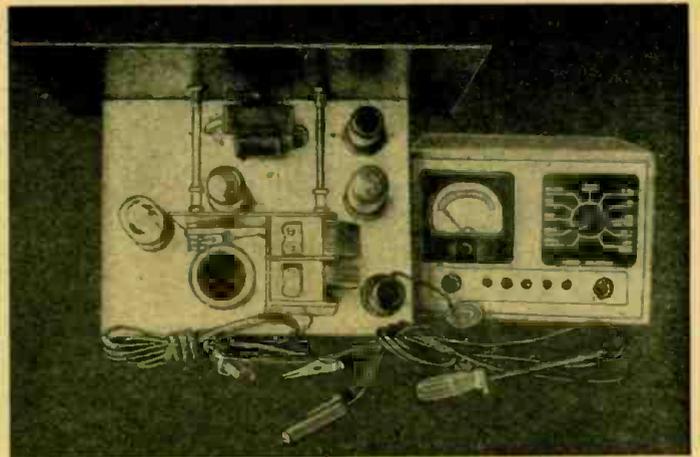


The output transformer permits use of phones or magnetic speaker.



This top view shows how condenser placement avoids hand capacity.

A Stable Regenerative Receiver

By OTTO L. WOOLEY

MORE than 20 years ago we built our first receiver, a 1-tube regenerative. That 1-tuber, a WD-11, cost exactly \$5. Small wonder then that for economic reasons the most popular set of that era was the one using the minimum number of tubes! For some reason, that trend of thought has continued through the years; but today when the same amount of money will purchase a double handful of far better tubes, any set builder is passing up a good bet if he doesn't use enough tubes to insure consistent maximum performance.

Looking through the tube manual recently we had a sudden urge to see what could be done with our old regenerative circuit. The straight regenerative has certain drawbacks. It is likely to radiate and it is sensitive to hand capacity. These disadvantages were reduced to the point where they were no longer objectionable by careful design and layout. Radiation from the receiver was eliminated by including an untuned r.f. amplifier.

There is no noticeable gain in a stage of this type, but it stabilizes the detector, making the control of feedback

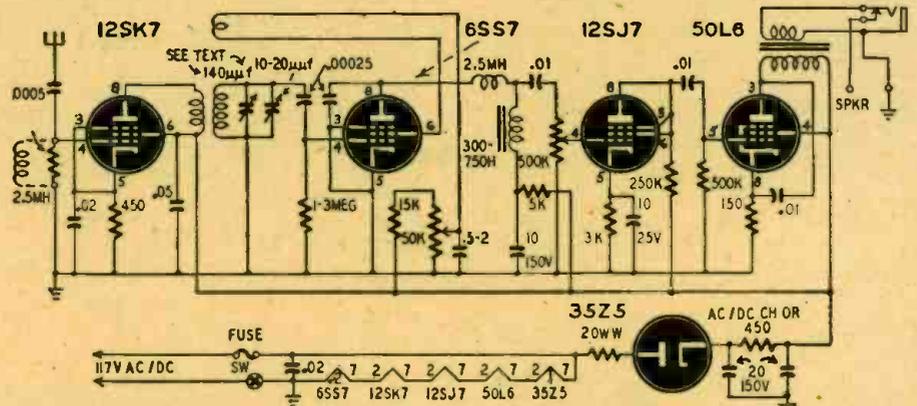
non-critical. Furthermore, antenna effects due to antenna coupling to the detector are almost completely wiped out.

Hand capacitance has been a real aspirin-sales booster since the earliest days of radio. To combat this nuisance, a substantial steel panel was used. It was well bonded to the chassis with a

voltage tubes all have the same pin connections and can be interchanged to compare their operation.

The 20,000-ohm resistor in the grid circuit of the untuned r.f. amplifier may be replaced by a 2.5-mh r.f. choke.

A broadcast-type tuning condenser was used in this set. One designed for



Complete schematic of the receiver. Choke coil or resistor may be used in antenna circuit.

short, heavy piece of copper braid. The parts were laid out so that the tuning unit and associated components remained well back on the rear portion of the chassis, and the band-set and band-spread condensers are coupled to the knobs by fiber shafts. The result is that no hand-capacitance effect is noticed, even on the 10-meter band.

There is nothing new in any part of the circuit except possibly the use of a remote cutoff tube for the detector in place of the more commonly used sharp cutoff type. However, the 3 low-

short-wave tuning might be preferred by SWL's. Standard, 3-winding, manufactured plug-in coils are used for the different bands. If these are unavailable they can be wound easily on standard coil forms.

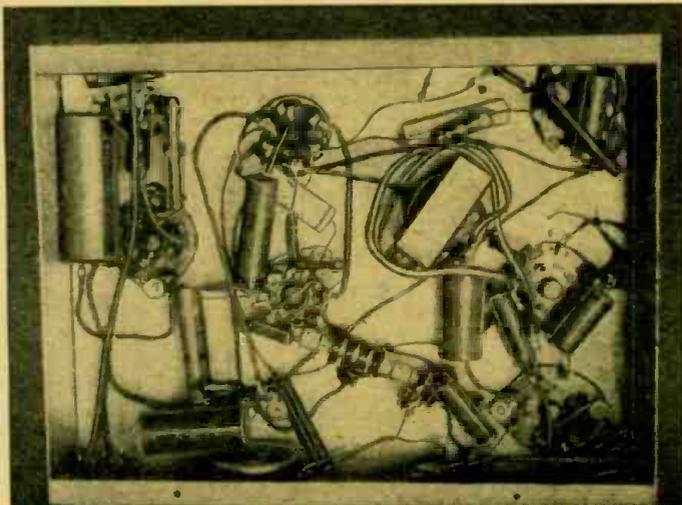
A coil for the broadcast band can be constructed with a primary of 25 turns No. 30 or 32, a secondary of 90 turns No. 28, and a tickler of 15 to 20 turns No. 30 or 32. The coil is wound on a 1½-inch diameter, 6-prong coil form. Coils for other bands can be determined by experiment.

Impedance coupling is used between the detector and the first audio tube. A small audio choke of at least 300 henries is used. This type of coupling permits the detector to work into a more suitable load than if resistance coupling were used between stages.

The audio system is conventional except that the first audio tube is triode-connected. The output transformer has a 2,500-ohm primary to match the 50L6

(Continued on page 83)

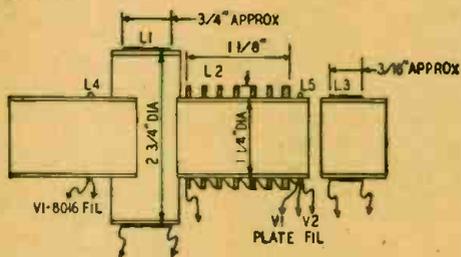
Under-chassis wiring is not critical except for the filament leads.



HIGH-VOLTAGE R.F. COILS

The experimenter who wishes to construct an r.f. high-voltage generator, such as described in the May, 1947, issue of RADIO-CRAFT, can make the coils without a coil-winding machine by winding the wire on spider-web forms cut out of thin composition board or heavy stencil paper, both of which are available in art supply stores. (Excellent forms for this purpose could be cut from polystyrene sheets.—Editor)

In cutting and winding the forms the inside dimensions and the number of turns given in the original descriptions should be followed. The layers may be spaced with nuts or spacing washers from a discarded condenser. The screw holding the forms together should be brass.



My original coil forms had 7 sections, but the coils will be flatter and neater if a larger number of sections are cut, at least 11 or 13. The forms must be cut with an odd number of sections.

Coil forms of this type will take up much more space than the conventional type, but the experimenter can try smaller diameter forms and more layers. With this arrangement, it pays to experiment with the number of turns in the grid coil.

Coils of this type may not be as efficient as those of modern design, but they can be made without special equipment.

Incidentally, for those who do not have a beam-power tube handy, other tubes will work. I used a 59. It operates more efficiently as a triode, with the control and screen grids tied together and the suppressor grid connected to the plate. I found a low value of grid resistor gave best results.

HAROLD WALKER,
Philadelphia, Penna.

A STABLE REGENERATIVE RECEIVER

(Continued from page 34)

to the speaker voice coil. The output terminals are brought out to the rear of the chassis. Inserting the headphone plug in the jack silences the speaker.

A small a.c.-d.c. choke may be used in place of the 450-ohm resistor in the power supply.

Since the set uses an a.c.-d.c. power supply, take care not to ground the chassis. A 1-ampere fuse in the line is sufficient protection in case of an accidental short circuit.

If you have wondered what a good regenerative receiver is capable of doing try building this one. The results are really worthwhile. It is no temperamental plaything, but a receiver you will enjoy listening to and operating.

RADIO-CRAFT for APRIL, 1948



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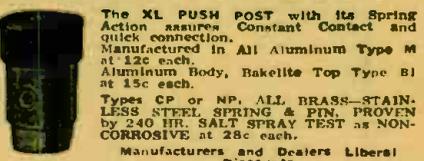
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