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CABLE HEAD AND METHOD OF CONSTRUCTION

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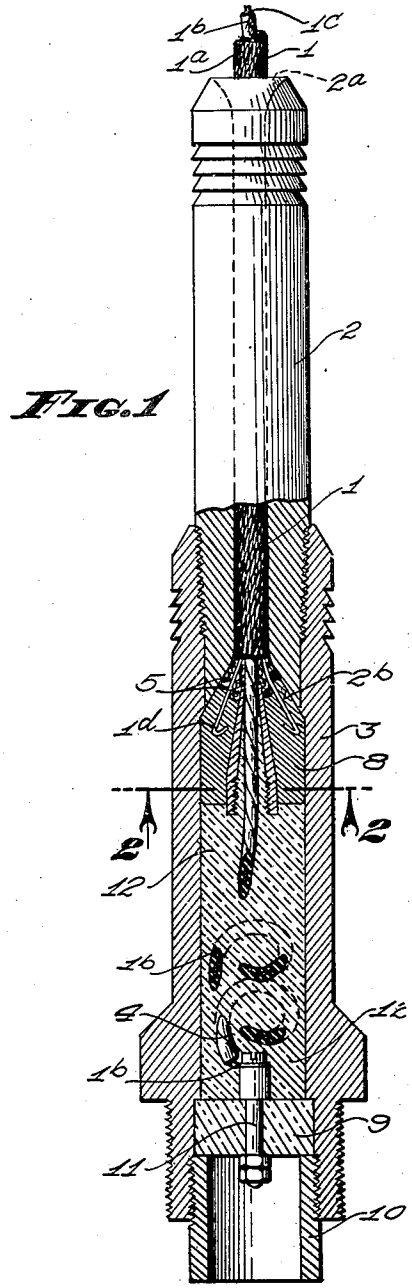


FIG. 1

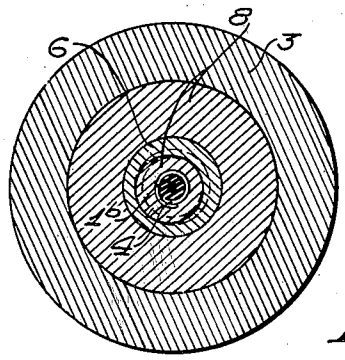


FIG. 2

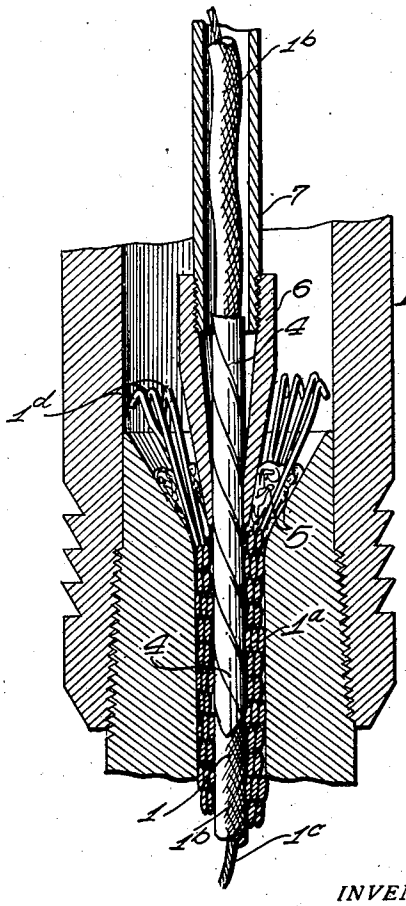


FIG. 3

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CABLE HEAD AND METHOD OF CONSTRUCTION

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4 Claims. (Cl. 173—353)

My invention relates to Cable heads and method of construction, and the objects of my invention are:

First, to provide a cable head which is particularly designed for supporting and conducting cables such as used in conjunction with electrically operated oil well tools;

Second, to provide a cable head which is adapted to withstand great external hydrostatic pressure without leaking or otherwise giving way;

Third, to provide a cable head wherein all tensional strain on the conductor is eliminated;

Fourth, to provide a cable head wherein all spaces may be readily and completely filled with solid or semi-solid substance to eliminate all air space which might permit the cable to yield to the external pressures encountered when the cable head is submerged to great depths;

Fifth, to provide a novel method of constructing cable heads whereby a molten substance may be poured around the weight supporting lay of the cable without damaging the central conductor core; and

Sixth, to provide on the whole a novel cable head which is simple of construction proportional to its functions, durable, and which will withstand continued use under adverse conditions without deterioration.

With the above and other objects in view as may appear hereinafter, reference is made to the accompanying drawing, in which:

Figure 1 is a partial elevational, partial sectional view of my cable head; Fig. 2 is an enlarged transverse sectional view through 2—2 of Fig. 1; and Fig. 3 is a fragmentary, enlarged sectional view of the cable head in the process of construction.

The cable, designated 1, comprises an outer, multi-stranded weight supporting lay 1a, a centrally disposed conductor 1b, separated from the weight supporting lay 1a by insulation 1c, the insulator and conductor forming a core. The cable is extended through the bore of a sleeve 2. The bore is flared at its extremities as indicated by 2a and 2b.

Near one end the sleeve is externally threaded to fit into a shell or cylinder 3. In assembling the cable head, the cable is pulled through the sleeve a short distance and the strands of the weight supporting lay peeled back; whereupon an additional wrapping, designated 4, of insulation is applied around the core. The strands of the weight supporting lay are then partially rearranged, and their extremities are bent outwardly into hook portions 1d.

When the sleeve and cylinder are connected, the cable appears as shown in Fig. 3. Asbestos 5 or other suitable heat insulating material is then applied around the bases of the hook portions and into the flared end 2b of the sleeve. A protector 6 is fitted over the end of the core and against the asbestos 5. Said protector is in the form of a sleeve with a frusto conical inner end and an internally threaded outer end. The outer end of the protector temporarily receives a tube 7. When the parts are arranged as shown in Fig. 3, molten metal of a comparatively low melting point, such as zinc, is poured around the hook portions 1d to form a plug 8 as shown in Fig. 1, which not only secures the cable but also grounds the same to the cylinder. The metal is poured until its level is just below the top of the protector 6 and when the metal plug is hardened, the tube 7 is removed.

The normally lower end of the cylinder 3 is externally threaded to screw into a suitable tool, and is internally threaded and enlarged slightly to receive a partition member 9 of insulating material, and a nipple 10 to secure the partition member. The partition member 9 carries a terminal screw 11, the inner end of which is secured to the conductor 1b. Sufficient slack is provided in the core to permit this connection. The space between the partition member and the plug 8 is filled with a suitable insulating compound 12, said compound being heated until melted and poured into the chamber before insertion of the partition member.

The compound 12 and plug 8 completely fill the interior of the chamber 3 and are practically incompressible so that great external hydrostatic pressure cannot force the cable into the chamber. The manner in which the cable strands are anchored into the plug 8 prevents withdrawal of the cable.

I claim:—

1. A head for conductor core wire ropes, comprising; an elongated wire rope receiving sleeve; an elongated shell adapted to be screw threaded upon an end of the sleeve to form an enlarged continuation thereof; an anchoring plug arranged to receive the strands of the wire rope and including a central bore loosely receiving said core; an insulating and sealing partition; a terminal means sealed therein arranged to be electrically connected with the extremity of the core; means for securing said partition at the extremity of said shell, said shell forming between the partition and anchoring plug a chamber adapted to permit looping of said core therein; and an insu-

lating and sealing compound completely filling said chamber.

2. The method of securing cable heads to conductor core wire ropes, characterized by; fraying an end of the weight supporting strands of the rope to form anchor means; positioning a permanent casing so as to shield the portion of the core within the anchor means and positioning a temporary casing so as to shield the extended portion of said core; arranging the anchor means, core and casings in a cable head; pouring while in a molten state a metallic plug in and around said anchor means and around the permanent casing; and removing the temporary casing.

3. The method of securing cable heads to conductor core wire ropes, characterized by: fraying an end of the weight supporting strands of the rope to form anchor means; positioning a permanent casing so as to shield the portion of the core within the anchor means and positioning a temporary casing so as to shield the extended portion of said core; arranging the anchor means, core and casings in a cable head; pouring while in a molten state a metallic plug in and around said anchor means and around the permanent casing; removing the temporary casing; securing the extremity of the core to a terminal and insulated sealing partition; pouring an insulating compound in the extended portion of the cable head; imbedding the excess core in said compound and securing said partition thereagainst whereby the compound completely fills the space between said plug and said partition.

4. In a head for wire ropes having a conductor core and a stranded sheathing: an elongated head structure having a constricted sleeve portion arranged to receive a wire rope and an enlarged shell portion arranged to receive the extremity of the wire rope; an anchoring plug in said shell coacting with the extremities of the stranded sheathing to secure the wire rope relative to said head structure, and having a central bore loosely receiving said core; an insulating and sealing partition; a terminal means sealed therein arranged to be electrically connected with the extremity of the core; means for securing said partition at the extremity of said shell, said shell forming between the partition and anchoring plug a chamber adapted to permit looping of said core therein; and an insulating and sealing compound completely filling said chamber.

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