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BY A. P. C.

W. HYPRATH

EXTRUSION DEVICES FOR THE MANUFACTURE OF CABLE SHEATHS

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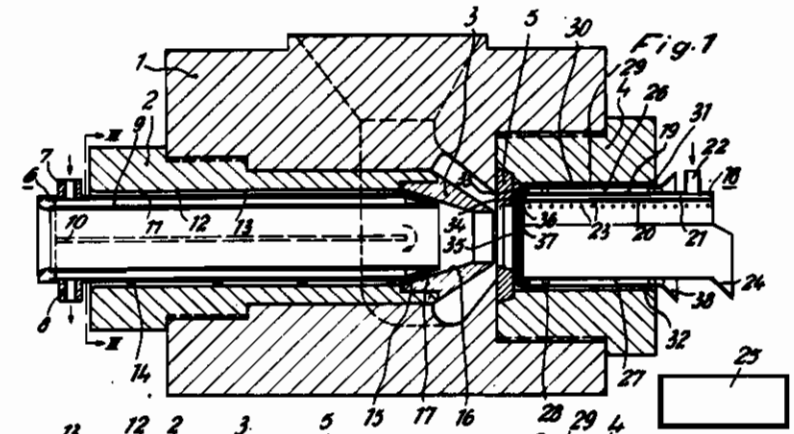

Fig. 1

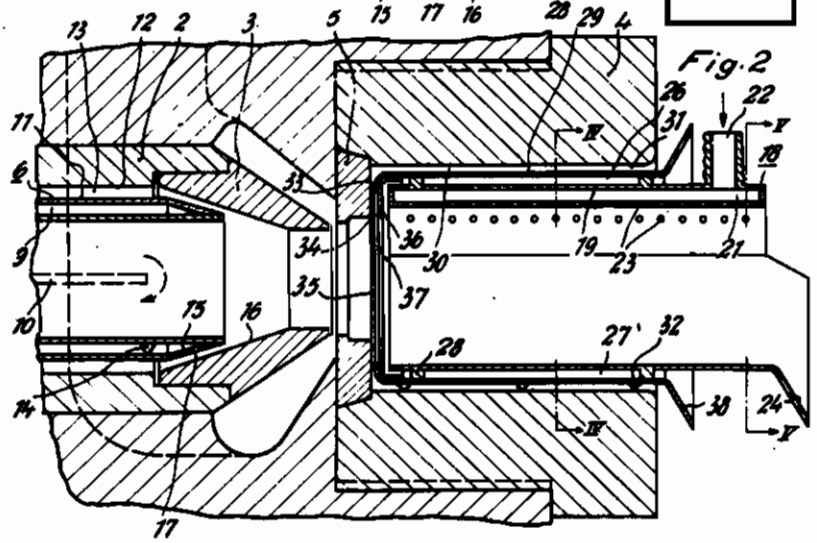

Fig. 2

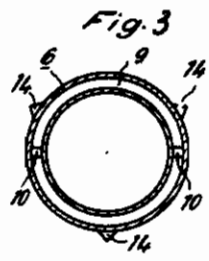

Fig. 3

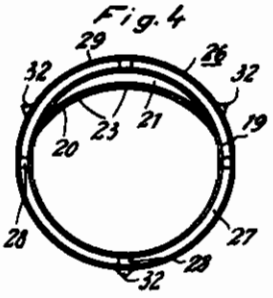

Fig. 4

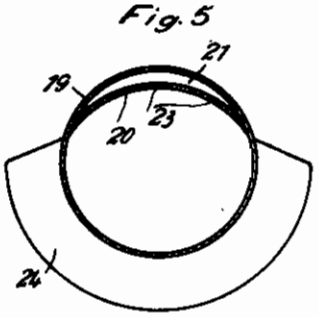

Fig. 5

Inventor:
Walter Hyprath
By Richardson & Fuller
Attys

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EXTRUSION DEVICES FOR THE MANUFACTURE OF CABLE SHEATHS

Walter Hyprath, Berlin-Wilmersdorf, Germany; vested in the Alien Property Custodian

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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 become deteriorated as a result of the high extrusion temperature. This may easily happen, particularly during the short periods in which the press is not operated. To protect the conductor of a cable against high temperatures which occur when extruding metals having a high fusing point, it has already been proposed to cool the conductor of a cable with the aid of a double-walled protective cylinder through which passes the conductor of the cable, the protective cylinder being arranged in the extrusion block and traversed by a cooling agent. However, this protective cylinder has hitherto been tightly fitted in a bore provided in the extrusion block. In such an arrangement the cooling agent flowing through the hollow jacket of the protective cylinder not only exerts a cooling effect on the conductor of the cable, but at the same time cools the extrusion block so that also the difficultly fusible filling material is cooled. In this manner a satisfactory cable sheath cannot be produced.

The present invention consists in providing between the protective cylinder and the bore provided in the extrusion block and through which the protective cylinder extends a layer so as to insulate the heat. In this manner the extrusion block is prevented from being cooled by the cooling agent flowing through the protective cylinder.

In the accompanying drawings is shown an embodiment of the invention in diagrammatic form, in which Fig. 1 is a vertical longitudinal sectional view of the extrusion block, Fig. 2 is an enlarged vertical sectional view of the extrusion block, partly broken away, Figs. 3, 4 and 5 are sectional views taken on the lines III/III of Fig. 1 and IV/IV and V/V of Fig. 2.

The extrusion block as shown in Fig. 1 serves particularly to apply an aluminum sheath to the conductor of a cable. The extrusion block 1 is threadedly engaged with the core holder 2, to which is secured the die core 3. Furthermore, the extrusion block 1 is threadedly engaged with the nut 4. In the bore of the core holder 2 projects a double-walled metal protective cylinder 6, through which passes the conductor of a cable not shown and which is provided with an inlet 7 and an outlet 8 for the cooling water. The cooling water flows through the hollow jacket 6 of the protective cylinder around the guide member 10. The conductor of the cable is cooled by the protective cylinder 6.

The outer jacket surface 11 of the protective cylinder is spaced from 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 6 is prevented by the air contained in the space 13. The protective cylinder is secured in the concentric position in the bore 12 of the core holder 2 by a conical spacer 15 fixed to the protective cylinder 6 and consisting of a poor heat conducting material, such as steatite, without this spacer causing any appreciable dissipation of heat from the extrusion block to the protective cylinder.

As will be seen from Fig. 2, the protective cylinder 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. In this manner, the cooling agent flowing through the protective cylinder 6 is prevented from exerting its 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 consists of 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 cooling water used 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 atmos-

phere 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 whose bore is adapted to the smaller or greater 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**.

WALTER HYPRATH.