June 21, 1960 C. R. KEYS 2,941,678

DEVICE FOR HANDLING CABLE REELS AND THE LIKE

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FIG. 1

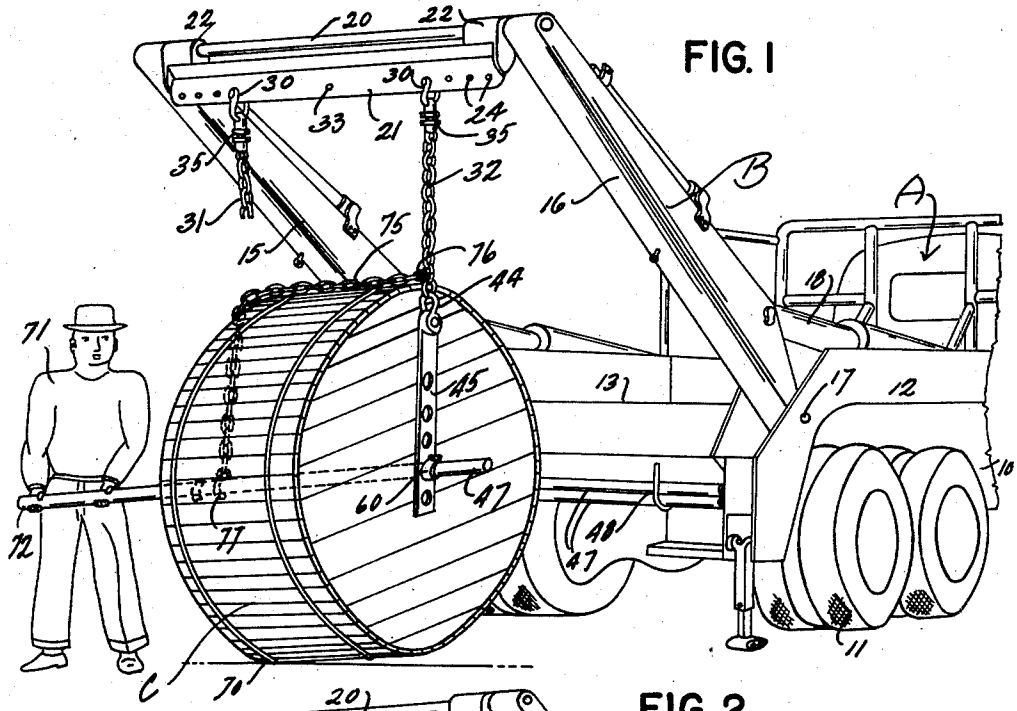
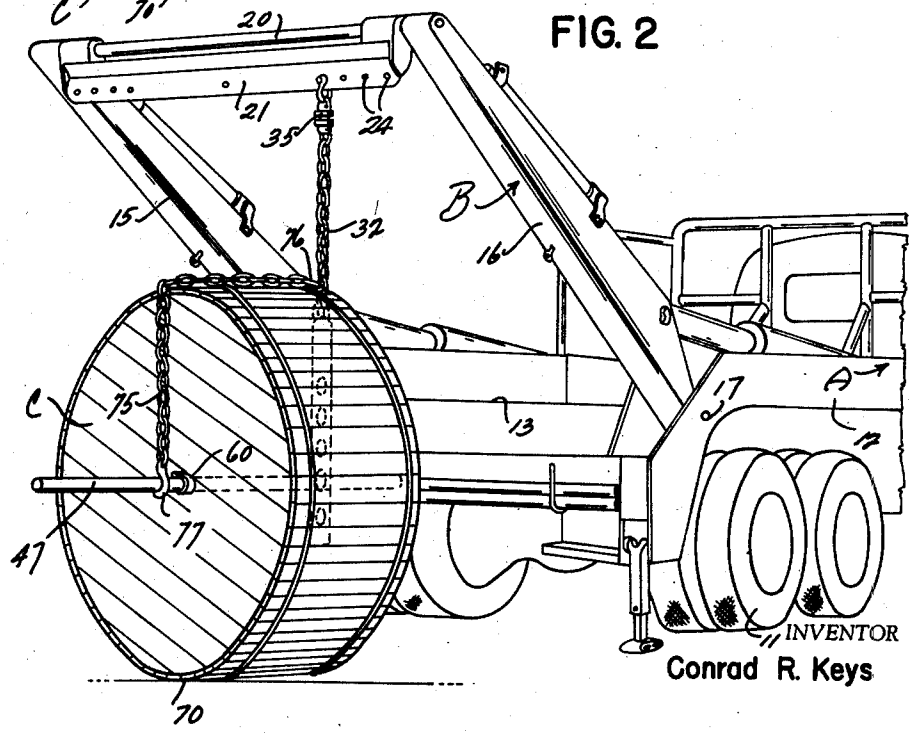


FIG. 2



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FIG. 3

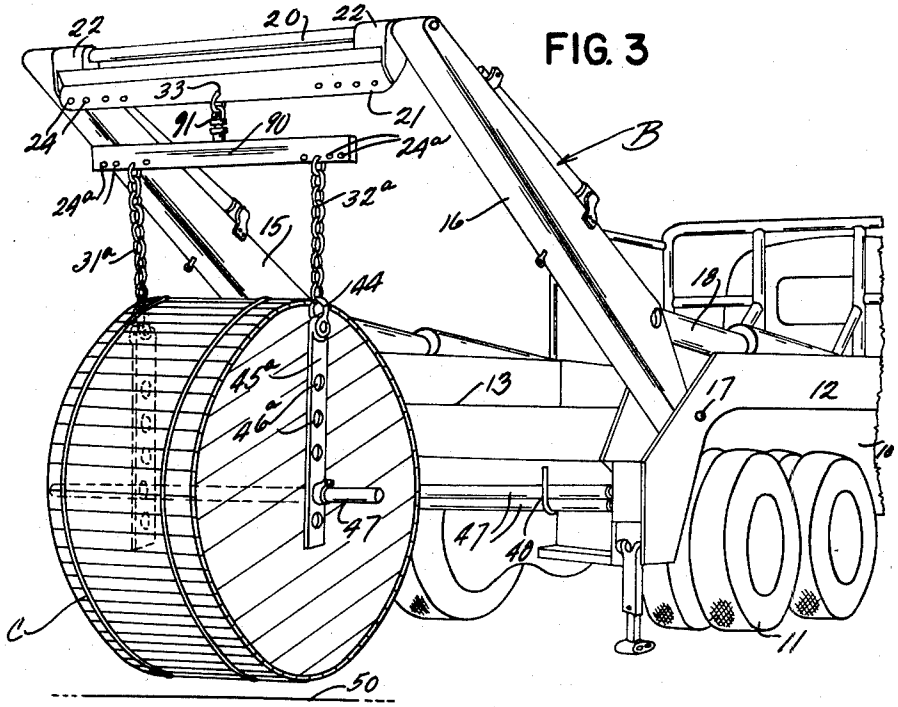


FIG. 4

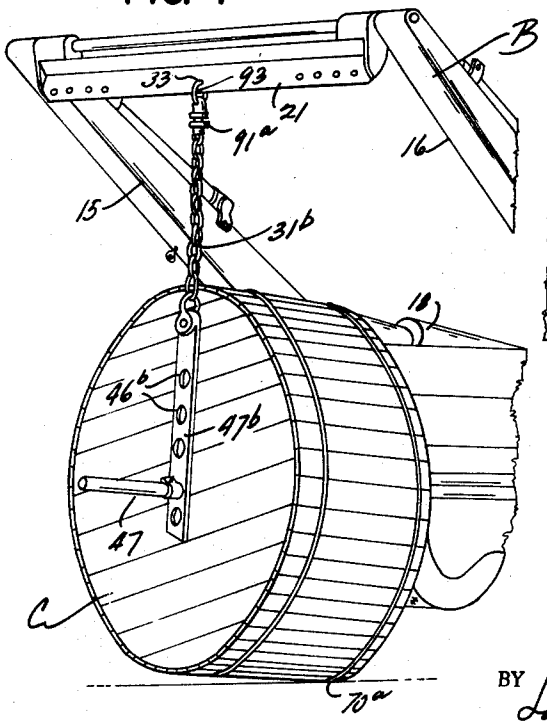
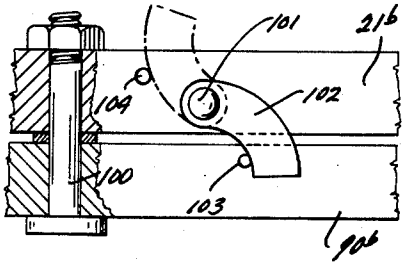


FIG. 5



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United States Patent Office 2,941,678 Patented June 21, 1960

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DEVICE FOR HANDLING CABLE REELS AND THE LIKE

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Filed May 8, 1956, Ser. No. 583,493

2 Claims. (Cl. 214—77)

This invention relates to improvements in methods and means for manipulating heavy cable reels.

In my U.S. Patent 2,848,123, dated August 19, 1958, I have shown loading, unloading and transporting equipment for handling heavy power line cable reels with ease, economy and safety. It is always a problem for operators to manipulate a cable reel into position in order that the axis thereof will lie at right angles to the line of unwinding of the cable from the reel. It is a purpose of this invention to provide an improved method and means for manipulating such a reel while in position upon the ground or other surface in order that the axis thereof may be placed in right angled position to the line of unwinding of cable from the reel.

Other objects and advantages of this invention will be apparent during the course of the following detailed description.

In the accompanying drawings forming a part of this specification, and wherein similar reference characters designate corresponding parts throughout the several views:

Figure 1 is a perspective view of a vehicle and its hoisting equipment, showing the parts thereof in position supporting a large cable reel so an operator may efficiently turn the same in order to locate the plane thereof in proper position for cable unwinding.

Figure 2 is a perspective view of the vehicle shown in Figure 1 with the reel turned in a plane at right angles to its position shown in Figure 1 whereby the cable can be unwound therefrom and extended in the direction in which it is to be laid.

Figure 3 is a perspective of a vehicle and its hoist equipment for lifting, lowering and hauling cable reels, showing a modified form of means for supporting a cable reel so that it may be laterally turned with facility to properly locate the plane thereof.

Figure 4 shows a modified form of reel handling and manipulating means for use with hoisting equipment of a vehicle.

Figure 5 is a fragmentary view, partly in section, showing a latch or restraining member to hold the reel supporting means in proper relation to other details of the vehicle and its hoisting equipment.

In the drawings, wherein for the purpose of illustration are shown preferred and modified forms of the invention, the letter A may generally designate a vehicle having hoisting equipment B mounted thereon for the lifting and lowering of heavy cable reels C.

The vehicle construction A may include a chassis **10** having running gear **11** associated therewith. The frame of the chassis may support a subframe **12** which includes a deck **13** upon which the reels C are adapted to be supported for transportation. The hydraulically operated hoisting and lowering equipment B includes a pair of lift arms **15** and **16** attached by means of a pivoted load shaft **17** upon the subframe. The boom arms are actuated by double acting hydraulic piston and cylinder devices **18** of a type which is conventionally used and is

shown in Patent 2,313,514. The boom arms **15** and **16** are located at the rear of the vehicle and swing lengthwise of the vehicle for elevating and lowering loads, such as reels C.

The outer ends of the lift or boom arms **15** and **16** support a cross shaft **20** having rotatably attached thereto a bar sling **21**, the ends of which, at **22**, bear upon the cross bar **20** between the outer ends of the boom arms **15** and **16**. This bar sling **21** is provided at its ends with series of openings **24** adapted to receive the upper supporting links or yoke portions **30** of chains **31** and **32**. A central attaching opening **33** may also be provided between the ends of the bar sling **21**. Each chain **31** and **32** at its end connected to the bar sling **21** has a swivel **35**, the axis of which is vertical and lies in the line of the chain whereby upon turning of the chain there will be no resultant twisting of the links.

So much of the structure as has been above described is conventional, as will be noted from my U.S. Patent No. 2,848,123, dated August 19, 1958.

Since the equipment is primarily intended to handle huge reels or drums of cables coiled thereon, the lift chains **32** at their lower ends are provided with special links **44** supporting bars **45** which may be referred to as key plates. The key plates **45** are provided with series of spaced vertically elongated openings **46** therealong adapted to receive the ends of a spindle or shaft **47** of the reel C. The spindles **47** are removable from the reels. A series of them may be supported at the rear of the subframe upon suitable brackets **48** where they will be readily accessible.

The reels C are provided with axial openings therethrough to receive spindles **37**; the latter being sufficiently long that their ends extend substantially beyond the sides of the reel as will be noted from Figure 3 and elsewhere.

The steps for loading and unloading a reel C with respect to deck **13** are set forth in my U.S. Patent No. 2,848,123. For a loading operation the booms are moved rearwardly to lower the key plates **45** at opposite sides of a reel C and spindle **47** is then inserted through the reel axis opening and the openings in the key plates. Means may be provided to hold the spindle **47** in place in the axial opening of the reel including such elements as friction clamps **60** secured to the projecting ends of spindle **47** at the outer sides of the reel and key plates. Movement of the boom arms **15** and **16** is under control of the lifting equipment (not shown). It enables the reel C to be lifted upon the deck **13** of the vehicle and secured therein as has been more specifically shown and described in my U.S. Patent No. 2,848,123. The unloading of the reel from the vehicle is the exact reverse.

When large and extremely heavy reels of the type shown are unloaded, in a large majority of instances they will be placed upon the street or at some location, to be used at a later date. For obvious reasons they are placed so that their axes are at right angles to the curb line or parallel to travel of traffic. It may become necessary, when the reel is to be used to swing the reel (while in its upright position) through an angle of 90° (more or less) in order that the plane of the reel will lie parallel to the paying out line of the cable as it is unwound from the reel. The turning manipulation of such reels is not only laborious but extremely dangerous. Many accidents have resulted because of the present day crude means used for the accomplishment of such turning or shifting movements of the reels, which sometimes tilts the reel too much, causing it to fall sidewise, or causing it to roll away, thus endangering the lives and limbs of workers and others.

One mode of turning the reel is shown in Figures 1 and

2 wherein the cable 31 has been disconnected from the spindle 47 at one side of the reel while the other chain 32 is connected upon the other end of spindle 47. By lifting the boom arms 15 and 16 the reel may be tilted, as shown at C, in order that the lower opposite edge forms a fulcrum point 70 upon which the reel can be turned for laterally swinging the same. Such turning or swinging may be accomplished by a laborer 71 who takes a push rod 72 and hooks it or straddles it upon the free end of the spindle 47, at the side where the fulcrum point 70 is located. Merely by pushing on rod 72 the operator can swing the reel through an angle of 90°, more or less. After the reel has been properly positioned, it may be rotatably mounted off the ground surface upon conventional standards or saw-bucks provided therefor.

As a means of stabilizing the reel, I may take a chain 75, one end of which is provided with a hook 76 for connection to a link of the chain 32. The chain 75 is extended across the top of the reel and hooked at its opposite end 77 over the free end of the axis spindle 47. The position to which the reel has been turned by means of the above described operation is shown in Figure 2.

In the manipulation of the reel C for the turning movement above described (as shown in Figures 1 and 2) there will obviously result an eccentric strain upon the lifting equipment B because only one lift chain is used. I have several modifications which will eliminate this.

In Figure 3 is shown lifting and lowering and transporting equipment, as above described, provided with an elongated load bar 90, which midway between its ends has a swivel 91 upon the bar sling 21. This may be any conventional swivel, rotatable through 360°. The load bar at its ends is provided with series of openings 24^a adapted to receive lift chains 31^a and 32^a, each of which is provided with key plates 45^a with openings 46^a. It is of the construction above described, adapted to receive a spindle 47 of a reel C.

The reel C is lifted by the hoist means B completely off the ground, from which position the operator can turn the reel through an angle of 90° (or any desired angle) to position its plane in the desired relation to the line of unwinding of the cable from the reel.

If desired any approved means may be provided to stabilize the position of the bar sling 21 and the load bar 90 until the reel is ready for swivelling movement.

As an alternative method of balancing the load upon the hoisting equipment, I may use a single lift chain 31^b (Figure 4). It has a key plate 47^b at the lower end thereof provided with openings 46^b for receiving an end of a spindle 47 of reel C. This lift chain 31^b is provided at its upper end with a swivel 91^a and a load bar connecting link 93 which may be connected in the opening 33 of the bar sling 21. Lifting of the reel C by means of the chain 31^b stabilizes the load upon the hoist equipment and the operation of turning is the same as that above described for the form of invention shown in Figures 1 and 2.

Figure 5 shows a bar sling 21^b and load bar 90^b; these two bars being pivotally connected on a vertical axis at 100 in order that the load bar 90^b may be rotated on such axis. In order to hold the bar sling and the load bar in the same plane until the desired time for turning reel; I provide a latching construction consisting of a pivot pin 101, the ends of which are provided with segmental shaped latches 102. The latter may be swung downward on the pivot construction 100 to a stop 103. When the latches 102 are swung upwardly to the dotted line position in Figure 5, preferably against the stop 104, the load bar 90^b may be turned for relocating the plane of the reel in the manner above described.

It is apparent from the foregoing that an improved method for manipulation of heavy reels has been provided which is safe and can expeditiously turn the reel. The device is simple, safe in operation and manipulation, does not place any appreciable strain upon the operator, and it is not dangerous to operate. The reel can be accurately oriented with any of the forms of invention shown.

Various changes in the shape, size and arrangement of parts and in and to the steps of turning the reel may be made to the forms of invention herein shown and described without departing from the spirit of the invention or scope of the claims.

I claim:

1. In a safety device for efficiently turning and manipulating a weighty cable reel, the combination of hoisting means, an elongated flexible lifting member connected to the hoisting means and depending therefrom and having a swivel in its upper portion for turning of the member on a vertical axis without twisting, a spindle type axle connected with the lower portion of said flexible lifting member, and a second elongated flexible lifting member connected at an end thereof to the first mentioned elongated flexible lifting member below said swivel and above the axle and being adapted to be looped over a reel with its opposite end connected to said spindle at the opposite side of the reel with respect to the connection of the spindle with said first mentioned elongated lifting member.

2. In a safety device for efficiently lifting and turning and manipulating a weighty cable reel, the combination of hoisting means, a cable reel, a spindle axially connected through the cable reel having the ends thereof protruding from opposite sides of the cable reel, an elongated lifting chain connected to the hoist means at its upper end and at its lower end being connected to one projecting end of said spindle, said chain having a swivel therein above its connection with the spindle which permits the turning of the chain on a vertical axis, a second chain having means for connecting it to the first mentioned chain above the cable reel and below the swivel and extending across the top of the cable reel and at its lower end being connected to the opposite projecting end of said spindle, said last mentioned end of the spindle projecting appreciably beyond the cable reel to provide a lever for facile turning of the reel as the hoist means lifts the cable reel through said first mentioned chain.

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