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2,584,124

LIFTING DEVICE

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Fig. 1

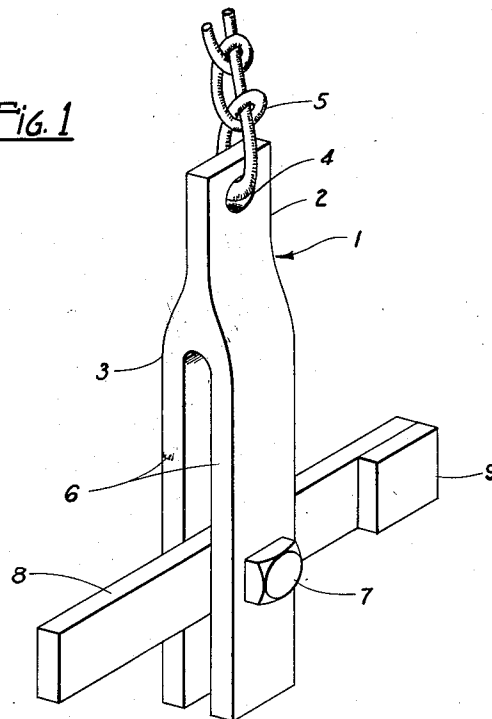
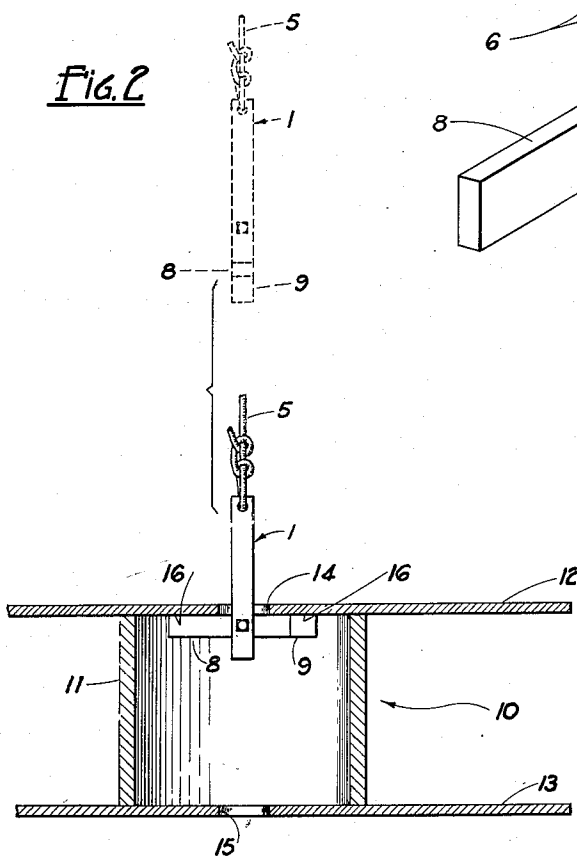


Fig. 2



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## LIFTING DEVICE

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5 Claims. (Cl. 294—93)

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This invention relates to lifting devices and more particularly to a device for lifting cable reels and the like.

Prior methods of lifting and transporting cable reels required a crew of five men and the use of a rope sling to go around a reel, and to be lashed in several directions. This procedure required considerable time from all these men in order to produce a safe lifting arrangement.

Objects of the present invention are to provide a lifting device for cable reels and the like which is operable by a small crew of men, is strong and safe to use, eliminates the need for complicated rope slings and will be easy and inexpensive to manufacture and use.

In accomplishing these and other objects of the present invention, I have provided improved details of structure, the preferred form of which is illustrated in the accompanying drawing, wherein:

Fig. 1 is a perspective view of a device embodying the features of the present invention in position for lifting.

Fig. 2 is a reduced elevational view of the device, shown in dotted lines ready for insertion into a reel and in full lines in lifting position within the reel.

Referring more particularly to the drawing:

Numeral 1 indicates generally an inverted Y-shaped member or body, formed of metal, having a short shank portion 2 and an elongated yoke or fork portion 3 which may be formed integral with the shank portion. An opening 4 is provided adjacent the upper or free end of the shank 2 for engagement with a hoisting element, such as a rope strand or cable 5 depending from a crane (not shown). Through the legs 6 of the yoke 3 extends a pin or bolt 7 which serves to pivotally mount a link or arm 8. Although the arrangement illustrated shows the body 1 bifurcated to form legs 6 and the arm 8 formed of a single piece of bar stock, it is apparent that under certain circumstances strength consideration may require that the arm 8 be bifurcated while the body 1 may adequately be made of a single piece of stock. The center of gravity of the link 8 is displaced from the axis of the pivot pin 7 toward one end thereof, conveniently by the addition of a weight 9 adjacent one end of the link. This causes the link or arm 8 to assume the position shown in dotted lines in Fig. 2 with the weighted end directed downward and the arm 8 substantially in longitudinal alignment with the body 1.

In Fig. 2, the device is shown in connection with

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a cable reel 10, having a hollow drum 11 with retaining flanges 12 and 13. Conventional axial openings 14 and 15 are provided in the flanges 12 and 13, respectively, to admit a rod or pipe of a standard (not shown) used for mounting the reel when winding or unwinding cable. The length of the link or arm 8 is so chosen and its pivot point is so placed that the arm will positively engage the underside or inner surface 16 of the flange 12 immediately surrounding the opening 14. For example, if the arm 8 is pivotally supported at the midpoint of its length, its length would then have to be substantially greater than the diameter of the opening 14.

## Operation

To use the device, the crane or hoist from which it depends is moved until the body 1 is suspended directly over the opening 14, as shown in dotted lines in Fig. 2. The substantial displacement of the center of gravity of the link or arm 8 from its pivot axis causes the arm to hang in alignment with the body 1. With the parts in this position, the cable 5 is lowered through the opening 14 until the link 8 is entirely within the drum 11. The cable 5 is then given a twist about its longitudinal axis causing the body 1 and link 8 to spin. The slightest accidental initial eccentricity (which will invariably exist) of the center of gravity of the link 8 from the spin axis will cause the centrifugal force acting through the center of gravity of the link 8 adjacent the weight 9 to pivot the link into a position in which it is substantially transverse to the body 1. At this time, the cable 5 is given a sudden jerk upward and the arm 8 assumes a position (Fig. 2 solid lines) approximately at right angles to the body 1 with both its segments on either side of pin 7 engaging the underside 16 of the flange 12. When the reel constitutes a symmetrically balanced load, the two areas 16 are preferably diametrically opposite relative to the opening 14 but at other times the areas 16 may lie at opposite ends of a chord. The reel 10 can now be readily lifted and transported by simply hoisting the cable 5. When the reel is in its final position, the tension on the cable 5 is released and the arm 8, under the action of gravity, again assumes a position in alignment with the body 1 so that the device can readily be lifted out through the opening 14.

It is apparent that the lifting device is applicable not only to cable reels but to any article having a substantially vertically extending opening corresponding to the opening 14, which opening may be not only circular but of any desired

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shape. Also, the link 8 need not have a separate weight 9 fixed thereto, but could be pivoted longitudinally off-center or could be formed of varying cross-section or of different materials to provide for the displacement of its center of gravity from the pivot axis.

While I have shown but one embodiment of my invention, it is apparent that the device is susceptible to modification without departing from the spirit of the invention. I do not wish, therefore, to be limited by the disclosures set forth, but only by the scope of the appended claims.

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

I claim:

1. A device for lifting an article having a substantially vertically extending opening through a portion thereof comprising a body, means on said body adapted for engagement with a hoisting element, and a link pivoted to said body about a normally horizontal axis, the center of gravity of said link being substantially displaced from said axis toward one end thereof to cause said link normally to hang in substantial alignment with said body, said link and body being of such size as to easily pass, when in alignment with each other, through said opening, the mass of said body being substantially at least as great as the mass of said link, and said link being so proportioned as to length and location of pivot point as to be capable of engaging, from beneath, opposite areas of said portion of said article forming said opening when said link extends substantially at right angles to said body.

2. A lifting device comprising a body, means on said body adapted for engagement with a hoisting element, an arm pivoted approximately at its midpoint to said body about a normally horizontal axis and a weight fixed to said arm adjacent one end thereof, the mass of said body being substantially at least as great as the mass of said arm.

3. A lifting device comprising a body having a shank portion and a yoke portion, means on said shank portion adapted for engagement with a lifting element, an arm pivoted adjacent its midpoint within said yoke portion about a normally horizontal axis, a weight fixed to said arm adjacent one end thereof to substantially dis-

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place the center of gravity of said arm from its midpoint toward said end, the mass of said body being substantially at least as great as the mass of said arm.

4. A lifting device comprising a body, means on said body adapted for engagement with a hoisting element, and an arm pivoted to said body about a normally horizontal axis having its center of gravity substantially displaced from said axis, the mass of said body being substantially at least as great as the mass of said arm.

5. A method of preparing for hoisting, by association of a hoisting element therewith, an article having a substantially vertically extending opening through a portion thereof comprising the steps of (1) attaching to said hoisting element a body having pivoted to it about a normally horizontal axis a link whose center of gravity is substantially displaced from said axis toward one end of said link to cause said link normally to hang in substantial alignment with said body, said link and said body being of such size as easily to pass, when in alignment with each other, through said opening, and the mass of said body being substantially at least as great as that of said link, (2) lowering said hoisting element until said aligned body and link are in such a position that said link is entirely below that portion of said article forming said opening, (3) rotating said body about a substantially vertical axis sufficiently rapidly to cause said link to swing substantially out of alignment with said body, and (4) while said link is displaced from alignment, raising said body so that said link engages, from beneath, opposite areas of said portion of said article forming said opening, said link being so proportioned as to length and location of pivot point as to be capable of spanning said opening when said link extends substantially at right angles to said body.

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#### REFERENCES CITED

The following references are of record in the file of this patent:

#### UNITED STATES PATENTS

| Number    | Name     | Date          |
|-----------|----------|---------------|
| 538,924   | Mapps    | May 7, 1895   |
| 1,859,191 | Almquist | May 17, 1932  |
| 1,890,734 | Kuberka  | Dec. 13, 1932 |