July 26, 1927. 1,636,944

B. M. SCHAUMAN

ANCHOR DAVIT

Filed July 6, 1926 3 Sheets-Sheet 1

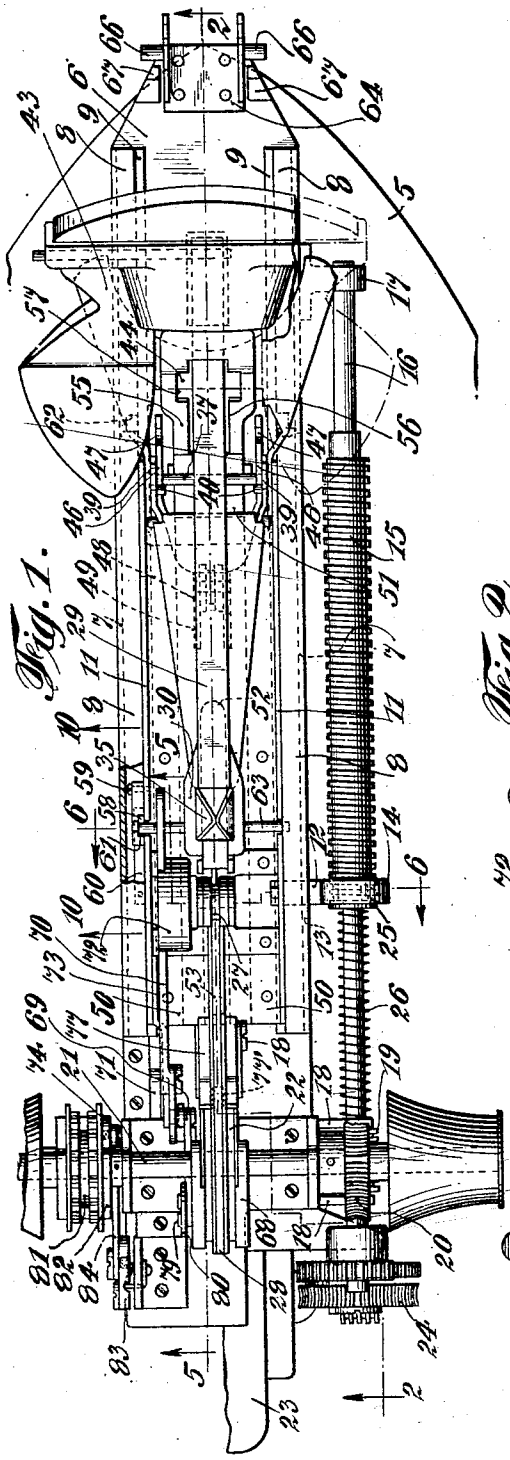


Fig. 1.

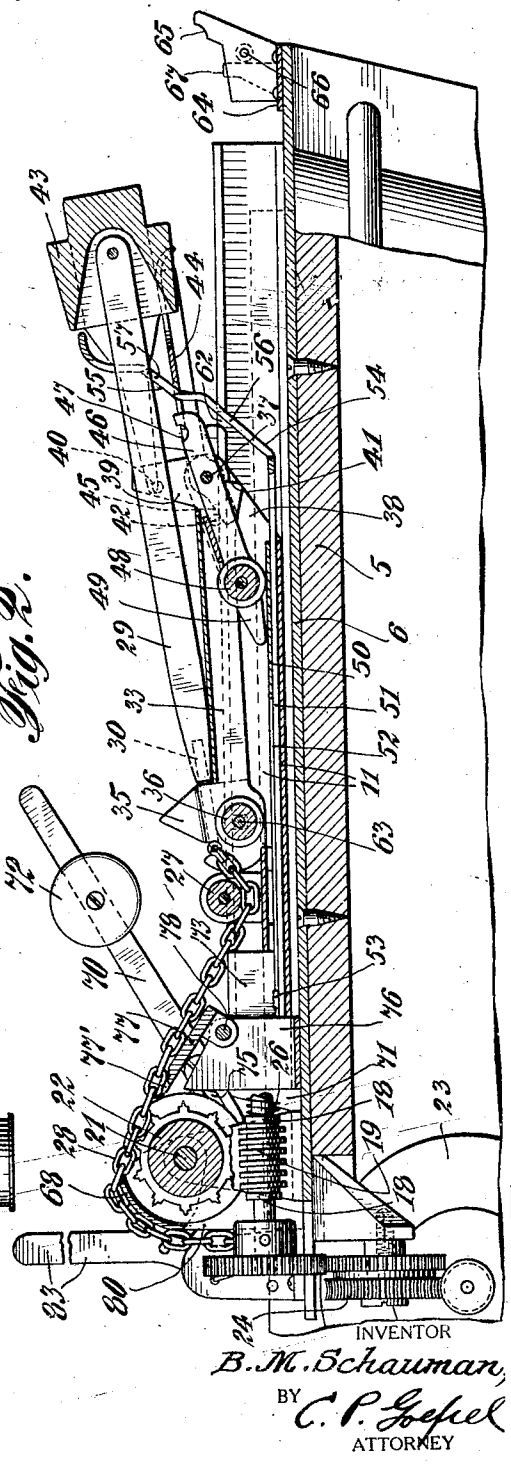


Fig. 2.

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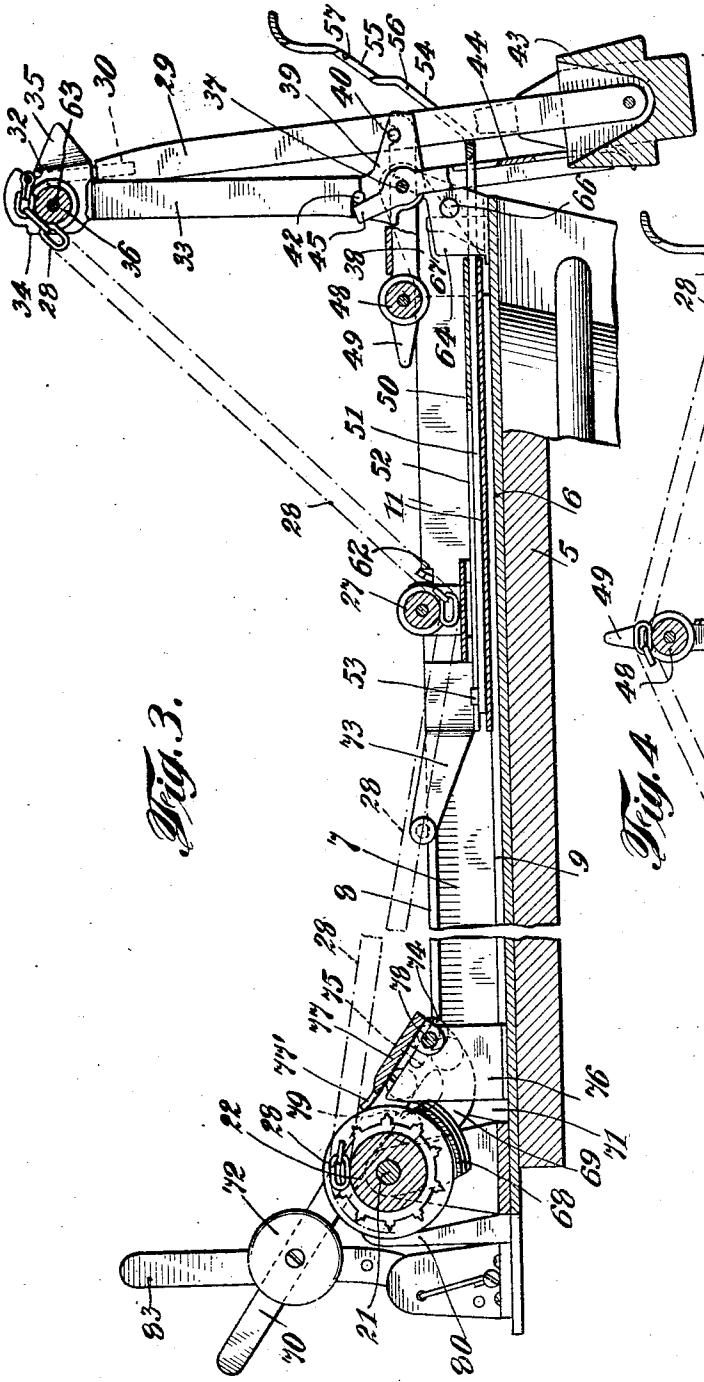


Fig. 3.

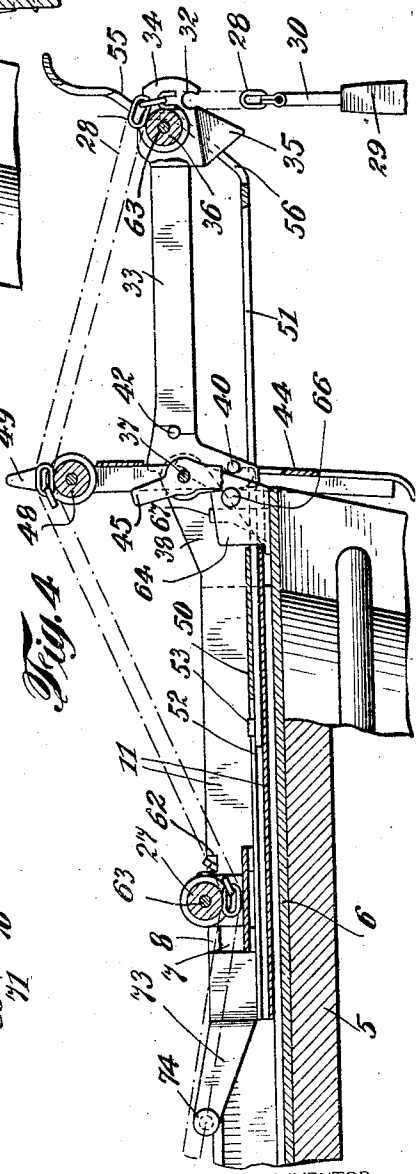


Fig. 4

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Fig. 5.

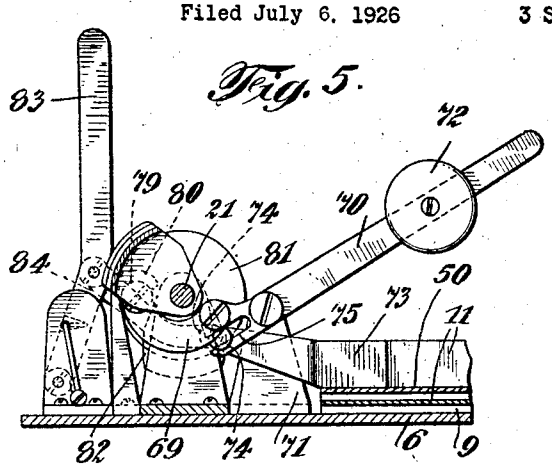


Fig. 6.

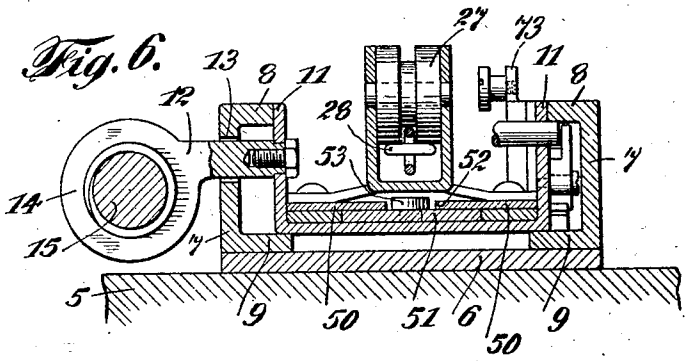


Fig. 7.

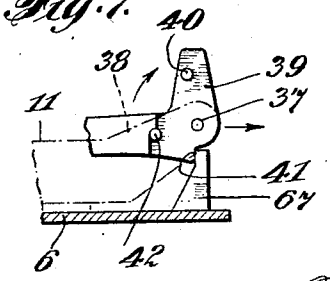


Fig. 8.

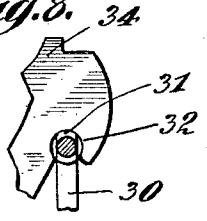


Fig. 9.

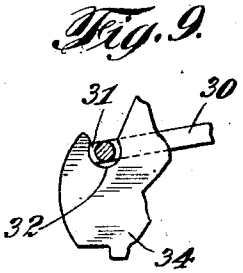
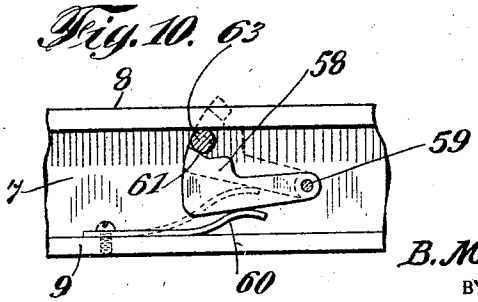


Fig. 10.



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Patented July 26, 1927. 1,636,944

UNITED STATES PATENT OFFICE.

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ANCHOR DAVIT.

Application filed July 6, 1926. Serial No. 120,774.

This invention relates to anchor davits, and has for its primary object to provide a simple and novel davit mechanism for ships' anchors which may be actuated from a suitable motor to cast or lower the anchor or to raise and stow the anchor on board of the deck.

It is one of the prominent objects of the invention to provide improved means for positively locking the anchor and its davit upon the deck of the vessel to prevent shifting movements thereof in rough seas. More particularly, in one embodiment of the invention the davit is mounted upon a traveling carriage, and the shaft of the anchor is provided with means at one end automatically cooperating with means on the davit when the anchor is raised whereby the anchor and the davit are locked together against a relative shifting movement.

It is another object of the invention to provide a simple and effective means automatically controlled by the davit carriage for engaging and disengaging the anchor chain with the driving sprockets of the mechanism.

A further object of the invention is to provide latch means for locking the carriage against movement in its extended position and for automatically moving the anchor from a substantially horizontal position to a vertical position to be lowered, said anchor having means which automatically cooperates with said latch means when the anchor is lifted upon ship deck to release the carriage whereby the anchor and its davit may be drawn inwardly upon the deck of the ship.

It is a further general object of my invention to provide a ship's anchor davit and operating means therefor which is relatively simple in its construction, positive and reliable in its operation and may be installed at comparatively small cost.

With the above and other objects in view, the invention consists in the improved anchor davit, and in the form, construction and relative arrangement of the several parts as will be hereinafter more fully described, illustrated in the accompanying drawings, and subsequently incorporated in the subjoined claims.

In the drawings, wherein I have illustrated one simple and practical embodiment of the invention, and in similar reference characters designate corresponding parts throughout the several views,—

Figure 1 is a top plan view illustrating one embodiment of my improved anchor davit and operating mechanism therefor;

Fig. 2 is a longitudinal section view taken substantially on the line 2—2 of Fig. 1;

Fig. 3 is a similar sectional view showing the relative positions of the parts when the anchor is raised to a vertical position to be lowered;

Fig. 4 is a view similar to Fig. 3 showing the positions of the parts as the anchor is lowered;

Fig. 5 is a detail longitudinal section taken substantially on the line 5—5 of Fig. 1;

Fig. 6 is a transverse sectional view taken on the line 6—6 of Fig. 1;

Figs. 7, 8 and 9 are detail views of different parts of the mechanism, and

Fig. 10 is a detail sectional view taken substantially on the line 10—10 of Fig. 1.

Referring in detail to the drawings, 5 indicates a part of the ship deck upon which there is suitably secured a longitudinally extending base plate 6 to the opposite edges of which channelled guides 7 having upper and lower inwardly projecting flanges 8 and 9 respectively, are suitably secured. A carriage generally indicated at 10 is mounted to travel between these guides and is supported upon the lower or base flanges 9 thereof. This carriage consists generally of a metal plate of U-shaped form in cross section, the opposite side walls 11 of which contact at their upper edges against the inner edges of the upper flanges 9 of the guides 7. To one of the walls 11 at one end of the carriage, an arm 12 is fixed and projects outwardly through a longitudinal slot 13 in the adjacent guide member 7, the outer end of said arm being provided with a suitably formed nut 14 for meshing engagement with a worm 15 provided on the shaft 16 which is journalled at its forward end in a suitable bearing 17. The rear end of this shaft is supported in the bearing bracket 18 and provided with a worm 19 which meshes with the worm gear 20 on a transversely positioned shaft 21 upon which suitable chain engaging sprocket members 22 are fixed. The shaft 16 may be directly driven by a suitable motor 23 or connected with the

motor shaft through intermediate gearing as indicated at 24, whereby the shaft will be driven at the required speed.

At one end of the worm 15, a collar 25 is loosely engaged on the shaft 16 and is yieldingly urged against the end of the worm by a coil spring 26.

Upon the inner end of the carriage 10 a guide sheave 27 for the anchor chain 28 is suitably mounted. The anchor chain passes under this guide sheave and is connected to an eye or loop member 30 fixed in the end of the anchor shaft 29. The intermediate portion of this eye or loop 30 which is generally of cylindrical form is provided with diametrically projecting lugs 31 (see Figs. 8 and 9) for engagement in notches or recesses 32 provided in the head 34 of the davit member 33. This davit member may be formed from a pressed or stamped sheet metal plate and is of general channel shape in cross section, the side walls of the head 34 being provided with laterally projecting tapering extensions 35. In this head portion of the davit a guide sheave 36 for the anchor chain is mounted.

The davit 33 at its other end is supported for pivotal movement upon the transverse rod or pin 37 extending between the upwardly projecting arms 38 formed on the carriage walls 11 at their forward ends, said latter end of the davit terminating in an angularly projecting arm 39 in which pins 40 are fixed. At the opposite side of the pivot rod 37, the davit is formed with a shoulder 41 and at a point longitudinally spaced from this shoulder, additional pins 42 are fixed to the davit.

The head 43 of the anchor which is suitably connected to the end of the shaft 29 is adapted to be supported upon a plate 44 and at one of its ends is provided with spaced arms between which the pivoted end of the davit 33 is disposed, said arms being also pivotally engaged upon the rod 37 as clearly shown in Fig. 3 of the drawings. These arms are provided with longitudinal extensions or fingers 45 adapted to cooperate with the respective pins 42.

In addition to the davit 33 and the plate 44 a yoke member 46 has its arms pivotally mounted upon the rod 37 adjacent one of their ends, said yoke arms being received within the channel of the davit 33 as indicated in Fig. 2 of the drawings. These yoke arms at one of their ends are provided with seats or notches 47 adapted to receive the pins 40 on the angular projection 39 of the davit member. The yoke arms at their other ends support the guide sheave 48 for the anchor chain and are provided with terminal projections 49 by which the chain is directed into engagement upon said sheave.

Between the base of the carriage 10 and a guide plate 50 fixed thereon a plate 51 is arranged for longitudinal sliding movement independently of the carriage. The guide plate 5 which has a central longitudinally extending slot 52 therein receiving the head of a stud 53 fixed in the sliding plate 51 whereby the forward sliding movement of said plate is limited. This plate at its forward end has an upwardly extending obliquely inclined section 54, said section of the plate having an intermediate angularly offset portion 55. This section 54 of the plate is provided with a central longitudinally extending slot 56 therein, the outer end of which is enlarged or provided with lateral extensions indicated at 57 for the purpose of permitting the passage of the eye or loop 30 on the end of the anchor shaft 29 therethrough.

For the purpose of locking the carriage 10 against movement after the anchor and its davit have been lifted to the vertical position shown in Fig. 3 of the drawings, I provide a latch dog 58 pivotally mounted at one of its ends as at 59 on the outer side of one of the carriage walls 11 (see Fig. 10), said dog being yieldingly urged by a suitable leaf spring 60 and at its free end having a locking stud or projection 61 which is adapted to engage in the notch or recess 62 provided in the upper flange 8 of one of the guide members 7. A similar notch is also provided in the corresponding flange of the other guide member, and these notches are adapted to receive the opposite ends of the shaft or axis 63 of the guide sheave 36 mounted in the head of the davit 33. In the sliding movement of the carriage 10, these pins are engaged against the under sides of the upper flanges 8 of the guide members 7, and thereby retain the davit and the anchor shaft 29 in a substantially horizontal position.

On the base plate 6 at its forward end in advance of the carriage guide 7 a bracket 64 is fixed, the upstanding arms of said bracket being provided in their upper ends with notches or seats 65 to receive the pivot rod 37. A transversely projecting stud 66 is fixed in each of these arms. Adjacent to each of the bracket arms, a stop member 67 is suitably secured to the base plate 6, and with these stops, the shoulders 41 on the pivoted end of the davit member 33 are adapted to coact as indicated in Fig. 7 of the drawings.

Upon the transverse shaft 21, the arms of a guide yoke 68 which straddles the sprockets 22 are loosely engaged. This yoke is actuated through the link connection 69 pivoted at one end to the yoke and at its other end to the end of a lever 70 which is fulcrumed adjacent said end thereof upon a bracket member 71 secured on the base 6. An adjustable weight 72 is carried by this lever and provides the gravity means for holding said lever and consequently the yoke

member 68 in one position. To the rear end of one of the side walls 11 of the carriage a longitudinally extending arm 73 is fixed and carries a pin or stud 74 adapted for engagement in the open-ended longitudinal slot 75 provided in the end of the lever 70. Between the rear ends of the carriage guides 7, a supporting standard 76 is fixed upon the base 6 and on the upper end of this standard, a plate 77 is pivotally mounted at one of its ends as at 78, the other or free end of said plate being bifurcated or slotted as at 77′ to receive the anchor chain 28. The yoke member 66 on one side thereof is provided with a stud 79 adapted to engage the curved upper end of an arm 80 fixed on the base 6 which constitutes a stop limiting the movement of lever 70 to the position shown in Fig. 5 of the drawings.

Additional sprockets 81 are secured upon the shaft 20 with which an additional chain is adapted to be engaged and connected with a second anchor, if such an additional anchor is necessary. A yoke 82, similar to the yoke member 66 above referred to is associated with the sprocket 81 and is adapted to be manually operated through the medium of the link 84 connected with lever 83 to disengage the chain from the sprocket 81, or permit of its engagement therewith.

In the operation of the mechanism above described, assuming that the anchor and its davit are positioned upon the deck as seen in Fig. 2 of the drawings, and it is desired to ship or cast the anchor, current is supplied to the operating motor to drive the shaft 16 in the proper direction so that carriage 10 is moved outwardly in its guides by means of the worm 15. At the start of this movement of the carriage, the weighted lever 70 is thrown over to the position shown in Fig. 3 of the drawings by the stud 74 on the arm 73, said stud moving out of the slot 75 in the lever. The chain 28 is thus lowered into engagement with the teeth of the sprockets 22 so that as the carriage continues to travel outwardly, the chain is positively drawn upwardly and forwardly by the sprockets. In this travel of the carriage, the ends of the rod or axis for the guide sheave mounted in the end of the davit being engaged beneath the upper walls of the carriage guides, prevents upward swinging movement of the davit under the weight of the anchor head. When, however, these pins come into alignment with the notches or recesses 62 in the flanges of the guides, the ends of the pin move upwardly therethrough and under the weight of the anchor the davit is swung upwardly to the substantially vertical position shown in Fig. 3 of the drawings. This upward movement of the davit is initiated by the engagement of the shoulders 41 on the pivoted end of the davit with the stops 67 on the arms of the bracket 64.

As the davit moves upwardly to the perpendicular position, the pivot axis 37 therefor on the end of the carriage comes into engagement with the notches or seats 65 in the bracket arms. Simultaneously, the latch dog 58 is forced upwardly and its free end engaged in the notch 62 in the flange 8 of one of the carriage guides, thus positively locking the carriage against any further sliding movement.

In the continued operation of the shaft 16, the chain is paid out and the davit 33 is swung outwardly and downwardly by the gravity pull of the anchor to a substantially horizontal position until the pivoted end thereof engages the stop pins 66 on the bracket 64. In this position of the davit, it will be observed that the rectangular parts of the end of the loop of the anchor shaft 36 may move through the entrances to the recesses 32 in the end of the davit 33 so that the anchor may freely drop as the chain is paid out. In this movement of the davit member to the horizontal position, the pins 40 on the pivoted end thereof engage in the seats 47 in the arms of the yoke member 46 and raise this member to a vertical position, as shown in Fig. 4, to support the chain in an elevated position above the davit.

As the shaft of the anchor moves downwardly through the slot 56 in the obliquely disposed end portion of the slide plate 51, the pin or axis of the sheave mounted in the end of the davit exerts a camming action against the angularly offset intermediate portion of said oblique end of the slide plate and thereby continues to move said slide plate outwardly independently of the carriage. Of course it is understood that in this downward swinging movement of the davit, the plate 72 which supports the anchor head in the horizontal position, also swings freely upon the pivot rod or axis 37 in the end of the carriage to a substantially vertical position.

In returning the anchor to its normal position upon the deck of the vessel, the operation of the motor is reversed. The chain 28 is thus drawn inwardly over the several guide sheaves and sprockets and the anchor is pulled upwardly until the end of the loop 30 engages in the notches 32 in the head of the davit 33. Thereafter, the davit will be swung upwardly from the horizontal position shown in Fig. 3 to a substantially perpendicular position, the anchor shaft moving upwardly through the slot 56 in the end section 54 of the plate 51 and by gravity pressure forcing this plate inwardly upon the carriage. In the continued pull on the chain, the davit is swung inwardly and downwardly from the perpendicular position and the pins 42 engage the extensions or fingers 45 on the arms of plate 44 and

thereby swing this plate upwardly to a horizontal position beneath the head of the anchor. As the davit member is thus moved inwardly and downwardly to a horizontal position on the carriage, the ends of the shaft or axis 63 of the sheave 36 move downwardly through the notches or recesses 62 in the guide flanges and below the plane of said flanges, one end of said axis coacting with the latch dog 58 to move the same to its released position, so that the carriage may thus move inwardly in the guides. It will be understood that when the carriage reaches the limit of its outward movement, the nut 14 fixed thereto is disengaged from the worm 15. However, after the latch means has been actuated and the carriage released as just explained, the continued pull of the chain causes said nut to be engaged with the end of the worm, so that in the rotation of said worm, the carriage with the davit and the anchor supported thereon move inwardly over the deck of the vessel. As noted, in this position of the parts, the davit is securely locked or held against any pivotal movement upon the outer end of the carriage, and the pins or studs 42 on the davit being engaged with the fingers or extensions 45 of the plate 44, therefore prevent any gravity movement of the anchor head relative to the davit. Since the shaft of the anchor is locked in connection with the other end of the davit by the engagement of the rectangular sections of the loop 33 in the notches or recesses 32 with their longer dimensions at right angles to the narrow entrances to these recesses, it becomes apparent that the boom and the anchor are securely locked and held against any possibility of relative movement.

As the carriage 10 approaches the end of its inward movement, the pin or stud 74 enters the slot 75 in the lever 70 and throws this lever over beyond the perpendicular position, from which its movement is continued by gravity to the position shown in Fig. 2 of the drawings, thus swinging the yoke member 68 upwardly and lifting the chain 28 out of engagement with the sprockets 22.

From the above description it will be seen that the mechanism for casting the anchor by the proper movements of the davit and for returning the anchor to its normal position upon the ship's deck is entirely automatic and no other manual operation is required than the manipulation of the switch controlling the supply of current to the operating motor. By mounting the davit upon a travelling carriage, the movement of the davit to its projected position from the deck of the vessel is in a straight horizontal line combined with the gravity action of the anchor itself which effects the final swinging or pivotal movement of the davit with respect to the carriage. The several essential parts of this mechanism are of very rugged construction so that it is not liable to get out of order and require frequent repairs. Also, it will be noted that the arrangement of the several cooperating parts is very compact so that the mechanism as a whole will occupy a minimum of the deck space on the vessel. It will, of course, be understood that the operating motor and most of the drive gearing might be conveniently mounted or arranged in the hold of the vessel. The particular arrangement which happens to be illustrated in the drawing of this means for transmitting movement to the sliding carriage is of course not an essential requisite so far as the fundamental and novel features of my present improvements are concerned. In addition, it is to be understood that the form and construction of the sliding carriage, the anchor davit and the several other cooperating elements may also be susceptible of embodiment in various other alternative forms. Accordingly, the privilege is reserved of resorting to all such legitimate changes in the form of construction and relative arrangement of the various parts as may be fairly incorporated within the spirit and scope of the invention as claimed.

What I claim is:

1. In combination, a carriage mounted for horizontal travel upon the deck of a vessel, a davit pivotally supported at one of its ends on said carriage, a sheave mounted in the other end of the davit, an anchor, and a flexible element trained over the sheave and connected with said anchor, means for locking the davit against tilting movement on the carriage during the travelling movements of the carriage but releasing the davit at the end of the movement of the carriage in one direction, means controlled by the weight of the anchor when the davit is released for pivotal movement to swing the davit upon the carriage to a horizontally extended position with respect thereto, means for actuating the carriage, and means for operating said flexible element to lower and raise the anchor relative to the davit.

2. In combination, a carriage mounted upon a ship deck for horizontal travelling movement, a davit pivotally supported at one of its ends upon said carriage, means for locking the davit against pivotal movement during the travel of the carriage and for releasing the davit from such pivotal movement at the end of the outward movement of the carriage, a sheave mounted in the davit, a flexible element trained over said sheave, an anchor connected with said flexible element, a member pivoted in the carriage and sustaining the weight of the anchor in the travelling movement of the carriage, and said member in the davit having

cooperating parts whereby, upon the releasing of the davit, the gravity weight of the anchor effects an outward swinging movement of the davit to a horizontally extended position with respect to the carriage, and means for actuating said carriage.

3. In combination, a carriage mounted upon a ship deck for horizontal travelling movement, a davit pivotally supported at one of its ends upon said carriage, means for locking the davit against pivotal movement during the travel of the carriage and for releasing the davit from such pivotal movement at the end of the outward movement of the carriage, a sheave mounted in the davit, a flexible element trained over said sheave, an anchor connected with said flexible element, a member pivoted in the carriage and sustaining the weight of the anchor in the travelling movement of the carriage, and said member in the davit having cooperating parts whereby, upon the releasing of the davit, the gravity weight of the anchor effects an outward swinging movement of the davit to a horizontally extended position with respect to the carriage, a latch device for locking the carriage against movement at the end of its outward travel, and said locking means for the davit including a part coacting with said latch device when the davit is returned to its normal position on the carriage whereby the carriage is released for inward sliding movement, and means for actuating said carriage.

4. In combination, spaced guides secured upon the deck of a vessel, a carriage mounted to travel between said guides, a davit pivotally supported at one of its ends in said carriage for swinging movement to and from a position in superposed relation to the carriage, a sheave mounted in the free end of the davit, an anchor, a flexible element trained over said sheave and connected with the anchor, said davit having means cooperating with the guides to prevent pivotal swinging movement of the davit in the travel of the carriage and said means disengageable from the guides at the end of the outward travel of the carriage, a member pivotally mounted in the carriage and sustaining the weight of the anchor co-acting with means on the davit when the latter is released to swing said davit to a horizontally extended position relative to the carriage, means for actuating said carriage, and means for paying out and taking up the flexible element to lower and raise the anchor.

5. In combination, spaced guides secured upon the deck of a vessel, a carriage mounted to travel between said guides, a davit pivotally supported at one of its ends in said carriage for swinging movement to and from a position in superposed relation to the carriage, a sheave mounted in the free end of the davit, an anchor, a flexible element trained over said sheave and connected with the anchor, said davit having means cooperating with the guides to prevent pivotal swinging movement of the davit in the travel of the carriage and said means disengageable from the guides at the end of the outward travel of the carriage, a member pivotally mounted in the carriage and sustaining the weight of the anchor co-acting with means on the davit when the latter is released to swing said davit to a horizontally extended position relative to the carriage, means for actuating said carriage, means for paying out and taking up the flexible element to lower and raise the anchor, and means controlled by means on the carriage for disengaging said flexible element from the take-up means therefor when the carriage reaches the limit of its inward movement.

6. In combination, spaced guides secured upon the deck of a vessel, a carriage mounted to travel in said guides, a davit pivotally supported at one of its ends in said carriage for swinging movement from a position in superposed relation to the carriage to a horizontally extended position, latch means on the carriage cooperating with one of said guides to limit the outward travel of the carriage, a sheave mounted in the davit at its free end, a flexible element trained over the sheave and an anchor connected to said flexible element, a member pivotally mounted in the carriage sustaining the weight of the anchor and co-acting with means on the davit at the end of the outward travel of the carriage to swing the davit upwardly and outwardly to its extended position, a part on said davit cooperating with the latch means to release the carriage when the davit is returned to its normal position on the carriage, and means for actuating said carriage.

7. In combination, spaced guides secured upon the deck of a vessel, a carriage mounted to travel in said guides, a davit pivotally supported at one of its ends in said carriage for swinging movement from a position in superposed relation to the carriage to a horizontally extended position, latch means on the carriage cooperating with one of said guides to limit the outward travel of the carriage, a sheave mounted in the davit at its free end, a flexible element trained over the sheave and an anchor connected to said flexible element, a member pivotally mounted in the carriage sustaining the weight of the anchor and co-acting with means on the davit at the end of the upward travel of the carriage to swing the davit upwardly and outwardly to its extended position, a part on said davit cooperating with the latch means to release the carriage when the davit is returned to its nor-

mal position on the carriage, means for actuating said carriage, said part on the davit also co-acting with said guides in the traveling movement of the carriage to prevent the pivotal movement of the davit with respect to the carriage.

8. In combination, spaced guides secured upon the deck of a vessel, a carriage mounted to travel in said guides, a davit pivotally supported at one of its ends in said carriage for swinging movement from a position in superposed relation to the carriage to a horizontally extended position, latch means on the carriage cooperating with one of said guides to limit the outward travel of the carriage, a sheave mounted in the davit at its free end, a flexible element trained over the sheave and an anchor connected to said flexible element, a member pivotally mounted in the carriage sustaining the weight of the anchor and co-acting with means on the davit at the end of the upward travel of the carriage to swing the davit upwardly and outwardly to its extended position, a part on said davit cooperating with the latch means to release the carriage when the davit is returned to its normal position on the carriage, means for actuating said carriage, said part on the davit also co-acting with said guides in the travelling movement of the carriage to prevent the pivotal movement of the davit with respect to the carriage, means for paying out and taking up the flexible element to lower and raise the anchor, and said anchor and the davit having co-acting parts locking the davit and anchor together when the davit is in superposed relation to the carriage and automatically releasing the anchor for gravity movement when the davit is in its extended position.

9. In combination, spaced guides secured upon the deck of a vessel, a carriage mounted to travel in said guides, a davit pivotally supported at one of its ends in said carriage for swinging movement from a position in superposed relation to the carriage to a horizontally extended position, latch means on the carriage cooperating with one of said guides to limit the outward travel of the carriage, a sheave mounted in the davit at its free end, a flexible element trained over the sheave and an anchor connected to said flexible element, a member pivotally mounted in the carriage sustaining the weight of the anchor and co-acting with means on the davit at the end of the upward travel of the carriage to swing the davit upwardly and outwardly to its extended position, a part on said davit cooperating with the latch means to release the carriage when the davit is returned to its normal position on the carriage, means for actuating said carriage, said part on the davit also coacting with said guides in the travelling movement of the carriage to prevent the pivotal movement of the davit with respect to the carriage, means for paying out and taking up the flexible element to lower and raise the anchor, and said anchor and the davit having co-acting parts locking the davit and anchor together when the davit is in superposed relation to the carriage and automatically releasing the anchor for gravity movement when the davit is in its extended position, and a plate slidably mounted for longitudinal movement relative to the carriage having a slotted cam extension at one of its ends, the slot thereof receiving the free end of the davit and a part of the davit cooperating with the cam extension to slide the plate outwardly relative to the carriage, and the anchor shaft moving through said slot as the davit is swung upwardly and inwardly towards its normal position, and the gravity pressure of the anchor moving said slide plate inwardly relative to the carriage.

In testimony that I claim the foregoing as my invention, I have signed my name hereto.

BROR MAX SCHAUMAN.