

No. 675,811.

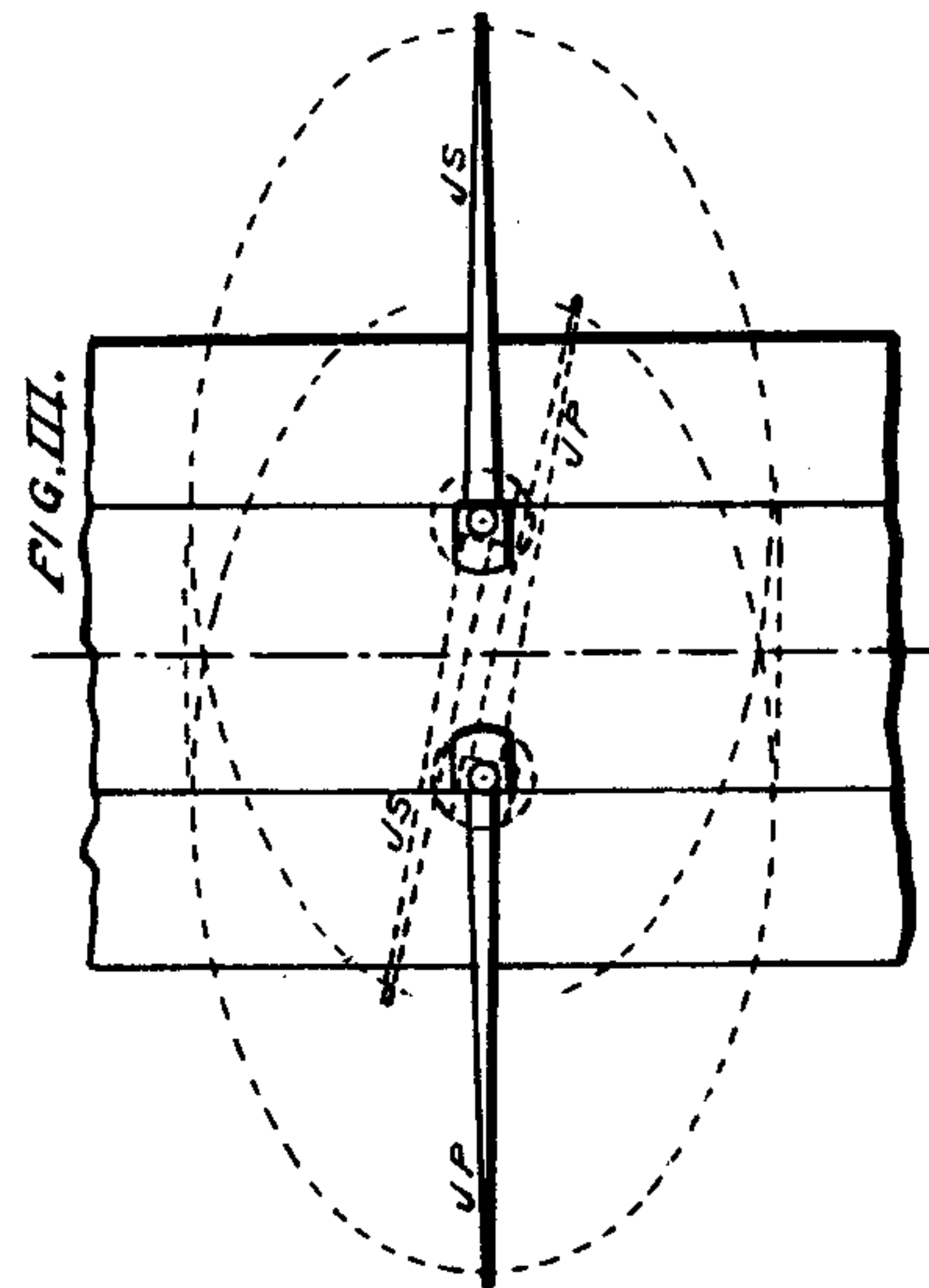
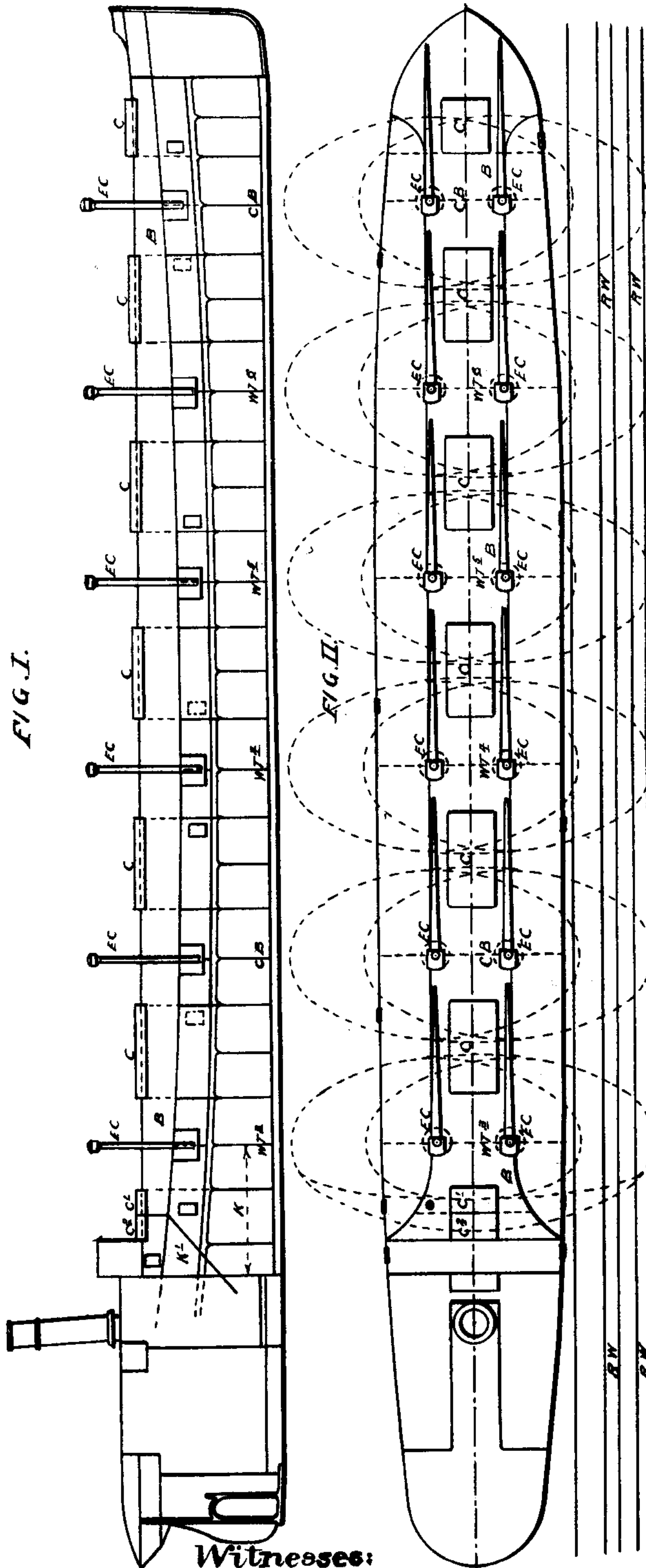
Patented June 4, 1901.

H. BURRELL.
EQUIPMENT OF ELECTRIC CRANES.

(Application filed Oct. 1, 1900.)

(No Model.)

5 Sheets—Sheet 1.



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No. 675,811.

Patented June 4, 1901.

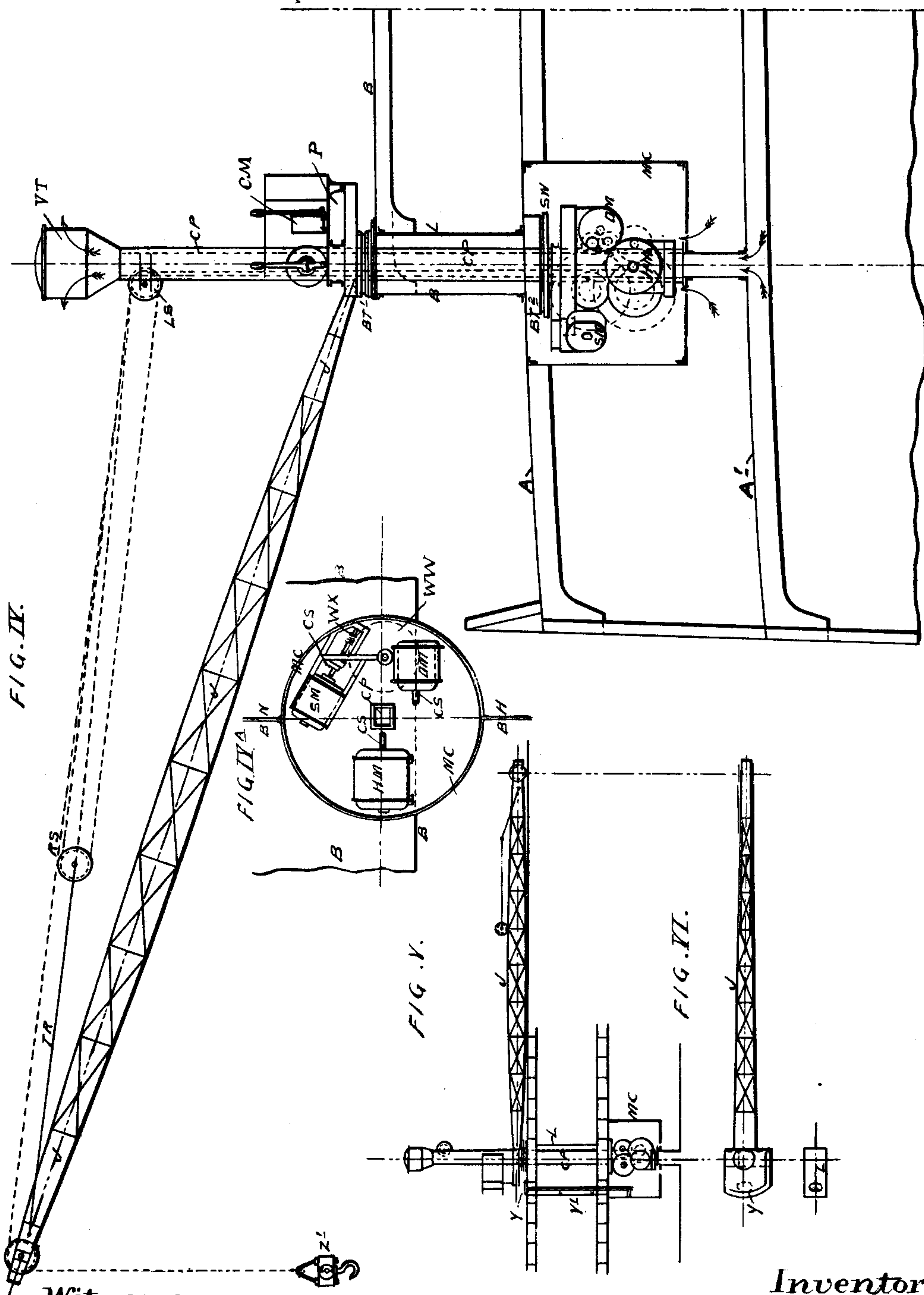
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5 Sheets—Sheet 2.



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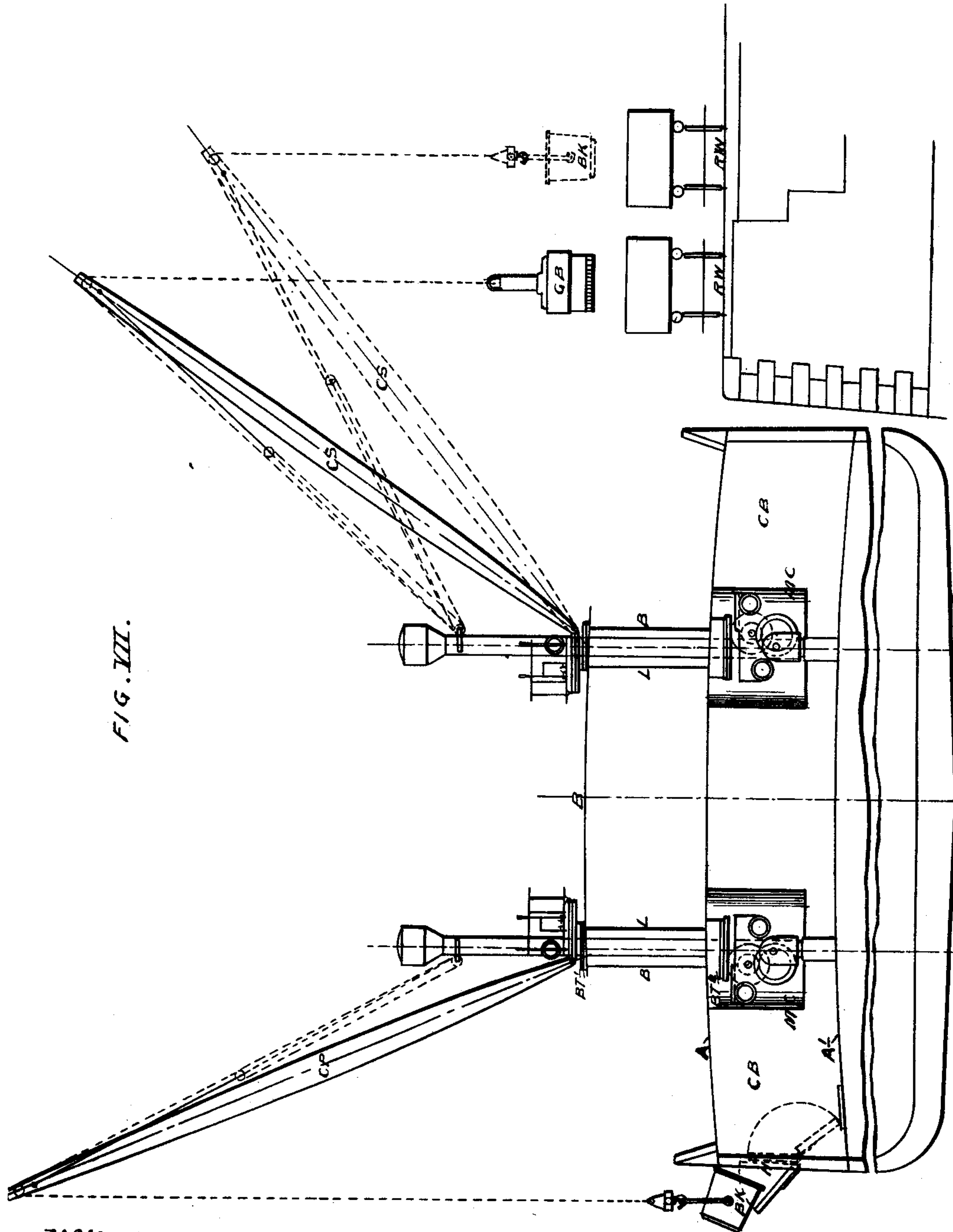
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(No Model.)

(Application filed Oct. 1, 1900.)

5 Sheets—Sheet 3.



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5 Sheets—Sheet 4.

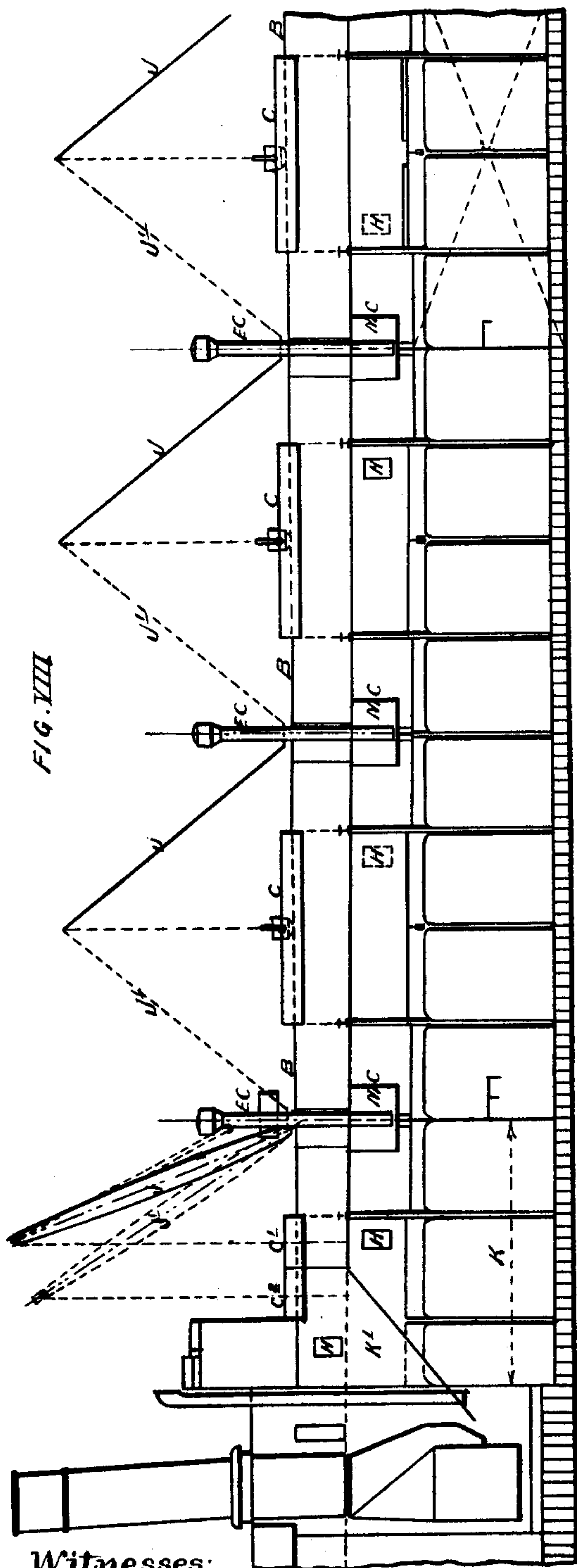


FIG. VIII.

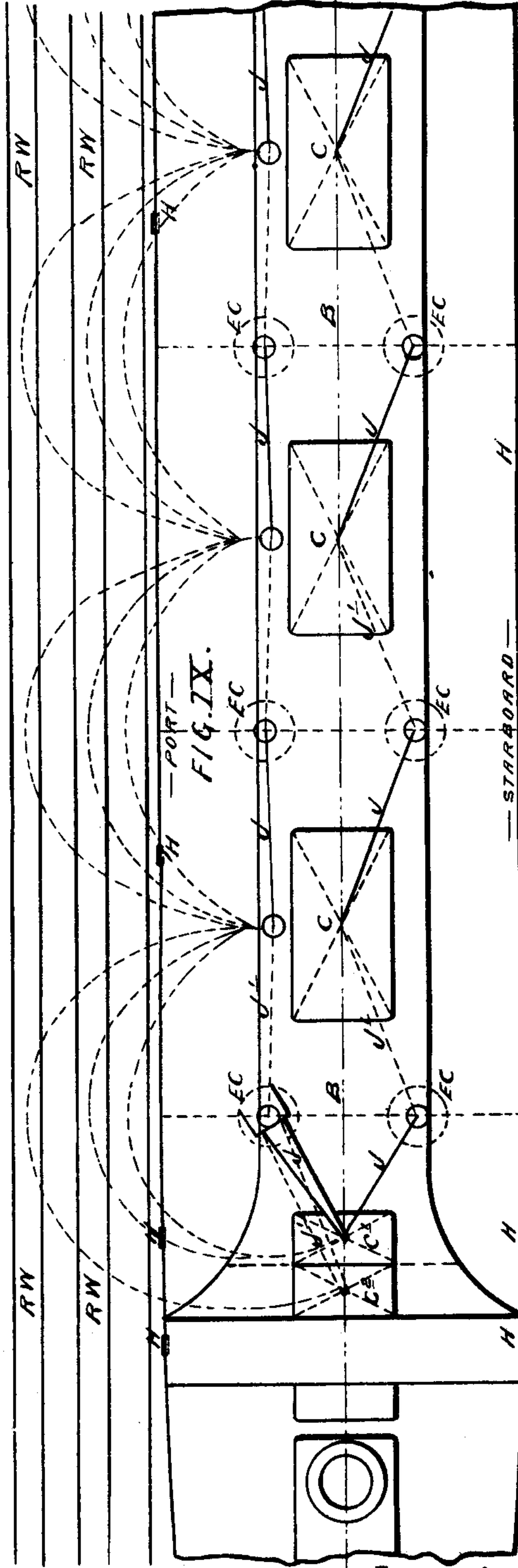


FIG. IX.

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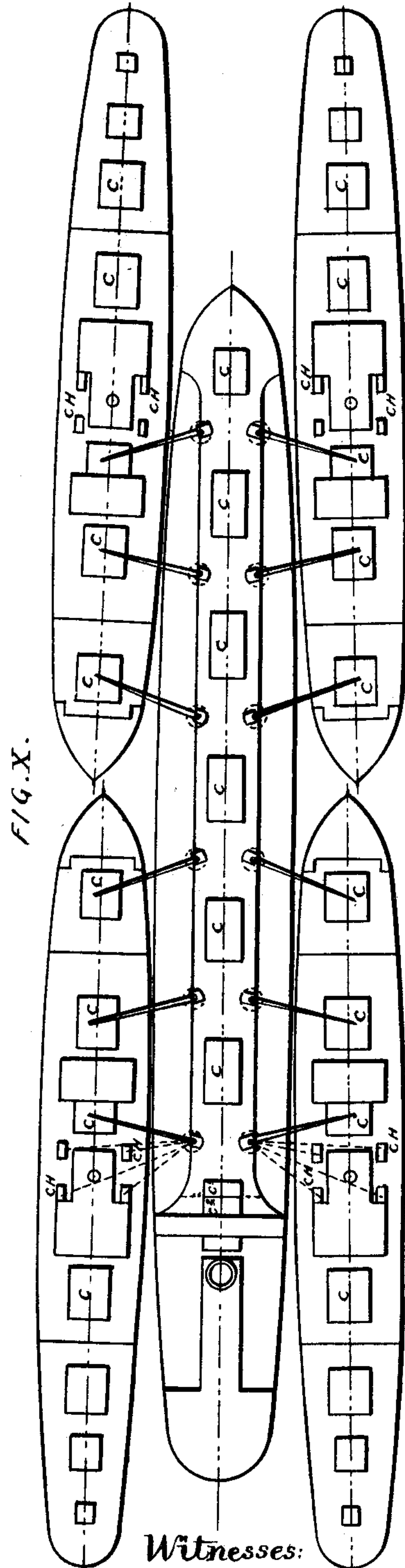
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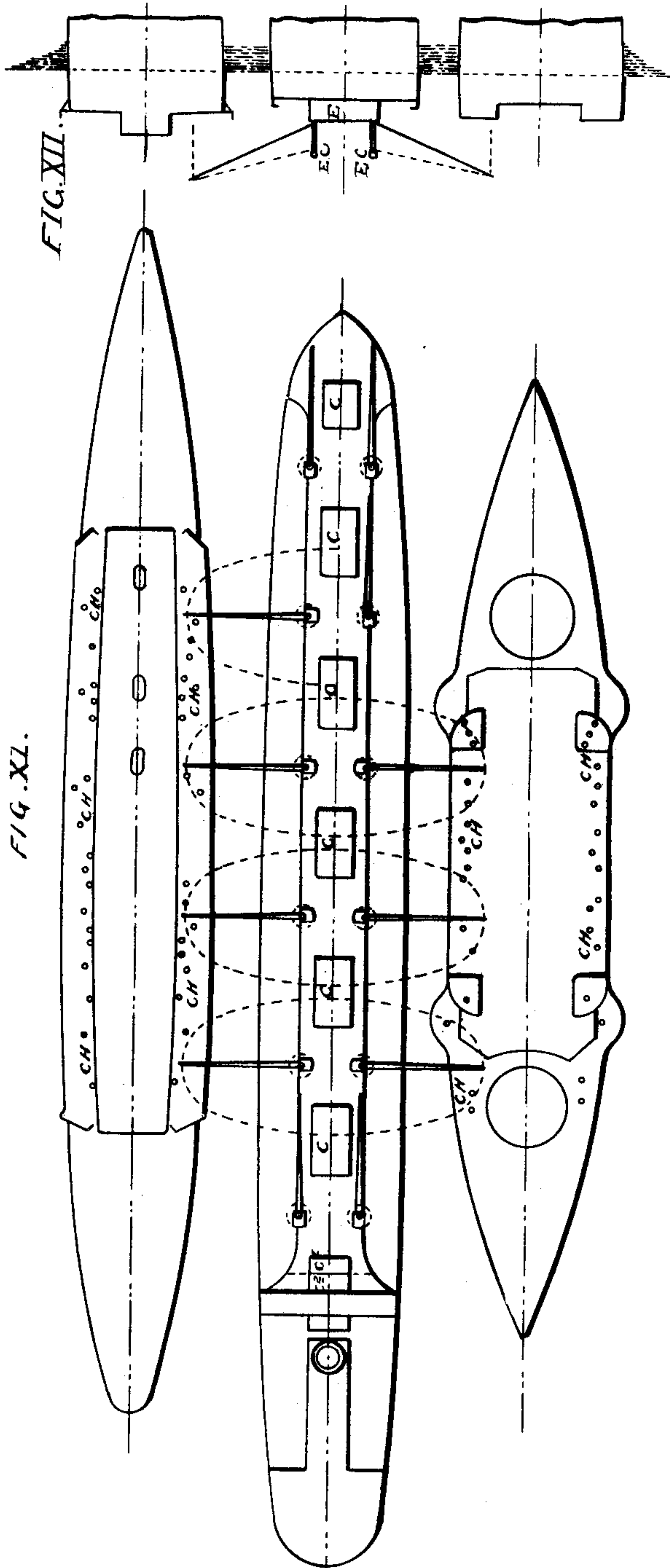
(No Model.)

5 Sheets—Sheet 5.



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UNITED STATES PATENT OFFICE.

HENRY BURRELL, OF GLASGOW, SCOTLAND.

EQUIPMENT OF ELECTRIC CRANES.

SPECIFICATION forming part of Letters Patent No. 675,811, dated June 4, 1901.

Application filed October 1, 1900. Serial No. 31,693. (No model.)

To all whom it may concern:

Be it known that I, HENRY BURRELL, ship-owner, a subject of the Queen of the United Kingdom, and a resident of 4 Devonshire Gardens, in the city of Glasgow, Scotland, have invented an Improvement in Equipment of Electric Cranes, of which the following is a specification.

My present invention relates to improvements in cranes adapted to be used upon ship-board to facilitate the transferring of cargoes and the like and in the manner of mounting said cranes upon a vessel whereby greatest strength is given to the structure of the vessel, and yet the said cranes will occupy the most advantageous positions.

In order to more fully explain my said invention, reference will be had to the accompanying drawings, wherein—

Figure I represents a central longitudinal section through a vessel equipped with my improved apparatus or equipment. Fig. II is a plan of the same. Fig. III is a detail diagrammatical view showing the arcs through which said cranes swing. Fig. IV is a side elevational view showing the method of mounting the cranes upon the vessel. Fig. IV^a is a detail plan view showing the crane-operating mechanism. Fig. V is a side elevation of a crane, showing the position of the jib upon the deck when not in service. Fig. VI is a plan view of the same. Fig. VII is a transverse section through a vessel, showing the operation of the cranes. Fig. VIII is a partial section taken longitudinally through a vessel, showing the operation of the cranes from the hatches and bunkers. Fig. IX is a plan view of the same. Fig. X is a diagrammatic view showing the operation of the cranes in transferring cargoes while at sea. Fig. XI is a similar view showing the means adapted for coaling war-ships while at sea, and Fig. XII is a transverse section thereof.

In the accompanying drawings similar parts are indicated by the same letters of reference.

A represents the main deck of a vessel upon which my said improvements have been applied, and A' is the lower deck of the same.

B represents the trunk running longitudinally of the vessel and above the center of the main deck A, this trunk B having an upper deck formed upon the top thereof. At suit-

able places along the upper deck are provided hatches C, and these hatches are provided with communication with the hold of the vessel. Upon each edge of this upper deck are located a number of cranes EC, said cranes being so disposed that each crane is adapted to operate from two of said hatches in loading or unloading cargo from said vessel.

L represents a hollow casing, preferably metallic, mounted between the main deck A and upper deck. This casing is shown as being square in cross-section, though it is obvious that any desired shape may be adopted. Passing through the casing L is the crane pillar or post CP, which is also hollow, its upper end terminating in the ventilator-top VT, having its sides open. This crane-post is supported upon the upper deck by the bearing BT' and beneath the main deck by the lower bearing BT². These bearings may be ball, roller, or any desirable type of bearing. This method of mounting the cranes tends to distribute the strain due to the weight of the jib and also to lower the center of gravity of the crane. Mounted in the top of the crane-pillar CP are a pair of sheaves or pulleys LS.

P is a platform carried by the crane-pillar above the upper deck, upon which an operator may stand in operating the crane. CM represents controlling means mounted upon said platform, by means of which the operation of the crane is controlled.

Upon the lower end of the crane-pillar and adapted to rotate therewith are carried the motor-operated means for hoisting, derricking, and sluing the crane. While I have shown a particular form of mechanism, it is of course obvious that any suitable form of mechanism may be substituted, if desired. As shown, HM represents the hoisting-motor, geared to the hoisting-drum, said motor being electrically connected to the controlling mechanism CM.

J is the jib of the crane, which is pivotally supported upon the crane-pillar CP at a point directly above the bearing BT' and approximately upon a level with the upper deck. Secured to the outer end of this jib is the tension-rod TR, connected to the pulley RS, over which the derricking rope or cable passes.

DM represents the motor for operating the

derricking mechanism, the derricking being effected by winding and unwinding this rope passing over the pulley RS.

SM represents the motor for operating the sluing mechanism. As shown in the drawings, this mechanism comprises the worm-pinion WX, gearing with the worm or spur wheel WW, which latter meshes with an internal gearing upon the spur-wheel SW. As the worm-wheel WW is rotated by the motor SM the same travels around the spur-wheel SW, which latter being held stationary reacts to turn the crane.

MC is a casing inclosing the motors and gearing, secured to the under side of the main deck A, the said motor and gearing being allowed to rotate therein. This casing MC is preferably formed in two halves and secured together upon each side of the bulkhead BII.

The lower end of the crane pillar or post is left open to allow air circulation between the space between decks and the outer air through the ventilator VT.

II represents the cargo-ports in the side of the steamer, through which coal and similar cargoes may be loaded.

Z' represents a hook or other suitable means for handling the load.

In Fig. VII, I have shown a section through a vessel, illustrating how the cranes are operated in loading or unloading to or from a wharf or quay or a railway alongside the vessel. In this view one of the cranes is shown provided with a device GB, provided with teeth adapted to grip the load. The crane in dotted lines is shown having the bucket BK supported from its hook, it being obvious that these holders or receptacles are changed according to the material to be handled. The crane upon the opposite side of the vessel is shown with the basket BK thereof occupying the position of loading to the port II. This crane may be employed when loading from or unloading to a vessel or barge lying alongside.

When the vessel is on a voyage or when the cranes are not in use, they may be stripped and swung around with their jibs resting horizontally upon said upper deck, as shown in Figs. V and VI. In these views is also shown a ladder Y, leading from the upper deck to the motor-chamber MC, providing a means of access to the machinery for the purposes of oiling, inspecting, and other purposes, a casing Y' inclosing said ladder between the main and upper decks.

In Fig. VIII, I have indicated the arcs through which the crane-jibs swing in loading and unloading from the hatches. One of these cranes is shown in solid lines J raising coal from the bunker K through the hatchway C' and in dotted lines J' lowering the coal into the chute K' through the hatchway C², communicating with the boiler-furnaces, thereby avoiding the necessity of transferring the coal by hand, as is now the practice.

Figs. X, XI, and XII show how the cranes

are employed in transferring coal from a coaling vessel to other vessels while at sea, said ships lying alongside. In Fig. X are shown vessels of the ordinary type of merchant steamer having the central hatches C and the coaling-hatches CH. It is possible to coal four vessels simultaneously in this manner. Figs. XI and XII show two warships being coaled. In this case are shown a cruiser upon one side and a battle-ship upon the other, both being anchored or spaced at a considerable distance clear of the coaling-ship.

It is obvious that although I have shown one particular form of crane and operating mechanism as applied to one particular form of vessel these details are not claimed in the present application, and these may be varied as desired. Therefore these features have been indicated only. It is also obvious that many advantages will be secured through the use of my said invention and that the same may be used for a variety of purposes.

Having thus described my said invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In an equipment of the character described, the combination with the upper and main decks of a vessel; of a crane post or upright passing through said upper and main decks, a jib adapted to swing from said upper deck, controlling means carried by said crane, and mechanism connected to said controlling means carried by the lower end of said crane-post for operating said crane, substantially as described.

2. In an equipment of the character described, the combination with the upper and main decks of a vessel; of a crane post or upright passing through and supported by said upper and main decks, a jib adapted to swing from said upper deck, and means carried by said crane for electrically operating the same, substantially as described.

3. In an equipment of the character described, the combination with the upper and main decks of a vessel; of a crane post or pillar passing through said decks, a jib adapted to swing from said upper deck, means carried by said crane-pillar for controlling the crane, and mechanism carried upon said crane-pillar and connected to said controlling means for electrically operating said crane, substantially as described.

4. In an equipment of the character described, the combination with the upper and main decks of a vessel; of a crane mounted upon said vessel, having its crane post or pillar passing through said upper and main decks, a jib adapted to swing from said upper deck, controlling means carried by said cranes, above said upper deck, and electric motors connected to said controlling means for operating said cranes, substantially as described.

5. In an equipment of the character described, the combination with the upper and

main decks, and a plurality of hatches carried by said upper deck; of a plurality of cranes mounted upon said vessel, the crane posts or pillars of said cranes passing through
5 said upper and main decks, each of said cranes being so disposed as to be adapted to operate from two of said hatches, controlling means carried by said cranes, and means also carried by said cranes and connected to said
15 controlling means for operating said cranes, substantially as described.

6. In an apparatus adapted to be applied to a vessel for facilitating the transfer of cargo of a vessel, the combination with the upper
15 and main decks of a vessel, and a plurality

of hatches provided upon said upper deck; of a plurality of cranes mounted upon said vessel, a jib adapted to swing from each of said cranes, above the upper deck, and to operate upon two of said hatchways, means 20 carried by said cranes for controlling the same, mechanism carried by the lower end of said cranes below said main deck and connected to said controlling means for operating said cranes, substantially as described. 25

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