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GUIDE FOR BOWLINES.

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1,103,055.

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Fig. 3.

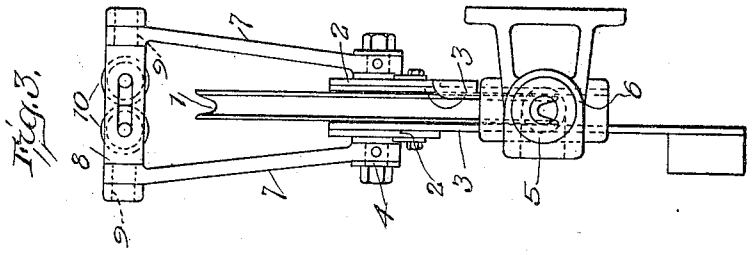


Fig. 2.

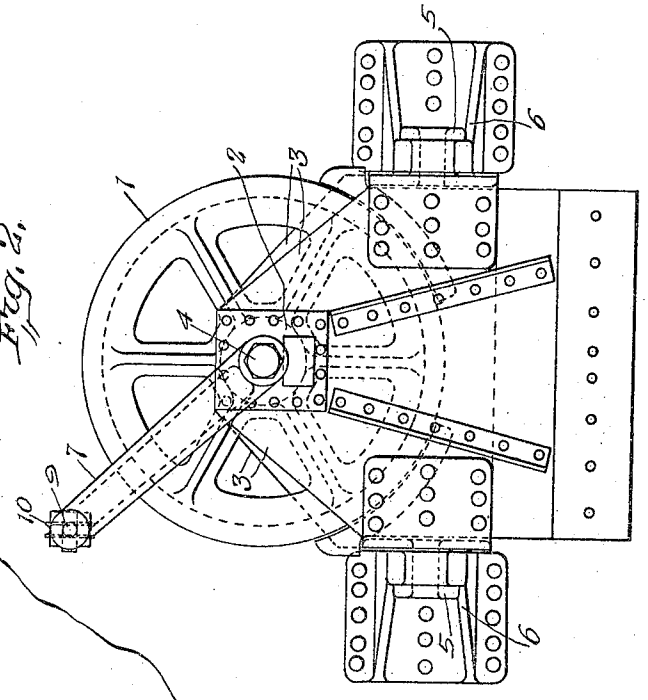
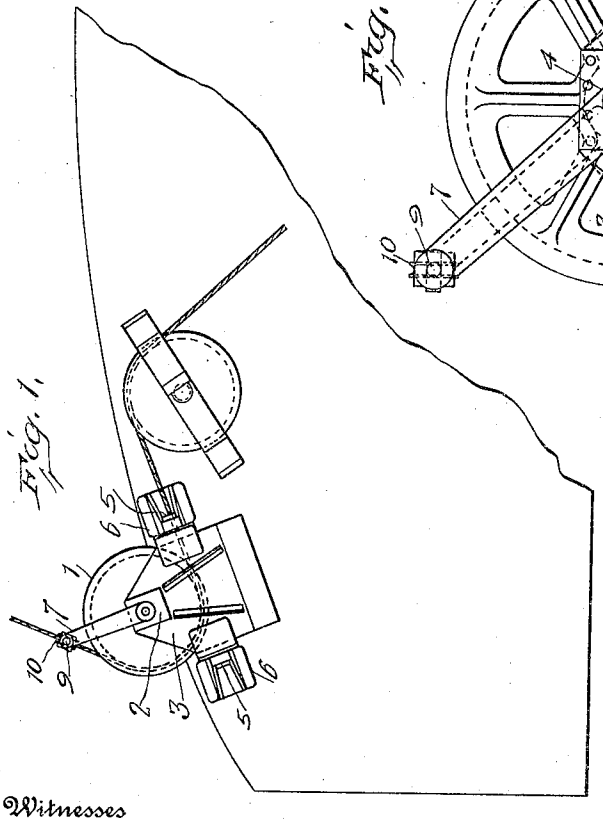


Fig. 1.



Witnesses

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UNITED STATES PATENT OFFICE.

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GUIDE FOR BOWLINES.

1,103,055. Specification of Letters Patent. Patented July 14, 1914.

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To all whom it may concern:

Be it known that we, CHARLES B. KING and JACOB W. FELLMETH, citizens of the United States, residing at Marion, in the county of Marion and State of Ohio, have invented certain new and useful Improvements in Guides for Bowlines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to guides for bow lines such as are employed in connection with elevator dredges and the like. In the operation of dredges of this character the bow of the dredge is moved from side to side between the shores of the channel in which it is working. This movement is imparted to the bow of the dredge by means of a bow line or cable, one end of which is fixed at a point on the shore and the other end of which is connected with a power winch on board the dredge. The winch and its driving mechanism are arranged some distance in the rear of the bow of the dredge. In order that the pull may be exerted on the dredge at the desired point a suitable guide is secured to the dredge near the forward end thereof and the cable passed about this guide. There is a bow line on each side of the dredge, and, as one is taken up by the winch to move the bow of the dredge in one direction, the other is paid out. The point on shore at which the shore end of the bow line is fixed is often considerably higher than the deck of the dredge and the bow line will extend at an angle to the deck of the dredge. As the bow is moved toward and away from the shore this angle will vary. When the guide, or roller, about which the bow line passes, is fixed, this varying angle causes the bow line to bind and twist in the guide and thereby subject both the guide and the line to severe wear.

The object of the present invention is to provide a guide for the bow line which will automatically accommodate itself to the varying angle of the line and will maintain the adjacent portions of the line at all times in the same plane with the sheave which constitutes a part of the guide.

In the accompanying drawings, Figure 1 is a top, plan view of a portion of the bow of a dredge showing the guide and bow line; Fig. 2 is a top, plan view of a guide embodying the invention; and Fig. 3 is an end elevation of the guide shown in Fig. 2.

In these drawings we have illustrated one embodiment of our invention and have shown the same as comprising a sheave 1 rotatably mounted on a bracket 2 which preferably comprises two parts or plates 3 arranged on opposite sides of the sheave. A journal pin 4 extends through the two plates of the bracket and through the hub of the sheave and serves both to connect together the two plates 3 and to form a journal for the sheave. Rigidly secured to the two plates 3 on opposite sides of the bracket and forming a part of the bracket are trunnions 5 having their axis extending at substantially right angles to the axis of the sheave. These trunnions are mounted in bearing brackets 6 which are rigidly secured to the deck of the dredge or to any other suitable support. One or both of the trunnions 5 are hollow and the bow line is passed through one of the trunnions, between the plates 3 of the bracket and about the periphery of the sheave. The arrangement of the hollow trunnion relatively to the periphery of the sheave is such that that portion of the line extending between the sheave and the hollow trunnion will have its axis at all times substantially coincident with the axis of the pivoted bracket 2. Consequently, the movement of the sheave and the bracket about the pivotal center of the latter will not affect the relation of the line to the sheave and the line will be maintained in the same plane with the sheave and will feed onto and off the same without binding or otherwise subjecting the cable or sheave to undue wear. A guide is also provided to maintain that portion of the line which extends from the outer side of the sheave in the plane of the sheave. This guide preferably comprises two arms 7 pivotally mounted at their inner ends on the pin 4 and having pivotally mounted on their outer ends a frame 8 comprising two side members rigidly connected one to the other and having at their opposite ends trunnions 9 which are journaled in the ends of the arms 7.

Guide rollers or sheaves 10 are rotatably mounted between the two fixed members of the frame 8 and are adapted to receive the line between them. These sheaves preferably have their peripheries grooved and the outer edges of the two sheaves are arranged close together so that the line is confined be-

tween them. The axes of the rollers or sheaves 10 are arranged at right angles to the axis of the sheave while the axis of the frame 8 is substantially parallel with the axis of the sheave. The sheave is normally supported in a horizontal plane and rotates about a vertical axis. It will be apparent, therefore, that any variation of the angle of the bow line will cause the same to raise or lower the arms 7 and bracket 2 to which these arms are secured. The guide rollers or sheaves 10 will prevent any displacement of the adjacent portion of the line relatively to the sheave and will thus prevent the line from being thrown off the cable or from being subjected to undue wear by severe frictional engagement with the flanges of the grooved sheave. Any fore and aft movement on the part of the line will cause the arms 7 of the bracket for the auxiliary guide to move about their pivotal connection to the bracket 2, and the supporting frame 8 will move about its axis to maintain the guide rollers or sheaves 10 in proper relation to the line.

The operation of the device will be readily understood from the foregoing description and it will be apparent that we have provided a guide or fair-lead, as it is commonly known, for bow lines for dredges, which, when mounted upon the deck of the dredge will have its sheave free to move about an axis extending substantially parallel with said deck, that is, in a substantially horizontal plane, whereby it will automatically accommodate itself to the variations in the angular relation of the bow line to the deck of the dredge, as the dredge moves toward and away from the bank upon which the shore end of the bow line is fastened. This movement of the sheave is accomplished without any displacement of the line at either point of divergence from the sheave and this prevents any binding or undue friction between the parts. The line is guided onto and off the sheave at its inner point of divergence therefrom by means of the hollow trunnion, about the axis of which the sheave swings and it is maintained in proper relation to the sheave at its outer point of divergence therefrom by means of the line guide comprising the arms 7 and the guide members at the outer end thereof. Further, this line guide serves to move the sheave and its supporting bracket about their axes. Otherwise, the line would be forced out of the groove in the sheave. If desired a counterweight, as indicated at 11, may be provided to counterbalance the weight of the sheave on the bracket, and thus relieve the line of the weight of these parts.

We wish it to be understood that we do not desire to be limited to the details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

Having thus fully described our invention, what we claim as new and desire to secure by Letters Patent, is:—

A fair-lead for bow lines comprising a bracket, a sheave rotatably mounted on said bracket, said bracket being provided with a hollow trunnion extending substantially tangentially to the periphery of said sheave, a bearing for said trunnion, and a line guide carried by said bracket and extending beyond the periphery of said sheave, and a counterweight connected with said bracket and arranged on that side of the axis thereof opposite said sheave.

In testimony whereof, we affix our signatures in presence of two witnesses.

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Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."