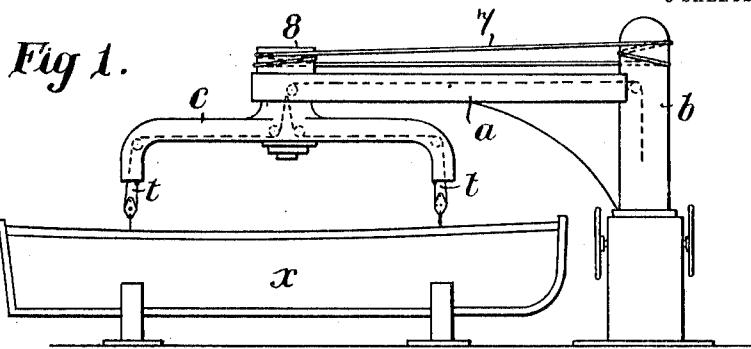
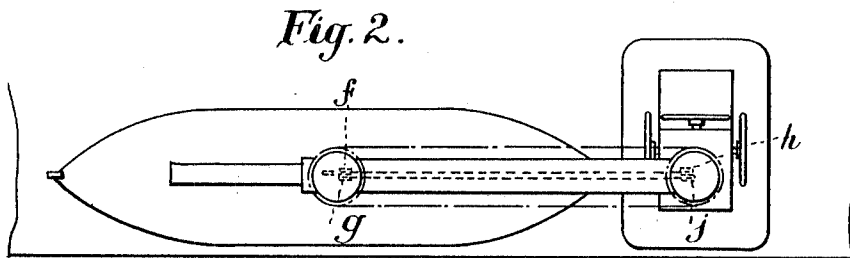
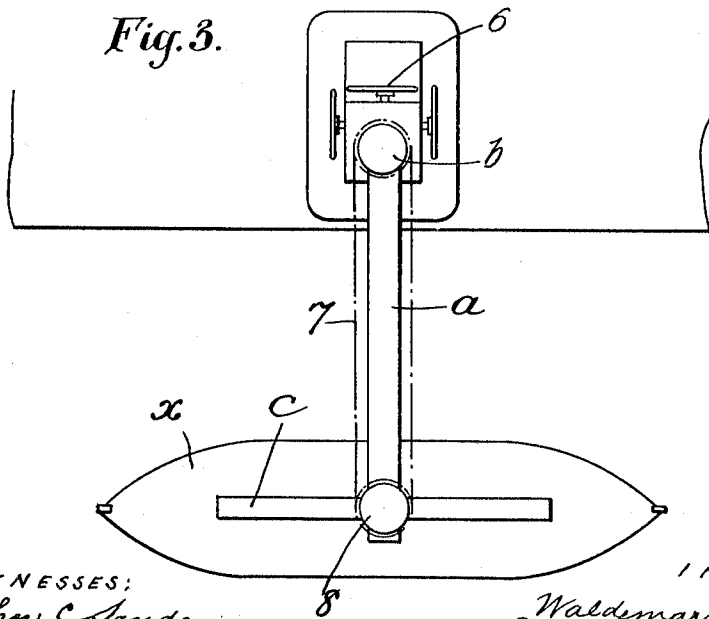


W. HARBINGER.
BOAT LOWERING APPARATUS FOR VESSELS.
APPLICATION FILED JAN. 7, 1914.

1,106,094.

Patented Aug. 4, 1914.

3 SHEETS—SHEET 1.



WITNESSES:

Johan C. Sanders
Albert F. Steiman

INVENTOR:

Waldemar Harbinger
By M. Kallan White

ATTY.

W. HARBINGER.
BOAT LOWERING APPARATUS FOR VESSELS.
APPLICATION FILED JAN. 7, 1914.

1,106,094.

Patented Aug. 4, 1914.

3 SHEETS-SHEET 2.

Fig. 4.

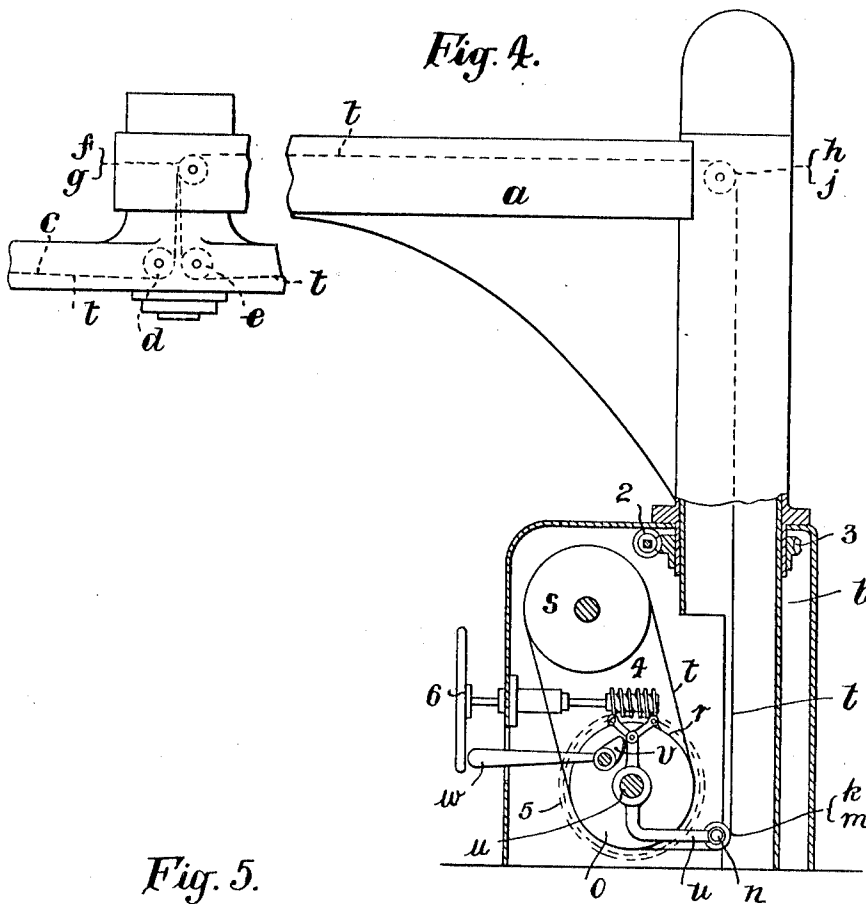
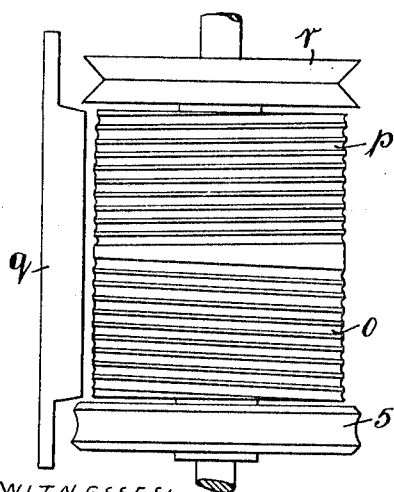
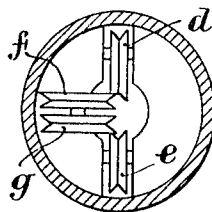


Fig. 5.



WITNESSES:
John C. Sanders
Albert E. Stouman

Fig. 6.



INVENTOR:
Waldemar Harbinger
BY Mr. Wallace White

ATTY.

W. HARBINGER.
BOAT LOWERING APPARATUS FOR VESSELS.
APPLICATION FILED JAN. 7, 1914.

1,106,094.

Patented Aug. 4, 1914.

3 SHEETS—SHEET 3.

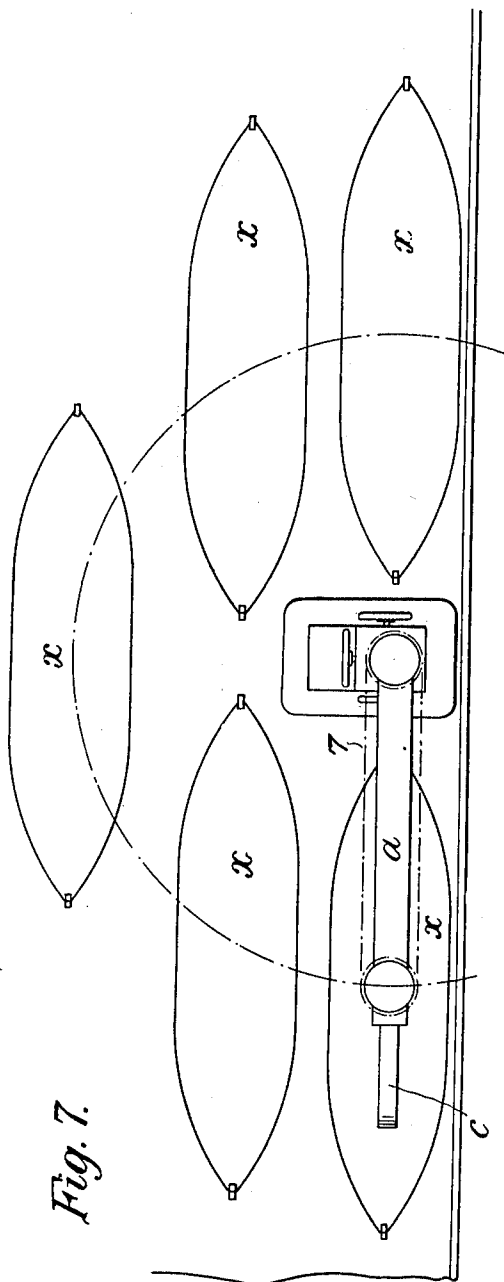


Fig. 7.

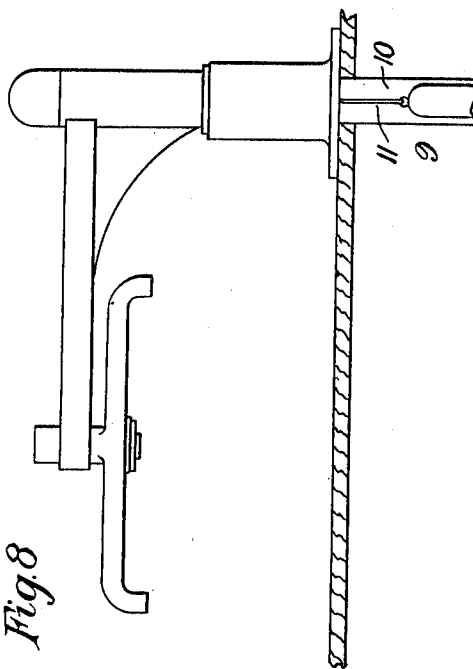


Fig. 8

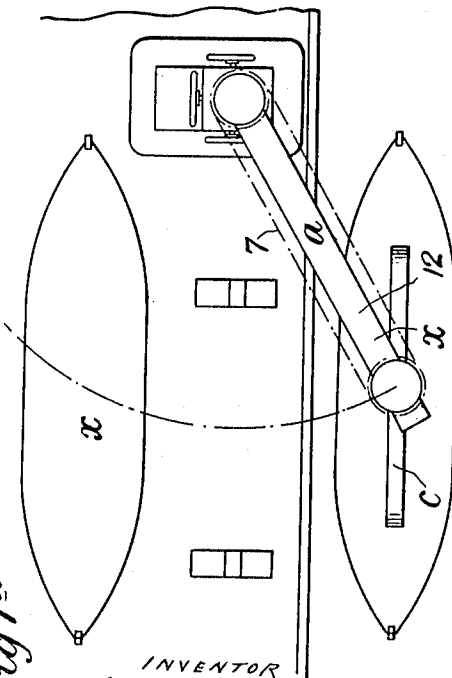


Fig. 7a

WITNESSES:
John C. Sanders
Albert F. Heuman

INVENTOR
Waldemar Harbinger
BY *Wm. Wallace White* ATT'Y

UNITED STATES PATENT OFFICE.

WALDEMAR HARBINGER, OF LONDON, ENGLAND.

BOAT-LOWERING APPARATUS FOR VESSELS.

1,106,094.

Specification of Letters Patent.

Patented Aug. 4, 1914.

Application filed January 7, 1914. Serial No. 810,711.

To all whom it may concern:

Be it known that I, WALDEMAR HARBINGER, a subject of the King of Great Britain, residing at London, England, have invented new and useful Improvements in Boat-Lowering Apparatus for Vessels, of which the following is a specification.

This invention relates to cranes and especially to apparatus for raising and lowering boats from ships' decks.

A crane and apparatus made in accordance with this invention comprises a cantaliver beam adapted to be swung on a vertical axis, a cross beam pivotally mounted on the outer end of the cantaliver, means for swinging or rotating the cantaliver on its axis and means for keeping the cross beam parallel with the keel of the ship or with any other given line, falls from the cross beam to the base of the crane and means for paying-in and paying-out the falls with or without means for regulating or braking the same.

The invention is particularly described with reference to raising and lowering boats from a ship's deck.

Figure 1 is an elevation showing diagrammatically one form of apparatus made in accordance with this invention. Fig. 2 is a plan thereof in its inboard position. Fig. 3 is a plan showing the crane in its lowering position. Fig. 4 is a cross section in diagram showing one arrangement of lowering and raising drums. Fig. 5 is a detail of a grooved rope drum. Fig. 6 is a detail showing position of pulleys in the center of the cross beam. Fig. 7 is a general plan showing one arrangement of boats. Fig. 7^a is a plan of a crane being moved into the lowering position. Fig. 8 is an elevation showing a counterbalancing weight.

Referring to the drawings, the cantaliver beam *a* is rigidly connected to a rotatably mounted hollow post *b*.

c is a cross beam pivotally mounted on the end of the cantaliver beam, *d e* are pulleys mounted in the center of the cross beam, and *f g* are pulleys mounted at the outer end of the cantaliver beam *a*; *h* and *j* are pulleys mounted in the hollow post *b*; *k* and *m* are guide pulleys mounted loosely on the shaft *n* and free to travel along the shaft; *o* is a drum provided with grooves *p* and guide bar *q*; *r* is a groove in which a band brake is adapted to operate; *s* is a drum with or without grooves around which the falls *t t*

are wound. The shaft *n* is or may be carried on arms *u*, one on each side of the drum *o*. These arms the connected to a band brake.

v is a cam operated by a hand lever *w* adapted to ease the band brake.

The falls *t* lead from the boat *x* to the winding drums *o* and *s*. The arrangements are such that when the falls are taut and the handle *w* in its normal position the brake is automatically on.

2 is a worm coacting with a worm wheel 3 on the post *b* for swinging the beam *a* on its vertical axis.

4 is a worm and 5 a worm wheel on the drum *o* for rotating the said drum. The worm may be operated by hand wheel 6 or by other power.

The beam *a* and cross beam *c* are preferably hollow so as to house the falls. The winding gear and guide pulleys *k* and *m* are all disposed in the base of the crane.

7 is a continuous rope or chain passing around the post *b* and the hollow pivot 8 fixed to the cross beam *c*, the arrangement being such that in whatever position the crane may be the cross beam is always parallel to the keel of the ship or any other given line.

9 is a counterbalancing weight inclosed in a tube or casing 10, 11 is a rope adapted to be passed over the drums *o* and *s* and so disposed as to be wound on to the drums as the falls *t t* are unwound and vice versa.

The boats *x x x x* may be arranged in any convenient manner around the crane. One such arrangement is shown in Fig. 7.

In operation when it is desired to lower a boat assuming the falls are attached to the boat, the boat is eased off its chocks, the crane is then swung out in the position shown at 12 in Fig. 7^a, and lowered to the level of the deck required, passengers and crew then take their places in the boat, the boat is swung out in the position shown in Fig. 3 and lowered. When the boat reaches the water it is automatically or otherwise disengaged from the falls, in any well known manner. During the lowering of the boat the falls will be unwound from the drums *o s* and the rope 11 has been wound up raising the weight 9. As soon as the boat has been disengaged the weight 9 runs down the tube and winds the falls up automatically, the guide *q* keeping the falls correctly to the grooves. The falls can then be

attached to another boat and lowered in the same manner.

Instead of the continuous rope 7 shown and described other gear may be employed, 5 for keeping the boat in line with the keel.

What I claim and desire to secure by Letters Patent is:—

1. A crane comprising a cantaliver beam adapted to be swung on a vertical axis, a 10 cross beam pivotally mounted on the outer end of the cantaliver, means for swinging or rotating the cantaliver and means for keeping the cross beam parallel with the keel of the ship or with any given line, in 15 combination with falls from the cross beam to the base of the crane and means for paying-in and paying-out the falls.

2. A crane comprising a cantaliver beam adapted to be swung on a vertical axis, a 20 cross beam pivotally mounted on the outer end of the cantaliver, means for swinging or rotating the cantaliver and means for keeping the cross beam parallel with the keel of the ship or with any given line, in 25 combination with falls from the cross beam to the base of the crane and means for pay-

ing-in and paying-out the falls with means for regulating or braking the same.

3. A crane comprising a cantaliver beam adapted to be swung on a vertical axis, a 30 cross beam pivotally mounted on the outer end of the cantaliver, means for swinging or rotating the cantaliver and means for keeping the cross beam parallel with the keel of the ship or with any given line, in 35 combination with falls from the cross beam to the base of the crane, a winding drum for paying-in and paying-out the falls, a counter balance weight, a rope connecting the said weight to the said drum said rope 40 being adapted to be wound on to the drum as the falls are paid out for the purpose of winding in the falls when the boats are disengaged.

In witness whereof, I have hereunto 45 signed my name in the presence of two subscribing witnesses.

WALDEMAR HARBINGER.

Witnesses:

ERNEST S. THOMPSON,
ALFRED BEESLEY CAMPBELL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."