Oct. 2, 1945. W. A. POLLOCK 2,385,939

CABLE GUIDE

Filed April 14, 1944

Fig. 1.

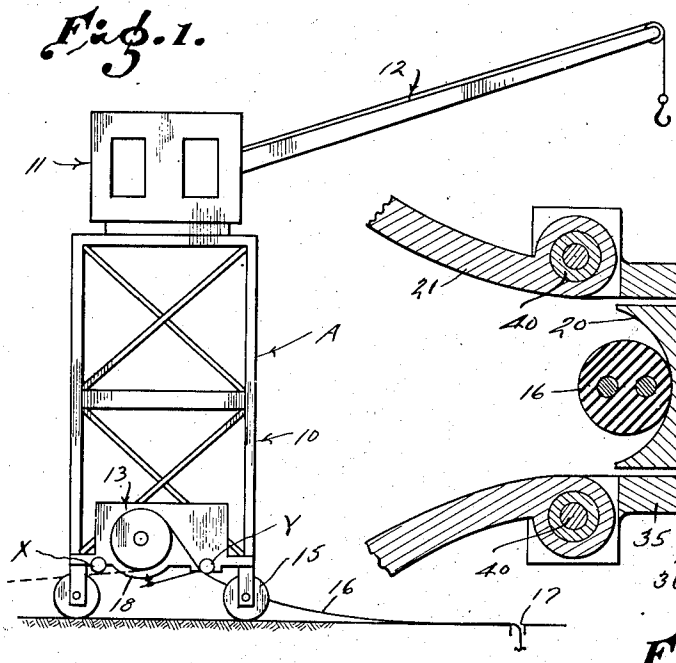


Fig. 3.

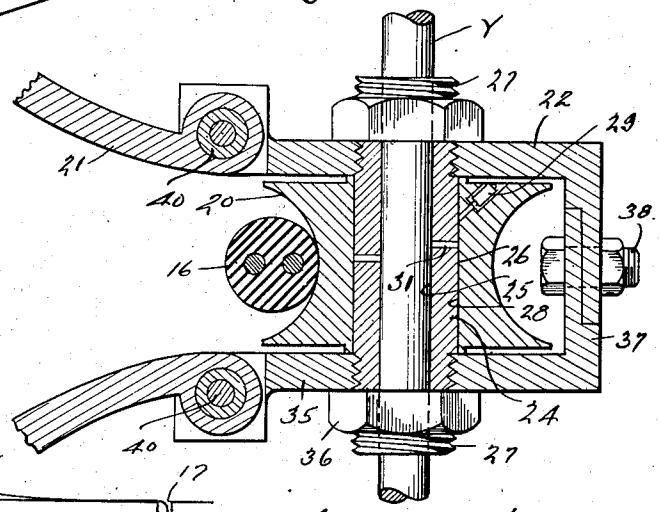


Fig. 2.

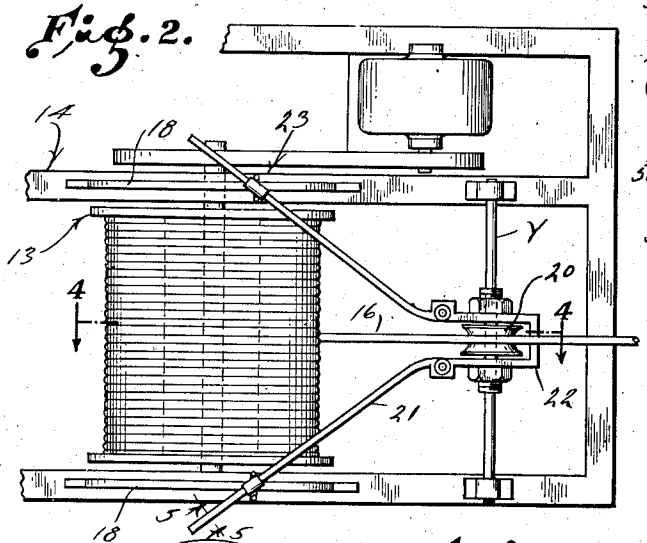


Fig. 5.

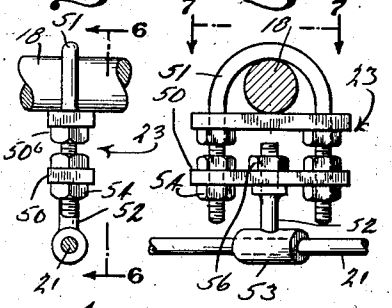


Fig. 6.

Fig. 7.

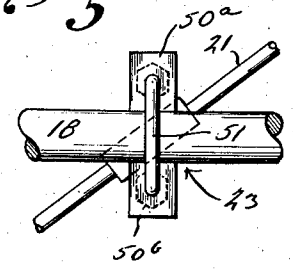
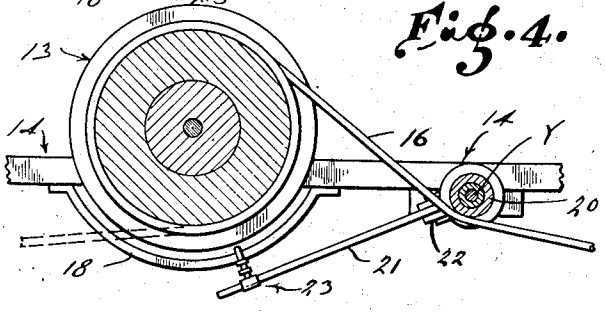


Fig. 4.



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UNITED STATES PATENT OFFICE

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CABLE GUIDE

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Application April 14, 1944, Serial No. 531,064

12 Claims. (Cl. 254—190)

This invention has to do with a cable guide and has particular reference to a construction for guiding a cable onto a drum such as the drum of a traveling crane, and it is a general object of the present invention to provide a guide which will operate to effectively and dependably handle a cable as it is spooled onto a drum so that the danger of the cable building up radially rather than feeding axially is eliminated, with the consequent elimination of the dangers and injuries that result when excessive slack occurs or freedom is allowed in the cable. The invention is partially suited to use on a traveling crane, however, it can be used to advantage in various situations where drums are used for handling cables or lines.

Traveling cranes are used in numerous situations, for instance, around loading docks in manufacturing plants or yards, as for instance around shipyards. Such cranes are generally supported on wheels so that they are movable and it is common to have them run on tracks. In most cases such cranes are operated electrically and to supply the necessary electrical energy a heavy electric cable is anchored at a point about midway of the travel of the crane and a cable spool or drum is provided on the crane to handle the electric cable as the crane moves to and from the point where the cable is anchored. With the usual crane construction the electric cable drum is located so that it is necessary to provide one or more guides for the cable, which operate to keep the cable down or at a point close to the level of the ground as it winds onto or leaves the drum. The cables being handled are heavy and the usual crane construction is such that when the crane moves away from the point of anchorage of the cable so the cable lifts and leaves the drum from the top side thereof, or when the crane is moved so that it approaches the point of anchorage of the cable so that the cable tends to feed onto the top side of the drum rather than around the bottom side thereof, there is an excessive drag on the guide. This drag or friction, in practice, materially interferes with the feed or spooling of the cable on the drum so that there is a marked tendency for the cable to feed onto the drum at one point along its length and thus pile up radially. When the tension is relieved the cable will spring or fall from the piled up position creating looseness so that it can get under the wheels of the crane or can be exposed to injure workmen.

The general object of the present invention is to provide a construction on the ordinary crane such as I have referred to whereby the spooling of the cable onto the drum is facilitated and the radial piling up of the cable is eliminated.

It is an object of the present invention to provide a device of the general character referred to which is applicable as an attachment to the usual crane construction and which adds little in the way of cost or added mechanism to the crane construction.

The various objects and features of my invention will be fully understood from the following detailed description of a typical preferred form and application of the invention, throughout which description reference is made to the accompanying drawing, in which:

Fig. 1 is a somewhat diagrammatic view of a typical traveling crane of the type to which the structure of the present invention is applicable. Fig. 2 is a bottom view of a part of the crane taken at the drum which handles the electric cable, showing the device of the present invention applied to facilitate spooling of the electric cable onto the drum. Fig. 3 is an enlarged, detailed sectional view of a part of the mechanism of the present invention, being a view through the anti-friction roller provided by the present invention. Fig. 4 is a sectional view of the structure shown in Fig. 2, being a view taken as indicated by line 4—4 on Fig. 2. Fig. 5 is an enlarged view taken substantially as indicated by line 5—5 on Fig. 2. Fig. 6 is a sectional view taken substantially as indicated by line 6—6 on Fig. 5. Fig. 7 is a plan view of the part shown in Figs. 5 and 6, being a view taken as indicated by line 7—7 on Fig. 6.

The construction of the present invention is applicable generally to drums such as are employed in traveling cranes, or the like, to handle electric cables. Since the invention is particularly useful as applied to traveling cranes such as are used in shipyards, on docks, and in like situations, I will describe it as applied to such a construction, it being understood that such reference is not to be taken as a limitation upon the scope or range of application of the invention.

In Fig. 1 of the drawing I show a traveling crane A of typical construction. The crane involves a vertically disposed frame structure 10 with a rotatable head 11 on the upper end of the frame. A boom 12 projects from the head of the crane and a winding drum 13 is carried in a frame 14 at the lower portion or base of the frame 10. Wheels 15 are provided to support the crane so that it can be moved.

In accordance with the usual crane construction the motor driven drum 13 is provided to

handle the electric cable 16 which has one end anchored to the crane and the other end anchored to a fixed point 17 with reference to which the crane operates. The drum 13 is mounted in the usual manner on the frame 14 so that its end flanges project somewhat below the frame 14 and guard members 18 are carried by the frame parts adjacent the ends of the drum to extend beyond the projecting portions of the drum, as is shown in Figs. 2 and 4 of the drawing.

In accordance with the usual crane construction guides X and Y are located at the frame 14 at either side of or in opposite directions from the drum. In the usual practice these guides extend transversely of the frame or are parallel with the drum and are located low enough so that they positively prevent the cable lifting up in a manner to interfere with frame parts or other working parts of the crane proper. From an examination of Fig. 1 of the drawing it will be seen that the guide X is located to guide the cable 16 to and from the drum when it is related to the drum to tend to feed onto or from the drum at the bottom side thereof, whereas the guide Y is located so that it operates or is engaged by the cable when the crane is operated so that the cable tends to feed onto or from the drum at the upper side thereof. In practice little difficulty is experienced with guides located as is the guide X, whereas much trouble is given by guides located as is the guide Y.

The device of the present invention may be applied to both guides X and Y of a crane. However, since it is usually only necessary as applied to the guide Y I have shown it in such application.

The device of the present invention involves, generally, an anti-friction roller 20 mounted on the guide Y to be freely rotatable and slidable longitudinally thereon. The invention further provides arms 21 which are pivotally attached to a yoke 22 that embraces the roller, which arms diverge from the yoke and extend in the general direction of the drum to the guards 18 where they are slidably pivotally connected to the guards by means 23.

In accordance with common crane construction the guide Y is a straight, plain bar, usually round in cross-section, as is shown in the drawing. The roller 20 of the present invention may, if desired, be directly mounted on the guide Y. However, it is preferred to provide a bearing sleeve 24 for the roller 20. The bearing sleeve 24 has a finished bore 25 that has a good bearing fit on the guide Y. The middle portion 26 of the sleeve is turned at the exterior to provide an effective bearing to carry the roller 20. The end portions 27 of the sleeve are threaded to facilitate connection with the yoke 22 as will be hereinafter described. The roller 20 has a central bore 28 fitting the part 26 of the sleeve and suitable means 29 may be provided for supplying lubricant between the roller and sleeve to keep the construction adequately lubricated. Further lubricant passages 31 may be provided in the portion 26 of the sleeve so that lubricant supplied between the roller and sleeve will find its way into the bore 25 of the sleeve to lubricate the sleeve on the guide rod.

The yoke 22 has spaced side parts 35 which are arranged at opposite ends of the roller 20 and have openings which pass the end portions of the sleeve 24. Nuts 36 are threaded on the projecting threaded portions of the sleeve 24 and may be tightened against the outer surfaces of the side parts 35. In the particular construction illustrated the web 37 of the yoke is split and the two parts are joined by a bolt 38, or the like, to facilitate assembly of the yoke with the other parts.

The arms 21 connect the yoke which carries the roller 20 with the frame 14 that carries the drum 13 through the guards 18 at opposite ends of the drum. The arms are pivotally connected to the outer or projecting ends of the sides 35 of the yoke by pivot pins 40 so that they are free to swing in a generally horizontal direction, it being preferred to arrange and locate the parts so that the axis of the pivot pins 40 is generally vertical.

The arms 21 may be in the form of bars round in cross section, slightly curved immediately adjacent their points of connection with the side parts 35 so that they serve to effectively guide the cable 16 relative to the roller 20.

The ends 23 provided for slidably pivotally connecting the arms 21 with the guards 18 may vary widely in practice. In the particular form of the invention illustrated each means 23 includes a bearing plate 50 secured to the guard 18 by a U-bolt 51. A spindle 52 is rotatably carried by the plate 50 and a bearing sleeve 53 is carried on the outer or projecting end of the spindle. As shown in Figs. 5, 6 and 7, the bearing plate 50 may be a plain flat plate with openings to pass the two threaded side parts of the U-bolt 51, and nuts 54 may be threaded on the side parts of the U-bolt to clamp against the plate 50. Nuts 50b on the bolt 51 engage plate 50a to clamp the structure on the guard 18.

The spindle 52 rotatably carried by the plate 50 may be retained on the plate by a nut 56 threaded on the spindle. The tubular bearing 53 may be formed integrally on the outer end of the spindle 52 transverse of the longitudinal axis of the spindle, as shown throughout the drawing. The bearing 53 slidably passes the arm 21.

With the construction above described and with the means 23 applied to the guards 18, as shown throughout the drawing, the yoke carrying the roller 20 is free to shift longitudinally of the guide bar Y from one end to the other while the arms 21 pivot about their pivot pins 40 at the yoke and slide and pivot relative to the guides 18 through the means 23. Through this connection the arms 21 are at all times maintained in position to effectively guide the cable 16 toward the roller 20 should it have a tendency to become disengaged therefrom.

In operation when the crane is being moved so that the cable 16 is fed to the drum 13, as indicated in full lines in Fig. 1, and as shown in Figs. 2 and 4 of the drawing, the cable bears on the anti-friction roller 20 provided by the present invention. The roller is free to turn, being effectively lubricated and mounted on the sleeve 24. The sleeve 24 with the yoke and roller is free to slide longitudinally on the guide bar Y with the result that the natural tendency of the cable 16 to properly spool on the drum 13 is not impaired but rather the cable freely spools transversely along the length of the drum and it does not build or pile up radially.

It will be observed that the construction of the present invention is simple and effective in operation and can be readily applied to a crane construction without materially altering or adding to the structure.

Having described only a typical preferred form and application of my invention, I do not wish to be limited or restricted to the specific details

herein set forth, but wish to reserve to myself any variations or modifications that may appear to those skilled in the art and fall within the scope of the following claims:

Having described my invention, I claim:

1. In combination, a frame, a drum carried by the frame, and means for guiding a cable relative to the drum including, a guide bar carried by the frame parallel with the drum, a cable supporting roller, means for rotatably and slidably mounting said roller on the bar, a pair of arms pivotally connected to said means diverging from points adjacent the ends of the roller, said arms having slidable pivotal mountings at opposite ends of the drum on said frame and the arms acting to guide the cable onto the roller.

2. In combination, a frame, a drum carried by the frame, guards for the drum at the ends thereof, and means for guiding a cable relative to the drum including, a guide bar carried by the frame parallel with the drum, a cable supporting roller, means for rotatably and slidably mounting said roller on the bar, a pair of cable guiding arms pivotally connected to said means and diverging from points adjacent the ends of the roller to the guards, said arms having a slidable pivotal connection with the guards.

3. In combination, a frame, a drum carried by the frame, and means for guiding a cable relative to the drum including, a guide bar carried by the frame parallel with the drum, a sleeve slidable along the bar, a roller rotatable on the sleeve, a pair of arms pivotally connected with said sleeve and diverging from points adjacent the ends of the roller, said arms having slidable pivotal mountings on said frame at opposite ends of the drum and acting to guide the cable onto the roller.

4. In combination, a frame, a drum carried by the frame, and means for guiding a cable relative to the drum including, a guide bar carried by the frame parallel with the drum, a sleeve slidable on the bar, a yoke carrying the sleeve, a roller in the yoke and rotatable on the sleeve, and arms carried by the yoke and having slidable pivotal connection with the frame at the ends of the drum.

5. In combination, a frame, a drum carried by the frame, and means for guiding a cable relative to the drum including, a guide bar carried by the frame parallel with the drum, a sleeve slidable on the bar, a yoke carrying the sleeve, a roller in the yoke and rotatable on the sleeve, a pair of arms, means pivotally connecting the arms to the yoke, and means slidably pivotally connecting the arms with the frame at the ends of the drum.

6. In combination, a frame, a drum carried by the frame, and means for guiding a cable relative to the drum including, a guide bar carried by the frame parallel with the drum, a sleeve slidable on the bar, a yoke carrying the sleeve, a roller in the yoke and rotatable on the sleeve, a pair of arms, means pivotally connecting the arms to the yoke, and means slidably pivotally connecting the arms with the frame at the ends of the drum including clamps for connection to parts stationary with the frame, spindles rotatably supported by the clamps, and sleeves carried by the spindles to slidably carry the arms.

7. In combination, a frame, a drum carried by the frame, and means for guiding a cable relative to the drum including, a guide bar carried by the frame parallel with the drum, a sleeve slidable on the bar, a yoke carrying the sleeve, nuts threaded on the ends of the sleeve engaging the sides of the yoke, a roller in the yoke and rotatable on the sleeve, and arms carried by the yoke and having slidable pivotal connection with the frame at the ends of the drum.

8. A cable guide for use with a drum carried by a frame including, a stationary rod to be supported from the frame, a sleeve slidable along the rod, a pair of guide arms, a yoke carrying the sleeve and having side arms with means for pivotally carrying said guide arms so they diverge therefrom to the ends of the drum, and a roller rotatably supported on the sleeve between the side arms of the yoke.

9. A cable guide for use with a drum carried by a frame including, a stationary rod to be supported from the frame, a sleeve slidable along the rod, a pair of guide arms, a yoke carrying the sleeve and having spaced side arms with means for pivotally carrying said guide arms so they diverge therefrom to the ends of the drum, and nuts threaded on the ends of the sleeve to engage the side arms of the yoke.

10. In combination, a frame, a drum carried by the frame, and means for guiding a cable relative to the drum including, a guide bar carried by the frame parallel with the drum, a cable supporting roller rotatable and slidable on the bar, a pair of cable guiding arms diverging from points adjacent the ends of the roller so their outer portions are at points beyond the ends of the drum, means immediately beyond the ends of the drum slidably pivotally supporting the outer portions of the arms, and means pivotally supporting the arms adjacent the ends of the roller.

11. In combination, a frame, a drum carried by the frame, and means for guiding a cable relative to the drum including, a guide bar carried by the frame parallel with the drum, a cable supporting roller rotatable and slidable on the bar, a pair of diverging cable guiding arms to guide the cable onto the roller, means slidably pivotally supporting the arms adjacent the ends of the drum, and means supported by the guide bar and pivotally supporting the inner ends of the guide arms adjacent the ends of the roller.

12. In combination, a frame, a drum carried by the frame, and means for guiding a cable relative to the drum including, a guide bar carried by the frame parallel with the drum, a cable supporting roller rotatable and slidable on the bar, a pair of cable guiding arms diverging from points adjacent the ends of the roller so their outer portions are at points beyond the ends of the drum, means pivotally supporting the arms adjacent the ends of the roller, and means immediately beyond the ends of the drum supporting the outer portions of the arms including clamps for connection to parts stationary with the frame, spindles rotatably supported by the clamps, and sleeves carried by the spindles to slidably carry the arms.

WILLIAM A. POLLOCK.