

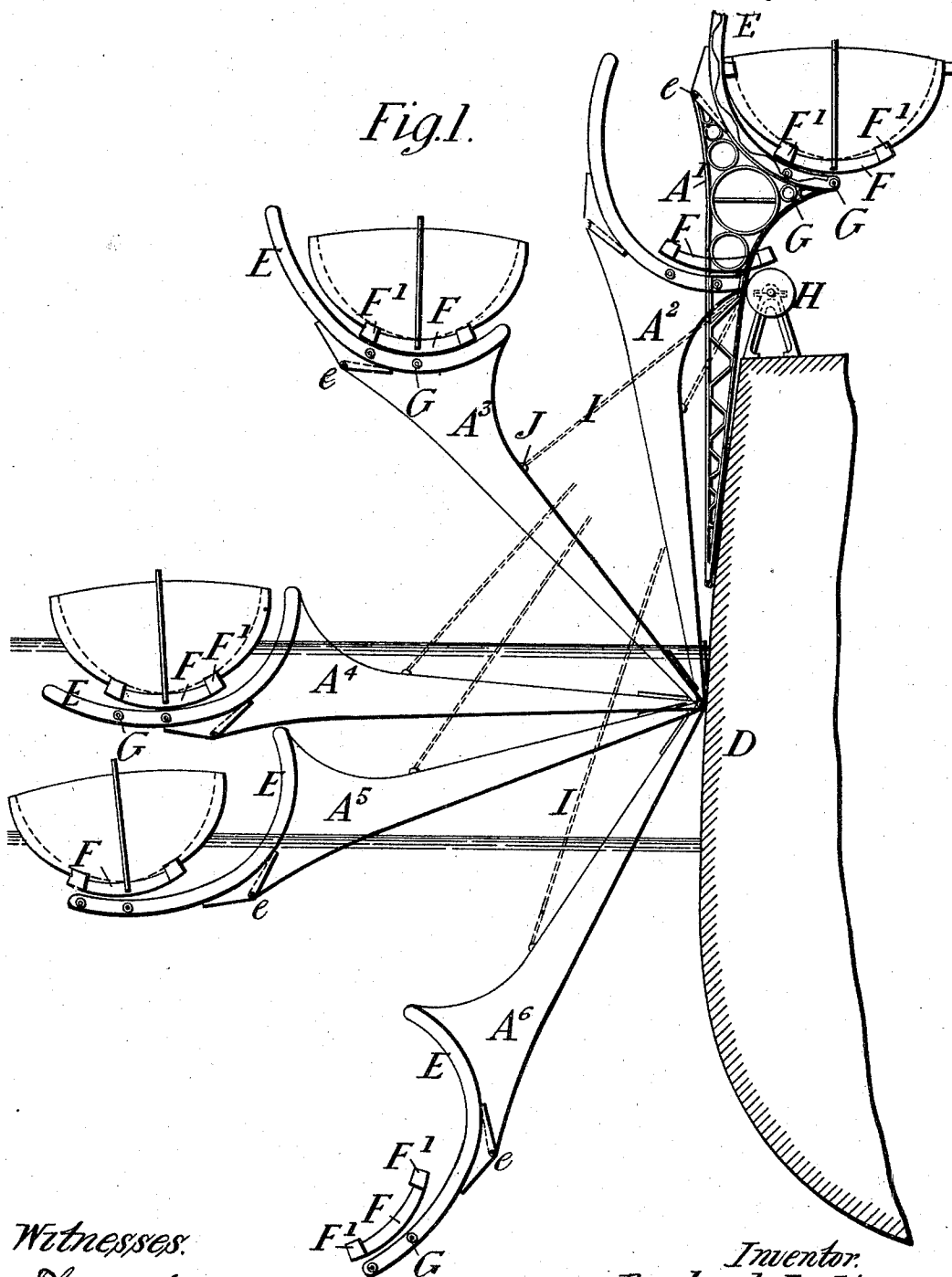
B. LESLIE.

APPARATUS FOR LOWERING OR RAISING SHIPS' BOATS.

No. 582,069.

Patented May 4, 1897.

Fig. 1.



Witnesses.

Thos. A. Sum

Robert Everett

Inventor.

Bradford Leslie.

By James L. Norris

Atty.

(No Model.)

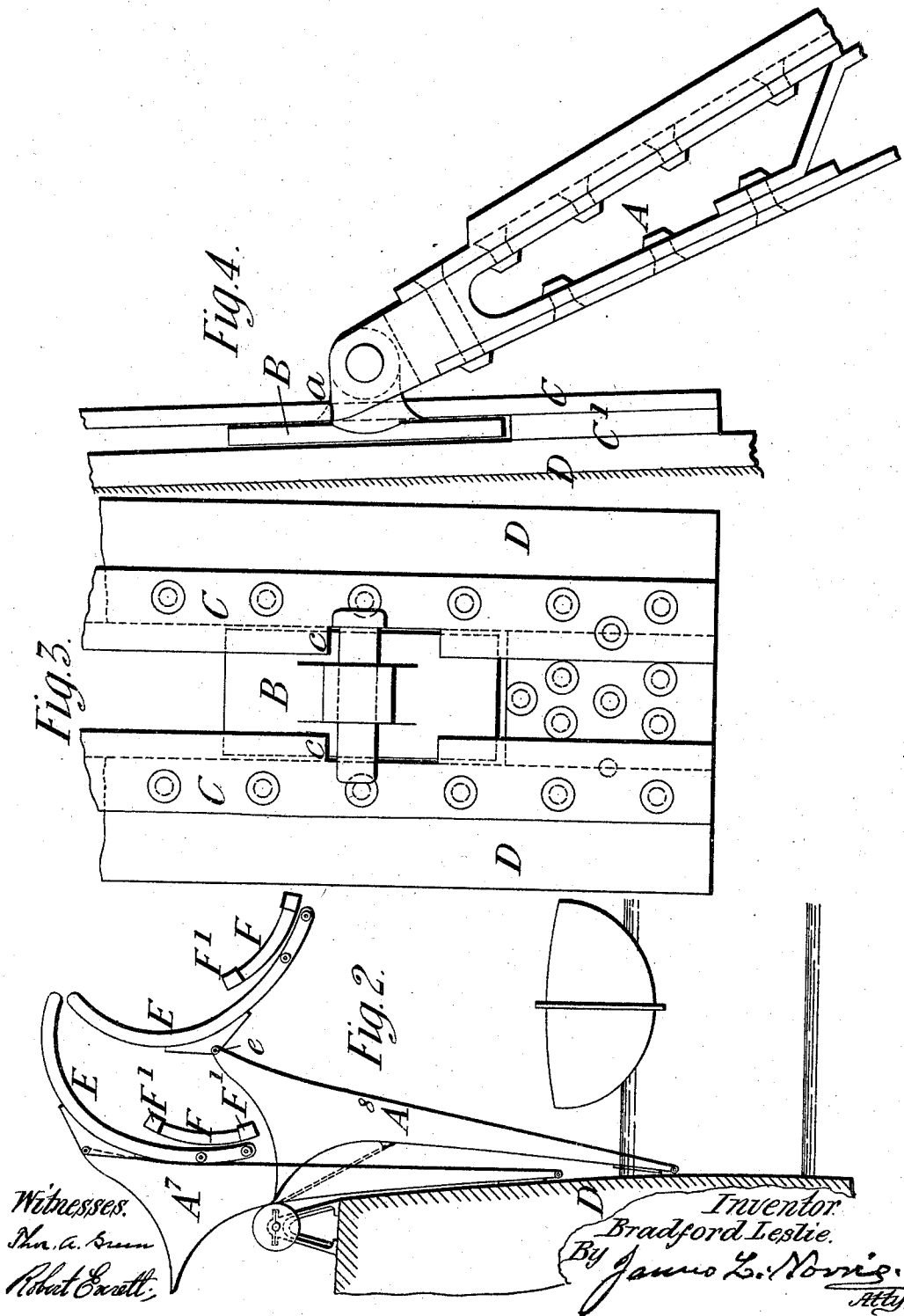
6 Sheets—Sheet 2.

B. LESLIE.

APPARATUS FOR LOWERING OR RAISING SHIPS' BOATS.

No. 582,069.

Patented May 4, 1897.

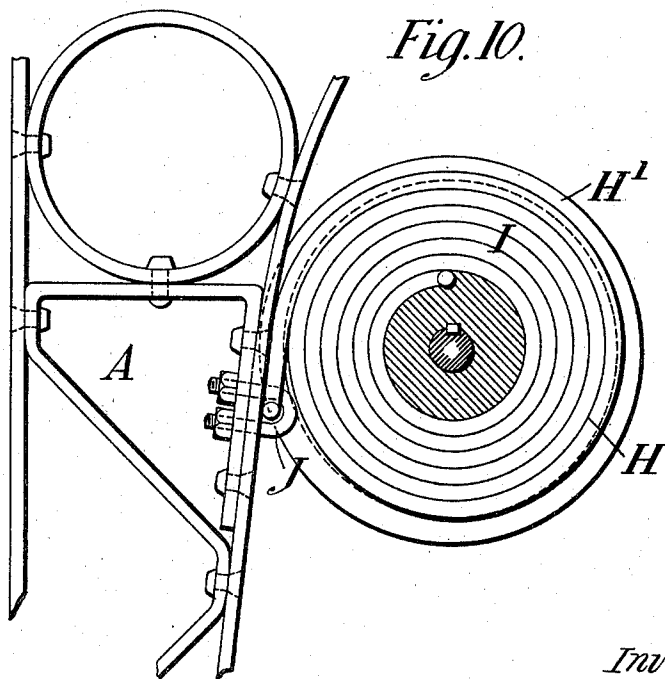
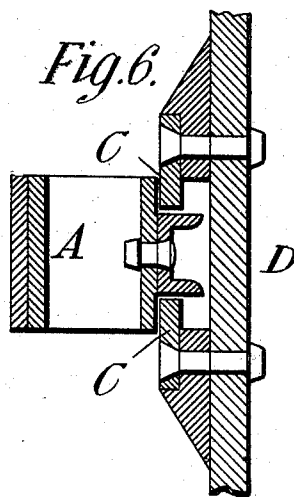
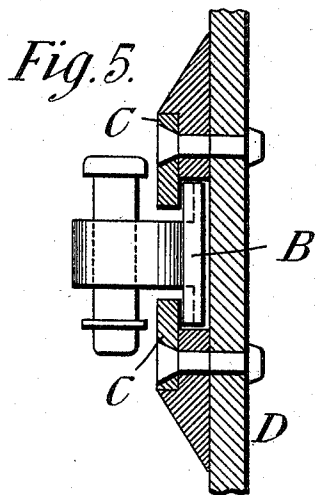


B. LESLIE.

APPARATUS FOR LOWERING OR RAISING SHIPS' BOATS.

No. 582,069.

Patented May 4, 1897.



Witnesses.

Thos. A. Green

Robert Everett

Inventor

Bradford Leslie.

By

James L. Norris

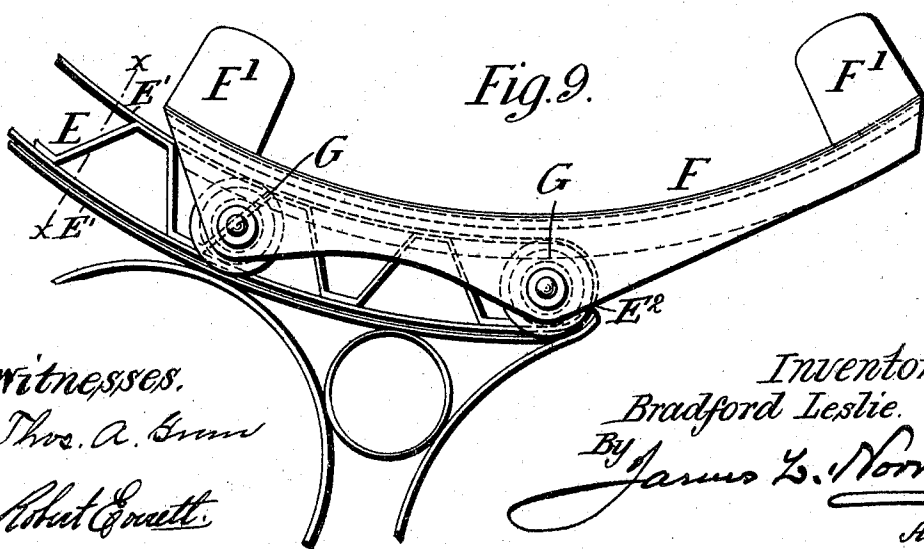
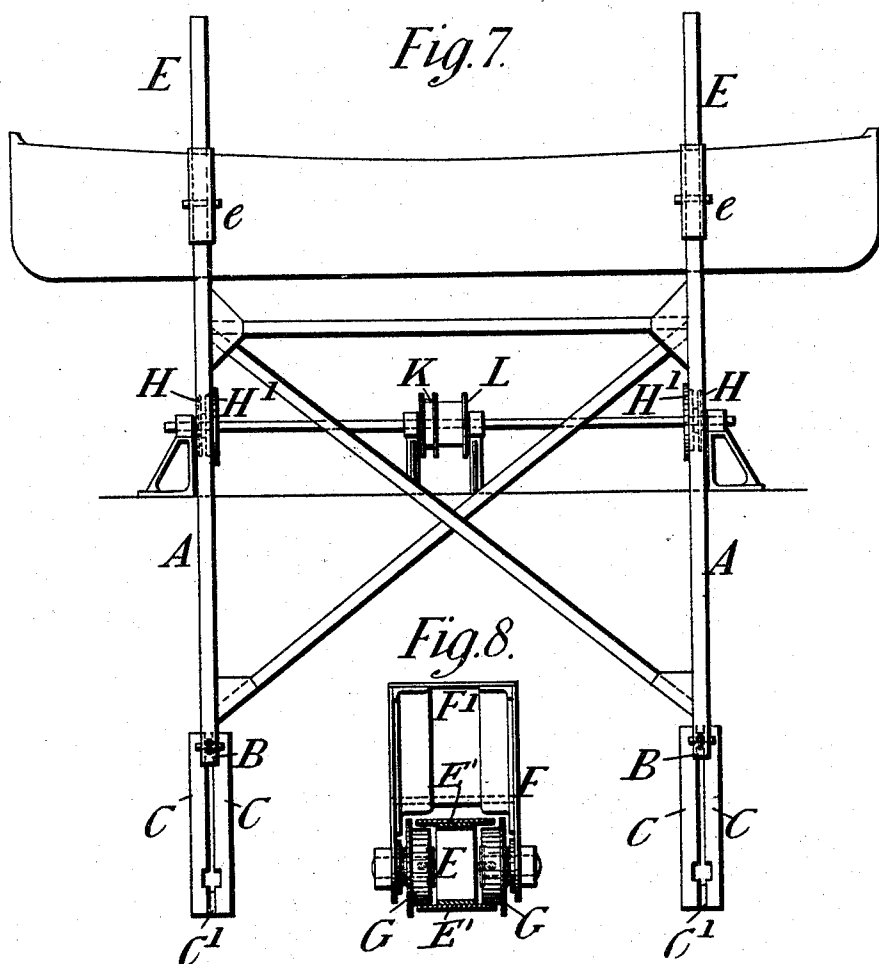
Atty.

B. LESLIE.

APPARATUS FOR LOWERING OR RAISING SHIPS' BOATS.

No. 582,069.

Patented May 4, 1897.



(No Model.)

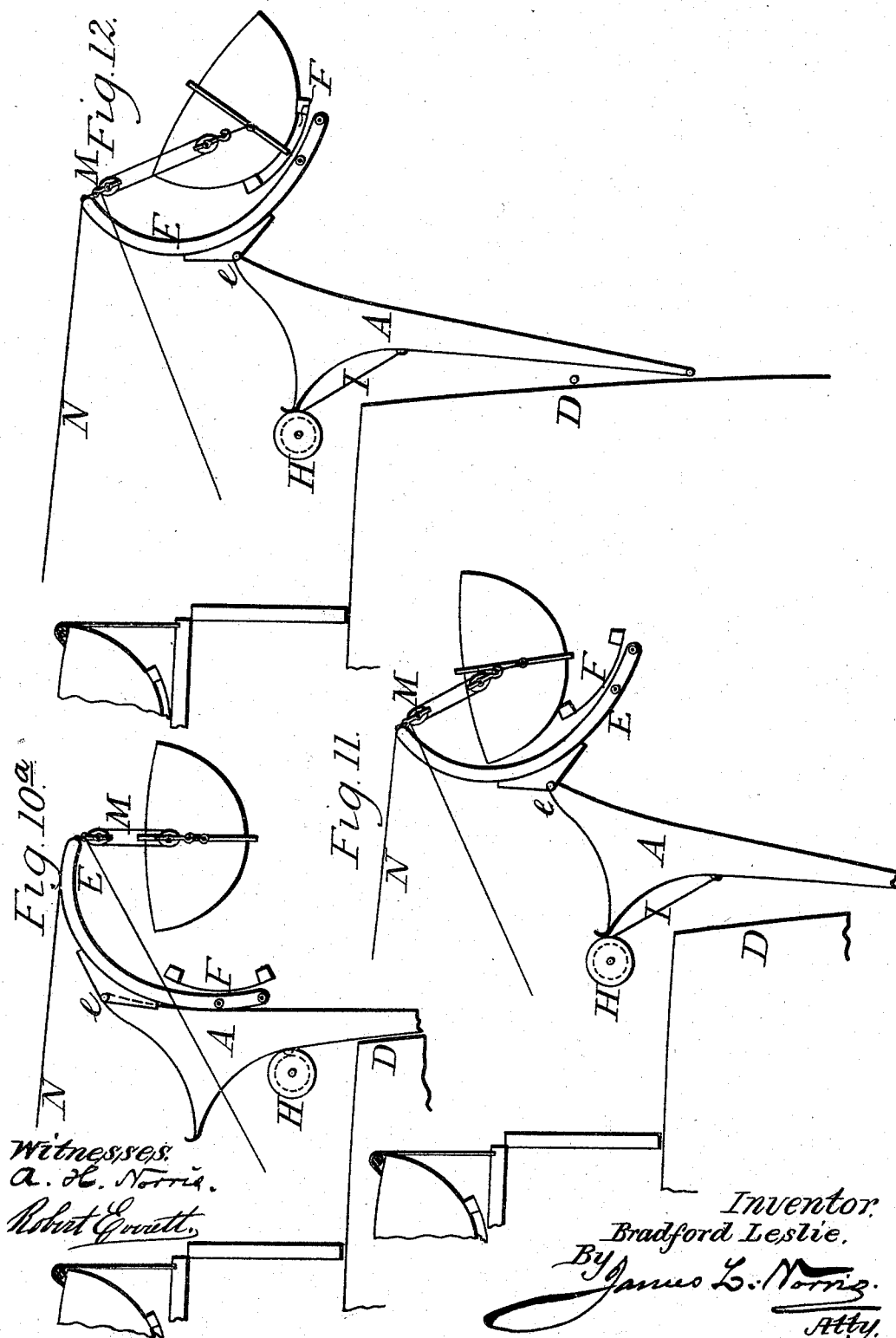
6 Sheets—Sheet 5.

B. LESLIE.

APPARATUS FOR LOWERING OR RAISING SHIPS' BOATS.

No. 582,069.

Patented May 4, 1897.

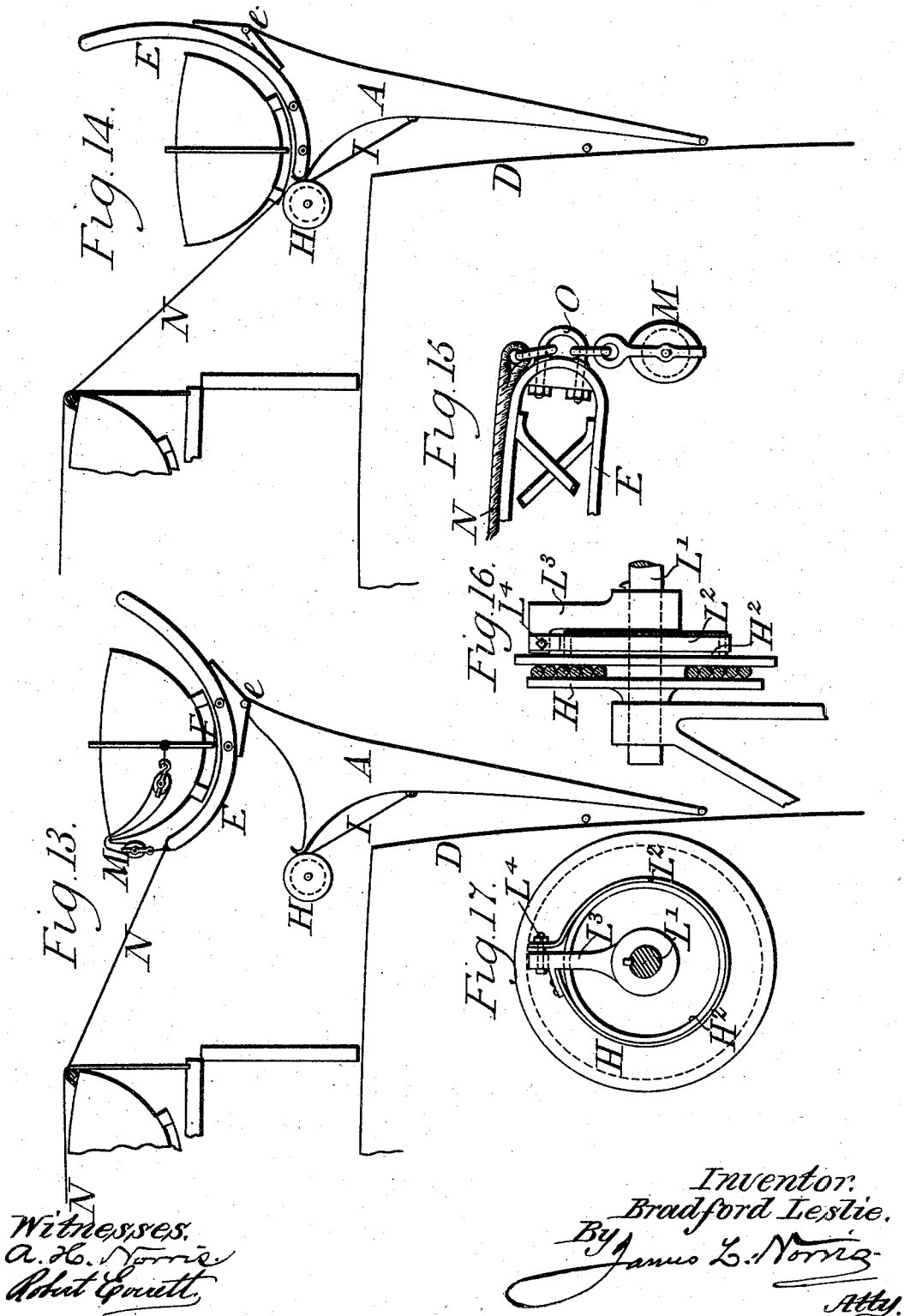


B. LESLIE.

APPARATUS FOR LOWERING OR RAISING SHIPS' BOATS.

No. 582,069.

Patented May 4, 1897.



UNITED STATES PATENT OFFICE,

BRADFORD LESLIE, OF FALMOUTH, ENGLAND.

APPARATUS FOR LOWERING OR RAISING SHIPS' BOATS.

SPECIFICATION forming part of Letters Patent No. 582,069, dated May 4, 1897.

Application filed September 29, 1896. Serial No. 607,347. (No model.)

To all whom it may concern:

Be it known that I, BRADFORD LESLIE, K. C. I. E., civil engineer, a citizen of England, residing at 6 Florence Terrace, Falmouth, in the county of Cornwall, England, have invented new and useful Apparatus for Lowering or Raising Ships' Boats, of which the following is a specification.

My invention relates to apparatus for lowering a ship's boat into the water and raising it therefrom, the whole operation of lowering or raising being performed by a rope or chain worked by any suitable power. For this purpose I provide on the ship's side a vertical guide in which can slide a block carrying a pivot for the lower end of a davit so shaped that part of it curves inward over the deck of the vessel. The upper part of the davit above this inwardly-curved part carries a curved cradle which forms a concave track for the rollers of a lorry. There are two of the davits, suitably braced together, the two lorries of which carry the boat above the deck, the davits being held in upright positions by the rope or chain. When it is desired to lower the boat, the rope or chain is slacked out, allowing the davits to descend, they being at the same time caused to turn outward upon the pivots at their lower ends by their inwardly-curved parts bearing against guide-rollers on deck. When their pivots reach stops at the lower ends of the vertical guides, the further slacking out of the rope or chain allows the davits to swing outward and downward on their pivots until they are immersed in the water. During this movement of the davits the lorries carrying the boat travel along their curved tracks always toward the lowest part of the tracks, the boat thus retaining its proper position for floating when it reaches the water. When the boat is floated away, the davits can again be drawn up by the rope or chain. When the boat has to be raised, the davits are lowered till the lorries are submerged. The boat is then floated to position over the lorries, and the davits are drawn upward and inward by hauling up the rope or chain, thus raising the boat to its position above the deck.

The accompanying drawings show the construction which I prefer to employ in carrying out my above-described invention.

Figure 1 shows a part cross-section of a ship with a side view of the davits connected

thereto and showing the various positions 55 which these are made to assume in the operation of raising or lowering a boat. Fig. 2 shows a similar view with the cradle of the davit in the inverted position for raising the boat in rough weather. Figs. 3, 4, 5, and 6 60 show, respectively, enlarged front view, side view, and cross-sections of part of the guide-bars and sliding blocks on the ship's side, by means of which the davits are enabled to slide up and down. Fig. 7 shows a front view 65 of the two davits with their guides when in the raised position supporting a boat. Fig. 8 shows a cross-section on the line *xx*, Fig. 9, showing the cradle and end view of the lorry; and Fig. 9, a part side view of one end of the 70 cradle with the lorry. Fig. 10 shows the section through the grooved pulley and hauling-rope and the attachment of the latter to the davit for raising and lowering this. Figs. 10^a, 11, 12, 13, 14, 15, 16, and 17 are detail views, 75 hereinafter explained, to clearly illustrate the mode of operation of the parts.

The lower end of the davit A is pivoted to a sliding block B, which can slide up and down between the guide-bars C, that are fixed 80 to the skin D of the ship. The davits A are preferably made of a strong but light triangular lattice-like structure, built up of flat bars, as shown at Figs. 1, 4, 6, 8, and 10. When in the fully-raised position A', Fig. 1, its outer 85 side is approximately vertical, while the curved inner side projects inward over the deck. At its upper outer angle it has pivoted to it the cradle E, preferably of open lattice-work of suitable curved form, which cradle, 90 when in the position shown at Figs. 1 and 9, rests with its lower part upon the correspondingly-curved upper surface of the davit and is secured in that position by suitable holding bolts or catches. On the cradle is mounted 95 the lorry F, having bolsters F', adapted to fit against the sides of the boat and running on wheels G, that fit with slight clearance between the top and bottom flanges of the cradle E, the ends of which are closed, as shown, 100 so that the lorry is always retained on the cradle. It is so formed as to project inward beyond the cradle when the davit is in the fully-raised position, as at A', Fig. 1, so that the boat carried thereby is almost completely in- 105 board. When in this position, the curved inner face of the davit bears against the deeply-grooved pulley H, around which the steel-wire

rope I is spirally coiled, the looped end thereof being secured to the looped bolt J, fixed on the inner face of the davit, as in Fig. 10, so that when the rope is coiled up it holds the davit securely in this position, the davit being further secured by a stay-rope from the upper end of the cradle, if necessary.

When it is desired to lower the boat, the pressure on the brake K of the hauling-drum L on the shaft carrying the two grooved pulleys H is relieved, so as to permit of the rotation of the shaft and pulleys, whereupon the weight of the davits, together with the boat, will cause them to descend, the lower end or heel of the davits, together with their blocks, sliding down the guides C until the block is arrested by the stop C', Fig. 4. During this motion the curved inner face of the davits in passing over the pulleys H will be pushed outward thereby, so that the davits will eventually occupy the position A², Fig. 1. The brake K may be of any known kind—such, for instance, as is used on an ordinary winch—for which reason further illustration of the brake is deemed unnecessary. On now continuing to release the ropes from the pulleys the davits will commence to turn outward on their pivoted connection, with the slides B occupying successively the positions indicated at A³ and A⁴ or A⁵, according to the height of the water-level. During this motion the lorries F, together with the boat, will by degrees roll along the curved surface of the cradle as the upper end of this gradually assumes the more or less horizontal position, so that when the davits have assumed the partially or wholly immersed position at A⁴ or A⁵ the boat will be free to float off the lorries. The davits are then lowered still farther, say to the position A⁶, so as to be quite clear of the boat, until this has moved away, when the davits are drawn upward again.

If passengers are to be lowered in the boat, they can be conveniently embarked when the davits and boat are in the position A², the boat being then sufficiently high above deck to prevent any indiscriminate rush.

Thus it will be seen that the lowering of the boat can be effected with ease and rapidity by the sole action of gravity, that it is deposited at a safe distance from the side of the ship, and that there are no hooks or tackle on the davits from which it has to be released.

The davits and cradles being open or trelis-like structures of flat bars they offer but little resistance in passing through the water, and consequently a boat may be safely lowered into the sea before the way is off the ship, and being about eight yards clear of the ship's side there is no danger of its drifting into the screw-race.

In calm weather the boat may be recovered by floating it over the lorries and heaving up the davits by the driving rope or chain.

When raising up the davits from the lowest position at A⁶, the heel thereof is prevented from sliding up the guides in consequence of

the very oblique direction of the pull on the rope by causing the heel when in this position to butt at *a*, Fig. 4, against shoulders *c*, formed by notching out the guide-bars C. When the davits have been raised to the position A⁴, Fig. 1, where there is no further tendency of the heel to ride up, the heel will have been turned so as to be free of the shoulders.

In rough weather there might be danger of damaging the boat while bringing her over the lorries on the immersed davits. In such cases the davits are kept in the raised or partially raised position, and the cradles E are turned on their pivots *e* into the reversed position, as shown at A⁷, Fig. 2. To the upper ends of the cradles E are attached, first, a block-tackle M and a hauling-rope N, as shown at Fig. 10^a, the attachments being made to a staple O on the cradle, as shown in the enlarged detail at Fig. 15. By means of the block-tackle M the boat is then raised as with ordinary davits into the position shown at Fig. 10^a. The davit A is then lowered into the position shown at Fig. 11, and a pull being exerted on the hauling-rope N the cradle E is canted over into the position shown in that figure, after which the tackle M is slacked out somewhat, as shown at Fig. 12, so as to allow the boat to sink onto the lorry F. The cradle E is then pulled over still farther on its pivot *e* by the rope N, the lorry, with the boat, at the same time rolling inward, as at Fig. 13, from which position it is then lowered into the position at Fig. 14 by slacking out the rope N again. Lastly, the davits A are raised up to the position Fig. 1 by winding up the rope I, and the looped bolt O, Fig. 15, is removed from the cradle E, so as to detach the block-tackle and hauling-rope.

The inner ends of the steel ropes I are secured to the pulleys H, and they are made of such a length that when the davits are lowered to their lowest position A⁶, Fig. 1, a complete turn will still remain on the pulleys.

One of the pulleys H is keyed on its shaft, but in order to provide means for adjusting the ropes so that the strain on both shall be equal the second pulley is fitted loose on the shaft and is secured thereto by a friction-clutch such as illustrated by Figs. 16 and 17, which show, respectively, a side and front view of the clutch. The pulley H is loose on the shaft L', and as a cylindrical lateral projection H², around which is fitted a brake-strap L², one end of which is fixed to an arm L³, keyed on the shaft L', while the other end is held by a screw-bolt L⁴, passing through the arm, so that on loosening or slacking this bolt the pulley H can be turned on the shaft, while on tightening the screw the strap L² secures the pulley H to the arm L³.

The davits are suitably braced together, as shown in Fig. 7, and the pulleys H are provided with outside flanges H' to prevent lateral motion of the davits.

The above-described construction of davits

also has the advantage that when it is employed for lowering boats of large dimensions, such as heavy steam-launches, these may be carried by three such davits instead of only two, whereas with ordinary davits boats can only be suspended from two points near the extremities.

It will be obvious that this construction of davits may also be employed for lowering submarine Whitehead and other torpedoes.

Although I prefer to pivot the davits to vertically-sliding blocks, as described, as this enables them to be brought into the requisite low position for floating off the boat without making them of excessive length, yet it is obvious that they might also be constructed to work on pivots fixed to the ship's side.

Having thus described the nature of my said invention and the best means I know for carrying the same into practical effect, what I claim is—

1. Apparatus for lowering and raising ships' boats, consisting of arms or davits, extending some distance down the ship's side, where they are attached to pivots, the upper ends of the davits being provided with curved cradles on which run wheeled lorries that carry the boat, so that on lowering the davits on their pivots by suitable rope or chain gear they turn on their pivots from a vertical to a horizontal or lower position, while at the same time the lorries, with the boat, roll on the curved cradles in such manner as always to maintain the boat in its horizontal position and thus enable it to float off the lorries when the davits are lowered below water-level substantially as described.

2. In apparatus for lowering and raising ships' boats, the combination of arms or davits extending down the ship's side and pivoted to vertically-sliding blocks, curved cradles connected to the upper ends of said davits and lorries that carry a boat, arranged to run upon said cradles, substantially as described.

3. In apparatus for lowering and raising

ships' boats the combination of arms or davits extending down the ship's side and pivoted to vertically-sliding blocks and having inwardly-curved inner faces bearing against rollers, by means of ropes on which the davits are raised and lowered, so that as they are lowered they are pushed outward by the rollers, curved cradles connected to the upper ends of said davits and lorries adapted to carry a boat running upon said cradles, substantially as described.

4. In apparatus for lowering and raising ships' boats the combination of arms or davits extending down the ship's side and pivoted to vertically-sliding blocks, curved cradles pivoted to the upper ends of said davits so that when in one position they can carry a boat upon a lorry running on their concave surface, while when turned over on their pivots so as to lie against the outer face of the davits their curved lower end constitutes the overhanging upper end of the davit, from which raising and lowering tackle is suspended, substantially as described.

5. In apparatus for lowering and raising ships' boats the combination of arms or davits A extending down the ship's side and pivoted to vertically-sliding blocks B, curved cradles E pivoted at *e* to the upper ends of the davits and having laterally-projecting top and bottom flanges E' formed into closed loops E² at the ends, and lorries F having wheels G that are confined between the said lateral flanges E' of the cradles so that the lorries always remain attached to the cradles in whatever position they may be placed, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 2d day of September, A. D. 1896.

BRADFORD LESLIE.

Witnesses:

CHAS. D. ABEL,

JNO. P. M. MILLARD.