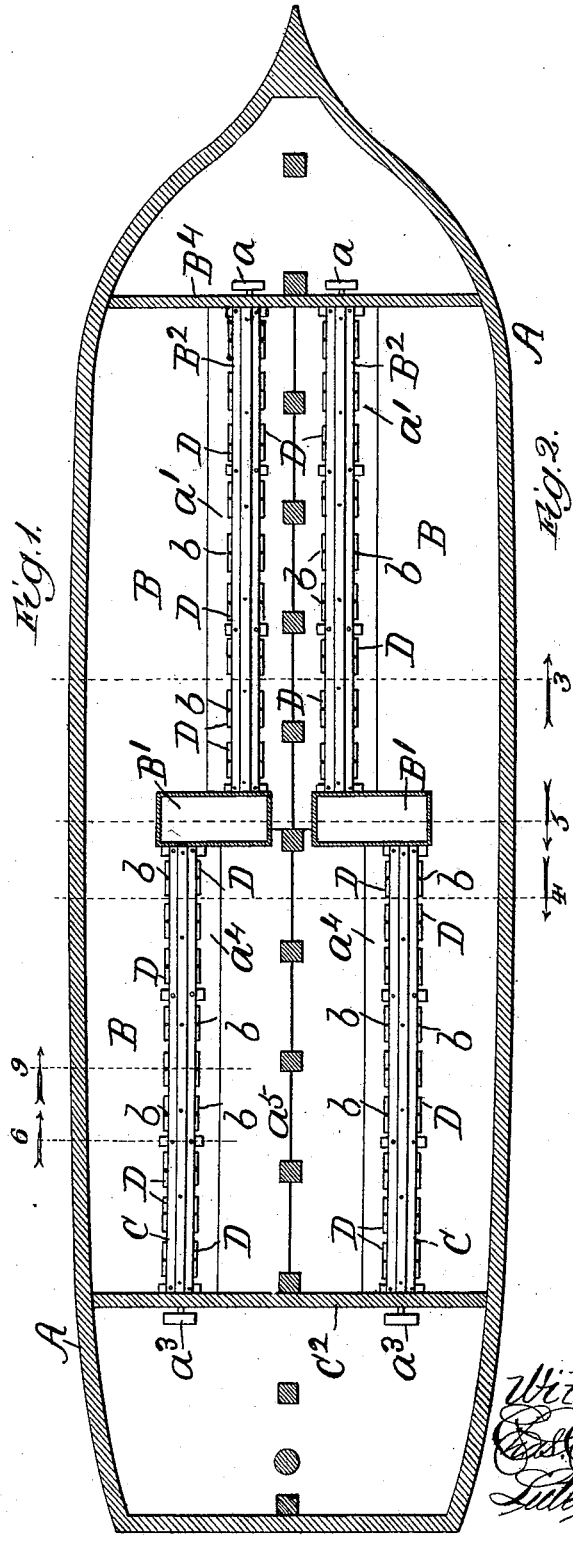
No. 645,747. Patented Mar. 20, 1900.

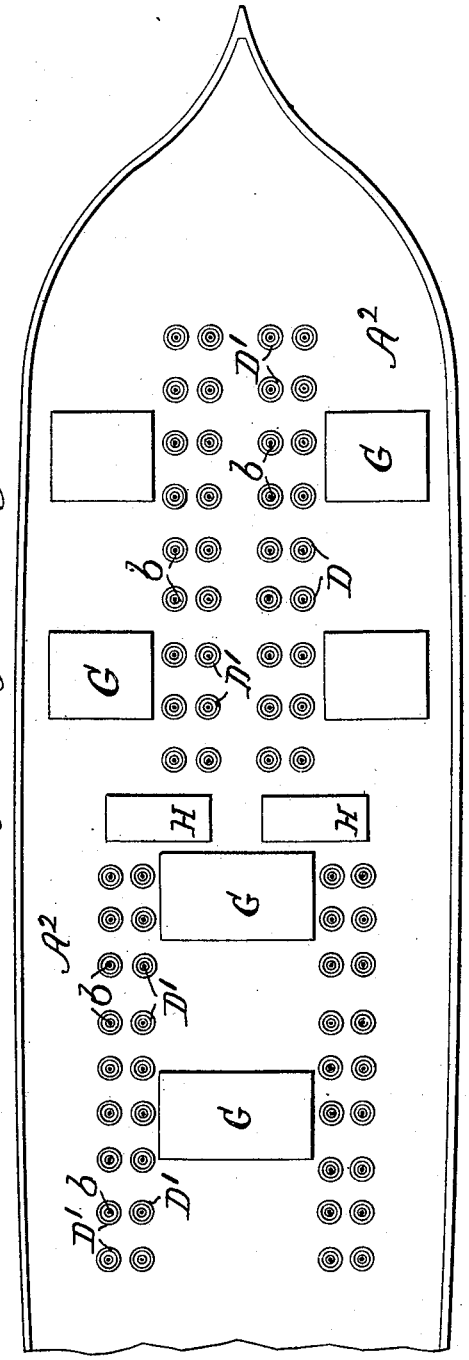
L. HOHMANN.

HOPPER BOTTOM GRAIN VESSEL.

(Application filed Aug. 5, 1898.)

(No Model.) 3 Sheets—Sheet 1.





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(No Model.) 3 Sheets—Sheet 2.

Fig. 3.

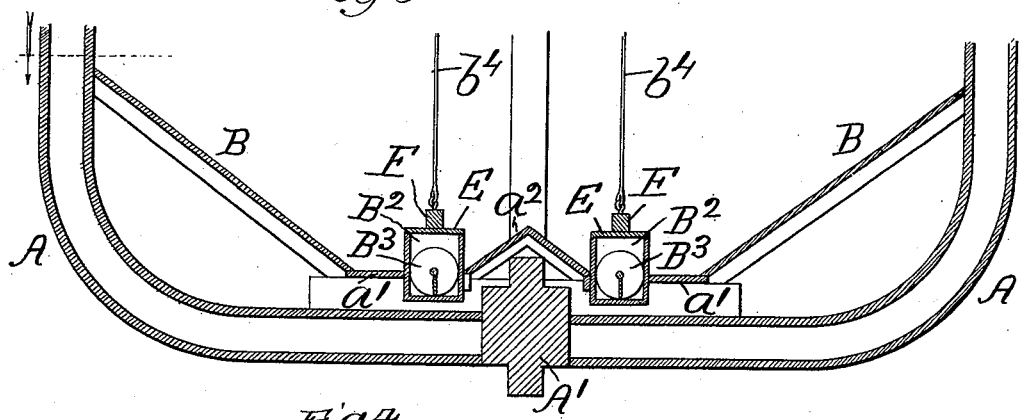


Fig. 4.

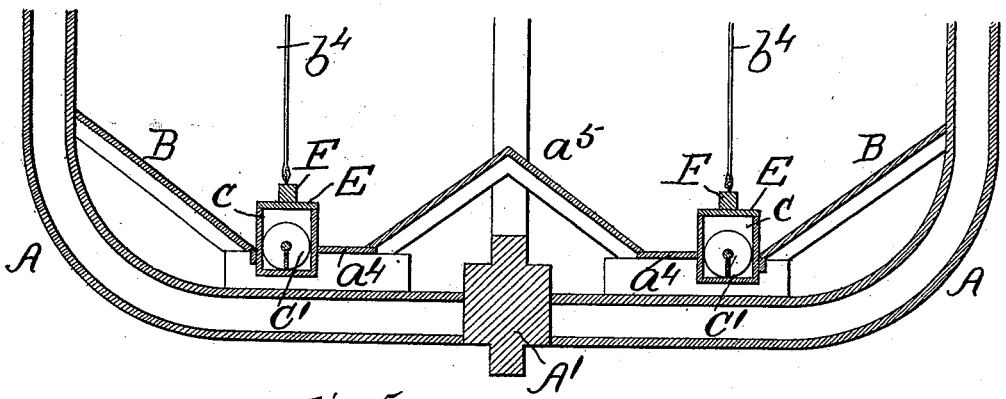
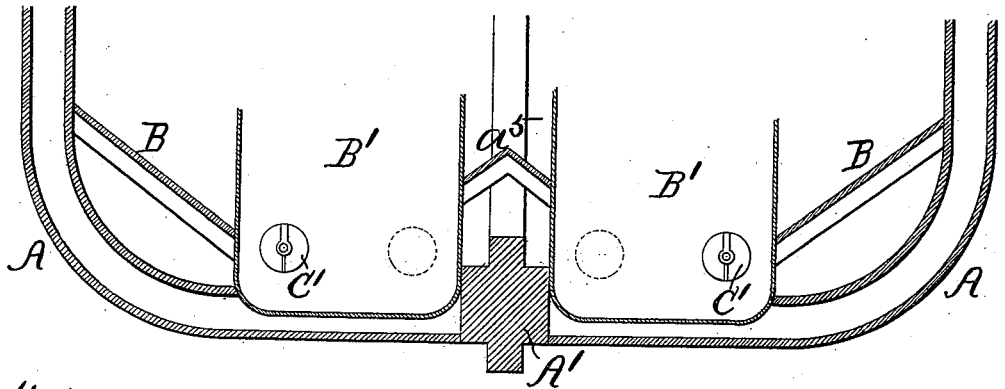


Fig. 5.



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(Application filed Aug. 5, 1898.)

(No Model.) 3 Sheets—Sheet 3.

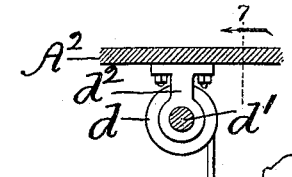


Fig. 10.

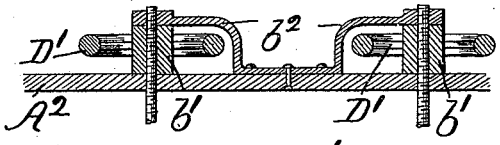
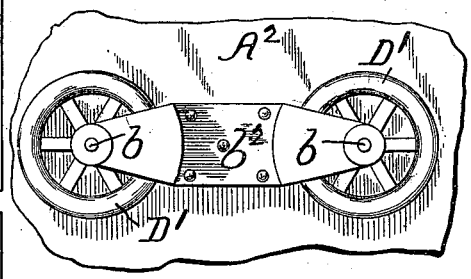


Fig. 6.



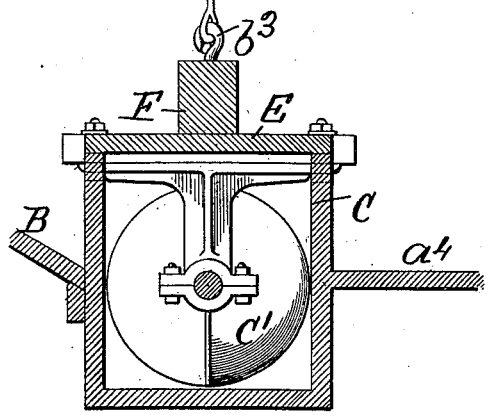


Fig. 9.

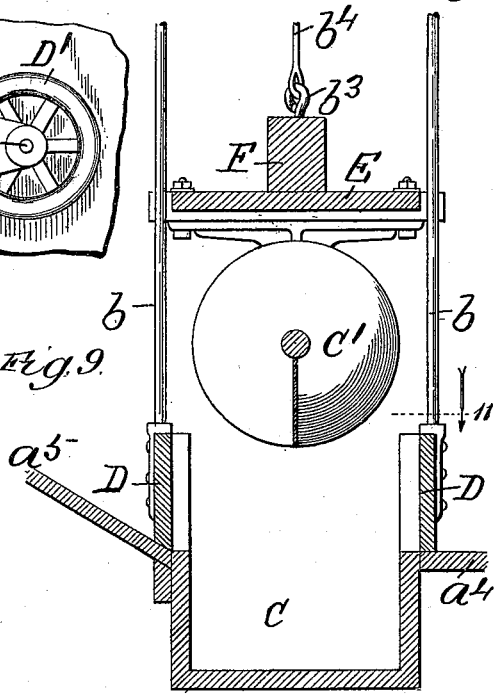


Fig. 7.

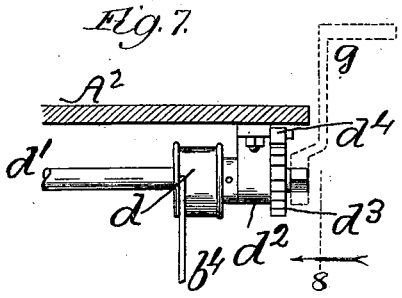


Fig. 8.

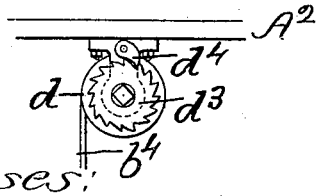
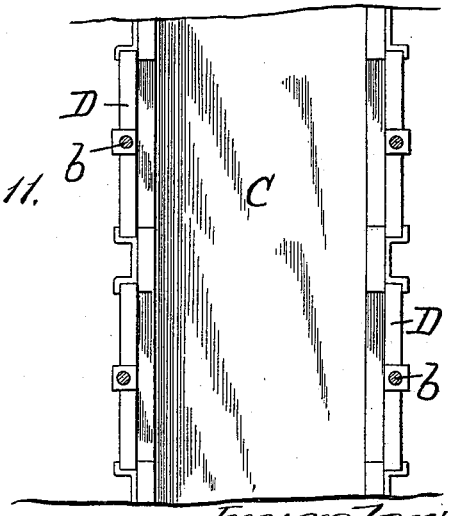


Fig. 11.



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UNITED STATES PATENT OFFICE.

LEWIS HOHMANN, OF CHICAGO, ILLINOIS.

HOPPER-BOTTOM GRAIN VESSEL.

SPECIFICATION forming part of Letters Patent No. 645,747, dated March 20, 1900.

Application filed August 5, 1898. Serial No. 687,795. (No model.)

To all whom it may concern:

Be it known that I, LEWIS HOHMANN, 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 Hopper-Bottom Grain Vessels; 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.

This invention relates to improvements in that class of vessels that are designed for transferring and handling grain in bulk, and has for its object to provide an arrangement of this character that will greatly facilitate the operation of discharging cargo.

Figure 1 is a horizontal section on line 1, Fig. 3, looking in the direction indicated by the arrow. Fig. 2 is a longitudinal horizontal plan section showing the interior arrangement in the hull of the vessel; Fig. 3, a broken-away transverse section on line 3, Fig. 1; Fig. 4, a similar view on line 4, Fig. 1. Fig. 5 is a similar view on line 5, Fig. 1. Fig. 6 is a broken-away transverse detail section on line 6, Fig. 1. Fig. 7 is a broken-away detail, part elevation and part section, on line 7, Fig. 6. Fig. 8 is a detail in elevation on line 8, Fig. 7. Fig. 9 is a broken-away transverse section on line 9, Fig. 1. Fig. 10 is a plan of the means used to raise and lower the gates or slides in the conveyer-boxes; and Fig. 11, a broken-away plan of one of the conveyer-boxes on line 11, Fig. 9.

A may represent the hull of the vessel, A′ the keel, and A^2 the deck.

The general construction of the vessel or barge will be of the usual character, and is then provided with a false inside bottom or sloping sides, forming a hopper-bottom, on which the bulk of the grain rests, and is so arranged that the same will gravitate inwardly to the center from both sides in the operation of discharging the cargo.

B represents the false inclined bottom, sloping from the respective sides of the vessel inwardly, so that the grain will gravitate or flow to a central line and is then mechanically conveyed to a central point and taken out by the elevator, the grain being removed from the vessel at one central point, thus dispensing with the necessity of shifting the vessel and inserting the elevator-leg through the different hatchways in removing the one cargo, as must be done under the ordinary arrangement.

B′ represents two receiving bins or compartments located near the longitudinal center of the vessel and arranged at opposite sides, as shown in Figs. 1 and 5, so that an elevator-leg may be inserted in either side of the vessel coming next to the dock. These bins bottom well down into the hull of the vessel, Fig. 5, and may be of any desired depth.

In the forward part of the vessel are placed longitudinally the companion conveyer-boxes B^2, inclosing screw conveyers B^3, provided at their respective ends with suitable bearings and having driving-pulleys a, mounted on the forward ends of the conveyer-shafts, projecting through the bulkhead B^4. It will be noted that the two forward conveyers are placed rather close together, their inner discharge ends opening into the receiving-bins at their inner adjacent sides, as shown in Fig. 1. Between the sloping sides B and the conveyers are narrow platforms a' a' for convenience in getting at the conveyers. Between the conveyers is located a Λ-shaped bottom a^2, from which the grain will gravitate into the respective conveyers.

In the after half of the boat are located the companion conveyer-boxes C, inclosing screw conveyers C′, provided with suitable bearings and having driving-pulleys a^3, mounted on the after ends of the conveyer-shafts, extending through the bulkhead C^2. These companion conveyers are arranged wider apart and have their discharge ends opening into the receiving-bins near their outer sides, diagonally to the position of the discharging ends of the conveyers in the forward part of the hold.

Horizontal platforms a^4 a^4 are arranged along the inner sides of the conveyer-boxes C and are connected by the Λ-shaped bottom a^5 to facilitate the flow of the grain into the conveyers.

The different conveyer-boxes are provided in their respective sides with a number of gates D, which are adapted to be moved vertically in letting in or closing out the grain. The opening and closing of these gates is accomplished by means of a vertical rod or rods

b, the lower ends of which are rigidly secured to the gates, the upper screw-threaded ends extending up through to the outside of the deck and having a threaded engagement with the hub b' of the hand-wheel D'. The upper ends of the rods b also pass through the outer ends of the angle-brackets b^2, the inner ends of which are bolted to the deck. By this means the flow of the grain into the conveyers is easily controlled and clogging prevented, as the gates are conveniently moved in either direction by the turning of the hand-wheels D' on the deck.

The respective conveyers are attached to the under sides of the removable covers E of the conveyer-boxes, so that when the covers are raised the conveyers go with them, as shown in Fig. 9, so that repairs may be made or the boxes cleared out. A bar F is secured to the top of the box-covers and runs longitudinally. Eyebolts b^3 are inserted in the bar F at intervals and have the lower end of a wire rope b^4 attached thereto, as shown in Fig. 6. The upper end of this rope, Figs. 6, 7, and 8, is secured to a drum d, mounted on a shaft d', supported from the under side of the deck by bearing-hangers d^2. But a part of one shaft is shown. It will be understood, however, that there is one placed above each conveyer-box and extending the whole length thereof. The lifting rope or ropes b^4 are arranged at intervals. On one end of the shaft d' is mounted a ratchet-wheel d^3, the pawl d^4 controlling the back movement of the same. In raising the covers and conveyers the shaft d' is rotated by means of a hand-crank g, (indicated by dotted lines, Fig. 7.)

G may represent the hatchways in the deck, and H the openings for the insertion of the elevator-leg.

It will be readily understood by this arrangement that the entire cargo may be removed from the hold of a vessel at one or two points, in accordance with the capacity of the vessel and the number of bins, so that ordinarily the elevator-leg would have to be shifted but once during the operation of discharging the cargo.

Other forms of conveyers, such as endless belts, may be used instead of the spiral or screw form shown.

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

The combination with a grain-carrying vessel, of a false hopper-bottom, the receiving-bins, the pair of screw conveyers located closely together and forward of said bins and adapted to discharge into the inner adjacent sides thereof, the pair of screw conveyers, set wide apart and located aft of the receiving-bins and discharging into their outer sides, the Λ-shaped bottoms between each pair of conveyers, the series of gates, inserted in the sides of the box conveyers, and means for opening and closing said gates from the deck of the vessel in regulating the flow of grain into said conveyers, substantially as described.

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

LEWIS HOHMANN.

Witnesses:
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L. B. COUPLAND.