

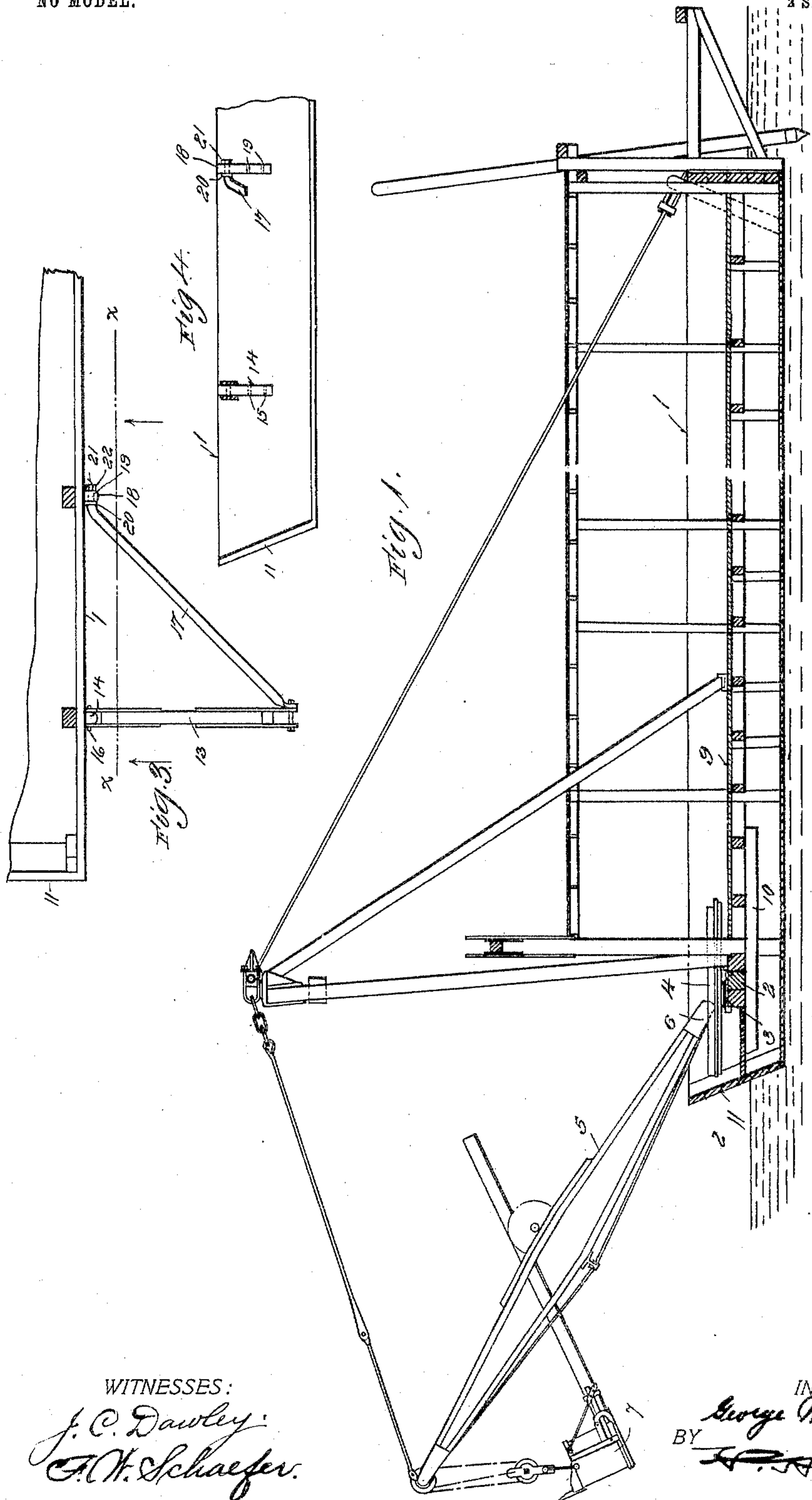
No. 776,848.

PATENTED DEC. 6, 1904.

G. W. KING.  
DITCHING DREDGE.  
APPLICATION FILED DEC. 16, 1901.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

J. C. Dawley.  
J. W. Schaefer.

INVENTOR.

George W. King,  
BY *H. A. Coulson*  
ATTORNEY.

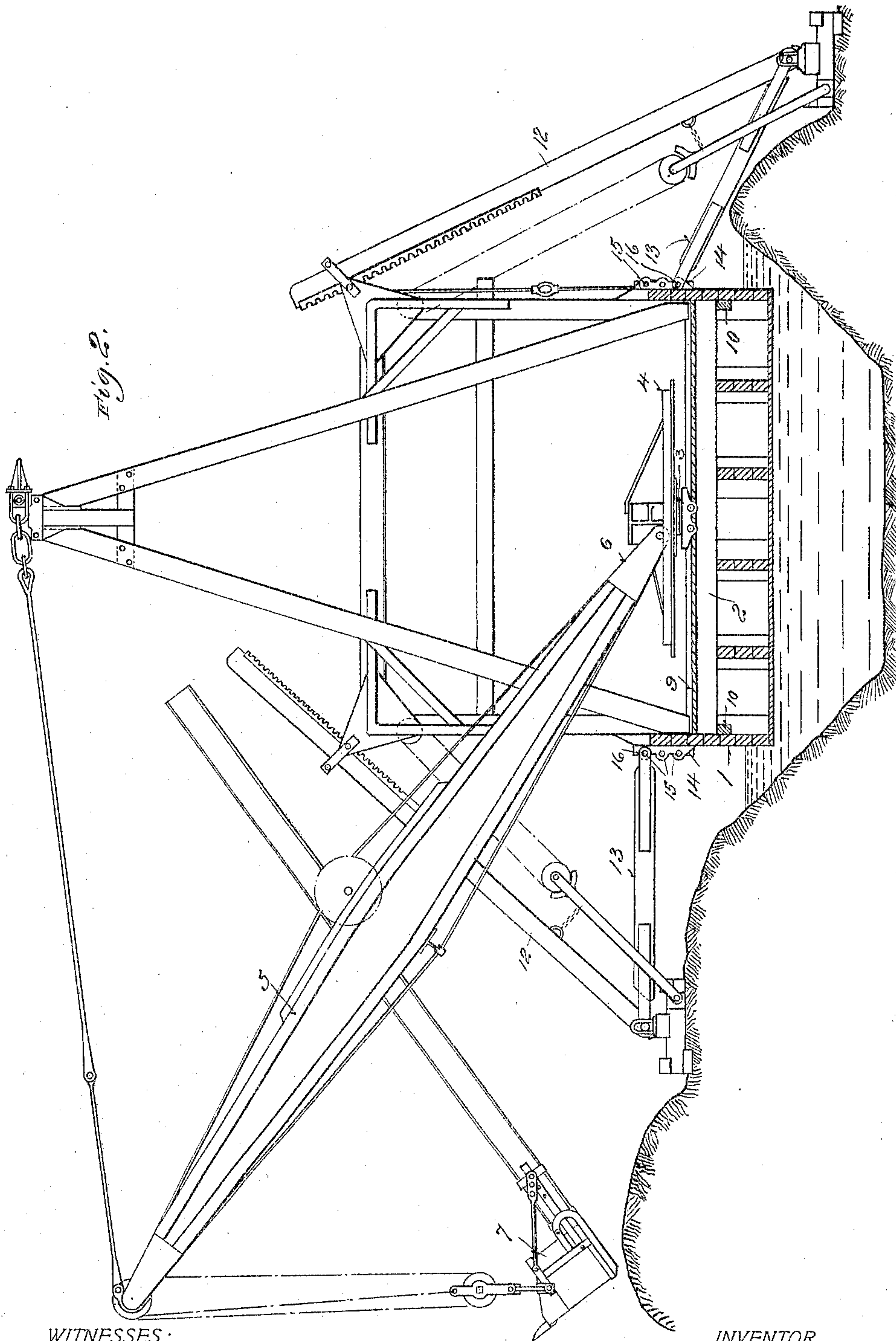
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INVENTOR.

George W. King,  
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# UNITED STATES PATENT OFFICE.

GEORGE W. KING, OF MARION, OHIO, ASSIGNOR TO THE MARION STEAM SHOVEL COMPANY, OF MARION, OHIO.

## DITCHING-DREDGE.

SPECIFICATION forming part of Letters Patent No. 776,848, dated December 6, 1904.

Application filed December 16, 1901. Serial No. 86,034. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. KING, a citizen of the United States, residing at Marion, in the county of Marion and State of Ohio, have invented certain new and useful Improvements in Ditching-Dredges, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to ditching-dredges, and has for its object to provide a construction whereby the stability of the boat or hull may be materially increased, so that a narrower boat may be employed in connection with a boom of a given length, thus adapting the dredge for use in digging narrow trenches or whereby the length of boom may be increased in proportion to the width of the dredge, thus obtaining an increased range of delivery.

To these and other ends my invention consists in certain novel features, which I will now proceed to describe and will then particularly point out in the claims.

In the accompanying drawings, Figure 1 is a view in vertical longitudinal section of a dredge embodying my invention in one form. Fig. 2 is a front elevation, partly in vertical section. Fig. 3 is a detail plan view showing one of the lateral braces, and Fig. 4 is a detail sectional view taken on the line  $x-x$  of Fig. 3 and looking in the direction of the arrows.

In dredges of the character to which my present invention relates, in which there is employed a boat or hull having mounted thereon a turn-table or swinging-circle carrying an inclined boom provided with a dipper, it has been customary to mount the swinging-circle which carries the foot of the boom on top of the deck of the boat, and said deck has been even or on a level with the top of the hull. Since in the operation of the dredge the boom is swung from approximately a central position to one side or the other of the dredge to deliver its load, the distance at which the load can be delivered has been limited by the stability of the boat, to which the length of the boom must be proportioned,

and this stability has been dependent upon the width or beam of the boat, which has heretofore been unnecessarily great, owing to the height above the water-line at which the turning-circle and foot of the boom are located. In order to obtain an increased range of delivery for a given-sized hull or a decreased width or beam of boat for a given range of delivery, thus adapting the dredge for use in narrow trenches or channels, I have provided a construction wherein the swinging-circle or turn-table and foot of the boom are lowered to a suitable distance below the top of the hull, thus correspondingly lowering the center of gravity and permitting a corresponding decrease in the width or beam of the hull or in the range of delivery, since by this arrangement the ponderous part of the machinery is located at a low level within the hull, thereby serving as ballast and tending to hold the float on an even keel.

In the accompanying drawings, 1 indicates the boat or hull, which has located therein, at a point considerably below the top thereof, the sill or sills 2, by means of which the mast base or journal 3 is supported, upon which the swinging-circle 4 is mounted.

5 indicates the boom, the foot 6 of which is pivotally connected to the swinging-circle in the usual manner, said boom carrying the usual dipper 7 at its free end.

The deck of the boat is indicated at 9, and it will be observed that the deck is also materially below the top of the boat and preferably on a level with the sills 3. Longitudinal deck-beams 10 may be provided, on which the mast-base sills may rest and be supported. Preferably I arrange these parts as low as possible, or, in other words, just high enough to permit the boom to clear the upper edge of the nearest portion of the hull, which in the present instance is the front or bow 11. It will be seen that by this construction I am enabled to so lower the center of gravity that a boat of comparatively narrow beam for a given range of lateral delivery may be employed or with a given width of hull a boom of increased length may be used, and consequently a greater range of lateral delivery



may be obtained. These points are of material advantage, respectively, where narrow channels or trenches are being operated upon or where it is particularly desirable to deliver the soil at a maximum distance from the place of excavation. I also employ to support the outer end of the boom an **A**-frame 23, which is secured to the hull of the boat in a rigid manner and which does not swing with the turn-table. This gives an efficient support to the end of the boom without shifting the weight to the **A**-frame relatively to the center of the boat when the turn-table and boom are swung to one side.

In dredges of this character lateral bracing devices are usually employed which rest upon the adjacent soil or on supports therefrom and which require to be vertically adjustable in order to adapt them to the inequalities of the surfaces on which they rest. Such devices generally consist of a vertically-adjustable brace 12, provided with suitable adjusting mechanism, and a brace-arm 13, pivotally connected to the lower end of the brace 12 and to the hull of the boat. In practice at the extreme positions of the brace 12 the brace-arm 13, if connected to the boat by a fixed pivot, is compelled to assume an extreme angle, whereby the parts are strained and the efficiency of the bracing reduced. To obviate this, I propose to provide at the inner end of each of the brace-arms 13 a hinge-casting 14, suitably secured to the side of the hull and provided with a plurality of apertures 15 to receive the pivot-bolt 16, by which the brace-arm 13 is connected to said hinge-casting. These apertures 15 are arranged in a vertical series, so that when the lower end of the brace 12 is lowered to a great extent, thereby correspondingly lowering the outer end of the brace-arm 13, the pivotal connection of the inner end of said brace-arm 13 may be correspondingly lowered in an obvious manner. In this connection I also employ a rearwardly-extending brace-arm 17, pivotally connected at its outer or forward end to the brace 12 and brace-arm 13, while its rear end is adjustably pivoted in a hinge-casting 18, similar to the hinge-casting 14 and having corresponding apertures 19 therein. As a convenient mode of connecting the arm 17 to this hinge-casting I provide the inner rear end of said arm with a shoulder 20 and a threaded pin-like extension 21, adapted to pass through any one of the pivot-apertures 19 and receive a retaining-nut 22 on its projecting rear end. It will be understood, of course, that when the pivotal connection of the inner end of the brace-arm 13 is vertically shifted the pivotal connection of the inner rear end of the brace-arm 17 is correspondingly shifted. By reason of this construction

excessive angular positions of the brace-arms are avoided, and said arms are therefore better able to effectually perform their functions.

I am aware that it has heretofore been proposed to mount the bearing for the foot of the boom outside of the boat and near the bottom thereof for the purpose of increasing the downward range of the dredge. Such an external arrangement is not, however, practicable in a ditching-dredge, where a narrow hull is necessary together with a long boom, as the hull would not have sufficient buoyancy to properly support the boom.

I am also aware that it has been proposed to support the boom-foot and turn-table at a point near the bottom of the boat; but in such cases, so far as I am aware, the turn-table and boom-foot themselves have been located above or on a level with the top of the boat, so that no effective lowering of the center of gravity has resulted.

It is obvious that various modifications in the details of the construction hereinbefore shown and described may be made without departing from the principle of my invention, and I therefore do not wish to be understood as limiting myself to the precise construction hereinbefore set forth.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a ditching-dredge, the combination, with a boat or hull having a depressed deck, of a swinging-circle or turn-table pivotally supported on said deck below the top of the boat, and a boom having its foot connected to said swinging-circle and also located below the top of the boat, whereby the apparatus for swinging the boom and supporting its foot is arranged at a low level and the center of gravity is correspondingly lowered, substantially as described.

2. In a ditching-dredge, the combination, with a boat or hull having a depressed deck, and an **A**-frame mounted on said hull, of a swinging-circle or turn-table pivotally supported on said deck below the top of the boat, and a boom having its head supported from the frame and its foot supported on said swinging-circle and also located below the top of the boat, whereby the apparatus for swinging the boom and supporting its foot is located at a low level and the center of gravity is correspondingly lowered, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE W. KING.

Witnesses:

ROBT. G. LUCAS,  
WILLIAM R. SHISLER.