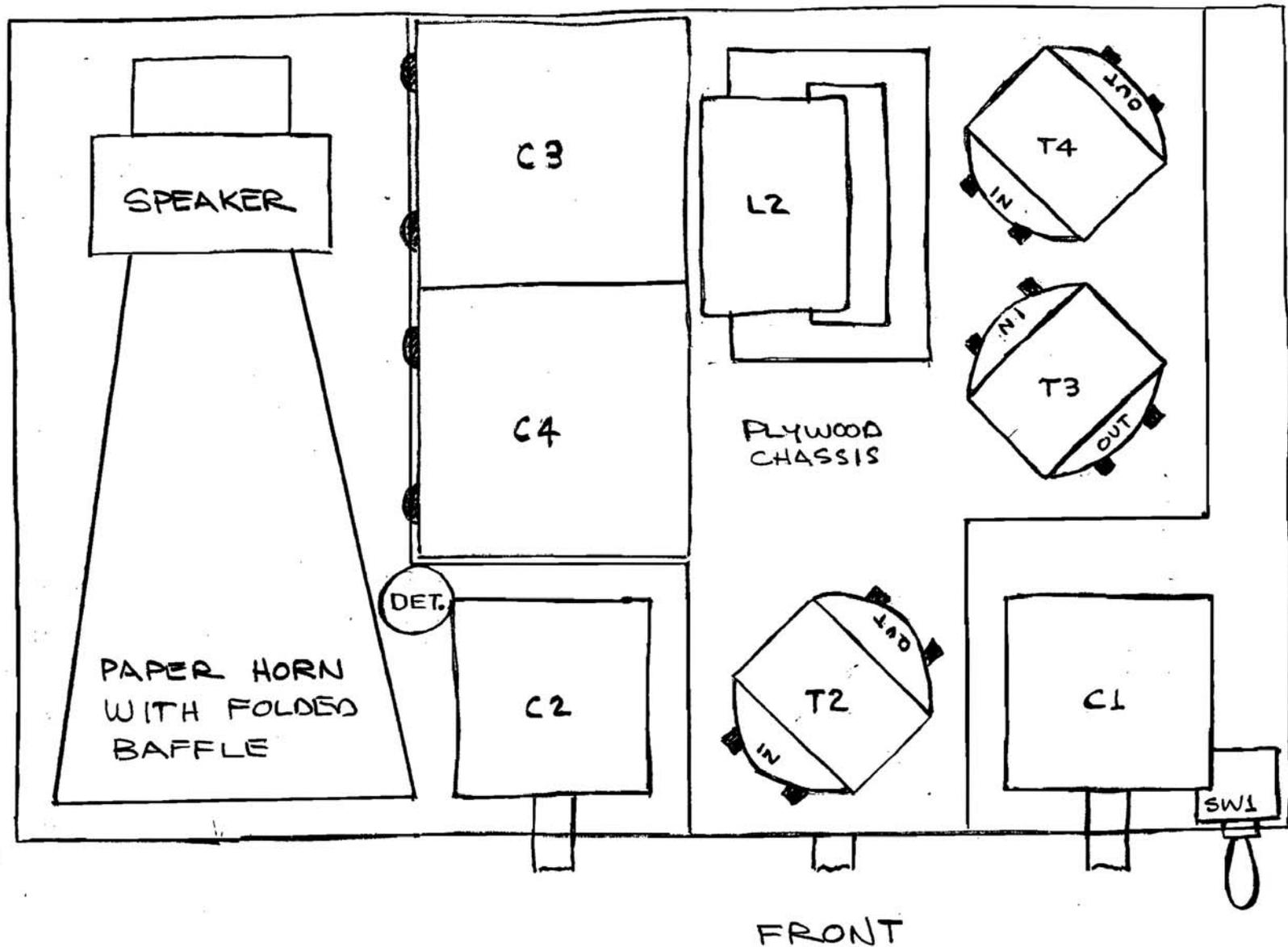
The wooden Chassis is connected to the Front Panel by a very small 'tongue'; too much strain.

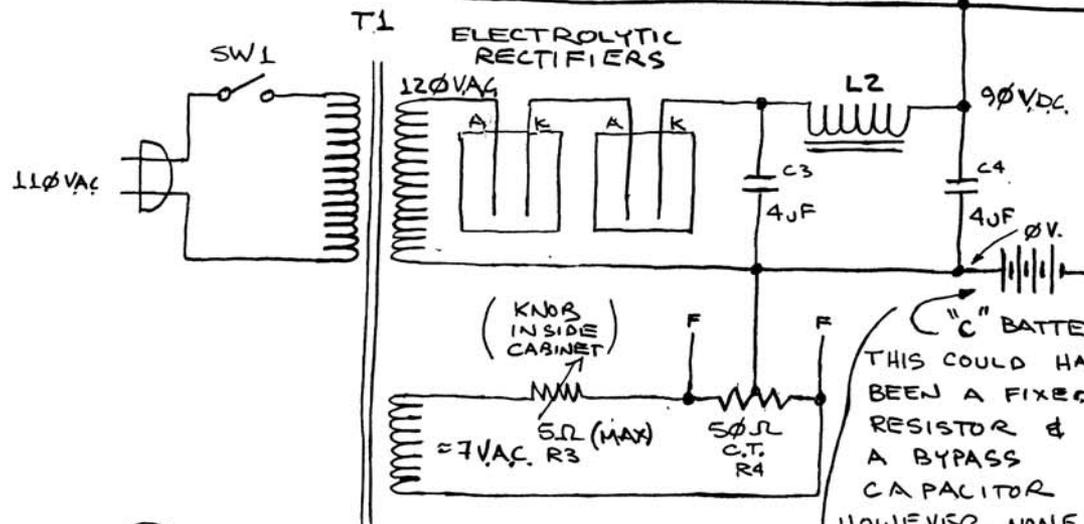
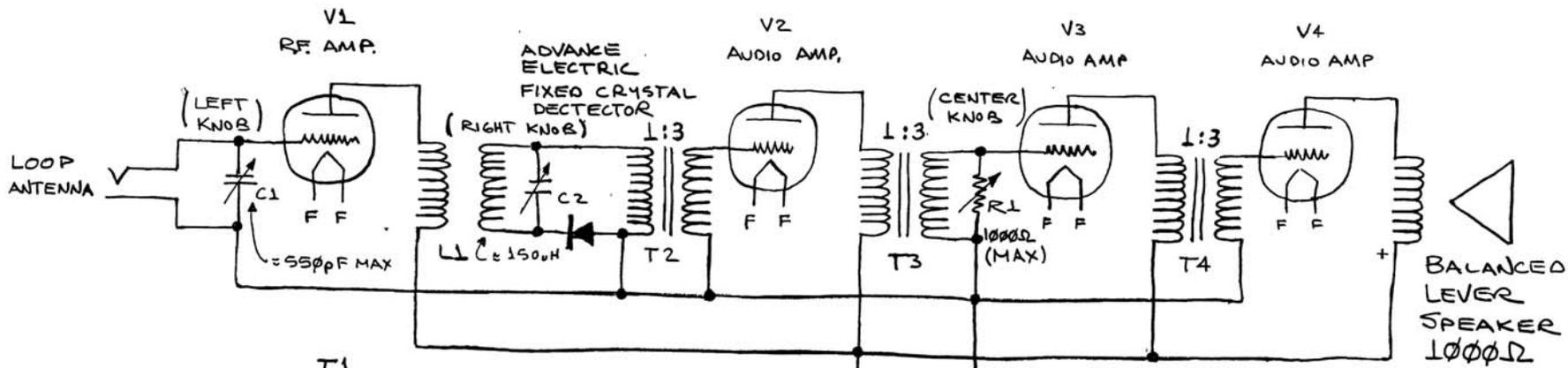
The Transformers are packed closely, and adjacent to the Filter Choke...  
Not much hum Isolation



# JACKSON-BELL MODEL 4 (BOTTOM VIEW)

(NOT TO SCALE)





ALL TUBES ARE VX20LA'S

JACKSON-BELL  
MODEL 4  
SKETCH 21 JAN '96  
R.A. GRAY

"C" BATTERY  
THIS COULD HAVE BEEN A FIXED RESISTOR & A BYPASS CAPACITOR HOWEVER, NONE WAS FOUND!

SOME INCORRECT ASSUMPTIONS  
SEE REVISED DRAWING BELOW



ELECTROLYTIC RECTIFIER  
DETAILS  
K IS A LEAD SCREW  
A IS AN ALUMINUM SLUG

# Resurrection!

I had long forgotten the JB-4 when I got a call from Marv, and Ricki Glassmann. Emory had died and Marv had purchased his collection. Marv told me that there was an unusual Jackson-Bell in the stuff he had acquired. I immediately knew it was the JB-4. Marv offered me the set, if I would put it in working order. With some reluctance I accepted!

# Reality Check

- In examining the JB-4 with restoration in mind the set was in much worse condition than I had recalled:
- The cabinet was originally glued and nailed together, no provision was made for any repairs to be made. My initial documentation efforts required I pried the cabinet apart
- The front panel was cracked, and about to break
- All the wood was warped
- There were two missing finial pieces missing
- The grille cloth was missing
- The cabinet feet was gone
- Fasteners and connector were missing

And this was just the cosmetic stuff

- The Electrolytic rectifiers had disintegrated
- The Speaker was broken, and did not work
- The tuning inductor, was loose and unwound
- The line cord was frayed and unusable
- One of the audio transformers was open
- The 'C' battery was missing
- There was no 'Loop Antenna'
- The set was too mechanically unstable to work on the electrical problems

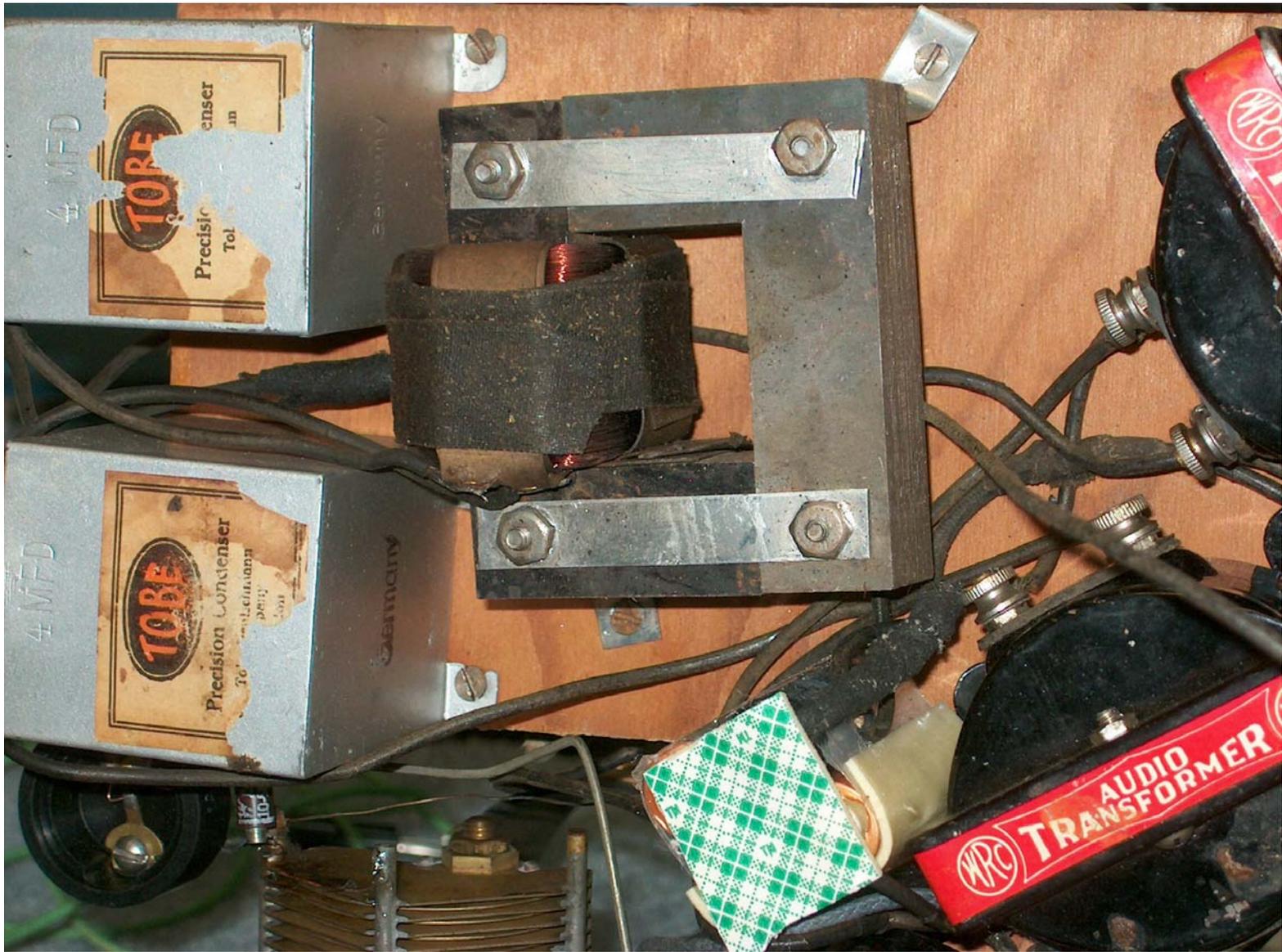
(The front Split in half the first time I turned the set upside down)

# Other Observations

- The construction is very flimsy
- This set was probably built in a Garage Shop
- The parts have a hand tool look
- Only the cabinet looks as though it was built in a professional shop



**Notice the crude construction, the brackets are hand or pliers bent  
The Capacitors are held in place by pounding the tabs into the wood!  
The Power transformer looks Home Brew**



**No machine tools were used, another example hand built brackets  
The Filter Choke looks Home-Brew**



**The R.F. coil is held in place with a single machine screw, 1/8 inch penetration  
The cabinet appears to be made in a factory,  
The rest of the construction seems to have been done in a garage, or kitchen!**

# Conclusions

This was never a beautiful set, so a complete restoration is not going to make this into something it isn't

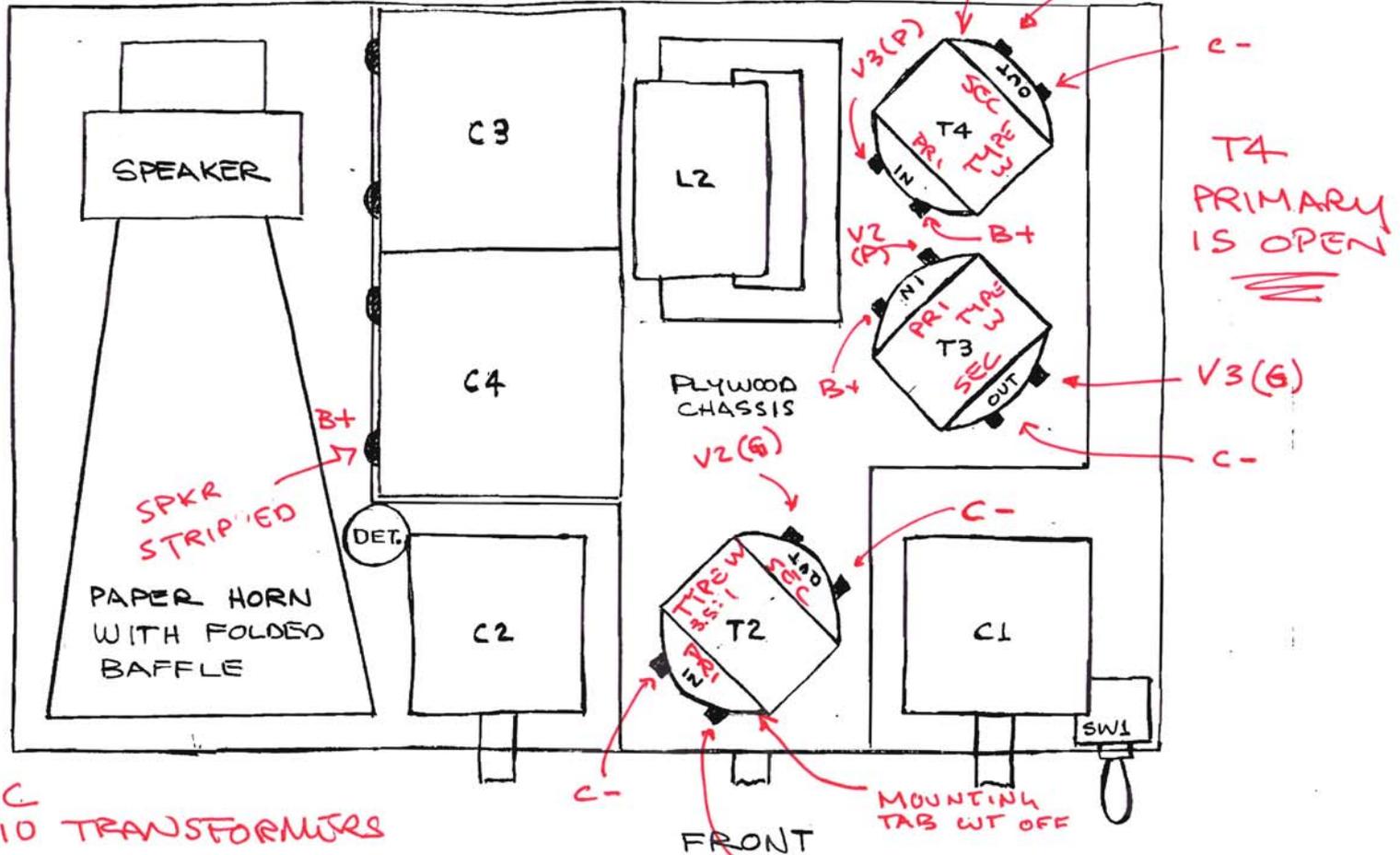
The Construction is flimsy, so rebuilding a new cabinet is not going to cure the design deficiencies.

The novelty in this set is the concept. The beauty is the fact that it is primitive, and has historical significance.

So I will attempt to get the set running doing as little as possible, and leave the 'chassis' out of the cabinet so the innards are exposed and can be studied

So... Document what's there and do as few repairs as necessary

# JACKSON-BELL Model 4 (BOTTOM VIEW) (NOT TO SCALE)



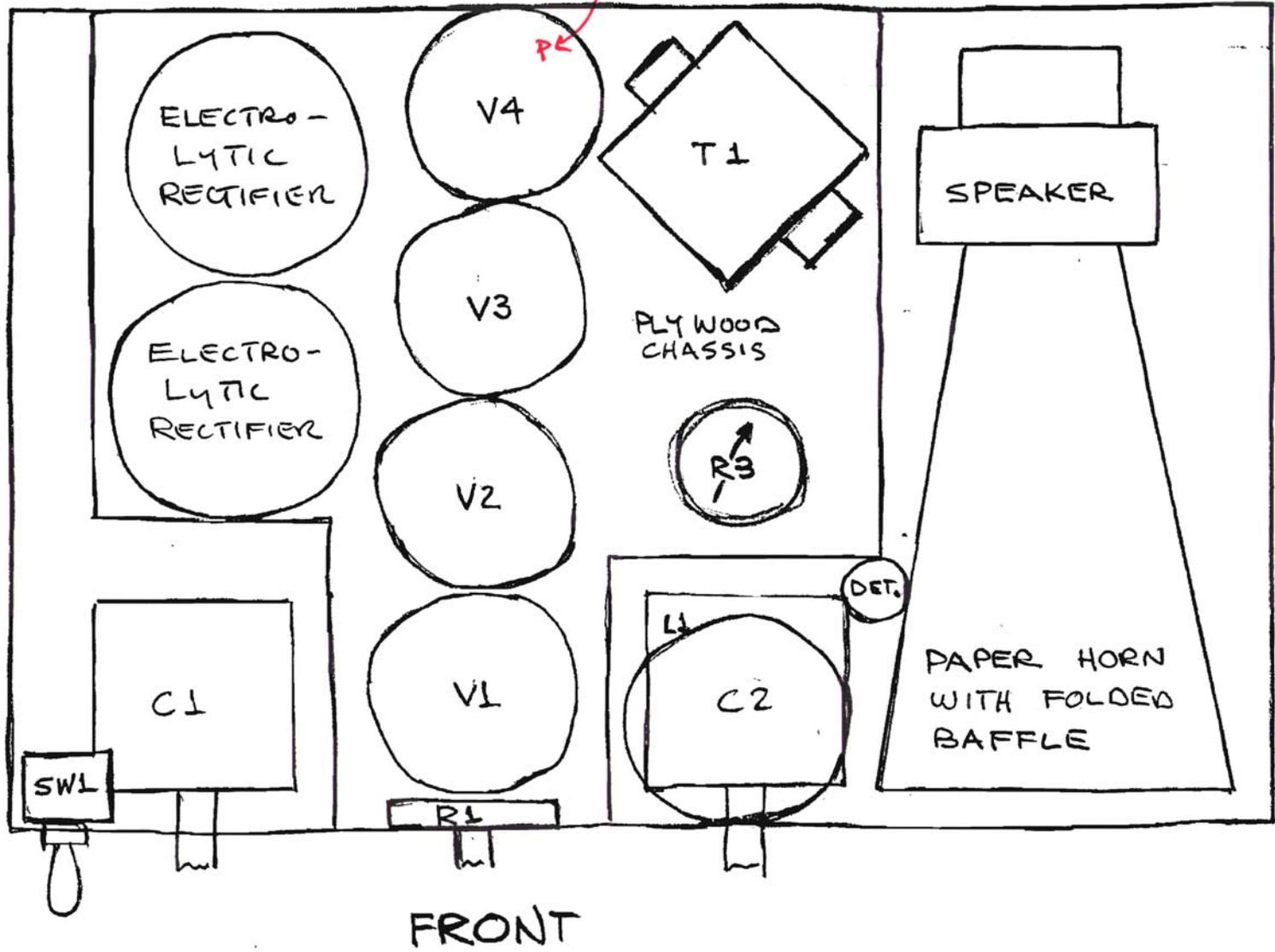
WRC  
AUDIO TRANSFORMERS  
PRIMARY = 1  
SECONDARY = 3.5

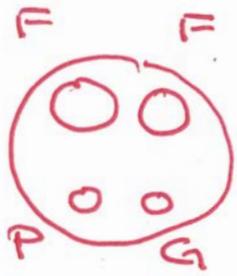
JULY 20 1939

Additional notes to aid in reassembly

# JACKSON-BELL Model 4 (TOP VIEW)

(NOT TO SCALE)





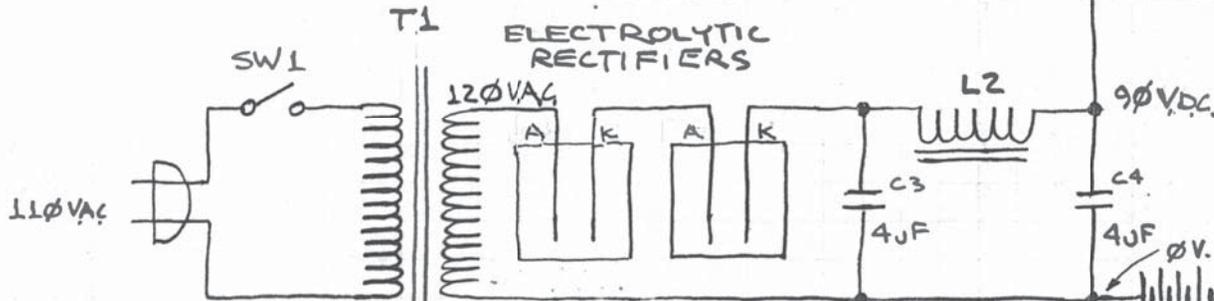
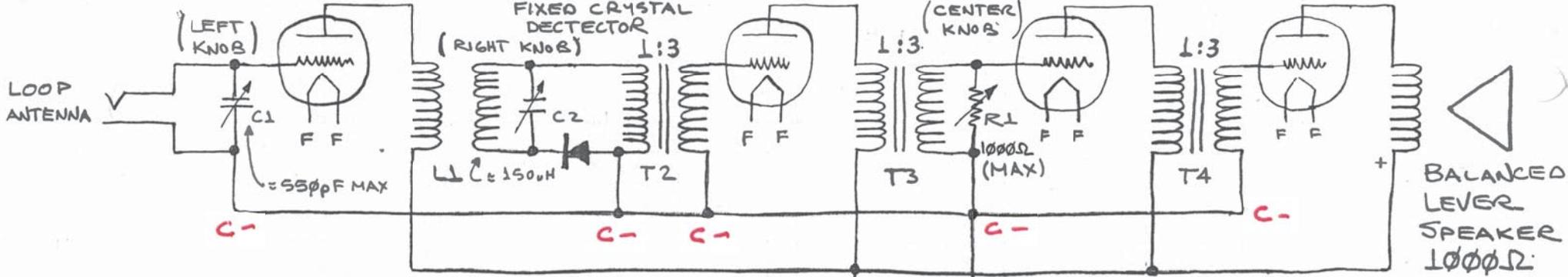
TOP VIEW

V1  
RF. AMP.

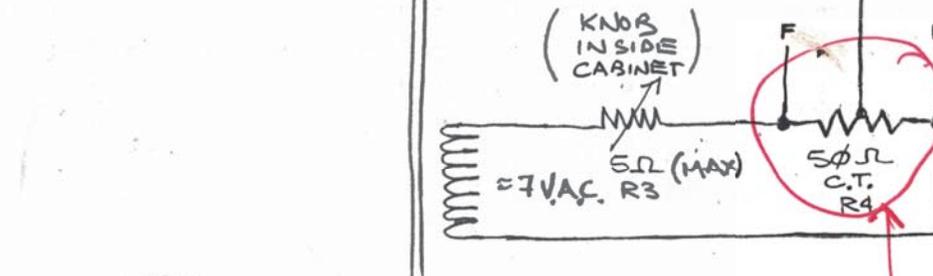
V2  
AUDIO AMP.

V3  
AUDIO AMP

V4  
AUDIO AMP



ALL TUBES ARE VX20LA'S



ELECTROLYTIC RECTIFIER  
DETAILS  
K IS A LEAD SCREW  
A IS AN ALUMINUM SLUG

"C" BATTERY  
THIS COULD HAVE BEEN A FIXED RESISTOR & A BYPASS CAPACITOR HOWEVER, NONE WAS FOUND!

JACKSON-BELL  
MODEL 4

SKETCH 21 JAN '96

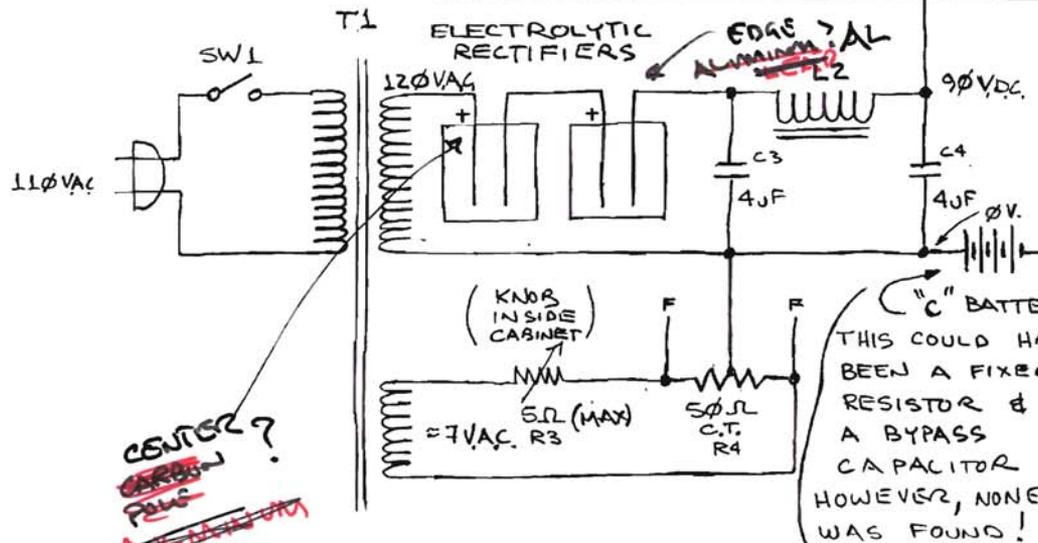
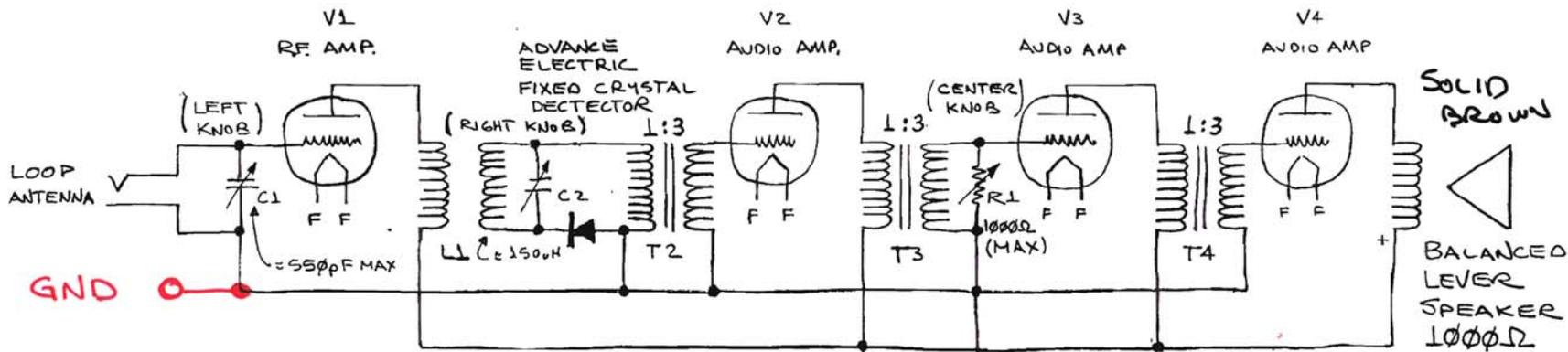
R.A. GRAY

JULY 2009

"A.C. POLARIZER"  
BLACK CO.  
LOS ANGELES

(OPEN)



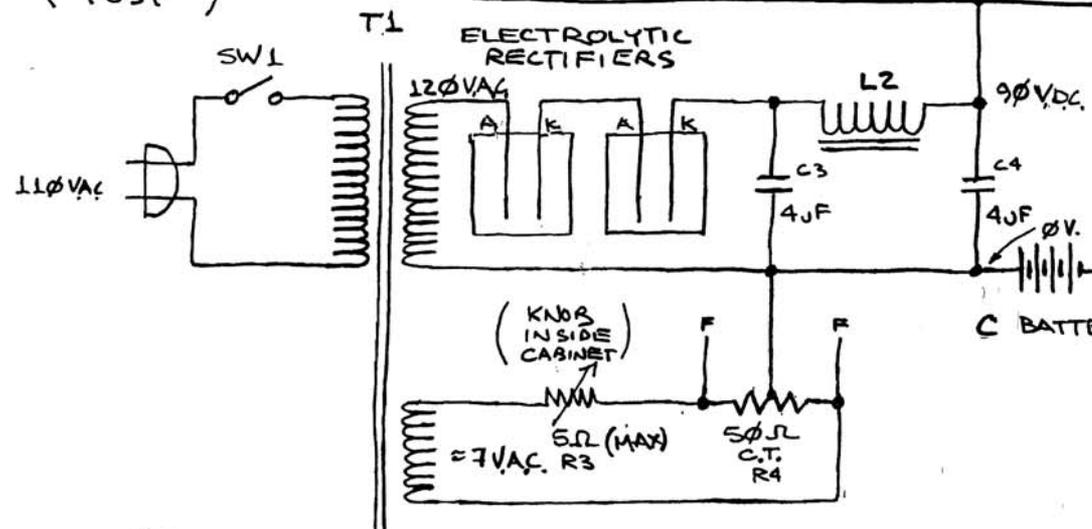
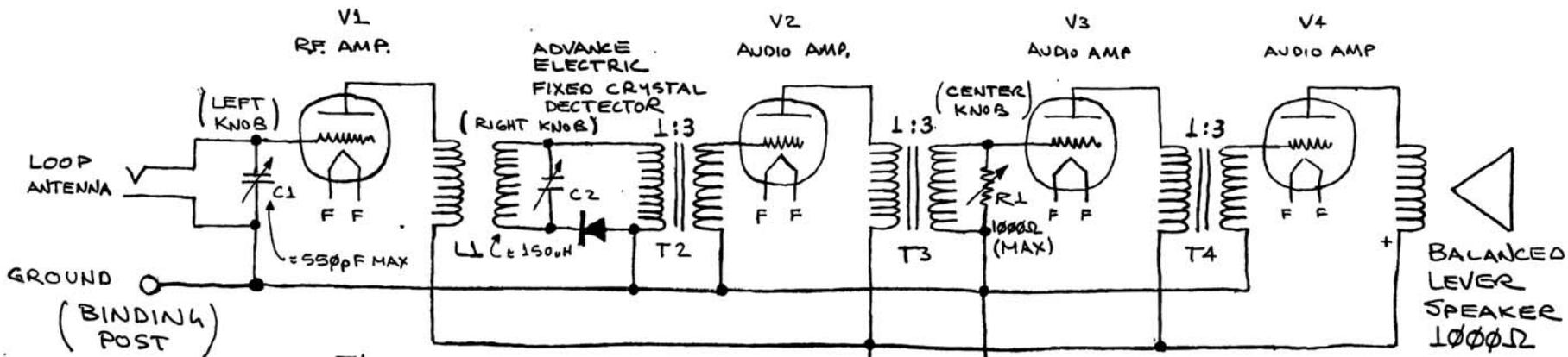


CENTER?  
~~IRON~~  
~~IRON~~  
~~IRON~~  
 IRON

AS A CAPACITOR  $\sim 100\mu\text{F}$

JACKSON-BELL  
 MODEL 4  
 SKETCH 21 JAN '96  
 R.A. GRAY

JULY 2009



ALL TUBES ARE VX20LA'S

JACKSON-BELL MODEL 4

SKETCH 21 JAN '96

R.A. GRAY

REVISED 27 JULY 2009 RAG



ELECTROLYTIC RECTIFIER DETAILS  
 A IS IRON SLUG  
 K IS AN ALUMINUM SLUG

After getting the set to work, I believe this was the original circuit

# Repairs

- Construction Stability
- Speaker
- R.F. Coil
- Rectifiers
- Audio Transformers

Joe Zahnen

933 Venice Road

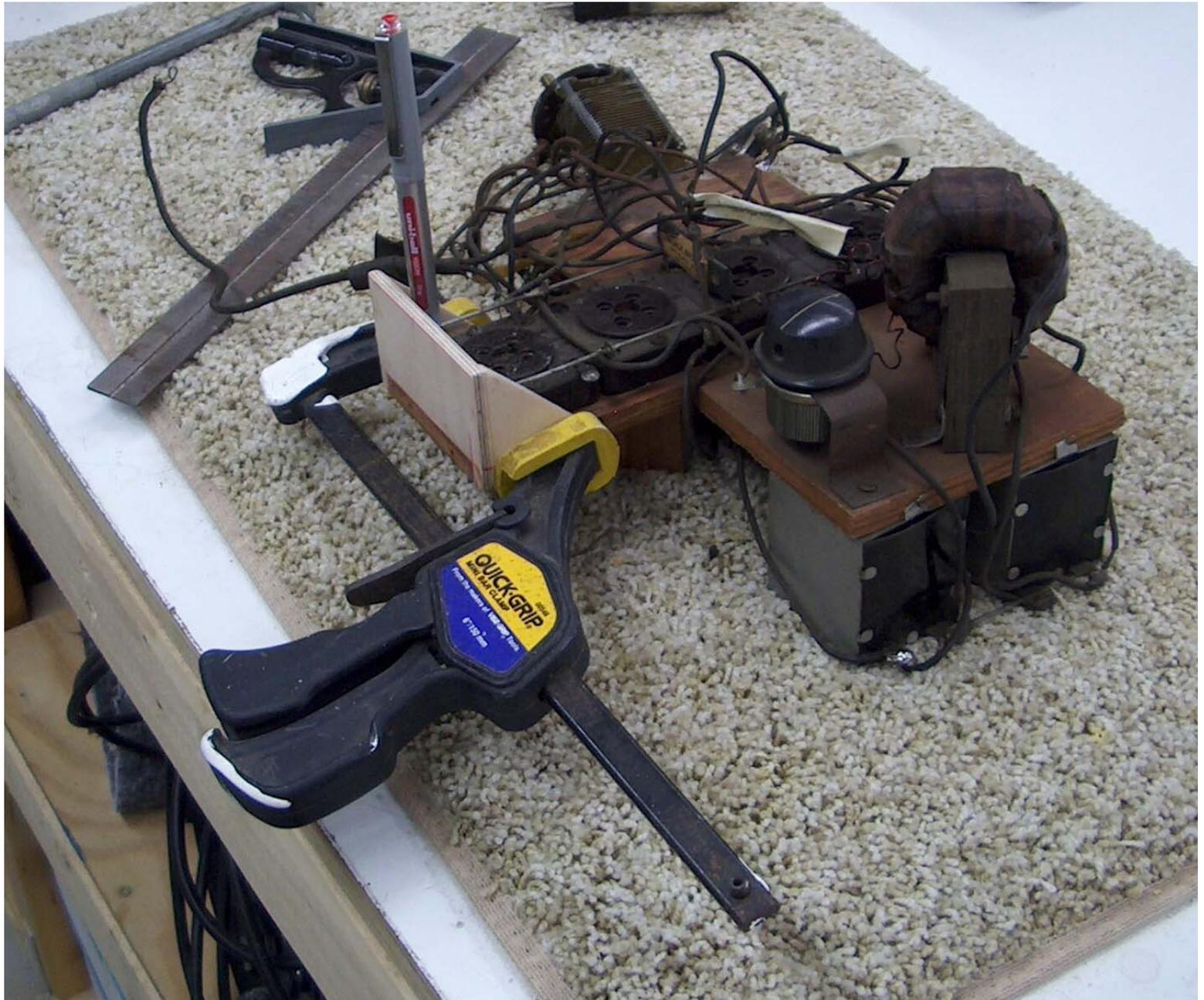
Knoxville, TN 37923

1-865-335-6760

# Construction Stability, Gussets



**The gusset pieces are made from aircraft plywood**







**The contact area with the front panel is now six square inches**



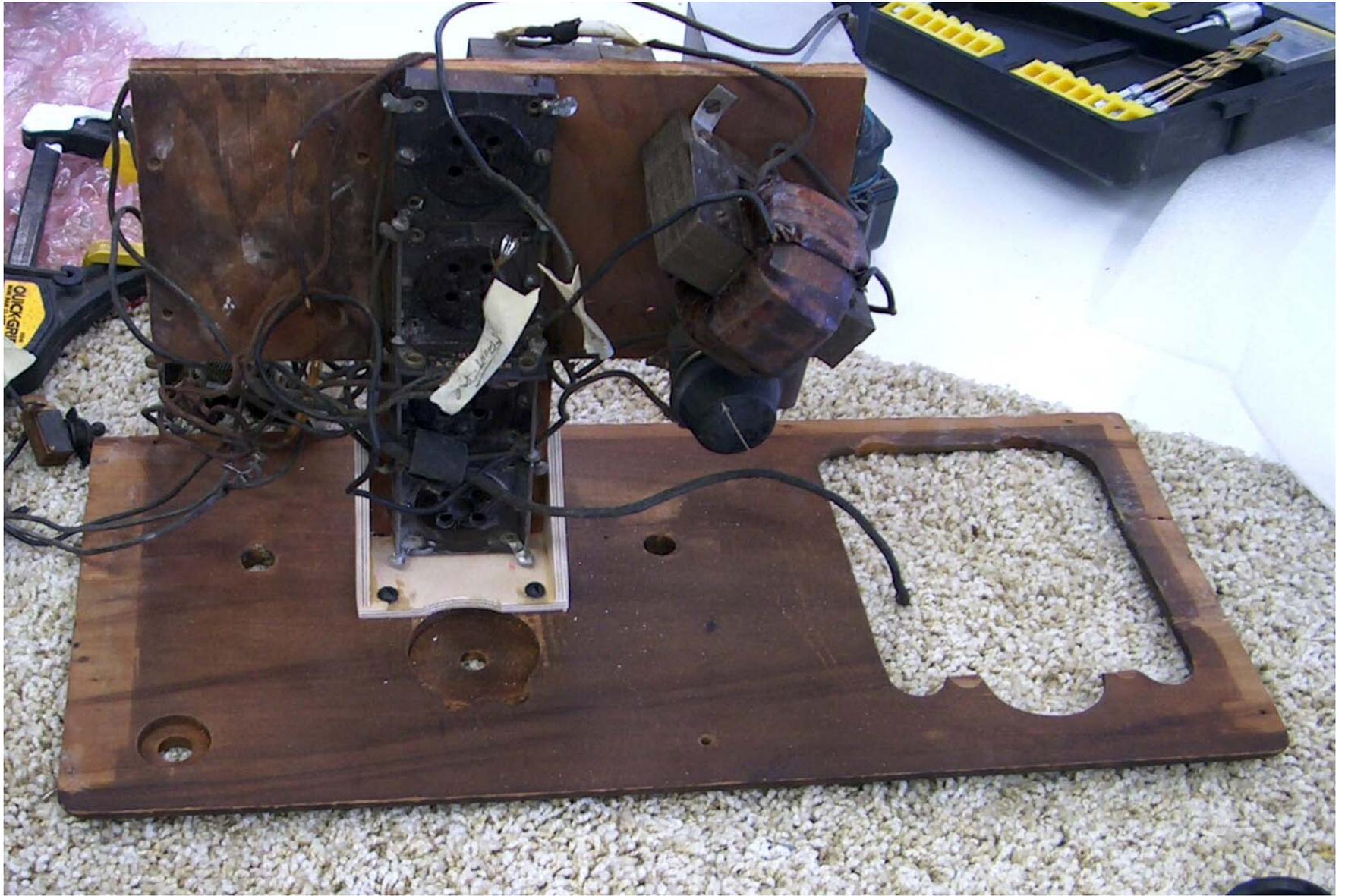
**After gluing the pieces together,  
the Front Panel was too badly warped to join to the Chassis**



**Some damp paper towels and a little sunshine usually works**



**Not great, but good enough**



**Attached from the back by two short wood screws**



**Attached from the front by the original screws, that are under the Nameplate**

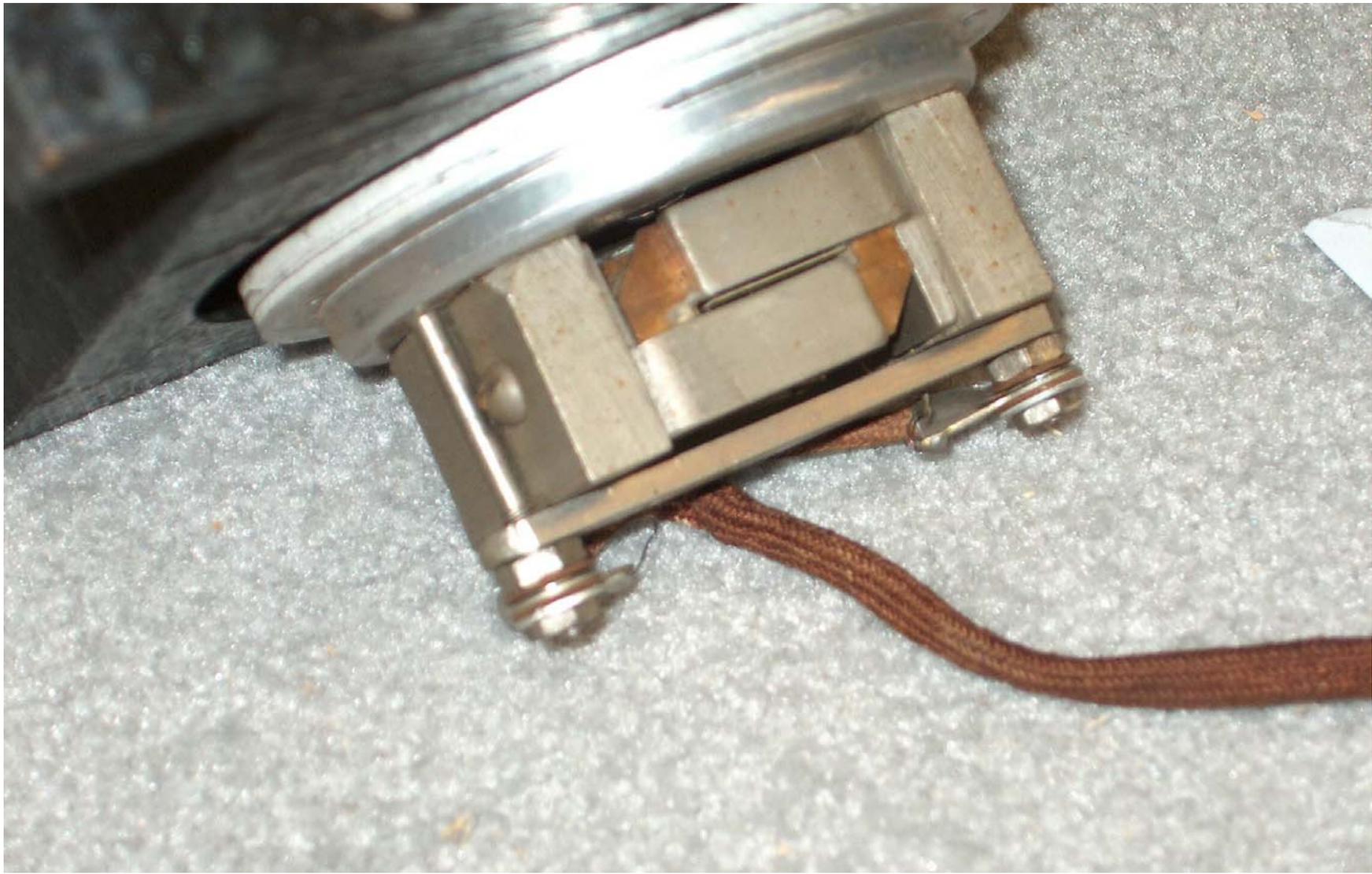
# Speaker



**This is a Baldwin Speaker, with the cabinet discarded.  
Notice one mounting ear is cut off because it was in the way!**



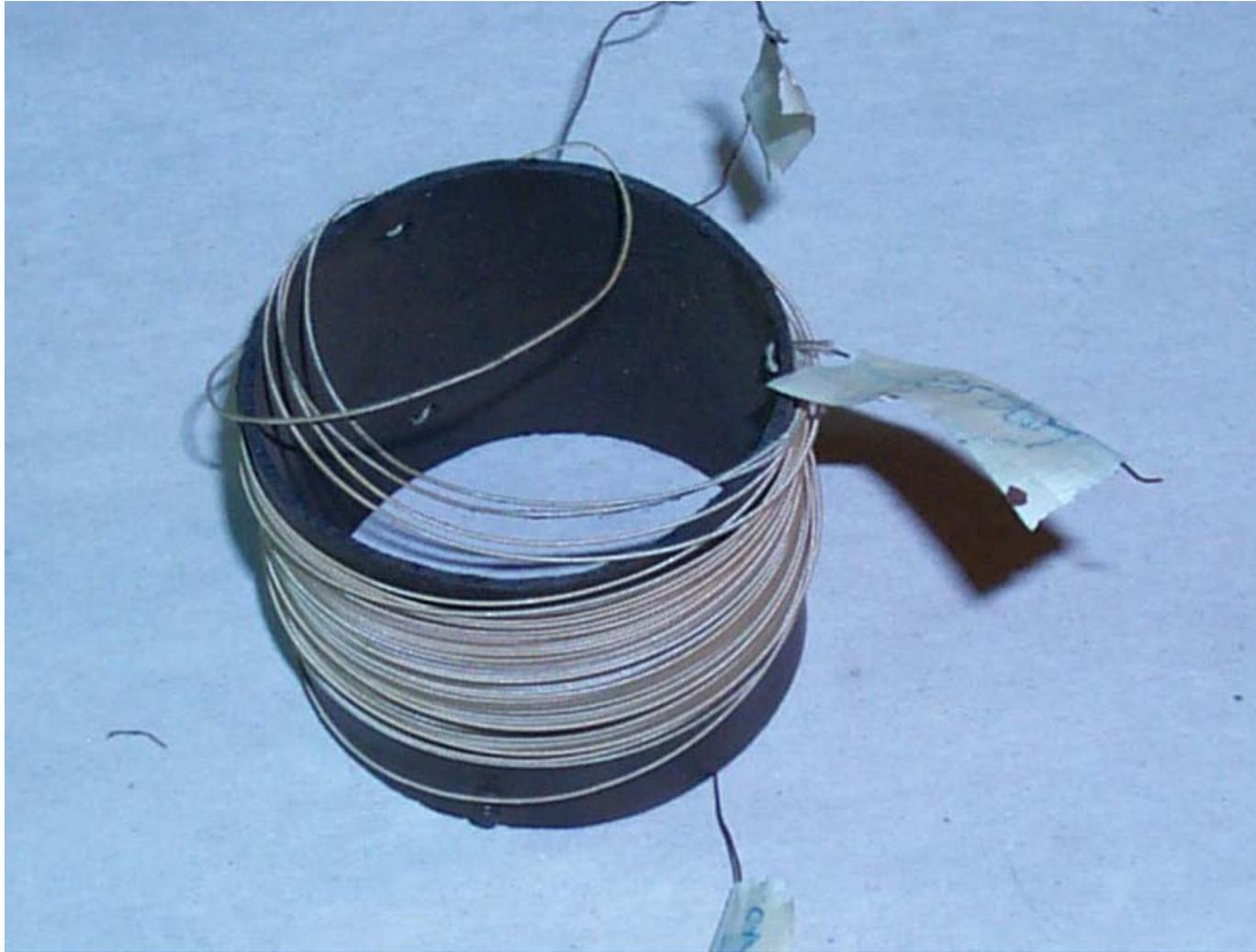
**The Armature was pressed against the pole piece.  
A paper slim was used to center the armature, and the bolts re-tightened**



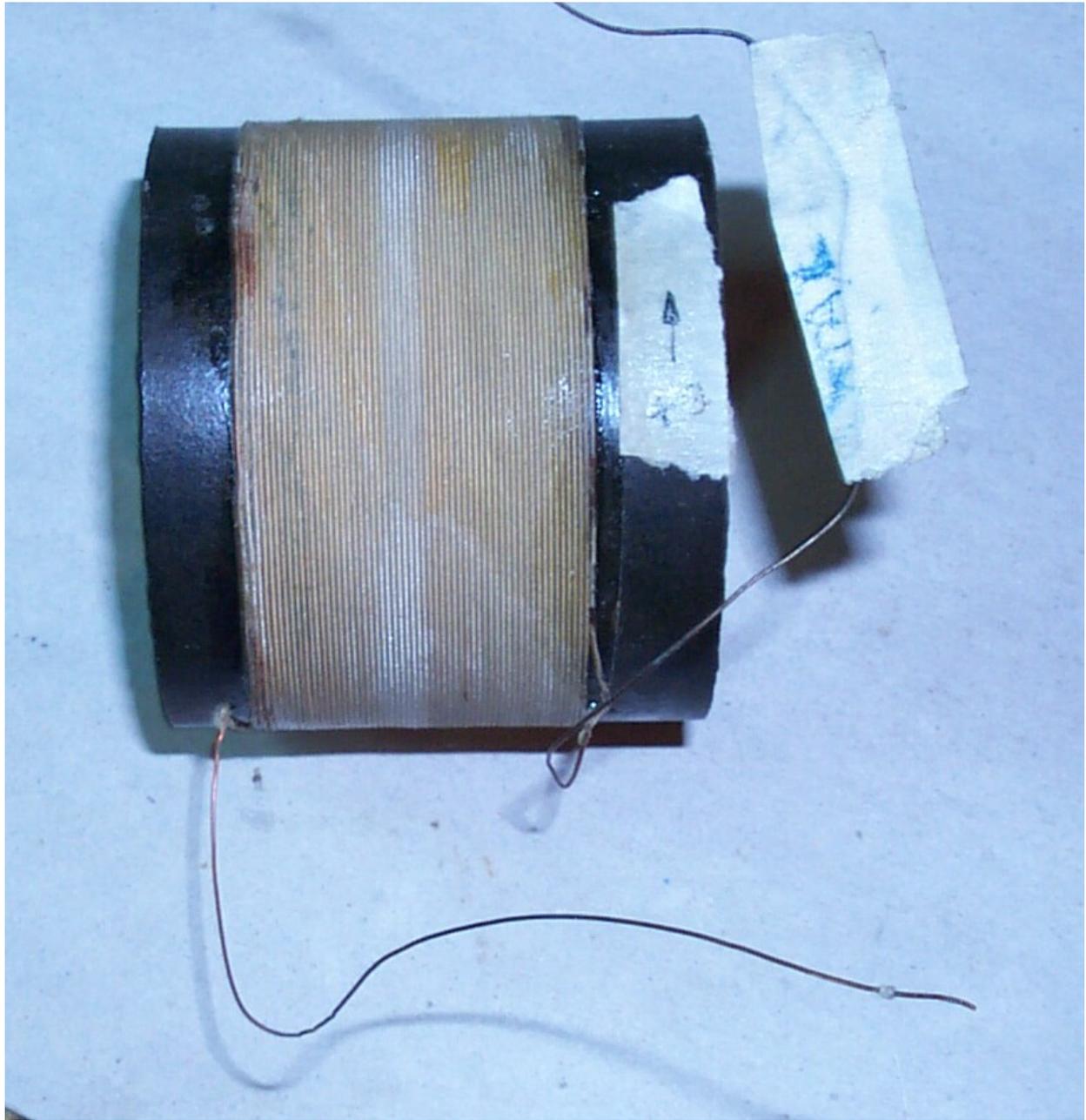


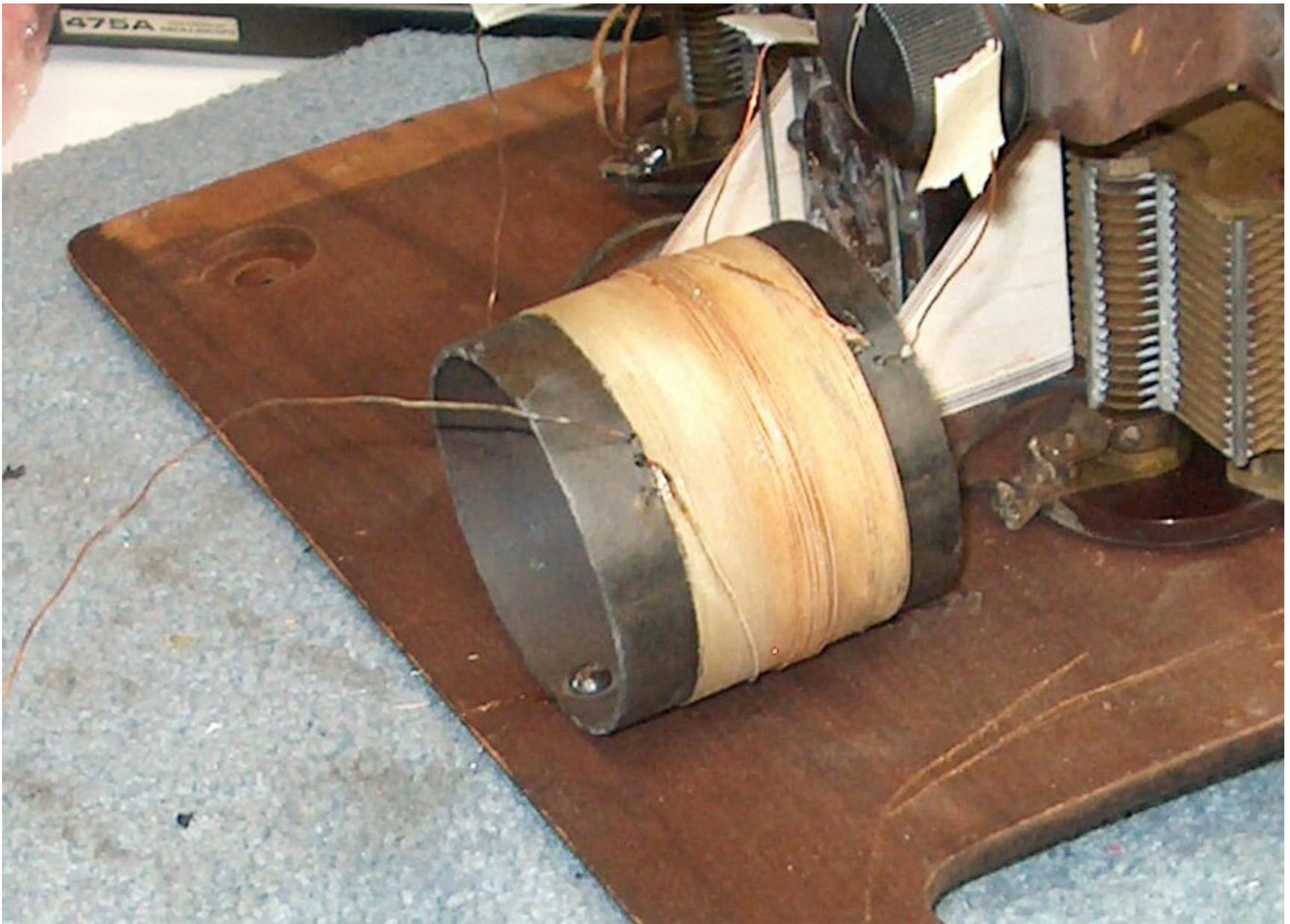
**Gluing the horn back together was the easy part  
Notice, the cord is full length ~ 3Feet, and the tips were soldered into the circuit**

# R.F. Coil



**The R.F. Coil needed rewinding, the tags show where the windings attach**





**The screw was re-installed for looks, the coil is now glued to the front panel**

# Electrolytic Rectifiers



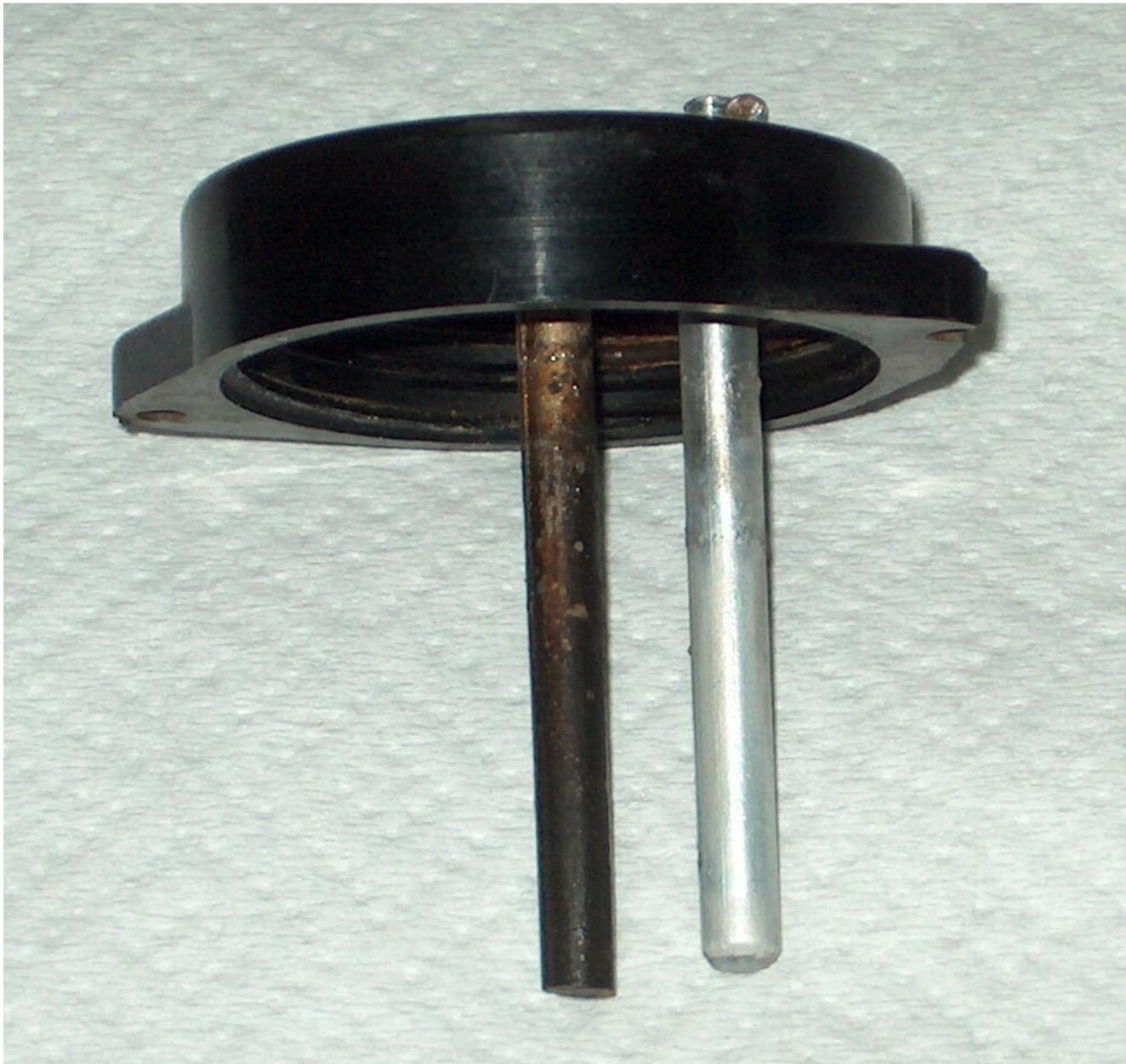
**Ugly, in need of a total overhaul**



**The junk in the bottom is probably part of the electrodes, and electrolyte I kept this stuff and all the broken parts in bags for someone else to analyze**



**The Aluminum Electrode is badly corroded  
The Iron Electrode is still in decent shape**



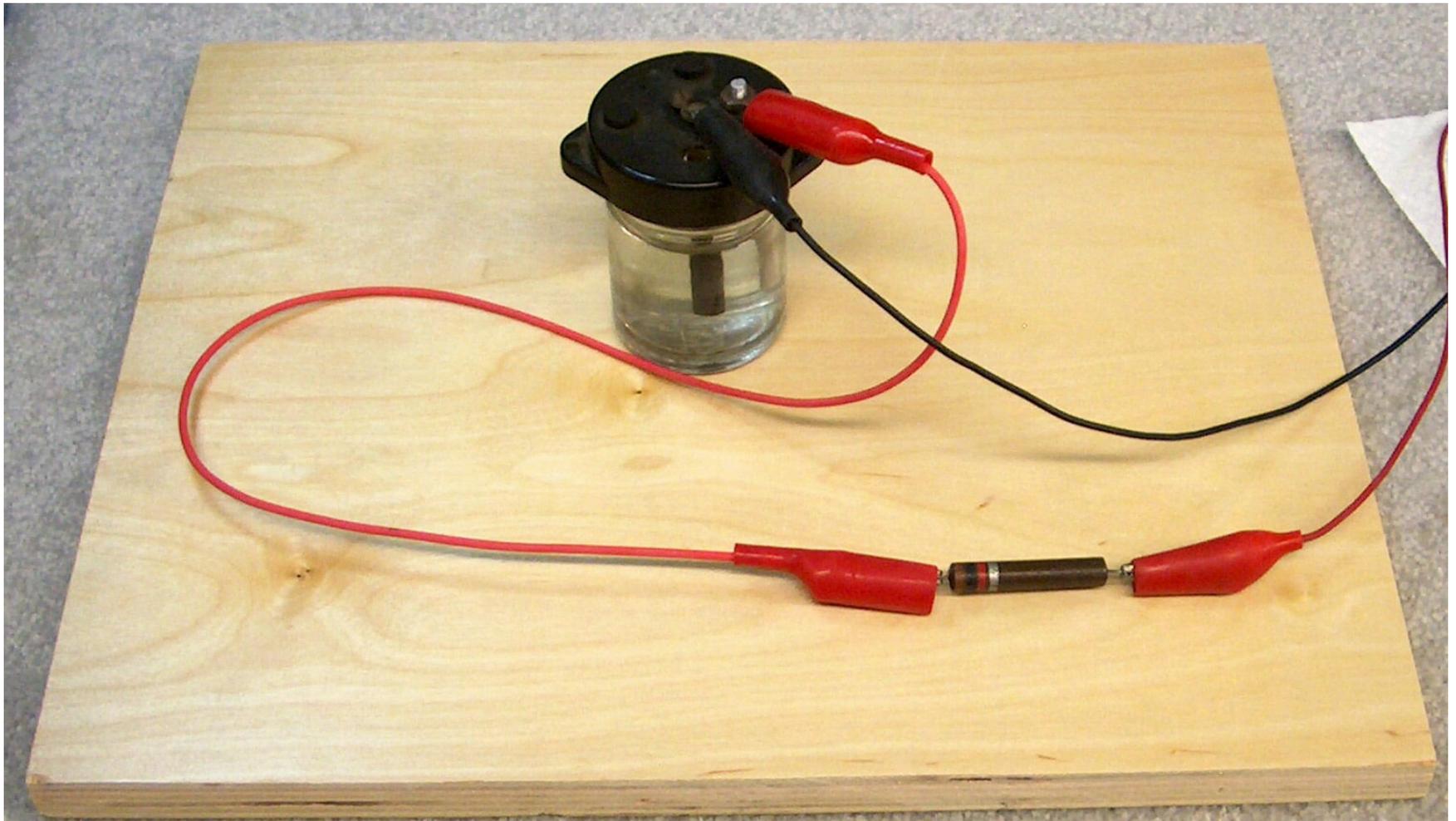
**One of two cleaned and rebuilt units**



Most of the recommend electrolytes, from a 1926 QST article, are no longer easy to obtain  
However, I had some Borax, which is suppose to work (Maybe not well?)  
A saturated solution is easy to make, just add too much Borax, and wait for it to dissolve



**Looks nice, but it still needs to be polarized into an Electrolytic Rectifier/Capacitor**



**The Electrodes are connected to a 100 Volt P/S through a current limiting resistor**



**The current drops quickly as the Aluminum Electrode forms an Oxide coating**



**After 20 Minutes the current is less than 1MA**

**The final Capacitance is ~ 2uF**

**The Resistance in the forward (Conducting) direction is about 100 Ohms**

For the second time in 80 years

# **The Jackson-Bell Model 4 Speaks again!**

**And it did, but not great**

**For the demonstration, the external stuff like the speaker, rectifier, and power cord was hooked together with jumper wires**

**A Substitute Loop antenna sat on the table connected with jumper wires  
(The missing original loop antenna, plugged into a phone jack on top of the cabinet)**

**The set powered up fine, and with a little adjustment of the Filament Pot  
The Hum level is acceptable**

**A little tuning got several stations loud and clear,  
the adjacent station rejection is acceptable,  
rotating the loop antenna helps**

**After several minutes things deteriorated,  
the hum level increased the volume decreased**

**Reforming the Electrolytic Rectifiers temporarily fixed the problem  
This may be a characteristic of these rectifiers, or a poor choice of Electrolyte**

**When run using a Silicon Diode in series with a 500-Ohm resistor, as a rectifier,  
the set works surprising well**

**This set is remarkable for its concept, even if it is impractical  
This set successfully launched a new company  
Jackson-Bell went on to become the largest radio manufacturer on the West Coast**

**If you have questions or comments, please contact me at: [rag@DesignSuccess.net](mailto:rag@DesignSuccess.net)**