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3,224,707

DEVICE FOR COILING AND STORING WIRE ROPE AND THE LIKE

Filed Nov. 12, 1964

2 Sheets-Sheet 1

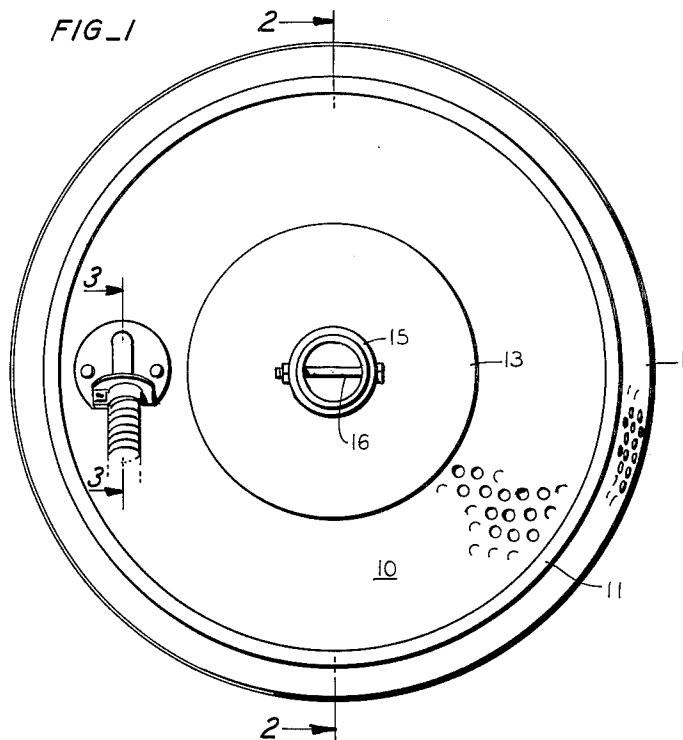


FIG_4

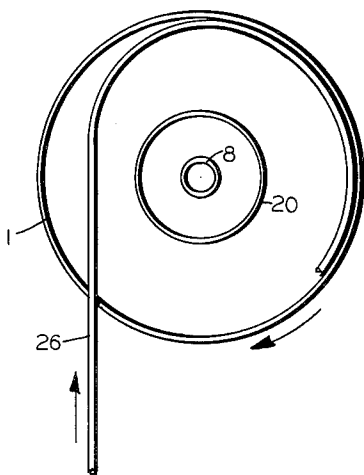
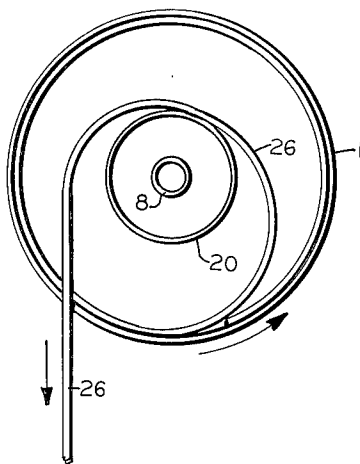


FIG_5



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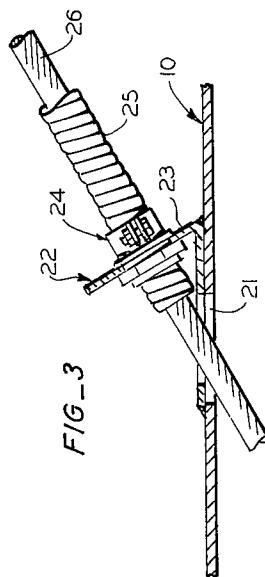
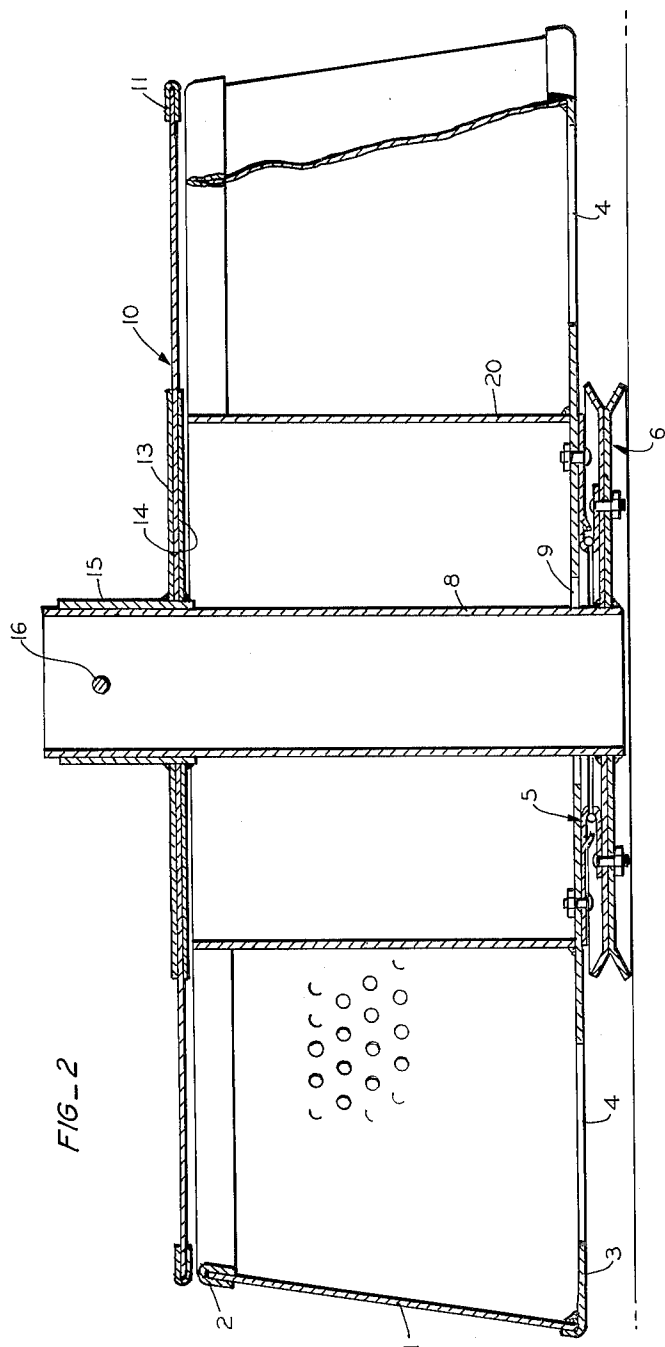
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DEVICE FOR COILING AND STORING WIRE ROPE AND THE LIKE

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DEVICE FOR COILING AND STORING WIRE ROPE AND THE LIKE

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5 Claims. (Cl. 242-129)

This invention is a continuation in part of application Serial No. 283,465, filed May 27, 1963.

This invention relates to a device for coiling and uncoiling and storing wire rope or any like elongated flexible element having sufficient stiffness to withstand moderate axial compression.

The main object of the present invention is the provision of a device in which wire rope or like material may be coiled and stored without placing an undue strain on the wire which might otherwise cause kinking.

Another object of the invention is the provision of an improved receptacle for storing wire rope in coils and which receptacle is less expensive to manufacture than devices of like nature heretofore provided and at the same time is adapted for use in coiling and uncoiling wire rope and the like in a more effective manner.

Other objects and advantages will be apparent from the following specification and from the drawings.

FIG. 1 is a top plan view of the device.

FIG. 2 is a greatly enlarged vertical cross sectional view of the device partly in elevation.

FIG. 3 is a fragmentary cross sectional view through the cover plate of the device showing the elongated guide.

FIG. 4 is a schematic plan view illustrating the operation of the device while the rope is being fed toward the storage receptacle for forming coils therein.

FIG. 5 is a schematic plan view showing the operation of the device while the rope is being pulled out of the storage receptacle.

In detail, the device comprises a receptacle having an outer generally circular wall 1 which may be preferably formed of perforated sheet metal to reduce weight. The wall 1 is provided along its upper margin with a strip 2 which may be U-shaped in cross section to provide a smooth upper edge for the receptacle. The outer circular wall 1 is fixedly secured as by welding along its lower edge to a bottom wall 3 the weight of which may be reduced by providing a plurality of relatively large apertures 4 in a circular row. The bottom wall 3 is rotatably supported by means of a relatively large diameter bearing generally designated 5 and supported on a circular base designated 6.

Fixedly secured centrally of the base 6 is a vertically extending central post 8 which extends through a relatively large central opening 9 in bottom wall 3 and is provided at its upper end with a cover plate generally designated 10. This cover plate 10 may also be formed of perforated sheet metal and is provided with a marginal strip 11 similar to the strip 2 on sidewall 1. The cover plate 10 may be reinforced at its center by means of annular plates 13, 14 and welded to a sleeve 15 which in turn is secured to post 8 by means of a bolt 16.

Integrally secured at its lower edge to bottom wall 3 of the receptacle is a cylindrical inner wall 20 which, with outer wall 1 and bottom wall 3, serves to define an annular space for receiving the coils of the rope or like element to be stored.

At a point on the cover plate 10 inwardly of the marginal strip 11 there is provided an aperture 21 (FIG. 3) which is adapted to receive the rope therethrough. As best seen in FIG. 3, an angle bracket generally designated 22 is secured to cover plate 10 with one leg 23 of said bracket extending slantingly upwardly from said

cover plate 10 and apertured to receive a clamp fitting generally designated 24. Said fitting 24 may be of the conventional design which is adapted to secure a length of conduit 25 of the type usually employed for a heavy electrical cable. The clamp 24 serves to secure conduit 25 to cover plate 10 so that the rope 26 may be slidably received through said conduit and passed through aperture 21 into the annular space between the outer and inner walls 1, 20. It will be understood that clamp 24 has the effect of fixedly securing conduit 25 in a predetermined position for movement of the rope 26 along a predetermined line of action. It will be also understood that conduit 25 may be of the flexible type and have a length of several feet or longer to guide the rope 26 along a nonlinear path of travel from whatever device is being employed with the rope. However, it is important to note that the section of the conduit 25 adjacent bracket 22 is inflexible and always maintains the rope for movement along a predetermined line of action at the point where it is being fed into or out of the receptacle.

The sidewall 1 is preferably formed to a frustoconical shape having its larger diameter at its lower edge so that coils of rope formed in the receptacle tend to form first at the bottom wall 3. Additional coils after the first layer of coils have been formed will tend to start forming adjacent the bottom wall 3 and build up along wall 1 but, because of the angular relationship of conduit 25 such coils will not tend to escape through the upper open end of the receptacle. It will be understood, of course, that in the event the coils do tend to shift upwardly out of the receptacle they will be stopped by the fixed cover plate 10.

The operation of the device may be readily understood from a consideration of FIGS. 4 and 5. It will be noted in FIG. 4 that it is not necessary to secure the end of the rope within the receptacle since the mere feeding inwardly of the rope through the guide 25 will cause the receptacle to rotate in a clockwise direction with the rope 26 forming a coil adjacent the juncture between the sidewall 1 and the bottom wall 3. Additional coils will then build up on the first coil until the maximum number of coils that can be accommodated by sidewall 1 have been formed at which time a second layer of coils will be formed starting at the bottom wall. When it is desired to remove the rope from the receptacle it is merely necessary to pull outwardly on the same thus causing rotation of the receptacle in a counterclockwise direction as indicated in FIG. 5. If the rope has less than moderate stiffness it will tend to be deflected inwardly toward the inner cylindrical wall 20 and engage said inner wall. However, whether or not the rope engages the inner wall 20 depends somewhat on its stiffness, but in any event the removal of the rope causes rotation of the receptacle in the direction indicated.

It will be apparent that the above described structure provides an effective means for coiling the rope in a manner that does not strain the same to the extent that it might be strained were it to be wrapped on a drum or the like. Since the rope lies in a natural manner in coils in the receptacle it is a simple matter to remove the same by pulling outwardly on the rope so that the rotation of the receptacle permits such removal without impressing undue strains on the rope.

It will be understood that the provision of guide 25 is extremely important and by placing the same in the position indicated the smooth action of the rope indicated in FIGS. 4 and 5 results so as not to injure the rope or cause kinking.

The very specific description given above of the preferred form of the invention should not be taken as restrictive as it will be apparent that various modifications

in design may be resorted to without departing from the scope of the following claims.

I claim:

1. A device adapted to be used for coiling and uncoiling wire rope or a like elongated flexible element having sufficient stiffness to withstand moderate axial compression comprising:

a receptacle having a generally annular storage space defined by a generally circular outer sidewall and an integral annular bottom wall,

a base on which said receptacle is mounted, means mounting said receptacle for rotation about a central axis coinciding with the central axis of said annular space,

means axially outwardly of said sidewall fixed relative to said base and extending radially outwardly of said central axis for restraining upward movement of coils of such rope out of said space,

an elongated rigid guide carried by said last mentioned means and adapted to receive said rope longitudinally therethrough,

said guide extending along a line of action intersecting said annular space for restraining said rope to axial movement along said line of action at said guide, whereby movement of such rope axially toward said receptacle urges said rope against said outer sidewall to rotate said receptacle in one direction and to form coils of rope, and movement of such rope away from said receptacle rotates the latter in the opposite direction and unwinds the coils from said space.

2. A device according to claim 1 wherein said receptacle includes an integral inner circular sidewall of substantially the same width as said outer sidewall and adapted to be engaged by such rope as the latter tends to straighten out when said rope is pulled outwardly of said receptacle.

3. A device adapted to be used for coiling and uncoiling wire rope or a like elongated flexible element having sufficient stiffness to withstand moderate axial compression comprising:

a fixed base,

an annular receptacle including an outer generally circular sidewall, and inner circular sidewall concentric with said outer sidewall and of substantially the same

width as the latter and a bottom wall fixedly secured to said sidewalls,

a central post fixed at one end to said base and extending along an axis coinciding with the axis of said sidewalls,

bearing means interposed between said bottom wall and said base for rotatably supporting said receptacle for rotation about said axis,

means opposite said bottom wall axially outwardly of said sidewalls and supported by said post for restraining movement of said rope out of said space, and

an elongated tubular guide supported on said last mentioned means and adapted to receive said rope longitudinally therethrough,

said guide extending along a line of action passing through the annular space between said sidewalls for restraining said rope to movement along said line of action,

whereby feeding movement of said rope toward said receptacle urges said rope against said outer sidewall to rotate said receptacle in one direction and to form coils of rope, and movement of such rope away from such receptacle rotates the latter in the opposite direction and unwinds the coils from said space.

4. A device according to claim 3 wherein said restraining means comprises a circular plate formed with its outer diameter closely adjacent the end of said outer sidewall opposite said bottom wall.

5. A device according to claim 3 wherein said guide is positioned at a point radially inwardly of said outer sidewall and is angularly disposed relative to said bottom wall.

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MERVIN STEIN, *Primary Examiner.*