

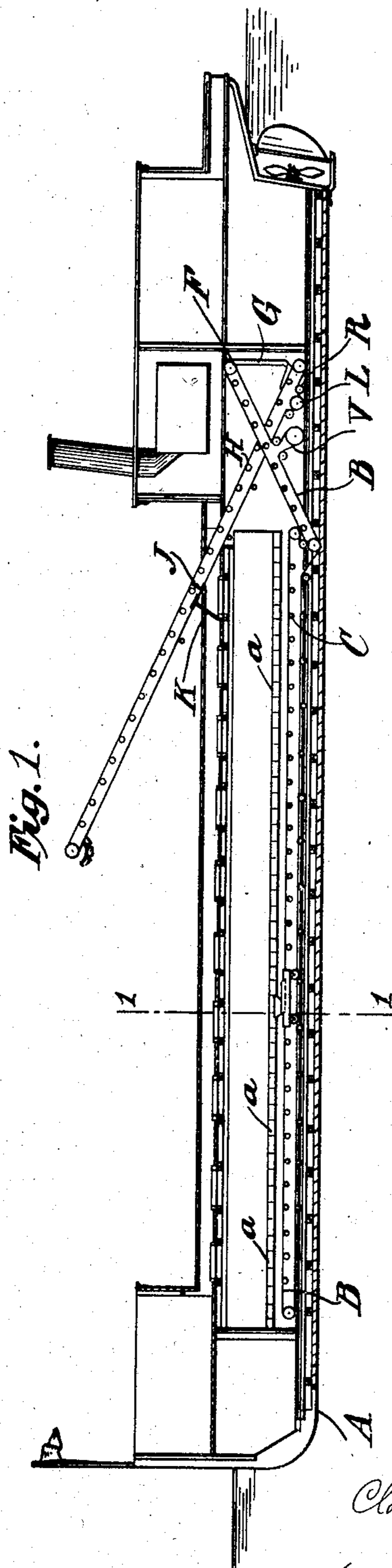
No. 791,174.

PATENTED MAY 30, 1905.

C. K. BALDWIN.
CONVEYER FOR UNLOADING VESSELS.

APPLICATION FILED MAR. 18, 1903.

3 SHEETS—SHEET 1.



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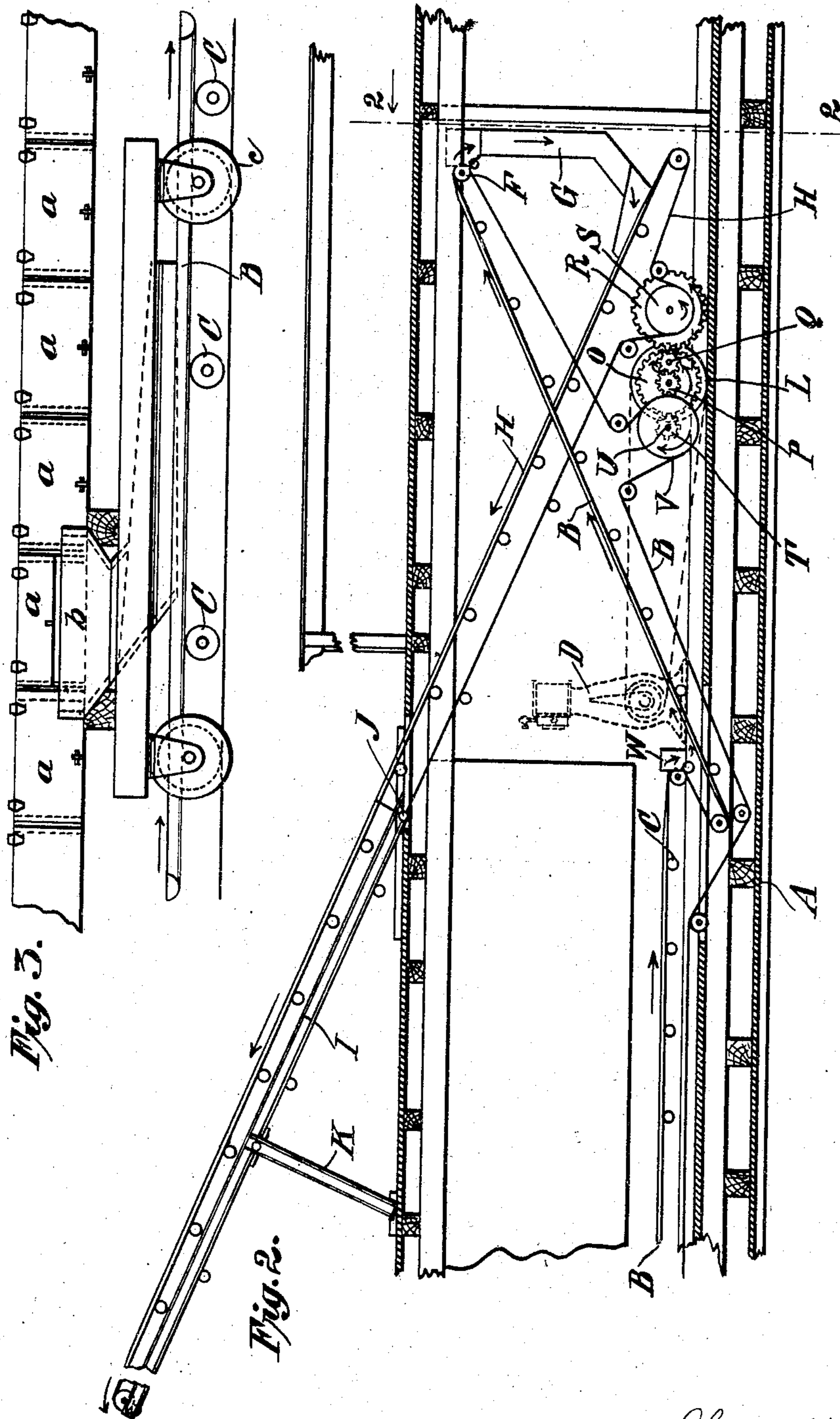
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 4.

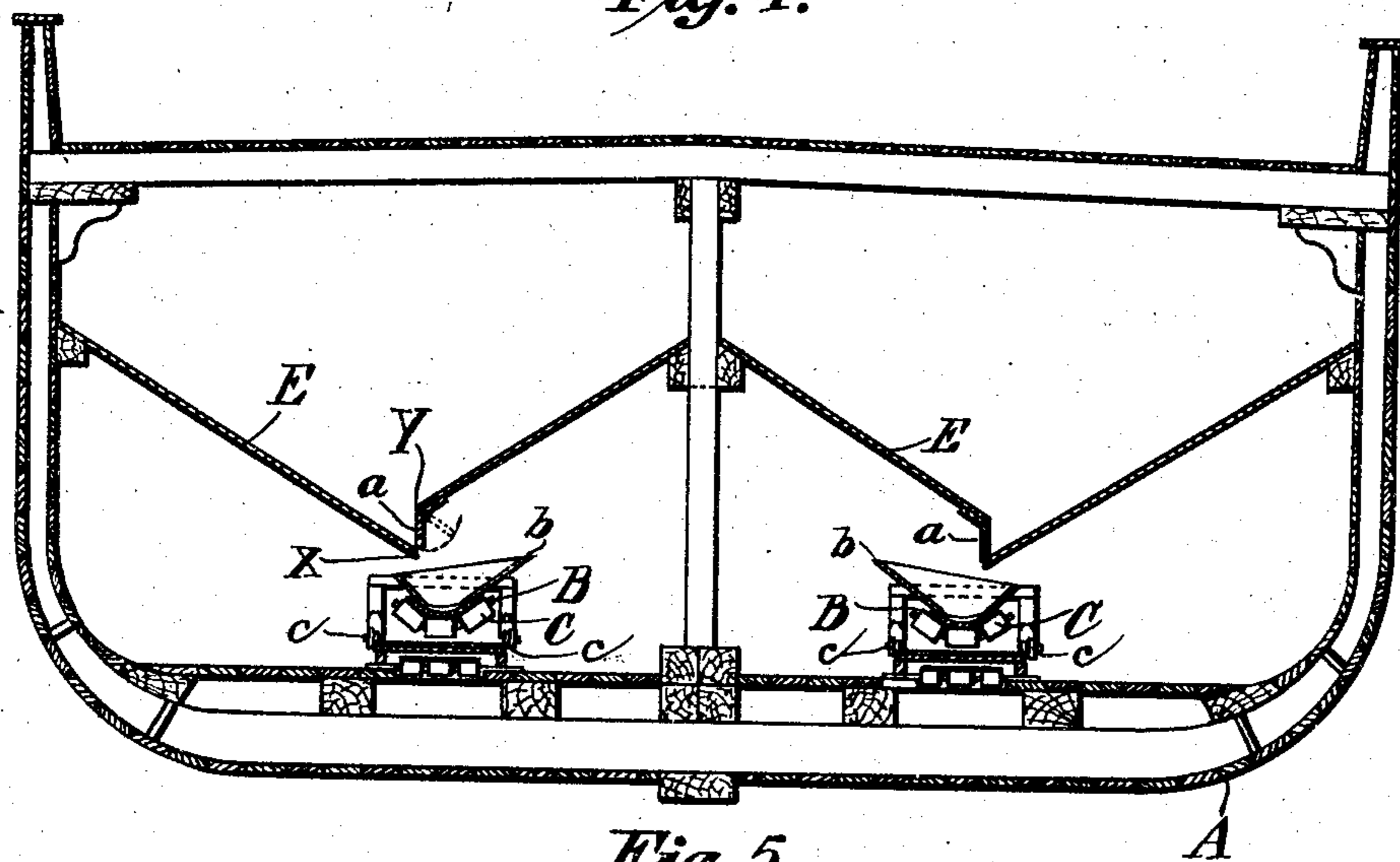
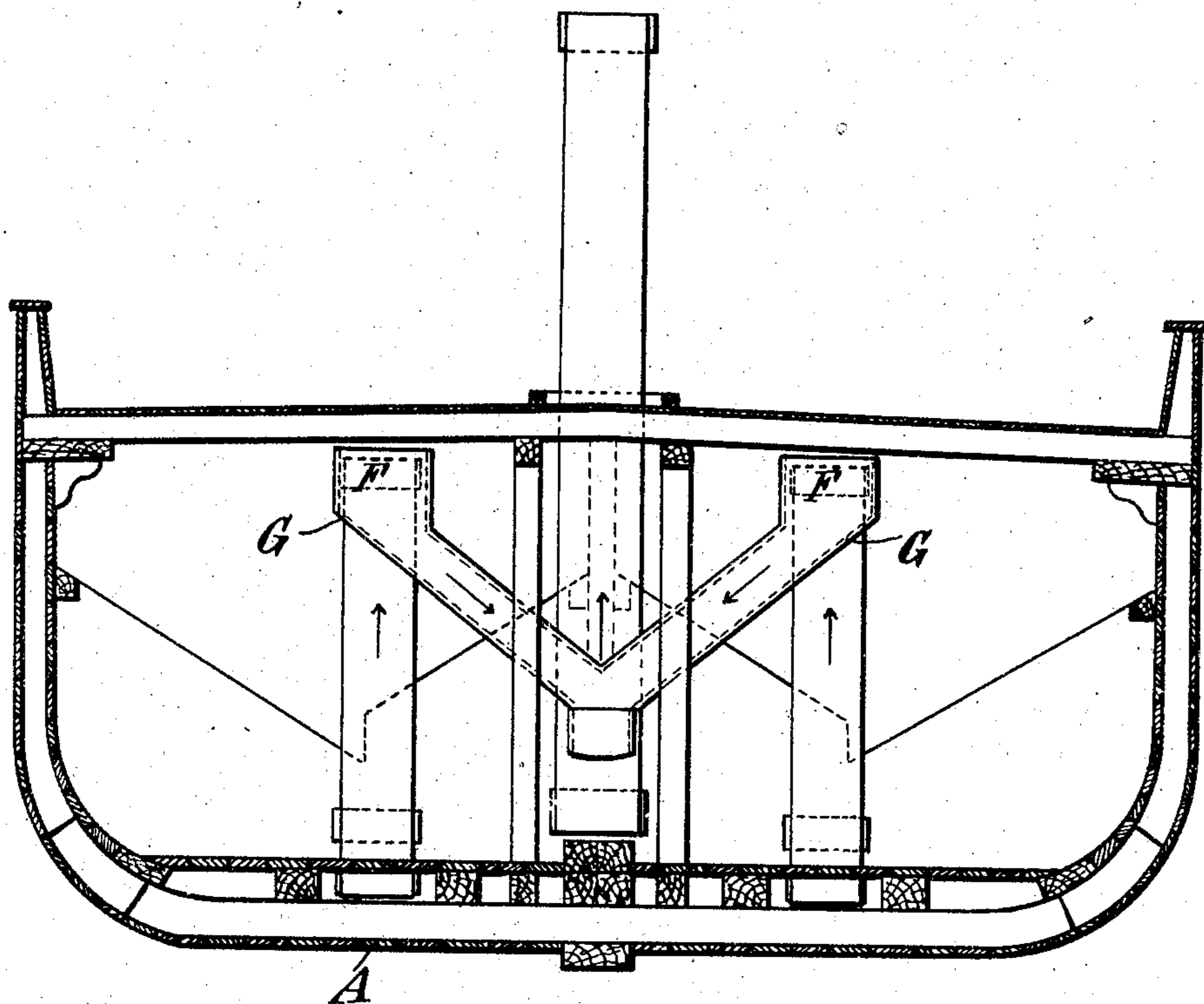


Fig. 5.



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UNITED STATES PATENT OFFICE.

CLARENCE KEMBLE BALDWIN, OF NEW YORK, N. Y., ASSIGNOR TO THE
ROBINS CONVEYING BELT CO., A CORPORATION OF NEW JERSEY.

CONVEYER FOR UNLOADING VESSELS.

SPECIFICATION forming part of Letters Patent No. 791,174, dated May 30, 1905.

Application filed March 18, 1903. Serial No. 148,353.

To all whom it may concern:

Be it known that I, CLARENCE KEMBLE BALDWIN, a citizen of the United States, and a resident of the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Conveyers for Unloading Vessels, Barges, and the Like, of which the following is a specification accompanied by drawings.

My invention relates to conveyers, but more particularly to conveyers for unloading vessels, barges, and the like, although my invention may be used in any connection to which it is applicable.

One of the objects of my invention is to enable a vessel or barge to be unloaded with great rapidity.

Further objects of my invention will hereinafter appear; and to these ends my invention consists of apparatus for carrying out the above objects embodying the features of construction, arrangement of parts, and combinations of elements having the general mode of operation substantially as hereinafter fully described and claimed in this specification and shown in the accompanying drawings, in which—

Figure 1 is a side view, in longitudinal section, of a barge provided with apparatus embodying my invention. Fig. 2 is an enlarged side view, partly broken away, showing the apparatus in longitudinal section. Fig. 3 is an enlarged detail view of the traveling chute. Fig. 4 is a transverse sectional view on the line 1 1 of Fig. 1, drawn on a large scale; and Fig. 5 is a transverse sectional view on the line 2 2 of Fig. 2.

Referring to the drawings, A represents a vessel, shown in this instance as a barge provided with conveying apparatus embodying my invention, for rapidly unloading the barge. The conveying apparatus utilizes the continuous traveling-belt conveyers B of any suitable construction arranged longitudinally in the hold of the vessel or barge A and beneath the hoppers E for the material to be discharged or unloaded. In this instance the belts are shown supported upon the troughing-idlers C, and a source of power D affords provision

for driving the belts through suitable connections to be described.

In barges built with conveyers in their hold the material has heretofore been elevated from the conveyers to above the deck-line at either the forward or after part of the vessel, which is a great disadvantage in some instances, as the vessel is then frequently obliged to assume such a position that it will lie over adjoining property in order to discharge the material at a given point. One of the objects of my invention is to enable the material to be distributed to the conveyers in the hold throughout the length of the vessel and then delivered above the deck-line at a point amidships, so that the vessel may be more conveniently located with regard to the discharging-point on the dock. In order to accomplish this purpose, various means may be utilized; but I have shown an arrangement of continuous traveling-belt conveyers for elevating the material in combination with the conveyers in the hold. The conveyers B extend upwardly in this instance at the after part of the vessel and discharge over the idle pulleys F into the chutes G, which deliver the material over to a common point, discharging it to the conveyer H, which carries it to a point above the deck-line toward amidships. In order that the frame I, supporting the conveyer H above the deck-line, may be lowered to the deck when not in use, suitable means are provided, as a hinge J for the frame I and a hinged support K, which may be folded to permit the frame I to be lowered to the deck-line.

Suitable means, as stated, are provided for driving the conveyers, as shown the engine D being connected by a belt to the pulley L, provided with the gear C, having the pinion P upon the same shaft meshing with the idler-pinion Q, which in turn meshes with the gear R, connected to the pulley S, over which the belt passes, to drive said belt H. A pinion T upon the shaft U meshes with the gear O and is connected to the pulley V, over which one of the belts B passes, to drive said belt. It will be understood that a similar pulley V is provided upon the shaft U for driving the other belt B. I am not to be understood as

limiting myself to the number and arrangement of conveying-belts as shown in the drawings, for obviously the number and arrangement may be varied to produce the same results. The material in being conveyed by the belts B is discharged through the fixed dumps W upon the upwardly-moving portions of the belts, this being a convenient arrangement.

The hoppers E are provided with the gates *a*, closing the discharge-openings in the hoppers, and one of my improvements consists in the traveling hopper or hoppers *b*, provided with wheels *c*, traveling upon the stringers of the conveyer. It will be seen that there are a number of doors *a*, and in the operation of the apparatus the hopper is run along under one of the doors or gates *a*, the latches of which are unfastened, and then the material slides from the hoppers E of the vessel to the traveling hopper *b*, which feeds it to the belt. By this means the material may be fed from any portion of the hopper or hoppers E as desired.

The great advantages of the traveling hopper *b*, as described, are that the relative position of the stringers supporting the conveyer and the top of the conveyer-belt itself is not substantially altered, so that the hopper *b*, traveling on the stringers, is always sure to feed the material to the belt without risk of damaging the same by contact therewith, having always the same relative position to the top of the belt. In those constructions wherein the material is fed through chutes connected rigidly to the hopper E it will readily be seen that should said hopper sag a little—through a rotten timber, for instance—the chute would sag correspondingly and come in contact with the belt and damage the same. According to my construction the hoppers E may sag considerably without damaging the belt.

One of my improvements relates to the hopper E for holding the sand, stone, ore, and such material. In the usual constructions expensive gates for feeding the material to the conveyer are required, and ordinarily the bottom edges of the tapering sides of the hopper E lie in substantially the same horizontal plane, and at this point or discharge-opening are arranged the gates of the lifting or cut-off pattern. According to this construction the dead-weight of the material rests on the gate, making it very hard to operate and causing frequent jamming by the material. According to my improved hopper one side of the hopper ends at the point X and the other side at the point Y in a plane which may be substantially vertically above the point X. The doors or gates *a* are hinged at their upper edges, as shown, and swing outwardly. A light fastening device will hold them shut, and very little power is required to keep them shut, for it will be seen that there is no direct

weight pressing upon them from the material in the hopper E. The horizontal component only of the direct force of the material acts upon the doors. These doors or gates *a* may be made from two to three feet wide, or substantially the width of the traveling hopper *b* moving underneath them.

It is obvious that some features of my invention while illustrated in connection with a vessel or barge are applicable to many other uses. My improved hopper E may be applied in many connections other than in a vessel or barge, and the traveling hopper *b* may be utilized wherever it is desired to feed material from a hopper to a conveyer by substantially the same arrangement as the apparatus shown. It is also obvious that the entire arrangement of conveyers whereby material is elevated from the hold to a point above the deck-line may be utilized in any place where it is desired to feed material from a long line of hoppers and then elevate it above the hoppers or bring it backwardly over substantially the central portion of the hoppers for delivery. My construction affords provision for elevating the material from a position at one end of the hoppers E to a point above the hoppers and centrally of the same, while means are provided for conveying material longitudinally of the hoppers and delivering it at one end of the same, whereby it may be conveyed upwardly to a central position.

In my construction of hopper E for the material it will be seen that the converging sides afford a vertically-extending discharge-opening. It will also be seen that the discharge-opening in this instance is formed by the sides of the hopper, the lower edge of one of which extends beneath and lies in substantially the same vertical plane as the lower edge of the other side, while a gate or door is pivotally attached to the upper of said edges, although I am not to be understood as limiting myself to a pivotal attachment, for a sliding or other moving door might be utilized in this connection, if desired. A vertically-hanging door has been found suitable and convenient in operation.

It may be said that my improved conveying apparatus is in one sense portable, since it is provided upon a barge or vessel or other suitable floating support, and the hoppers extend lengthwise of the vessel, as do the conveyers arranged beneath the hoppers for delivering the material to a point above the same, which of course need not necessarily be central of the hoppers or amidships. In the drawings the material is conveyed in a generally reverse direction to the direction of the travel of the material in the hold of the vessel and then delivered upwardly above the hoppers, and in order to accomplish this end provision is afforded for transferring the material by gravity from one conveyer to

another in a direction transverse to the conveyers.

Obviously some features of my invention may be used without others and my invention may be embodied in widely-varying forms.

Therefore, without limiting myself to the construction shown and described nor enumerating equivalents, I claim, and desire to obtain by Letters Patent, the following:

1. The combination with hoppers having discharge-openings, of a conveyer for elevating material from a position at one end of the hoppers and discharging it directly at a point at one side of and above the hoppers between the ends longitudinally of the same and substantially amidships, and means for conveying material longitudinally of the hoppers to one end of the same, whereby it may be carried upwardly, for substantially the purposes set forth.

2. The combination with hoppers having discharge-openings, of a conveyer for elevating material from a position at one end of the hoppers and discharging it directly at a point at one side of and above the hoppers between the ends longitudinally of the same and substantially amidships, and one or more conveyers extending longitudinally of the hoppers and arranged to deliver material upon said first-named conveyer, whereby material may be carried from any portion of the hoppers and delivered above the same, for substantially the purposes set forth.

3. The combination with a vessel or barge, of a conveyer for elevating material from one end of the vessel to a point above the deck-line and substantially amidships, a hinged frame for the portion of the conveyer extending above the deck of the vessel and affording provision for folding the conveyer downwardly, and means in the hold of the vessel for transporting material longitudinally and delivering it to the said conveyer, whereby material may be carried from any part of the hold and delivered amidships above the deck-line, for substantially the purposes set forth.

4. The combination with a vessel or barge, of converging chutes at one end of the barge, a conveyer for receiving material from said chutes, elevating it above the deck-line of the vessel and delivering it amidships, and apparatus in the hold of the vessel for transporting material longitudinally thereof and delivering it into both of said converging chutes, whereby material may be carried from any part of the hold and delivered amidships above the deck-line, for substantially the purposes set forth.

5. The combination with a vessel or barge, of a conveyer affording provision for elevating material from one end of the vessel above the deck-line and delivering it amidships, a hinged frame for that portion of the conveyer extending beyond the deck of the vessel affording provision for folding the conveyer down-

wardly, and one or more longitudinally-extending conveyers in the hold of the vessel arranged to deliver the material at one end of the vessel into the said first-named conveyer, whereby material may be carried from any part of the hold and delivered amidships above the deck-line, for substantially the purposes set forth.

6. The combination with a vessel or barge, of converging chutes at one end of the barge, a conveyer affording provision for elevating the material from said chutes above the deck-line of the vessel and delivering it amidships, and one or more longitudinally-extending conveyers in the hold of the vessel arranged to deliver the material into the said converging chutes upon the said first-named conveyer, whereby material may be carried from any part of the hold and delivered amidships above the deck-line, for substantially the purposes set forth.

7. The combination with a vessel or barge having hoppers extending longitudinally thereof on either side of the median line of converging chutes at one end of the barge, a longitudinally-extending conveyer for each of said hoppers arranged to receive material therefrom and adapted to deliver the material to one of said converging chutes, and a conveyer for receiving material from both of said converging chutes and delivering said material above the deck-line of the vessel substantially amidships, whereby material may be carried from any part of the hold and delivered amidships above the deck-line, for substantially the purposes set forth.

8. The combination with a vessel or barge, of a hopper extending longitudinally thereof, a conveyer extending beneath the hopper and fore and aft of the vessel for receiving material from the hopper, a second conveyer for elevating the material and discharging it directly at a point above and at one side of the hopper and substantially amidships, and means for transferring the material from the first conveyer to the second conveyer, for substantially the purposes set forth.

9. The combination with a vessel or barge, of a hopper extending longitudinally of the same, converging chutes at one end of the barge, one or more conveyers extending fore and aft of the vessel for receiving material from the hopper and conveying it to the said chutes, and another conveyer for carrying the material from said chutes in a generally reverse direction to the travel of the material on the conveyer extending fore and aft, to a point of delivery above the hopper, for substantially the purposes set forth.

10. The combination with a vessel or barge, of a hopper extending longitudinally of the same, a conveyer system extending fore and aft of the vessel for receiving material from the hopper and conveying it from beneath the hopper in a generally reverse direction, to a

point of delivery above the hopper, and a hinged frame for the delivery end of the conveyer system above the hopper, for substantially the purposes set forth.

5 11. The combination with a vessel or barge, of hoppers extending longitudinally of the same and having converging sides, vertically-extending discharge-openings for the hoppers, doors for said openings, a conveyer affording
10 provision for elevating the material above the deck-line, one or more longitudinally-extending conveyers in the hold of the vessel beneath the discharge-openings of the hoppers arranged to deliver the material into said first-
15 named conveyer, whereby the material may be carried from any point of the hold and delivered above the deck-line, for substantially the purposes set forth.

20 12. The combination with a vessel or barge, of hoppers extending longitudinally of the same and having converging sides, vertically-extending discharge-openings for the hoppers, doors for said openings, a conveyer affording provision for elevating the material above the
25 deck-line, one or more longitudinally-extending conveyers in the hold of the vessel beneath the discharge-openings of the hoppers arranged to deliver the material into said first-named conveyer, whereby the material may
30 be carried from any point of the hold and delivered above the deck-line, and a traveling hopper arranged to deliver material from said first-named longitudinally-extending hoppers to the conveyer, for substantially the purposes
35 set forth.

40 13. The combination with a vessel or barge, of hoppers having converging sides, one of which sides extends beneath the other forming a discharge-opening, vertically-hanging doors for said openings, a conveyer affording provision for elevating the material above the deck-line, one or more longitudinally-extending conveyers in the hold of the vessel beneath the discharge-openings of the hoppers ar-

45 ranged to deliver the material into said first-named conveyer, whereby the material may be carried from any point of the hold and delivered above the deck-line, for substantially the purposes set forth.

50 14. The combination with a vessel or barge, of hoppers having converging sides, the lower edge of one of which sides extends beneath and lies in substantially the same vertical plane as the lower edge of the other side, and gates or
55 doors pivotally attached to the upper of said edges, a conveyer affording provision for elevating the material above the deck-line, one or more longitudinally-extending conveyers in the hold of the vessel beneath the discharge-openings of the hoppers arranged to deliver
60 the material into said first-named conveyer, whereby the material may be carried from any point of the hold and delivered above the deck-line, for substantially the purposes set forth.

65 15. The combination with a vessel or barge, of hoppers having converging sides, the lower edge of one of which sides extends beneath and lies in substantially the same vertical plane as the lower edge of the other side, and gates or
70 doors for the discharge-openings thus formed between said edges of the converging sides, a conveyer affording provision for elevating the material above the deck-line, one or more longitudinally-extending conveyers in the hold
75 of the vessel beneath the discharge-openings of the hoppers arranged to deliver the material into said first-named conveyer, whereby the material may be carried from any point of the hold and delivered above the deck-line, for
80 substantially the purposes set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CLARENCE KEMBLE BALDWIN.

Witnesses:

FREDERICK EDELIN,
EMIL CHAS. EGER.