

No. 710,170.

Patented Sept. 30, 1902.

D. F. WEINDORF.
MARINE DOCK.

(Application filed May 8, 1902.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

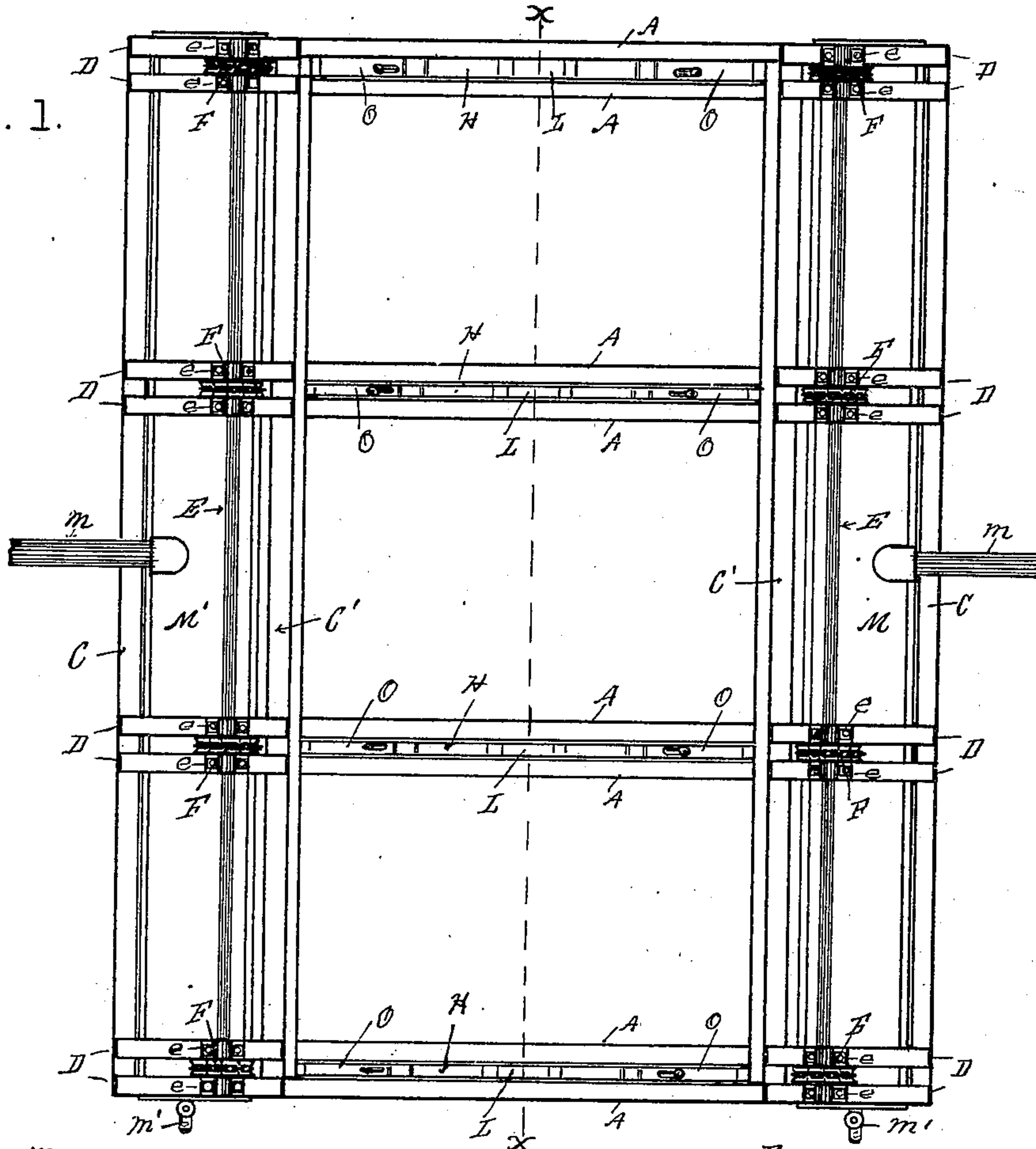
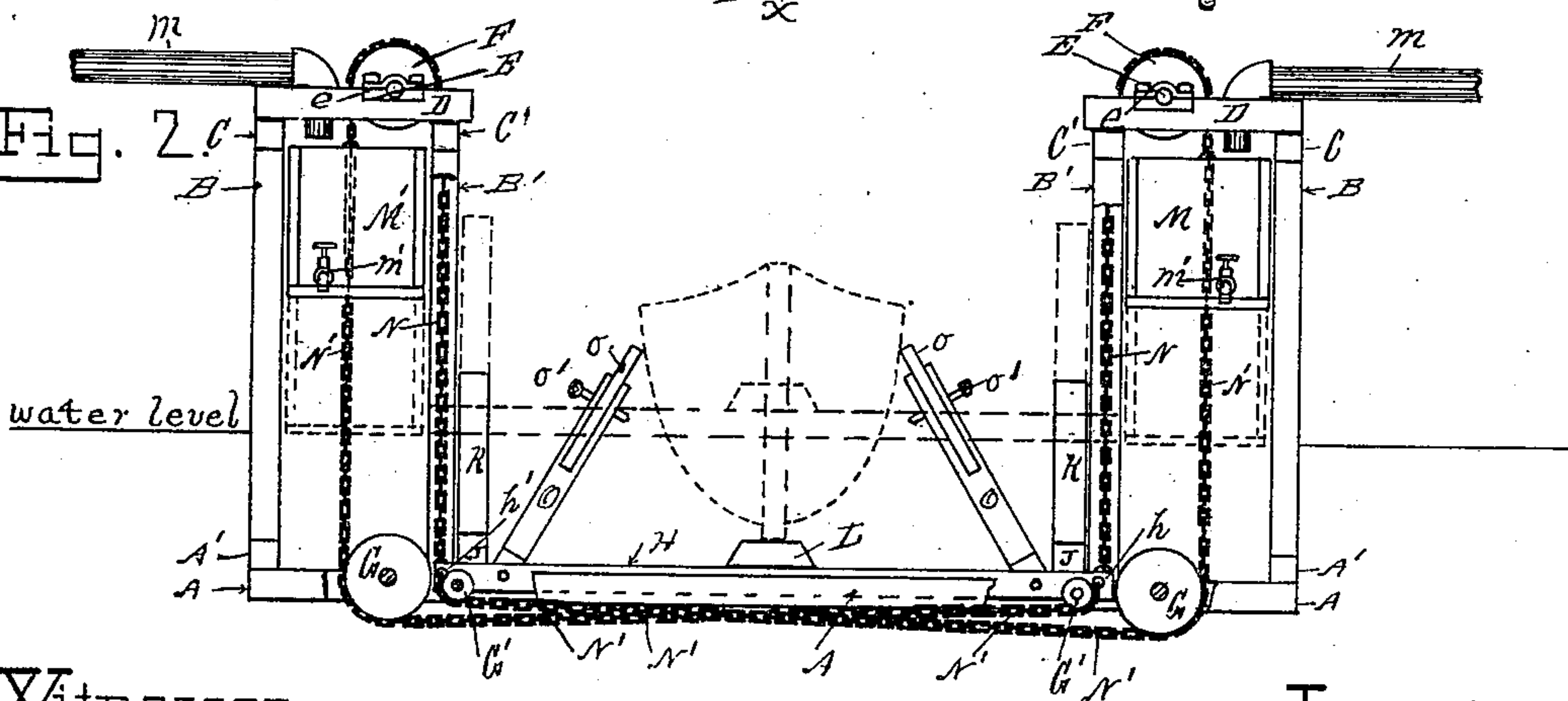


Fig. 2.



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2 Sheets—Sheet 2.

Fig. 3.

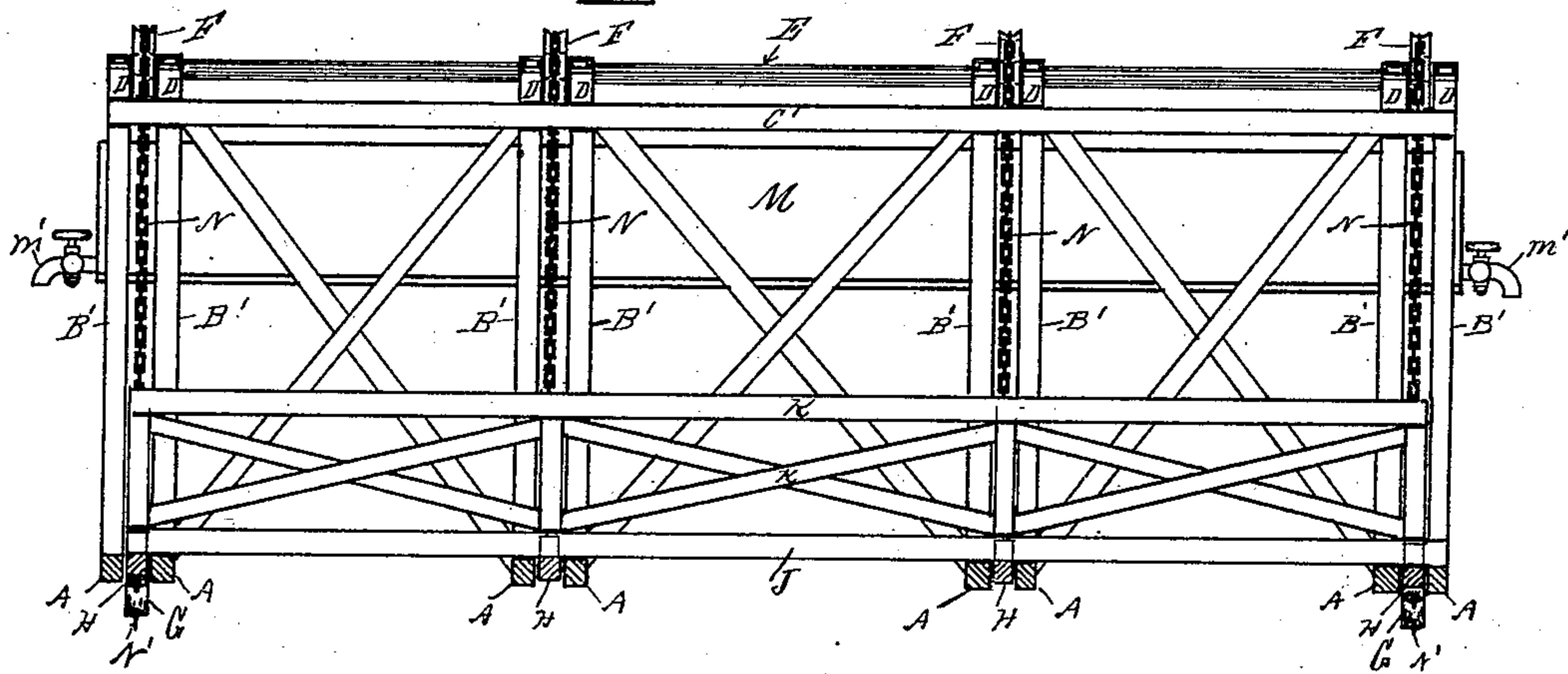
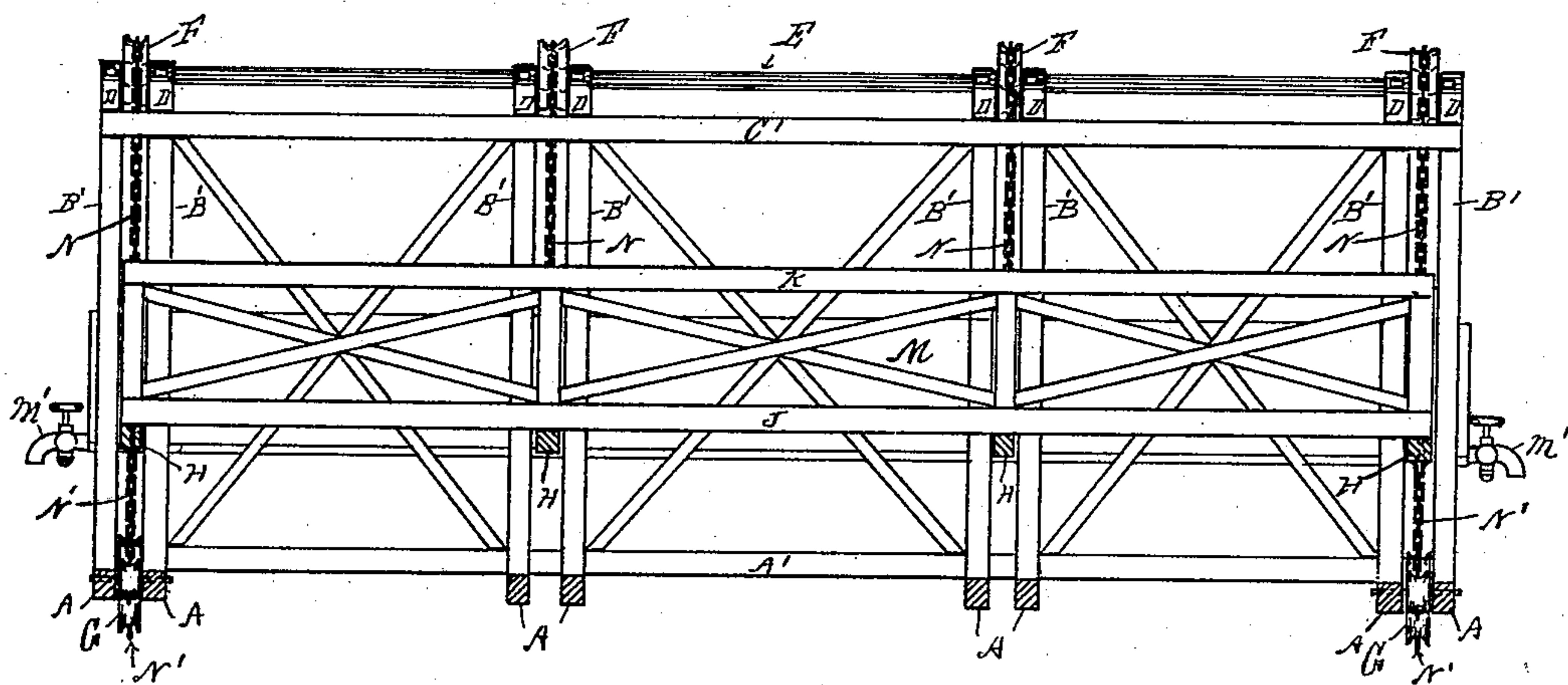


Fig. 4.



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UNITED STATES PATENT OFFICE.

DON F. WEINDORF, OF ERIE, PENNSYLVANIA.

MARINE DOCK.

SPECIFICATION forming part of Letters Patent No. 710,170, dated September 30, 1902.

Application filed May 8, 1902. Serial No. 106,407. (No model.)

To all whom it may concern:

Be it known that I, DON F. WEINDORF, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Marine Docks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, forming part of this specification.

My invention relates to improvements in marine docks, and has for its object the construction of a marine dock mechanism adapted for use in shallow water, whereby vessel-hulls may be raised out of the water when desired. Heretofore this has been accomplished by the ordinary basin dry-dock or by the floating pontoon-dock, the latter of which being only adapted for use in very deep water. The means whereby I accomplish these objects is hereinafter set forth and explained, and illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of my improved marine dock. Fig. 2 is an end view in elevation of the same. Fig. 3 is a central section of the same on the line xx in Fig. 1 with the keel-block platform down ready to receive a vessel thereon looking in the direction of the arrow. Fig. 4 is a like view of the same with said platform elevated above the water-level.

In the mechanism herein set forth and illustrated the base of the frame consists of bed-pieces or sills A, which are intended to rest upon the bottom, which are arranged in pairs, as shown in the drawings, and are secured at such distances apart as is deemed expedient for the proper stability of the structure by means of stringers A', placed above and along the ends thereof. (See Figs. 2 and 4.) Upon these stringers A', over the ends of the sills A, I place uprights B, which support the stringers C placed thereon. A short distance toward the centers of these sills A, from the uprights B, I place other uprights B', (see Figs. 2, 3, and 4,) which support the stringers C' placed thereon. Transversely on the top of the stringers C and

C', immediately over the uprights B and B', I place girders D, and upon these girders D, I place shafts E, mounted in suitable bearings therefor. Upon the shafts E, between the girders D, as shown in the drawings, I place grooved chain-bearing sheaves F, which are rigidly secured upon said shafts E, so as to be non-rotatable thereon. This feature is desirable in order that the several sheaves on each one of the shafts E will rotate in unison for the purpose hereinafter set forth. Between the uprights B and the uprights B' of this structure I place the necessary braces to give stability to the structure. Between the sills of one or more pairs A thereof I place grooved sheaves G, and also between said sills A, underneath the ends of the sills H, hereinafter described, I place sheaves G' for the purpose hereinafter set forth.

It will be seen that I have thus far described a structure comprised of sills having erected over the ends thereof upright framework structures, the whole being adapted to rest upon the bottom in shallow water. Within this structure I construct a keel-block platform adapted when at its lowest position to be of the same height as the sills A, but which when desired may be raised above the level of the water. In constructing this keel-block platform I place sills H between each pair of the sills A, the ends of the sills H, however, reaching only from the uprights B' on one side of the structure across the intervening space to the uprights B' on the other side of the same. Along and over the ends of these sills H, I secure stringers J, (see Figs. 2, 3, and 4,) which while firmly secured to the sills H only rest upon the sills A when down, as shown in Fig. 3. Upon these stringers J, I erect bridge or truss work K, of usual and ordinary construction, which serves the double purpose of a railing along the sides of the keel-block platform and renders the same firm and rigid from end to end. Upon the sills H, near the centers thereof, I place keel-blocks L, upon which the keel of the vessel to be docked may rest, as illustrated by dotted lines in Fig. 2. Between the uprights B and B', at each side of this mechanism, I construct tanks M and M' of suitable capacity, that

when filled with water they will counterbalance the weight of the keel-block frame and the vessel to be docked. These tanks M and M' extend the entire length of the upright portions of this framework and are adapted to move freely up and down between the uprights B and B' thereof and are provided with discharge-cocks *m'* for freeing the water therefrom.

Secured to the ends of the sills H of the keel-block platform, between each pair of the uprights B', are chains N, which are passed up and over the sheaves F, hereinbefore described, and down to and secured to suitable fastenings (not shown) on the tanks M and M'. It will thus be seen that the tanks M and M' are suspended by the chains N upon the sheaves F on the shafts E and when empty are somewhat of less weight than the keel-block platform, and consequently will in the empty condition be raised to the tops of the side framework of the structure. For the purpose of insuring the raising and falling of the two sides of the keel-block platform simultaneously I attach a chain or chains N' to the under side or bottom of the tank M, at each end thereof, and pass them down under the sheaves G and lengthwise under the sills H to and under the sheaves G' and up to and secured to the opposite ends *h'* of the sills H, and to the under side or bottom of the tank M', I secure like chains at each end thereof and pass them down under the sheaves G and lengthwise underneath the sills H to and under the sheaves G' and up to and secured to the opposite ends *h* of the sills H. It will thus be seen that when the ends *h* of the sills H are raised the chains N', attached to the under side thereof and passing beneath the pulleys G' and G and up to the tank M, will be pulled up at their ends *h'* and will simultaneously draw down the tank M an equal distance, to which their opposite ends are attached, and that the same operation will be performed by the opposite chains N' on the tank M', so that both tanks are thereby made to rise and fall in unison. I secure to the upper sides of the sills H braces O, which are adjustable in length and consist of a base-piece which is secured to the sill H, having a slot in its upper end in which a telescoping extension *o* is placed and is secured by means of the pin *o'*.

In operation a vessel is floated over the keel-blocks L and the braces O adjusted against the sides of the vessel, as illustrated by dotted lines in Fig. 2. Water is then supplied to the tanks M and M' through the supply-pipes *m*, which are connected with a suitable source of supply, until the weight of the water in the tanks M and M' will raise the keel-block platform, composed of the sills H and bridgework K, and the vessel placed thereon above the level of the water, as shown by dotted lines in Fig. 2, and will retain said platform and vessel thereon in such raised

position until the water in the tanks M and M' is discharged through the discharge-cocks *m'* in the ends of the tanks M and M'. It will be seen that the chain-bearings sheaves F, being secured on the shafts E, will rotate in unison during the operation and act in conjunction with the chains N' in retaining all portions of the keel-block platform in a level position at all times.

Having thus fully described my invention, so as to enable others to construct and use the same, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination in a marine dock, of a base-frame, upright frames on each side thereof, a vertically-movable keel-block platform between said upright frames, vertically-movable counterbalance-tanks in the upright frames, sheaves on the tops of the upright frames, and chains passing around said sheaves and connecting the counterbalance-tanks with the keel-block platform, substantially as and for the purpose set forth.

2. The combination in a marine dock, of a base-frame, upright frames on each side thereof, a vertically-movable keel-block platform between said upright frames, vertically-movable counterbalance-tanks in the upright frames, longitudinal shafts mounted on the upper parts of the upright frames, chain-sheaves secured to said shafts so as to rotate in unison, chain-sheaves mounted in the bases of said upright frames, chains leading from said tanks over the shaft-sheaves and down to the sides of the keel-block platform, and chains from the bottoms of each tank passing under chain-sheaves at the bottom of the upright frames and connecting at the opposite ends thereof with the keel-block platform, substantially as and for the purpose set forth.

3. The combination in a marine dock, of a base-frame A, upright frames B B' on each side thereof, a keel-block platform H, trusses K on each side thereof, shafts E mounted in bearings on the top of the upright frames B B', chain-sheaves F secured to said shafts, chain-sheaves G G' mounted in the base-frames A at the bottoms of the upright frames B B', vertically-movable counterbalance-tanks M M' in the upright frames B B', means *m m'* for filling and emptying said counterbalance-tanks, chains N leading from the tanks M and M' up over the chain-sheaves F and down to the ends *h* and *h'* of the keel-block platform H, chains N' leading from the bottom of the tank M under the chain-sheaves G below said tank and thence under the sheaves G' at the side *h* of the keel-block platform H to which the chain N' is there attached, and other chains N' leading from the bottom of the tank M' under the chain-sheaves G below said tank, and thence under the sheaves G' at the side *h'* of the keel-block platform H to which the chain is there attached, substantially as and for the purpose set forth.

4. In a marine dock, a base-frame A, and
vertical side frames B B' thereon, a keel-
block platform H having side trusses K there-
on and adapted to move up and down be-
5 tween said side frames, and adjustable braces
O on said keel-block platform, substantially
as and for the purpose set forth.

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

DON F. WEINDORF.

Witnesses:

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C. J. STURGEON.