Oct. 25, 1927. 1,646,804

L. J. WESTWOOD

CABLE WINDING MECHANISM FOR HOISTS

Filed Nov. 28, 1925 2 Sheets-Sheet 1

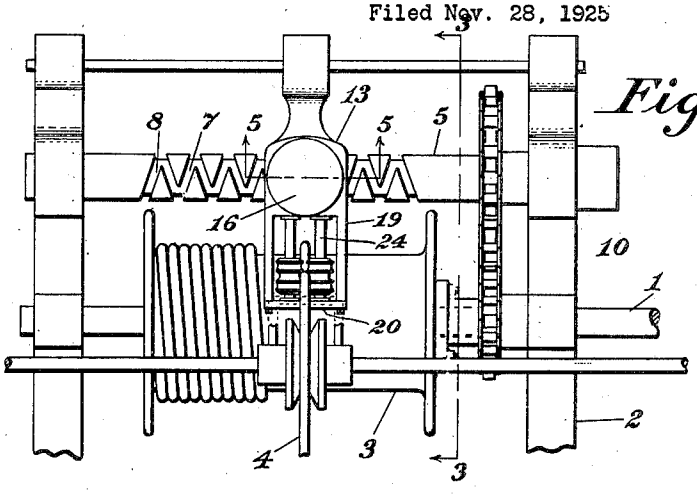


Fig. 1.

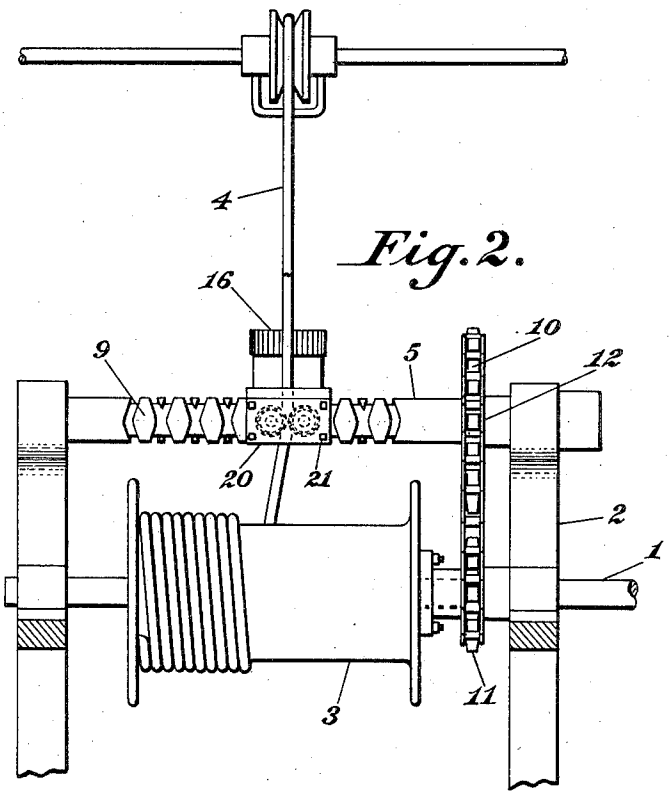


Fig. 2.

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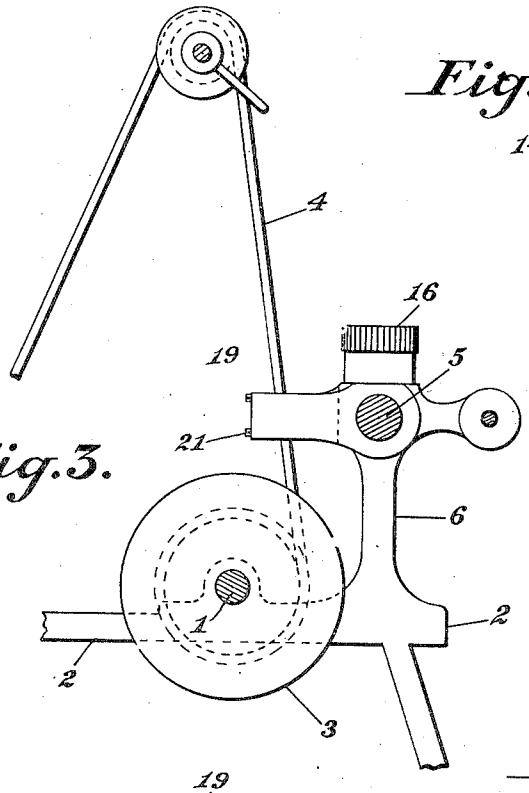


Fig. 3.

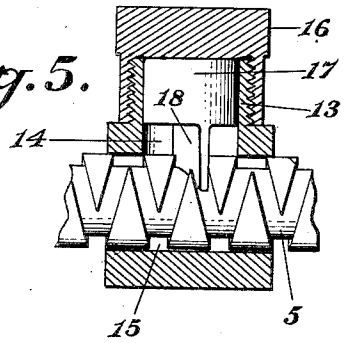


Fig. 5.

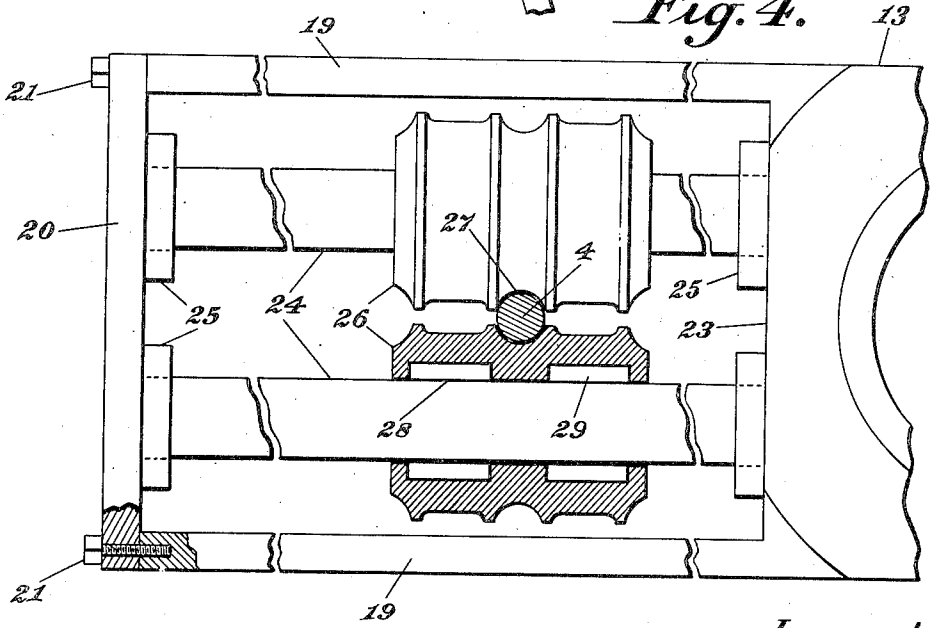


Fig. 4.

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Patented Oct. 25, 1927. 1,646,804

UNITED STATES PATENT OFFICE.

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CABLE-WINDING MECHANISM FOR HOISTS.

Application filed November 28, 1925. Serial No. 72,000.

The invention relates to improvements in cable winding apparatus for hoists as described in the present specification and shown in the accompanying drawings that form a part of the same.

The main object of the invention is to provide for the automatic adjustment of the cable guiding element in lateral relation to the winding drum coincident with the addition of each successive layer of cable.

And generally the objects of the invention are to provide cable winding apparatus which will be efficient in operation and which can be manufactured at small cost.

The invention consists in the novel features of construction, arrangements and combinations more particularly pointed out hereinafter.

In the drawings Figure 1 is a plan view of the device, a portion of the supporting frame being broken away.

Figure 2 is a front elevation of the structure shown in Figure 1.

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

Figure 4 is an enlarged plan view of the slidable guide member, the cable and one of the spools being shown in section.

Figure 5 is an enlarged cross sectional view through the guide block, taken on the line 5—5 of Figure 1, the shaft being shown in full.

Like numerals of reference indicate corresponding parts in the various figures.

Referring to the drawings, 1 is a driven shaft rotatably journaled in bearings in a suitable frame 2 and carrying a winding drum 3 to which is secured one end of the cable 4.

5 is a shaft extending parallel to the winding drum 3 but being on a somewhat higher plane than said drum, said shaft being journaled in bearings in supporting elements 6 which are preferably mounted on the frame 2, said shaft being cut spirally in opposite directions to provide intersecting right and left hand threads, or grooves, 7 and 8, said grooves converging at opposite ends of the threaded portion of the shaft, as at 9, to reverse the direction of travel of the follower element as will be described more fully hereinafter.

10 is a chain operating over sprockets 11 and 12 carried by the driven shaft 1 and the shaft 5 respectively, for imparting rotary movement to said shaft 5 coincident with the rotation of said shaft 1.

13 is a guide block slidably mounted on the shaft 5 and having a vertical opening 14 from the top thereof communicating with the transverse opening 15 through which the shaft 5 extends, said opening being closed by a screw cap 16.

17 is a follower loosely mounted within the opening 14, the lower end of said follower being reduced to provide a tail 18 adapted to extend into the threads or grooves 7 and 8 and to rest on the shaft 5, the end of said tail preferably being concaved to follow the contour of said shaft.

The block 13 is provided with integral arms 19 extending in parallel arrangement in the direction of the winding drum 3 and projecting thereover, the ends of said arms being connected by means of an end piece 20 secured thereto by means of bolts, or other fasteners, 21, said arms 19 and end piece 20 together with the end wall 23 of the block constituting a frame through which the cable extends and by means of which said cable is guided from end to end of the winding drum 3 as the block 13 operates to and fro along the shaft 5.

As the diameter of the load on the winding drum increases with each successive layer of cable it is desirable that means be provided which will readily permit of movement of said cable a corresponding distance in a direction at right angles to the axis of said winding drum so as to insure perfect winding and for this purpose the construction described immediately hereinafter and shown more particularly in Figure 4 of the drawings, is provided, in which:

24 are shafts extending in parallel relation to one another and being mounted at their ends in bearings 25 in the end piece 20 and the wall 23 respectively.

26 are spools slidably mounted on the shafts 24 respectively and spaced from one another a distance less than the diameter of the cable, said spools respectively being provided with centrally disposed circumferential grooves 27 adapted when opposed to one another to provide a guide in which the cable 4 may operate in a direction at right angles to the axis of said spools but from which it cannot escape laterally.

It will have been apparent that as the diameter of the load on the drum 3 is in-

creased, or reduced, the cable is permitted through the movement of the spools 26 to adjust itself accordingly but is restrained from violent movement in any direction.

The inner face of each of the spools 26 is cut away at each side of the groove 27, as at 28, to provide housings for suitable roller bearings 29 to permit of absolute freedom of movement of said spools on their shafts.

In the operation of the invention, assuming that it is desired to wind the cable on to the drum 3, the operating machinery is set in motion to rotate the shaft 1 in the required direction, which shaft through the medium of the chain 10 and sprockets 11 and 12 rotates the shaft 5 and as said shaft 5 rotates the tail 18 of the follower 17 follows the groove 7, or 8, as the case may be, causing the block 13 to be moved longitudinally of said shaft and drawing the cable in a like direction and causing it to wind evenly over the surface of said drum. When the follower reaches the end of the groove on the shaft 5 it passes over the projecting point 9 and enters the other groove causing the block to be moved backwardly along the shaft and to guide the cable accordingly, said cable operating vertically between the spools 26 and upon the superposing of each successive layer on the drum being permitted to move away from said drum through the sliding action of the spools 26 on the shafts 24.

What I claim is:—

In cable winding mechanism for hoists, the combination with a drum and a threaded shaft operatively connected therewith and extending parallel therewith, of a guide block movable longitudinally on said shaft and having parallel extensions therefrom extending at right angles to the axis of said drum, an end piece connecting the outer ends of said extensions, shafts mounted within said extensions at right angles to the axis of said drum, and circumferentially grooved spools slidable on said shafts respectively, said spools respectively being cut away interiorly at opposite sides of the grooves therein for the reception of roller bearings.

Signed at the city of Toronto, Ont. this 31st day of October, 1925.

LOUIS J. WESTWOOD.