

The laminations are now to be shel-laced with one coat on both sides, for which purpose shellac is dissolved in methylated spirits and applied with a brush. This coating of shellac is important, as its purpose is to insulate each lamination from the next.

When the shellac is thoroughly dry, laminations, all the same way round, are packed into one end of the coil, the last few being pushed in under the top one, and having the sharp corner cut off the central piece to prevent the manila being cut. A piece of strong paper is to intervene between the two ends of laminations where they meet outside the coil, so large enough pieces are placed there, while the laminations on the second side are packed into place. As many must be got in as possible, so that both lots are free from looseness. The ends of laminations must both press against the paper, so that they are only separated by its thickness. This forms a gap in the iron, the object of which is to prevent magnetic saturation of the core by the direct current passing through the coil.

#### Final Operations.

THE wooden clamps, four in number, are 4½ inches long and 7-16-inch square, drilled at each end to take a

3-8 brass bolt two inches long, about a half-inch of which can be cut off after all is assembled. A washer should be put under the bolt head to protect the wood, but at the other end the nut will be sufficient. A slip of ebonite about 2 1-8 by 1 1-8 inches is now screwed to the clamps and fitted with two terminals, to which the leads are connected underneath.

When completed and stood on end the choke occupies a floor space of about 8 by 1½ inches, and, of course, the ebonite slip may be placed in any convenient position. A small diagram of the circuit is included.

The wooden clamps should be finished with the shellac applied with a piece of rag and rubbed. The clamping bolts must not be allowed to touch the ends of the laminations, and so connect some of them together. If care and finish are put into the work the coil has quite a neat appearance. If desired the outside of the laminations may be finished with black cycle enamel.

Experiment may show that a higher value than .001 gives better results for the fixed condenser across the speaker. With no condenser there, tone is inclined to be harsh and thin. Too large a capacity causes woolliness.

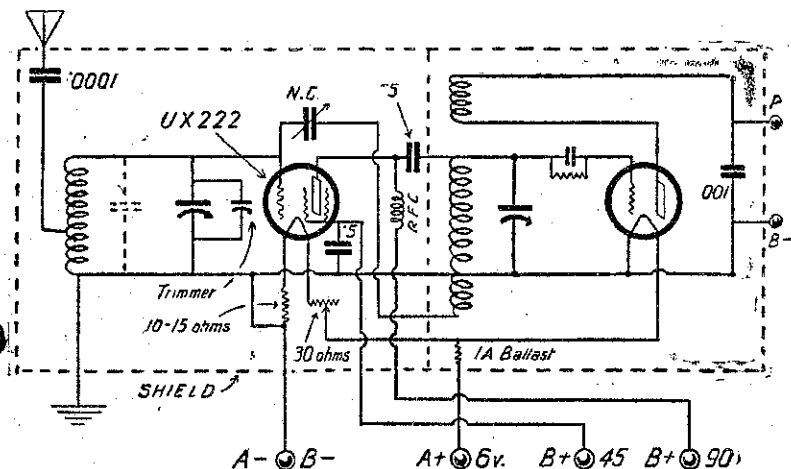
## The Screen Grid Browning-Drake

Now on the N.Z. Market

MANY correspondents have written asking for a diagram of the screen grid Browning-Drake, and so this week we publish that diagram with a few notes on the set, and this new type of Browning-Drake should prove equally as popular as its predecessor has done.

The new upright type of 4-element valve has made possible the greatest single advance in radio-receiving-set

fully-placed shielding and without rather critical operation. While it is true that shielding appears to be absolutely necessary for anything like good performance when the upright valve is used with the tuned-plate method—now most generally employed—it is not essential to employ the tuned-plate impedance for very fine results. In fact, much more stable and



R.F. and Detector Stages of Browning-Drake showing adaptation of Shield Grid Valve

performance of any new development within the last few years. As soon as its possibilities became known it was clear that a standard of radio reception far above anything previously experienced could be obtained, both as to sensitivity and selectivity.

#### Easy to Build.

THERE has been a certain impression that it was difficult to build a receiving circuit using the upright, without the use of a great deal of care-

otherwise satisfactory operation is obtained if a correctly-designed radio-frequency transformer with a very high primary impedance is used instead.

#### No Neutralisation Troubles.

WHEN one of the new upright valves is used with such a R.F. transformer, in connection with the Browning-Drake circuit, not only is the sensitivity or distance-getting ability of the receiver improved to a marked degree, but also the necessity for neu-

tralisation, and any tendency toward undesired oscillation of the radio-frequency stage completely eliminated. This condition results in better tone quality, as the regeneration in the detector circuit may readily be controlled without affecting the stability of the radio-frequency stage.

THE constructor should not find it difficult to complete this new receiver, especially as units comprising the coils, condensers, and controls are already on the market. These new units are very fine, and should add greatly to the popularity of this receiver. One dial control is used, and a special balancing condenser allows of maximum tuning capacity.

## Tips and Jottings

#### Soldering Lugs.

WHEN soldering to lugs on fixed condensers, transformers, and the

like, a wet or damp rag should be placed over all but the part to be soldered, as the heat of the iron will, in the first case, melt the wax that insulates the sheets, whilst, in the latter case, the soldered connections inside the transformer may be loosened.

#### A Telephone Hint.

TO get the very best results from D.X. work or crystal reception of the local station, really sensitive telephones are essential. Cheap 'phones are not as sensitive as more expensive ones, but they can often be greatly improved with a little judicious doctoring. When a diaphragm is vibrating, the point in the centre is undergoing a great strain and energy is used up instead of making sound waves. If this strain can be relieved a little the results will be better. A small round hole 1-16in. diameter drilled through the centre of the diaphragm will give a marked improvement in signal strength.



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