

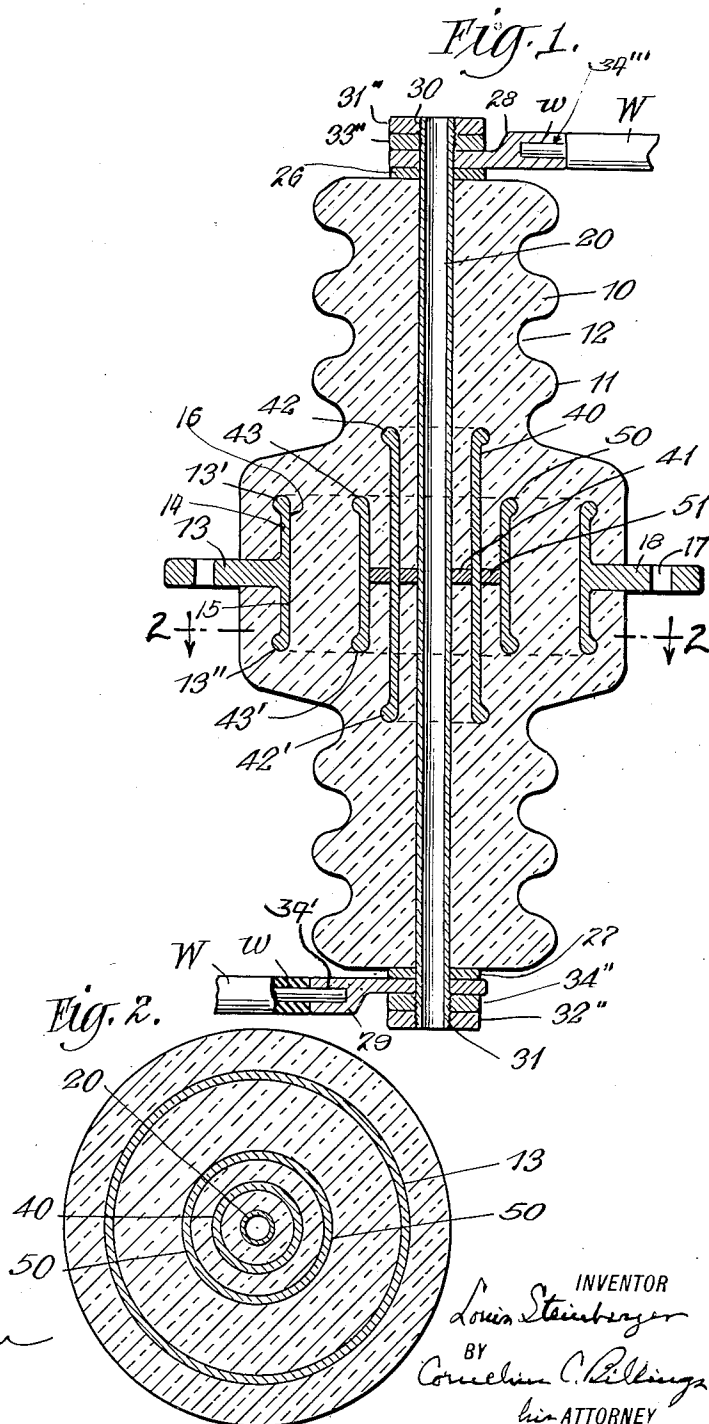
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INSULATED VENTILATING CONNECTER

Filed Oct. 12, 1918



UNITED STATES PATENT OFFICE.

LOUIS STEINBERGER, OF BROOKLYN, NEW YORK.

INSULATED VENTILATING CONNECTER.

Application filed October 12, 1918. Serial No. 257,863.

To all whom it may concern:

Be it known that I, LOUIS STEINBERGER, a citizen of the United States, and a resident of the borough of Brooklyn, city and State of New York, have invented certain new and useful Improvements in Insulated Ventilating Connecters, of which the following is a specification.

My invention relates to insulated ventilating connecters for terminals and particularly to terminals which operate upon high frequency and high voltage systems.

One of the objects of my invention is to provide a high potential insulated connector so constructed that when used for very high voltage service, the concentration of electrical strains and stresses within and upon the insulator, which otherwise tend to destroy the insulation, will be substantially prevented.

Another object of the invention is to provide an improved insulated conductor between the terminals which is so constructed as to have a plurality of conducting surfaces over which the electric potential will be distributed and thereby prevent the destructive effects upon the insulating material due to a concentration of the electrostatic stresses.

Another object of my invention is to provide a conductor with a plurality of potential distributing insulated surfaces, and a combined support and electrical distributing member to minimize the destructive effects upon the insulating material which results from a concentration of electrical stresses and strains within or upon the body of insulating material.

Another object of the invention is to construct an insulated connector so that the interior of the insulator will be cooled by a ventilating structure which permits the entrance of the cooled air and the dissipation of the heated air.

Another object of the invention is to so construct an insulated connector that the heat which may be generated within the body portion of the insulator may be dissipated, and the construction will be such that the electrical stresses and strains that may develop within the insulator will be distributed within the interior of the insulator and at the same time the interior of the insulator will be cooled by a ventilating structure to further prevent the dissipation of the heat therefrom.

Other objects of the invention will appear from the subjoined specification and claims.

Insulated conductors for terminals for high frequency or high voltage currents are usually supported at or near their central portions upon covers of tanks or roofs of buildings and to this end I have provided a combined support and electrical distributing member which tends to distribute the electrostatic stresses at the point of support so that the concentration of the electrical strains and stresses will be effectually prevented.

By the utilization of structures embodying my invention a great saving of insulating material is effected for otherwise it would be necessary to have a greater thickness of dielectric material to resist the stresses imposed upon it which emanate from the high frequency or high voltage conductors. The insulated conductors embodying my invention will be precluded from breaking down and from being destroyed by preventing the concentration of the electrostatic strains and stresses.

By the use of my invention undue or abnormal concentration of electrostatic lines of force is precluded from forming on the connector and therefore these connectors are very effective for use when the conductors or terminals form parts of lines carrying very high frequency or very high voltage currents.

In the drawings; Fig. 1 is a view partly in vertical section and partly in elevation of an insulated connector embodying my invention. Fig. 2 is a section on line 2—2 of Fig. 1.

Referring to the drawings in which like reference characters refer to like parts, 10 represents the insulator body of any usual form which may be constructed of any suitable insulating material but I prefer to use for this purpose the insulating material known in the art as "electrose".

In the form shown I provide an elongated body having alternate horizontally extending flanges 11 and grooves 12 for the purpose of increasing the surface area of the insulating body. In the central portion of the insulating body there is molded a ring-shaped support 13 which is provided with longitudinal extending flanges 14 and 15 forming a ring, the inner surface of which is designated at 16. Suitable bolt or rivet holes 17 are provided in the portion 18 of

the support which extends radially outward from the central portion of the insulating body so that the insulated connector may be properly secured and supported thereby.

- 5 A hollow metallic conducting member or tube 20 is molded in the center of the insulating body and extends longitudinally thereof. The ends of this hollow conducting member or tube are screw threaded and project a short distance beyond the ends of the insulating body at 30 and 31.

Clamping elements 28 and 29 of the respective terminals are each provided at one end with holes to fit over the ends of the tube 20 and thus rest on the respective washers 26 and 27 which are first placed over the ends of the tube. These clamping elements are then secured to the screw threaded ends by means of nuts 33'' and 34'' and lock nuts 31'' and 32'', as shown. Cavities 34''' and 34' are provided in the opposite ends of the terminal clamps and the exposed ends *w* of the insulated line wires *W* are then fitted in the cavities and secured therein by solder or by any other suitable means.

Secured to the conductor are a plurality of concentrically arranged metallic hollow conductors or tubes, each tube differing from the other in length and in diameter, which operate to produce a condenser effect.

In forming the construction shown, I provide concentrically arranged hollow metallic heat conducting and electrostatic stress distributing tubes 40 and 50 secured to the central conducting tube 20. The tube 40 is of such length that it may be secured to the tube 20 by a conducting disc or collar, as at 41, by solder or by any approved means. It may be so machined as to fit tightly to the tubes 20 and 40 so as to hold by friction. The tube 50 is secured to the tube 40 in a similar way by a conducting disc or collar 51. The ends of the tubes 40 and 50 are then beaded as at 42 and 43, 42' and 43' as shown. It is, of course, within the province of my invention to provide more than two encircling tubes, as shown, any suitable number being used, the length of the outer tube, such as 50, being equal to the length of the surface 16 of the distributing element 14.

The plurality of conducting tubes forming an integral nest of tubes as above described are then positioned within the ring-shaped supporting member and the insulating body is then formed by molding the insulating material around and about the inner portion of the ring-shaped member and the assembled nest of conducting tubes.

The ring-shaped supporting member of the form shown also tends to distribute the electrical stresses so that they will not be concentrated in the center of the insulator near the support thereof and will thereby minimize or eliminate the danger of breaking down the insulator body.

The ventilating feature of my invention is very important for the reason that an insulator not provided with ventilating means soon heats up thereby lowering its efficiency. If the heating is allowed to continue for a certain period the destruction of the insulator will follow especially when used with currents of very high frequency and high voltage.

As changes of construction could be made within the scope of my invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

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

1. In a device of the class described, an insulating body, a ring-shaped stress distributing member, a plurality of conducting members in the center of said insulating body and extending longitudinally thereof, each of the conducting members provided with a stress distributing surface, said members being electrically connected to each other.

2. In a device of the class described, an insulating body provided with a plurality of tubular conducting members arranged telescopically with respect to each other, the outer conducting members being electrically connected to the inner one, all arranged within the central portion of the insulating body.

3. In a device of the class described, an insulating body provided with a plurality of tubular conducting members arranged telescopically with respect to each other, the outer conducting members being electrically connected to the inner one, all arranged within the central portion of the insulating body and molded thereto.

4. In a device of the class described, an insulating body, a tubular conducting member molded therein centrally thereof, a second tubular conducting member of larger diameter than the first named tubular conducting member extending concentrically thereof and electrically connected thereto, the said tubular conducting members situated within the central portion of the insulating body.

5. In a device of the class described, a series of concentrically arranged electrically connected hollow conducting members, the outer conducting members being of larger diameter than the central conducting member and rigidly secured thereto, a body of insulating material molded around said hollow conducting members.

6. A device of the class described, comprising an insulated connector provided with a body of insulating material molded to a series of hollow telescopically arranged

metallic conducting members, an inner hollow conducting member extending at each end from the body of insulating material, the outer hollow members being of larger diameter than the inner hollow member but of less length, said outer hollow members being completely surrounded by insulating material and electrically connected to each other.

7. A device of the class described, comprising an insulated connector provided with a centrally arranged tubular conducting member extending from each end of the insulating body, another tubular conducting member of greater diameter but of less length than the first mentioned tubular conducting member secured and electrically connected to said inner tubular conducting member, another tubular conducting member of greater diameter and less length than the second tubular conducting member and secured and electrically connected thereto concentrically thereof, a body of insulating material molded completely around the outer tubular members.

8. A device of the class described, comprising an insulated connector provided with a centrally arranged tubular conducting member extending from each end of the insulating body, another tubular conducting member of greater diameter but of less length than the first mentioned tubular conducting member secured and electrically connected to said inner tubular conducting member, another tubular conducting member of greater diameter and less length than the second tubular conducting member and secured and electrically connected thereto concentrically thereof, a body of insulating

material molded completely around the outer tubular members and a member having a ring-shaped stress distributing portion and a supporting portion, said stress distributing portion being molded within the insulating material and the supporting portion extending therefrom, the plurality of conducting members and the stress distributing member being concentrically arranged.

9. In a device of the class described, a body of insulating material, a plurality of electrically connected hollow conducting members arranged centrally thereof, each conducting member provided with a stress distributing surface.

10. In a device of the class described, a body of insulating material, a plurality of electrically connected hollow conducting members arranged centrally thereof, each conducting member provided with a stress distributing surface and means for securing line terminals to the respective ends of one of the hollow conducting members.

11. In a device of the class described, an insulating body, a plurality of hollow conducting member electrically connected and secured to each other concentrically arranged with respect to each other and molded within the insulating body, the inner hollow conducting member extending through the insulating body and open to the atmosphere at each end.

In witness whereof, I have hereunto set my hand at the borough of Manhattan, city and State of New York, this fourth day of October, 1918.

LOUIS STEINBERGER.