

[54] **APPARATUS FOR MANUFACTURING MAGNET WIRE**

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[58] Field of Search **427/117; 118/620, 101, 118/125, 314, 325, DIG. 18**

[56] **References Cited**

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[57] **ABSTRACT**

A novel method and apparatus for manufacturing magnet wire in a continuous process by which coatings of a flowable resin material may be applied concentrically to a moving elongated filament in thicknesses of about 16 mils or less. The filament can be a bare copper or aluminum conductor having round or rectangular configuration or an insulated conductor upon which a top or an

intermediate coat of material is desirably applied. Coatings of one and two mils also can be applied by the method of the invention. By the method and apparatus of the invention, magnet wire can be manufactured by continuously drawing the wire to size, annealing the wire, if necessary, insulating the wire with one or more coats of flowable resin material, curing the resin material, if necessary, hardening the resin material, and spooling the wire for shipment, without interruption at speeds limited only by the filament pay-off and take-up devices used. The apparatus of the invention utilizes the flowable resin material to center the filament in a die, the size of the die controls the thickness of the coat to be applied. In the apparatus of the invention, only the resin material being applied to the filament is in contact with the filament. Thus, the mechanical wear normally associated with centering dies used in extrusion process and like devices is completely eliminated. Further, the apparatus and method of the invention can be used to apply coats several times thinner than is possible with conventional extrusion apparatus and of materials different than those conventionally extruded onto filaments. In specific embodiments using heat softenable materials or melts, curing is no longer required; and thus, the need for curing, catalytic burners and the like as well as all concerns regarding atmospheric pollution are eliminated. The coated filaments and magnet wire made by the apparatus and in accordance with the method of the invention have coatings which are surprisingly concentric and continuous when compared to magnet wire made by conventional methods and apparatus.

15 Claims, 4 Drawing Figures

