

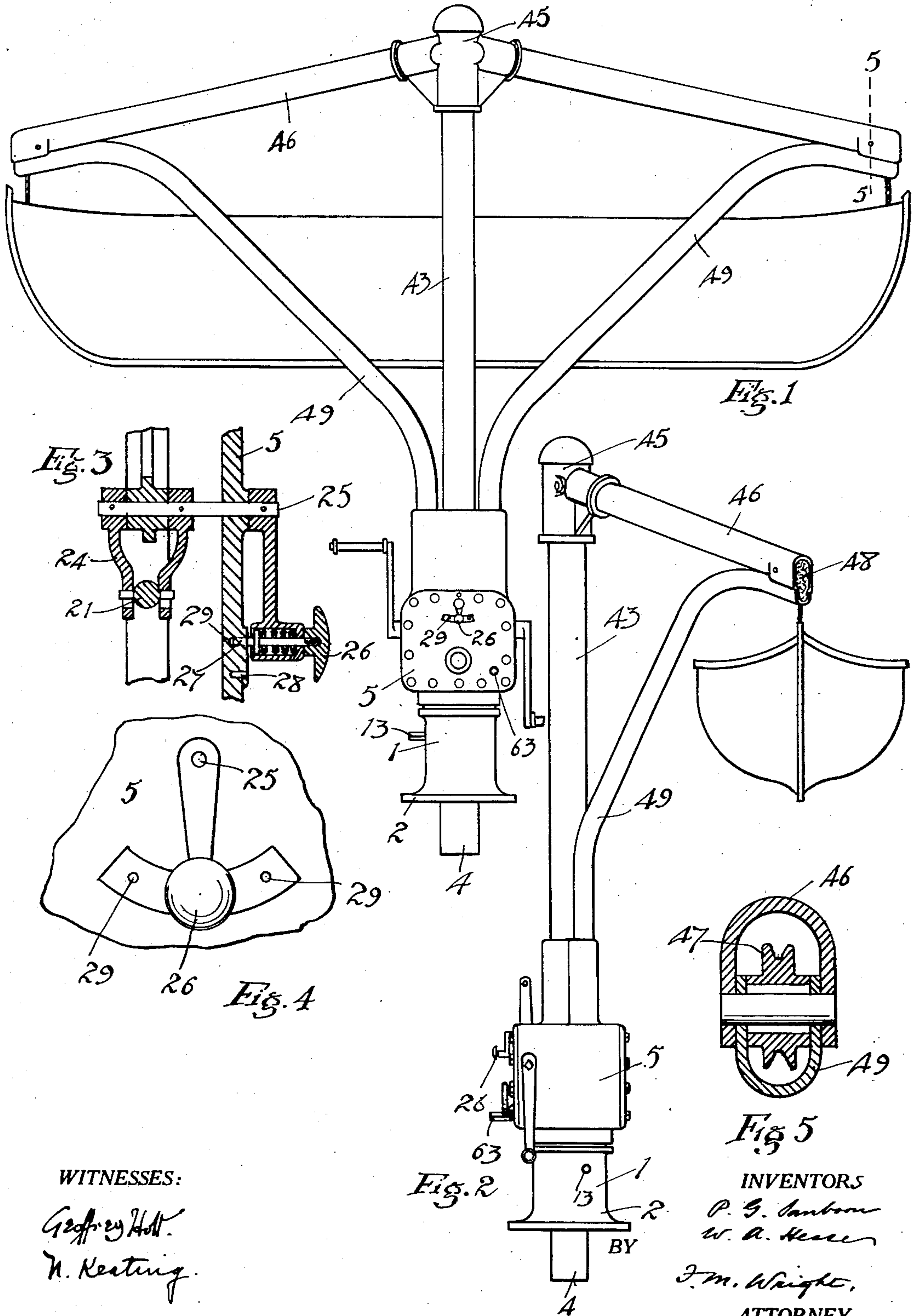
P. G. SANBORN & W. A. HESSE.  
BOAT DAVIT.

APPLICATION FILED DEC. 3, 1907.

915,118.

Patented Mar. 16, 1909.

3 SHEETS—SHEET 1.



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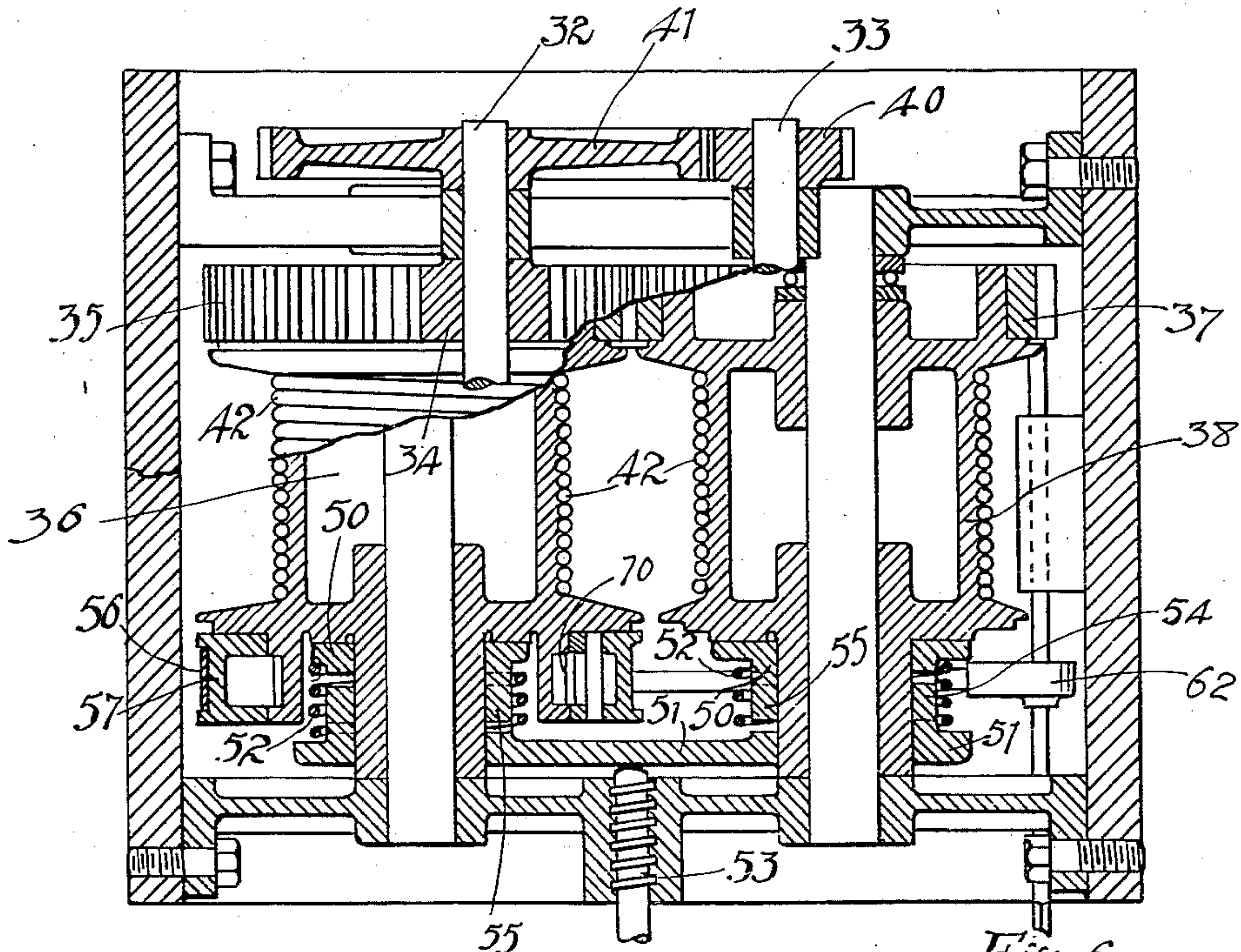


Fig. 6

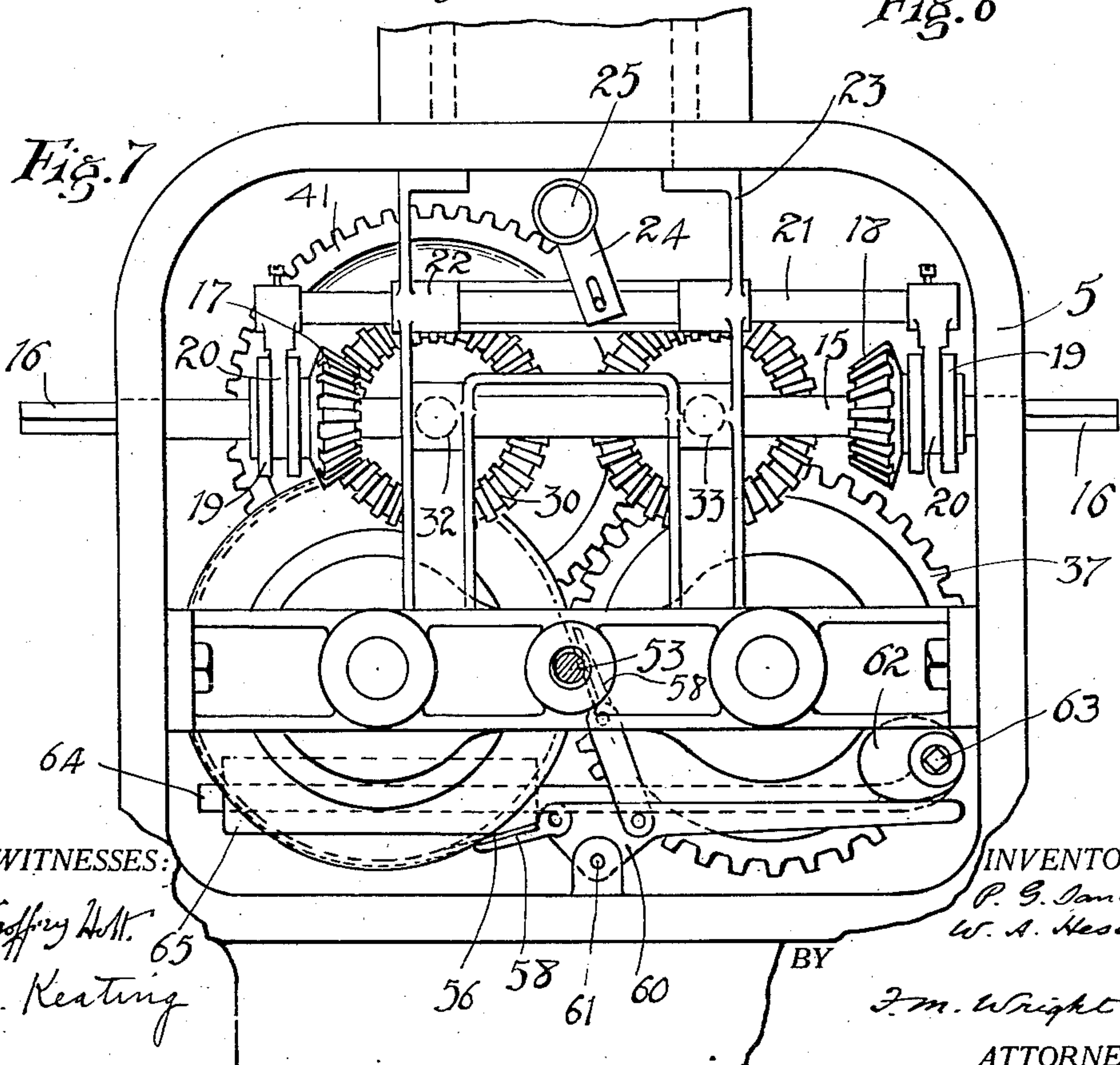


Fig. 7

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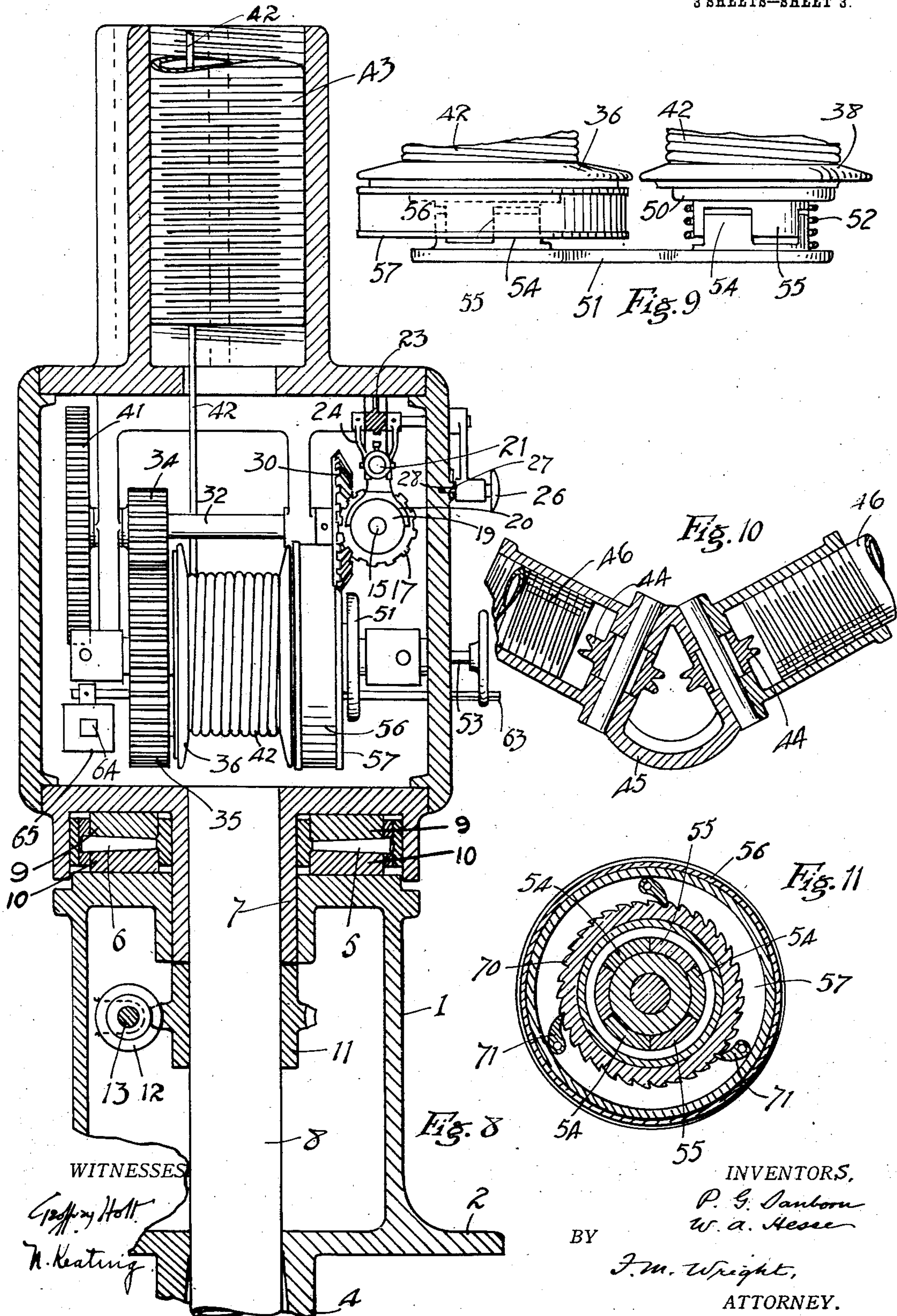
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# UNITED STATES PATENT OFFICE.

PERCY G. SANBORN, OF SAN FRANCISCO, AND WALTER A. HESSE, OF ALAMEDA, CALIFORNIA.

## BOAT-DAVIT.

No. 915,118.

Specification of Letters Patent.

Patented March 16, 1909.

Application filed December 3, 1907. Serial No. 404,895.

*To all whom it may concern:*

Be it known that we, PERCY G. SANBORN and WALTER A. HESSE, citizens of the United States, residing, respectively, at San Francisco, in the county of San Francisco, and Alameda, in the county of Alameda, and State of California, have invented new and useful Improvements in Boat-Davits, of which the following is a specification.

This invention relates to an improved boat davit, the object of the invention being to provide an apparatus of this character by means of which a boat can be lowered from a ship into the water much more rapidly than at present, which can be operated by a single person, instead of requiring, for a large boat, five or six men, as is at present the case, and by which a boat can with certainty be lowered into the water on an even keel, and the speed of descent be under complete control.

A further important advantage of this improvement is that it enables a boat to be lowered on the windward side of a vessel, as well as on the leeward side, at which only at present boats can be lowered. And a further advantage is that whereas in very cold regions the lowering of the boat now frequently entails long delay owing to the necessity of chopping away the ice which binds the lowering ropes by our apparatus this difficulty is entirely eliminated.

In the accompanying drawings, Figure 1 is a front view of the apparatus in the position in which the boat is to be lowered in the water; Fig. 2 is an end view thereof; Fig. 3 is an enlarged longitudinal sectional view through the gear changing shaft; Fig. 4 is a front view of the same; Fig. 5 is an enlarged sectional view on the line 5-5 of Fig. 1; Fig. 6 is a broken horizontal section through the gear casing; Fig. 7 is a broken view of the same; Fig. 8 is a vertical section of the base and gear casing, the gearing being shown in side elevation; Fig. 9 is a broken plan view of ends of the drums to show the clutch members; Fig. 10 is an enlarged horizontal section of the upper ends of the guide tubes; Fig. 11 is a vertical section through the brake ring on one of the drums.

Referring to the drawing, 1 indicates a hollow stand or base having a flange 2, by which it is bolted to the deck 3 of the vessel, and having a sleeve 4 depending therefrom. Above said stand is a casing 5 which rotates on rollers 6, which in turn revolve upon the base 1. Through a central sleeve 7 depend-

ing from the casing passes a shaft 8 which also extends down through the sleeve 4, rollers 9 and 10 being interposed between said shaft and two sleeves 7 and 4 respectively. Upon said shaft 8 is secured a worm gear 11 driven by a worm 12 on a shaft 13 extending through the wall of the stand and having a square outer end by which said shaft 13 can be turned by a suitable crank handle. By this means the casing can be rotated upon the stand. Since the whole of the mechanism is supported by said casing 5, it is by means of this worm and worm gear that said mechanism is rotated, to swing the boat from the position in which it hangs over the deck of the ship to a position proper to lower it to the water.

Extending transversely through the casing 5 is a shaft 15 having projecting squared ends 16 by which said shaft can be turned by cranks applied thereto. Upon said shaft are bevel pinions 17, 18, rotatable with the shaft, but slidable thereon. The hub of each pinion is formed with a collar 19, and said collars are engaged by forks 20 secured to a slide rod 21 which slides in bearings 22 carried by hangers 23, depending from the casing, said rod being adapted to be moved longitudinally by means of an arm 24 on a rock shaft 25 extending through the casing to the front thereof and having a crank handle 26. Said crank handle carries in its end a spring-actuated pin 27 which is adapted to engage any one of three sockets, the middle socket 28 holding the crank handle in the position in which both bevel pinions are out of engagement, while the terminal sockets 29, hold the crank handles in the position in which either one bevel pinion or the other is in operative engagement. Said pinions are adapted to engage bevel gears 30, 31 on shafts 32, 33. The shaft 32 carries at its rear end a pinion 34 which meshes with a gear wheel 35 on a drum 36, and said gear wheel 35 likewise meshes with a gear wheel 37 on a drum 38, so that said drums 36, 38, rotate in unison, but in opposite directions. When it is required to raise only a comparatively light weight, as when the boat is empty or nearly so, the bevel pinion 17 on the left is used, which directly drives the shaft 32, but when it is desired to impart a slow rotation to said drums, for a heavier load, the rod 21 is shifted so that the bevel pinion 18 is thrown into engagement, which then rotates the shaft 33 on the right. This



shaft carries a pinion 40, which meshes with a gear wheel 41 on the shaft 32 so that, when the bevel pinion 18 is in mesh, the shaft 32 on the left is then driven more slowly than before, and in consequence the drums are more slowly rotated, but greater power is obtained. Wound around said drums are ropes 42, which pass upward together through a central vertical guide tube 43 secured upon the casing, then around pulleys 44 in a housing 45 at the top of said guide tube and then within downwardly sloping guide tubes 46 leading to points over the ends of the boat. In the ends of said guide tubes 46 the ropes pass over pulleys 47 and thence to suitable falls in the ends of the boat. When not in use, the outer ends of the tubes 46, around the ropes, are stuffed with tow 48 or any suitable packing material, to prevent the access of water to the tubes and to the mechanism. Said guide arms both extend sufficiently out of the vertical central longitudinal plane of the casing of the controlling mechanism to support said boat at one side, out of contact with said mechanism. The ends of said tube 46 are additionally supported by struts or braces 49. It will now be understood that by turning the crank handles on the ends of the transverse shaft 15, one or the other of the two bevel pinions 17, 18 is rotated, thereby rotating, either directly or indirectly, the shaft 32 on the left, thereby turning the two drums in unison in opposite directions, so that the ropes 42 are wound up together, and the boat is raised with absolute uniformity at both ends.

In order to lower the boat into the water, it is only necessary to allow the drums to rotate by the weight of the boat so as to pay out the ropes 42, while at the same time maintaining full control of said drums. For this purpose there is provided a main brake comprising sleeves 50 adapted to engage the drums, and a friction plate 51, apertured to pass over the hubs of the drums. Between said plate and the sleeves 50 are interposed powerful coiled springs 52. Said plate is forced inward toward said sleeves by means of a screw 53 adapted to be turned by a suitable crank handle, the inner end of which screw abuts against the outer side of said plate. In order to prevent the brake sleeves 50 turning with the drums, the friction plate 51 is formed with two hub-like lateral projections 54 each of which and the corresponding brake sleeve are formed with registering teeth 55, and notches the teeth entering said notches, and preventing the turning of the brake sleeve, while at the same time permitting the brake plate to be moved to and from the brake sleeve, this being accomplished by the screw 53 and springs 52. When said screw is screwed inward pressure is thereby imparted to the plate, and thence

to the brake sleeves, the surfaces of which press against the brake drums. The pressure thereby obtained is of itself almost sufficient to prevent the descent of the boat. For instance, supposing the boat weighs 1000 pounds, said main brake would create friction capable of holding, say, 900 pounds.

To support the residual weight of the boat there is provided an auxiliary brake, comprising a brake band 56 extending around a brake ring 57 surrounding the drum 36 on the left, and secured at its ends by plates 58, to a lever 60 fulcrumed at 61 between the points of attachment of said plates. The end of said lever is depressed by means of a cam 62 upon a rock shaft 63, to which rock shaft is also attached an arm 64 carrying at its outer end a weight 65, so that said weight constantly tends to press said cam upon said lever and thereby to tighten said brake band about said brake ring, so that said ring is constantly under the control of said brake, and the weight is such that, unless a lifting force is applied thereto, the friction thereby created will be sufficient, together with the friction caused by the main brake, to prevent the descent of the boat. Hence, the rate of descent can be controlled at all times by varying the amount of pressure that is removed from the brake band, this being controlled by means of a crank handle applied to the end of the shaft 63 and pressed in such a direction as to oppose the force of the weight 65. The brake ring 57 is not fixedly secured to the drum 36, and checks the motion of said drum in one direction only, corresponding to the lowering of the boat. A ratchet wheel 70 is formed on the drum 36, and on the ring 57 are pivoted pawls 71, of which there are here shown three in number, which engage the teeth of the ratchet wheel, so that the drum cannot rotate in one direction without at the same time rotating the brake ring, whereas said drum can freely rotate in the other direction, corresponding to the raising of the boat, without being affected by the action of said brake ring. This allows the full force of the brake to be kept on the brake ring, while raising the boat, so that, should the power employed to raise the boat be removed or reduced, the boat could not then drop, but would be immediately arrested by said brake. Hence the boat can be raised in perfect safety without any danger of any sudden drop owing to the accidental diminution of the force which is so raising it. To lower the boat, first, the auxiliary weight is removed to a greater or less extent, as may be convenient, by exerting more or less force against the weight 65. Then the screw 53 is unscrewed until the main braking pressure is diminished to such a degree that the boat begins to drop. The boat can then be allowed to drop as fast or slow as may be desired, and, can be instantly



arrested by letting go of the crank handle on the shaft 63.

We claim:—

1. In combination with a stand or base, a casing rotatable on said base, means for rotating the same thereon, a post secured upon said casing and having diverging arms arranged to guide ropes for supporting a boat, drums in said casing on which said ropes can be wound, high and low speed mechanisms for rotating said drums, and means for selectively operating said mechanisms substantially as described.

2. In combination with a stand or base, a casing rotatable on said base, means for rotating the same thereon, a drum within casing, means for rotating said drum, a standard or post secured to said casing and rotatable therewith, and arranged to guide a rope for supporting a boat, a main brake for resisting the greater part of the load of the boat, an auxiliary brake arranged to resist the residual portion of said weight, and means for varying the latter brake by hand, substantially as described.

3. In combination with a stand or base, a casing rotatable on said base, means for rotating the same thereon, a post secured upon said casing and having diverging arms arranged to guide ropes for supporting a boat, drums in said casing on which said ropes can be wound, high and low speed mechanisms for rotating said drums, and means for selectively operating said mechanisms, comprising a crank handle, and connections whereby when said crank handle is moved to one limiting position one of said mechanisms is operative, when into another limiting position the other mechanism is operative, and into an intermediate position both mechanisms are inoperative and means for retaining said crank handle in either one of the three positions in which it has been so moved, substantially as described.

4. In a boat davit, the combination of a central vertical guide tube, guide tubes extending outwardly from the upper end of the central tube, pulleys in said latter guide tubes, and at the points of connection with the central guide tube, and braces or struts for said guide tubes, substantially as described.

5. In a boat davit, the combination of a suitable stand or base, an upwardly extending guide above said base, guide arms extending outwardly from the upper end of the vertical guide, said guides being arranged to form conduits to contain ropes for raising or lowering a boat, drums for winding and unwinding said ropes, and means for horizontally rotating said vertical guide tube, substantially as described.

6. In a boat davit, in combination with suitable guides for ropes for raising or lowering a boat, a rope-winding drum, means for

winding said drum, and a brake for said drum comprising a sleeve adapted to engage the drum, a plate engaging said sleeve to prevent it turning while moving to and from said plate, a coiled spring between said plate and sleeve, and means for moving said plate inwards toward said sleeve, to compress the spring therebetween, substantially as described.

7. In a boat davit, the combination of suitable guides for ropes for raising and lowering a boat, drums for said ropes, means whereby said drums rotate in unison, means for winding said drums, and braking mechanism for said drums, comprising sleeves adapted to engage said drums, a friction plate, said sleeves and plate being provided with co-engaging parts whereby the sleeves are prevented turning with the drums, but said plate is movable to and from said sleeves, coiled springs between said plate and sleeves, and means for moving said plate toward said sleeves to compress said coil springs, substantially as described.

8. In a boat davit the combination of suitable guides for ropes for raising and lowering a boat, drums for said ropes, means whereby said drums rotate in unison, means for winding said drums; and braking mechanism for said drums, comprising sleeves and plate being provided with co-engaging parts whereby the sleeves are prevented turning with the drums, but said plate is movable to and from said sleeves, coiled springs between said plate and sleeves, and a screw for moving said sleeves to compress said coil springs, and a handle on the end of said screw, substantially as described.

9. In a boat davit, the combination of suitable guides for guiding ropes for raising and lowering a boat, drums for winding, and unwinding said ropes, means for rotating said drums, and a brake for one of said drums comprising a brake ring surrounding the drum, means whereby said brake ring is caused to rotate with the drum when the latter rotates in one direction, said drum being inoperative to rotate the brake ring when moving in the other direction, a brake band for said brake ring, and means for tightening said brake band around said ring, substantially as described.

10. In a boat davit, the combination of suitable guides for guiding ropes for raising and lowering a boat, drums for winding and unwinding said ropes, means for rotating said drums, and a brake for one of said drums comprising a brake ring surrounding the drum, means whereby said brake ring is caused to rotate with the drum when the latter rotates in one direction, said drum being inoperative to rotate the brake ring when moving in the other direction, a brake band for said brake ring, and means for tightening said brake band around said ring,



comprising a lever to which the ends of the brake band are attached at opposite sides of its fulcrum, a rock shaft, means carried thereon for rocking said lever, an arm on said rock shaft, and a weight on the free end of said arm, substantially as described.

11. In a boat davit, the combination of a tubular guide for ropes for raising and lowering the boat, tubular guide arms diverging  
10 downward from the top of said tubular guide, means for rotating said first guide, and means

for drawing in and paying out ropes extending through said guides, substantially as described.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

PERCY G. SANBORN.  
WALTER A. HESSE.

Witnesses:

FRANCIS W. WRIGHT,  
D. B. RICHARDS.