

No. 780,083.

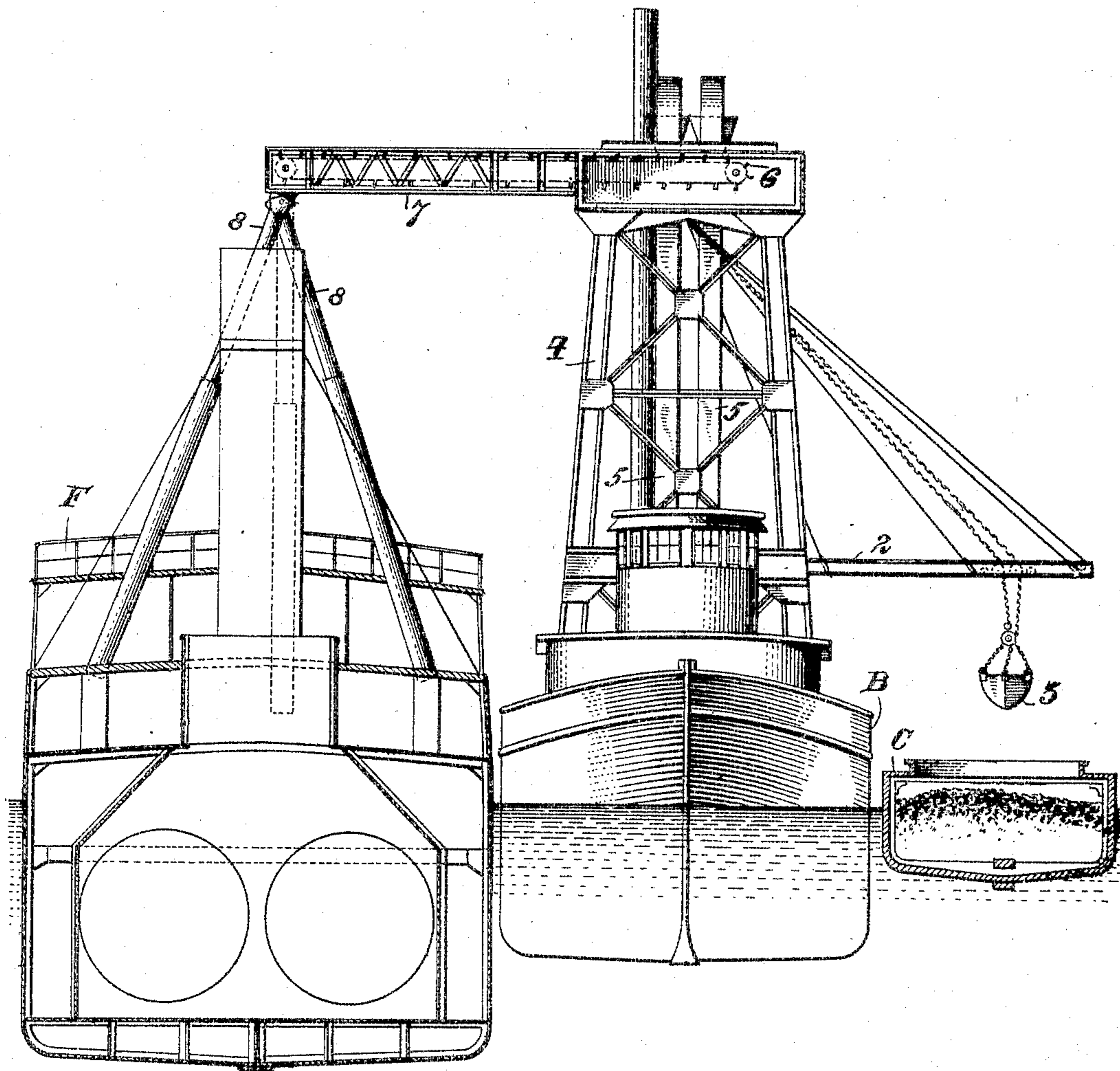
PATENTED JAN. 17, 1905.

E. T. WILLIAMS & G. A. ORROK.
VESSEL FOR BUNKERING AND LOADING SHIPS.

APPLICATION FILED DEC. 23, 1901.

3 SHEETS—SHEET 1.

Fig. 1.



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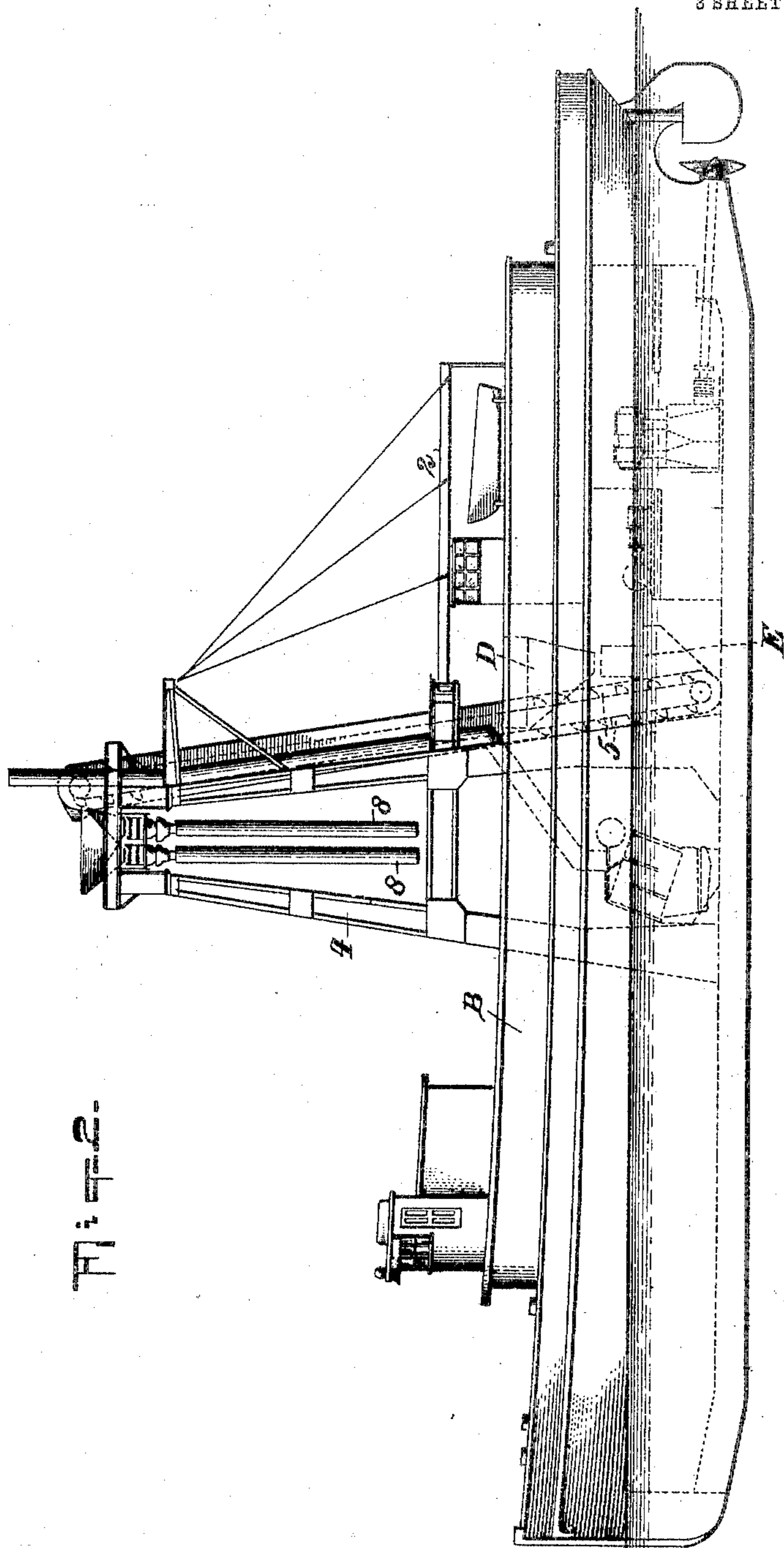


Fig. 2-

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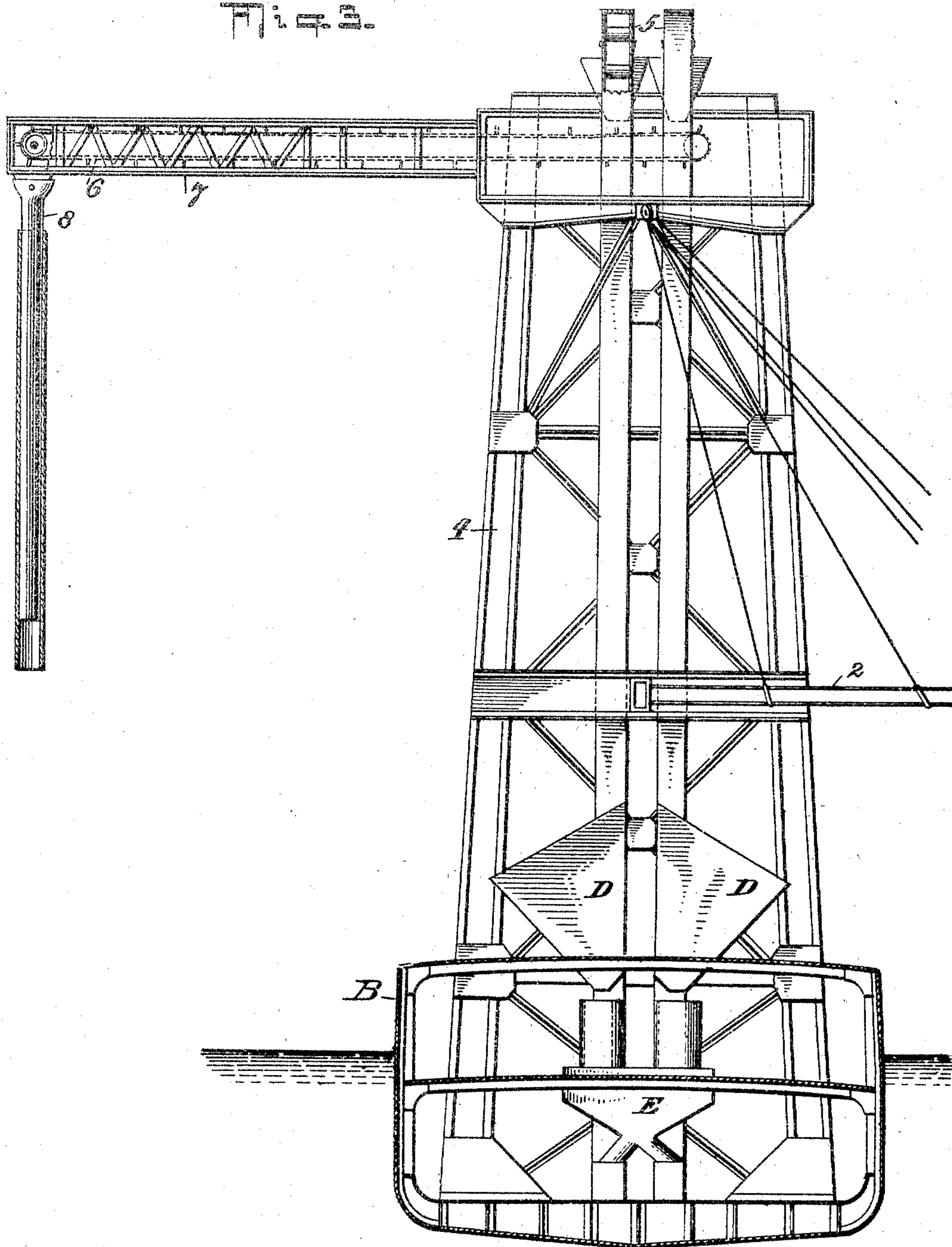
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3 SHEETS—SHEET 3.

Fig. 3.



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VESSEL FOR BUNKERING AND LOADING SHIPS.

SPECIFICATION forming part of Letters Patent No. 780,083, dated January 17, 1905.

Application filed December 23, 1901. Serial No. 86,984.

To all whom it may concern:

Be it known that we, EDWARD T. WILLIAMS and GEORGE A. ORROK, of the borough of Brooklyn, city and State of New York, have
5 invented a certain new and useful Improvement in Vessels for Bunkering and Loading Ships, of which the following is a specification.

Commercial requirements demand that any
10 method or means of transferring coal to the bunkers of a coal-consuming vessel or cargo to the hold or loading-deck of a vessel of any sort shall possess features enabling the cargo and bunker material to be handled with a
15 minimum of cost in effecting the transfer and in general giving the preference, other things being equal, to that form of apparatus which accomplishes the loading or the bunkering in the shortest time. Broadly considered, there-
20 fore, two elements are involved, so far as the operation of a transferring apparatus of this character is concerned, that of economy and speed, and while the former necessarily implies the manifold application of cheap power and mechanical contrivances as distinguished
25 from manual labor the latter is a more flexible quantity in that its attainment varies with circumstances—that is to say, the vessel may be coaled or loaded from a wharf direct, the
30 material being delivered through properly-directed chutes or by properly-located conveyers, or the material may be delivered alongside the vessel in barges or boats and from these transferred to her hold, decks, or
35 bunkers. It is to the class of apparatus designed to bunker or load a vessel with material taken in bulk from alongside that our present invention relates.

In a general way means embodying our in-
40 vention will comprise a self-propelling vessel of ample burden in which is contained the loading apparatus. We are thus enabled to transfer the apparatus from point to point with all the facility inherent in the navigating
45 of a self-propelling vessel and in accordance with the demand for the services of such an apparatus at variously-situated locations, thus permitting the ballasting, loading, or bunkering of a ship to be carried on equally as well

whether she be lying at anchor or moored to
a wharf. 50

For various reasons we prefer that the vessel containing the transferring apparatus shall be in no sense a cargo-boat—that is, her construction need not be such as to adapt her to
55 contain any bulk of the material to be transferred. Among the advantages resulting may be mentioned that of relatively cheaper construction, decreased cost of handling the material, increased seaworthiness of the ves-
60 sel, and relatively great facility and speed with which a ship may be loaded or coaled.

In the practical use of our present invention the material will usually be taken from
65 a barge or boat moored along one side of the transfer vessel and delivered to the bunkers or cargo-space of the ship located on the opposite side.

It is oftentimes highly desirable to bunker or load a vessel while moored in the open
70 waters of a roadway or harbor and exposed to a considerable sea, and any vessel or floating apparatus for accomplishing this must necessarily possess considerable seaworthiness to effect this under such conditions without dan-
75 ger of capsizing or actually turning over. As we contemplate the employment of a vessel embodying our present improvements under conditions such as referred to, a particular
80 feature of our invention is directed to the reduction of the top hamper to a minimum and to the provision of a transferring apparatus of such a character and construction as to re-
85 quire a less height and weight of superstructure above the deck of the vessel containing it than any of the constructions heretofore used for a similar purpose of which we are
aware. To the same end—that is to say, for the purpose of rendering the vessel top-heavy
90 to as slight a degree as possible—the transferring apparatus is so designed as to cause when in operation the suspension above the deck of the vessel of a minimum amount of the material during the transfer.

The accompanying drawings set forth an
95 embodiment of our present invention, and in the drawings—

Figure 1 is mainly an elevational view, bow

on, of a vessel for loading and bunkering purposes, the boat or barge containing the material to be transferred and the ship to which the transfer is to be made being indicated on opposite sides of the same. Fig. 2 is a side view of the vessel with its transferring apparatus; and Fig. 3 is a cross-section looking from the rear of the vessel, the plane of the section being just rearward of the weighing apparatus to more clearly indicate the position of this latter depthwise in the hull of the vessel and the respective arms or booms projecting outboard being shown in this figure as extending from relatively opposite sides of the vessel as compared with their disposition in Fig. 1.

Similar characters of reference designate corresponding parts in all figures.

As hereinbefore stated, we prefer to employ a power-driven vessel for holding the transferring apparatus, thus enabling the latter to be taken directly alongside the ship to be loaded or bunkered. In order, therefore, that such vessel may be safely navigated under the various conditions of weather and sea likely to be encountered when in service, the vessel may be advantageously designed for great stability and general seaworthiness. She will likewise be properly ballasted, besides possessing the usual features of self-propelling vessels. The vessel, (designated in a general way herein by B,) whatever her form and construction, will be braced and strengthened to support the various parts of the transferring apparatus; but as it is not proposed that she shall herself have a capacity adequate to transport the coal or cargo or any considerable part thereof to the ship her cost of construction may be lessened by the amount required to fit her for holding the same.

The exclusion of the material from the hold or decks of the vessel presents a further advantage represented in the labor and expense avoided in the trimming of the remaining material during the progress of loading and bunkering the ship. We are aware that various self-trimming devices and contrivances have been proposed; but these have not proved altogether satisfactory in operation, nor do they permit hand-trimming to be dispensed with altogether, generally requiring the same in some measure to prevent dangerous careening. By taking the material from a separate barge or other vessel alongside of the transferring vessel we thus avoid the necessity of devoting space to the cargo or bunkering material and obtain ample room for the location of the weighing-machine and the bulk of the material being weighed low down in the hull. The stability of the vessel is thus far less affected as compared with those loading means in which the weighing is done in a tower above the deck. Moreover, the transferring vessel may, if properly engined, be utilized for towing purposes in conveying the loaded barges to the ship.

Referring now to the transferring apparatus, this comprises in general means for elevating the material from a loaded barge, &c., such as C, on one side of the transferring vessel and conveying the same inboard of the latter, where it may be dumped in a proper receptacle, preferably situated well down in the hull, where, if desired, it may be weighed. The material is then taken from this point and conveyed to a height over the ship in whose bunkers or hold it is to find its ultimate resting-place and from which it may descend by gravity.

Any suitable or well-known means adapted to the purpose may be utilized for raising the material from the barge, that shown in the drawings attached to the present specification being an instance of such, comprising, as shown, a boom or arm 2, extending outboard from the vessel B and having rigged thereupon a well-known form of hoisting-bucket 3, with which there is combined proper devices for elevating the bucket and after drawing the same inboard along the boom dumping the same in a hopper-like receptacle, such as D. Here the material may be weighed by any proper device, such as a weighing-machine of the desired type, (indicated in a general way by E.)

We prefer to have the hoisting apparatus for the purpose just described so connected with the vessel as to enable it to operate from either side of the latter, as this will permit the material to be taken from either side of the vessel, according to circumstances. Thus when a boom such as that hereinbefore referred to is employed it may be swiveled at its inner end, so that it may be swung from one side to the other, the construction being such as to enable this to be done. The connection of this hoisting apparatus is also, preferably, of such a character as to permit the entire apparatus to be drawn inboard on the vessel B as completely as may be, especially when the vessel is under way. (See Fig. 2.)

An important feature of our present invention relates to the means employed for transferring the material from the transferring vessel to the ship on the opposite side. As previously adverted to, it is highly important to keep the center of gravity of the superstructure as low as possible, and to this end we prefer to use appropriate means for delivering the material to the upper ends of the gravity-chutes located vertically above the loading or bunkering ship. A transferring apparatus embodying our improvements is therefore clearly distinguished from those forms in which the material is raised vertically above the supporting vessel and from thence delivered by inclined chutes to the loading (or bunkering) ship. When constructed to deliver the material to chutes over the loading ship, important advantages are obtained as compared with apparatus of the lat-

ter class, especially in the permitting of a superstructure of minimum height to be employed, with consequent increased stability. In apparatus of the class in which inclined
 5 chutes are used reaching to a point directly above the transfer vessel it is obviously necessary to elevate the material to a height adequate to cause such an inclination of the chute or chutes as that the material will freely
 10 descend therethrough. If, therefore, the delivery must be made to an opening on the far side of the ship, the superstructure must be carried to an excessive height in order that the delivery-chute may have a sufficient pitch.
 15 Even when the delivery is made to other locations the material, for a similar reason, must be raised to an undesirable height, and the necessary height of tower and framework renders the vessel unwieldy and top-heavy, causing her to be dangerously unstable, especially
 20 in a seaway.

As contrasted with the foregoing, when the mouths of the chutes are directly above the loading, &c., ship—that is to say, to one side
 25 of the transferring vessel—the necessity for such excessive elevation of the material does not exist, for the proper descent of the material does not then depend upon the height to which it is carried. The chutes may therefore be disposed substantially vertical, provided, of course, that the material is moved
 30 to a point directly above the opening through which it is to descend. A vessel carrying an apparatus of this latter class requires far less height of tower, elevator, or other superstructure and possesses, therefore, better qualities as a stable sea-going vessel.

For the conveyance of the material to the side of the transferring vessel any proper and
 40 desired form of apparatus may be utilized; but whatever the form adopted it will preferably be adapted to convey the same to a point on the opposite side to that upon which the hoisting apparatus, already referred to, is
 45 located for the purposes of proper balance as far as may be.

We contemplate, as a convenient and practical construction, the erection upon the transferring vessel of a tower of substantial nature
 50 having a height which is sufficient only to enable the material to be raised to a plane above the ship that will not cause her to interfere when rolling with any part of the structure on the transferring vessel. Having been
 55 raised to this plane, some suitable means will be employed for conveying the material outboard to the point of delivery through properly-disposed delivery-chutes.

Obviously various constructions may be
 60 used for effecting the results hereinbefore set forth. Thus in a general way there will be a tower, such as 4, of proper construction supporting an elevator of a suitable type, such as 5, adapted to take the material after it has
 65 been weighed (in the event that a record of

the weight delivered is kept) and raise the same to a height above the ship F. From this point the material is conveyed outboard over the ship by some suitable form of conveyer, such as 6. For the convenient support
 70 of this latter we may use a boom or arm, such as 7, whose inner end rests directly upon and is secured to the upper part of the tower and from whose outer end, extending outward from the tower, descend chutes, (one or more,) 75 such as 8. These chutes may be of a telescopic nature and advantageously connected with the delivery end of the boom 7 in such a way as to facilitate the adjustment to different positions. Although we do not regard
 80 it as essential, the boom 7 may be so connected with the tower as to render it adjustable in and out, thus permitting the relative location of the delivery end of the chute supported by it to be adjusted. The construction 85 may also be such as to permit this boom to be drawn inboard or even disconnected from the tower and lowered down on deck, if desired.

From the foregoing description it is obvious that our improved vessel for loading or bunkering ships, tugs, vessels, &c., is capable not
 90 only of propelling herself from point to point, but dispenses with the necessity of trimming in order to keep her upright, has no dangerously high and heavy superstructure, and, 95 moreover, is capable of handling the material rapidly and in such a way that at no time is there any necessity for the accumulation of an undue amount at a point dangerously high above the deck. Such a vessel therefore possesses great stability and can be used under
 100 conditions dangerous to the safety of similar contrivances in which the center of gravity is undesirably high.

Having described our invention, we claim— 105

1. A self-propelling non-cargo-carrying vessel having a supporting-tower combined with a hoisting apparatus adjacent to the base of the tower for raising cargo or bunkering material lying alongside and discharging it
 110 inboard; an elevator supported by the tower and to which the discharged material is delivered and which is adapted to raise the material to a height directly over said vessel less than would suffice for its descent by gravity therefrom to the farthest point that the vessel is adapted to ultimately deliver the material; an arm whose inner end rests directly upon and is secured to the upper end of the tower and whose outer end extends outward
 120 therefrom; a driven conveyer carried by said arm for taking the material delivered to it by the elevator at this height and conveying the same outboard beyond the opposite side of the said vessel to a point directly over the loading or bunkering ship; and a delivery-chute leading downward from this point to the ship. 125

2. A self-propelling non-cargo-carrying vessel having a supporting-tower combined with a hoisting apparatus adjacent to the base 130

of the tower for raising cargo or bunkering material lying alongside and discharging it inboard; a weighing-machine in the hull of the vessel and onto which the hoisting apparatus dumps its load; an elevator supported by the tower and to which the material from the weighing-machine is delivered and which is adapted to raise the material to a height directly over said vessel less than would suffice for its descent by gravity therefrom to the farthest point that the vessel is adapted to ultimately deliver the material; a conveyer-arm whose inner end rests directly upon and is secured to the upper end of the tower and whose outer end extends outward therefrom; a driven conveyer supported by said arm for taking

the material substantially as fast as it is delivered to it by said elevator at said upper height and conveying the same outboard beyond the opposite side of the said vessel to a point directly over the loading or bunkering ship; and a delivery-chute leading downward from this point to the ship.

In testimony whereof we have hereunto signed our names in the presence of two subscribing witnesses.

EDWARD T. WILLIAMS.
GEORGE A. ORROK.

Witnesses:

KEITH O. GUTHRIE,
W. W. ERWIN.