

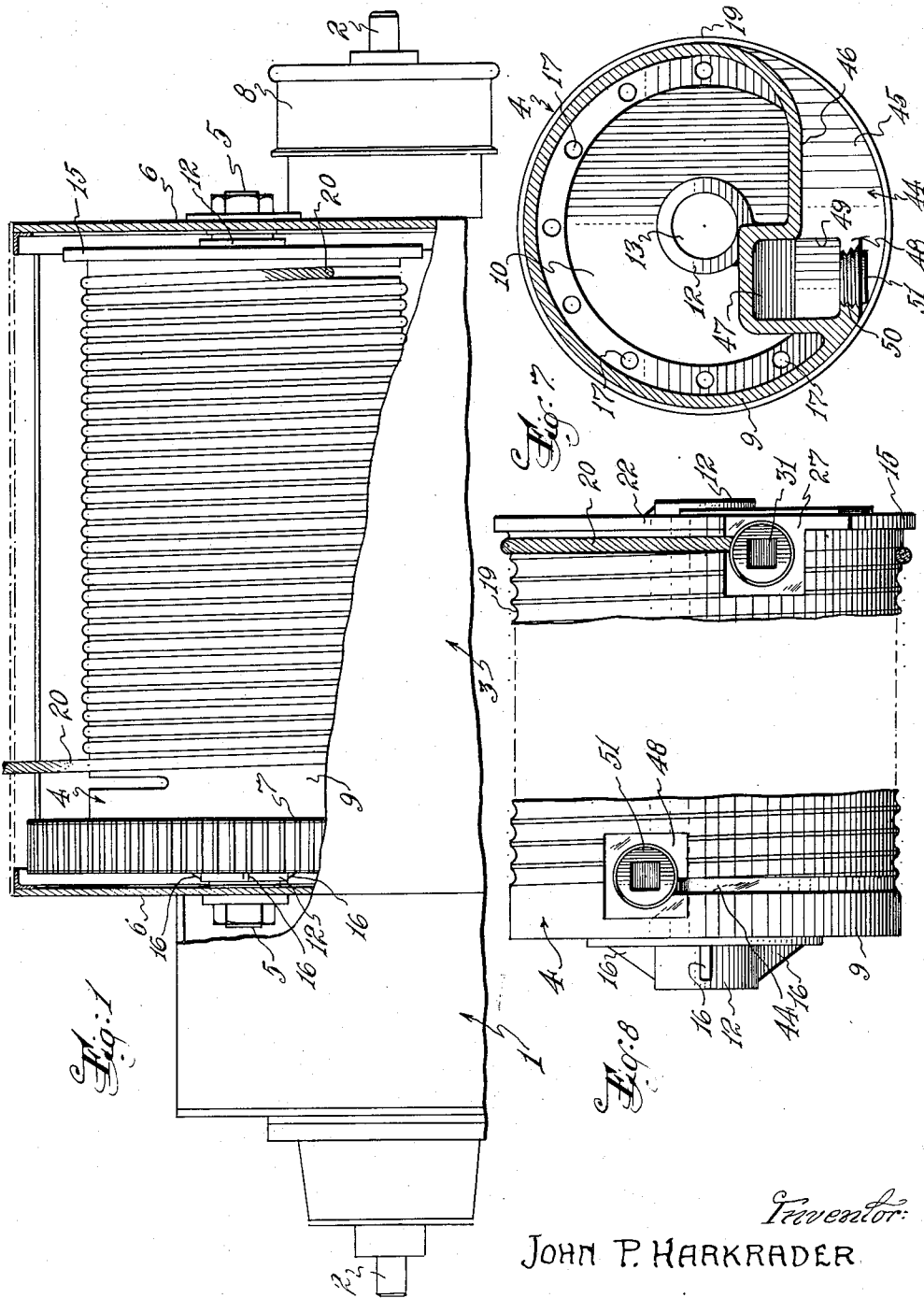
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J. P. HARKRADER
HOISTING DRUM

2,584,099

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2 SHEETS—SHEET 1



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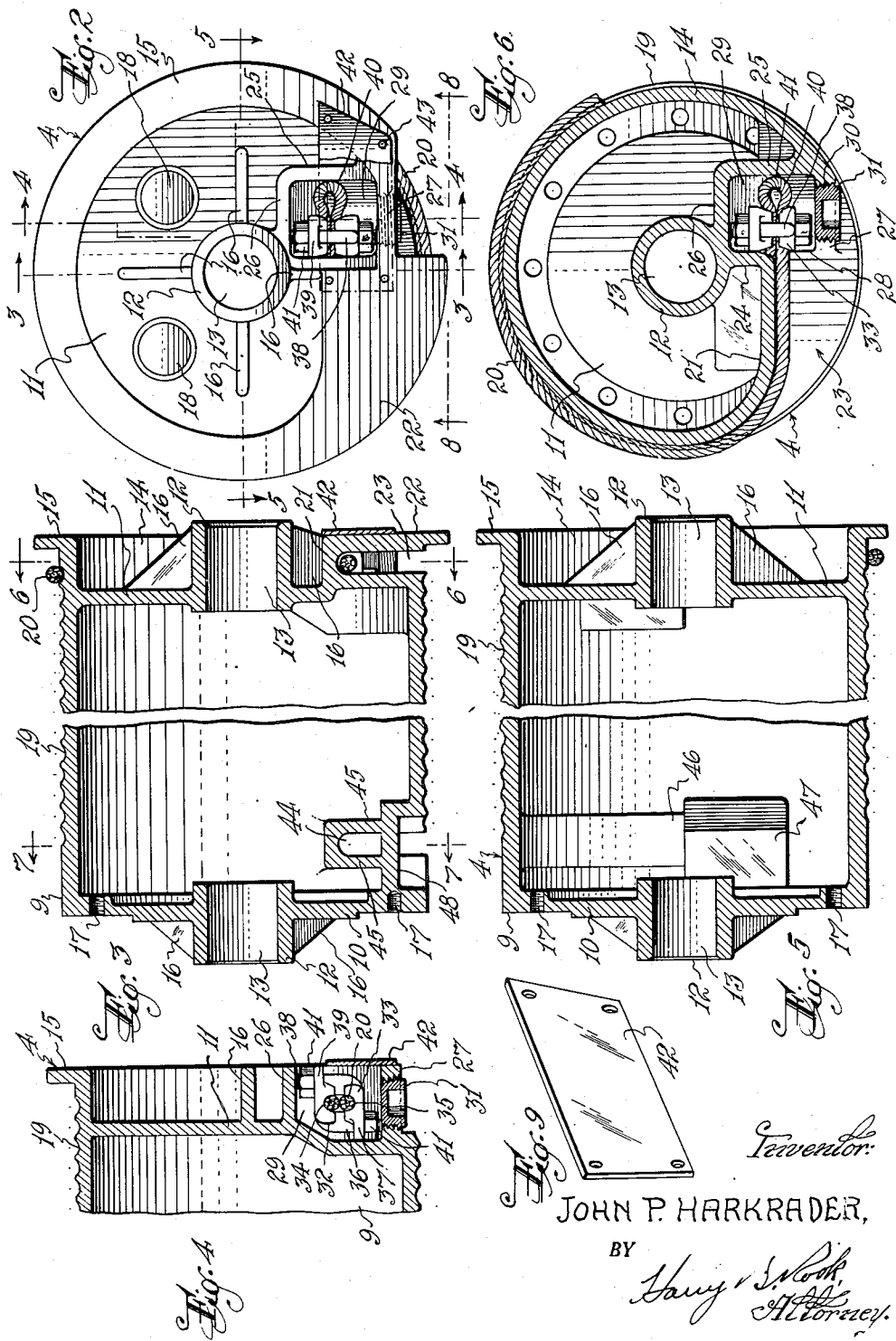
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2 SHEETS—SHEET 2



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HOISTING DRUM

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3 Claims. (Cl. 242-117)

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The invention relates to hoisting drums such as used with power winches.

In the ordinary hoisting winch construction, an opening is formed in one end of the drum, that is, the end opposite the gear casing, for receiving means for anchoring the end of the cable to the drum or for "dead-ending" the fall of the cable as it is called. This is a difficult operation and adjustment of the cable for length is also difficult.

This practice also necessitates providing right and left hand winches with right and left hand drums, respectively, which complicates the construction and makes it costly.

It is a prime object of the present invention to eliminate the aforesaid difficulties and disadvantages.

It is another object of the present invention to provide means for securing a cable to a hoisting drum by which the anchor clip at the end of the cable may be passed through an opening in the drum and securely locked in place.

Another object of the invention is to provide means for anchoring the end of a cable to a drum that is convenient and readily removable to permit adjustment of the cable.

Another object of the invention is to provide an opening at each end of the drum with a curved entrance to each opening whereby all sharp points may be avoided in the cable and whereby kinking of the cable is impossible.

Another object of the invention is to provide means for closing the opening in the drum that is readily removed and does not interfere with the coiling of the cable on the drum.

Another object of the invention is to provide means for anchoring a cable to a hoisting drum that is simple and rugged in structure, inexpensive to manufacture and effective in use.

The invention broadly consists in forming a hole and a communicating groove at each end of the drum so that a cable or wire fall with an anchoring clip can be inserted in the desired end of the drum. Each hole is plugged to prevent withdrawal of the cable and clip. This permits the use of one drum for both hands.

Other objects and advantages of the invention will be apparent from the description thereof to follow taken in connection with the accompanying drawings in which:

Figure 1 is a fragmentary side view of a winch construction with a hoisting drum embodying my invention, parts being shown broken away.

Figure 2 is an end view of the drum.

Figure 3 is a vertical sectional view taken on the plane of the line 3-3 of Figure 2.

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Figure 4 is a fragmentary vertical sectional view taken on the plane of the line 4-4 of Figure 2.

Figure 5 is a horizontal sectional view taken on the plane of the line 5-5 of Figure 2.

Figure 6 is a vertical sectional view taken on the plane of the line 6-6 of Figure 3.

Figure 7 is a vertical sectional view taken on the plane of the line 7-7 of Figure 3.

Figure 8 is a bottom plan view of the drum taken from the line 8-8 of Figure 2 and looking in the direction of the arrows.

Figure 9 is a perspective view of the closure plate.

In Figure 1, a power winch 1 is shown with a drive shaft 2 adapted to be connected to a suitable source of power such as an electric motor (not shown). Enclosed in a housing 3 supported on the framework of the winch is a hoisting drum 4. The drum is rotatably mounted on a shaft 5 which is mounted between the end walls 6 of the housing. A gear 7 fixed to one end of the drum and operatively connected by a suitable gearing unit to the drive shaft 2 serves to rotate the drum. A brake drum 8 is shown on one end of the shaft 2.

The hoisting drum 4 comprises a hollow cylindrical metal body 9 closed at its ends by walls 10 and 11. Each end wall is formed with a hub bearing portion 12 having a central opening 13 for the shaft 5. Beyond the end wall 11, the body of the drum is formed with an extension 14. The extension terminates in an outwardly projecting flange 15. The hub bearing portions are strengthened by webs 16. End wall 10 is provided with spaced screw threaded openings 17 for receiving fastening members for securing the gear 7 to the drum. The opposite end wall 11 is provided with plugs or discs 18 for closing openings in the wall.

The surface of the hoisting drum is formed with the usual helical groove 19 for the reception of the convolutions of the wire rope or cable 20 of the drum. My invention is concerned with means for anchoring the end of the wire rope or cable to either end of the drum.

For anchoring the cable to the right hand end of the drum as viewed in Figures 1 and 8, the cylindrical extension 14 of the drum body is deformed or depressed adjacent the bottom as viewed in Figures 2 and 6 and merges into a flattened portion 21. This reduces the diameter of the wall portion of the extension but enlarges the flange portion thereof to form a wall 22 parallel to the adjacent end wall 11, but spaced therefrom to provide a radial passage

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23 therebetween. The flattened portion 21 terminates in a vertical extension 24 which connects with the adjacent hub bearing 12. The lower portion of the drum extension 14 to the right of the hub bearing 14 as viewed in Figures 2 and 6 extends upwardly to form a vertical wall portion 25 disposed parallel to the vertical extension or radial wall 24 and then extends horizontally to form a horizontal wall portion 26 which connects with the hub bearing 12. The extension 14 is flattened at this point to provide a horizontal wall 27 across the space between the inner end wall 11 and the wall 22. The horizontal wall 27 is below the flattened portion 21 of the extension thereby leaving an opening between said flattened portion and the wall 27, and forming a radial shoulder 28 on the wall 11. The wall 27 extends from the end of the wall 22 to the flange 15 at the base of the vertical wall 25. The end wall 11, vertical walls 24 and 25 and horizontal walls 26 and 27 form a compartment or recess 29 opening laterally, the horizontal wall 27 being formed with a screw threaded opening 30 to provide an entrance to the compartment or recess. The opening 30 is closed by a plug 31.

When the wire rope or cable 20 is to be attached to the hoisting drum 4, the cable is wrapped around the extension 14 of the drum and its end threaded through the passage 23 between the walls 11 and 22, over the flattened portion 21 of the extension, through the opening between the end of the flattened portion 21 and the horizontal wall 27, into the compartment 29. An anchoring clip or device is inserted through the lateral opening or through the bottom opening 30 into the compartment 29. The anchoring device comprises a pair of complementary clamping plate members 32 and 33 having opposed grooves 34 and 35, respectively. Plate 32 is formed with a downwardly extending screw threaded post 36 extending through an opening 37 in the adjacent end of the plate 33. Plate 33 is formed with an upstanding screw threaded post 38 extending through an opening 39 formed in the adjacent end of the plate 32. The end of the cable is folded upon itself to form a loop 40 and the folded portions placed between the clamping plates 32 and 33 in the grooves 34 and 35. Lock nuts 41 on the posts 36 and 38 hold the end of the cable clamped in the grooves between the plates. The anchoring device is smaller than the opening 30 in wall 27 but larger than the opening between the end of the flattened portion 41 and the horizontal wall 27 and also larger than the passage 23. When pressure is exerted upon the cable, the anchoring plates 32 and 33 with the cable end clamped thereto will be pulled to their final position in the compartment 29, abutting against the extension 24 and shoulder 28, thereby securely anchoring the cable to the drum. The plug 31 prevents the anchoring plates and cable from falling out of the compartment radially upon slackening of the cable, and a plate 42 removably secured to the flange 15 and wall 22 by bolts 43 may be provided to prevent said parts from falling laterally out of the compartment.

Provision is also made for anchoring the end of the cable on the left hand end of the drum as viewed in Figures 8 and 1. For this purpose, the wall of the body 9 of the drum, as shown in Figure 7, is deformed to provide a circumferential groove or passage 44 having flat vertical side walls 45 and a horizontal wall 46 connecting the

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inner edges of the side walls. The horizontal inner wall 43 at its inner end, at the deepest point of the groove 44, is shaped to provide a substantially square shaped compartment or recess 47 extending inwardly of the drum. A horizontal wall 48 extends across the side walls 45 at the outer end of the compartment 47, leaving an opening between the wall 46 and the wall 48 and providing shoulders 49 on the inner ends of the side walls 45. The horizontal wall 48 is formed with a screw threaded opening 50 which is adapted to be closed by a plug 51.

As in the form of the invention in Figures 2 and 6, the cable 20 is threaded through the groove 44 and through the opening between the walls 46 and 48 into the compartment or recess 47 and its end is secured therein by the anchoring clip or device, the plates 32 and 33 of said device abutting against the shoulders 49 of the side walls 45 and against the adjacent wall of the compartment.

It will thus be seen that the cable 20 may be very conveniently anchored either at the right hand side of the drum or at the left hand side. Furthermore, the anchoring clip 32, 33 can be easily and quickly adjusted along the cable, or the cable can be inserted through the clip to vary the length of the cable as desired.

Changes in details of construction might be made without departing from the principle of the invention and it is desired to be limited only by the appended claims and the state of the prior art.

What I claim is:

1. A hoist drum comprising a hollow cylindrical body having an interior wall forming a radial shoulder, the peripheral wall of the drum having a circumferential groove which opens through said interior wall to nicely receive the end portion of a cable, and said peripheral wall of the drum also having an opening permitting free passage of an anchoring device on such a cable into abutment with said radial shoulder, and a plug removably secured in said opening to overlie said cable end portion and said anchoring device so as to hold them against disconnection from the drum through said groove and opening.

2. A hoist drum as defined in claim 1 wherein said interior wall forms a part of a chamber closed except for said groove and said opening, in which said anchoring device is located so that movement of the anchoring device and the corresponding end of the cable relative to the drum is limited in all directions.

3. In combination the hoist drum as defined in claim 1, a hoisting cable having an end portion in said groove, and an anchoring device connected to said end portion of the cable and adjustable longitudinally thereof and in abutting relation to said radial shoulder.

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