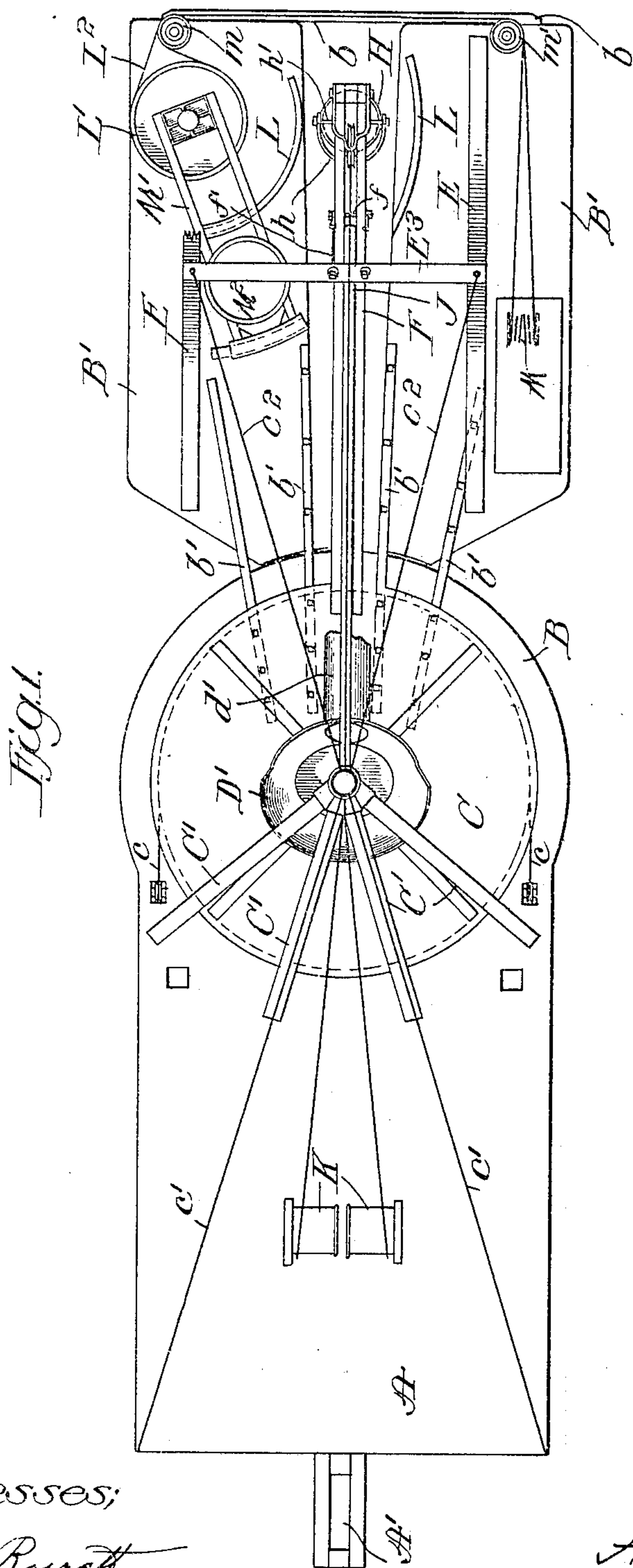


A. N. SMITH.
DREDGING MACHINE.
APPLICATION FILED JULY 7, 1904.

2 SHEETS—SHEET 1.

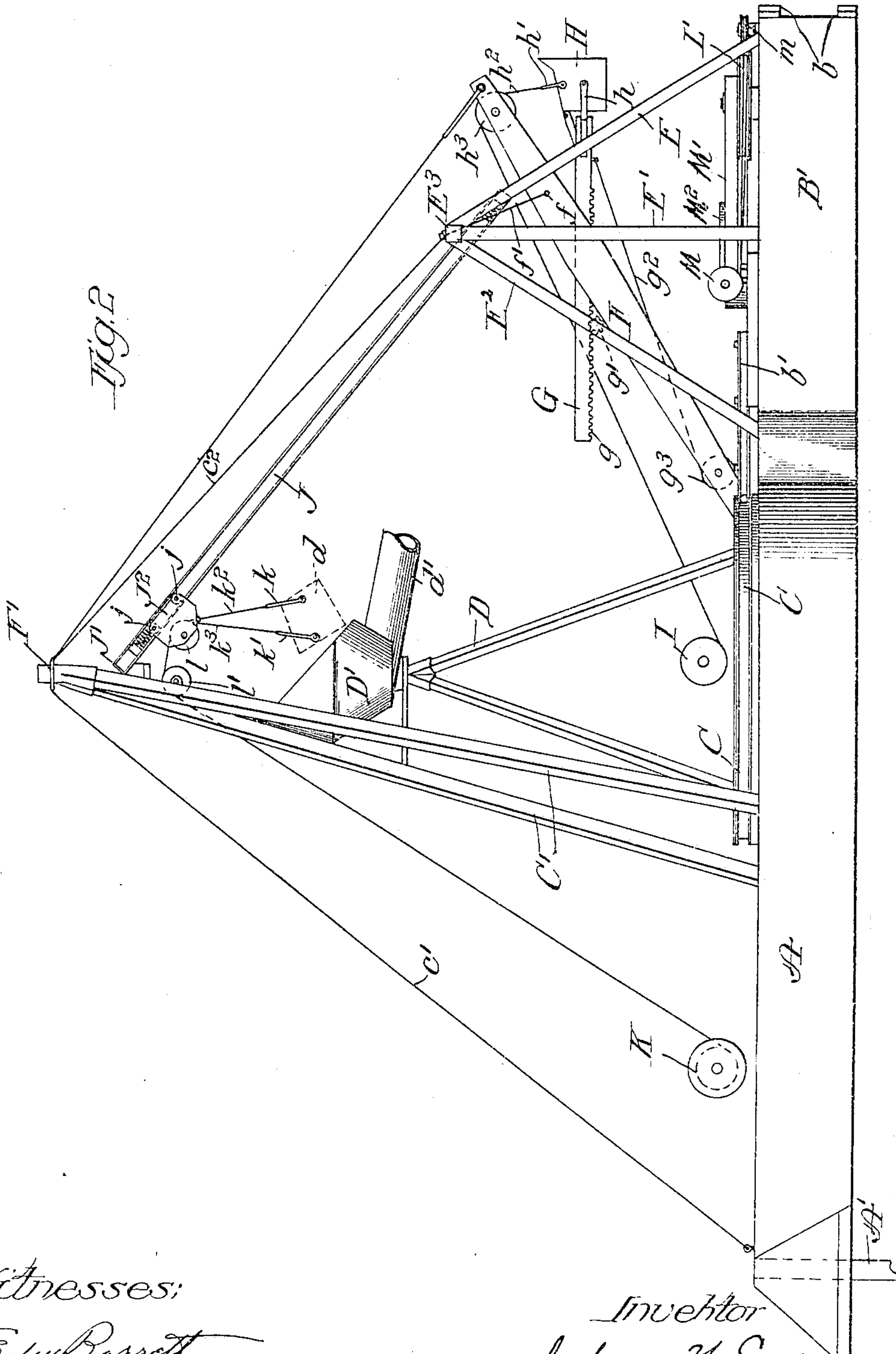


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UNITED STATES PATENT OFFICE.

AMBROSE N. SMITH, OF CHICAGO, ILLINOIS.

DREDGING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 787,953, dated April 25, 1905.

Application filed July 7, 1904. Serial No. 215,582.

To all whom it may concern:

Be it known that I, AMBROSE N. SMITH, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Dredging-Machines, of which the following, taken in connection with the drawings, is a specification.

My invention has for its object the improvement of dredging-machines which are in use at the present time to provide a dredge capable of doing more work in a given length of time and one capable of being adjusted for operation upon either side of the scow or boat to which it is attached without such boat being moved from its original position.

In dredges of this kind as heretofore constructed considerable difficulty has been experienced by the tilting of the scow when the load was being elevated. I have practically overcome this difficulty by my arrangement of the derricks and pontoons, by which I have so distributed the strain and force exerted in elevating the load that the scow remains practically in its normal position.

Other objects and advantages will be apparent from the following description.

I have illustrated my invention in preferred form in the accompanying drawings, in which—

Figure 1 is a top plan view of my dredging apparatus and the scow to which it is attached. Fig. 2 is a side elevation of the same.

In carrying out my invention, A represents a flat-bottomed boat or scow of the kind ordinarily used in connection with dredging apparatus. This scow is provided with an anchor A' at the rear thereof, which may also be of the kind now in general use for such purposes. The front part of the scow A is made circular in shape, as shown at B, for a purpose hereinafter explained.

In front of the scow A and conforming to the circular shape of the front end thereof are two pontoons B' B'. These pontoons are arranged a suitable distance apart to permit the dredging apparatus to pass between them. They are secured in this position at each end in any desired manner, as shown at b. Upon

the deck of the scow and the pontoons are arranged the various engines or other power-supplying devices needed to operate and control the mechanisms hereinafter described. The rear end of these pontoons B' is made concave to fit and traverse around the convex end B of the scow A. Upon the circular end of this scow is secured a turn-table C, which may be operated from right to left, as desired, by means of cables c or in any other well-known manner. The pontoons B' are secured to this table in any desired manner—as, for instance, by means of the I-beams b', also by guys c', secured to the derrick and cross-beam. When it is desired to turn the apparatus to the right or left of the scow, the table is turned to the desired position and the pontoons turn with it.

Upon the deck of the scow I have erected a derrick C', to which I have secured apparatus for dumping the load when the dredge is in operation. This derrick is supported by guys c', secured to the platform of the scow, and c'', secured to the cross-rod E³.

Mounted upon a suitable support D is a hopper or receptacle D' for receiving the load dumped therein by the bucket d. A pipe or carrier d' leads from this receptacle to any point it may be desired to deposit the contents of the bucket d.

Suitable braces or supporting-beams E E' E² are erected upon the pontoons and are joined together at a convenient height by a cross-beam E³. These beams serve as a support for the dredging and elevating mechanism.

A crane F, by which the scoop is supported, has one end thereof secured to and turning with the table C. This crane is secured at f' by a guy f'' to the cross-beam E³. The forward end of this crane is supported by guys secured to the derrick at F'.

G is a scoop-supporting beam, provided upon its under side with a ratchet g. This ratchet meshes with a pinion g', mounted upon the beam E². A scoop or dipper H is secured to the end of this beam by means of the bail h, secured to the sides of the scoop. Another bail, h', is attached to the top of the scoop or dipper H, to which is secured a cable or chain

h^2 , which passes over a pulley h^3 , journaled in the forward end of the crane F, and is wound upon a drum I.

Attached to the scoop-supporting beam G, near the forward end thereof, is a cable or backing chain g^2 , which is also wound over a drum g^3 . When in use, the scoop or dipper H is swung downwardly, the cable g^2 is slackened, and the ratchet is permitted to travel over the pinion g' a sufficient distance to enable the scoop to take up a load.

An I-beam J, one end of which is supported by the derrick at J', the other end secured to the beam E³, provides a track or way for a carrier J². This carrier is provided with small rollers j upon each end thereof to facilitate its movement in elevating the load to the dumping-point.

Two bails k k' are secured to the bucket d , and to each of these bails is attached a cable or chain k^2 k^3 , which passes over a pulley l , journaled in carrier J², over another pulley, l' , journaled in a support or bearing secured to one of the braces C' of the derrick. These cables are wound upon drums K, suitably mounted upon the rear platform of the scow A. If desired, for the purpose of adding greater strength two cables or chains may be attached to the bail k' , passed over pulleys l and l' , and be wound upon drum K.

Upon one of the pontoons B', previously described, I have provided a movable platform adapted to receive the bucket d when in position to receive a load from the scoop H. This platform moves upon the arc of a circle, L being the tracks upon which it travels.

L' is a pulley, around the periphery of which passes a cable L². This cable travels over small pulleys m m' and is wound upon a drum M, which is operated by any suitable source of power. (Not here shown.)

M' is a frame of any kind desired to support the platform M². One end of this frame is rigidly secured to the pulley L' and moves therewith. The other end of the frame is adapted to travel over and be supported by the track L. When the scoop H is on the descending position, the frame and platform are in the position shown in Fig. 1. When the scoop is raised, the bucket d is lowered by slackening the cables k^2 k^3 until it rests upon the platform M², when pulley L, carrying the frame M' and platform M², is turned to a horizontal position with bucket d ready to receive the contents of the scoop H. When the bucket d has received its load, the platform is moved out of the way, the scoop descends for another load, and the bucket d is elevated to deposit its load into the receptacle D', from whence it is carried away through pipe d .

In the drawings I have shown the apparatus ready for dredging in front of the scow. When it is desired to change the base of operations, an attendant simply swings the turn-

table C by any well-known means (not here described) to the right or left, and this table moves with it the pontoons B' and the entire dredging apparatus. It will thus be seen that the dredge can be turned to operate at right angles to the right or left of its normal position or at any angle therebetween. During this entire operation the scow remains anchored in one position, thereby saving the time necessary to change positions in the dredges now in common use.

I have shown my invention applied to what I may term a "scoop-dredge;" but I contemplate also employing the pontoons and turntable in connection with an elevator-dredge, as it is obvious that an elevator-dredge could be operated between the pontoons equally as well as the scoop. The changes necessary to operate the elevator instead of the scoop would be slight. In such case the platform mechanism I have illustrated in Fig. 1 would be dispensed with and the hopper or receptacle D' would be located in a position to receive the load directly from the elevator.

It will be observed that by the use of my dredge a large amount of time is saved by being able to dump the load almost as soon as it has left the water, leaving the scoop ready to descend for the next load, while the former one is being carried away and deposited. By this means at least one-third more work can be done in a given length of time than with apparatus now in use.

I do not desire to be limited to the precise construction shown and described herein, as many of the details thereof may be changed without departing from the spirit of my invention, which consists, essentially, in providing a dredge which may be changed in its position without moving the boat carrying the same and in so distributing the strain and force of the dredge that the boat is kept from tilting when a load is elevated.

I have shown and described my apparatus as applied to a dredge for operating in water; but I contemplate the use of my invention in excavating upon the land by having the apparatus mounted upon suitable platforms from which the dredging mechanism may be operated instead of the scows and pontoons.

I claim—

1. In a dredge the combination with a scow, two pontoons adjustably connected to the forward end of said scow, said pontoons being separated to permit the dredging apparatus to work therebetween, substantially as described.

2. In a dredge, the combination with a scow having a turn-table upon the forward end thereof, pontoons secured to and moving with said turn-table, said pontoons being separated to permit a dredging apparatus to work therebetween, substantially as described.

3. In a dredge, the combination with a scow,

of a turn-table upon the forward end thereof, pontoons secured to and adapted to move with said turn-table, a movable platform mounted upon one of said pontoons, a track upon 5 which said platform travels, and suitable means for moving said platform over the track, substantially as described.

4. In a dredge, the combination with a scow, of a turn-table upon the forward end thereof, 10 pontoons secured to and adapted to move with said turn-table, a main derrick, a crane, one end of which is guyed to said derrick, the opposite end secured to and moving with the said turn-table, a scoop or dipper supported 15 by a cable passing over one end of said crane and suitable mechanism for operating said scoop, substantially as described.

5. In a dredge, the combination with a scow, a turn-table mounted upon the forward end 20 thereof, pontoons rigidly secured to said turn-table, dredging apparatus mounted upon said pontoons and adapted to be moved therewith, and suitable mechanism for turning said turn-table, pontoons and dredge, substantially as 25 described.

6. In a dredge, the combination with a scow, of a turn-table upon the forward end thereof, pontoons secured to and adapted to move with said turn-table, dredging apparatus adapted 30 to operate between said pontoons, and a receptacle located at the rear of the dredging apparatus adapted to receive the load from the dredge, substantially as described.

7. In a dredging-machine, the combination of a scow, dredging apparatus operating there- 35 from, means for adjusting the position of said dredging apparatus, a receiving-bucket secured to and traveling with a carrier upon a track supported upon derricks, said bucket adapted to receive a load from said dredging 40 apparatus, substantially as described.

8. In a dredging-machine, the combination with the scow and pontoons, dredging appa- ratus mounted upon and operated therefrom, means for moving said dredging apparatus to 45 the right or left of said scow, and a receptacle for receiving the load from the dredge, substantially as described.

9. In a dredge, the combination with a scow, of a turn-table upon the forward end thereof, 50 pontoons secured to and adapted to move with said turn-table, a main derrick supported by the aforesaid scow, a second derrick supported by the pontoons, a dredging apparatus secured to said derricks, and means for operating the 55 same, a movable platform secured to one of the aforesaid pontoons upon which a receiving-bucket rests, means for moving said platform and bucket into position to receive the load 60 from the dredge, and means for elevating said receiving-bucket, substantially as described.

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Witnesses:

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