

(No Model.)

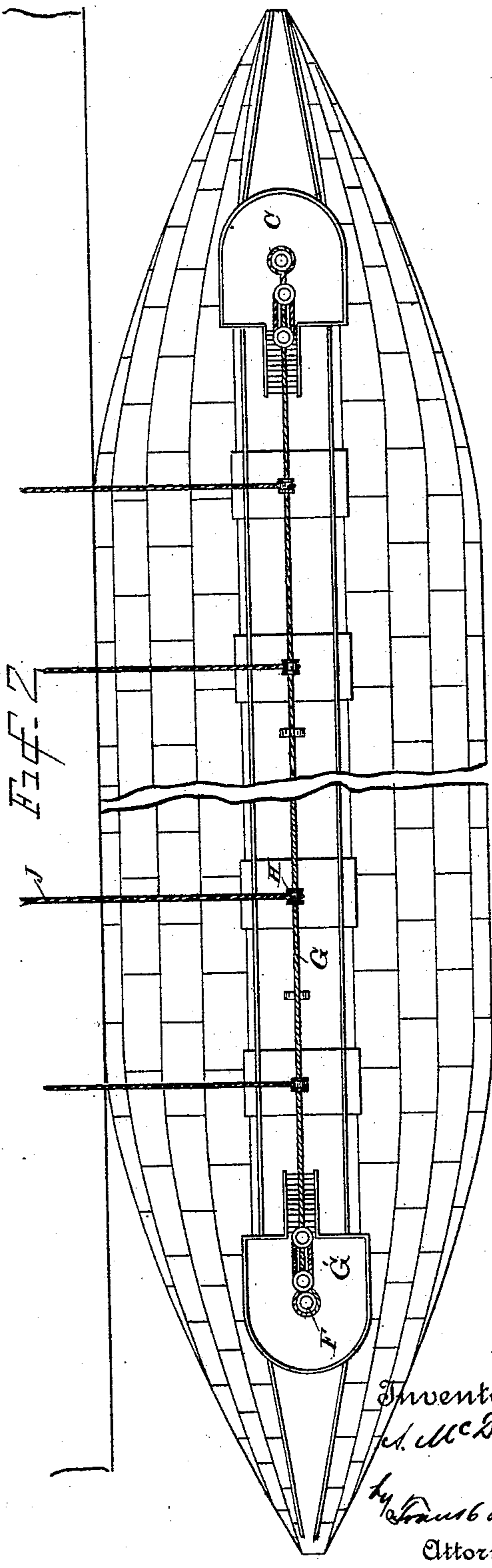
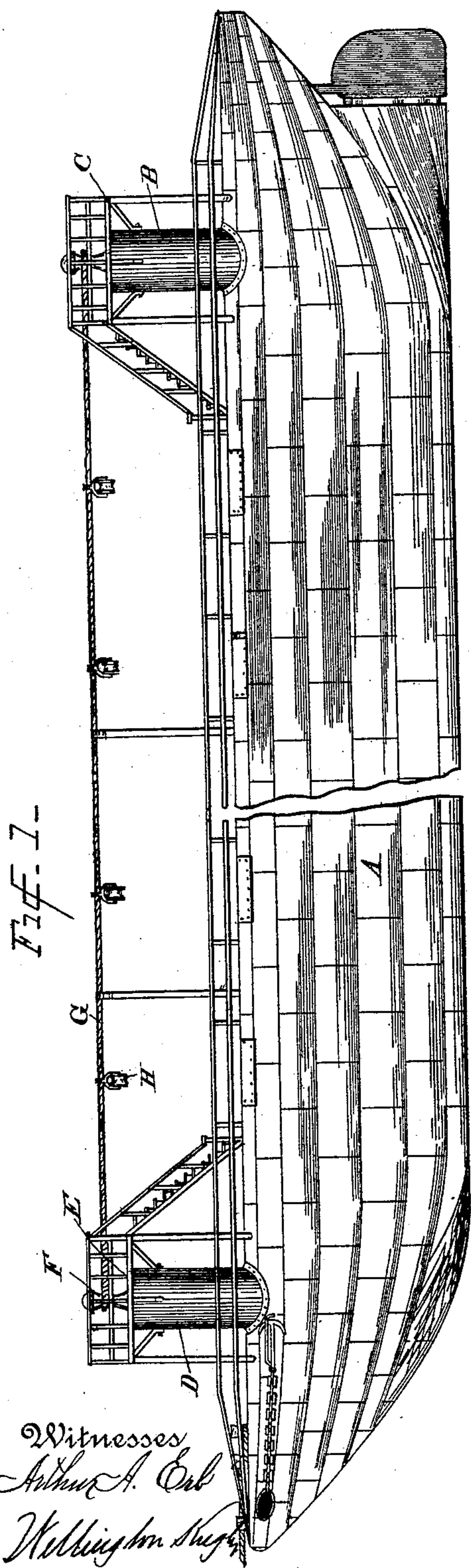
2 Sheets—Sheet 1.

A. McDOUGALL.

APPARATUS FOR LOADING AND UNLOADING VESSELS.

No. 453,155.

Patented May 26, 1891.



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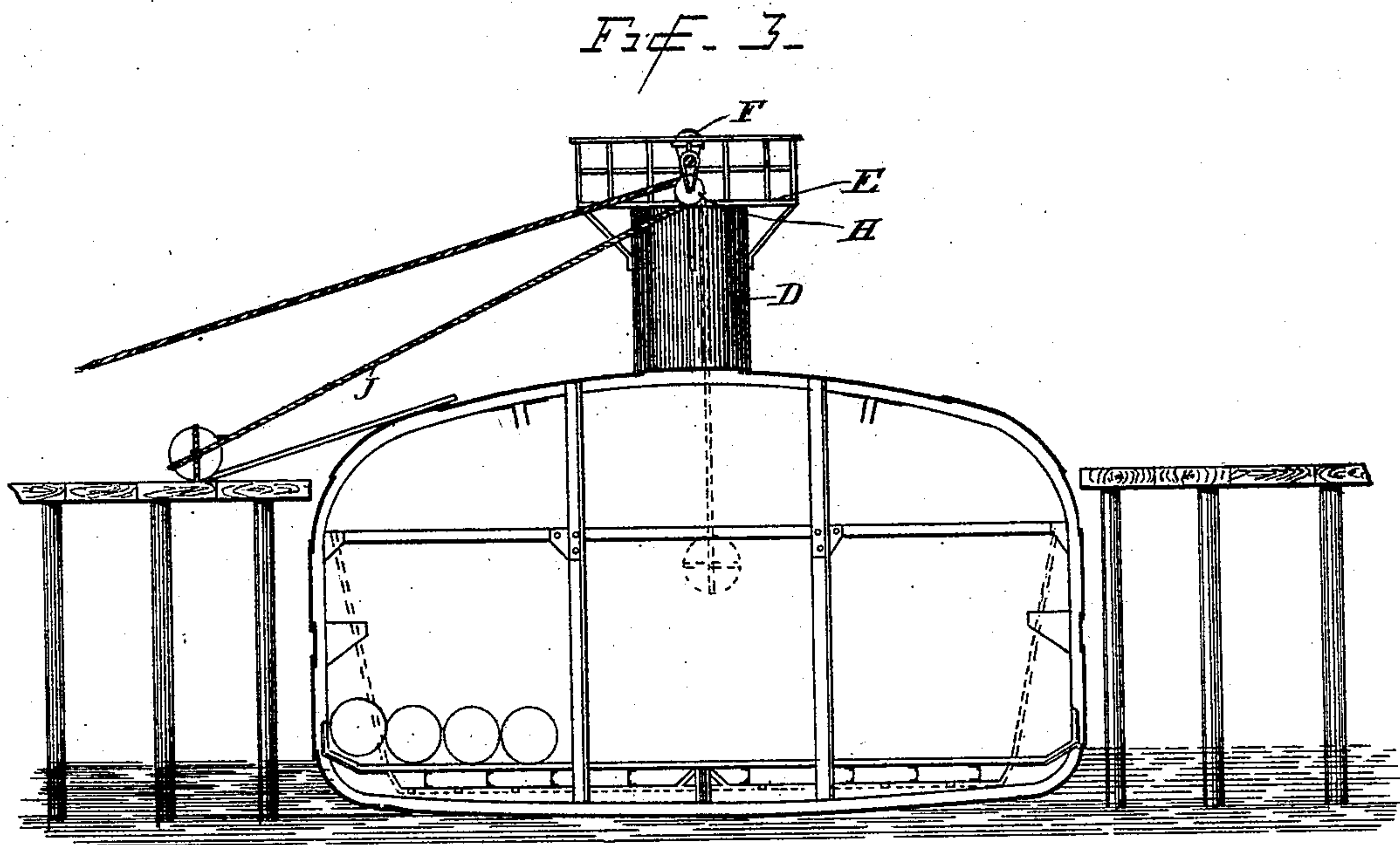
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UNITED STATES PATENT OFFICE.

ALEXANDER McDOUGALL, OF DULUTH, MINNESOTA.

APPARATUS FOR LOADING AND UNLOADING VESSELS.

SPECIFICATION forming part of Letters Patent No. 453,155, dated May 26, 1891.

Application filed March 27, 1890. Serial No. 345,590. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER McDOUGALL, a citizen of the United States, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Apparatus for Loading and Unloading Vessels; and I do hereby declare the following to be a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an attachment to that variety of tow-boats invented by me and which is fully described and shown in several Letters Patent of the United States—viz., No. 241,813, dated May 24, 1881, No. 259,889, dated June 20, 1882, and No. 393,997, dated December 4, 1888.

From an inspection of these patents it will be seen that the tow-boat consists, generally, of a metallic hull adapted to be nearly submerged when towed, provided with hatches in its top and with two or more turrets supporting working-decks.

This present improvement relates to a certain attachment to that type of vessel whereby the moving and handling of the hatches may be facilitated, whereby the customary grain spouts or chutes may be adjusted and controlled with relation to the hatches, whereby cargo or other merchandise may be effectively shifted from one hatch to another and from one end of the vessel to the other, and whereby the vessel may be conveniently loaded and unloaded with cargo.

To this end the invention consists, generally, in swinging a cable or hawser from one working-deck to the other over the line of hatches and in mounting thereon one or more ordinary pulley blocks or carriers adapted to be placed at proper positions on the cable or hawser. Engaging with each pulley block or carrier is a rope, by which the hatches may be removed or the grain-spout may be handled or the cargo or the merchandise may be shifted or the vessel loaded or unloaded, as will be explained hereinafter.

For a better understanding of my invention attention is invited to the accompanying drawings, forming a part of this specification, and in which corresponding parts are designated by the same reference-letters.

In the drawings I have shown the following views: Figure 1 is a side elevation of a vessel of the character above described, showing my present improvements attached thereto; Fig. 2, a top elevation of the same; and Fig. 3 an enlarged elevation, partly in section, of a portion of a boat embodying my improvements.

A represents the hull, constructed, generally, as described in said patents—viz., with a curved top and bottom, straight sides, and a spoon-shaped bow and stern.

B is the after turret supporting the rear working-deck C, which carries the usual tiller-wheel or other steering mechanism and also the hauling-in gear.

D is the forward turret supporting the working-deck E, upon which is placed a capstan F, of any suitable construction, but preferably a steam-capstan. This is used to handle the tow-lines and the forward hawser and anchor-chains under the usual conditions. It also serves a valuable purpose in conjunction with my present improvement, as will be now explained.

G represents the before-mentioned cable or hawser, which is by preference made of wire rope, although an ordinary hemp hawser may be used. The after end of this cable G is attached to the rear working-deck by any suitable means. The forward portion of the cable G extends directly to the front working-deck and connects either directly with the capstan F or indirectly thereto through the intervention of a "block and tackle" G' of ordinary construction. By starting up the capstan, especially if it is operated by steam, as was before mentioned, and if the block and tackle G' is used, the cable is drawn very tightly in its line over the hatches. It has been found by practical experiment that the cable can be drawn so tightly as to be almost as rigid as a bar of iron. Traveling freely upon the cable when so tightened is a pulley block or carrier H of some approved kind, through which extends a line J, having a suitable hook at its lower end.

By means of the cable, pulley-block, and line, as I have just described, it will be evident that the following is the usual manner of operation of my invention in its different applications: When it is desired to move any particular hatch, the pulley block or carrier

is moved directly over the same. Then the screw-bolts for holding the hatch in place are removed, and the tackle is attached to the hatch at each side thereof in any suitable way. When this is done, the line J is drawn in the direction in which the hatch is to be moved, so that the one operation will tend both to raise the hatch and to shift the carrier H along the cable in the proper direction, as will be evident, so that the hatch is moved by one operation, or instead the two operations may be accomplished separately, as will be evident. The reverse movements in replacing the hatch to its original position are accomplished in precisely the same way. When it is desired to shift the cargo from one part of the vessel to another out of the hold, the line is made fast to a bucket of any suitable variety. This bucket is then lowered into the hold by means of the line J, and is loaded, after which it is elevated up to the pulley block or carrier, which is moved along the cable to the hatchway or the place on the vessel where the cargo or merchandise is to be deposited. The bucket is then dumped in the usual manner, is then returned to its original position, and the operation just described is again repeated as many times as may be necessary.

In using the cable to support the grain-loading spouts or chutes or dumpers, as I have briefly before mentioned, I go about as follows: Instead of using a single line, &c., as above described, I make use of a separate line and carrier for each spout or nozzle that is to be handled. Each tackle is then secured to its respective spout or nozzle in the usual way, and by means of the line J the spout or nozzle is lowered into the hold of the vessel until the desired position is reached. The line J is then made fast either to its respective carrier or to the cable and the spout or the nozzle remains stationary. As the depth of the grain increases in the vessel it will of course be necessary to frequently raise the

spouts or nozzle to allow the grain to flow freely therefrom. This is accomplished by means of the line J, as will be evident, and the spouts or nozzles are held again once more in position.

My invention is also especially adapted for use in loading and unloading the vessel, in which case I operate the same substantially as follows: An inclined way or plank is first laid up against the vessel from the dock opposite each hatchway, as shown in Fig. 3. The tackle is now attached to the barrel, bale, or other article of merchandise on the dock, so that it will be drawn up the plank or way before mentioned until it is directly over the hatch, after which it may be lowered into the hold, as shown in dotted lines. In unloading the vessel the reverse movements take place. The line in this connection may be operated by hand; but it is preferable to make use of an engine of some sort for this purpose, and which may be placed on the dock. In handling heavy cargoes it is usually preferable to brace the wire cable in some way, and which is generally done by means of an ordinary pair of shears placed beneath the cable at each side of the hatch.

Although I have described my present invention as especially adapted for certain purposes, it will of course be understood that I am not limited to any particular use.

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

In a boat of the character described, having a forward and rear turret, a windlass in the forward turret, a cable or hawser attached to said rear turret and connected to said windlass, and a carrier and line on said cable, for the purposes set out herein.

ALEXANDER McDOUGALL.

In presence of—

C. E. WACHTEL,
W. M. ROSS.