June 24, 1958 G. D. LODVICK ET AL 2,840,008

CABLE ATTACHMENT AND CARRIER

Filed June 17, 1955 2 Sheets-Sheet 1

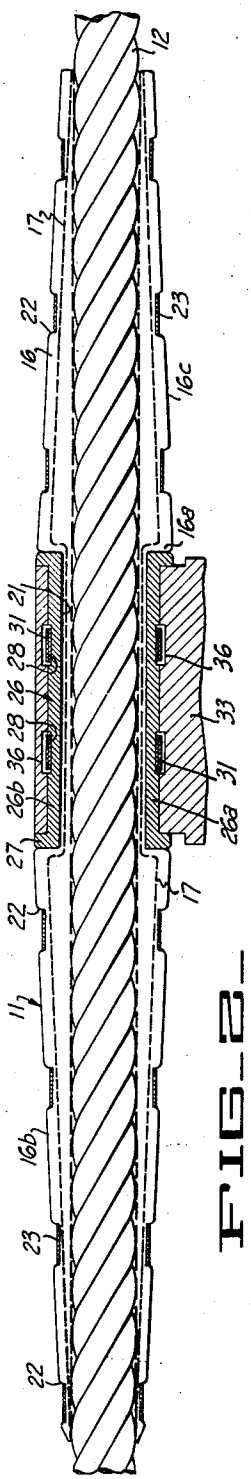


FIG. 2

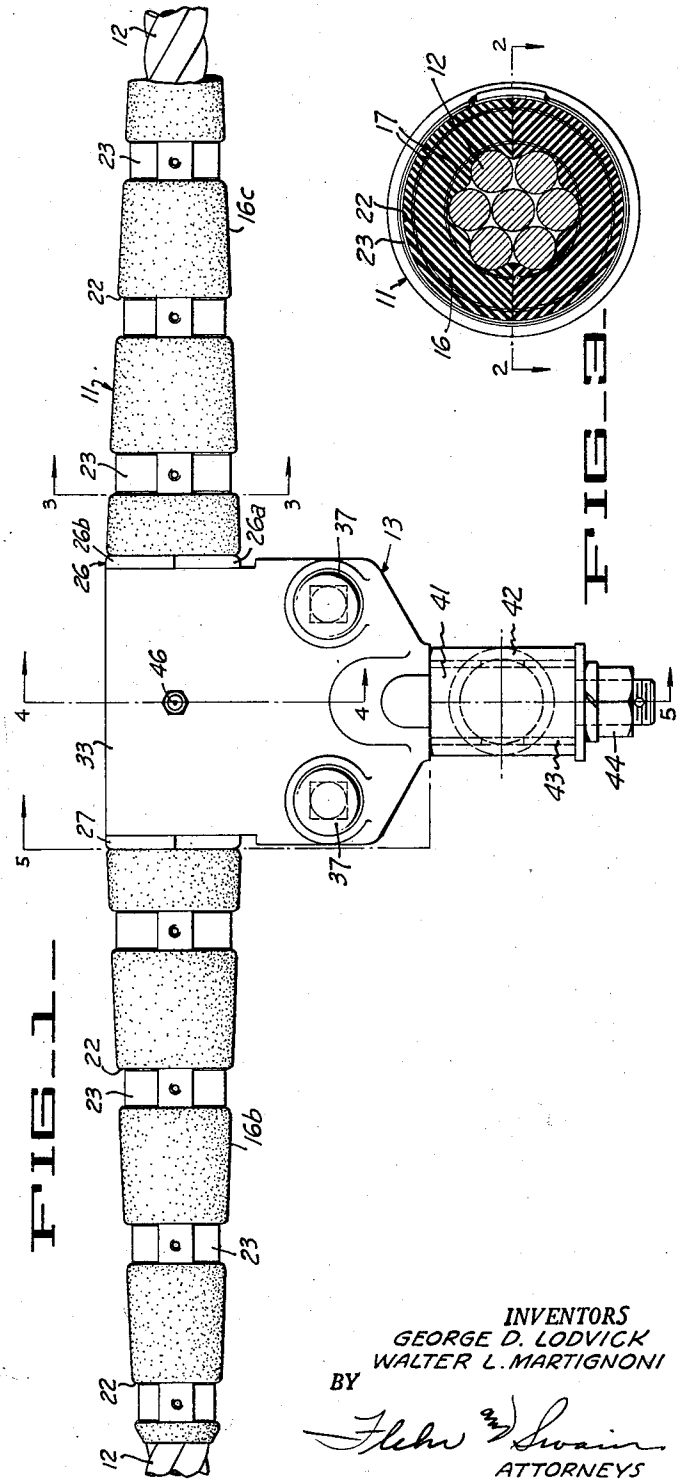


FIG. 1

FIG. 3

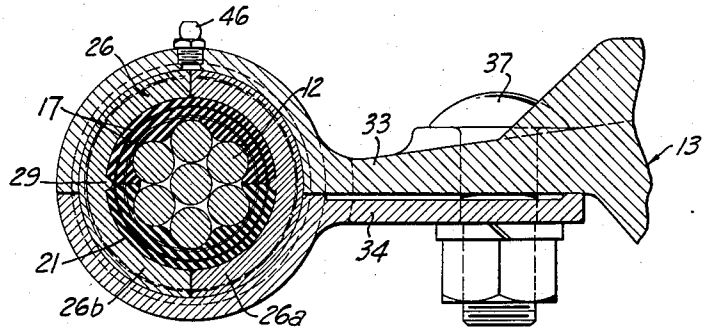
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FIG_4_



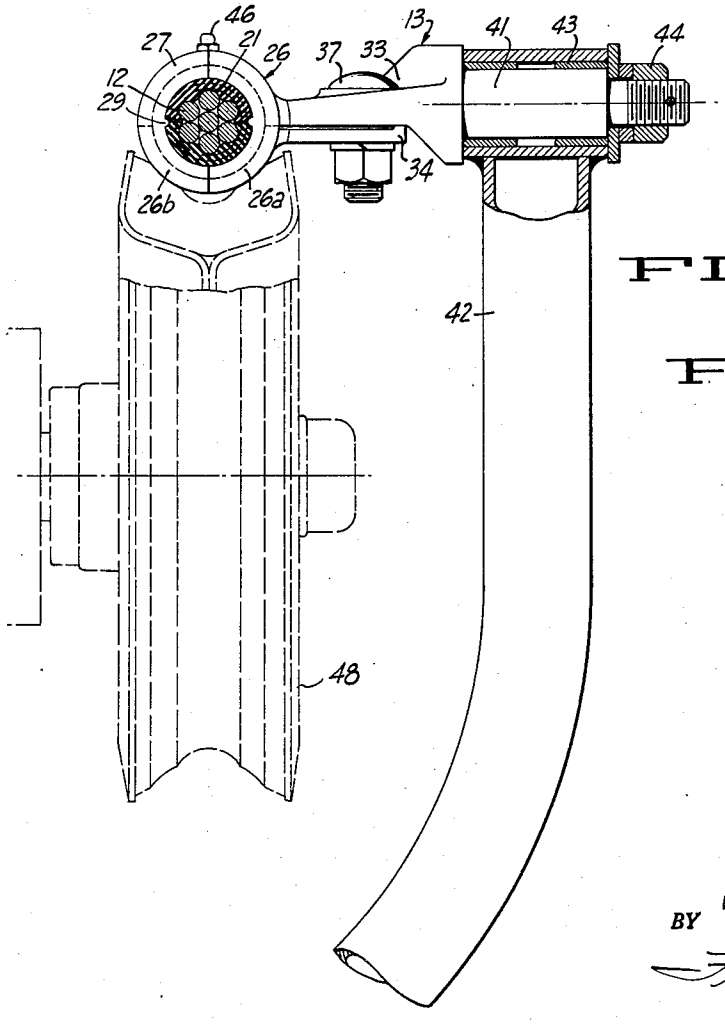
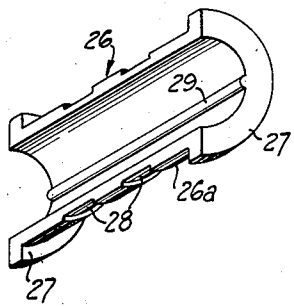


FIG_5_

FIG_6_



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CABLE ATTACHMENT AND CARRIER

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Application June 17, 1955, Serial No. 516,255

6 Claims. (Cl. 104—200)

This invention relates generally to cable attachments and carriers and more particularly to cable attachments and carriers suitable for use on ski lifts of the chair type.

In cable attachments and carriers such as have been used on ski lifts of the chair type, it has been common to attach the carrier for the chair directly to the cable. This type of attachment has many undesirable features, particularly in that swinging of the chair would continuously twist the cable and cause undue wear to the cable. In addition cable attachments and carriers of this type have been very difficult to repair and replace.

In general, it is an object of the present invention to provide a cable attachment and a carrier which is particularly useful for the purpose referred to above.

Another object of the invention is to provide a cable attachment and carrier of the above character in which the carrier or hanger may rotate freely with respect to the cable without wearing the cable and in which the freedom of rotation can be adjusted.

Another object of the invention is to provide a cable attachment and carrier of the above character which can be expeditiously applied to the cable and easily repaired or removed.

A further object of the invention is to provide a cable attachment of the above character in which a continuous sleeve of resilient material is used to prevent wear to the cable.

Additional objects of the invention will appear from the following description in which the preferred embodiment of the invention has been set forth in detail in conjunction with the accompanying drawing.

Referring to the drawing:

Figure 1 is a plan view showing a cable attachment and carrier incorporating the present invention.

Figure 2 is a horizontal cross-sectional view taken along the line 2—2 of Figure 3.

Figure 3 is a cross sectional view taken along the line 3—3 of Figure 1.

Figure 4 is a cross-sectional view taken along the line 4—4 of Figure 1.

Figure 5 is a cross sectional view taken along the line 5—5 of Figure 1.

Figure 6 is an isometric view of a half section of the bushing utilized in our invention.

The embodiment of our invention shown in the drawing consists of a sleeve assembly **11** mounted on a suitable cable **12** such as stranded wire rope, and a hanger assembly **13** rotatably mounted on the sleeve assembly.

The sleeve assembly consists of a split sleeve **16** formed of two equal halves each having a middle section **16*a*** and tapered end sections **16*b*** and **16*c***. The sleeve **16** can be formed of any suitable resilient material such as neoprene and may be provided with reinforcing material molded integral with the sleeve. In this instance we have shown several layers of synthetic reinforcing material **17**, which may be of any suitable material such as nylon fabric, imbedded in the molded neoprene.

The middle section **16*a*** of sleeve **16** is provided with a bushing seat **21** and the tapered end sections **16*a*** and **16*b*** are provided with a plurality of grooves **22**.

In fixing sleeve **16** to the wire rope **12**, the half sections of the sleeve may first be vulcanized to the wire rope by suitable cement. The half sections of the sleeve are securely fastened to the wire rope **12** by suitable clamping means **23** mounted in grooves **22**. One type of clamping means found to be particularly satisfactory is a clamp manufactured by the Punch-Lok Company, of 321 No. Justine St., Chicago, Illinois. Stainless steel strapping is used to prevent rusting. Clamps of this type can be speedily applied and removed by use of simple tools.

It will be noted that the depth of the grooves **22** is such that when the clamping means **23** is in place it is still within the contour of the sleeve and will not come in contact with the sheave or similar device over which the cable or wire rope **12** is adapted to ride.

A bushing **26**, formed of two identical halves **26*a*** and **26*b*** made of any suitable material such as phosphor bronze, is mounted in the bushing seat **21**. Half section **26*a*** is shown in Figure **6**. Each bushing section is provided with flanged ends **27** and a pair of grooves **28**. The inner surface of each bushing section is provided with a raised portion **29** which extends longitudinally of the bushing section and engages the resilient bushing seat **21**. The corners of the bushing sections engaging the sleeve **16** have been rounded to reduce the shearing stresses on the sleeve.

The bushing sections are fixed within bushing seat **21** by clamping means **31** mounted in grooves **28**. These clamping means may also be of any suitable type such as the clamps previously described. The bushing sections are so dimensioned that when they are placed on bushing seat **21** there are small clearances between the adjacent side edges of the same. Clamping means **31** presses the bushing sections snugly into seat **21** by removing the clearances between the bushing sections. At the same time the raised portions **29** are pressed into the resilient material of the seat **21** and provide additional means for preventing rotation of the bushing with respect to the sleeve.

The hanger assembly **13** is rotatably mounted on bushing **26** and consists of two sections **33** and **34**. Both sections are provided with grooves **36** which lie adjacent the grooves **28** in bushing **26** to give additional clearance for clamping means **31**. Section **34** is clamped to section **33** by suitable fastening means such as the carriage bolt assemblies **37**. By inserting shims on the bolt assemblies between sections **33** and **34**, it is apparent that it is possible to adjust the tightness of the connection between the hanger assembly **13** and the bushing **26** and thus to adjust the ease of rotation between the hanger assembly and the bushing.

A spindle **41** is provided on section **33** and serves as a mounting for the object to be supported which in this instance has been shown to be a length of pipe **42** which may be connected to a ski chair or the like. The pipe is journalled on spindle **41** by means of a bushing **43** and is held in place by a nut **44** threaded onto the spindle.

If desired, suitable means may be provided for lubricating bushing **26** such as fitting **46**.

As shown particularly in Figure 1, the contour of the sleeve assembly and the hanger assembly **13** is such that the same will ride smoothly over a sheave **48** on which the cable is riding as shown in Figure 5. A sheave of this type is described in our copending application Serial No. 516,256, filed June 17, 1955.

Since the sleeve assembly, the bushing and the hanger assembly are in sections, it is apparent that they may be

expeditiously secured to the wire rope by the clamping means previously described. It is also apparent that they may also be readily removed from the wire rope by merely cutting the clamping means. For example, it has been found that it takes less than five minutes to secure a complete assembly to the wire rope and less than ten minutes to replace a worn out assembly.

The sleeve 16 is continuous on both sides of the hanger assembly and thus prevents the sleeve from separating from the hanger assembly. The hanger assembly 13 can rotate relative to the wire rope or cable 12 and hence prevents twisting of the cable. The object carried by the hanger assembly 13 can rotate on the spindle of the hanger assembly and therefore prevents undue stresses from being transmitted to the hanger assembly. The ease of the rotation of the hanger assembly with the cable can be varied by adjustment of bolts 37.

It has been found that the tapered ends of the sleeve wear more rapidly than the other portions of the sleeve. If they become too worn, the clamping means adjacent the end can be removed and the sleeve cut off adjacent the next clamping assembly without unduly affecting the smoothness of movement over the sheaves. This adds considerably to the length of time which a sleeve can be used before it must be replaced.

It is apparent that we have provided a cable attachment and carrier which is relatively simple in construction and which greatly facilitates installation, maintenance and replacement. It is readily adjusted to meet various requirements and is adapted for use on a wide variety of installations.

We claim:

1. In an attachment and a carrier for a wire rope, a split resilient sleeve embracing the wire rope, means for securing said sleeve to said rope, a seating surface intermediate the ends of the sleeve, a two-part rigid bushing engaging said seating surface, means for clamping said bushing to said sleeve to prevent rotation of said bushing relative to said sleeve, and a hanger assembly rotatably mounted on said bushing and adapted to support an object to be carried thereby.

2. A device as in claim 1 wherein said hanger assembly includes members embracing the bushing and adapted to frictionally engage the bushing, and means engaging the members for applying clamping pressure to the bushing for adjusting the ease of rotation of said hanger assembly with respect to said bushing.

3. A device as in claim 1 wherein said hanger assembly includes a journalled connection with the object being carried, said journalled connection having an axis of rotation perpendicular to the axis of rotation of said hanger assembly with respect to said bushing.

4. In an attachment and a carrier for a wire rope, a two-part resilient sleeve embracing the wire rope, said sleeve having a middle portion and tapered end portions, means for clamping the tapered end portions of said sleeve to said rope, a seat formed in the middle portion of said sleeve, a two-section bushing engaging said seat, the bushing sections being of such dimension that there are clearances between the adjacent edges thereof, means for snugly clamping said bushing sections into said seat to remove said clearances to prevent rotation of said bushing relative to said sleeve, and a two-part hanger assembly journalled on said bushing and adapted to support an object to be carried thereby.

5. In an attachment and carrier for a wire rope, a two-part resilient sleeve embracing the wire rope, the portion of the resilient sleeve embracing the wire rope having a contour corresponding to the contour of the wire rope, said sleeve having a middle portion and tapered end portions, a plurality of grooves formed in the tapered end portions of said sleeve, clamping means mounted in said grooves for fastening said sleeves to said cable, said clamping means being within the contour of said sleeve, a seat formed in the middle portion of said sleeve, a two-part bushing engaging said seat, the parts being so dimensioned that there are clearances between the adjacent edges thereof, a plurality of grooves in each of the bushing parts, clamping means mounted in said grooves in said bushing parts for pressing said bushing parts into said seat to cause the bushing parts to snugly engage the sleeve to prevent the rotation of said bushing parts relative to the sleeve, a hanger assembly rotatably mounted on said bushing and adapted to support an object to be carried thereby, said hanger assembly including members embracing the bushing and adapted to frictionally engage the bushing, and means engaging the members for applying clamping pressure to the bushing for adjusting the ease of rotation of said hanger assembly with respect to said bushing.

6. A device as in claim 5 wherein said hanger assembly includes a journalled connection with the object being supported, said journalled connection having an axis of rotation at right angles to the axis of rotation of said hanger assembly with respect to said bushing.

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