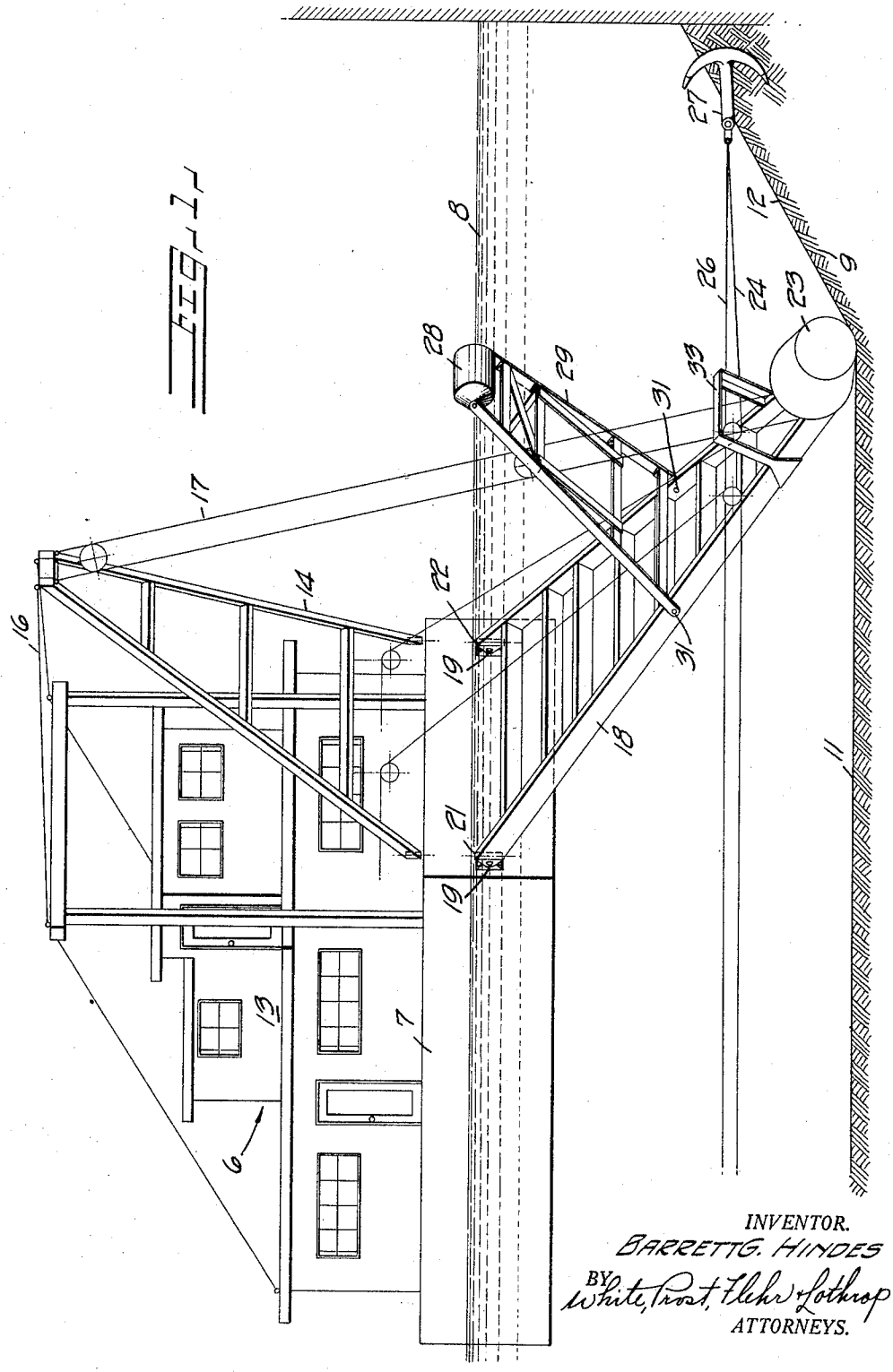
June 13, 1933. B. G. HINDES 1,913,670

DREDGE

Filed April 11, 1931 2 Sheets-Sheet 1



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DREDGE

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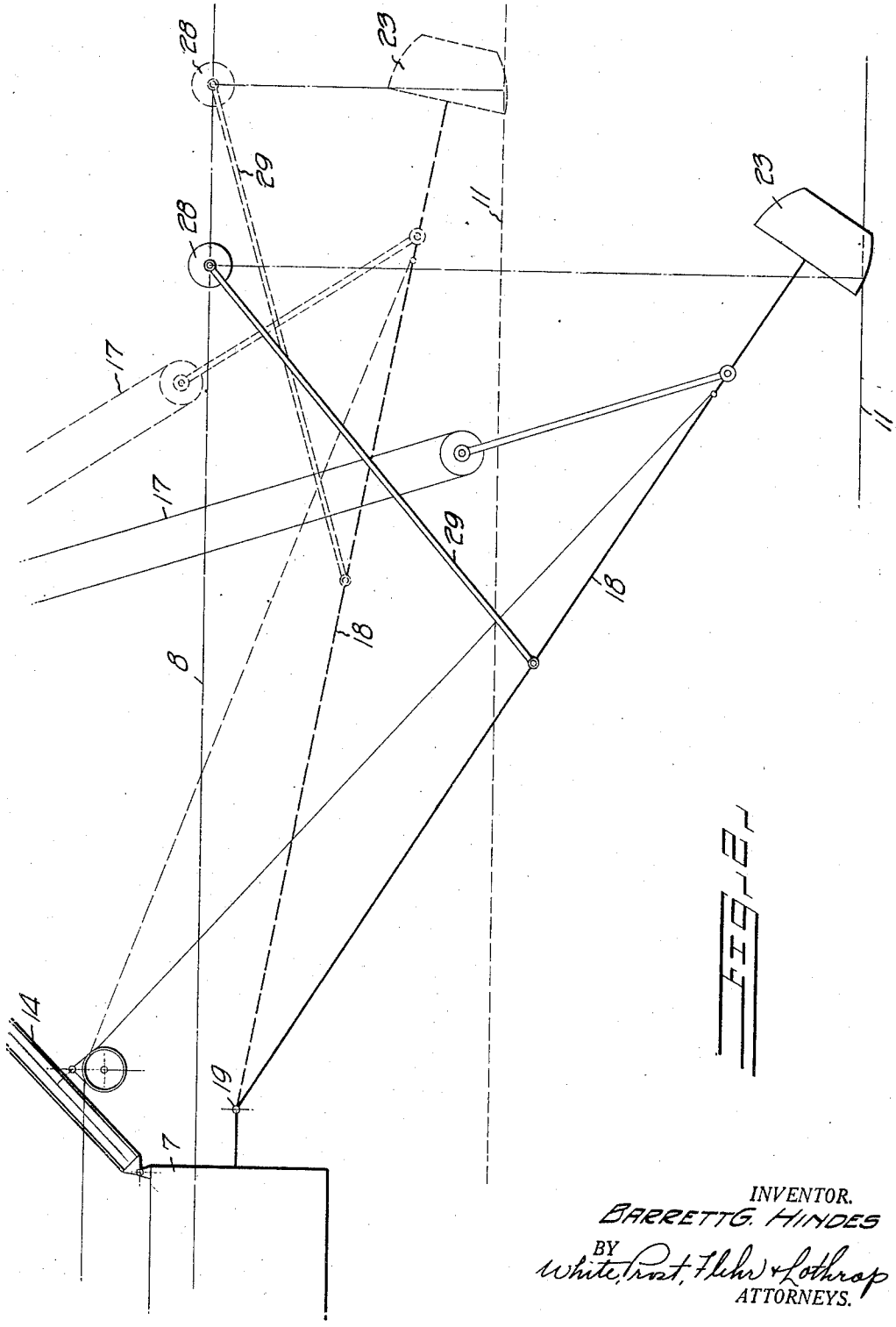


FIG. 2.

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UNITED STATES PATENT OFFICE

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DREDGE

Application filed April 11, 1931. Serial No. 529,314.

My invention relates to dredges for use primarily in subaqueous excavations and is particularly concerned with means for improving the accuracy of dredging and facilitating the dredging operation.

In dredging work, particularly work under contract, there is usually specified a desired or predetermined contour of the channel or other excavation to be made. In order for sufficient material to be removed that the minimum or desired contour be obtained, it is ordinarily necessary for the dredge to remove surplus or excess material. One of the major reasons for the necessity of removing such excess material is that it is virtually impossible to determine accurately the position of the dredging member, usually a cutter. Experienced dredge operators judge the position of the cutter by the location of the ladder or by the position of various lines and supporting cables extending to the vicinity of the cutter, but such judgment is at best haphazard and not sufficiently accurate to avoid the removal and handling of a large amount of excess or surplus material. The cost of handling the material being relatively high, moving surplus material increases the cost of dredging and often renders unprofitable a dredging job which otherwise would be profitable.

It is therefore an object of my invention to provide a dredge in which the position of the dredging member can be accurately ascertained.

Another object of my invention is to provide an indicator for a dredge which will show with reasonable accuracy the exact location of the dredging member.

A further object of my invention is to facilitate in general the precise and accurate operation of a dredge.

The foregoing and other objects are attained in the embodiment of the invention shown in the drawings, in which

Figure 1 is a diagrammatic view showing in perspective a dredge constructed in accordance with my invention.

Figure 2 is a view showing diagrammatically in side elevation the ladder portion of a dredge together with its associated parts in accordance with my invention.

In its preferred form, the dredge of my invention comprises a dredging member adapted to be submerged in association with means for indicating the position of the dredging member.

In the preferred form of my invention shown in the drawings, there is provided a dredge, generally indicated by the numeral 6, comprising a barge 7 which floats on a body of water 8 lying above terrain 9 in which a channel is to be dredged with the preferred or minimum contour of the channel being defined by the boundary lines 11 and 12.

Erected on the barge 7 is a superstructure 13 including an inclosure for the dredging machinery and a boom 14. The boom is suitably oriented with respect to the barge 7 by supporting cables 16 and in turn is provided with suitable tackle 17 for orienting a ladder 18. The ladder usually comprises a suitable framework fastened as at 21 and 22 to the barge 7 in such a way that the ladder is movable in a vertical arc with respect to the barge 7. Such an articulated connection is preferably afforded by suitable pivot pins 19. At one extremity of the ladder 18 a cutter 23 is mounted for rotation and has the function of removing material from the bottom 11 of the channel. The entire dredge including the barge 7 and the ladder 18 is related in any desired fashion to its surroundings by means of swing lines 24 and 26 which are fastened to suitable anchors, such as 27.

In order that the position of the dredging member or cutter 23 can be determined from the barge 7 with reasonable accuracy and with much greater accuracy than is at present the case, I preferably provide a float 28 which is supernatant on the body of water 8 and is preferably arranged to lie substantially vertically above the dredging member or cutter 23 in all positions of the cutter and in all positions of the float 28. In order to relate the float 28 in the desired fashion to the dredging member 23 I preferably mount the float at the extremity of a framework 29 which is ar-

ticulated with respect to the ladder 18 in such a way that the float 28 is constrained to move in a vertical arc with respect to the ladder. To this end the framework 29 is fastened by pivot pins 31 or other comparable means to the framework of the ladder 18. The dimensions of the framework 29 and the location of the pivot pins 31 are chosen with respect to the arcuate vertical movement of the cutter 23 so that the center line of the float 28 lies substantially vertically above the dredging member 23. This arrangement is particularly shown in Figure 2 wherein the cutting member 23 is shown in dotted lines as it appears at an elevation with the float 28 substantially vertically thereabove while the cutting member 23 as shown in full lines is adjacent the bottom of its vertical movement with the float 28 nevertheless substantially vertically thereabove. If desired, a rest 33 can be mounted on the ladder 18 to support the framework 29 when the ladder is out of water.

In accordance with my invention, therefore, the float is mounted by a rigid framework on the ladder 18 in such a fashion that the float is constrained to move in substantially a vertical path with respect to the cutter 23 and indicates in any position of the float or of the cutter the position of the cutter so that an observer on the barge 7 by noting the position of the float 28 is afforded an accurate indication of the location of the cutter 23. With this means a very close approximation to the minimum contour or boundary of the channel 11 can be obtained, thereby avoiding the removal and transportation of a large amount of extra material.

It is to be understood that I do not limit myself to the form of the dredge shown and described herein, as the invention, as set forth in the following claims may be embodied in a plurality of forms.

I claim:

1. A dredge comprising a ladder, a cutter on one end of said ladder, said cutter being adapted to be submerged, and a float mounted on said ladder and adapted to overlie said cutter.

2. A dredge comprising a ladder adapted to have one end submerged, and a float mounted on said ladder and adapted to overlie said end.

3. A dredge comprising a barge, a ladder articulated to said barge, a cutter on said ladder and adapted to be submerged, and a float articulated to said ladder and adapted to overlie said cutter.

4. A dredge comprising a barge, a ladder pivoted on said barge to move in a vertical plane, and a float pivoted on said ladder to move in a vertical plane.

5. A dredge comprising a ladder, and a float articulated to said ladder by a rigid framework.

6. A dredge comprising a ladder, a cutter on one end of said ladder, a rigid framework pivotally mounted on said ladder, and a float on said framework and adapted to overlie said cutter.

7. A dredge comprising a ladder, a cutter on said ladder, and a float constrained to move substantially vertically above said cutter.

8. A dredge comprising a ladder, a dredging member on said ladder, and a float constrained to move substantially vertically above said member.

9. A dredge comprising a barge, a ladder, a dredging member mounted on said ladder to move in a vertical arc with respect to said barge, and a float mounted to move in a vertical arc with respect to said ladder with said float substantially above said dredging member in all positions of said dredging member and of said float.

In testimony whereof, I have hereunto set my hand.

BARRETT G. HINDES.