

Dec. 27, 1932.

N. P. HARSHBERGER

1,892,146

ELECTRICAL WIRING SYSTEM

Filed Sept. 16, 1929

2 Sheets-Sheet 1

Fig. 1.

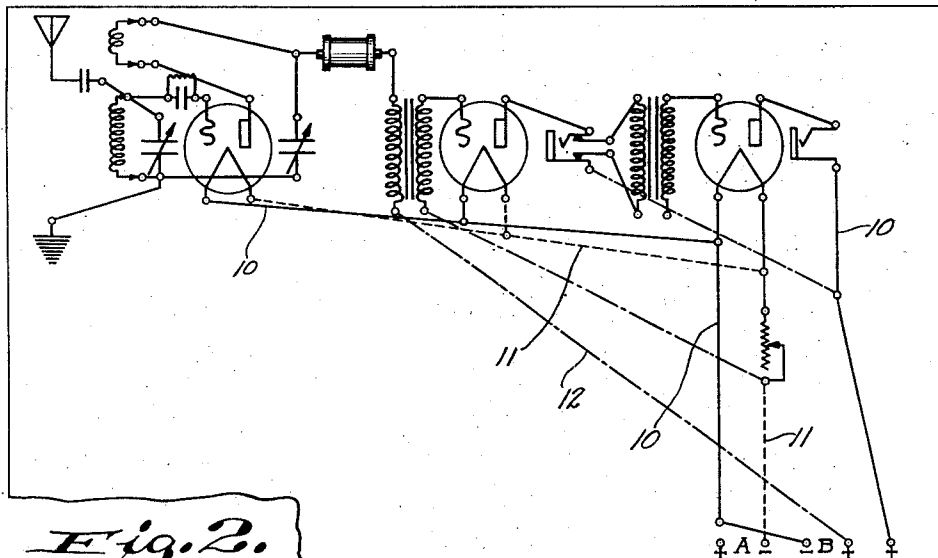


Fig. 2.

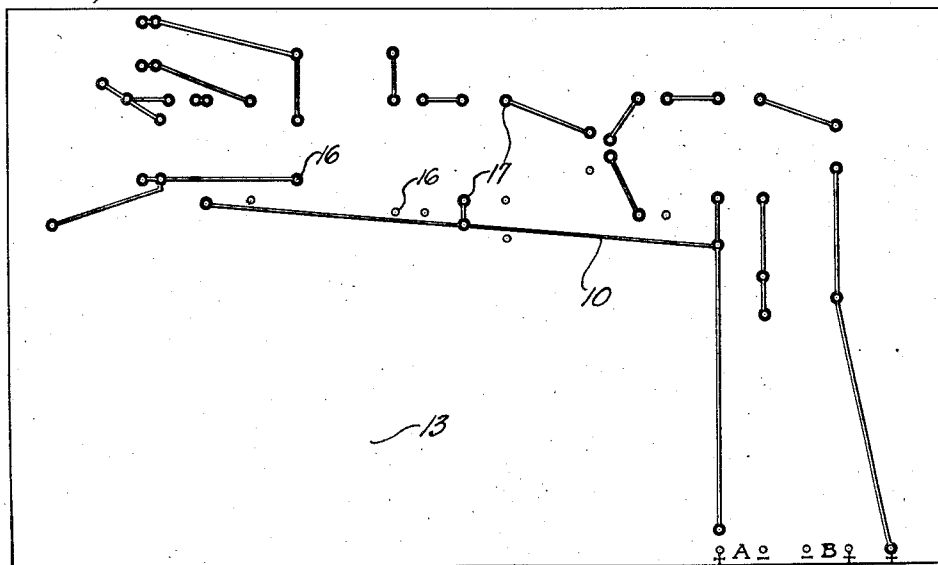
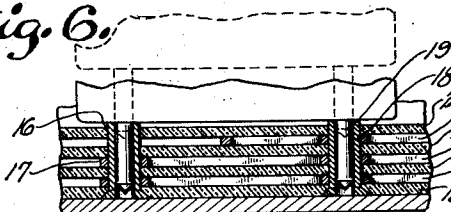


Fig. 6.



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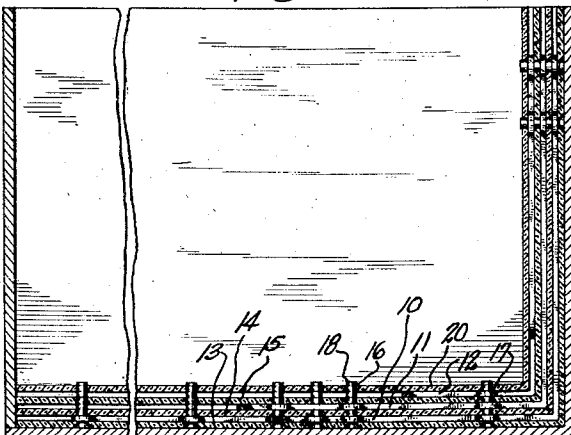
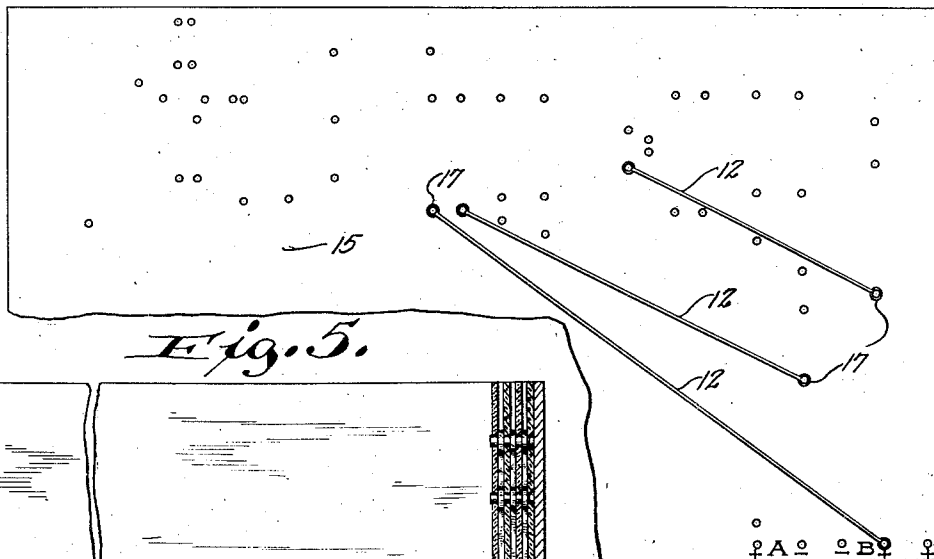
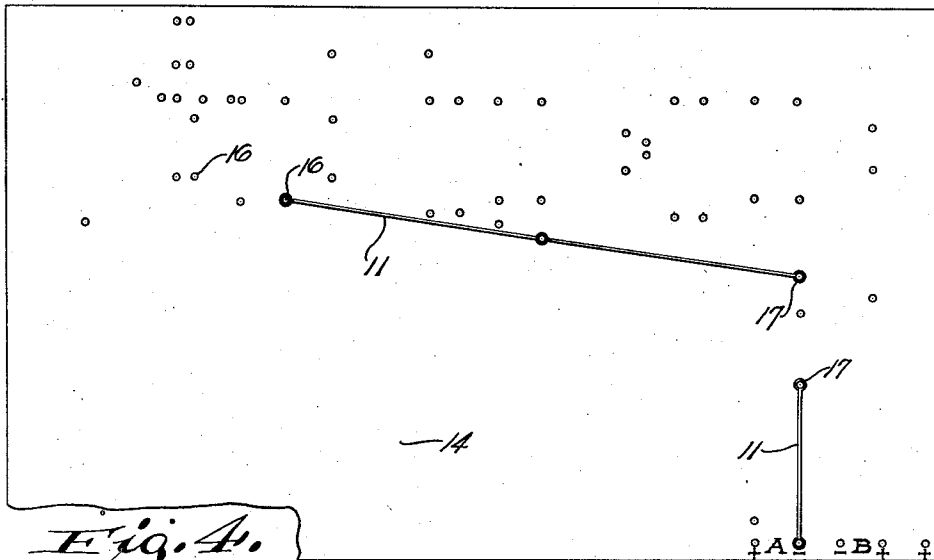
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2 Sheets-Sheet 2

Fig. 3.



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ELECTRICAL WIRING SYSTEM

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This invention relates to improvements in wiring systems and more particularly to wiring systems adapted for use in radios.

In the present day radio the terminals of the various units are connected to one another by a plurality of wires which extend at various angles within the casing. The said wires have to be bent in various places so that no two wires will touch one another and cause interference. This method of wiring renders the assembly of radios very difficult and also makes it difficult to gain access to the various parts in making repairs.

It is one of the objects of this invention to overcome the above mentioned objectionable features by providing an improved wiring system which will simplify the assembling of the various units and which will eliminate the usual maze of wires within the instrument.

A more specific object of this invention is to provide a wiring system in which a plurality of flat sheets of insulating material are employed, each sheet carrying a number of wires and no two wires on any one sheet being crossed, the said sheets being provided with openings through which binding posts may be inserted to connect the various wires in the desired manner.

A further object of this invention is to provide a wiring system in which all wires are grouped closely adjacent the bottom and side panels of the instrument.

A still further object of this invention is to provide a wiring system in which the various wires are secured to tubular binding posts, the said tubular binding posts being adapted to readily receive the terminals of the units which are to be assembled.

With the above and other objects in view the invention consists of the improved wiring system and all its parts and combinations as set forth in the claims, and all equivalents thereof.

In the accompanying drawings illustrating one complete embodiment of the preferred form of the invention, in which the same reference numerals designate the same parts in all of the views:

Fig. 1 is a diagrammatic view of the wiring

system showing it as used in connection with a short wave receiver, the full lines designating one set of wires, the lines formed by short dashes indicating another set of wires, and the lines formed by long and short dashes indicating another set of wires;

Fig. 2 is a plan view of one of the insulating sheets showing the wires indicated by the full lines in Fig. 1 mounted thereon;

Fig. 3 is a similar view of another insulating sheet showing the wires indicated by the short dashes in Fig. 1 mounted thereon;

Fig. 4 is a similar view of a third insulating sheet showing the wires indicated by the long and short dashes in Fig. 1 mounted thereon;

Fig. 5 is a transverse sectional view taken through a radio instrument box showing the various sheets in assembled position; and

Fig. 6 is an enlarged detail view showing how one of the units of the instrument may be connected to the tubular binding posts.

Referring to the drawings, in Fig. 1 the various units of the short wave receiver illustrated are connected to one another by means of three sets of wires, the wires shown by the full lines being designated by the numeral 10, the wires shown by the short dashes being designated by the numeral 11, and the wires indicated by the long and short dashes being designated by the numeral 12.

Flat sheets of suitable insulating material designated by the numerals 13, 14 and 15 are formed with a plurality of perforations 16 between which the wires are adapted to be connected. On the sheet 13 all of the wires 10 are mounted, as shown, and it is to be noted that none of the wires cross one another. The wires 11 are mounted on the sheet 14, inasmuch as said wires would cross some of the wires mounted on the sheet 13. The wires 12 which would cross wires on the sheet 14 are for this reason mounted on the sheet 15.

The three sheets are then placed one on another and placed in the instrument box as shown in Fig. 5. It will be noted that the perforations in the various sheets have been so positioned that they register with one another and that binding posts 18 have been inserted through said perforations to connect

the ends of the various wires, the said ends being in the form of eyes 17.

In assembling the various sheets it is necessary to solder the eyes 17 to the desired binding posts.

The binding posts 18 may be of ordinary construction having nuts threaded on their upper ends for making connection with the desired units, but in the present invention it is preferred to make said binding posts tubular as shown in Fig. 6, and to construct the various units of the instrument with legs 19 which form the terminals, said legs being slidable within the binding posts 18 as shown.

The various wires are preferably constructed of flat material so that they will consume less space. This, however, is not essential.

In placing the sheets within the instrument box all of the sheets may be placed flat on the bottom of the instrument or they may be bent upwardly on one or more of the sides, as shown in Fig. 5, when said position is necessary in the particular instrument being constructed. The upper sheet is preferably covered with an additional sheet of insulating material 20 also having perforations through which the binding posts may extend.

From the foregoing description it may be seen that suitable sets of sheets may be provided for each particular radio, and that in assembling the sheets it is merely necessary to square said sheets with one another and to place them in the box in a desired manner, and to insert the binding posts 18. The various units may then be quickly attached, as shown in Fig. 6, and the set is ready for operation.

With this system it is also possible for a radio manufacturer to keep various sheets on hand and have said sheets numbered so that various combinations may be used in different instruments to get a desired circuit.

It is further to be noted that an advantageous feature of the system resides in the fact that a minimum amount of wire is used. By having a plurality of insulating sheets with no conflicting wires on any one sheet, the terminals may be connected by the shortest possible path, which is a straight line. In the ordinary wiring system, the wires are necessarily extended at various angles to avoid other wires or to avoid units within the instrument.

Although the invention has been shown and described as comprising a plurality of groups of wires arranged in a plurality of parallel planes, the wires in the various planes being separated by a plurality of thin insulating sheets, it is also possible to carry out the invention by molding similarly arranged groups of wires in a single relatively thick block of insulating material. It is therefore to be understood that the invention includes all such changes and modifications

as may fairly come within the scope of the claims.

What I claim is:

1. A wiring system for electrical instruments comprising a plurality of flat sheets of insulating material laid one on another, a set of non-crossing electrical conductors laid on each sheet according to a predetermined circuit arrangement, and binding posts extending through said plurality of sheets to the surface of the upper sheet to form accessible connecting members, the conductors of each sheet connecting certain pairs of said binding posts, and some of said binding posts being connected at various portions of their length with the conductors on a plurality of the sheets to link all of the sets of conductors together and thus form a complete circuit, said binding posts being tubular in form for slidably receiving terminals of units of the electrical instruments.

2. A wiring system for electrical instruments comprising a plurality of flat sheets of insulating material laid one on another, a set of non-crossing electrical conductors laid on each sheet according to a predetermined circuit arrangement, and binding posts extending through said plurality of sheets to the surface of the upper sheet to form accessible connecting members, the conductors of each sheet connecting certain pairs of said binding posts, and some of said binding posts being connected at various portions of their length with the conductors on a plurality of the sheets to link all of the sets of conductors together and thus form a complete circuit.

In testimony whereof, I affix my signature.

NORMAN P. HARSHBERGER.