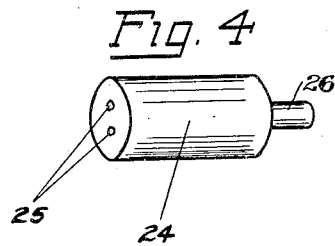
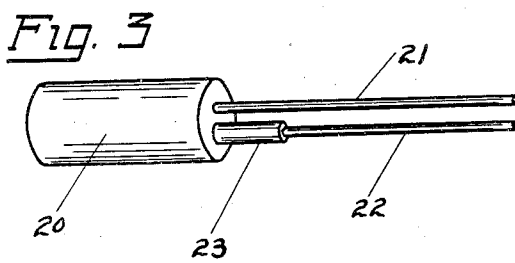
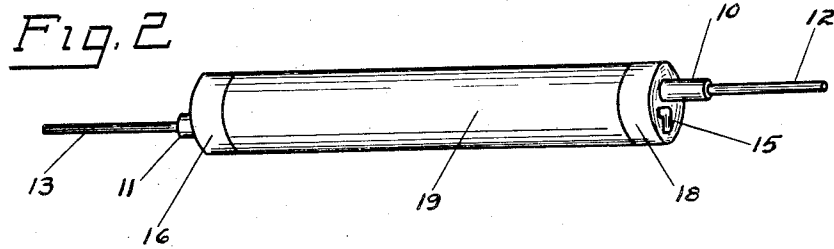
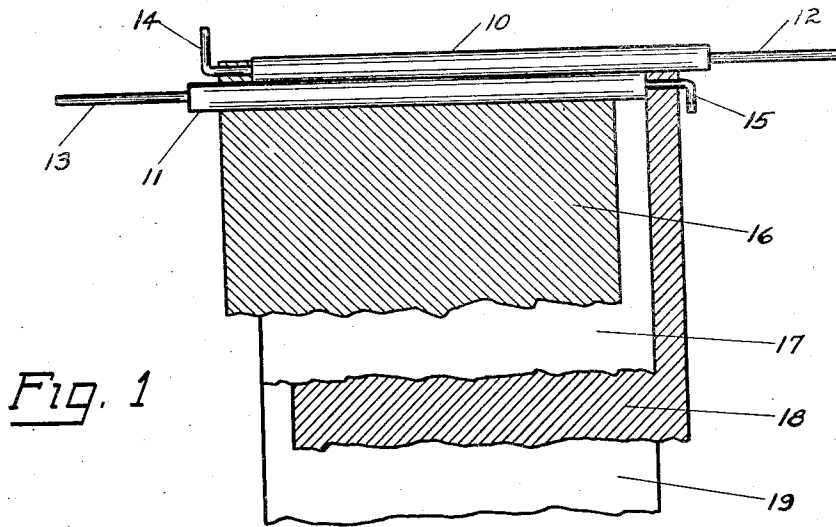


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ELECTRICAL CONDENSER
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UNITED STATES PATENT OFFICE

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ELECTRICAL CONDENSER

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Application March 20, 1931, Serial No. 524,091

5 Claims. (Cl. 175-41)

My invention relates to electrical condensers, and more particularly to those known as fixed capacity condensers, and which are composed of sheets of tin or aluminum foil and sheets of paper or other insulation between the sheets of foil, all wound on a suitable core and provided with suitable terminals.

An object of my invention is to manufacture such condensers more quickly and cheaply than has been possible heretofore.

A further object of my invention is to provide such a condenser having terminals which are more solidly connected to the sheets of foil than is possible with other condensers.

A feature of my invention is the use of terminals soldered or otherwise fixed, one at each end of the condenser, and extending entirely through the condenser, through insulated tubes, and out at the opposite ends of the condenser.

Another feature of my invention is the use of a special mandrel or reel for winding the sheets of foil and insulation on the core.

Other features will be more fully described in the ensuing specification and claims.

It is believed that the invention will be more easily understood from a detailed description, taken in connection with the accompanying drawing, in which:

Fig. 1 is a view of the core and terminals of the condenser of my invention, showing sheets of paper and foil offset at the ends, or "staggered";

Fig. 2 is a perspective view of a finished condenser, before being coated with wax or other insulating material;

Fig. 3 is a perspective view of one part of the winding mandrel; and

Fig. 4 is a perspective view of the other part of the mandrel.

The core consists of two hollow tubes 10 and 11, which may be made of paper or any suitable insulating material. These tubes are placed with the ends offset, as is clearly illustrated in Fig. 1 of the drawing. The sheets of foil 16 and 18 and the sheets of paper 17 and 19 are so placed that one sheet of foil extends beyond the edge of the paper and the end of the inner tube at one end of the condenser as, for instance, the sheet of foil 16 extends beyond the edges of the paper 17 and 19 and the end of the tube 10 as shown at the left side of Fig. 1. The sheet of foil 16 does not, however, extend to the end of tube 11 at this end. At the other end of the condenser, as at the right side of Fig. 1, the sheet of foil 16 extends to a point short of the end of tube 11. The sheet of foil 18 is similarly placed, but at the opposite

end of the condenser. The sheets of paper 17 and 19 are of a width to extend substantially from the inner end of one tube to the inner end of the other, or cover only that part of the condenser which has the two tubes adjacent.

The contact wires 12 and 13 extend through the tubes 10 and 11, in a manner which will be explained.

It will now be seen that each of the sheets of foil 16 and 18 is insulated from the other at all points by the sheets of paper, and from the contact wires 12 and 13 by the tubes 10 and 11. The sheets of foil and paper may be of any length necessary to obtain the desired capacity, and are wound on the two tubes as a core, in a manner well understood in the art.

After being rolled to the desired size, the condenser may be covered with other sheets of paper, for further protection and insulation.

Each of the contact wires 12 and 13 is bent approximately to a right angle at one end, as at 14 and 15 respectively. The wires 12 and 13 are slipped through the tubes 10 and 11, respectively, until the bent ends thereof are pressed into the layers of foil which extend beyond the ends of the tubes 10 and 11, and soldered or otherwise affixed to the foil, as shown at 15 of Fig. 2. The other ends of the contact wires may be provided with any convenient tip or binding post.

After being completed, the entire condenser may be covered with wax and inserted in a container, as is well understood in the art.

In Figs. 3 and 4 of the drawing I have shown a preferred form of mandrel for winding the condenser of my invention.

A cylinder 20 is provided with the two cylindrical rods 21 and 22, of a size adapted to fit inside the tubes 10 and 11. The rod 22 is provided with an enlarged portion 23 at the end nearest the body portion 20.

A second cylinder 24 is provided with a cylindrically shaped extension 26 and two orifices 25 adapted to receive the free ends of the rods 21 and 22. One of said orifices extends through the member 26 and receives the rod 21 in Fig. 3.

In winding condensers, tubes 10 and 11 are placed over the rods 21 and 22. The tube which is placed on rod 21 is positioned against the body portion 20, and the tube placed on rod 22 is positioned against the enlarged portion 23. The tubes are thus offset or "staggered". The free ends of rods 21 and 22 are then placed in the orifices 25 in such a manner that the extension 26 of cylinder 24 engages the end of the insulating tube on the rod 21 and holds the other end of the tube

against the face of the cylinder 20 while the enlarged portion 23 holds the other tube against the face of member 24. The mandrel is placed in a winding machine, by which the strips of paper and foil are wound onto the tubes, in a manner well understood in the art.

When the winding has been completed, the mandrel is removed from the winding machine and disassembled, and the condenser removed from the rods 21 and 22. The contact wires 12 and 13 are then inserted through the tubes and soldered in place, as previously described.

It will now be seen that by the use of very simple and cheap material and mechanism I am able to make a condenser of almost any desired size and capacity, more quickly and easily than has heretofore been possible.

While I have illustrated and described a preferred embodiment of my invention, it is to be understood that changes and modifications will suggest themselves to those skilled in the art, and I therefore desire to be limited only by the spirit and scope of the appended claims.

Having described my invention, what I claim as new and desire to secure by United States Letters Patent is:

1. In an electrical condenser, a core consisting of a pair of offset insulating tubes, a pair of offset metallic foil sheets, a plurality of insulating sheets separating said foil sheets, said foil and said insulating sheets being wound around said core, and terminal wires, one extending

through each of said tubes, said wires being affixed to said foil sheets, respectively at opposite edges thereof.

2. In an electrical condenser, a core comprising a plurality of offset insulating tubes, a plurality of offset conducting sheets wound around said core, insulating sheets between said conducting sheets for insulating said conducting sheets from each other, and terminal wires extending through said tubes, respectively, each of said wires being attached to one of said conducting sheets at opposite edges of said sheets.

3. An electrical condenser comprising offset insulating tubes, alternate sheets of conducting and insulating material wound on said tubes, and terminal wires extending through said tubes and connected to said conducting sheets, respectively at opposite edges thereof.

4. In an electrical condenser, offset insulating tubes, offset sheets of conducting material wound on said tubes, sheets of insulating material between said conducting sheets, and terminal wires extending through said tubes and connected to said conducting sheets at opposite edges of said sheets.

5. An electrical condenser comprising offset insulating tubes, alternate sheets of conducting and insulating material wound thereon, and terminals connected to said conducting sheets, respectively at opposite edges thereof.

ANTON M. KNUDSEN.

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