

**No. 665.457.**

**H. M. NOURSE.**

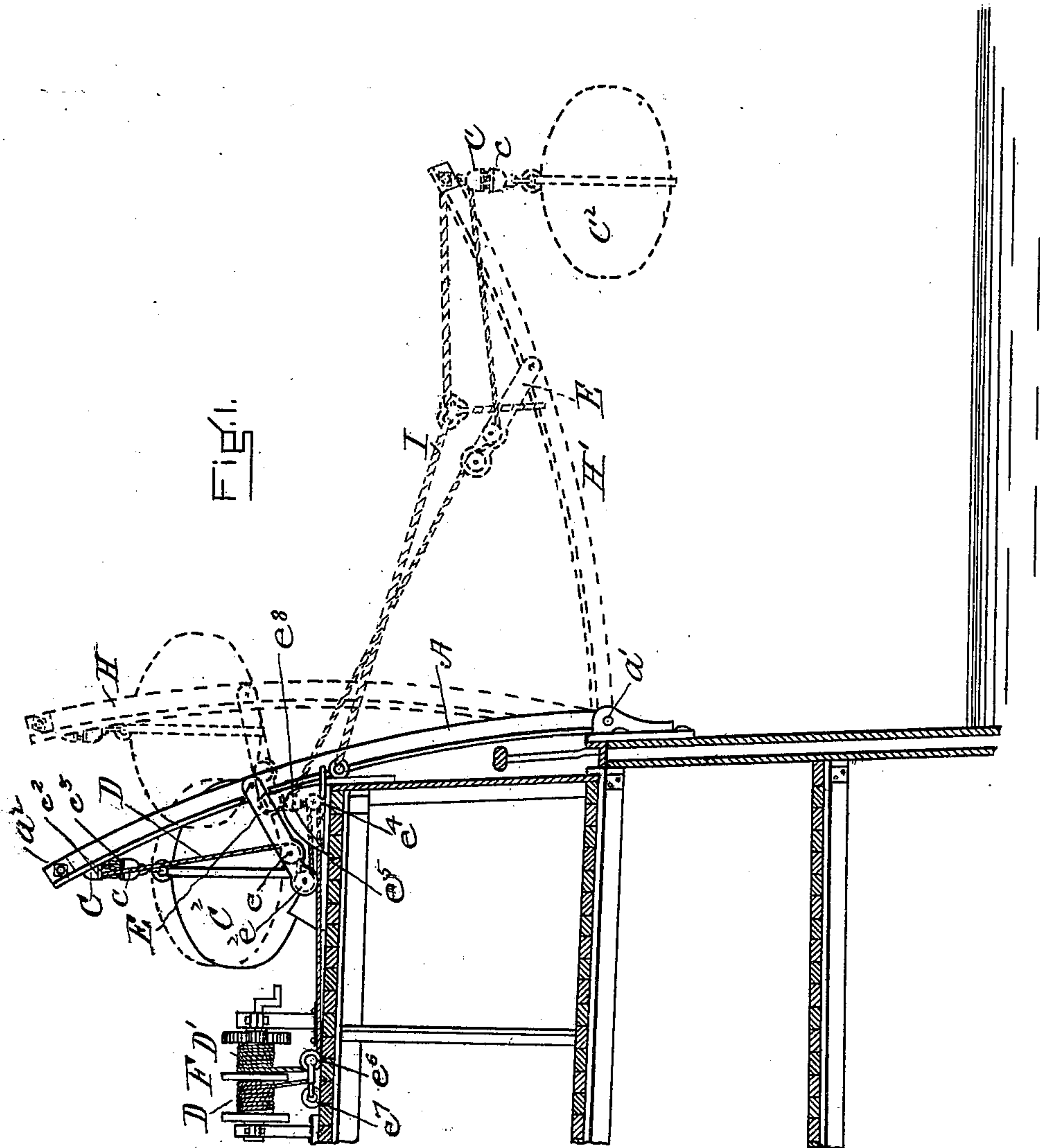
**DAVIT.**

(Application filed July 5, 1900.)

**Patented Jan. 8, 1901.**

(No Model.)

**4 Sheets—Sheet 1.**



WITNESSES:

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No. 665,457.

Patented Jan. 8, 1901.

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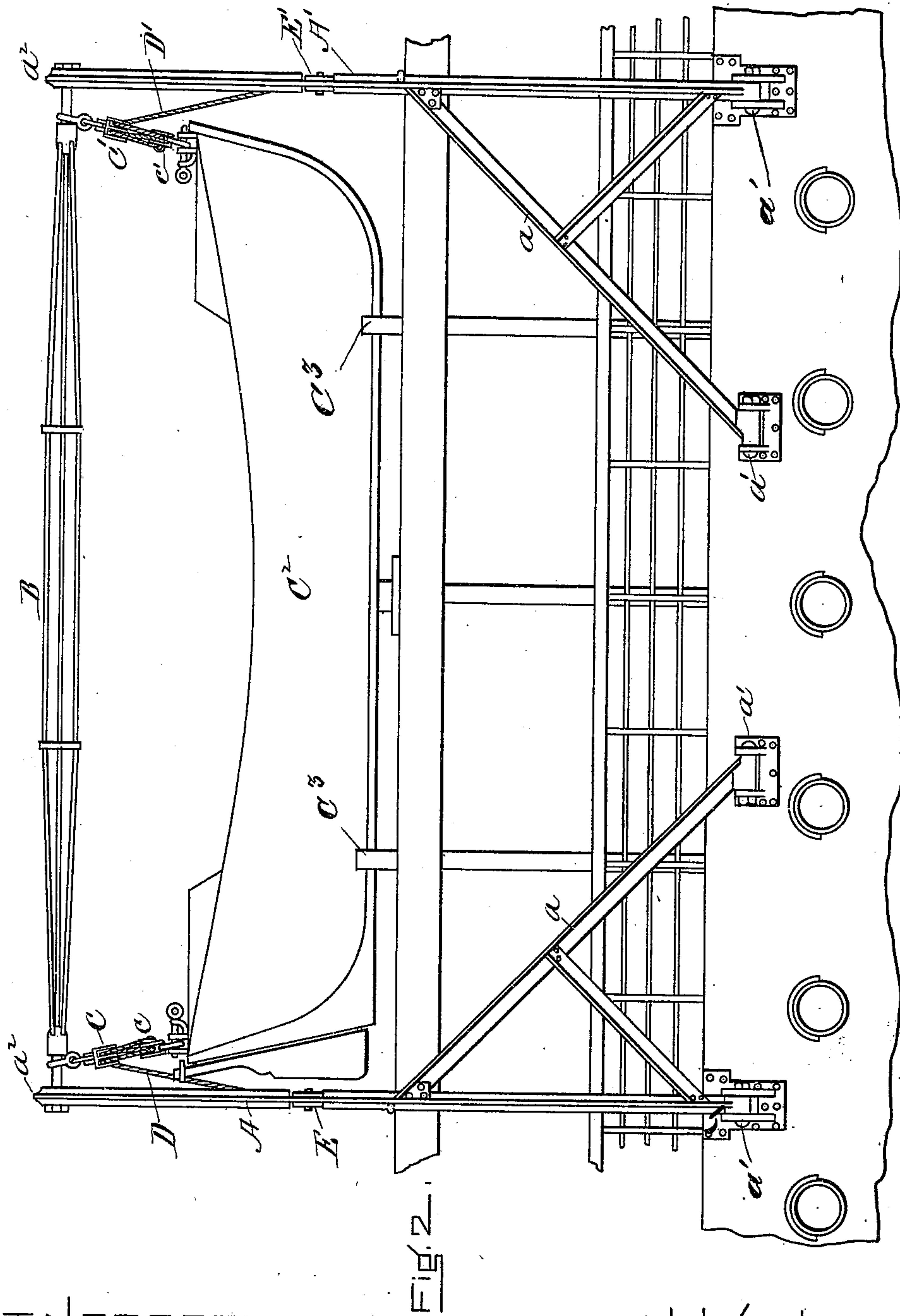


FIG. 2.

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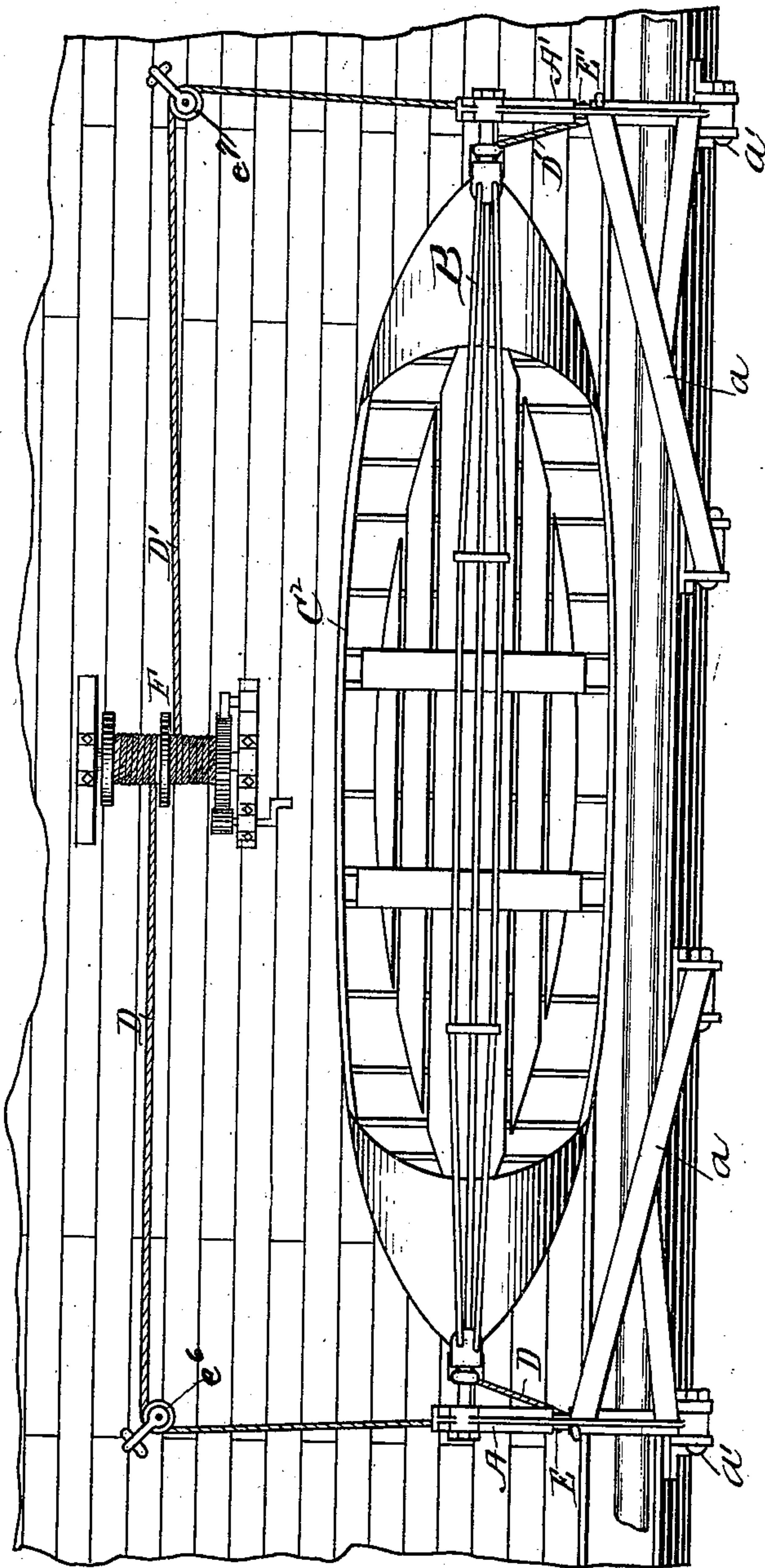


Fig. 3.

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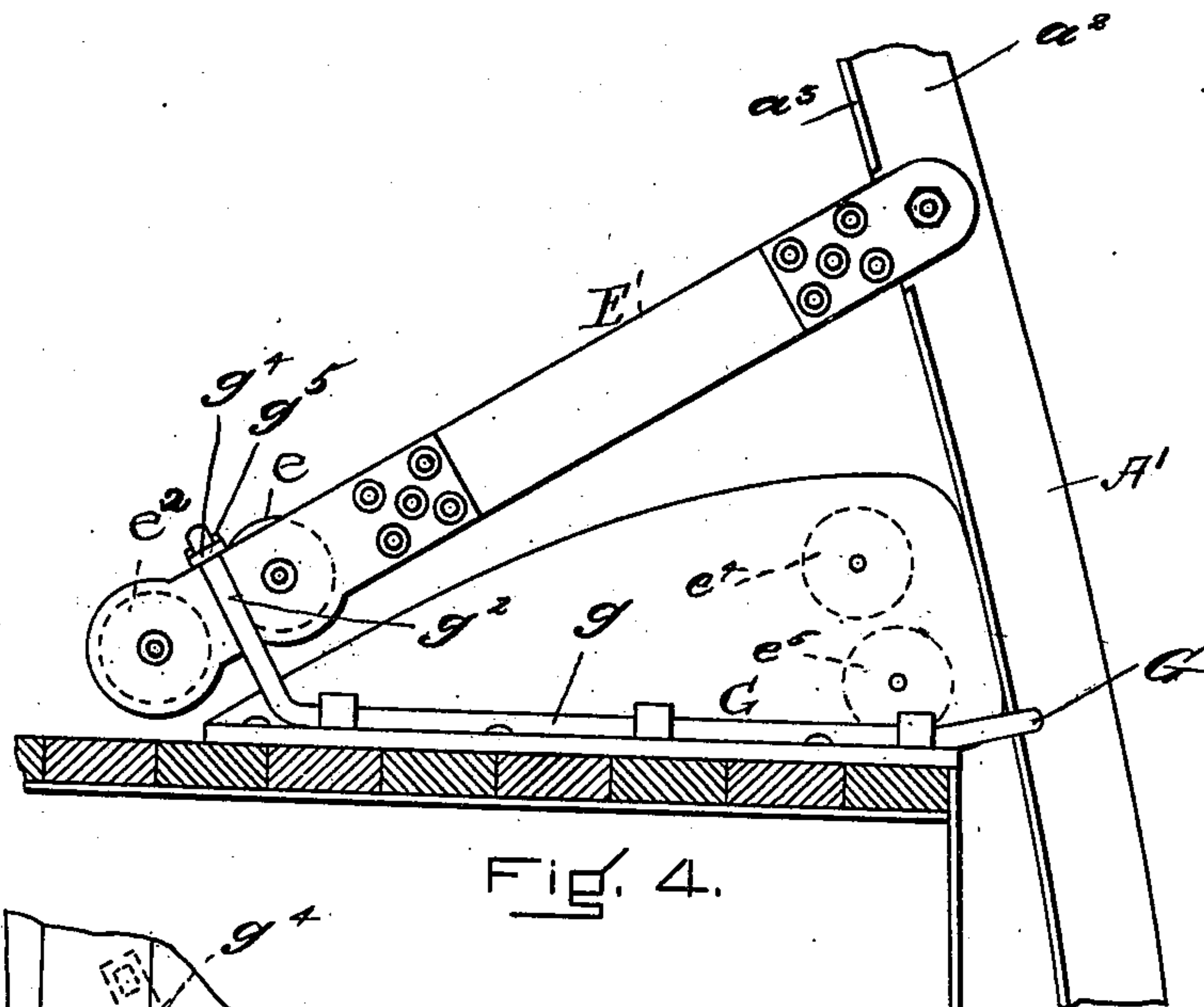


Fig. 4.

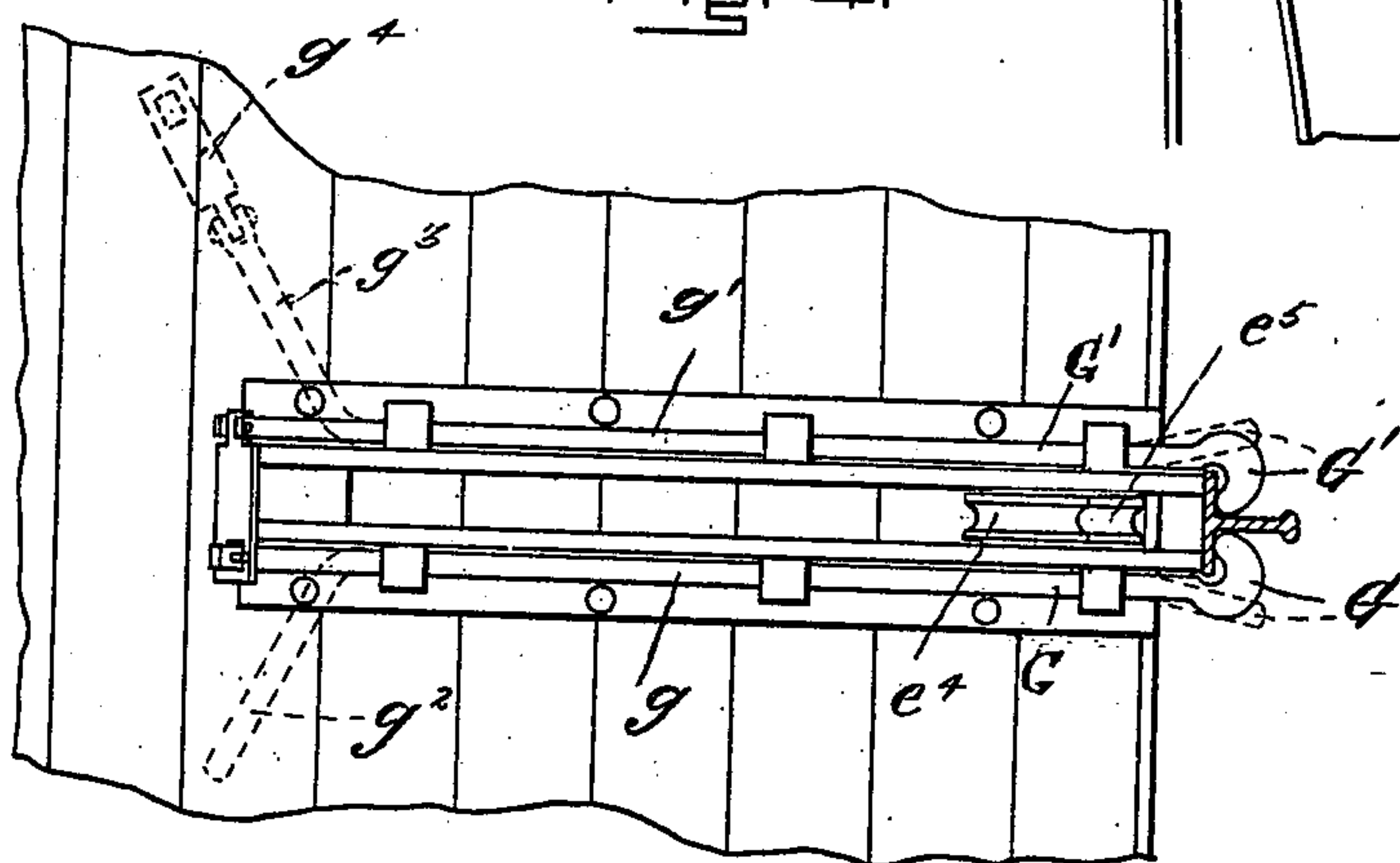


Fig. 5.

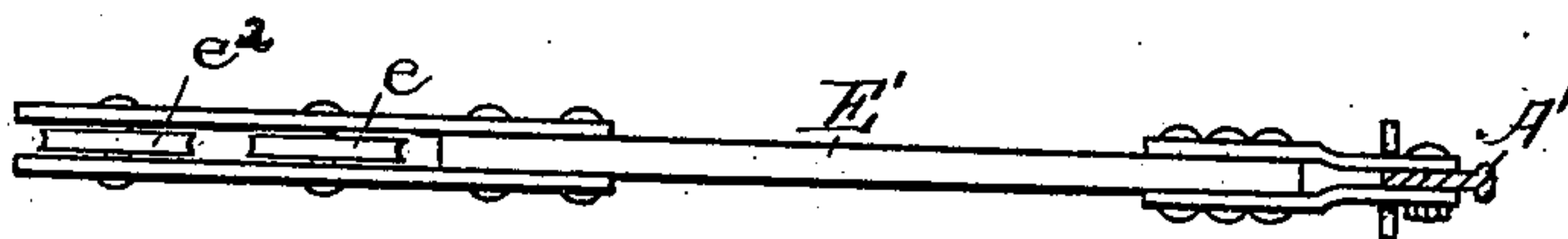


Fig. 6.

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# UNITED STATES PATENT OFFICE.

HENRY M. NOURSE, OF BOSTON, MASSACHUSETTS.

## DAVIT.

SPECIFICATION forming part of Letters Patent No. 665,457, dated January 8, 1901.

Application filed July 5, 1900. Serial No. 22,491. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY M. NOURSE, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Davits, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

It is desirable that davits should be so constructed as to hold a boat upon a vessel or support entirely inboard and to lower the boat from the vessel or support to a detaching position removed from the side of the vessel or support. It is also desirable that the boat should be received by the davits in a similar position to that it is removed from the side of the vessel or support.

It is well known that the ordinary davits provide for the launching of a boat close to the side of a vessel or support and that this is not only an undesirable way to launch or take on a boat, but if a sea is running it is also a dangerous place, because the boat is then liable to be dashed against the side of the vessel or upset. My invention is designed to overcome this objection and by means substantially as hereinafter set forth.

I will now describe my invention in connection with the drawings, wherein—

Figure 1 is a view in section of a portion of a vessel to which the davits are secured and in elevation of the davits and their operating devices, the davits being shown in their inboard or permanent position by full lines and in two other positions by dotted lines. Fig. 2 is a view in side elevation of the davits in their inboard position and with the boat attached to the same and on chocks on a vessel's upper deck. Fig. 3 is a view in plan of the davits and boat when inboard and of the means for operating the davits and boat. Figs. 4, 5, and 6 are detail views.

Davits are usually used in pairs, and referring to the drawings, A represents one of the davits and A' the other. They are preferably made of iron or steel and of the section shown in Fig. 5, which provides lightness and great strength. They are braced by braces  $a$ , of iron or steel, of similar section to that of the davits, which braces and davits are

attached by pivots  $a'$  to the outer side of the vessel or support near the bulwark of the vessel or upper surface of the support. The davits are preferably slightly curved inwardly from inner to outer or upper ends and so that they shall have the greatest degree of strength when in a horizontal or vertical position, and also so that their outer or upper ends shall when in a closed or vertical position extend well inboard with respect to the side of the vessel or support. (See Fig. 1.) The outer or upper ends  $a^2$  of the davits are connected together and braced apart by a tie-brace connection B, which may be in the form of a truss of rods, as shown in Fig. 2. To the davits or to their cross connection, and I prefer the latter, are secured blocks C C', (see Fig. 2,) through which the operating ropes or falls D D' reeve to the blocks  $c c'$ , to which last-named blocks the boat C<sup>2</sup> is detachably secured at its bow and stern. I have represented the blocks C C' and  $c c'$  as having their opposing ends made square, so that they may come firmly into contact with and steady each other, and so that they may not injure each other as they are brought together. (See Fig. 1.) The davits are so arranged that the boat may be swung outward and inward between them as it is swung off or on, and the boat is attached to the blocks  $c c'$  and made detachable from them by any of the usual means. The ropes or falls D D' extend from the blocks C C' under the sheaves  $e e$  on the davit-arms E E', respectively, and over the sheaves  $e^2$  on said arms, thence about the sheaves  $e^4 e^5$ , attached to the deck or support, and the blocks  $e^6 e^7$  to the winch F, which has two winding-sections, upon one of which is wound the rope or fall D and upon the other the rope or fall D'. The winch may be turned by hand, or it may be turned by steam, electric, or any other power. To understand the action of these devices, it should be borne in mind that the davit-arms E E' are attached at their outer ends to the davits, one to each, and that when the davits are inboard the arms extend upon the deck or surface of the support, so that their inner ends are considerably inside the position of the sheaves  $e^4$  and with which they are substantially in line; also that the sheaves  $e$  and  $e^2$  are carried at the inner ends of the said arms,



two sheaves  $e$   $e^2$  being carried by the arm E and two sheaves  $e$   $e^2$  by the arm E'; also that upon the application of pressure to the inner ends of these arms the davits and the boat will be moved outboard to a position which will bring the center of gravity of the boat and the davits on the outer side of the davits, and so that from said position the davits and the boat may be lowered upon an arc of a circle downward and away from the side of the vessel or support and to a position from which the boat may be lowered from the ends of the davits to the water, and thus reach the water at a point so removed from the side of the vessel or support as to prevent the liability of its being injured by being dashed against the side of the vessel or support by the waves or motion of the water in which the boat is launched.

Of course the blocks  $c$   $c'$  and C C' are separated sufficiently from each other when the boat is inboard, resting on its chocks C<sup>3</sup>, to permit the boat, if desired, to be slightly lifted vertically from its chocks before the outward-swinging movement is imparted to the davits from the push-arms and the boat. This vertical movement of the boat from the chocks will bring the blocks  $c$   $c'$  and C C' into contact with each other, and for the purpose of preventing injury to the blocks and also for the purpose of steadying them when together I have made the block-housings of a shape to squarely abut when they are drawn together. For instance, the blocks C C' have the relatively large square under surfaces  $c^2$  and the housings of the blocks  $c$   $c'$  have the relatively large square upper surfaces or ends  $c^3$ , and these surfaces  $c^2$   $c^3$  of the blocks come into contact with each other when the blocks are drawn together.

It is necessary that the davits should be locked to the vessel or support when in their inboard position, and it is desirable that the arms E E', especially when pivoted to the davits, be locked inboard to the vessel or support. When they are rigidly attached to the davits, the locking of the davits will of course lock the arms. I have shown in Figs. 4 and 5 as a means for locking the davits to the vessel the latches G G', which are at the end of rods  $g$   $g'$ , attached by any suitable attaching means to the vessel in a manner to be turned and preferably provided with handles  $g^2$   $g^3$ . The latches are so arranged that by the turning of the rods in one direction they may be moved to a position to engage the flange of a davit and then hold it against the vessel or support and being turned backward will of course act to release the davit. It will be understood that each davit has its separate latches. A portion of the same means may be used for locking the davit-arms E E' to the deck when in their inboard position, the handles of the rods being then shaped so that they may be brought to a vertical position parallel with the sides of the said arms and may then be locked together over the

arms, preferably between the sheaves, by means of a link  $g^4$ , pivoted to one of the handles  $g^3$  and having a hole at its outer end, by means of which the link  $g^4$  may be slipped upon the end of the other handle  $g^2$ , to which it is secured by a locking-pin  $g^5$ , passing through a hole in said handle. (See Figs. 4 and 5.)

While it is not necessary that the boat be provided with a preliminary upward vertical movement from the chocks, and I do not confine myself to a construction which employs it, still I prefer to use a construction that does provide this vertical movement, and I also prefer, although I do not consider that it is essential, that the same means which are operative to so move the boat vertically shall also be employed for afterward pushing, by means of the arms E E', the davits and the boat from their inboard position to their outboard position, and that they shall be further used for lowering the davits and the boat together from their outboard position to their horizontal or launching position, and to then still further operate to lower the boat from the ends of the davits and launch it in a relatively safe position. I have used for giving this movement to the boat and davits the ropes or falls D D', and these ropes or falls lead from the blocks  $c$   $c'$  through the blocks C C', the sheaves of the arms E E', and the blocks on the deck to the winch, as shown and described.

To launch the boat, the winch is turned by hand or any other means to slightly wind up the ropes or falls D D'. The draft is then by the sheaves  $e$   $e^2$  at the inner ends of the arms E E' and the outboard-blocks  $e^4$  upon the deck to the winding-winch. The davits on the arms E E', if locked in or down, are then unlatched and made free, and the ropes or falls D D' then operate to move the boat, davits, and arms from the first dotted position in Fig. 1 to the dotted position lettered H in the same figure. The ropes or falls through this operation exert stress upon the davits or boat through the means of the arms E E', against or upon which the power which they communicate is caused to act.

The ropes or falls D D' during the initial movement of the apparatus in raising the boat from its chocks C<sup>3</sup> run only on the deck-sheaves  $e^4$ , (see Fig. 1, full-line position;) but when the davits A A' swing outward the ropes engage and run over deck-sheaves  $e^5$  as the boat is lowered away. (See dotted positions, Fig. 1.) The action of the ropes or falls D D' then reverses, and the winch is caused to be unwound by hand or by power to release the ropes or falls, for they then operate to prevent the davits and boat from falling outward and serve to lower the davits and the boat from the position H, Fig. 1, to the launching position shown in dotted lines in the same figure, where the davits are in very nearly a horizontal position and the boat is represented as held at the ends of the davits consider-



ably removed from the side of the vessel. When the davits reach this position, they are held by the holding-chains I, which extend from the vessel or support to the davits and make connection by spans with their outer ends and also at any desired point between their outer and inner ends. (See Fig. 1.) The davits then become stationarily held in very nearly a horizontal position, and the ropes or falls D D' no longer serve to hold the davits and are then used solely for the purpose of the lowering of the boat from the ends of the davits to the water, when they are disengaged from the boat to leave it free in the water by detaching the blocks c c' from the boat. The ropes or falls D D' are then used for returning the davits to their vertical position or to a position where they can be latched or secured to the side of the vessel or support.

In taking a boat onto the vessel or support the operation of the falls and davits is substantially a reversal of the operation of launching—that is, the boat is brought to a position beneath the blocks c c', with which it is engaged. The ropes or falls D D' are then caused to be wound by the winch and the boat raised from the water to the ends of the davits, and further winding of the ropes or falls causes the boat and the davits to be lifted to the position represented by dotted lines at H, Fig. 1, from which position upon the release of the ropes or falls the davits are moved inward to their inboard position and the boat swung over the deck or chocks and lowered upon them and the davits made fast to the side of the vessel.

It will be seen that as the davits A A' swing outboard or inboard the ropes or falls D D' automatically engage and run over deck-sheaves e<sup>5</sup> or disengage therefrom and leave said sheaves idle, according to the position of the boat, as clearly shown in Fig. 1.

The advantages of the invention arise from the fact that a boat is held entirely inboard on the upper deck or support and is loaded or unloaded in that position and swung free from the deck and side of the vessel to a releasing position so removed from the side of the vessel that it may be launched in rough or other water with a far greater degree of security than is possible with any davits which launch a boat at the side of a vessel, and there is a corresponding degree of safety in the operation of taking on a boat, as one of the greatest difficulties in launching a boat from a vessel or taking it on, especially in rough water, is the liability of its being dashed against the side of the vessel before it can be got away from it and be thereby upset or broken to pieces. Another advantage arises from the simplicity of the means employed for operating the davits and the boat and the directness of the action of said means. The arms E E' move with the davits, and the ropes D D' are in contact with one of the two sheaves mounted upon each during the lowering and lifting of the davits and the lower-

ing of the boat from the ends of the davits when in their launching position and the hoisting of the boat when the davits are in the same position.

The davits may have any suitable shape for providing the requisite strength and lightness, and I prefer the form having the section represented in Fig. 5 of the drawings—that is, the form provided with a relatively wide flange on its inner side and a round enlargement upon its outer edge.

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

1. The combination with vertically-swinging davits hinged to the vessel or other support, of davit-blocks carried at the upper end of said davits, inwardly-extending davit-arms pivoted to said davits, sheaves mounted at the inner ends of said arms, deck-blocks secured to the vessel or other support outside of the inboard position of said sheaves; and ropes or falls running from said davit-blocks to said sheaves and deck-blocks.

2. In ships' davits, the combination with a pair of davits pivoted to the side of the vessel or other support to move in vertical planes, of davit-blocks attached to the upper ends of said arms, boat-suspending devices carried by said davit-blocks, ropes or falls running from said davit-blocks and means connected with said falls and operated by draft or pull thereon to move said davits and boat outboard.

3. In ships' davits, the combination with inwardly-curved davits pivoted to the side of the vessel or other support to move in vertical planes, of davit-blocks attached to the upper ends of said arms; boat-suspending devices carried by said blocks, davit-arms extending inwardly from said vertical arms, deck-blocks located between the inner ends of said davit-arms and said vertical arms, and ropes or falls running from said davit-blocks to said deck-blocks, said falls engaging the inner ends of said davit-arms.

4. The combination of vertically-swinging davits hinged to a vessel or other support having arms which extend upon the vessel or support when the davits are in their inboard position, sheaves carried by said arms, blocks attached to the vessel or support outside the inner ends of said arms when in their inboard position, blocks carried at the upper ends of the davits, ropes or falls extending from said davit-blocks about the sheaves of said arms and deck-blocks as and for the purposes described.

5. The combination of vertically-swinging davits hinged at their lower ends to a vessel or support, blocks carried by the davit-blocks adapted to be attached to a boat, arms extending inboard from the davits when the davits are in their inboard position, operating ropes or falls extending from the boat-blocks through the davit-blocks and sheaves upon the davit-arms to the deck adapted upon the application of draft thereto to first lift the boat



toward the ends of the davits and to then move the boat and davits outwardly by stress exerted upon the davits through the said davit-arms and to then further act to lower the davits and boat together as they swing outward and downward and to then lower the boat from the side of the vessel or support from the ends of the davits.

6. The combination of vertically-swinging davits hinged to a vessel or other support having arms which extend upon the vessel or support when the davits are in their inboard position, blocks attached to the vessel or support outside the inner ends of said arms when in their inboard position and ropes or falls extending from the inner ends of said arms about the sheaves in said blocks whereby draft upon the ropes will cause the davits and arms to be moved outboard.

7. The combination of vertically-swinging davits hinged to a vessel or other support, blocks carried at their upper ends adapted to be attached to a boat, arms which extend upon the vessel or support when the davits are in their inboard position, sheaves carried at the inner ends of said arms, blocks fixed to the deck or support on the outboard side of said arms, ropes or falls rove in the davit-blocks, the arm-sheaves and deck-blocks, means for simultaneously winding the ropes or falls to cause first the boat to be lifted from the deck or support and then with the davits and arms to be moved outboard beyond the center of gravity of the davits and boat, further means for holding the ropes or falls and permitting them to be drawn in a reverse direction by the weight of the davits and the boat whereby they then serve to first permit the davits and boat to be moved outward and downward together to the lowermost position of the davits and then to further act to permit the lowering of the boat to the water from the ends of the davits and means for holding the davits in their lowest position during the lowering of the boat from their ends.

8. The combination of vertically-swinging davits hinged to a vessel or other support, blocks carried at their free ends, davit-actuating arms attached to the davits to extend upon the vessel or support when the davits are in their inboard position, means for lock-

ing the davits or arms to the vessel or support when in their inboard position, blocks upon the vessel or support outboard the inner ends of said arms when inboard and ropes through the davit-blocks, the inner ends of the thrusting-arms and outboard-blocks as and for the purposes set forth.

9. The combination of the vertically-swinging davits hinged to a vessel or other support having arms which extend upon the vessel or support when the davits are in their inboard position, blocks carried by the davits, sheaves mounted upon said arms, blocks attached to the vessel or support outside the inner ends of said arms when in their inboard position, blocks carried at the upper ends of the davits, stay-chains connecting the davits with the vessel or support for holding the davits outboard in their horizontal position, a winding-winch and ropes or falls extending from said davit-blocks about the sheaves of said arms and of the deck-blocks to the winding-winch as and for the purposes set forth.

10. In ships' davits, the combination with the davit A having the web  $\alpha^2$  and the flange  $\alpha^3$ , of sheave-carrying davit-arms E, E', having forked extensions passing through said flange  $\alpha^3$  and means for securing the forked extensions of said davit-arms to the webs  $\alpha^2$  of said davit A.

11. In ships' davits, the combination with vertically-swinging davits hinged to the side of the vessel or other support, of inwardly-extending davit-arms pivoted to said davits, latches or locking devices engaging said davits to lock them in their upright inboard position, and latches or locking devices engaging said davit-arms to lock them in their inboard position.

12. In ships' davits, the combination with vertically-swinging davits, hinged to the side of the vessel or other support, of inwardly-extending davit-arms pivoted to said davits, and double latches or locking devices hinged to the deck or other support to simultaneously engage and lock said davits and davit-arms in inboard position.

HENRY M. NOURSE.

In presence of—

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GEORGE O. G. COALE.