

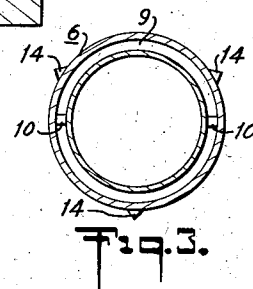
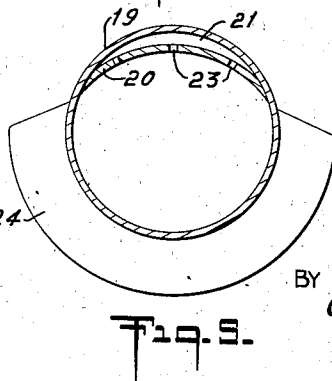
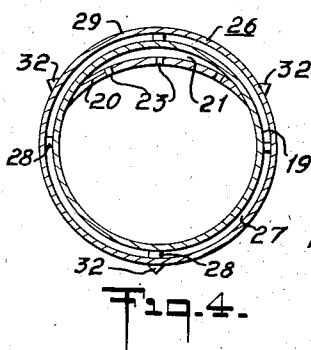
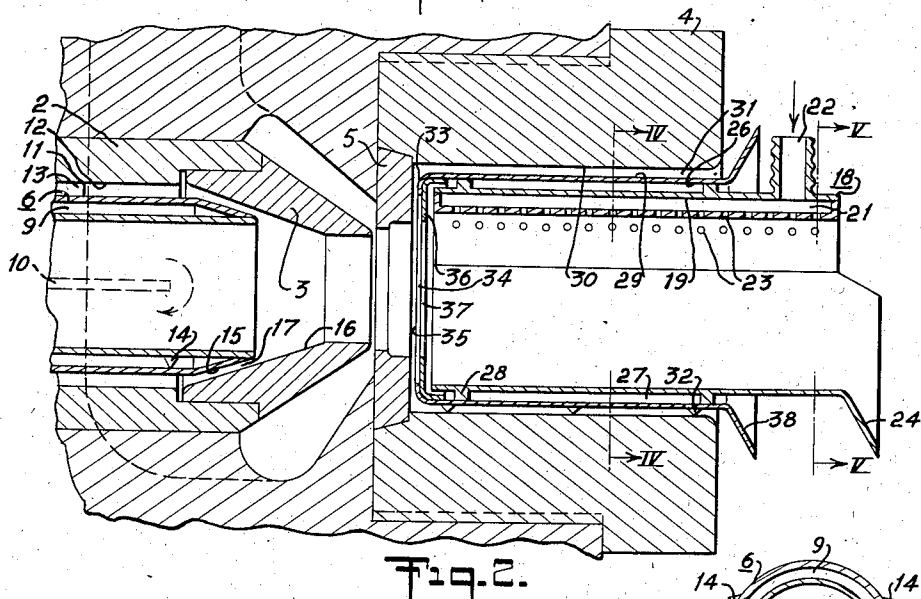
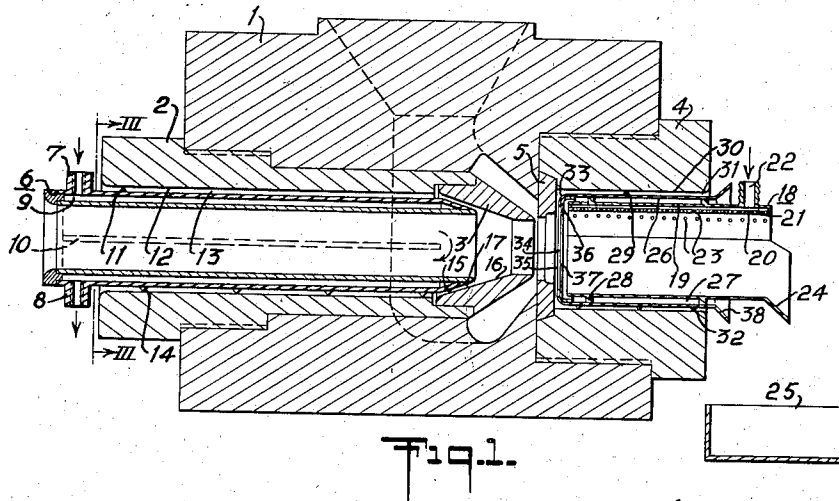
Sept. 25, 1945.

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2,385,574

EXTRUSION DEVICES FOR THE MANUFACTURE OF CABLE SHEATHS

Filed March 24, 1941



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UNITED STATES PATENT OFFICE

2,385,574

EXTRUSION DEVICE FOR THE MANUFACTURE OF CABLE SHEATHS

Walter Hyprath, Berlin-Wilmersdorf, Germany;
vested in the Allen Property CustodianApplication March 24, 1941, Serial No. 384,913
In Germany January 18, 1940

6 Claims. (Cl. 207—16)

This invention relates to extrusion devices, and more particularly to an extrusion block for applying aluminum sheaths to conductors of cables.

When applying metal sheaths to the conductors of cables, especially sheaths of metals having a high fusing point, such as aluminum, the conductor of the cable is liable to suffer damage due to the effect of the high extrusion temperature. It has already been proposed to protect the conductor by cooling it through the medium of a double-walled protective cylinder which is arranged in the extrusion block and traversed by a cooling agent. However, this protective cylinder, in prior structures, is tightly fitted in a bore provided in the extrusion block. The cooling agent flowing through the hollow jacket of the protective cylinder therefore exerts the desirable cooling action on the conductor of the cable, but at the same time an undesirable cooling action on the extrusion block thereby cooling the filling material, and thus preventing the production of a satisfactory cable sheath.

The present invention provides a heat insulating layer between the protective cylinder and the bore in the extrusion block through which the protective cylinder extends, thereby preventing the detrimental cooling of the extrusion block by the cooling agent flowing through the protective cylinder.

The accompanying drawing shows an embodiment of the invention in diagrammatic form, Fig. 1 illustrating a vertical longitudinal sectional view of the extrusion block; Fig. 2 representing an enlarged vertical sectional view of the extrusion block, partly broken away; and Figs. 3, 4 and 5 showing sectional views taken on the lines III—III of Fig. 1 and IV—IV of Fig. 2.

The extrusion block 1 shown in Fig. 1 is particularly provided for applying an aluminum sheath to the conductor of a cable. It is threadedly connected with the core holder 2, to which is secured the die core 3 and is also threadedly connected with the nut 4. In the bore of the core holder 2 is disposed the double-walled metal protective cylinder 5 for protecting and cooling the conductor of a cable (not shown). This cylinder is provided with an inlet 7 and an outlet 8 for the cooling water. The cooling water flows through the hollow jacket 9 around the guide member 10.

The outer jacket surface 11 of the protective cylinder is spaced from the inner wall of the bore 12 of the core holder 2 by an annular space 13 communicating with the outside atmosphere. A detrimental cooling of the core holder 2 and of the extrusion block 1 caused by the cooling agent

flowing through the protective cylinder 5 is prevented by the air contained in the space 13. The protective cylinder is secured in concentric position in the bore 12 of the core holder 2 by spacer lugs 14 which may be made of a poor heat conducting material, such as steatite, so as to prevent any appreciable dissipation of heat from the extrusion block to the protective cylinder.

As will be seen from Fig. 2, the protective cylinder 5 has at its inner end a truncated conical portion 15. The outer jacket surface of this conical portion is separated from the inner conical metal surface 16 of the core 3 by an annular space 17 which is in communication with the intermediate space 13 and which contains an air layer serving to insulate the heat. The cooling agent flowing through the protective cylinder 5 is thus prevented from exerting a cooling action on the core 3.

The cable issuing from the die 5 and provided with an aluminum sheath is cooled by a spraying device 18. This spraying device comprises a cylinder 19 through which passes the cable and in whose upper part is arranged a tubular section 20 so as to form a distributing chamber 21 for the cooling water. The cooling liquid flows through the inlet 22 into the chamber 21 and is squirted out through the perforations 23 to cool the cable sheath. At the outer end of the cylinder 19 is provided an inclined portion 24 for discharging the used cooling water into the collecting tank 25 (Fig. 1).

The portion of the cylinder 19 projecting into the bore 30 is surrounded by a protective cylinder 26. Between the cylinders 19 and 26 is provided an annular space 27. The cylinders 19 and 26 are held in the concentric position with respect to each other by means of lugs 28 provided on the cooling cylinder 19. The outer jacket surface 29 of the protective cylinder 26 is spaced from the bore 30 of the nut 4 by an annular space 31 communicating with the outside atmosphere and containing an air layer serving to insulate the heat. On the protective cylinder 26 are provided conical spacers 32 consisting of steatite or any other poor heat conducting material and which maintain the protective cylinder 26 in a concentric position with respect to the bore 30.

At the left-hand end, the protective cylinder 26 is bent at right angles to form a flange 33 which has a relatively large opening 34. Between the flange 33 and the die 5 there is a space 35 communicating with the space 31 and serving to insulate the heat. An interchangeably arranged cap 36 fits very closely to the flange 33 and has

an opening 37 whose diameter is slightly greater than the outer diameter of the aluminum sheath applied to the conductor of the cable. The funnel-shaped enlargement 38 provided at the outer end of the protective cylinder 26 discharges the cooling water used into the collecting tank 25.

The protective cylinder 26 (Fig. 2) protects the nut 4 against the cooling water squirted out from the sprayer device 18. The water squirted onto the aluminum sheath of the cable through the perforations 23 is collected at the bottom of the cooling cylinder 19. At the discharge end 24 the cooling water flows in part into the collecting tank 15. The other portion of the cooling water flows over the inner edge of the tube 19 to the bottom of the space 27 and is then discharged at the funnel-shaped end 38 into the tank 25. The protective cap 36 prevents the cooling water flowing over the inner edge of the cylinder 19 from being splashed onto the die 5.

In case an aluminum sheath of a greater or smaller outer diameter should be applied to the cable, the cap 36 is replaced by another cap having a suitable bore adapted to the outer diameter of the aluminum sheath.

The funnel-shaped enlargement 38 prevents a splashing of the cooling water flowing from the space 27 onto the nut 4.

What is claimed is:

1. Apparatus for applying metal sheathing to a cable conductor comprising an extrusion block having an axially extending channel and a radially extending opening communicating therewith for supplying metal in heated plastic condition thereto, a die core disposed in said channel adjacent said opening for receiving said conductor which is fed into said block from one side thereof for the application of said sheathing within said opening, a tubular holder mounted in the channel of said block, said die core being secured on the end of said holder adjacent said opening, and having a converging bore, and a protective cylinder having an axially extending opening therethrough and a truncated conical portion at one end, said cylinder being disposed within said holder substantially throughout the entire length thereof but annularly spaced therefrom, its truncated conical portion extending into said converging bore, and annularly spaced from the die core for protecting said conductor within said block before it is received by said die core, the annular space

between the die core and the cylinder communicating with the annular space between the holder and the cylinder, and the latter space communicating with the atmosphere.

2. The structure and combination defined in claim 1, wherein said holder is removably attached to said extrusion block at one end thereof.

3. The structure and combination defined in claim 1, wherein said holder is removably attached to said extrusion block at one end thereof, and wherein said protective cylinder is removably disposed within said holder.

4. The structure and combination defined in claim 1, together with lugs made of poor heat conducting material disposed between said protective cylinder and the inside wall of said holder for maintaining said cylinder in concentric position within said holder and spaced therefrom.

5. The structure and combination defined in claim 1, together with means for defining passageways for directing a cooling medium through the walls of said protective cylinder.

6. Apparatus for applying metal sheathing to a cable conductor comprising an extrusion block having an axially extending channel and a radially extending opening communicating therewith for supplying metal in heated plastic condition thereto, a die core disposed in said channel adjacent said opening for receiving said conductor which is fed into said block from one side thereof for the application of said sheathing within said opening, a tubular holder mounted in the channel of said block, said die core being secured on the end of said holder adjacent said opening, and having a converging bore, and a tubular protective cylinder disposed within said holder substantially throughout the entire length thereof, and comprising an inner tubular jacket and an outer tubular jacket about said inner tubular jacket, annularly spaced from said holder and from said inner tubular jacket, and a truncated conical end connecting said jackets and extending into said converging bore, and annularly spaced from the die core for protecting said conductor within said block before it is received by said die core, the annular space between the die core and the conical end communicating with the annular space between the holder and the outer jacket, and the latter space communicating with the atmosphere.

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