Oct. 17, 1944. H. F. PARKER 2,360,713

HOIST

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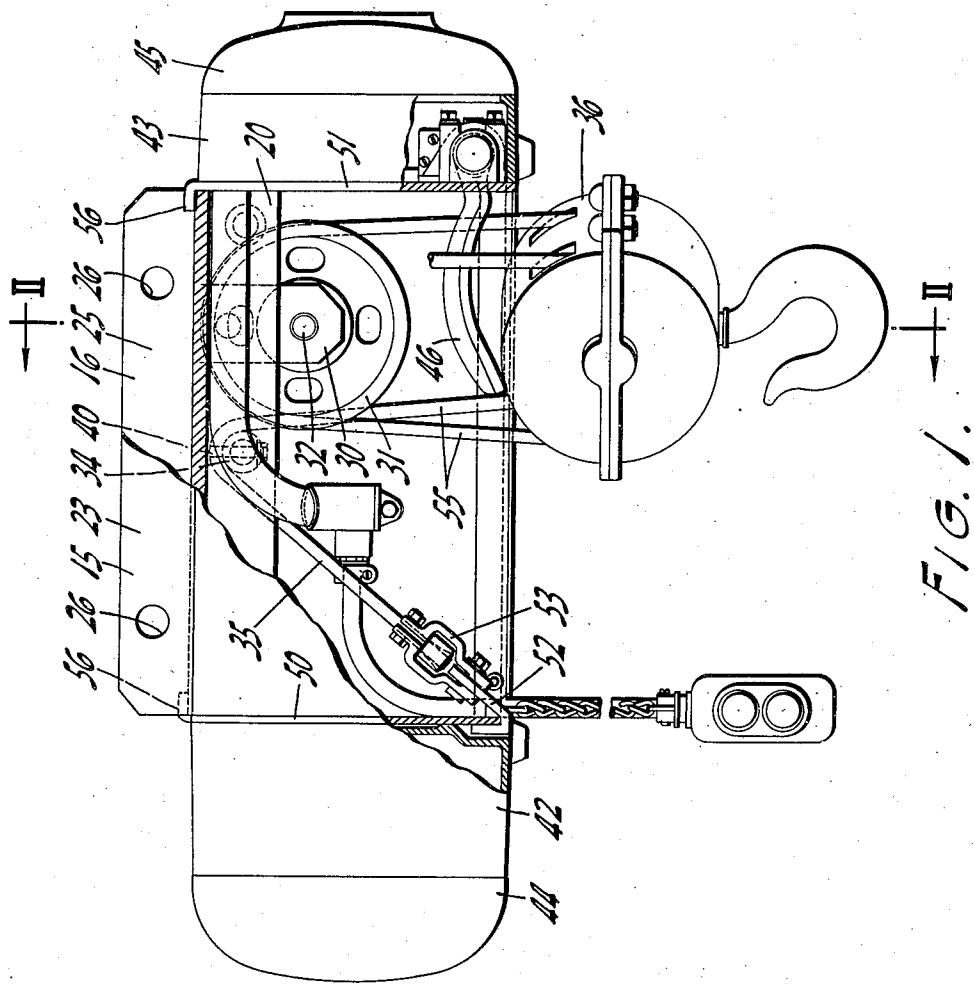


FIG. 1.

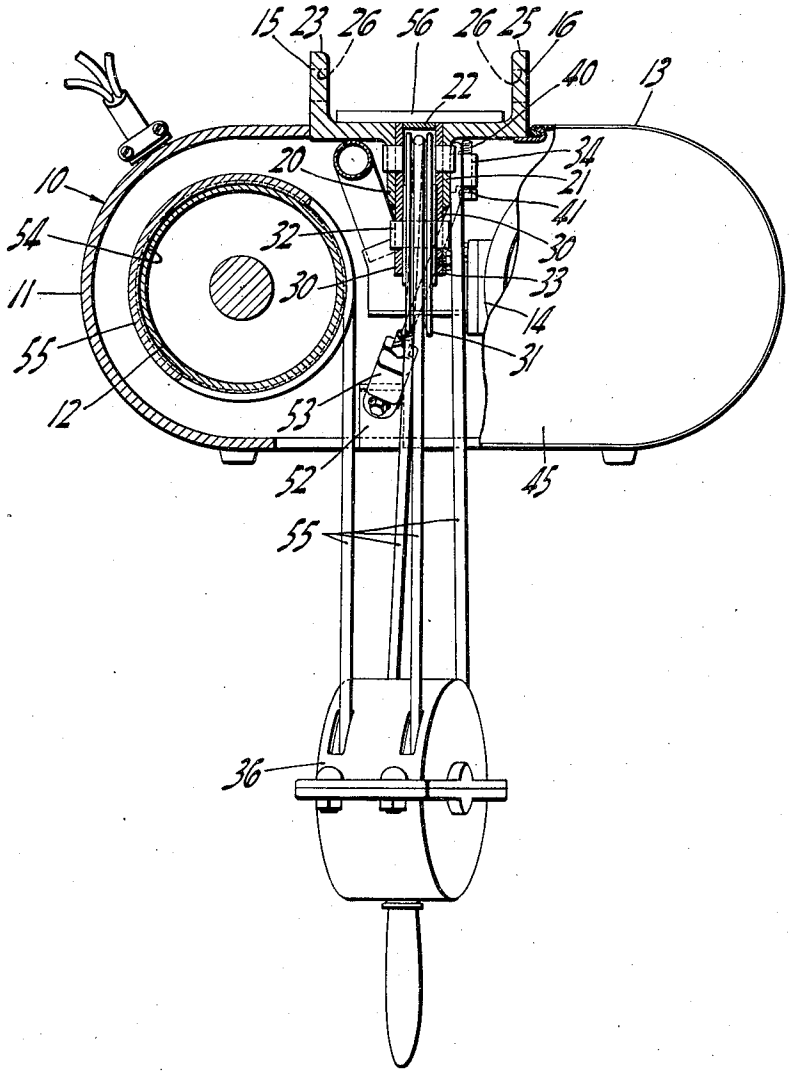
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HOiST

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FIG. 2.



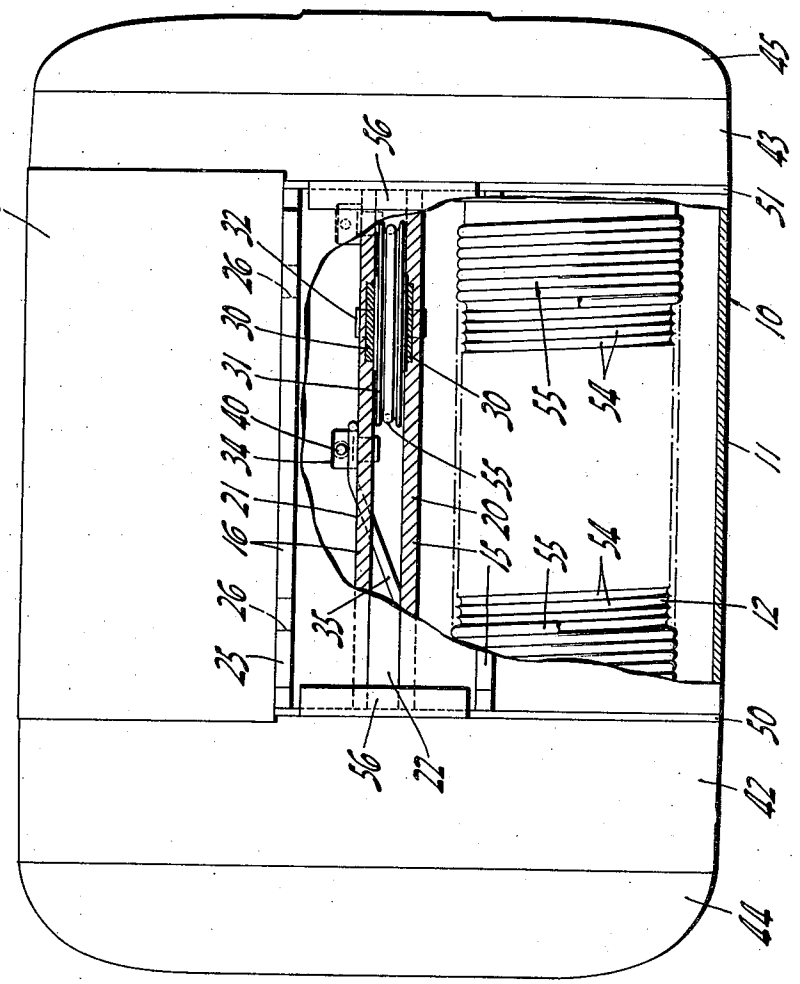
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FIG. 3.



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2,360,713

UNITED STATES PATENT OFFICE

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HOIST

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Application October 29, 1941, Serial No. 416,981

8 Claims. (Cl. 254—168)

My invention relates in general to electrically driven cable hoists, and particularly to that type of hoist in which the drum and the motor are in spaced relation with each other and have their axes substantially parallel one to the other.

As is well known to those skilled in the art, in hoists of this type it is desirable that compactness be achieved in order that economy may be had in the manufacturing of the same.

To this end it has been the principal object of my invention to place the idler sheave of the hoist between the motor and the drum and to so position it that the drum and motor of the hoist may be compactly arranged.

Another object of my invention has been to mount the idler sheave between the longitudinally extending members of the frame of the hoist and to arrange the axis of the sheave substantially at right angles to the axes of the drum and motor.

The above objects and advantages have been accomplished by the device shown in the accompanying drawings, of which:

Fig. 1 is a side elevation of my hoist with portions thereof broken away;

Fig. 2 is a fragmentary, sectional elevation taken on line II—II of Fig. 1; and

Fig. 3 is a plan view of my invention with portions thereof broken away.

My hoist comprises a hoist frame 10 having a casing part 11 for enclosing the drum 12 at one side thereof and a motor cover 13 at the other side of the frame for enclosing the motor 14. Extending longitudinally across the hoist frame are two oppositely arranged Z-bars 15 and 16. These bars have their downwardly extending legs 20 and 21 arranged in spaced relation with each other and separated by means of a filler strip 22. The upward extending legs 23 and 25 of the Z-bars 15 and 16, respectively, are provided with apertures 26 whereby the hoist may be suitably suspended.

Secured to the inner faces of the downwardly extending legs 20 and 21 of the Z-bars 15 and 16, respectively, are idler sheave hangers 30. The idler sheave 31 is disposed between these sheave hangers and is rotatably mounted upon an idler sheave shaft 32. The shaft 32 is mounted in suitable apertures formed in the hangers and may be held in place by a lock plate 33.

Carried by the downwardly extending leg 21 of the Z-bar 16 is a dead end spool 34 over which the dead end 35 of the cable 55 is passed and from whence it extends downwardly to the traveling block 36. Passing upwardly through this spool is a detent screw 40, a flattened surface 41 being provided on the under side of the spool for engagement with the head of the screw. The screw is of sufficient length to have its upper end extend beyond the periphery of the spool to act as a detent to retain the dead end 35 of the cable in place upon the spool.

The hoist frame is provided with a gear housing 42 at one end and with a control housing 43 at the other end. Suitable covers 44 and 45, respectively, are provided for enclosing the housings 42 and 43.

The gear housing 42 contains the gears for connecting the electric motor 14 to the drum 12 and the control housing 43 contains the electrical controls and also the limit lever 46 for controlling the upward movement of the traveling block 36. Since these parts do not form a part of my invention, they are not further shown or described.

An end wall 50 is arranged at the gear housing end of the casing and an end wall 51 is arranged at the control housing end thereof. The walls are integral parts of the casing and a flange 56 formed along the top edge of each engages and is secured to the Z-bars 15 and 16. A dead end anchor bracket 52 is engaged with the bottom edge of the casing end wall 50 where it is suitably secured in place. This bracket is preferably placed at the left-hand side of the plane passing through the sheave, as shown in Fig. 2, so that the dead end 35 of the cable will be tightly drawn against the leg 21 of the Z-bar 16 and thus be securely held in place upon the dead end spool 34. A dead end anchor block 53 is secured to the upwardly extending leg of the bracket 52 and this anchor block serves to attach the dead end 35 of the cable to the hoist casing.

The drum 12 of my invention is suitably mounted in bearings provided in the end plates 50 and 51 and in the gear housing 42. The bearings for the drum and the gears connecting the drum with the motor do not form part of the present invention and are not therefore further shown or described. The drum is provided with the customary helically formed groove 54 for the reception of the cable 55.

From the foregoing it will be clear that the cable 55 passes upwardly from the dead end anchor around the dead anchor spool 34 and thence downwardly around the first sheave of the traveling block 36. From this sheave the cable passes upwardly between the drum and motor and around the idler sheave 31 in a plane

substantially parallel to the axes of the drum and the motor, passing downwardly again and around the second sheave of the traveling block, from which it is extended upwardly and passed around the drum of the hoist.

Obviously, some modifications of the details herein shown and described may be made without departing from the spirit of my invention or the scope of the appended claims, and I do not, therefore, wish to be limited to the exact embodiment herein shown and described, the form shown being merely a preferred embodiment thereof.

What is claimed is:

1. A hoist comprising a housing, a cable drum rotatably carried thereby, a cable engaging the periphery of the drum and having a dead end, an electric motor carried by said housing and arranged in spaced relation with said drum, means for operatively connecting said motor and said drum, an anchor carried by said cable for securing the dead end thereof to said housing, centrally arranged supporting members disposed across the top of the housing and being longitudinally arranged with respect to the axis of the drum, hangers depending from said members and disposed between said drum and said motor, and an idler sheave carried by said housing and engageable with the active portion of the cable, said sheave being disposed between and rotatably supported by said hangers and having its axis substantially perpendicular to the axis of said drum.

2. A hoist comprising a housing, a cable drum rotatably carried thereby, a cable engaging the periphery of the drum and having a dead end, an electric motor carried by said housing and arranged in spaced relation with said drum, means operatively connecting said motor and said drum, an anchor carried by said cable for securing the dead end thereof to said housing, centrally arranged supporting members disposed across the top of the housing and being longitudinally arranged with respect to the axis of the drum, hangers depending from said members and disposed between said drum and said motor, a dead end spool carried by one of said members for supporting that portion of the cable adjacent the dead end near the top of the housing, and an idler sheave carried by said housing and engageable with the active portion of the cable, said sheave being disposed between and rotatably supported by said hangers and having its axis substantially perpendicular to the axis of said drum.

3. In a hoist, the combination with a casing, a drum rotatably carried thereby, a motor carried by said casing for driving said drum, a cable engaging the drum and having a dead end, of parallel Z-bars located near the top of the casing and arranged in planes substantially parallel with the axis of the drum, said bars having their downwardly extending legs arranged adjacent each other and in spaced relation, a dead end spool carried by one of said downwardly extending legs for supporting that portion of the cable adjacent to the dead end thereof near the top of the casing, an anchor secured to the dead end of said cable, an anchor bracket carried by said casing and having connection with said anchor, and an idler sheave rotatably supported by and between said downwardly extending Z-bar legs and engageable with an active portion of said cable, said sheave being so disposed as to have its plane of rotation substantially parallel to said legs.

4. In a four-part rope hoist, the combination with a casing, a drum rotatably carried thereby, a motor carried by said casing for driving the drum, a traveling block, and a cable engaging said drum and said block and having a dead end, of parallel Z-bars located near the top of the casing and arranged longitudinally in planes substantially parallel with the axis of the drum, said bars having their downwardly extending legs arranged adjacent to each other and in spaced relation, said downwardly extending legs lying in planes which are substantially parallel to each other and which extend into the space between said drum and said motor, and an idler sheave rotatably supported by and between said downwardly extending legs and being engageable with an active portion of said cable, the space between said drum and said motor being substantially greater than the thickness of said sheave and narrower than the diameter thereof, said sheave having its axis substantially perpendicular to the faces of the downwardly extending legs.

5. In a hoist having a rope of more than two parts, the combination with a casing, a drum rotatably carried thereby, a motor carried by said casing for driving the drum, a traveling block, and a cable engaging said drum and said block and having a dead end, of a centrally arranged stiffening member carried by the casing and located near the top thereof and substantially parallel to the axis of said drum, said member having parallel depending flanges arranged adjacent each other and in spaced relation, said depending flanges lying in planes which are substantially parallel to each other and located above the space between said drum and said motor, and an idler sheave rotatably supported by and between said depending flanges and being engaged with an active portion of said cable, the space between said drum and motor being substantially greater than the thickness of the sheave and narrower than the diameter thereof, said sheave having its axis substantially perpendicular to the faces of the downwardly depending flanges.

6. A hoist comprising a housing, a cable drum rotatably carried thereby, a cable engaging the periphery of the drum and having a dead end, an electric motor carried by said housing and arranged in a spaced relation with said drum, means operatively connecting said motor and said drum, supporting members disposed across the top of the housing and arranged longitudinally with respect to the axis of the drum, a dead end spool carried by one of said members near the top of said housing for supporting that portion of said cable adjacent the dead end, anchoring means carried by said housing and located beneath said dead end spool, an anchor secured to the dead end of said cable and engaging said anchoring means, spaced hangers depending from said members and disposed between said drum and said motor, and an idler sheave rotatably supported between said hanger and engageable with an active portion of the cable, said sheave having its axis substantially perpendicular to the axis of said drum.

7. In a hoist, the combination with a casing, a cable drum, rotatably supported thereby, an electric motor carried by said casing for driving said drum, a cable engaging the drum and having a dead end, and a traveling block, of means for reeving the cable, comprising an idler sheave carried by and enclosed within said casing, said sheave being engageable with an active portion of said cable and mounted intermediately between said drum and said motor, said sheave having its axis substantially perpendicular to the axis of said drum, an anchor secured to the dead end of the cable, supporting means near the top of said cas-

ing for supporting a loop in the dead end of the cable and from which the cable passes downwardly for engagement with said traveling block, means secured to said casing and arranged beneath said supporting means for attaching said anchor, said sheave and said anchor being so disposed as to be on the side of the drum having the tangentially depending pass of the cable from the drum.

8. In a hoist, the combination with a casing, a cable drum rotatably supported thereby, an electric motor carried by said casing for driving said drum, a cable engaging said drum and having a dead end, and a traveling block, of means for reeving the cable, comprising an idler sheave carried by and enclosed within said casing, said sheave being engageable with an active portion of said cable and mounted between said drum and said motor, said sheave having its axis substantially perpendicular to the axis of said drum, a dead end spool carried by said casing near the top thereof for the support of a loop in the dead end portion of the cable, the cable passing downwardly from said spool for engagement with said traveling block, anchoring means carried by said housing and located beneath said dead end spool, an anchor secured to the dead end of said cable and engaging said anchoring means, said sheave and said anchor being disposed on the same side of the drum as that having the tangentially depending pass of the cable from the drum.

HUMPHREY F. PARKER.