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H. O. BEDGOOD

MEANS FOR ANCHORING DREDGES

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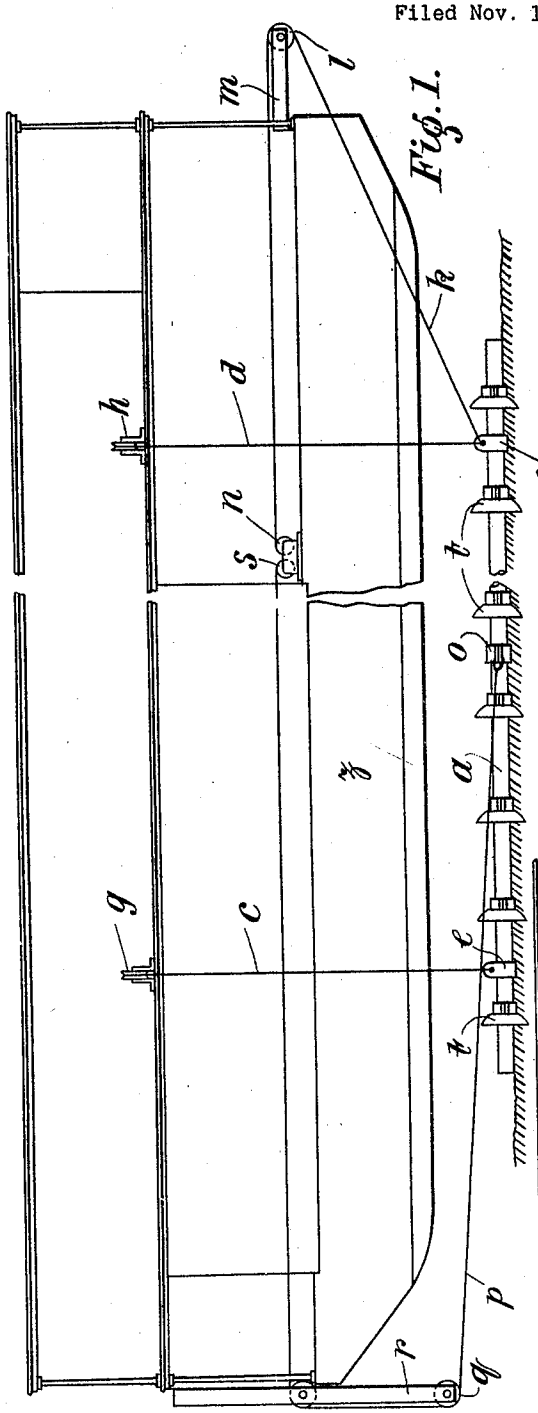


Fig. 1.

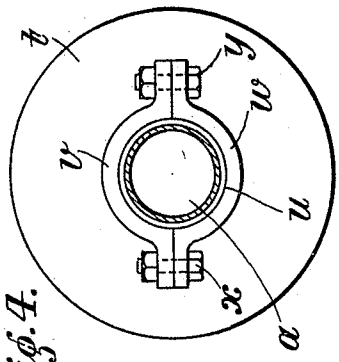


Fig. 4.

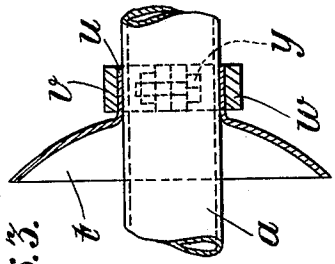


Fig. 3.

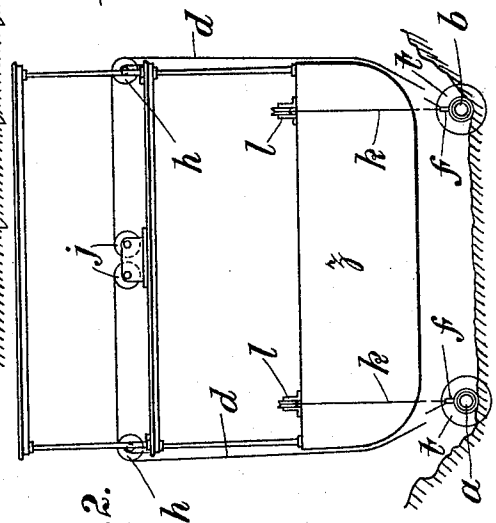


Fig. 2.

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UNITED STATES PATENT OFFICE.

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MEANS FOR ANCHORING DREDGES.

Application filed November 11, 1925, Serial No. 68,291, and in Great Britain January 3, 1925.

This invention relates particularly to the anchoring of dredges of the type known as "forward feed dredges," i. e. a dredge in which a number of revolving cutters carried by the dredge are employed in making a wide cut or channel in advance of the dredge, the latter being slowly advanced step by step as the channel is cut.

Dredges of this type are usually anchored, while in operation, by means of one or more head lines connected to the vessel and to an anchorage some distance forward of the vessel, the dredge being moved by hauling in the head lines.

One disadvantage of anchoring a dredge in this manner is that the anchorage has to be constantly set down in the bed of the stream or on the land and removed to new positions as the dredge continues its forward movement. A further disadvantage is that some land through which the dredge is required to operate does not form a suitable anchorage on account of the weedy or other growth which prevents an ordinary anchor from taking a proper grip, with the result that the dredge is liable to drag its anchor, when being moved.

The object of this invention is to provide an improved anchorage particularly for forward feed dredges which can be carried by the dredge itself and adapted to be quickly hauled up and set down in a new position, these operations being entirely controlled from the dredge, thus obviating the necessity of using independent anchors which have frequently to be hauled up and is re-arranged in advance of the dredge, either in the stream or on the land.

To the attainment of the aforesaid object, according to our present invention the improved anchorage consists of one or a plurality of long members carried on or by the vessel, said member, (or members), being each provided with a plurality of projections adapted to engage in the ground to serve as anchors for the dredge.

Preferably, said member (or members) is (or are) arranged with its (or their) axis (or axes) parallel to the longitudinal axis of the dredge, means being provided on the dredge for hauling up or lowering said member (or members) as desired. There may, for example, be two such members one at each side of the dredge, and the means referred to may also be adapted to steer the dredge to one side or the other or to turn it.

Means may also be provided for hauling said member (or members) forward or aft relatively to the dredge when it is desired to alter the position of the anchorage, said means being also adapted to haul the dredge forward or aft relatively to the member (or members).

The, or each member, may consist of a long bar or tube provided, at spaced intervals, with a plurality of projections (such, for example, as flat or concavo-convex discs, polygonal plates, anchor flukes or equivalent) which are are adapted to engage with the ground to serve as anchors for the dredge. Hauling lines, operated by hauling means on the dredge, are provided for hauling each bar or tube forward or aft and for raising and lowering it.

In order that the invention may be readily understood, reference is now made to the annexed sheet of drawings, whereon is illustrated, by way of example, a constructional form of the present invention applied to a dredge of the forward feed type.

On the drawings:—

Fig. 1 is a diagrammatic elevation of the dredge and shows one of the anchor tubes in operation;

Fig. 2 is a diagrammatic end elevation corresponding to Fig. 1;

Fig. 3 is a fragmentary view, partly in section and to a large scale, of one of the anchor tubes with an anchor disc attached thereto; and

Fig. 4 is an end view corresponding to Fig. 3.

Referring to the drawings:—

Two anchor carrying members *a* and *b* which, in this case, consist of long steel tubes, are suspended from the dredge *z*, one on the port side and the other on the starboard side, by means of wire ropes *c* and *d* the ropes *c* being attached to clips *e* and the ropes *d* to clips *f*, which are secured to the tubes *a* and *b*. The ropes *c* are carried inboard over rotatable sheaves *g* and are led to a hauling winch (not shown) while the ropes *d* are led inboard over rotatable sheaves *h* and thence over rotatable sheaves *j* to the same hauling winch as the ropes *c*. A wire rope *k* is also attached to the clip *f* on each tube *a* and *b*, and is led inboard over a rotatable sheave *l*, carried on a forwardly projecting boom *m*, and passes over rotatable

sheaves n wherefrom it is led to the aforesaid hauling winch which operates the wire ropes c and d. A clip o is secured to each tube a and b, a wire rope p being secured to said clip, and led inboard over a rotatable sheave q carried on a vertically projecting boom r. The rope p then passes over a rotatable sheave s to the aforesaid hauling winch.

Steel discs t of concavo-convex form, are attached, at spaced intervals, to the tubes a and b, each disc being formed with a part u which embraces the tube a or b and is gripped between the two halves v and w of a split clamp provided with bolts x and y adapted to pull said halves together to grip the part u of the disc t.

As aforesaid, the wire ropes c, d, k, and p are led to the same hauling winch (not shown), said winch having four winding drums corresponding to the four wire ropes, and in order to lower the tubes a and b into their operative positions, the said ropes are paid out until the tubes take up the position indicated in Figs. 1 and 2, with portions of the steel discs t engaging in the ground. Owing to the large number of discs which are used a very firm anchorage is thus formed, which it is impossible for the dredge to drag. For this reason the tubes a and b with the discs t thereon may be used for hauling the dredge forward to a new working position, and in order to do this the wire ropes c, d, and k are paid out while the ropes p are hauled in by means of the aforesaid winch, the dredge being advanced relatively to the tubes a and b. It will be understood that the dredge may also be hauled aft by paying out the ropes c, d, and p and hauling in the ropes k.

If it is desired to alter the position of the anchorage the tubes a and b are first raised by means of the wire ropes c and d and thereafter the wire ropes k are hauled in, while the ropes p are paid out. Thus, the tubes a and b are moved forward relatively to the dredge. Similarly, of course, the tubes a and b can be moved aft relatively to the dredge by hauling in the ropes p. When the tubes a and b have been moved sufficiently far from their original positions they are again lowered into the operative position by paying out the ropes c and d.

By arranging the two tubes a and b as described, it is also possible to raise one of said tubes and advance it to a new position without interfering with the other tube and without interfering with the dredging operations.

Moreover, the two tubes a and b can be used for steering the dredge to one side or the other in order to alter the width of cut. For example, the ropes c and d on the one side of the dredge are hauled in while the ropes c and d on the other side are paid out. It is also possible to turn the dredge by applying the pull entirely to one side of the vessel.

It will be readily understood that the present invention has the advantage that a very simple form of portable anchorage is provided, the discs t on the tubes a and b exercising a strong grip on the ground, while said tubes can be readily and quickly altered in position and the dredge moved forward or aft or from side to side when it is desired to lengthen or widen the cut or channel which the dredge is making.

It will also be understood that the tubes a and b need not be of steel but may be of any other suitable material, and said tubes may be replaced by bars of timber or metal. Similarly, the discs t can be replaced by flat discs, polygonal plates, anchor flukes or equivalent. The tubes a and b, or their equivalent, may either be continuous members or may be made in sections and built up as desired, and the number of discs t, or equivalent, provided on each bar may be varied according to the nature of the ground with which said discs are required to engage.

Having now fully described my invention what I claim and desire to secure by Letters Patent is:—

1. Anchorage means for dredges comprising, in combination, a bar-like member adapted to be suspended beneath the dredge, means on said member for engaging in the ground so as to act as anchors, and means for hoisting and lowering said member and for hauling the latter forward or aft relatively to the dredge.

2. Anchorage means for dredges comprising, in combination, a bar-like member adapted to be suspended beneath the dredge, a plurality of projections on said member for engaging in the ground so as to act as anchors, means for hoisting and lowering said member, and means for hauling said member forwards or aft relatively to the dredge.

3. Anchorage means for dredges comprising, in combination, a bar-like member adapted to be suspended beneath the dredge, means on said member for engaging in the ground so as to act as anchors, and means connected to said member for hoisting or lowering the member and for moving the dredge to one side or the other, and means for moving the member forwards or aft relatively to the dredge and for moving the latter forwards or aft relatively to said member.

4. Anchorage means for dredges comprising, in combination, a long bar, adapted to be suspended beneath the dredge, a plurality of projections on said bar for engaging in the ground so as to act as anchors, and hauling lines for hoisting and lowering

said bar and for hauling the latter forward or aft relatively to the dredge.

5. Anchorage means for dredges comprising, in combination, a long bar, adapted to be suspended beneath the dredge, a plurality of projections on said bar for engaging in the ground so as to act as anchors, hauling lines for hoisting and lowering said bar, and hauling lines for moving said bar forwards or aft relatively to the dredge.

6. Anchorage means for dredges comprising, in combination, a long bar, adapted to be suspended beneath the dredge, a plurality of projections on said bar for engaging in the ground so as to act as anchors, hauling lines connected to said bar for hoisting and lowering the latter and for hauling the latter forward or aft relatively to the dredge, and means on the dredge for hauling in or paying out said lines.

7. Anchorage means for dredges comprising, in combination, a long bar, adapted to be suspended beneath the dredge, a plurality of projections on said bar for engaging in the ground so as to act as anchors, hauling lines connected to said bar for hoisting and lowering the latter, means on the dredge for hauling in or paying out said lines, hauling lines for hauling the bar forwards or aft relatively to the dredge, and means on the dredge for hauling in or paying out said last mentioned lines.

8. Anchorage means for dredges comprising, in combination, a long bar, adapted to be suspended beneath the dredge, a plurality of projections on said bar for engaging in the ground so as to act as anchors, hauling lines for hoisting and lowering the bar and for adjusting the dredge to one side or the other, hauling lines for moving the bar forwards or aft relatively to the dredge or for moving the dredge forwards or aft relatively to the bar, and means on the dredge for hauling in or paying out said lines.

9. Anchorage means for dredges comprising, in combination, a long bar, adapted to be suspended beneath the dredge with its axis arranged longitudinally thereof, a plurality of discs on said bar for engaging in the ground so as to act as anchors, hauling lines for hoisting and lowering said bar and for hauling the latter forward or aft relatively to the dredge, and a winch on the dredge for hauling in or paying out said lines.

10. Anchorage means for dredges comprising, in combination, a long bar, adapted to be suspended beneath the dredge with its axis arranged longitudinally thereof, a plurality of discs on said bar for engaging in the ground so as to act as anchors, hauling lines for hoisting and lowering said bar, hauling lines for moving the bar forwards or aft relatively to the dredge, and a winch on the dredge for hauling in or paying out said lines.

11. Anchorage means for dredges, comprising, in combination, a plurality of long bars adapted to be suspended beneath the dredge, a plurality of discs on each bar for engaging in the ground so as to act as anchors, hauling lines connected to each bar for hoisting and lowering the latter and for hauling the latter forward or aft relatively to the dredge, and means on the dredge for hauling in or paying out said lines.

12. Anchorage means for dredges comprising, in combination, a plurality of long bars adapted to be suspended beneath the dredge, a plurality of discs on each bar for engaging in the ground so as to act as anchors, hauling lines connected to each bar for hoisting and lowering the latter, hauling lines for moving the bar forwards or aft relatively to the dredge, and means on the dredge for hauling in or paying out said lines.

13. Anchorage means for dredges comprising, in combination, a plurality of long bars adapted to be suspended beneath the dredge, with their axes arranged longitudinally thereof, a plurality of discs on each bar for engaging in the ground so as to act as anchors, hauling lines connected to each bar for hoisting and lowering the bar and for moving the dredge to one side or the other, hauling lines connected to each bar for moving the latter forwards or aft relatively to the dredge or for moving the dredge forwards or aft relatively to the bar, and means on the dredge for hauling in or paying out said lines.

In testimony whereof I affix my signature.

HUBERT OSWALD BEDGOOD.