Jackson-Bell Model 59 and Model 60 Circuit Comparison

Jackson-Bell Model 59, Art Deco Cabinet

Jackson-Bell Model 60, Art Deco Cabinet

The Jackson-Bell Model 59

The circuit design is typical and straightforward for a cheap TRF (Tuned Radio Frequency) radio of 1929.

In this case, the difference is the packaging into a “Midget” cabinet.

There are two triode, un-neutralized, Radio Frequency Amplifier stages. Resistors are added to the grid circuit to reduce gain at higher frequencies, thus ensuring that unintentional regeneration will not take place.

The Grid-leak Detector Stage is transformer-coupled to the first Audio Stage. The transformer provides a significant amount of signal gain.

The output transformer of the First Audio Stage provides some additional gain and acts as a phase splitter to feed the Push-Pull Audio Output Stage. A Push-Pull Balanced Lever Speaker is driven directly from the Power Amplifier tube’s plates.

The power supply is also a typical capacitor-input choke, capacitor-output B+ supply. The choke allows the filter capacitors to be as small as 2μF & 4μF. The power transformer has many filament windings for the Filamentary-Cathode tubes.

The performance of the Model 59 is marginal. The radio is not very sensitive and has poor selectivity. The set is unable to separate adjacent stations with closely spaced frequencies.

The Jackson-Bell Model 60

Jackson-Bell quickly “upgraded” the Model 59 to the Model 60 Chassis, with a minimum of mechanical changes. Many Model 60 chassis first carried Model 59 chassis labels. Presumably, chassis labeling occurred before Model 60 component installation!

To “Improve” sensitivity and selectivity, regeneration capability was added. This throw-back design works but requires tweaking for each station!

The Grid-Leak detector replacement with a 224A tetrode power detector provides two benefits. The technical benefit is a greater detector output level, eliminating the need for the first audio coupling transformer.

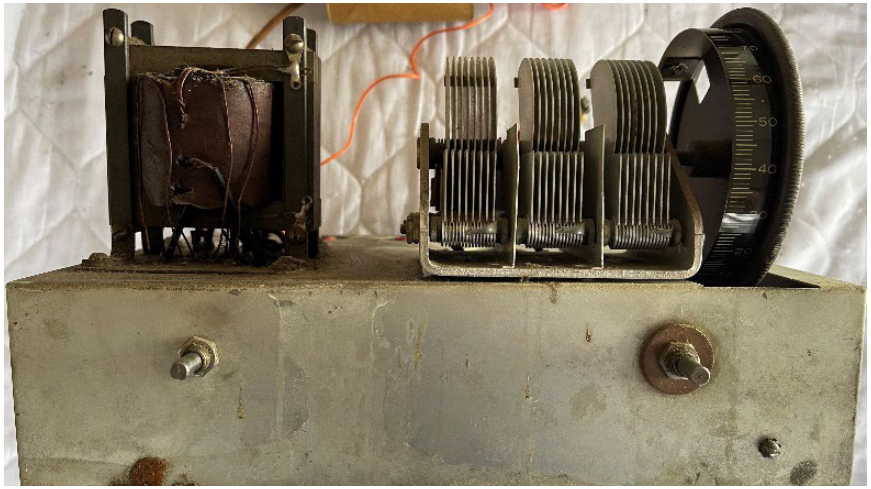
The other benefit is “Bragging Rights”. Jackson-Bell could use the phrase “Screen-Grid of Course” in their advertising.

The Model 60 Audio Power Amplifier is similar to the Model 59 but now drives a dynamic speaker through an output transformer.

The power supply is also similar, with the speaker field coil used as a choke. The two filter capacitors have higher values at 8µF each.

Physical Comparison of the Model 59 and Model 60 Chassis

Model 59 Chassis Front



Model 60 Chassis Front

The only mechanical change required one additional hole in the chassis front for the regeneration control.

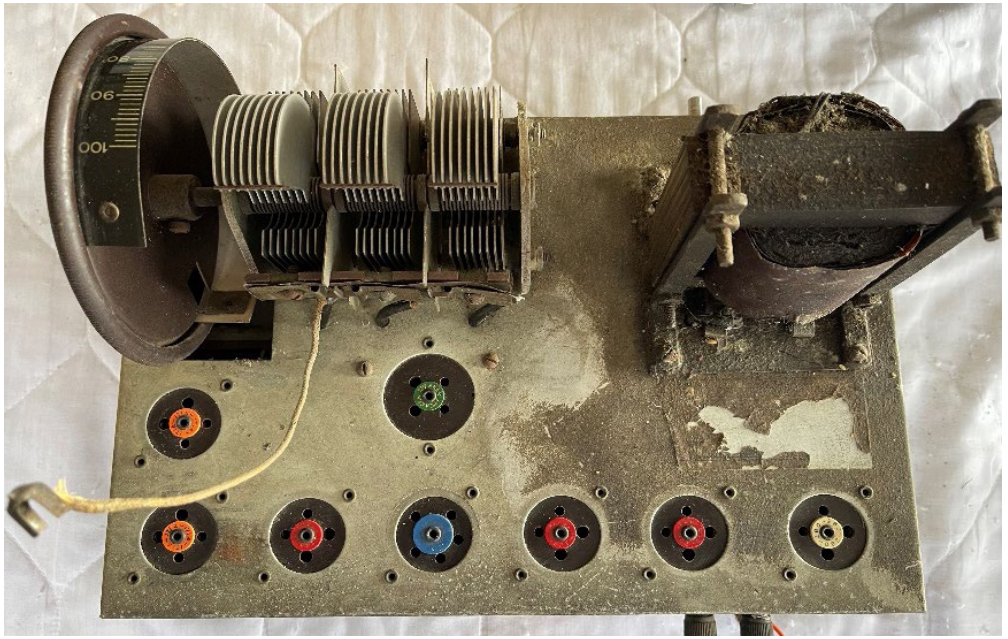
The electrical changes required many more resistors and capacitors.

Notice that the chassis fronts are almost identical.

The Model 59 chassis has one volume control potentiometer. The mounting shaft nut grounds the potentiometer wiper.

The Model 60 chassis has an extra “Regeneration” control. The regeneration potentiometer is held in place with non-conductive fiber washers, so the wiper is electrically floating.

Model 59 Chassis Top

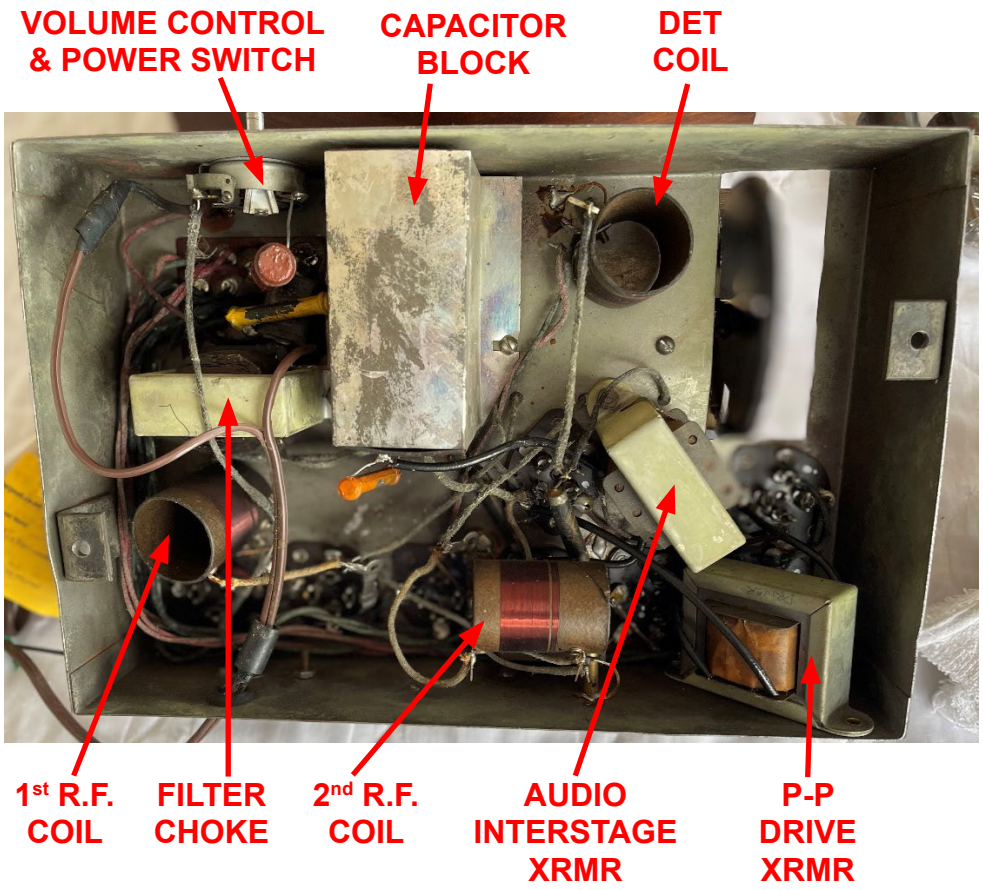


Model 60 Chassis Top

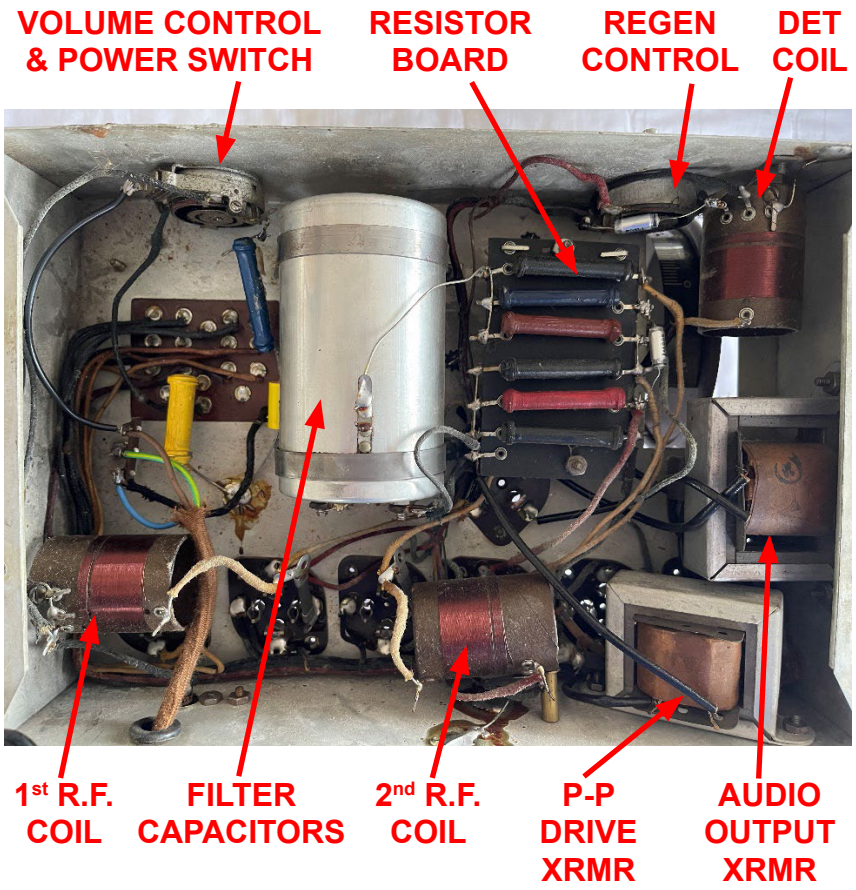
Notice that the chassis metal is almost identical between the two models.

The Model 60 Chassis has a grid cap for the 224A detector tube. The Model 60 chassis also has a few extra mounting screw heads.

Model 59 Chassis Bottom



Model 60 Chassis Bottom



The chassis bottoms reveal the differences between the two designs.

Both chassis have a volume control with an on-off switch. The Model 60 chassis also has a regeneration control.

The Model 59 chassis has two transformers and one filter choke.

The Model 60 chassis has two transformers and no filter choke.

The Model 60 chassis has many more capacitors and Resistors. Many resistors are board-mounted.

Model 59 Speaker

Model 60 Speaker

The Model 59 and Model 60 used very different cone speaker types.

The Model 59 used a balanced armature speaker.
Low-frequency reproduction is very limited. There is very little travel before the speaker overloads.

The Model 60 used a voice coil dynamic speaker with better volume and better low-frequency response.

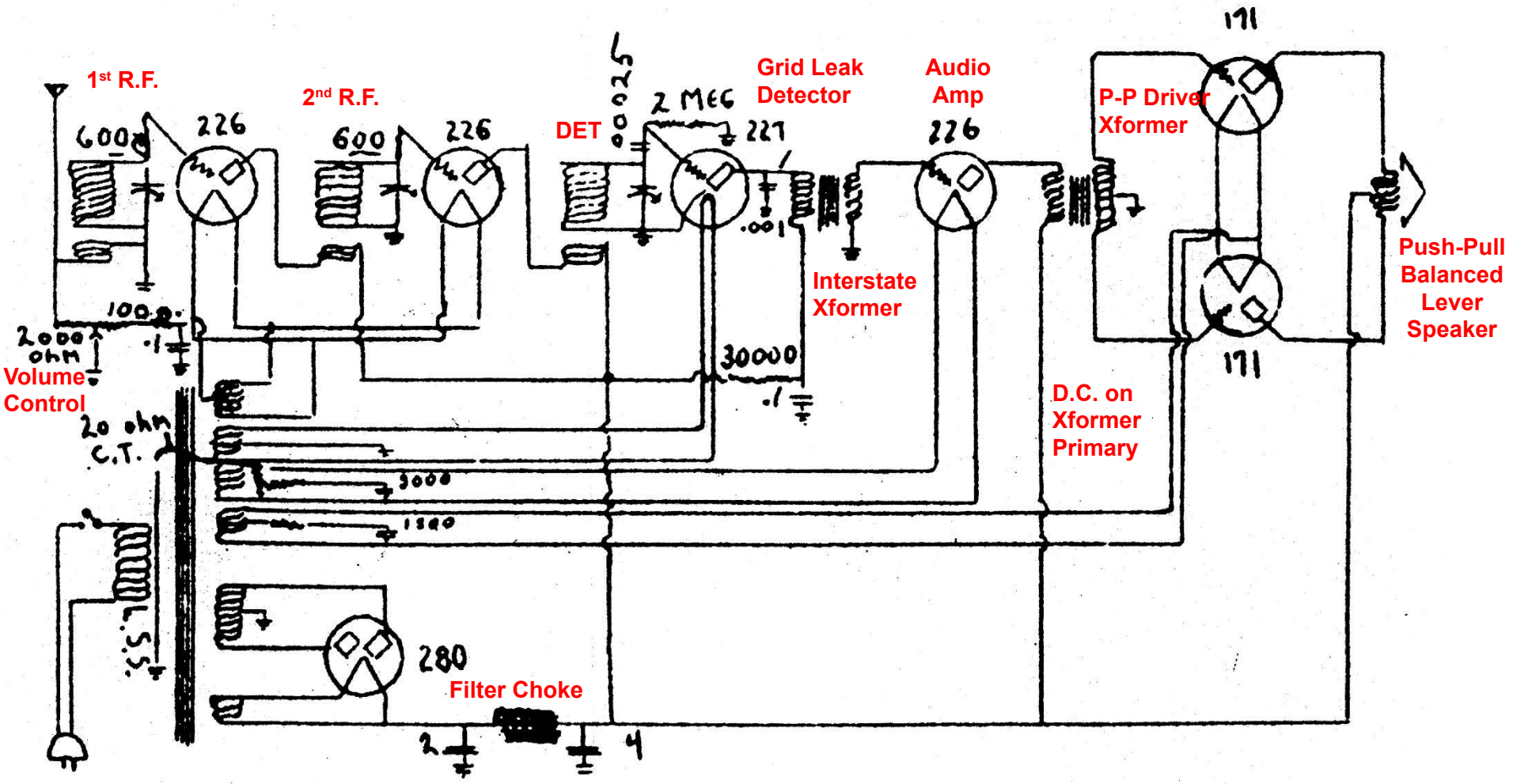
Photos: Mark Thomson
Text: Richard Gray 27 April, 2024

Please see the marked up schematics on the following pages

Model 59 Chassis

Major problems... with non-shielded coils, and triode tubes
Not very sensitive... not very selective

TRF, with resistors helps
eliminate unwanted regeneration
at the expense of gain!



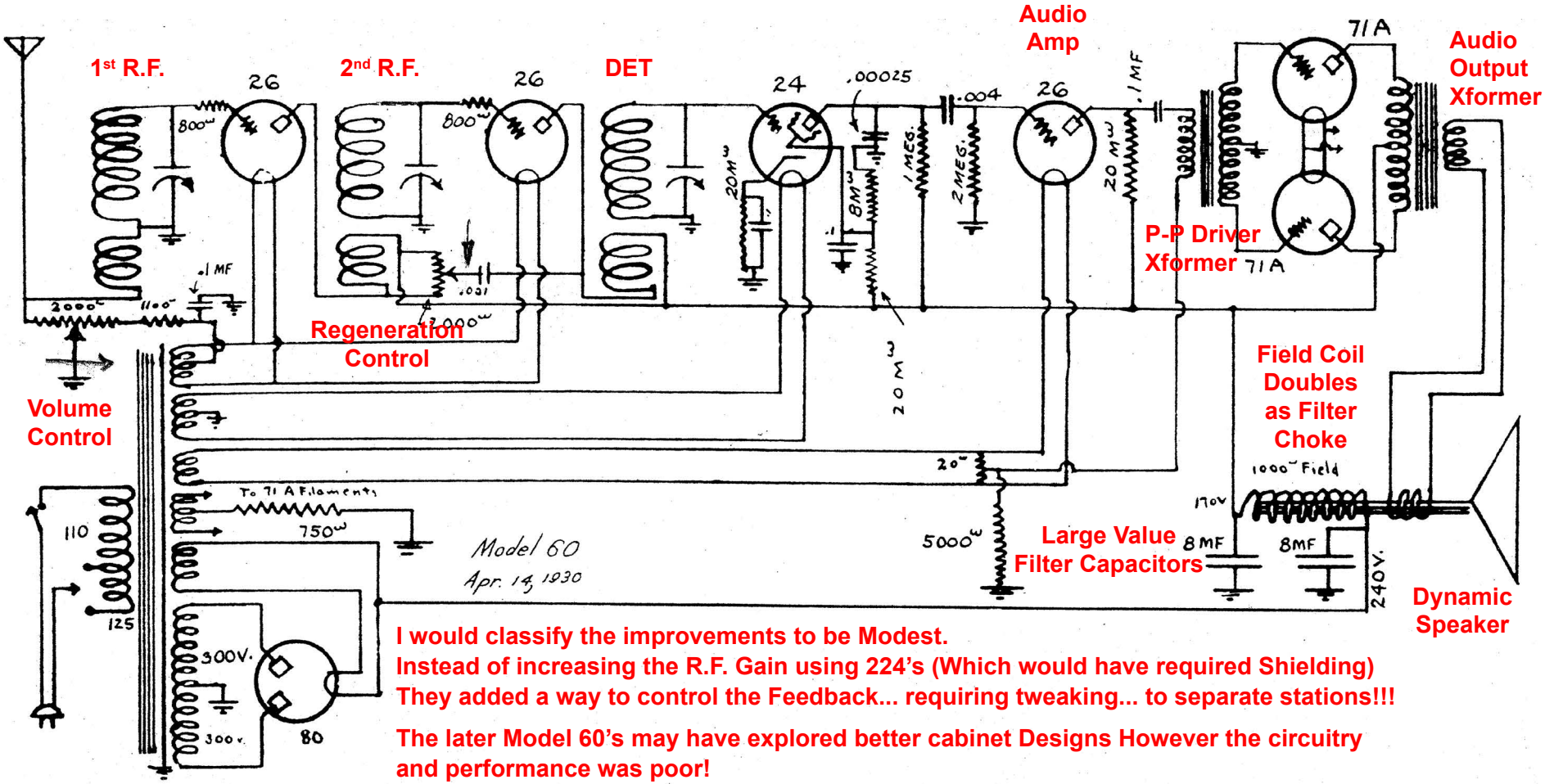
Model 60 Chassis

Same miserable TRF section
With the addition of Regeneration
to increase Gain & Selectivity
at the expense of needing to
tweak for each station!!!
And significant distortion.

"Screen Grid, of Course"
(Extolled in the Advertisements)

The 24 Screen Grid tube is used as the Detector
Not as an RF Amplifier where, with Shield Coils
some real advantages could have been had.

D.C. removed from Transformer Primary
Allows a physically smaller
(cheaper) transformer to get the job done.



I would classify the improvements to be Modest.
Instead of increasing the R.F. Gain using 224's (Which would have required Shielding)
They added a way to control the Feedback... requiring tweaking... to separate stations!!!

The later Model 60's may have explored better cabinet Designs However the circuitry
and performance was poor!

The subsequent Model 62, was a huge circuitry departure!!!