Aug. 20, 1940. V. S. PENOTE 2,212,244

WINCH

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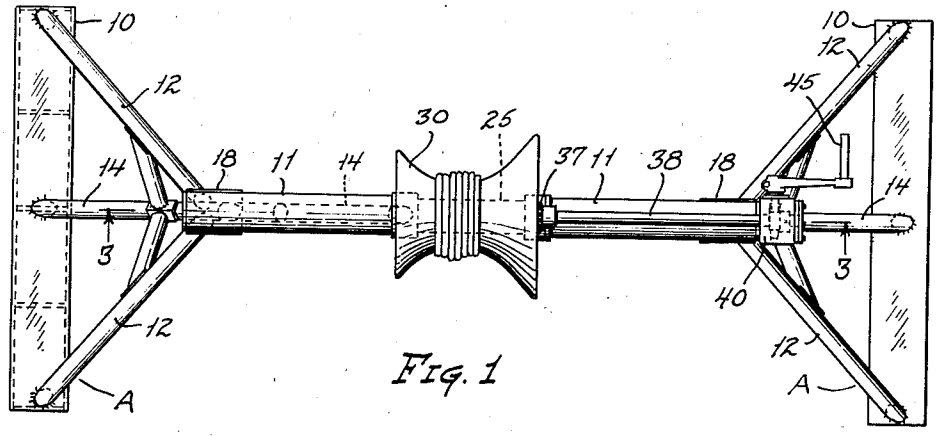


FIG. 1

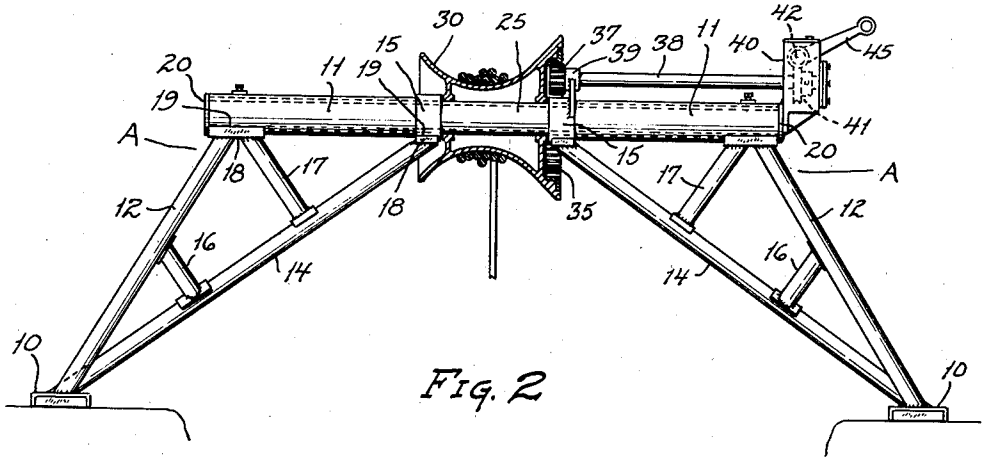


FIG. 2

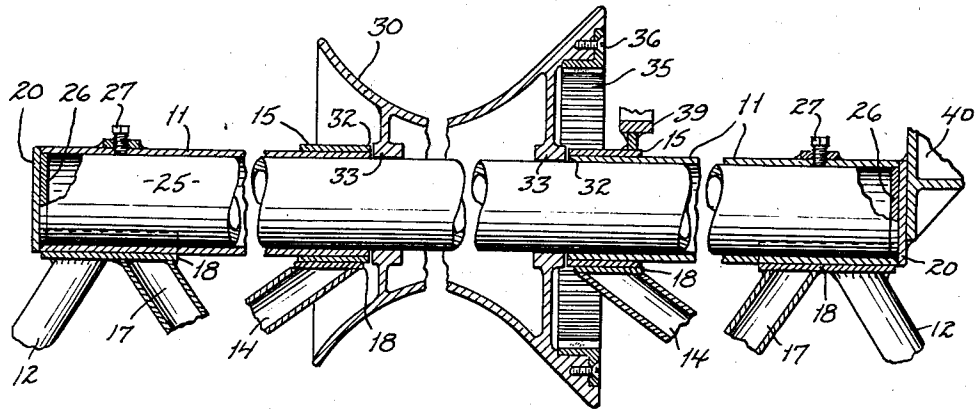


FIG. 3

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WINCH

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3 Claims. (Cl. 254—145)

This invention relates to a portable winch, and especially to a winch for use in laying pipe lines and the like.

The general object of the present invention is to provide an improved winch of rugged construction, in which the members which are subjected to greatest wear and strain are readily replaceable.

A further object of the present invention is to provide a portable winch, which may be positioned astride a trench or like excavation and which will be especially adapted for raising and lowering objects such as a pipe line into and out of the trench, which winch will be so constructed as to be comparatively light in weight and at the same time extremely rugged, to enable the handling of comparatively heavy loads.

Another object is to provide a winch for raising and lowering objects in and out of a trench, which winch will be so constructed that it may be dismantled for movement or shipment from one place to another and when dismantled may be readily stored and yet which winch may be assembled by unskilled labor.

Other objects and features of this invention will become more apparent from the following description, reference being had to the accompanying drawing, in which I illustrate a preferred embodiment of the invention.

In the drawing, Fig. 1 is a plan view of my improved winch construction; Fig. 2 is a side elevation of the winch, certain parts being broken away to more clearly illustrate the internal construction; Fig. 3 is a fragmentary section of the winch, on an enlarged scale, the plane of the section being indicated by the line 3—3 on Fig. 1.

The winch, as shown in the drawing, is supported by a pair of spaced frames A adapted to be positioned at opposite sides of a trench. Each frame has the base 10 in the form of an inverted channel and extending upwardly and inwardly therefrom are three struts or tubes which, at their upper ends, are connected with a horizontal tube 11 which extends transversely over the trench. Two of these struts, shown as 12 in the drawing, are secured to opposite ends of their base 10, and extend upwardly to the outer end of the tube 11, while the third strut 14 extends from the center of the base 10 and is connected to the inner end of the tube 11. As shown in the drawing, a suitable reinforcing band 15 encircles the tube 11 at the inner end, and the strut 14 is secured to this band. Suitable cross-bracing, such as tubes 16, extend between the struts 12 and strut 14, while other braces, such as tubes 17, extend from the strut 14 to the outer end of the tube 11. The various elements, tubes and the like, which form the frames may be secured in any well known manner, preferably, however by welding. The method of making the welds forms the subject matter of my copending application for Letters Patent filed October 1, 1938, and assigned Serial No. 232,729. Briefly, this method when applied to winch frames contemplates welding the upper ends of the struts 12 and 14 to the faces of the channel members 18 and then welding the longitudinal edges 19 of the flanges of the channel members to the sides of the tubular member to which the strut is joined. The reinforcing members are welded to the struts in a similar manner.

The frames A are joined together by a member which also supports a cable winding drum 30. As illustrated, the tubes 11 are slid onto the opposite ends of a connecting shaft or tube 25. When the member 25 is a tube, as shown, the ends thereof may be closed by closure plates 26 and welded to the ends of such tube, and arranged to abut the respective closure plates 20 which are secured to the outer ends of each tube 11, thereby to maintain the inner ends of the tubes 11 a predetermined minimum distance apart. It will be noted that the external diameter of the tube 25 is substantially the same as the internal diameter of the tubes 11, thus the former tube not only joins the two frames A, but in addition reinforces the tubes 11.

The frame connecting tube or member 25 is removably secured in position within the tubes 11 in any well known manner, such, for instance, as by the set screws 27 as shown in Fig. 3.

The cable winding drum 30 is rotatably mounted on the member 25, between the inner ends of the tubes 11. Axial movement of the cable winding drum 30 is restricted by the inner faces 32 of the tubes 11, which as heretofore described are maintained a minimum distance apart by reason of the supporting end of the tubes 25 and 11, and coact with hub formations 33 of the drum.

The driving mechanism for the winch is best shown in Fig. 2. The cable drum 30 is provided with an internal gear ring 35, which may be secured to the drum by means of bolts 36. Meshing with this gear ring is a pinion 37, which is secured to a shaft 38, the inner end of which is mounted in a bearing 39. This bearing may be clamped in place on one of the two frame members 11 or secured thereto by welding, as indicated in the drawing. The outer end of the shaft 38 is journalled in a gear box 40, which likewise

may be removably secured to a tube 11 or may be welded thereto. Secured to the shaft 38, within the gear box 40, is a worm wheel 41, which is engaged by a worm gear 42 mounted on a cross-shaft journalled in the gear box and to which is secured an operating crank 45, thus enabling the operation of the hoist from a point adjacent the side of the trench.

From the foregoing description it will be seen that I have provided a very simple, light and yet rigid construction and by utilizing the shaft which rotatably supports the winding drum as a tie between the supporting frame members A, the winch may be readily dismantled for packing in a relatively small space. This also facilitates replacement of the drum supporting shaft which due to the fact that the drum is rotatably mounted thereon, and the fact that the shaft provides the only tie between the two supporting members A, is practically the only member subjected to any substantial wear or stress.

I claim:

1. In a winch, a pair of frame members, each frame member comprising an elongated base and a tube, said tubes extending in a direction normal to their respective frame members, tubular struts interconnected between opposite ends of the base and the outer end of said tubes, a tubular strut connected between the mid-point of each base and the inner end of the respective tube, a cross brace between said struts and between said struts and said tube, a reinforcing member encircling the inner end of said tube, a shaft having its opposite ends extending into the tubes of respective frame members, said shaft forming the only interconnecting member between the two frame members, and a cable winding drum rotatably mounted on said shaft and provided with hub members engaging the inner ends of said tubes and reinforcing members.

2. In a winch, a pair of frame members, each member having an elongated base at its lower end and a tube at its upper end, tubular struts interconnected between opposite ends of the base and the outer end of said tube, a tubular strut connected between the mid-point of said base and the inner end of said tube, cross bracing between said struts and between said struts and said tube, a cap secured to the outer end of said tube and a reinforcing member encircling the inner end of said tube, a shaft having closed ends extending into the tubes of respective frame members and engaging the caps of respective tubes to maintain the inner ends of said tubes a predetermined minimum distance apart, and a cable winding drum rotatably mounted on said shaft and provided with hub members engaging the inner ends of said tubes and reinforcing members.

3. In a winch, a pair of frame members, each member having an elongated base at its lower end and a tube at its upper end, said tube extending in a direction normal to the frame members, tubular struts interconnected between opposite ends of the base and the outer end of said tube, a tubular strut connected between the mid-point of said base and the inner end of said tube, tubular cross bracing between said struts and between said struts and said tube, a cap secured to the outer end of said tube and a reinforcing member encircling the inner end of said tube, a shaft for connecting the frame members of a pair and having closed ends extending into the tubes of respective frame members and engaging the caps thereof, respective tubes to maintain the inner ends of said tubes a predetermined distance apart, a cable winding drum rotatably mounted on said shaft and provided with hub members engaging the inner ends of said tubes and reinforcing members, manually operative gearing carried by one of said tubes, and a driving connection between said gearing and said winding drum.

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