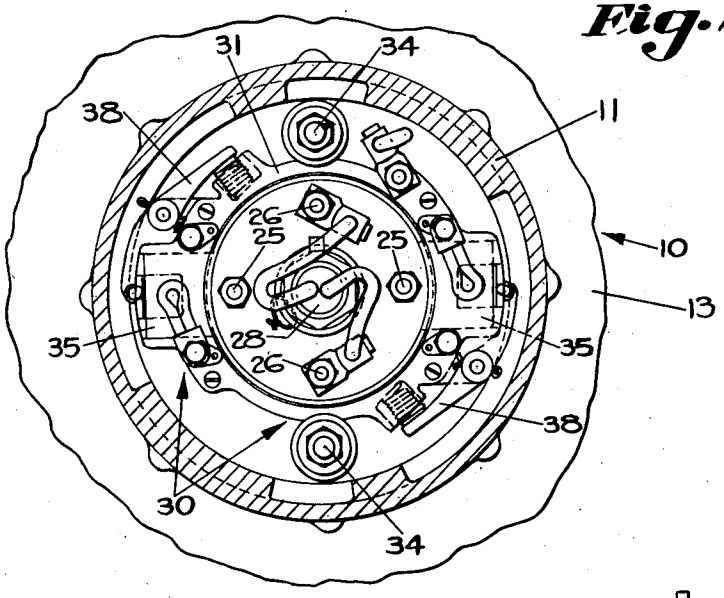
Sept. 30, 1952 S. C. MOON 2,612,569

ELECTRIC CABLE REEL

Filed Dec. 29, 1948

Fig. 2



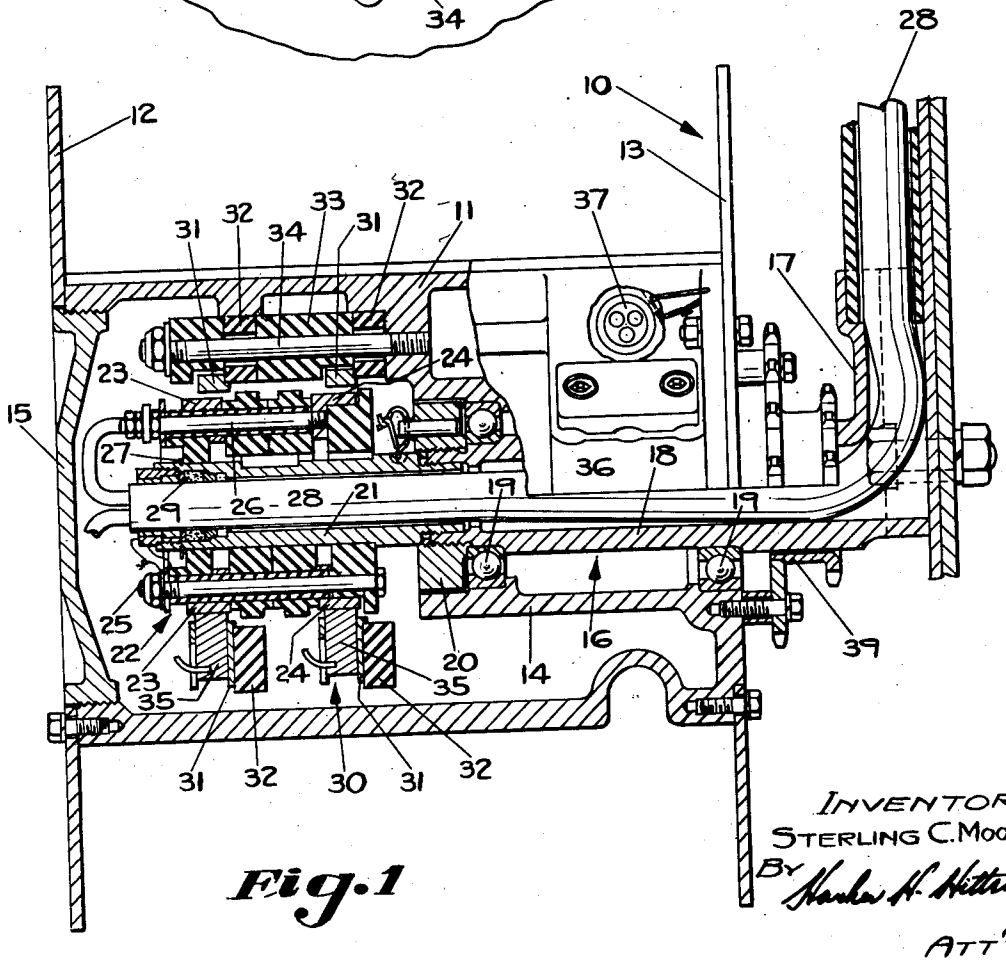


Fig. 1

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ELECTRIC CABLE REEL

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1 Claim. (Cl. 191—12.2)

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This invention relates to an electric cable reel, and an object of the invention is to provide an improved cable reel wherein the brushes and collector rings are held in predetermined fixed positions to insure continuous satisfactory operation thereof.

Another object of the invention is to provide an improved cable reel in which there is an enclosing drum which is mounted on a cantilever type support by spaced bearings, the cantilever projecting beyond the bearings and supporting spaced collector rings, there being collector brush means adjacent the rings rigidly held in fixed position on the drum of the cable reel by having spaced peripheral contacts therewith.

Another object of the invention is to provide an improved cable reel assembly in which there is a hollow drum mounted to rotate about the axis of a supporting shaft and in which there is mounted spaced conductor rings and brush means, one upon said shaft and the other upon said drum, the mounting means for the one of them that is associated with said drum being a ring having direct bearing centering contact at least at spaced points of its periphery with the interior of said cable drum.

Other objects of the invention will appear hereinafter, the novel features and combinations being set forth in the appended claim.

In the accompanying drawings,

Fig. 1 is a sectional elevational view through the axis of the cable reel, with parts broken away; and

Fig. 2 is a sectional view through the cable reel in a plane perpendicular to its axis, showing particularly a brush supporting collector mechanism.

The cable reel includes a drum 10 formed of a generally cylindrical hollow body 11 and removable outwardly extending disc shaped end flanges 12 and 13 adjacent the opposite ends of said cylinder 11. Formed integral with the main cylinder 11 and extending from the right-hand side, as viewed in Fig. 1 of the drawings, and within said cylinder 11, there is a smaller concentric cylinder 14 which forms an integral part of the body 11. The small diameter cylinder 14 extends inwardly from the right-hand edge of the large cylinder 11 to approximately the axial center thereof, or, in other words, substantially to a plane passing through the center of the drum 10 and perpendicular to the axis of cylinders 11 and 14.

The left-hand end of the cylinder body 11, as viewed in Fig. 1, is closed by a removable cap 15 to which access is had to the interior of said body 11. The cylinder 11 together with the cap 15, in cooperation with the cylinder 14 and other parts hereinafter described, provides a substantially totally enclosing casing or housing for the conductor rings, brushes and the like, as hereinafter described.

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The drum 10 is mounted for rotation on a cantilever type bracket, generally designated 16, said bracket 16 being hollow to provide a conduit and including a base 17 adapted to be bolted or otherwise attached to a supporting frame, such as the frame of a shuttle car, truck, loader or mining machine, or any other vehicle which may require an electric cable reel.

Formed integral with the base 17 is a hollow post 18 which supports the drum 10 by means of a pair of axially spaced anti-friction bearings 19 which are interposed between the post 18 and the cylinder 14 of drum 10. One of the bearings 19 is adjacent the inner end of the drum 10, the other near the center thereof, but slightly closer to that end of the drum 10 at which it is supported by the other bearing 19. In other words, the drum 10 is supported by the cantilever post 18 or bracket 16 by spaced bearings 19, both of which are to one side of a plane passing through the center of said drum 10 and cylinder 11 and perpendicular to the axis thereof about which is rotates.

The cylinder 11 is removably mounted on the post 18 by means of a threaded lock ring 20 which threads on the free end of the integral post 18 and holds the outer bearing 19 in place.

Forming an extension of the cantilever support for post 18 is a removable hollow sleeve 21 which is threaded into the outer end of said post 18 and provides a removable extension thereof. For some purposes the posts 18 and 21 therefore may be considered as a single cantilever post unit.

Mounted upon the sleeve 21 is a collector ring unit 22 which includes a pair of spaced collector rings 23 and 24 which are mounted upon spaced blocks or rings of insulating material and which are spaced apart by interposed rings of insulating material, all the parts being clamped together by a pair of insulated through bolts 25. Each of the collector rings 23 and 24 is provided with an individual terminal rod 26, the terminal rod 26 for the ring 24 being shown in detail in Fig. 1 of the drawings. The terminal rod for ring 23 will, of course, be shorter, since it is the forward collector ring. The complete collector ring unit 22 is keyed to the sleeve 21 and is removably held thereon against axial movement by a snap ring 27.

An electric cable 28 extends through the hollow base 17, the post 18 and the extension sleeve 21, and the sheathing thereof preferably terminates adjacent a stuffing box 29 formed in the outer or free end of the sleeve 21; the individual contacts of said cable 28 extending to the terminals 26, as best illustrated in Fig. 2 of the drawings.

It is thus seen that both the collector ring unit and the cable drum are mounted on the cantilever arm, bracket or support 18, 21, the collector ring unit being mounted on the outer end thereof, while the drum is mounted near the base thereof.

This, of course, leaves one side of the drum entirely free of bearings and the like, making possible the provision of a simple cap 19 through which access may be had to the interior of the drum and to all the parts thereof.

The brush supports for the brushes which cooperate with the two collector rings 23 and 24 are part of a brush collecting unit 30 which is rigidly attached to the interior hollow cylindrical body portion of the drum 10. This brush collecting unit 30 includes a pair of metal brush collector ring assemblies 31, one of which is seen in detail by reference to Fig. 2 of the drawings. These spaced ring assemblies 31 are rigidly attached to spaced rings 32 of insulating material which are spaced apart by a pair of insulating spacers, one of which is seen at 33, which are rigidly mounted with other elements of the complete unit 30 on the interior of the body 11 by a pair of spaced clamping bolts 34.

Each of the brush collector ring assemblies 31 includes a pair of diametrically spaced brushes 35 having standard type pigtails by which they are connected to metallic or conducting rings of the assemblies 31, each of said rings in turn being connected to a conductor leading to a clamping block 36 within the cylinder 11 which receives the end of a cable 37 which is adapted to be wound on the reel 10 in a well known manner. Each of the brushes is provided with a spring pressed rocker arm 38 which resiliently urges the brush 35 into contacting relation with one of the collector rings 23 and 24.

Of particular importance, insofar as the mounting of the brush collector ring assembly 31 is concerned is the fact that at a plurality of spaces around the peripheries of the rings 32, said rings have close bearing contact or a close fit with arcuate machined surfaces on the interior of cylinder 11, the center of which arcuate surface is concentric with the center of the ring assemblies 31 and the center of the collector rings 23 and 24 which, of course, is the axis of the cantilever post or bracket 16 and is the axis about which the drum 10 rotates. In other words, the interior of the drum 11 is machined so that at least at spaced points there are concentric arcs, the center of which is the axis of rotation of the drum 10 and the axis of the collector rings 23 and 24. The brush collector ring assembly then has a close contacting fit with these arcuate surfaces so that it is impossible for the brush ring assemblies 31 to move toward and from the axis of the drum 10.

It has been found in practice that if the brush collector assemblies are mounted on cantilevers or simply carried on bolts in the drum and are not rigidly mounted therein, as above described, they become out of round in operation or out of alignment with the collector rings and thus their life is shortened.

It is to be noted that the cable reel assembly incorporates a number of important characteristics. First of all, the drum is mounted on the supporting bracket 16 in cantilever. The mounting is all within the lateral confines of the drum, being provided by the two spaced bearings 19 which are within said drum 10. This mounting is all to one side of a central plane through the drum 10 perpendicular to its axis of rotation and is toward the base of the cantilever bracket or post 16. The brush and collector ring assemblies are also entirely within the lateral confines of the drum 11 and they are both

largely, if not entirely, on the outer side of the above mentioned plane through the center of said drum 10. This positions them adjacent the open end of the cylinder 11 which is closed by the removable cap 15. The collector ring mechanism is mounted on the cantilever bracket 16 at its extreme outer end, as provided by the removable sleeve extension 21 thereof. The brush collector mechanism is rigidly mounted in the drum 11 and the peripheries of one or both of the rings 32 have direct bearing contact at spaced points with the interior arcuate machined surfaces of said drum 11.

Rotation of the drum 10 is effected by sprocket means 39 which are clamped externally on one side of the drum 11 and surround the post 18. Said sprocket means 39 also provides control for the usual cable guide associated with the cable reel drum 10.

Obviously those skilled in the art may make various changes in the details and arrangement of parts without departing from the spirit and scope of the invention as defined by the claim hereto appended, and applicant therefore wishes not to be restricted to the precise construction herein disclosed.

Having thus described and shown an embodiment of the invention, what it is desired to secure by Letters Patent of the United States is:

An electric cable reel including a supporting bracket having an arm supported only at one end providing a hollow cantilever support, a cable drum having a generally hollow enclosing cylindrical portion with outwardly extending end flanges and adapted to receive a coiled cable, spaced apart bearing means carried at axially spaced positions on said cantilever and supporting said cable drum for rotation on said cantilever arm, said bearing means being located entirely on one side of a plane through the center of said cylinder perpendicular to its axis and constituting the supporting bearing means for said drum, said cantilever arm having a free end portion extending beyond said bearing means and entirely within the enclosure of said cylindrical portion of said cable drum, insulating means mounting spaced stationary conductor rings on said free end of said arm, cable means extending through said hollow cantilever support and connected to said stationary conductor rings, spaced brushes carried within said cylindrical portion of said cable drum and having sliding contact with said stationary conductor rings, and ring insulating means supporting said brushes, said ring means having direct bearing centering contact at spaced points of its periphery with the interior of said cylindrical portion of said cable drum.

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