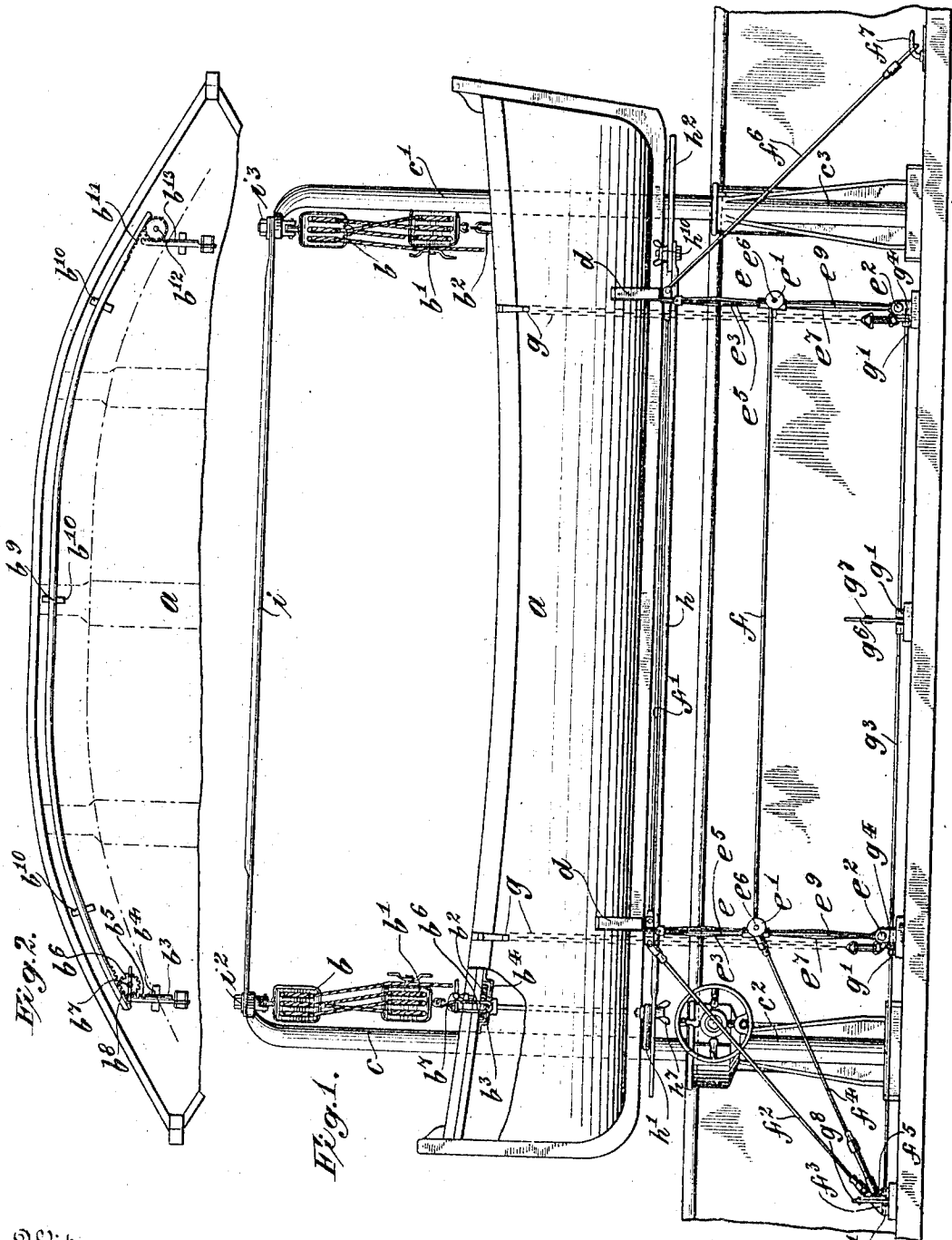


A. R. NYBOER.
 APPARATUS FOR STOWING AND LAUNCHING SHIPS' BOATS.
 APPLICATION FILED JAN. 31, 1911. RENEWED MAR. 4, 1912.

1,040,741.

Patented Oct. 8, 1912.

4 SHEETS—SHEET 1.



Witnesses:
Gust. L. L. L.
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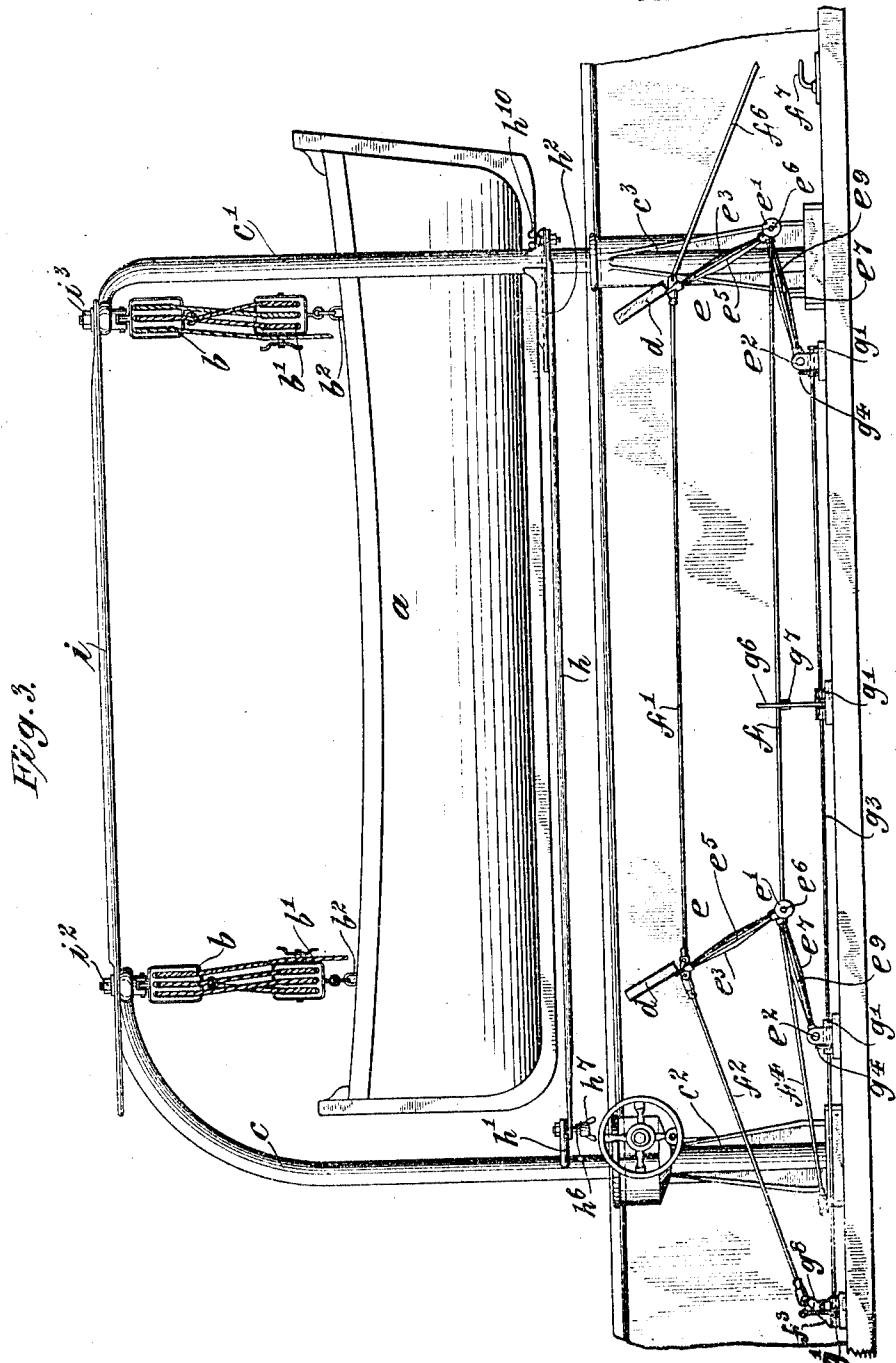
Inventor
Arend Regent Nyboer
 By his Attorney
Redding, Greeley & Austin

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4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 3.

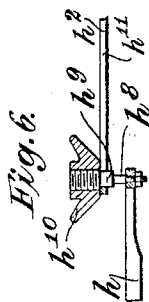
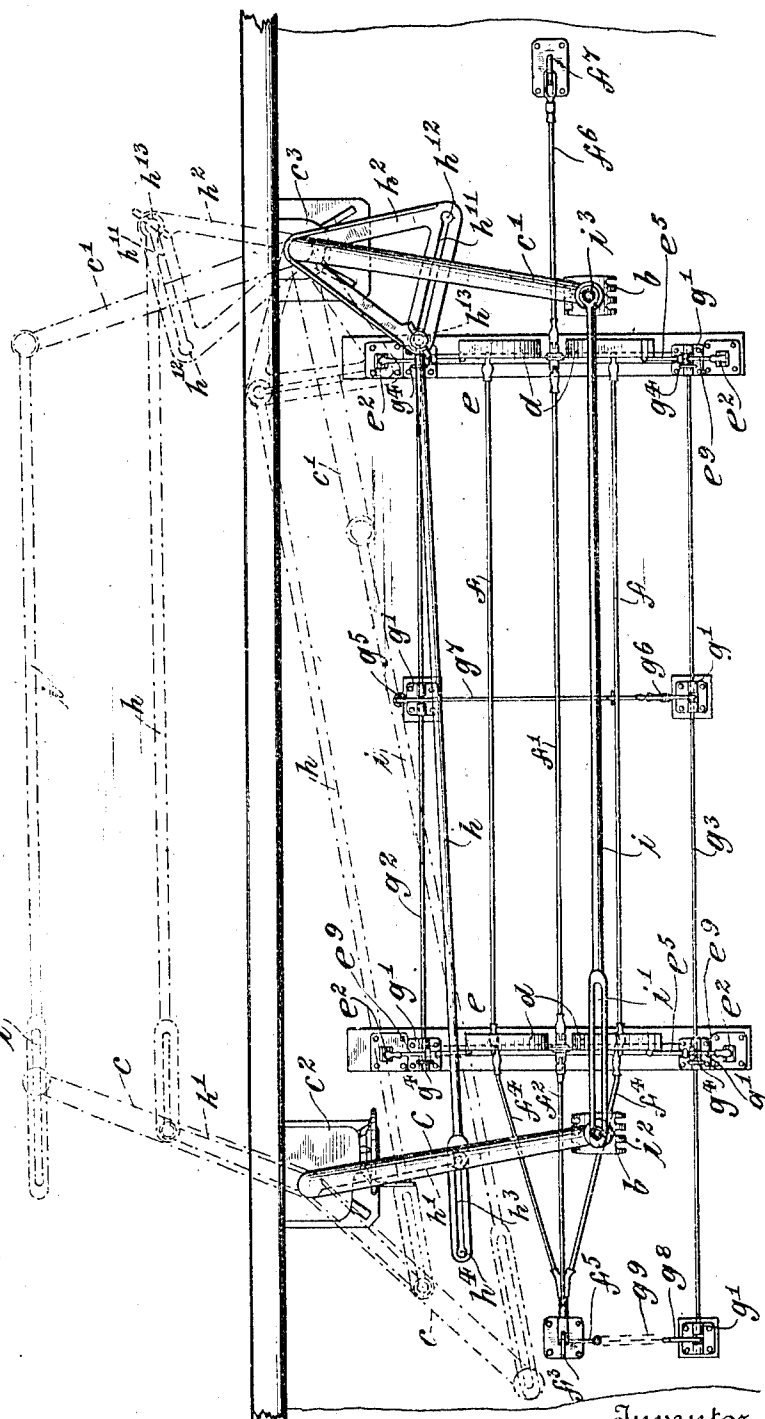


Fig. 6.

Fig. 4.

Fig. 5.

Witnesses:
Geoffrey
Sully Russo



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 By his Attorneys
 Redding, Green & Austin

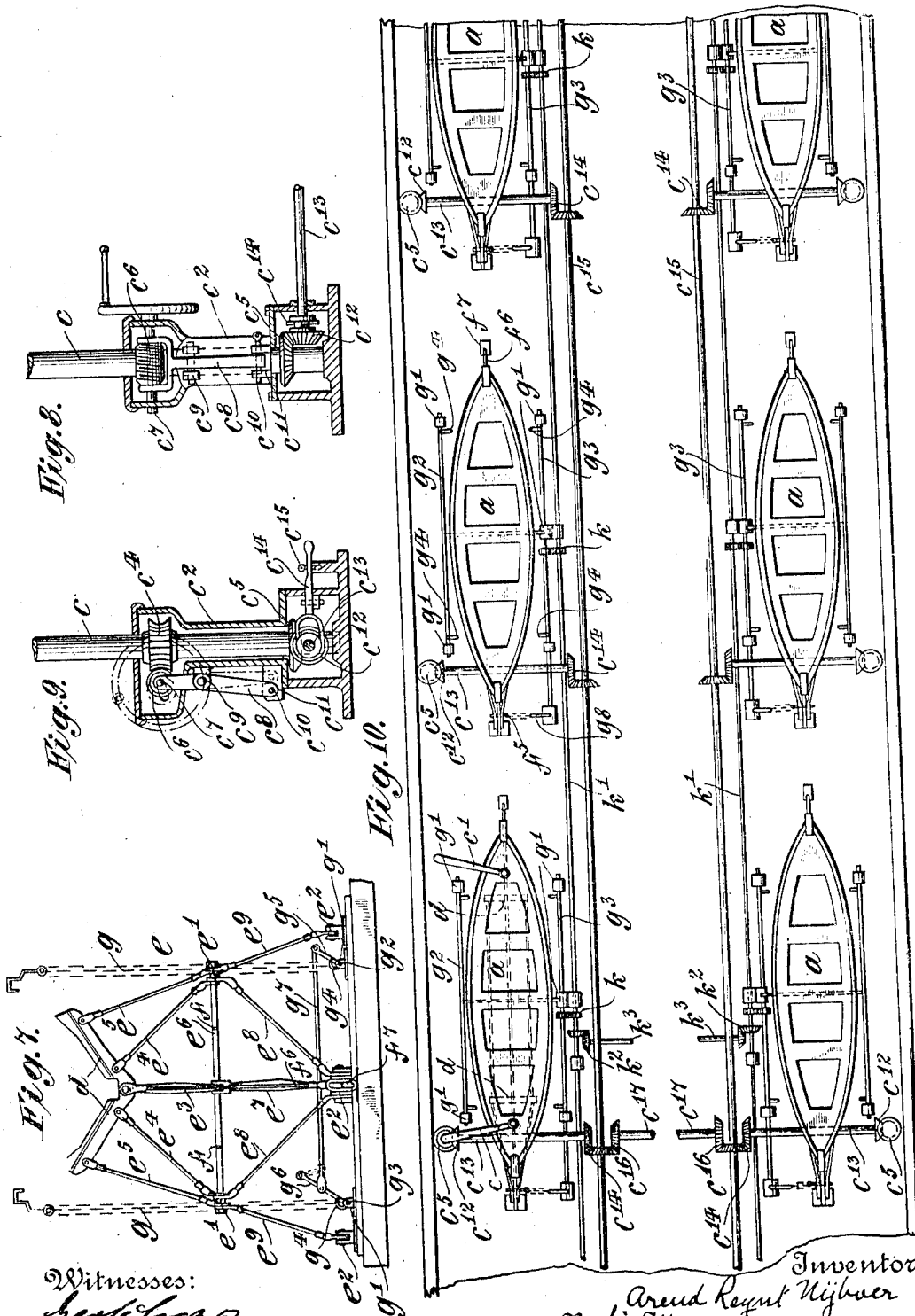
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4 SHEETS-SHEET 4.

1,040,741.



Witnesses:

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR STOWING AND LAUNCHING SHIPS' BOATS.

1,040,741.

Specification of Letters Patent.

Patented Oct. 8, 1912.

Application filed January 31, 1911, Serial No. 605,794. Renewed March 4, 1912. Serial No. 681,613.

To all whom it may concern:

Be it known that I, AREND REYNT NYBOER, a subject of the Queen of the Netherlands, residing in Edam, Netherlands, have invented certain new and useful Improvements in Apparatus for Stowing and Launching Ships' Boats, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

This invention has for its object to provide improved means for the stowing and launching of ships' boats so that they may be stowed securely when not required for use and may be launched quickly and easily and be let go from the falls without danger of capsizing.

The invention is particularly concerned with the construction of the chocks or cradle which is so constructed as to support the boat properly and as to free the boat instantly when necessary; with the means for operating the usual davits, so that the boat may be swung outboard quickly and easily, such means being also constructed and arranged with reference to the launching of several boats simultaneously under the control of an officer on the bridge; and with the means for detaching the boat from the falls, which are so constructed as to make it impossible to let go at the bow quicker than at the stern.

The invention will be more fully explained hereinafter with reference to the accompanying drawings in which it is illustrated and in which—

Figure 1 is a view in side elevation showing a portion of a ship's rail with a pair of davits and a boat resting in the chocks or cradle, a portion of one side of the boat being broken away to show the releasing devices. Fig. 2 is a partial top view of the boat, showing some of the details of the boat releasing devices. Fig. 3 is a view similar to Fig. 1 but showing the chocks or cradle collapsed and the boat outboard at the davits. Fig. 4 is a top view of the parts shown in Figs. 1 and 3, but without the boat, showing in full lines the davits and the chocks or cradle in the positions which they occupy when the boat is resting in the chocks, and in dotted lines the positions which the davits assume when the boat is swung outboard. Figs. 5 and 6 are detail views, on a larger scale, of some of the con-

necting devices between the two davits. Fig. 7 is an end view of the chocks or cradle, the boat gries being also indicated. Figs. 8 and 9 are detail views of the means for operating the davits. Fig. 10 is a top view showing several boats and launching devices therefor adapted to be operated simultaneously.

The boat *a*, hung by falls *b* from the davits *c*, *c'*, is supported inboard in a cradle which is so constructed that it can be collapsed so as to free the boat instantly. The chocks proper, *d*, at each end of the boat, are mounted upon a frame *e* which is hinged between its upper and lower ends, as at *e'*, and is also hinged to the ship's deck at its foot, as at *e''*. Each of the frames or supports *e* may be constructed of any suitable material and in any suitable manner, but is preferably formed of rods or bars, as shown particularly in Fig. 7, the rods or bars *e''*, *e'* and *e''* of the upper member of the hinged frame being secured at their upper ends to the rigid chock *d* and secured or pivotally mounted at their lower ends upon a horizontal rod *e''* upon or to which the rods *e'*, *e''* and *e''* of the lower member of the hinged frame are mounted or secured, while the lower ends are pivotally mounted, as at *e''*, in suitable brackets secured to the ship's deck. However the frame or support may be formed, it is only necessary that it shall be hinged to the deck at its lower end and hinged in a line between its upper and lower ends so that it shall be capable of collapsing, as shown in Fig. 3. The two frames or supports are connected at the hinge lines *e'* by rods *f*, which may be secured to the bars *e''*, and they are also secured at their upper ends by a rod *f'*, so that the two frames move together. One of the frames is connected at its upper end by a rod *f''* with a bracket *f'''* secured to the deck, and is also connected from its hinge line *e'*, that is, from the cross-bar *e''*, by a link *f''* which is detachably connected with the bracket *f'''* by a pin *f'''*. The other frame is connected from its upper end by a link *f''* with an open hook *f'''* secured to the ship's deck. It will now be seen that when the link *f''* is connected to the bracket *f'''* by the pin *f'''* the cradle is held from collapsing, and that the two frames are held from movement at their upper ends in either direction by the links *f''* and *f''*. It will also be seen that when the link *f''* is detached

from the bracket f^3 the cradle will collapse by its own weight, the centers not being in a vertical plane. As the cradle collapses the upper end of the frame at one end will still remain connected with the deck by the link f^2 , as shown in Fig. 3, while the link f^0 at the other end will slip from the hook f^1 . In restoring the cradle to its position of support, the link f^4 is again engaged with the bracket f^3 and the link f^0 with the hook f^1 .

In order that the cradle may be released and permitted to collapse and the boat girders g released simultaneously therewith, there are mounted in suitable brackets g^1 secured to the deck, two rock shafts g^2 and g^3 . The rock shaft g^2 is provided with open hooks g^4 to engage the lower ends of the boat girders g on the corresponding side of the boat and with an arm g^5 . The rock shaft g^3 is also provided with open hooks g^4 to engage the boat girders on that side and with an arm or operating lever g^6 , which is connected by a link g^7 with the arm g^5 of the rock shaft g^2 , so that both rock shafts shall be operated simultaneously from the arm or lever g^6 . The rock shaft g^3 is also extended, as shown in Fig. 4, to a point opposite the bracket f^3 and is there provided with an arm g^8 which is connected by a chain g^9 with the pin f^5 , so that oscillation of the rock shaft g^3 releases all the boat girders and disconnects the link f^4 from the bracket f^3 simultaneously, the boat being thereby freed instantly and made ready to be swung outboard by the operation of the davits.

The boat is hung by the usual falls b from the davits c, c' which are mounted, as usual, in pillars c^2, c^3 in which the davits may be rotated to swing the boat outboard or inboard as the case may be. In the present case, however, the two davits are arranged to be operated simultaneously from a single source of power. Rotary movement is imparted to one of the davits by any suitable means, but preferably by the means hereinafter described, and the two davits are so connected by a system of links and levers, that the second davit receives from the first the movement which is necessary to permit the boat to be swung outboard or inboard as the case may be.

As shown in the drawings the davit c has secured thereto, for operation by hand in the launching of a single boat, a worm gear c^4 , and for launching of several boats at the same time from a common source of power, controlled from the bridge, a bevel gear c^5 . With the worm gear c^4 is adapted to mesh a worm gear c^6 which is secured to a shaft c^7 mounted in the forked end of a lever c^8 which is pivoted on the pillar, as at c^9 . The worm is held in or out of engagement with the worm gear by a pin c^{10} which engages the lower end of the lever c^8 and brackets c^{11}

on the pillar. The bevel gear c^5 is adapted to be engaged by a bevel gear c^{12} slidably keyed on a shaft c^{13} and movable longitudinally into or out of engagement with the bevel gear c^5 by a forked lever c^{14} pivoted in the base of the pillar and held in one position or the other by a pin c^{15} . Under normal conditions each bevel gear c^{12} is in mesh with the corresponding bevel gear c^5 so that all or several of the boats may be launched at the same time, and if it is desired to provide for the launching of only one boat, the gear c^{12} is thrown out of mesh with the gear c^5 and the worm c^6 is thrown into mesh with the worm wheel c^4 so that the davit c may be rotated by manual operation of the crank shaft c^7 . Of course the worm c^6 is held normally out of engagement with the worm gear c^4 , so that all of the boats may be launched at the same time when the necessity arises.

The boat itself, when suspended at the davits in position to be secured, constitutes a connection between the davits, but as the davits must be capable of being swung outboard or inboard whether the boat is suspended therefrom or not, the connection between the davits which is formed by the boat itself is to be disregarded. The operative connection between the two davits is constituted by two links h and i with their cooperating devices. The link h and its cooperating devices are preferably located just above the rail so that they will be cleared by the keel of the boat as it is swung outboard or inboard. The link h has cooperating therewith an arm or lever h' which is secured to the davit c , and a quadrant lever h^2 , which is secured to the davit c' . The link h is slotted longitudinally, as at h^3 , and the slot is enlarged at its outer extremity, as at h^4 . In the end of the arm h' is secured a stud h^5 which preferably depends below the arm, and, as clearly shown in Fig. 5, has an enlargement h^6 and, below the enlargement, is threaded to receive a thumb nut h^7 . The stud itself is of such diameter as to travel in the slot h^3 when the end of the link h is raised by the nut h^7 into the same plane with the smaller portion of the stud, but when the end of the link h is lowered by the nut h^7 and the stud is moved to the end of the slot in the link, the enlargement h^6 of the stud may then drop over the enlargement h^6 of the stud so that the arm and the link are then compelled to move together without relative movement.

At its other end the link h carries a stud h^8 which stands above the link and has, at a little distance above the link, an enlargement h^9 , and above that receives a nut h^{10} . The quadrant h^2 has in its outer member a slot h^{11} which is enlarged at its ends, as at h^{12} and h^{13} . The smaller portion of the stud h^8 may travel freely in the slot h^{11} , while if

the end of the link is permitted by the nut h^{10} to drop; the enlargement h^9 of the stud may enter one or the other of the terminal enlargements h^{12} , h^{13} of the slot h^{11} so that the link and the quadrant will then move together and relative movement be prevented.

The link i connects the davits c , c' at their extremities and is slotted longitudinally, as at i' , to engage loosely a bolt i^2 in the end of the davit c , while at the other end the link i is pivotally connected to the extremity of the davit c' , as by a bolt i^3 .

If it be assumed that the boat is inboard, that the cradle has been collapsed so as to free the boat, and that the boat is to be launched, the left hand end of the link h is raised by the nut h^7 so that relative movement of the stud in the slot of the link may take place. The other or right hand end of the link h is also raised by the nut h^{10} so that the stud h^9 may travel freely in the slot h^{11} of the quadrant h^2 . The right hand end of the link h is then moved to that end of the slot h^{11} in the quadrant h^2 which is to become the outboard end, and is then dropped by the nut h^{10} so that the enlargement h^9 of the stud drops into the enlargement h^{13} of the slot. The longitudinal movement of the link h which is permitted by the slot h^2 allows this shifting of the right hand end of the link to be effected. Rotary movement is now imparted to the davit c in a clockwise direction, seen from above, until the davit reaches the position indicated by dotted lines in Fig. 4. During this movement the stud h^9 moves in the slot h^{11} of the link h , which therefore has no effect upon the davit c' , but the bolt i^2 in the upper end of the davit c , standing at the extremity of slot i' in the link i , acting through the link, swings the davit c' into the intermediate position indicated by dotted lines in Fig. 4. Before commencing the movement of the davit c as described, the nut h^7 is dropped, so that when the davit c reaches the first position already referred to, the enlargement of the slot h^9 in the link h drops upon the enlargement h^8 of the stud h^5 .

When the intermediate position has been reached, as already described, the direction of rotation of the hand wheel or other actuating mechanism is reversed and the davit c is then swung in the opposite direction from the intermediate position to the extreme outboard position. The link h having been engaged with the arm h^7 , as already described, and the quadrant h^2 having been swung with the davit c' to the intermediate position, so that the connection of the right hand end of the link h with the quadrant has been moved beyond a line connecting the centers, the davit c' will be swung, through the link h , from the intermediate position to the extreme outboard position,

the slot in the end of the link i permitting the necessary changing of the distance between the ends of the two davits during this operation. The relative movement of the two davits which is thus effected is the ordinary movement imparted to davits in the launching of a boat and the movement of the boat itself is therefore the usual movement, one end, say the bow, being first swung forward until the stern clears the after davit, the stern of the boat being then swung outward and astern until the bow can clear the forward davit, when the bow is then swung outward until the boat is in position to be lowered away.

The connection of the link h with the quadrant h^2 , as already described, is that which is required for launching. When the boat is to be stowed, the end of the link h must be shifted from the outboard end of the slot h^{11} of the quadrant h^2 to the inboard end of the slot, so that in the reversal of the movement of the davits the right hand or after end of the link will be swung beyond the center line and in the continued movement of the parts the after davit will receive the proper movement through the link h .

The operation of the davits has been described herein as if the required adjustment of the link h with respect to the quadrant h^2 were made as a part of the launching operation, but it will be understood, of course, that when the davits are inboard, the proper relation of the link h and the quadrant h^2 is established, so that when the necessity arises the launching of the boat is effected without any preliminary adjustments. The same is true, of course, when the davits are swung outboard, the necessary adjustment of the parts being effected beforehand in readiness for the hoisting and stowing of the boat. It was also assumed, in the description of the operation, that the stern of the boat is swung outboard first, but obviously the bow might be swung outboard first.

The operation of launching has been described with respect to the launching of one boat only, but if several boats are to be launched at the same time, under control from the bridge, the operation is still the same. As shown in Fig. 10, each shaft c^{14} may be operated through suitable gears c^{15} from a shaft c^{15} and the shafts c^{15} to port and starboard may be operated together, through gears c^{16} , from a common motor shaft c^{17} under control from the bridge or any other convenient point. In this case the devices for permitting the cradles to collapse and for releasing the boat girders may also be operated together, the rock shaft g^2 being operated through gears k from common controlling shafts k' which may themselves be operated through gears k^2 from a

common motor shaft k^s under control from the bridge.

Provisions are made, as shown in Figs. 1 and 2, for the simultaneous casting off of the falls when the boat has been lowered away. As shown in Fig. 1, each lower fall block b^1 has a link b^2 which passes through the boat deck so as to be engaged by a bolt b^3 carried by a plate b^4 suitably secured to the boat. The bolt b^3 has formed on its end, as shown in Fig. 2, a rack b^5 for engagement with a pinion b^6 which may be rotated to withdraw the bolt by a vertical hand shaft b^7 provided with a suitable handle above the deck. The pinion b^6 also engages a rack b^8 on a rod b^9 which is adapted for longitudinal movement in suitable guides b^{10} under the thwart. At its other end the rod b^9 has a rack b^{11} which engages a similar pinion b^{12} , which in turn engages a similar bolt b^{13} . The latter is adapted to engage the link b^2 of the after fall. Thus by rotation of the vertical hand shaft b^7 both bolts b^3 and b^{13} are withdrawn simultaneously and the falls are therefore cast off simultaneously.

It will be understood that various changes in details of construction and arrangement may be made to suit different conditions of use without departing from the spirit of the invention which is not restricted to the precise construction and arrangement shown and described herein.

I claim as my invention:

1. A collapsible support for a ship's boat comprising a frame hinged at its foot and hinged between its upper and lower ends, a chock at the upper end of the frame, a connection from the deck to the frame at its upper end to hold the upper end in position and a connection from the deck to the frame between its ends to prevent the frame from collapsing.
2. A collapsible support for a ship's boat comprising a frame hinged at its foot and hinged between its upper and lower ends, a chock at the upper end of the frame, a link connected to the frame at its upper end and to the deck, and a link connected to the frame between its ends and detachably connected to the deck.
3. A collapsible support for a ship's boat comprising a frame hinged at its foot and consisting of an upper member, a lower member and a hinge rod to which both members are connected, the upper member consisting of a rigid chock and rods extending therefrom to the hinge rod and the lower member consisting of rods extending from the hinge rod to the deck and pivotally secured to the deck, a link pivotally connected to the upper end of the frame and to the deck and a link pivotally connected to the hinge rod and detachably connected to the deck.

4. A collapsible support for a ship's boat comprising a frame hinged at its foot and hinged between its upper and lower ends, a chock at the upper end of the frame, a link pivotally connected to the upper end of the frame and to the deck, a bracket secured to the deck, a link connected to the frame between its ends, detachable devices connecting the other end of the link to said bracket and means to detach the link from the bracket.

5. A collapsible support for a ship's boat comprising a frame hinged at its foot and hinged between its upper and lower ends, a chock at the upper end of the frame, a link pivotally connected to the upper end of the frame and to the deck, a bracket secured to the deck, a link connected to the frame between its ends, a pin detachably connecting the link and the bracket and means to pull out said pin.

6. A collapsible support for a ship's boat comprising a frame hinged at its foot and hinged between its upper and lower ends, a chock at the upper end of the frame, a link pivotally connected to the upper end of the frame and to the deck, a bracket secured to the deck, a link connected to the frame between its ends, a pin detachably connecting the link and the bracket, a rock shaft, an arm on the rock shaft and a connection from the arm to the pin.

7. A series of collapsible supports for ships' boats, links connected to said supports and detachably connected to the deck for maintaining said supports in operative position and means for detaching said links simultaneously.

8. A series of collapsible supports for ships' boats, links connected to said supports and detachably connected to the deck for maintaining said supports in operative position, a shaft common to the series of supports and means actuated by the movement of the shaft to detach all of said links simultaneously.

9. A series of collapsible supports for ships' boats comprising each a frame hinged at its foot and hinged between its upper and lower ends, a chock at the upper end of the frame and links connected to said supports and detachably connected to the deck for maintaining the frame in operative position and means for detaching simultaneously all of said links.

10. A series of collapsible supports for ships' boats comprising each a frame hinged at its foot and hinged between its upper and lower ends, a link pivotally connected with the upper end of the frame and the deck and a link connected with the frame between its ends and detachably connected to the deck and means for releasing simultaneously all of said detachably connected links.

11. A series of collapsible supports for ships' boats comprising each a frame hinged at its foot and hinged between its upper and lower ends, a link pivotally connected with the upper end of the frame and the deck and a link connected with the frame between its ends and detachably connected to the deck, a shaft common to the series of supports and means actuated by the shaft for releasing simultaneously all of said detachably connected links.

12. A collapsible cradle for a ship's boat comprising a plurality of frames each hinged at its foot and hinged between its upper and lower ends, a link connecting the frames at their upper ends, a link connecting the frames between their upper and lower ends, a link connected with one of the frames at its upper end and with the deck, and a link connected with said frame between its ends and detachably connected with the deck.

13. A collapsible cradle for a ship's boat comprising a plurality of frames each hinged at its foot and hinged between its upper and lower ends, a link connecting the frames at their upper ends, a link connecting the frames between their upper and lower ends, a link connected with one of the frames at its upper end and with the deck, and a link connected with the other frame at its upper end and detachably connected with the deck.

14. A collapsible cradle for a ship's boat comprising a plurality of frames each hinged at its foot and hinged between its upper and lower ends and having a cheek at the upper end, a link connecting the upper ends of the frames, a link connecting the frames between their upper and lower ends, means connected to one of the frames at its upper end to hold the upper end in position and detachable means connected to one of the frames between its ends to prevent the frame from collapsing.

15. The combination of a collapsible cradle for a ship's boat, links connected to the cradle at one end and detachably connected to the deck at the other end for maintaining the cradle in operative position, boat grippers detachably connected to the deck and means for releasing simultaneously the detachable links and the boat grippers.

16. The combination of a collapsible cradle for a ship's boat, links connected to the cradle at one end and detachably connected to the deck at the other end for maintaining the cradle in operative position, boat grippers, a shaft mounted on the deck and having hooks to engage the boat grippers and means connected with the shaft to release said detachable links whereby, through movement of the shaft, the boat grippers are released and the cradle is permitted to collapse.

17. The combination of a series of collapsible supports for ships' boats, links connected to the cradle at one end and detachably connected to the deck at the other end for maintaining the supports in operative position, detachable boat grippers for the several boats and a common means for releasing simultaneously all of the detachable links and the boat grippers.

18. The combination of a series of collapsible supports for ships' boats, links connected to the cradle at one end and detachably connected to the deck at the other end for maintaining the supports in operative position; detachable boat grippers for the several boats and a shaft mounted on the deck and common to the entire series and means actuated by the movement of the shaft for releasing simultaneously all of said detachable links and the boat grippers.

19. The combination with a boat, davits and falls, each lower fall block having a depending link, of bolts mounted movably on the boat and adapted to engage said links and formed, each with a rack, pinions engaging said racks and means for operating said pinions together to withdraw the bolts simultaneously.

20. The combination with a boat, davits and falls, each lower fall block having a depending link, of bolts mounted movably on the boat and adapted to engage said links and formed, each with a rack, pinions engaging said racks, a bar having racks in engagement with said pinions and an operating handle on one of said pinions whereby said pinions may be operated together and the bolts withdrawn simultaneously.

21. The combination of a pair of davits, connections between said davits whereby they are operated together, a manually operated worm shaft and gear for actuating one of said davits, said worm shaft being movably supported, and a power operated shaft and intermediate gears for actuating the same davit, one of the said intermediate gears being movably mounted, whereby said davit may be actuated either manually or by power.

22. The combination of a pair of davits, means to actuate one of said davits, an arm secured to one of said davits, a slotted quadrant arm secured to the other of said davits and a link having a pivotal, slotted connection with the first named arm and a pivotal, shiftable connection with the quadrant arm.

23. The combination of a pair of davits, means to actuate one of said davits, an arm secured to one of said davits, a slotted quadrant arm secured to the other of said davits, a link having a pivotal, slotted connection with the first named arm, a pivotal, shiftable connection with the quadrant arm and a link having a pivotal connection with the extremity of one of the davits and a pivotal,

slotted connection with the extremity of the other of the davits.

24. The combination of a pair of davits, means to actuate one of said davits, an arm secured to one of said davits, a slotted quadrant arm secured to the other of said davits, a link having a movable pivotal connection with the slotted quadrant and slotted at its other end for engagement with the first named arm, means to retain the link in engagement with one end or the other of the slot in the quadrant and means to retain the extremity of the slotted portion of the link in engagement with said first named arm.
25. The combination of a pair of davits, means to actuate one of said davits, an arm secured to one of said davits, a slotted quadrant secured to the other of said davits, the

ends of the slot being enlarged, a link slotted longitudinally at one end and having the extremity of the slot enlarged, a stud on one end of the link having a shank adapted to move freely in the narrow portion of the slot in the quadrant and a head to engage the enlarged ends of the slot and a stud carried by the first named arm and having a shank to travel freely in the narrow portion of the slot in the link and a head to engage the enlarged end of the slot in the link.

This specification signed and witnessed this 12th day of January A. D., 1911.

A. R. NYBOER.

Signed in the presence of—

D. P. De YOUNG,
W. DE HAAR.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."