(No Model.) 2 Sheets—Sheet 1.

G. PEIRCE.

APPARATUS FOR HOISTING AND LOWERING SHIPS' BOATS.

No. 425,955. Patented Apr. 15, 1890.

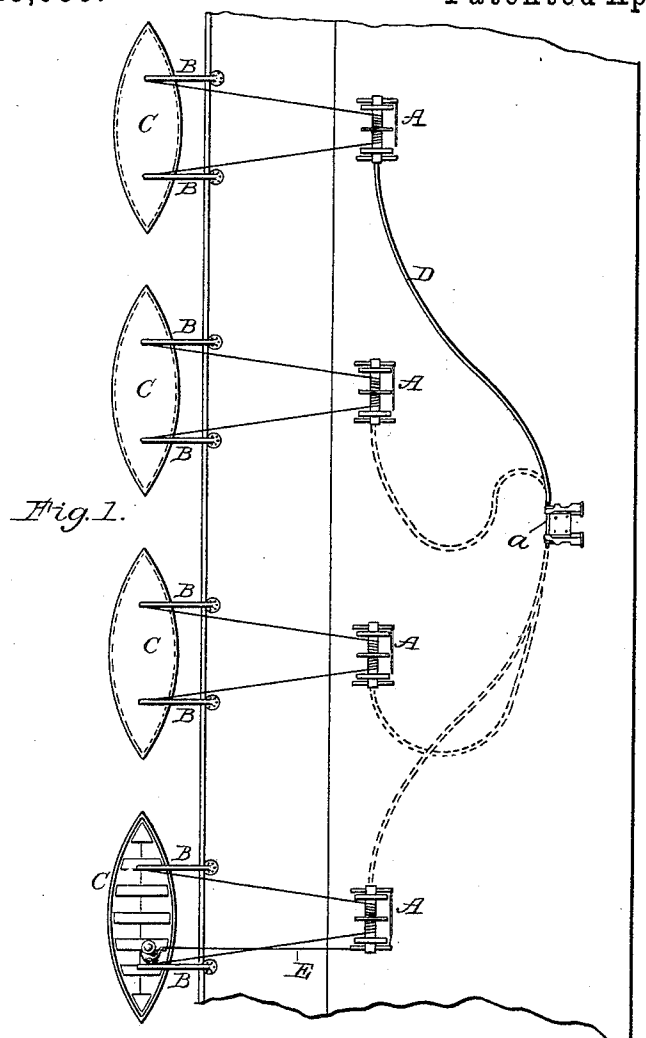


Fig. 1.

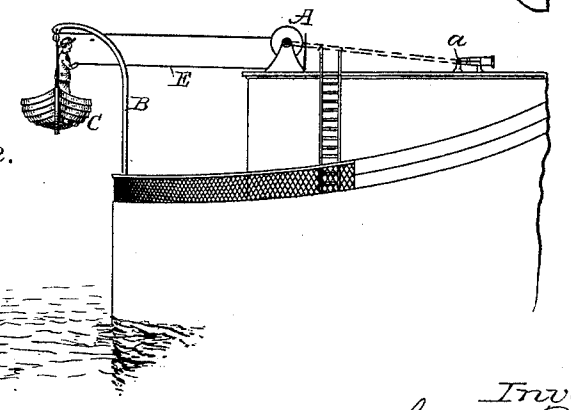


Fig. 2.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

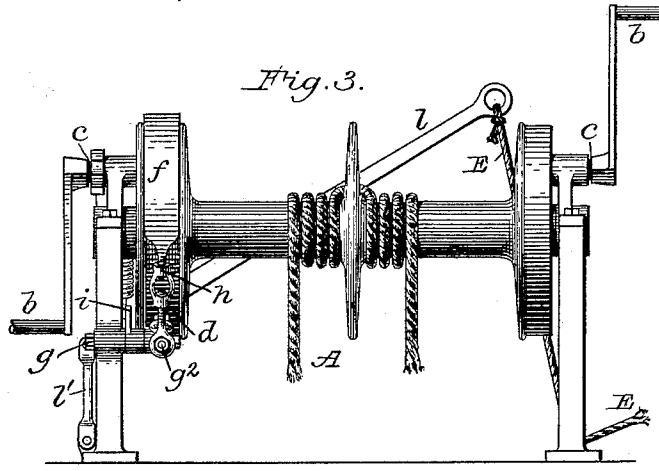
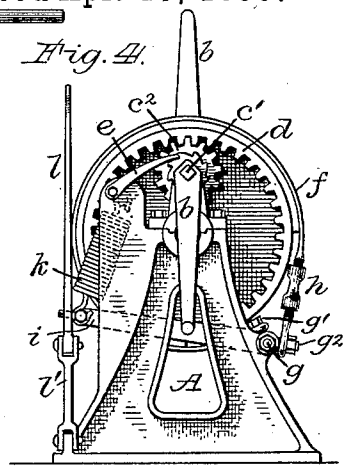


Fig. 4.



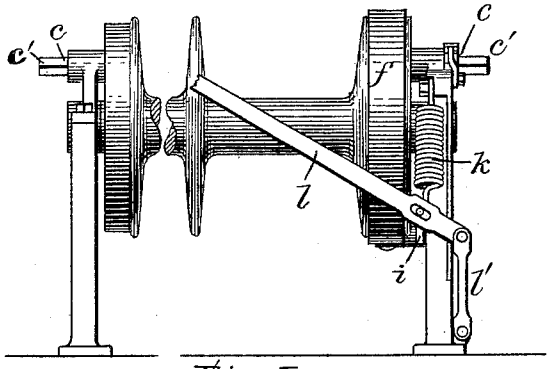


Fig. 5.

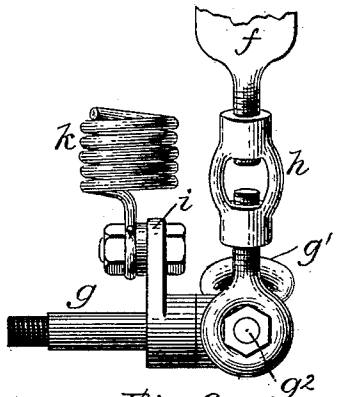


Fig. 6.

Fig. 7.

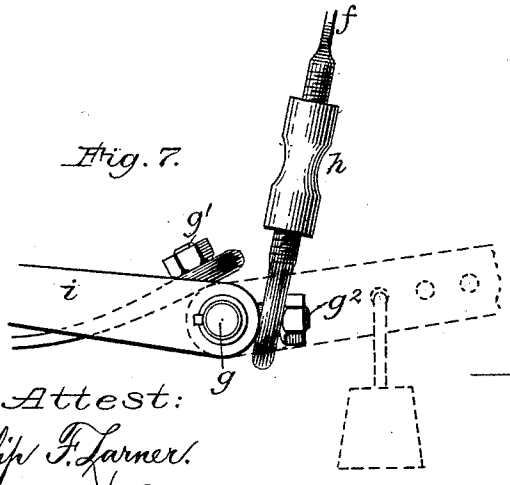
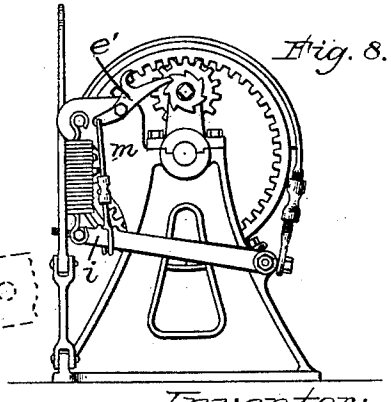


Fig. 8.



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UNITED STATES PATENT OFFICE.

GEORGE PEIRCE, OF NEWPORT, ASSIGNOR TO THE AMERICAN SHIP WINDLASS COMPANY, OF PROVIDENCE, RHODE ISLAND.

APPARATUS FOR HOISTING AND LOWERING SHIPS' BOATS.

SPECIFICATION forming part of Letters Patent No. 425,955, dated April 15, 1890.

Application filed October 4, 1889. Serial No. 326,013. (No model.)

To all whom it may concern:

Be it known that I, GEORGE PEIRCE, of the city and county of Newport, and State of Rhode Island, have invented certain new and useful Improvements in Apparatus for Hoisting and Lowering Ships' Boats; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a clear, true, and complete description of my invention.

On large vessels carrying many boats the several hoisting-winches have heretofore in some cases been operated by steam-power applied through a long driving-shaft common to all of the winches and directly but detachably geared thereto. Although involving no special objections when all of the boats are to be hoisted at once, it is obvious that this organization involves the operation of the entire line of shafting when but one boat is to be hoisted, and special care must first be taken to observe that each idle-winch is ungeared from the shaft. I have now, as I believe for the first time, organized a main driving-shaft and a series of boat-winches with one or more detachable sections of flexible shafting, provided with suitable means at their ends for coupling said driving-shaft with any one of the several boat-winches. Said main driving-shaft may be mounted in suitable bearings on an upper deck and driven by chains or other gearing from a more or less remote motor, or it may be immediately geared to or be the crank-shaft of a suitable steam-engine; or if an electric motor be used proper reducing-gearing is of course to be employed. In all cases said main driving-shaft is so located with respect of the several winches in a group that any one of the winches may be coupled thereto, whether the boats be located in line at one or at both sides of an upper deck.

Another portion of my invention enables a person within a suspended boat to completely control the lowering operation, not only as to the matter of starting and stopping, but also as to speed in lowering, and although this general mode of operation has been involved in certain prior apparatus I have devised certain improvements in the mechanism which possess much practical value.

After describing my said improvements, in connection with the drawings, the features believed to be novel will be specified in the several clauses of claims hereunto annexed.

Referring to the drawings, Figure 1 illustrates in plan view a portion of a ship with a set of davits and boats, and a motor with a driving-shaft and flexible connecting-shaft, all organized in accordance with my invention. Fig. 2 is a partial end view of a vessel with the apparatus as in Fig. 1. Figs. 3 and 4, respectively, illustrate in front, side, and end view one of the boat-winches on an enlarged scale. Fig. 5 is a rear view of the winch with a portion thereof broken away for reducing the length of the figure. Figs. 6 and 7 illustrate details of a band-brake and its operating mechanism, as devised by me, for use on the boat-winches. Fig. 8 illustrates means for confining the band-brake with the pawl, which must be released from its ratchet prior to lowering a boat.

Referring to Figs. 1 and 2, it is to be understood that the several boat-winches A and the davits B, on which the boats C are suspended, may be indefinitely varied as to their construction, provided each winch has a suitable operating-shaft to which a flexible driving-shaft D may be readily applied and disconnected, and, as a rule, square socket and tenon couplings with mere retaining pins or latches will best serve my purposes. The arrangement of the winches on the vessel may be widely varied; but as a rule they are located in fore-and-aft lines on one or both sides of an upper deck, and for my purposes they are essentially so distanced from a main driving-shaft *a* that a length of flexible shafting D may be applied to one or either end of said driving-shaft and coupled with any one of the several winches A. The driving-shaft *a* is located above the upper or house deck of the ship, and it is wholly immaterial to my invention in what manner power may be applied thereto; but, as here shown, said driving-shaft is indicated as the crank-shaft of a double-cylinder donkey steam-engine. (Here shown in a conventional form.) In some in-

stances an electric motor would be desirable, involving between it and said driving-shaft proper gearing for reducing speed in a manner well known to be requisite with such rapidly-operated motors. With the organization thus illustrated it will be seen that, if desired, both ends of the driving-shaft *a* may be simultaneously coupled to any two of the winches for hoisting boats, and that this can be equally well done in connection with another parallel row of winches oppositely arranged at the other side of the ship. (Not shown.) In most cases, however, a single length of flexible shafting D will only be needed, and this may be readily employed for operating either one of the several winches. While this portion of my invention has its greatest value on large ships and in connection with a set of many boats, it will have substantial value upon yachts and other light vessels upon which steam-power and electric motors are employed, even for operating winches for one or two boats, inasmuch as the flexible shafting when not in use can be readily put out of the way, leaving the deck wholly unobstructed, and enable the hoisting-motor or the driving-shaft to be employed for other ship's duty, as in hoisting sails or operating rotary pumps, to which the same flexible shafts may be readily applied.

The lowering of a boat is of course wholly independent of the hoisting mechanism, and it is placed fully within the control of a person within a suspended boat by means of a hand-line E, by which the braking mechanism is controlled.

Referring now to Figs. 3 to 7, inclusive, I will describe a winch as improved by me; but it is to be understood that such winches may be operated by hand as well as by steam power, a hand-crank *b* being here shown as applied to the operating-shaft *c* of the winch, the outer end *c'* of the latter being square in cross-section and well adapted to receive one of the square mortised or socketed couplings carried by a flexible shaft. Said operating-shaft *c* carries a pinion c^2, which engages with an internal gear, which is integral with a part of the winch-head, the periphery of which serves as a friction-drum *d*, and the barrel of the winch is divided by a central disk or plate, to afford separate spaces, on which the boat-falls may be evenly wound, all substantially as heretofore, a pawl *e* being employed with a ratchet for controlling the backward rotation of the barrel, and which must be released from the ratchet to permit the barrel to run freely on its axis when lowering a boat. The drum *d* is engaged by a friction-band *f*, which is coupled at its two ends to a rock-shaft *g*, having two arms g' g^2 radiating therefrom at different angles, and a turn-buckle *h* at one end of the band provides for tensional adjustment of the band. This rock-shaft *g* is mounted in suitable bearings in the frame of the winch, and to the outer end of said rock-shaft a lever *i* is secured, so that by lifting the outer end of said lever braking-tension is applied to both ends of the brake-band *f*, and by lowering said outer end the brake is released. This brake is maintained in a normally-set condition by a retractile spiral spring *k*, secured at its upper end to the frame of the winch and at its lower end to the outer end of said lever. It will be seen that the band may be adjusted with great nicety, and that the leverage applied to the band is specially favorable to prompt and effective results with but little movement of the lever *i* for changing a full-braked condition to a complete release or in promptly resuming the braked condition. At the rear of the winch there is a line-lever *l* fulcrumed upon a link *l'*, which is pivoted on the winch-frame at the bottom and arranged to engage with the outer end of the band-brake lever *i* by means of a pin-and-slot connection clearly shown. The boat-lowering line E, hereinbefore referred to, is attached to the outer end of the line-lever, extends downward through a suitable eye or block at the foot of the winch-frame, and thence to a boat.

It is obvious that if the arm of lever *i* were projected in the opposite direction from that shown, as indicated in dotted lines at Fig. 7, the depression of its outer end would set the brake, and that in that case a mere weight would perform the function of the spring, and also that if the latter were used it should pull downwardly instead of being arranged to lift, and, further, that the rock-shaft, with its arms g g', is in substance a part of said lever, and that the interposition of the line-lever *l* is merely for securing a desirable arrangement of the boat-line E. This organization of the brake-band, with its controlling-lever and its line-lever, all as illustrated, is highly effective, and is well adapted to meet the varied conditions incident to ship's boat service.

It will be observed that the brake is normally in its set condition, and while that matters but little if a motor be employed for hoisting it is generally desirable that the brake be free if a hand-crank is to be used on the winch. The spring can, if desired, be readily uncoupled at either end, or it may remain coupled, and the pawl *e* can be so organized with a pendent leg or link as to release the lever *i* more or less from the power of the spring, except when the pawl has been thrown backwardly preparatory to lowering—as, for instance, as shown in Fig. 8, wherein the pawl *e'* is in the form of a lever, one end serving as the pawl-finger and the other as a support for a thrust-rod or pendent link *m*, forked at its lower end and straddling the lever *i* at a predetermined point thereon and stepped between lugs or in a recess. When the winch is operating, as in hoisting, the lever *i* is slightly depressed and its spring weakened, the pawl then operating as a spring-pawl. The pawl has a thumb piece or handle on its upper side near its finger end, by which it may be readily lifted and thrown rearward,

away from its ratchet, thus shifting the position of the pendent rod *m* and leaving the spring free to act and to set the brake.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with a ship's davits and boat-falls, of a hoisting-winch, a main driving-shaft, and a flexible shaft detachably coupled to said driving-shaft and to the operating-shaft of the winch, substantially as described.

2. The combination, with a series of ships' davits and boat-falls, of a series of boat-hoisting winches, a main driving-shaft, and a flexible shaft coupled to said driving-shaft, and adapted to be detachably coupled to the operating-shaft of any one of said winches, substantially as described.

3. In a boat-lowering winch, the combination of a friction-drum, a friction brake-band having both of its ends connected with and normally maintained under full braking tension by a single lever, and a boat-line accessible in a suspended boat for actuating said lever and promptly releasing or setting the brake, substantially as described.

4. In a boat-lowering winch, the combination of a friction-drum and its band, a lever coupled to and straining upon both ends of said band, a spring engaging with said lever for actuating the brake, and a boat-line accessible in a suspended boat for actuating said lever and controlling the spring in releasing or setting the brake, substantially as described.

GEORGE PEIRCE.

Witnesses:
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WILLIAM H. SULLIVAN.