March 9, 1926. 1,575,808

S. E. AARON

BOAT HANDLING APPARATUS

Original Filed Oct. 7, 1920 5 Sheets-Sheet 1

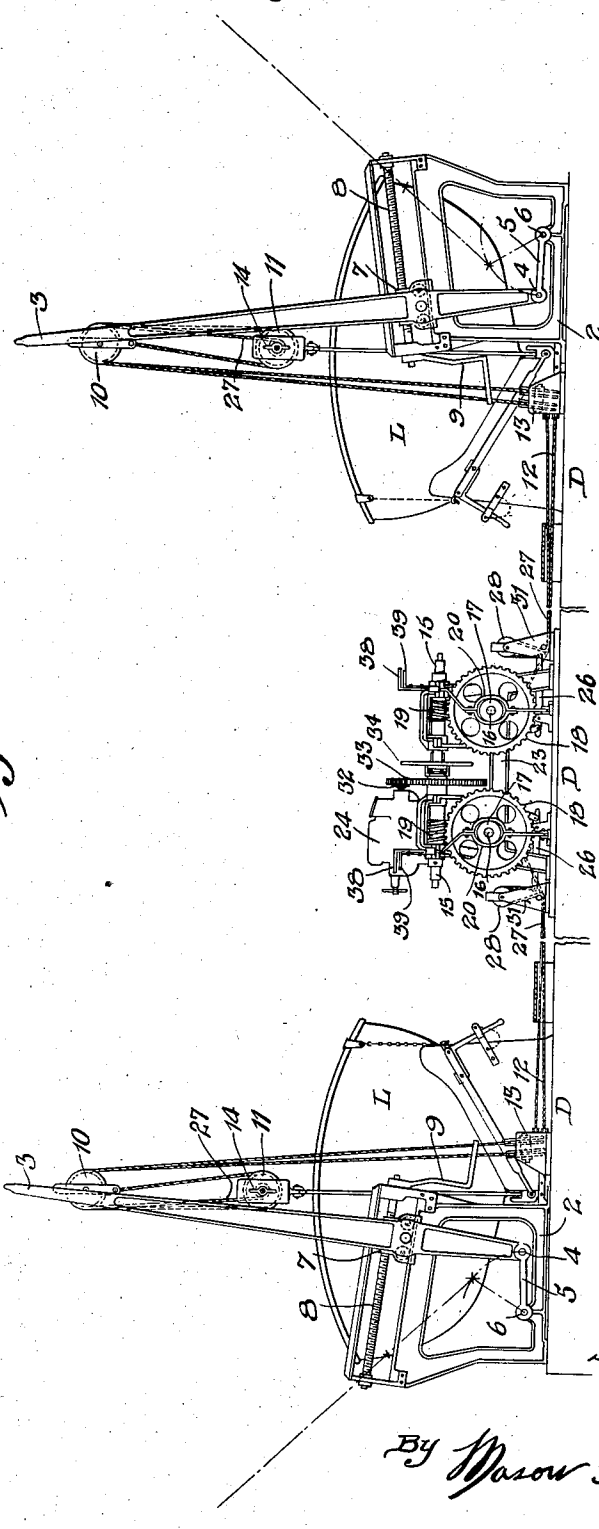


Fig. 1.

Inventor
Solomon E. Aaron

By Mason Fenwick & Lawrence,
Attorneys

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Fig. 2.

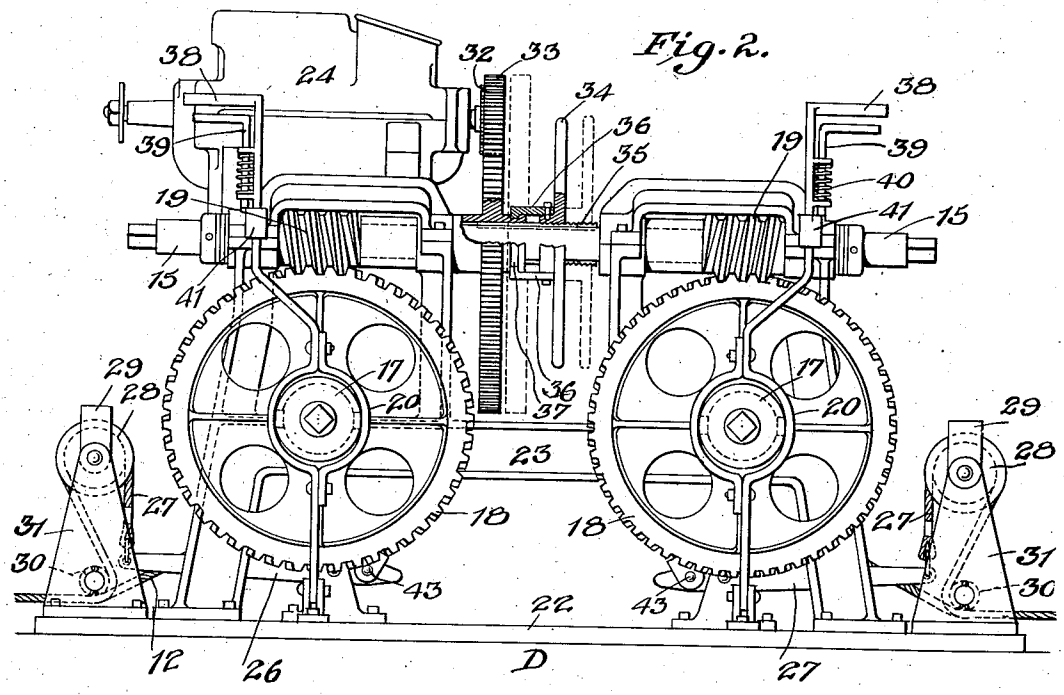
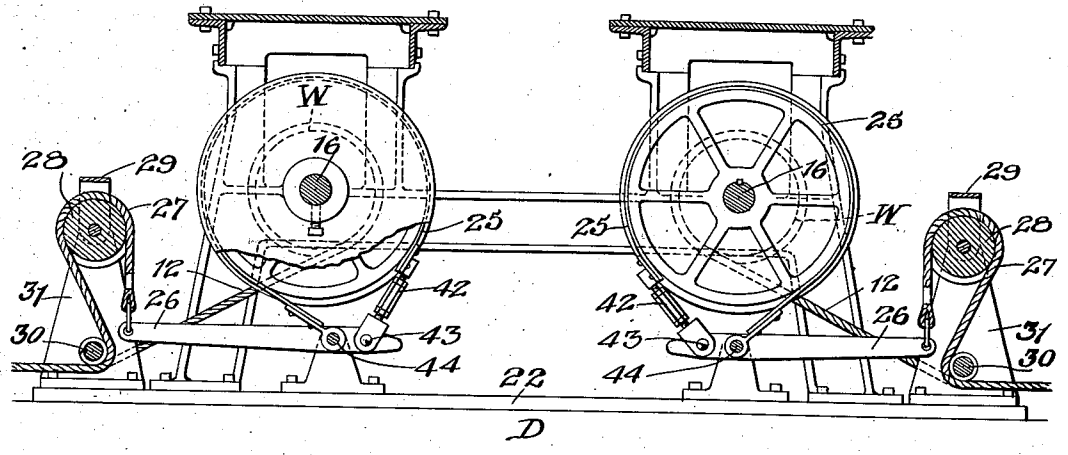


Fig. 3.



Inventor

Solomon E. Aaron

By Mason Fenwick & Lawrence,

Attorneys

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Fig. 4.

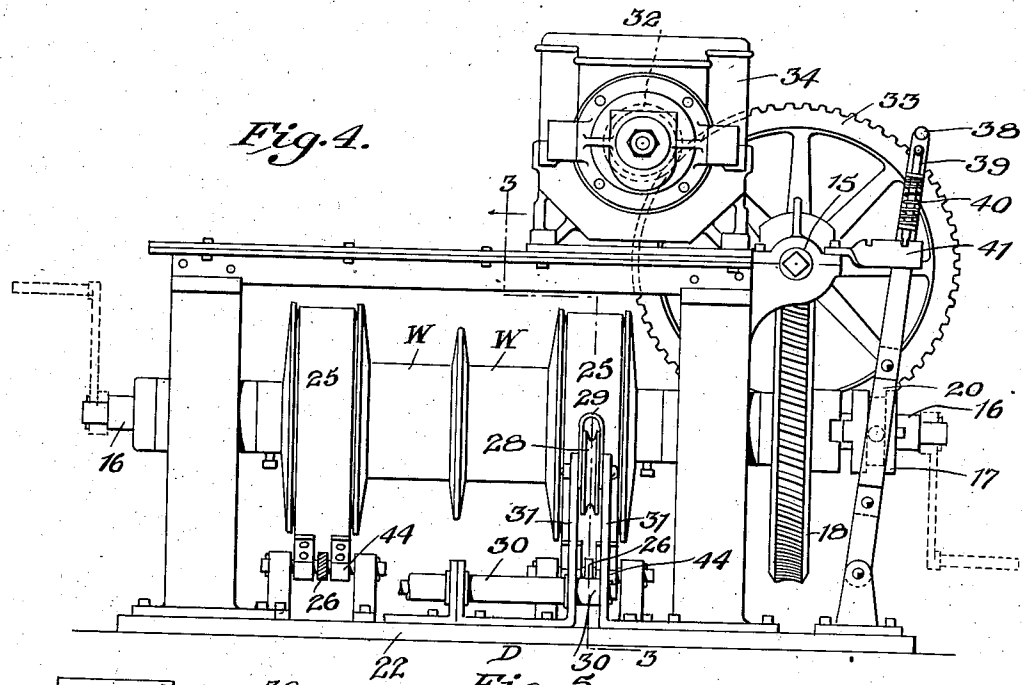
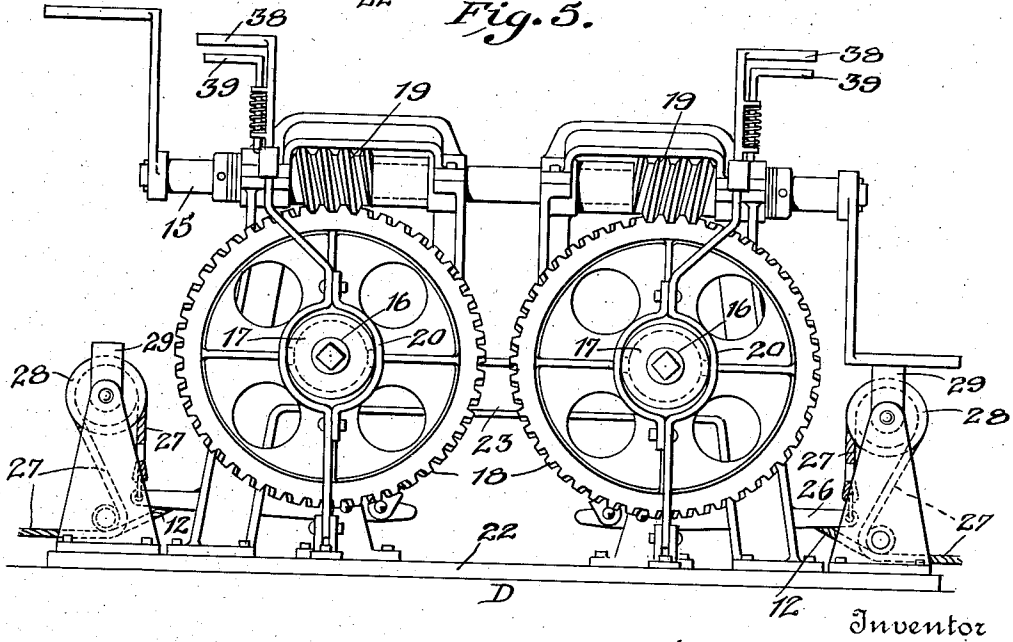


Fig. 5.



Inventor

Solomon E. Aaron

By Mason Fenwick & Lawrence,

Attorneys

March 9, 1926. 1,575,808

S. E. AARON

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Fig. 6.

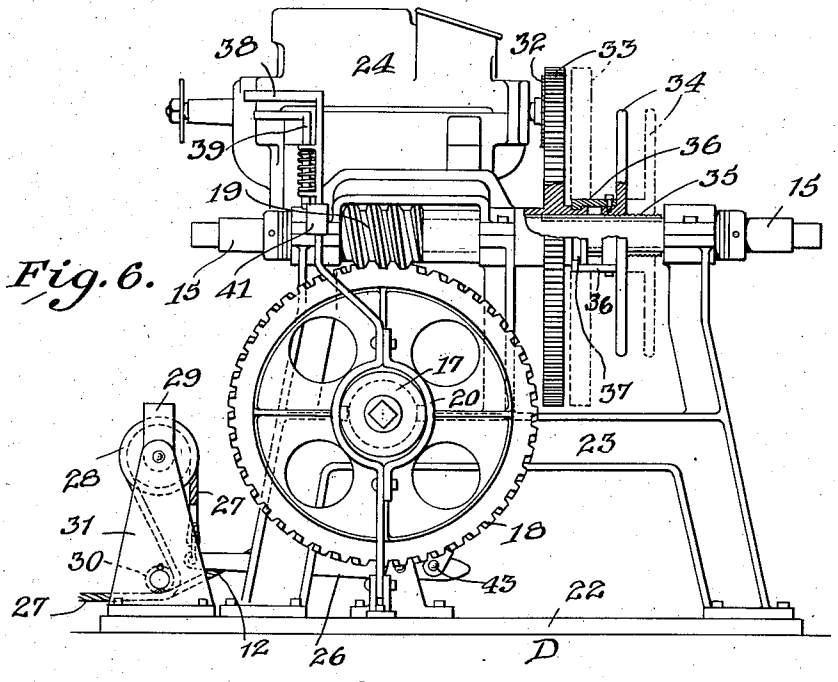
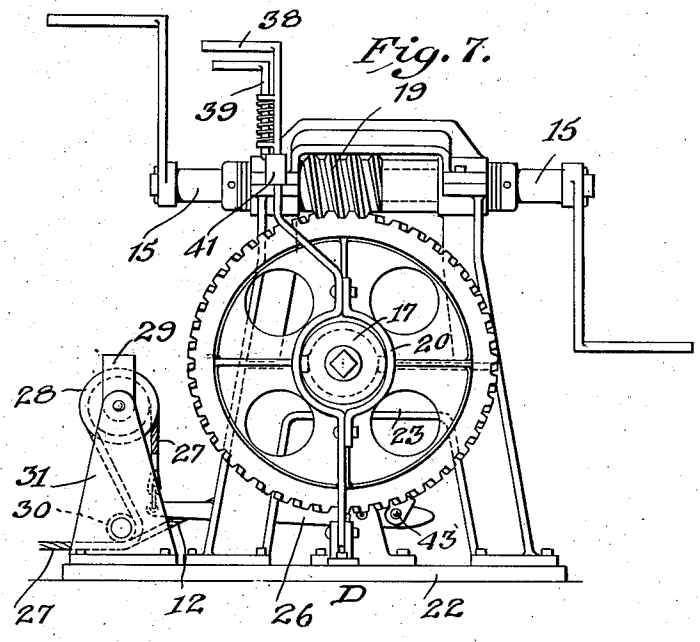


Fig. 7.



Inventor

Solomon E. Aaron

By Wason Fenwick & Lawrence,

Attorneys

March 9, 1926. 1,575,808

S. E. AARON

BOAT HANDLING APPARATUS

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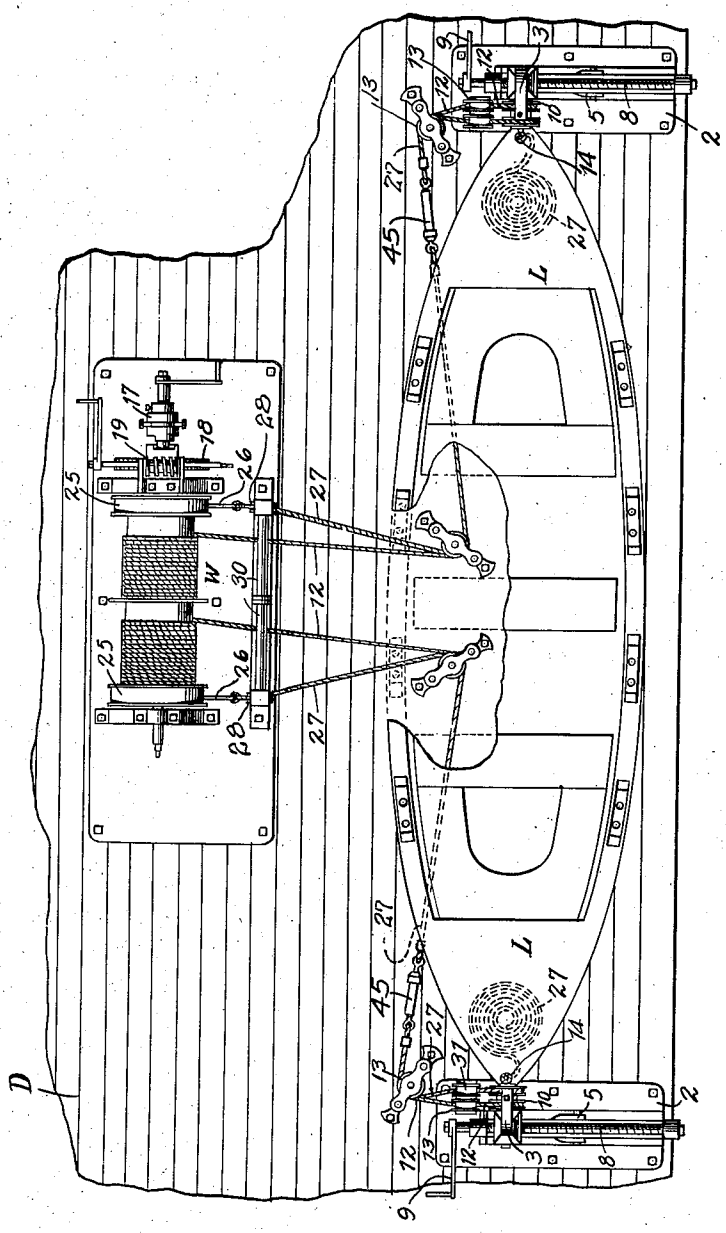


Fig. 8.

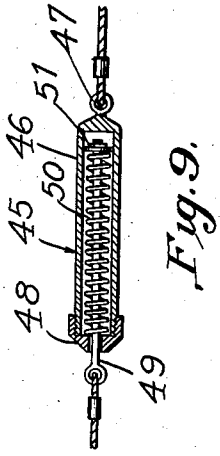


Fig. 9.

Inventor

Solomon E. Aaron.

By Mason Fenwick & Lawrence,

Attorneys.

Patented Mar. 9, 1926.

1,575,808

UNITED STATES PATENT OFFICE.

SOLOMON EDWARD AARON, OF BOSTON, MASSACHUSETTS.

BOAT-HANDLING APPARATUS.

Continuation of application Serial No. 415,406, filed October 7, 1920. This application filed December 16, 1921. Serial No. 522,800½.

To all whom it may concern:

Be it known that I, SOLOMON E. AARON, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Boat-Handling Apparatus; 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.

This invention relates to devices for handling lifeboats on shipboard.

The object of the invention is to provide a simple, efficient, economical device by means of which one or more lifeboats may be handled on one or both sides of a vessel by a common winch engine operated either by power or hand and by means of which the lifeboats may be raised or lowered with safety and despatch, being at all times under control from the deck of the vessel and from the boats themselves.

Further more particular objects will appear and be more particularly described in connection with the specification of the structure hereinafter disclosed.

This application is a continuation of my application, Serial No. 415,406, filed Oct. 7, 1920.

The invention consists in the novel structures, arrangements and combinations of parts hereinafter more particularly described and claimed.

Five sheets of drawings accompany this specification as part thereof in which like reference characters denote like parts throughout.

In the drawings:

Figure 1 represents a transverse section of a lifeboat deck of a vessel showing lifeboats in davits on both sides of the vessel and the falls operating engine located amidship;

Figure 2 is an end view of a power driven winch operating engine;

Figure 3 is a sectional view taken from the line 3—3 of Figure 4;

Figure 4 is a side elevation of a motor operated winch engine;

Figure 5 is an end elevation of a hand operated double winch engine;

Figure 6 is an end elevation of a motor driven single winch engine showing certain novel features of the clutch arrangement;

Figure 7 is an end elevation of a hand operated single winch engine;

Figure 8 is a fragmentary plan view of a part of a vessel's deck showing a lifeboat in the davits and the disposition of the falls and the brake control ropes with reference to the single winch hand operated engine;

Figure 9 is a detail view of the spring element in the brake operating rope.

Referring to the drawings, the present invention is applicable to lifeboats supported in any suitable type of davits, those illustrated here comprising frames 2 mounted on deck D, davit arms 3 pivoted to links 5 at 4, the links being pivoted to the frame at 6. The davits are elevated and swung outboard by means of screws 8 operating through threaded blocks 7 and handles 9, the davits being pivoted to the blocks 7. Falls blocks 11 provided with cleats 14 are secured to the lifeboats L. Falls ropes 12 are woven through the falls blocks 10—11, as in common practice, and carried thence through guide pulleys 13, a roller 30 to the winch drums W of the fall operating engine. Applicant's improved winch engine is shown in both single and double units and will be described first with reference to a single unit adapted to operate one or several nested lifeboats on one side of the vessel only and will then be described with reference to the double units adapted to handle lifeboats on both sides of the vessel.

Referring particularly to Figures 4, 6 and 7, and the windlass structure generally two winch drums W are fixedly mounted on a shaft 16, on which are also mounted two

brake drums, one on either end of the winch drums, around which pass brake bands 25. The ends of shaft 16 are squared to receive operating handles, if desired, and the shaft 16 is suitably mounted in the frame 23. Gear wheel 18 is freely mounted on shaft 16 and provided with a clutch hub adapted to engage a clutch member 17 slidably but non-rotatably mounted on shaft 16 and operated by lever 20 with handle 38 controlled by latch 39 in engagement with the notched guide 41, said latch member 39 being normally held in locked engagement by means of spring 40. Main operative shaft 15 is suitably mounted in frame 23 above gear 18 and at right angles to shaft 16 and is provided with a worm member 19. The ends of shaft 15 are also squared for the reception of operating handles. The brake bands 25 are pivoted at one end, as at 44, and at the other end, as at 43, to lever 26, to the other end of which lever is secured brake operating rope 27, which passes upwardly over pulley 28 and thence downwardly back and under roller 30, which also serves as a guide for the falls ropes. The roller 30 and pulleys 28 are mounted in suitable supports 31 provided with guards 29. From roller 30, the brake control ropes 27 pass over pulleys coaxial with pulleys 13 and guide roller 30 also over pulleys coaxial with those of the falls ropes in block 10 and are belayed to the cleats 14 on falls blocks 11 secured at each end of each lifeboat. Means for adjusting the tension of the brake bands is illustrated in the turn-buckles 42, as shown in Figure 3, by adjustment of which changes due to climatic variations may be rectified.

To the structure thus described where it is desired to operate the windlass by power, a motor 24 is mounted upon frame 23 and provided with a gear wheel 32. Another gear wheel 33 having an internally splined hub, is slidably mounted upon shaft 15, which is provided with a spline so that the gear wheel 33 is slidable on, but rotatable with shaft 15. A threaded sleeve 35 is secured to shaft 15 upon which a hand wheel 34, having a threaded hub, rotates. Hand wheel 34 carries clutch members 36 adapted to engage the hub of gear wheel 33 to slide same on shaft 15 into and out of engagement with gear 32 of the motor so that the motor may be readily and safely connected or disconnected from operative connection with shaft 15.

In Figure 2 is shown a motor operated winch engine in which the winch mechanism previously described is shown in duplicate for operating lifeboats on each side of the vessel, both winch drums being operated from a common motor 24, by means of oppositely disposed worms 19 on shaft 15.

From the structure thus described and referring particularly to Figure 2, it will be noted that each pair of winch drums are independently connected with shaft 15 through gear wheel 18 and the clutch mechanism operated by lever 20, controlled by latch 39 while shaft 15 may be either operated by hand, by means of handles applied to the squared ends of shaft 15 or by motor 24, as desired. When it is desired to operate the drums or either of the drums by hand, hand wheel 34 is revolved and by means of threaded sleeve 35 gear wheel 33 is withdrawn from engagement with gear 32 to the motor, as illustrated in dotted lines thus releasing shaft 15 from the motor control and permitting its rotation by means of suitable hand cranks applied to the ends of shaft 15 as illustrated in Fig. 5.

At some desirable point, spring expansion elements 45 are introduced into the brake control ropes 27, which tension elements may be constructed as illustrated in Figure 9 in which a casing 46 is shown secured to one portion of the control rope at 47 and a sliding piston 49 controlled by spring 50 secured to the other part of the rope. A suitable head 48 guides piston 49 and an internal head 51 engages the spring 50. The function of these elements will appear from the following description of the operation of the brake control ropes in launching a lifeboat.

In practice, clutch 20 controlling gear wheel 18 is normally kept locked in disengaged position as shown in Figure 4 so that winch drums W—W and shaft 16 are free to rotate except as controlled by brake bands 25. By throwing clutches 20 into engagement drums W—W will be locked by worm-gear 19. As previously described, brake bands 25 are controlled through the levers 26 and brake control ropes 27, which brake control ropes 27 pass through coaxial pulleys with the falls ropes to blocks 11 secured to the lifeboat and are there belayed to cleats 14 under sufficient tension to hold winch drums W—W against rotation under the weight of the lifeboat and its load. Upon swinging a lifeboat outboard, which operation can be clearly understood from Figure 1, davit arms 3 are both elevated and thrust outwardly by means of the operation of the links 5 so that it is desirable to introduce tension elements, such as 45, into the brake control ropes 27 of sufficient scope to permit this expansion to the rope while at the same time maintaining the desired tension upon brake bands 25. The lifeboat being swung outboard, the seamen therein, by releasing brake control ropes 27 from cleats 14, can release the tension upon the brake bands 25 and permit the boat to be lowered away, the boat being at all times under control through ropes 27 extending, as previously described, one to each end of the lifeboat.

By throwing the clutch 20 into engagement with gear wheels 18, the drums can at any time be locked from the deck by operation of the worms 19, and the boats can, if desired, be further raised or lowered either by hand or power through the operation of shaft 15.

The ends of the shaft 16 are preferably squared to accommodate hand cranks by means of which the winch drums may be rapidly operated by hand if required to retrieve the falls after the release of a lifeboat, thus eliminating the gearing to shaft 15.

As illustrated the various supporting standards are shown secured to a suitable base 22 which would in turn be secured to the deck D, or, of course, the standards may be assembled in properly spaced relation and secured directly to the deck. Various other similar modifications will readily suggest themselves to those skilled in the art, but within the scope of the present invention as claimed.

What I claim is:

1. A boat handling apparatus for ships, docks and the like comprising in combination, a fall, a windlass fixed relatively to the ship, dock or the like, a normally inoperative brake for the windlass, means detachably secured to the boat for operating the brake and means for maintaining an operative tension on said brake operative means during the movement of the boat from inboard to outboard position.

2. A boat handling apparatus for ships, docks and the like, comprising means for moving a boat from inboard to outboard position, a hoisting drum fixed relatively to the ship dock or the like, a normally inoperative brake therefor, and means detachably secured to the boat adapted to maintain said brake applied while the boat is being moved from inboard to outboard position.

3. A boat handling apparatus for ships, docks, and the like, comprising in combination, means for moving a boat from inboard to outboard position, a hoisting drum fixed relatively to the ship dock or the like, a normally inoperative brake for said drum, a fall, and brake control means secured to the boat arranged to automatically maintain the brake operative while the boat is moving from inboard to outboard position.

4. A boat handling apparatus for ships, docks and the like comprising in combination davits, blocks and falls, a windlass for said falls, a normally inoperative brake for said windlass and a control rope passing from said brake over a guide on a davit and including an expansion element and secured to the boat whereby the boat may be swung outboard with the brake made operative by said brake control rope.

5. In combination, davits, blocks and falls, a relatively fixed winch for operating said falls, independent and normally inoperative brakes for said winch, independent control ropes for operating said brakes secured to the boat to be lowered, and means for maintaining a tension on said brake control ropes for operating of the brakes during the movement of said davits from inboard to outboard position.

6. In combination, davits, blocks and falls suspended from said davits, a winch for operating said falls, independent, normally inoperative brakes for said winch, independent brake control ropes, each including an expansion element for operating said brakes, said brake control ropes passing over the upper block and being secured to the lower, whereby the boat may be swung from inboard to outboard position with the brakes applied.

7. The combination with a boat of a boat lifting engine comprising a shaft, a windlass fixedly mounted on said shaft having a brake drum at each end, brake bands in normally inoperative relation to said brake drums, a gear rotatable on said shaft, a worm operative of said gear and a clutch member adapted to lock said gear to said shaft; and brake controlling ropes passing from said brake bands and secured to the boat whereby said boat may be held in position either by operation of said clutch or said brake ropes.

8. In combination, davits, blocks and falls suspended from said davits, a winch for operating said falls, independent, normally inoperative brakes for said winch, independent brake control ropes, each including an expansion element for operating said brakes, said brake control ropes passing over the upper block and being secured to the lower, whereby the boat may be swung from inboard to outboard position with the brakes applied, and means for lowering the boat whereby the weight of the boat is utilized to lock the brakes.

9. In combination, davits, blocks and falls suspended from said davits, a winch for operating said falls, independent, normally inoperative brakes for said winch, independent brake control ropes, each including an expansion element for operating said brakes, said brake control ropes passing over the upper block and being secured to the lower, whereby the boat may be swung from inboard to outboard position with the brakes applied, and means for lowering the boat whereby the weight of the boat is utilized to lock the brakes, the said means consisting of a cleat block control, and a device for fastening the brake rope in the boat.

10. In combination, davits, blocks and falls suspended from said davits, a winch for operating said falls, independent, nor-

mally inoperative brakes for said winch, independent brake control ropes, each including an expansion element for operating said brakes, said brake control ropes passing over the upper block and being secured to the lower, whereby the boat may be swung from inboard to outboard position with the brakes applied, and means for lowering the boat whereby the weight of the boat is utilized to lock the brakes, the said means consisting of a cleat block control, and a device for fastening the brake rope in the boat, the brakes being controlled by either single or compounded ropes.

In testimony whereof I affix my signature.

SOLOMON EDWARD AARON.