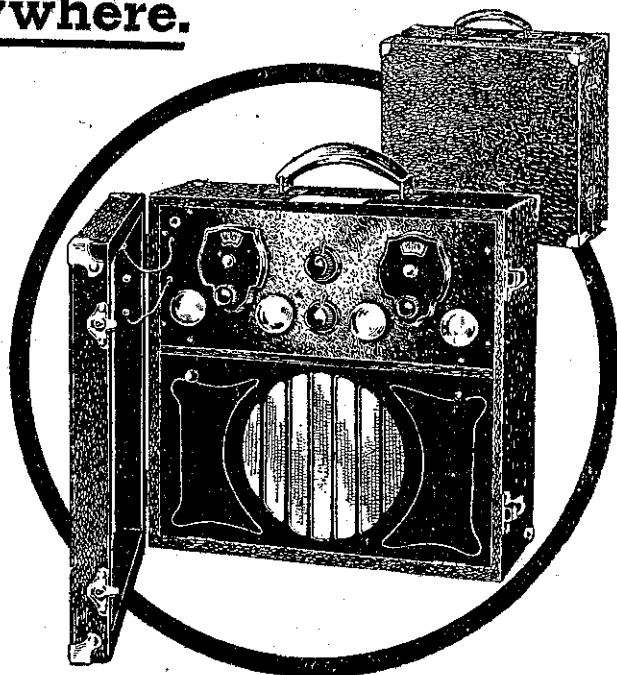


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Loop Antenna

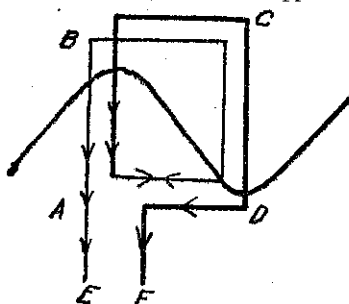
(Concluded from page 1.)

The approximate ratio between the signal strength from a loop and from an outdoor aerial is shown by the following formula:—
Signal strength =

$$\text{loop area} \times \text{No. of turns}$$

$$\text{Antenna height} \times \text{wave length in metres} \times 0.1593.$$

Thus assume a loop with an area of 3 sq. feet and with 15 turns to be compared with an aerial 30ft. high both operating at a wave length of 300 metres. The upper part of the ratio will = $3 \times 15 = 45$ as representing the strength of the loop signal. The lower part of the ratio = $30 \times 300 \times 0.1593 = 1333.7$ as representing the strength of the aerial signal. The ratio of loop signal to aerial signal is then $45/1333.7$ or approxi-



mately 1/13th in strength. This divergence into simple mathematics shows conclusively that a loop antenna can be nowhere as efficient as good aerial.

Types of Loop Antenna.

THERE are mainly two types of loop antenna—the box and the spiral. The box loop is built up of a number of turns wound as though inside a box. They are all upon the same plane and each loop is of the same length. This is the type that is usually employed when wound round the frame of portable receivers.

The other type is the spiral, which in appearance is flat, each turn being less in diameter than the preceding one. This type is shown in the diagram. Either of these loops may be operated with or without a ground connection. As a rule the loop alone is insufficient to furnish signal energy to a receiver, but very frequently the introduction of the aerial and the earth will strengthen signals. The aerial may be brought in at a tap in the loop and the ground taken off from its filament end. It is thus possible to use a loop and an aerial at the same time. Used in this manner the portable set or loop-using receiver is equal to an ordinary set.

Another method is to wind two or three additional turns on the loop frame, passing them near to the end, or side of the loop that connects with the low potential end of the receiver. The extra coils can now be regarded as an aerial coil loosely coupled to the grid coil. This, however, while increasing the sensitivity of the receiver, reduced both selectivity and directional effect.

There are other methods of increasing the signal strength resulting from a loop aerial, and these, with the constructional details of a loop, will be described in next week's "Radio Record."

Tips and Jottings

Soldering Stranded Wires.

A TASK which constructors often find troublesome is the making of a satisfactory soldered connection between the shank of a terminal and a piece of flex wire. Actually it is very easy when undertaken in the proper way. When the end of the flex has been bared, it is necessary to make sure that the strands are clean. Sometimes, especially if the flex is old, the strands become dull and discoloured, due to oxidation. Should the wire be dirty, untwist it, spread the strands out flat, and draw them once or twice lightly over a sheet of the finest emery cloth. Twist them together again, and apply a very little flux. With a hot iron run a little solder into the strands so as to bind them together. Tin the shank of the terminal, and it will be found that no difficulty will be experienced in making a neat, firm joint.

A Vice Precaution.

NEITHER ebonite nor brass should ever be gripped between the bare jaws of a metal vice. Both are comparatively soft substances and, as the jaws are roughened, deep marks will be made which are most difficult to remove. The best tip is to obtain a piece of sheet lead of the same width as the jaws of the vice and to cut the two pieces about 4in. in length. These are bent to fit the jaws so that they remain in position when the vice is opened. If for any reason sheet lead is not available, thick cardboard can be used quite well in an emergency. When it is desired to hold the shank of a terminal or a screw in the vice, bend a thin strip of lead into a V-shape and push the threaded part into it. The lead can now be screwed up tightly and it will grip the threads without injuring them in any way. When a brass nut has to be gripped, always place a screw in it first of all, otherwise it may be crushed out of shape by the jaws of the vice. The screw serves to prevent it from being distorted.

Panel Protection.

WIRELESS sets with highly-polished panels have a great attraction for some constructors. But if there are any scratches, however slight, the effect is completely spoilt, and it would be better if a matted panel had been used. Most of these scratches are made when the panel is being marked out and drilled. They can be avoided by laying the panel on several thicknesses of soft tissue paper while marking out drilling. With ordinary care scratches can be prevented during the rest of the constructional work, and the result will be a set which looks quite professional, due to the faultless polish on its panel.

Cone Speakers

(Continued from page 27.)

The units now available are capable of giving high quality reproduction by any of the methods mentioned, but the volume and exact range of frequencies depends to a certain extent upon the method selected and the manner in which construction is carried out. A little patience will conquer many difficulties and ensure success.