P. THOMAS.

CONDENSER.

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1,354,146.

Patented Sept. 28, 1920.

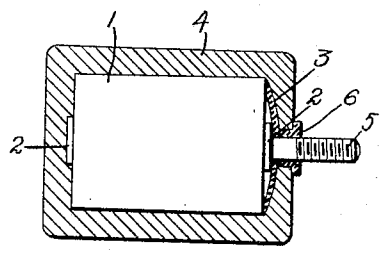


Fig. 1.

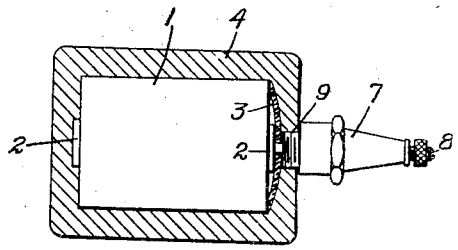


Fig. 2.

WITNESSES:

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CONDENSER.

1,354,146. Specification of Letters Patent. Patented Sept. 28, 1920.

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To all whom it may concern:

Be it known that I, PHILLIPS THOMAS, a citizen of the United States, and a resident of Edgewood, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Condensers, of which the following is a specification.

My invention relates to condensers and it has, for its primary object, the construction of condensers which may be employed for relatively heavy duty, such as is experienced in wireless systems.

Heretofore, difficulty has been experienced in employing condensers for heavy duty, such as is experienced in wireless systems, on account of the fact that, being provided with molded casings, the condensers were sometimes injured by excessive heating, the molded casings not being good radiators.

In view of this, one object of my invention is to construct condensers having casings suitable for dissipating heat and which, at the same time, shall possess mechanically strong and compact structures obtained by utilizing unitary casings formed about the condensers.

A still further object of my invention is to construct condensers having unitary casings which may be employed as terminals for the condensers.

With these and other objects in view, my invention will be more fully described, illustrated in the drawings, in the several views of which corresponding numerals indicate like parts, and then particularly pointed out in the claims.

In the drawings, Figure 1 is a side view, partly in section and partly in elevation, of a condenser embodying my invention, and Fig. 2 is a similar view of a condenser constructed in accordance with my invention and embodying a modified form of terminal.

In practising my invention, I may construct a condenser by stacking alternate layers of insulating and conducting material in the usual manner. The stacked material may be impregnated with a suitable molten wax and cooled and pressed to form a compact body. A plurality of terminals may be secured to the layers of conducting material in the usual manner, the terminals, however, being made relatively short, after which insulating material, such as mica, may be disposed at one side of the condenser to cover the terminal and any exposed conducting material projecting from that side. In some instances, a covering of heat-resisting material, such as asbestos, may then be disposed about the body and a metal casing may be provided therefor by die-casting a metallic alloy about the body. The casing, thus formed about the condenser, engages the terminal not protected by insulating material and, therefore, constitutes an exterior terminal for the condenser. Another exterior terminal may be provided by drilling an opening, through the casing and the insulating material, to communicate with the protected terminal within the casing, after which a suitable conductor may be secured within the opening to engage the terminal and to project from the casing. The terminal which projects from the casing may also be provided by fastening a conductor to the terminal before the casing is formed about the condenser body, insulating material being interposed between the conductor and the casing.

In order to insure an accurate understanding of my invention, I have shown, in Fig. 1, a condenser comprising a main body-portion 1 which may be formed, in the usual manner, by either stacking alternate layers of insulating and conducting material or by winding relatively long strips of superimposed insulating and conducting material. Such superimposed material may then be subjected to a bath of molten wax, such as halowax, montan-wax or other suitable impregnating agent, and the body may be subjected to pressure in a cooling press to compact the material and remove excess impregnating wax. Terminals may then be provided for the condenser by securing to the respective layers of conducting material relatively short metal terminals 2 of sufficient width to provide suitable contact surface. The condenser thus formed may then be covered with a heat-resisting material, such as asbestos, and one terminal 2 may be covered with insulating material 3 which may be mica or other similar material. The body-portion 1 may then be inclosed in a casing 4 by die-casting a suitable metal about the body, the metals commonly employed for die-casting being utilized on account of their low melting points. However, if the body-portion 1 of the condenser is covered

with a suitable heat-resisting material, a casing may be formed thereabout with metals having higher melting points than the metallic alloys utilized in die-casting.

The casing 4, being formed about the condenser, engages the terminal 2 not protected by the insulating material 3 and, therefore, constitutes one exterior terminal of the condenser. Another exterior terminal 5 may be provided by drilling an opening through the casing 4 and insulating material 3 to expose a portion of the terminal 2 inclosed thereby, after which the conductor 5 may be secured within this opening to engage the terminal 2 and may be insulated from the casing 4 by an insulating bushing 6. The insulating bushing 6 may be formed of a suitable moldable material which may be molded between the conductor 5 and the casing 4 or the bushing may be formed and wedged therebetween.

The conductor communicating with the terminal insulated from the casing of the condenser may be secured thereto in a variety of ways. For example, the conductor 5 may be secured to the terminal 2 and surrounded by the insulating bushing 6 before the casing 4 is cast about the condenser, the particular manner of securing the conductor within the casing being governed, to a certain extent, by the character of the metal comprising the casing 4. When a low-melting-point alloy is employed, the conductor is preferably secured to the terminal before the casing is cast about the condenser because the insulating bushing may be sufficiently heat-resistant to withstand the degree of heat employed in die-casting such metal. This is also true of the covering employed about the condenser to withstand the heat. In case a low-melting-point alloy is employed, material possessing a lower degree of heat resistivity may be employed as a covering to protect the condenser.

In Fig. 2 is shown a condenser similar to the one shown in Fig. 1, with the exception of the terminal 7 which comprises a structure similar to a spark plug in which the conductor 8 is insulated from the outer casing by a porcelain sleeve. When employing the terminal 7, it may be secured to the casing, after it has been cast about the condenser, by tapping a suitable opening 9 into which the threaded portion of the terminal may be screwed so that the conducting member 8 may engage the inner terminal 2 of the condenser 1. A terminal of this type provides a very satisfactory connecting means to the condenser and I prefer to employ this type of structure.

Although I have specifically described a condenser which may be constructed in accordance with my invention, it is obvious that slight changes may be made in the construction thereof, as I have pointed out, for example, a variety of terminals which may be employed and have described a plurality of ways of providing such terminals. It will be obvious, therefore, that my invention should not be limited to specific structures except as defined in the appended claims.

I claim as my invention:

1. A method of making condensers that comprises superposing alternate layers of insulating and conducting material, impregnating the superposed material, securing a plurality of terminals to the conducting material, die-casting a casing about the body thus formed, with one terminal engaging the casing and the other insulated therefrom, and extending a conductor through the casing to engage the terminal insulated from the casing.

2. A method of making condensers that comprises superposing alternate layers of insulating and conducting material, impregnating the superposed material, securing a plurality of terminals to the conducting material, disposing insulating material to cover one of the terminals, die-casting a metallic casing about the body thus formed, providing an opening through the casing and insulating material communicating with the terminal and securing an insulated conductor in the opening to engage the terminal.

3. A method of making condensers that comprises superposing alternate layers of insulating and conducting material, impregnating the superposed material, securing a plurality of terminals to the conducting material, securing an insulated conductor to one of the terminals and die-casting a metallic casing about the body thus formed, with the conductor projecting therefrom.

4. A method of making condensers that comprises superposing alternate layers of insulating and conducting material, impregnating the material with a suitable wax, covering the body thus formed with a heat-resisting material, securing terminals to the layers of conducting material at opposite sides of the body, disposing insulation over one side of the body to cover the terminal, die-casting a metallic casing upon the body, providing an opening therethrough communicating with the insulated terminal and so securing an insulated conductor therein as to engage the terminal and project from the casing.

5. A method of making condensers that comprises superimposing alternate layers of insulating and conducting material, securing terminals to the respective layers of conducting material and die-casting a metallic casing about the condenser thus formed.

6. A method of making condensers that comprises superimposing alternate layers of insulating and conducting material, die-

casting a metallic casing about the assembled material, with a portion of the conducting material engaging the casing and the remaining conducting material insulated therefrom, providing a threaded opening in the metallic casing and screwing an insulated conductor into the threaded opening of the casing to engage the conducting material insulated therefrom and to provide an air-tight joint with the casing.

In testimony whereof, I have hereunto subscribed my name this 13th day of Feb. 1919.

PHILLIPS THOMAS.