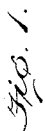


1,052,644.

2 SHEETS--SHEET 1.



Edwin L. Bradford  
Mr. D. Ballauf.

By *Ritter & Ritter*

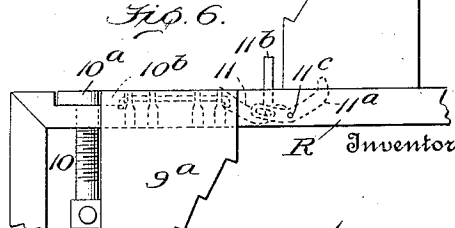
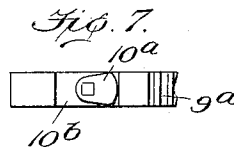
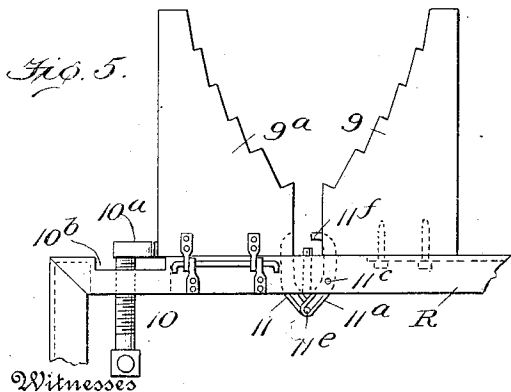
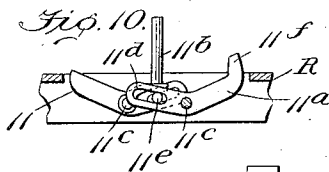
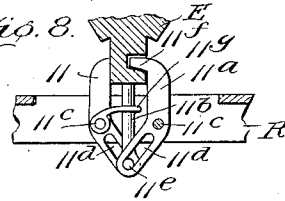
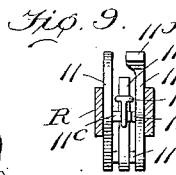
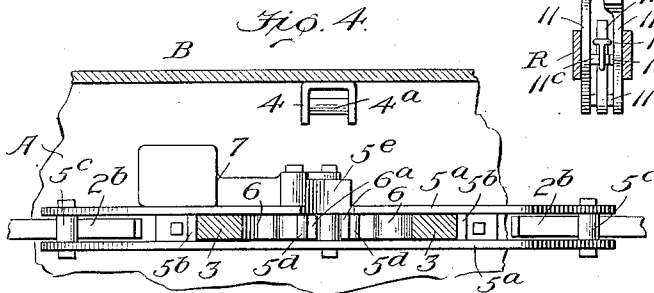
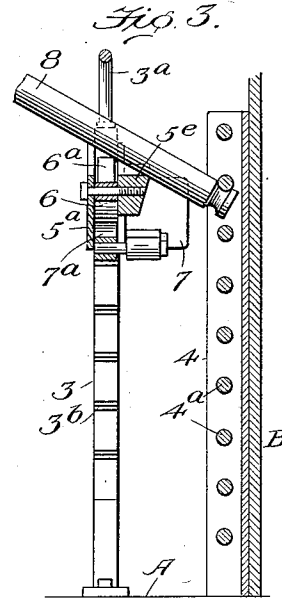
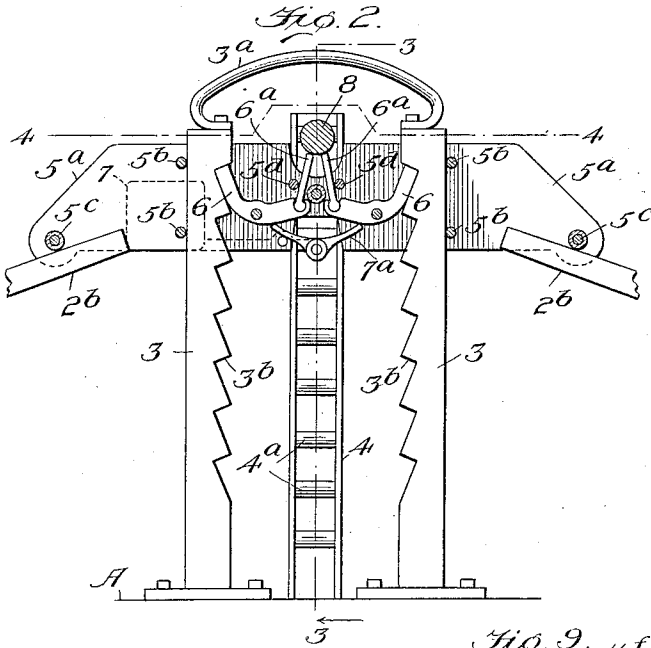
COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

K. BAETZNER.  
MECHANISM FOR LAUNCHING BOATS.  
APPLICATION FILED APR. 20, 1912.

1,052,644.

Patented Feb. 11, 1913.

2 SHEETS—SHEET 2.



Witnesses  
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# UNITED STATES PATENT OFFICE.

KARL BAETZNER, OF ROCHESTER, NEW YORK.

MECHANISM FOR LAUNCHING BOATS.

1,052,644.

Specification of Letters Patent.

Patented Feb. 11, 1913.

Application filed April 20, 1912. Serial No. 692,028.

*To all whom it may concern:*

Be it known that I, KARL BAETZNER, a citizen of the German Empire, residing at Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Mechanism for Launching Boats; 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.

My invention relates to the construction of apparatus for hoisting and lowering ships' boats and supporting them securely within-board.

It has for its several objects the reduction of friction incident to, and the power required for launching boats, and also the simplification of the mechanism, and a compact form and arrangement thereof which saves deck space in the installation of the devices.

As is well known to those familiar with the launching of ships' boats, the common practice is to rotate the davits or boat-supports outboard by hand, and thereafter lower the boat by means of tackle operated either from the boat or from the ship's deck. This method of lowering boats demands the labor of from three to five men, requires some six or eight minutes of valuable time, and where unity of action is necessary, as in cases of emergency, not infrequently leads to mishaps in lowering and manning the boats.

In order to overcome the objectionable features above noted, as well as to limit the number of hands required to launch ships' boats, various attempts have been made to produce effective automatic devices for hoisting and lowering ships' boats, but so far as I am aware this has not been heretofore successfully accomplished because of the limited space on a ship's deck which can be economically allotted for the installation of such devices, and because the complication of the devices, and the power required for the operation thereof, have rendered their use on shipboard prohibitive.

In carrying out my invention I provide the davits which carry the ship's boat with movable steps, spiral bearings, and means for easing the load on the bearings whereby the friction of the moving parts is reduced to a minimum and the power required to lift the load and rotate the davits is also

reduced to a minimum, and such a construction embodies one feature of my invention.

I also provide a rack, ratchet and lever mechanism for applying the power to lift the load and rotate the davits which support the ship's boat whereby compactness of the mechanism is attained, the number of hands and power required are greatly reduced, the deck-space required for the installation of the devices is also reduced, and the space required for the devices may be so located as to be economically allotted on the ship's deck, and such a construction embodies another feature of my invention.

I also provide keel clamps actuated by the weight of the boat so that the boat is held firmly on its bearings or supports inboard until purposely lifted therefrom by the davit operating mechanism, and such a construction embodies a further feature of my invention.

There are other, minor, features of invention involving particular combinations and elemental features of construction, ancillary to the main features of invention, all of which will hereinafter more fully appear.

In the drawings chosen for the purpose of illustrating my invention, the scope whereof is pointed out in the claims, Figure 1 is a view in side elevation of a ship's boat, and mechanism for launching the same embodying my invention. Fig. 2 is a front elevation, partly in section of the rack, ratchet and lever, boat-launching mechanism, embodying my invention shown in Fig. 1. Fig. 3 is a vertical sectional view of the rack, ratchet and lever mechanism taken in the plane of the line 3—3, Fig. 2. Fig. 4 is a horizontal sectional view of the rack, ratchet and lever mechanism taken in the plane of the line 4—4, Fig. 2. Fig. 5 is a view in elevation of one of the sets of boat-chocks, a portion of their rail support, a keel-clamp, and the chock lock, the several parts shown in operative position to support a ship's boat inboard. Fig. 6 is a view similar to Fig. 5, the chock lock being withdrawn, and the swinging chock dropped to release the ship's boat for launching. Fig. 7 is a top or plan view of the chock-lock shown in Figs. 5 and 6. Fig. 8 is a view in elevation of a keel-clamp, a portion of the boat keel and a portion of the chock rail being shown in section. Fig. 9 is a view of the keel-clamp taken at right angles to the view Fig. 8, and Fig. 10 is a view in eleva-

tion of the keel-clamp in its open position, or the position it assumes when the ship's boat is lifted.

Like symbols refer to like parts wherever they occur.

I will now proceed to describe my invention more fully so that others skilled in the art to which it appertains may apply the same.

In the drawings, A indicates a ship's deck, B the bulwarks, *b* the rail thereof, C, C' davits for hoisting and lowering a ship's-boat, C', C' tubular bearings in which the davits rotate, D the tackle by means of which the ship's-boat is raised and lowered, and E a ship's-boat which is to be hoisted, lowered, and swung in-board and out-board by means of the davits and tackle.

The boat E will be of the usual character, except that instead of having fixed eyes at its opposite ends for the reception of the tackle hooks, it will be provided at each end with a traveler rail *e*, running lengthwise of the boat above the heads of the occupants, for travelers *d* with which the tackle hooks engage. This construction relieves the tackle of torsion and strain, permits the connections to adjust themselves to the changing position of the boat and davits when the boat is swung out-board or in-board, and the traveler rails serve also as a support for the canvas covering of the boat, when the boat is housed.

As it is intended that the boat shall be manned before it is lowered, and shall be lowered or hoisted by those manning the boat, suitable cleats (not shown) are provided on the boat for securing the hoisting rope of the tackle.

The upper or crane-like portion of the davit C is of the usual design and construction having a swiveling eye 1<sup>a</sup> for the tackle hook, but the lower portion of the davit is provided with a fixed collar 1<sup>b</sup>. The lower edge of collar 1<sup>b</sup> constitutes a spiral bearing as at 1<sup>c</sup> to co-act with the corresponding spiral upper end of the tubular bearing C'. The lower end of the davit C passes through the tubular bearing C', and rests on a movable step 2<sup>a</sup>, in the present instance the short arm of a lever 2. The socket or tubular bearing C' having the spiral upper end for co-action with the spiral under surface of davit-collar 1<sup>b</sup> is supported from deck A adjacent to bulwark B by the slotted base C<sup>2</sup>. In lieu of the slotted base C<sup>2</sup> the lower end of the socket or tubular bearing C' may rest upon the deck and may be slotted for the entrance of the short arm 2<sup>a</sup> of lever 2.

In order that the davits shall rotate in reverse direction in carrying the boat, the spiral bearings 1<sup>c</sup>, 1<sup>c</sup> are given reverse turns, that is to say, one will have a right hand turn and the other a left hand turn. Each davit C (or collar 1<sup>b</sup>) is provided with a pin 1<sup>a</sup> for the attachment of one end of a rope P

or its equivalent, whereby the davit may be rotated. The rope P after being wound several times around the davit C or the collar 1<sup>b</sup> thereof, passes over an adjustable pulley *p* carried by a bracket *p'* on the bearing or socket C' and is finally secured at its other end to the long arm of lever 2, or, if preferred, to the sliding frame 5.

2, 2 indicate pivoted levers having their fulcrums 2<sup>c</sup> near the bulwark B and adjacent to the respective davits, so that the short arm 2<sup>a</sup>, 2<sup>a</sup> of said levers may constitute movable steps or bearings for the lower ends of the davits. These levers 2, 2 extend parallel with, and in juxtaposition to, the bulwark B, and the inner or adjacent ends of the long arms 2<sup>b</sup> of said levers 2 are in the plane of and adjacent to a centrally disposed vertical rack, or racks, 3, 3, and beneath a frame 5 which slides vertically on said racks.

The rack or racks 3, 3 which are intermediate of and in line with, the davits, are preferably two in number arranged to face each other, as shown in the drawings, properly bolted or otherwise secured to the deck A at their lower ends, and connected or braced at their upper ends by a cross-bar or bridge bar 3<sup>a</sup>. The engaging sides of the rack teeth 3<sup>b</sup> are to face downward, or are so disposed as to support the frame 5 against the thrust of the long arms 2<sup>b</sup> of levers 2, and hold the load, when the power is withdrawn. Secured to the bulwark B in a plane intermediate of the planes of the racks 3, 3, is a ladder 4, or like device, the rungs 4<sup>a</sup>, 4<sup>a</sup> of which constitute fulcrums for a detachable primary or operating lever 8, see Figs. 2 and 3.

5 indicates a sliding frame adapted to move up and down on the vertical racks 3, 3. The opposite ends of the frame engage the inner ends of the long arms 2<sup>b</sup> of pivoted levers 2 to depress said long arms of levers 2 when the frame 5 is forced down by lever 8. This frame may be composed of parallel spaced plates 5<sup>a</sup> rigidly connected by transverse bolts 5<sup>b</sup> which bolts guide it on and maintain its relation to the racks 3, 3; by bolts 5<sup>c</sup> which serve as contacts for the arms 2<sup>b</sup> of levers 2, and by bolts 5<sup>d</sup> which serve as guides for the stems 6<sup>a</sup> of the ratchet devices—and where required (as for instance at 5<sup>e</sup>) the bolts may pass through spacer sleeves which will also act as anti-friction bearings for the moving parts.

In order to prevent the rise of the vertically sliding frame when the power that depresses it is temporarily withdrawn, pawls or detents 6, 6 are pivoted on the frame 5 and arranged to engage the teeth 3<sup>b</sup> of racks 3, 3. The pawls or detents 6 are preferably of the character shown in the drawing, that is to say somewhat arc shaped, pivoted at mid-length on the frame 5, and provided at their inner ends with pivoted stems

6<sup>a</sup> which stems stand in the path of the primary or operating lever 8, whereby the lever as it descends depresses the inner ends of the detents and causes their disengagement from the racks 3, 3. Secured to the back of sliding frame 5 (see Fig. 3) is a block 5<sup>e</sup>, in line with the stems 6<sup>a</sup>, 6<sup>a</sup> of detents 6. This block 5<sup>e</sup> is first engaged by the lever 8 in depressing frame 5, and consequently, in withdrawing the lever, the stems 6<sup>a</sup>, 6<sup>a</sup> of detents 6, 6 are released for an interval of time before the lever 8 releases the frame 5, which interval allows the detents 6, 6 to engage the racks 3, 3 and prevent the rise of frame 5 when the lever 8 is withdrawn.

In order to maintain the operative engagement of the pawls or detents 6, 6 with the teeth 3<sup>b</sup> of racks 3, 3 when the primary lever 8 or power which depresses frame 5 is temporarily withdrawn, a counterweighted lever 7 is pivoted on frame 5, said counterweighted lever being provided with a rocking block 7<sup>a</sup> which bears upon the undersides of the pawls or detents 6, 6.

It is to be noted that the rack, ratchet and lever operative mechanism, hereinbefore described, occupies but a narrow space on the deck in close proximity to the bulwark B, and need not be extended above the bulwark rail b.

R, R indicate the usual in-board rail supports for the boat, to which the keel-clamps and boat-chocks are secured. These rails will be attached to the deck A and bulwark B in the usual or any approved manner.

9, 9<sup>a</sup> indicate boat-chocks secured to the upper surface of the rails R, R, the in-board chock 9 being rigidly secured thereto, if desired, and the out-board chock 9<sup>a</sup> being hinged to the rail R so as to drop laterally when released. The chocks 9<sup>a</sup> are held in vertical, or operative position by lock devices 10, which in the present instance are shown as consisting of coarse threaded or multiplex screws projecting through the rails R and carrying on their upper ends eccentrics 10<sup>a</sup>, which eccentrics in the elevated position (Fig. 5) jam or lock the swinging chock 9<sup>a</sup>, but when withdrawn sink into recesses 10<sup>b</sup> in the upper surfaces of rails R R (Fig. 6) and permit the out-board chocks to swing down and out of the way of the boat E.

The keel-clamp is composed of two members 11, 11<sup>a</sup> and an intermediate vertical post 11<sup>b</sup> (see Figs. 5, 9, 10 and 11) by which said members are actuated by the weight of the boat to clamp the keel of the boat and hold it securely in position between the chocks 9, 9<sup>a</sup> on the rail supports R, R when the boat is lowered on its supports. Each of said members 11, 11<sup>a</sup> is pivoted on the rail R intermediate of the chocks 9, 9<sup>a</sup> as at 11<sup>c</sup>, and each of said members has an elongated slot 11<sup>d</sup> in its lower end for the reception of a transverse pin 11<sup>e</sup> on the lower end of vertical post 11<sup>b</sup>.

In order to maintain the post 11<sup>b</sup> in a vertical position a guide member 11<sup>s</sup> pivoted on the rail, and through which the post passes, is provided.

Usually the in-board member 11<sup>a</sup> of the keel-clamp is formed with a curved beak 11<sup>f</sup> which takes into a recess in the keel provided for its reception. When the keel of the boat rests upon the post 11<sup>b</sup> of the clamp the post is forced down and the transverse pin 11<sup>e</sup> at its lower end descends in the slots 11<sup>d</sup> in the lower ends of the clamp members 11, 11<sup>a</sup>, forcing the upper ends of said members 11, 11<sup>a</sup> toward each other until they clamp and hold the keel of the boat securely, as indicated in Fig. 8 of the drawings. So long as the weight of the boat rests upon the keel-clamps the boat is held securely in position on the rail supports R, R. When the boat is lifted by the rise of the davits C, C, previous to their out-board rotation, or by use of the tackle D, as the case may be, and the weight or load is thus removed from post 11<sup>b</sup>, the overbalance of the members 11, 11<sup>a</sup> of the clamp causes them to fall apart, as indicated in Fig. 10 of the drawing, thus releasing the boat keel and permitting the out-board movement of the boat. The falling apart of the clamp members 11, 11<sup>a</sup> also causes the rise of post 11<sup>b</sup> into normal position for again operating the clamp members 11, 11<sup>a</sup> when the boat is returned to its position on the rail supports R, R.

The construction of the apparatus being of substantially the character hereinbefore pointed out, the same may be operated as follows for launching a ship's boat. The lock devices 10 are first operated to draw down the eccentric chock locks 10<sup>a</sup> and release the outboard chocks 9<sup>a</sup> to permit them to swing down and release the boat. The primary lever 8 is then passed over the center of sliding frame 5 and its end passed under the upper rung 4<sup>a</sup> of ladder 4, after which the lever is depressed to force frame 5 down on racks 3, 3. The downward movement of prime lever 8 depresses stems 6<sup>a</sup>, 6<sup>a</sup> of pawls 6, 6, which disengages said pawls or detents from racks 3, 3, and at the same time, through the medium of rocking block 7<sup>a</sup>, depresses the short arm and raises the weighted arm of counterweighted pivoted lever 7. The descent of frame 5 depresses the long arms 2<sup>b</sup> of levers 2 and lifts the short arms 2<sup>b</sup>, constituting the movable steps for davits C, C, and, at the same time, draws upon the ropes or flexible connections P, P which serve to rotate the davits, thus reducing the load and friction on the bearings of the davits as well as directing their out-board rotation. When the frame 5 has been moved down on the racks 3, 3 as far as the limited movement with the first fulcrum 4<sup>a</sup>

will permit, the lever is raised thus releasing the detents or pawls 6, 6, which by the operation of counterweighted lever 7, and block 7<sup>a</sup> are caused to engage the teeth 3<sup>b</sup> of racks 3 and to hold the frame and load in fixed position until the primary lever 8 has been shifted to the next lower fulcrum, or rung 4<sup>a</sup>, and this step by step movement is continued until the davits have been rotated completely out-board, after which the boat may be lowered by those who man it, or from the deck, as the case may be. When a boat has been hoisted by its tackle it may be swung in-board and lowered into position on the support rails R, R by so manipulating the primary lever 8 as to maintain such a limited depression of the stems 6<sup>a</sup>, 6<sup>a</sup> of the detents 6, 6, as will limit the descent or operation of the counterweighted lever 7, and prevent the engagement of the pawls or detents 6, 6 with the teeth 3<sup>b</sup> of racks 3, 3—or in other words, the lever 8 may be slowly and limitedly moved so as to cause the pawls to jump the rack teeth 3<sup>b</sup>, and the weight of the boat acting on the spiral bearing of the davits will rotate the davits in-board and wind the rope P upon the davits, thus bringing the boat into position over the support rails R, R for storage in-board.

It will be evident that the compact character of the mechanism hereinbefore described reduces greatly the deck space required for its instalment, while its simplicity obviates any possibility of its becoming or being rendered inoperative, and its mechanics renders it economic of power and permits a single hand to launch a manned boat in case of emergency. The mechanism can be worked also by steam or hydraulic power without any alteration of the construction.

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

1. In apparatus of the character indicated the combination with rotatable davits which are slidable in the direction of their length, of vertically movable steps therefor, and means for rotating each of the davits about its vertical axis.

2. In apparatus of the character indicated the combination with davits, of vertically movable steps therefor, spiral bearings for said davits about vertical axes, and means for moving the steps to separate the bearing faces of the spiral bearings, means for rotating the davits.

3. In apparatus of the character indicated the combination with rotatable davits which are slidable in the direction of their length, of vertically movable steps therefor, levers for moving the said steps vertically, and means for rotating each of the davits with respect to its step.

4. In an apparatus of the character indicated the combination with rotatable davits which are slidable in the direction of their length, of vertically movable steps therefor, levers for moving the steps vertically, and flexible means for rotating each of the davits about its vertical axis.

5. In apparatus of the character indicated the combination of davits, vertically movable steps therefor, spiral bearings for the davits, means for moving the steps to separate the bearing faces of the spiral bearings, and means for rotating the davits.

6. In apparatus of the character indicated the combination of davits, levers constituting movable steps for the davits, and flexible connections between the davits and said levers for rotating the davits.

7. In apparatus of the character indicated the combination of davits, spiral bearings therefor, levers constituting movable steps for the davits, and flexible connections between the davits and the levers for rotating said davits.

8. In apparatus of the character indicated the combination of davits, movable steps for the davits, means for rotating the davits, and rack and lever mechanism for actuating the movable steps and means which rotate the davits.

9. In apparatus of the character indicated the combination of davits, spiral bearings therefor, movable steps for the davits, a flexible means for rotating the davits, and rack and lever mechanism for actuating the movable steps and the flexible means which rotates the davits.

10. In apparatus of the character indicated the combination of davits, spiral bearings therefor, movable steps for the davits, and rack and lever mechanism for actuating the movable steps of the davits.

11. In apparatus of the character indicated the combination of davits, levers constituting movable steps therefor, flexible means connecting the davits with the levers for rotating the davits, and rack and ratchet mechanism for actuating the levers constituting the steps for the davits.

12. In apparatus of the character indicated the combination of davits, spiral bearings therefor, levers constituting movable steps for the davits, and pawl and rack mechanism for actuating the levers which constitute the movable steps of the davits.

13. In apparatus of the character indicated the combination of davits, spiral bearings therefor, levers constituting movable steps for the davits, flexible connections between the davits and the levers which constitute the movable steps of the davits, and pawl and rack mechanism for actuating the levers which constitute the movable steps of the davits.

14. In apparatus of the character indi-

5 cated the combination of davits, pivoted  
levers constituting movable steps therefor,  
flexible connections between said levers and  
the davits for rotating the davits, and a  
10 rack, pawl, and slide mechanism for actu-  
ating the levers which constitute the movable  
steps of the davits.

15 15. In apparatus of the character indi-  
cated the combination of davits, spiral bear-  
ings therefor, levers constituting movable  
steps for the davits, and a rack, pawl, and  
slide mechanism for actuating the levers  
which constitute the movable steps of the  
davits.

16. In apparatus of the character de- 15  
scribed the combination with a boat, its  
supports, and means for hoisting and lower-  
ing the boat, of keel-clamps having mem-  
bers pivoted on the boat support, and stems  
which are engaged by the boat to operate 20  
the clamps and automatically secure the boat  
to the supports when lowered thereon.

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

KARL BAETZNER.

Witnesses:

W. LEUZINGER,  
D. E. RENEY.

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