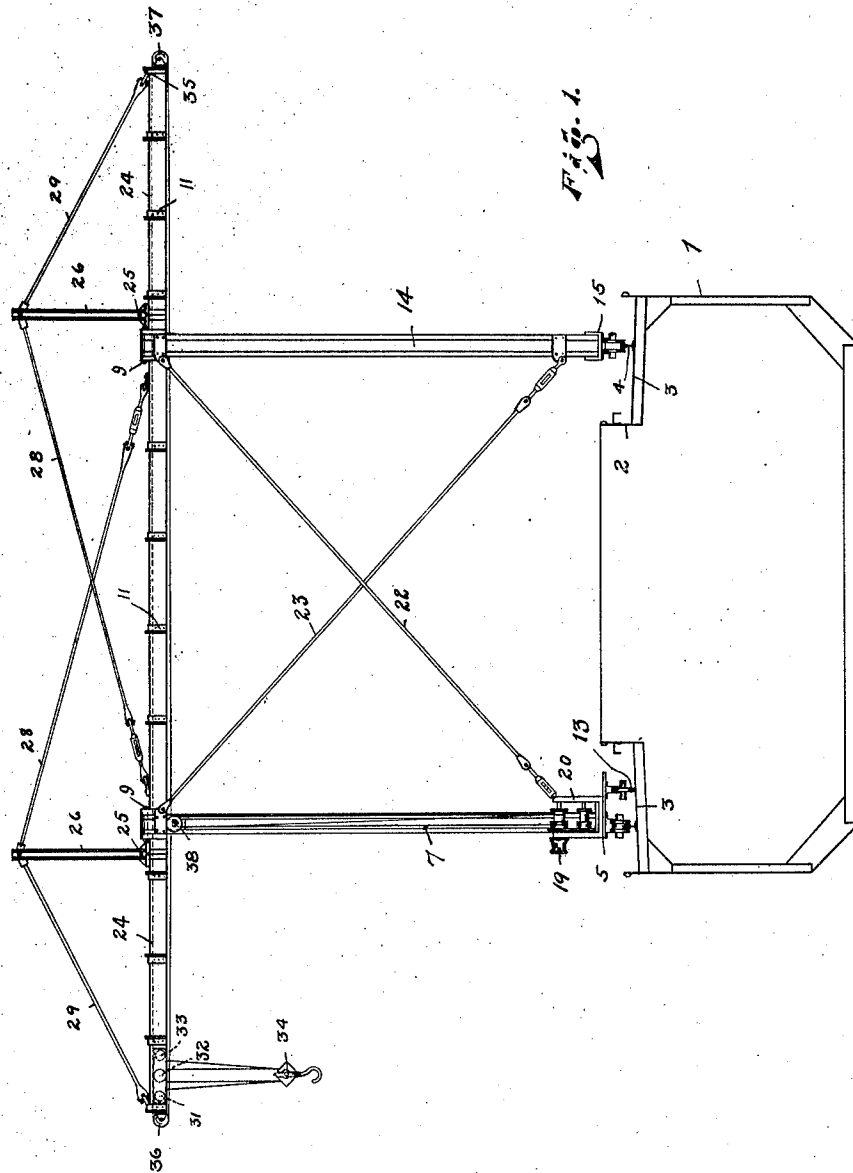


F. R. ZIMMERMAN.
BOAT CRANE.
APPLICATION FILED AUG. 26, 1921.

1,428,809.

Patented Sept. 12, 1922.
3 SHEETS—SHEET 1.



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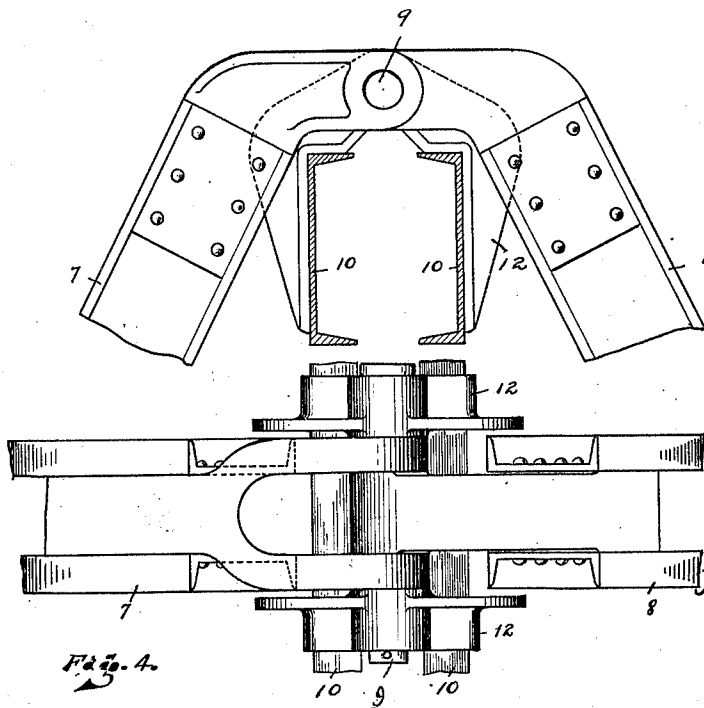
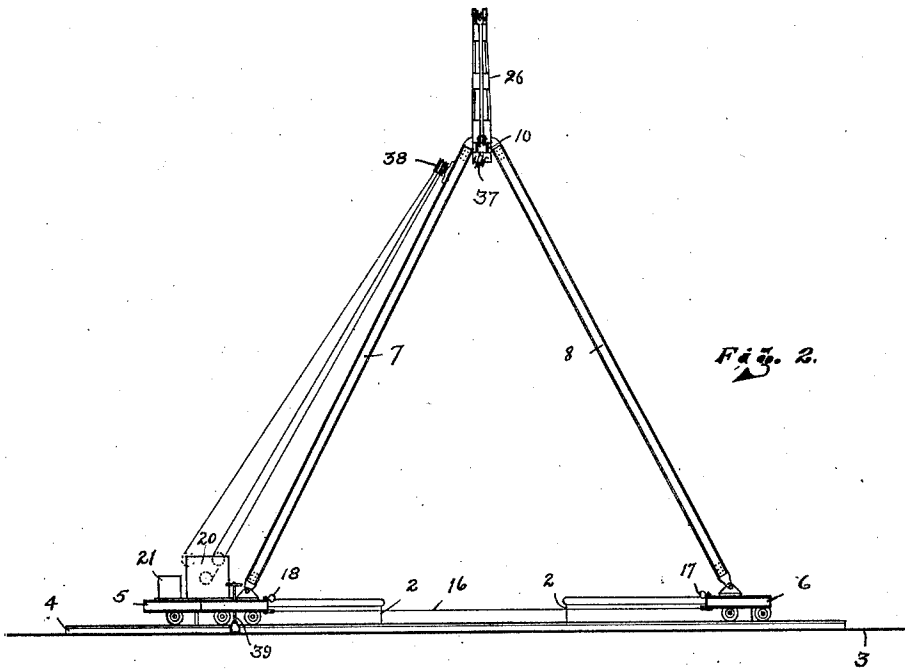


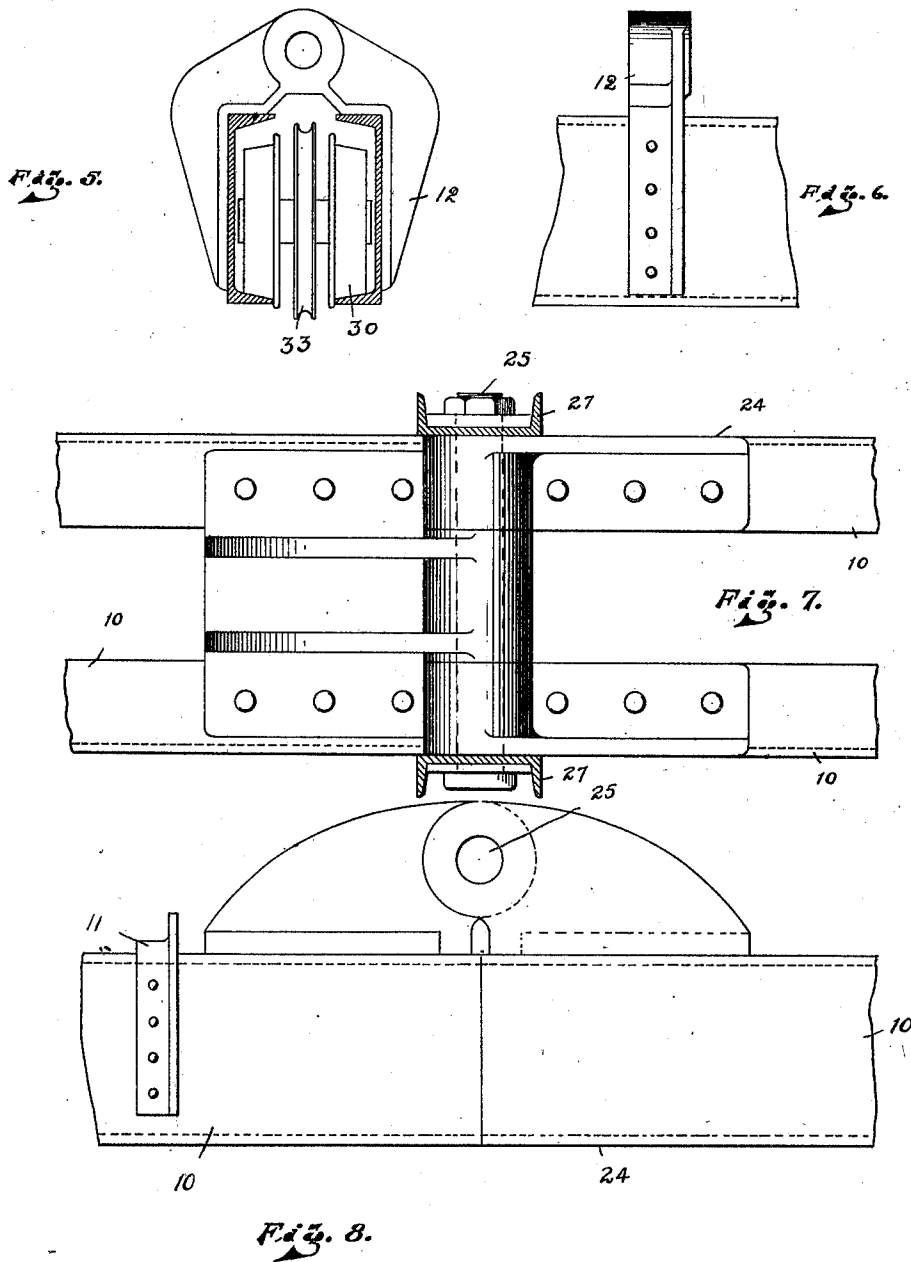
Fig. 4.

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UNITED STATES PATENT OFFICE.

FRANK R. ZIMMERMAN, OF SUPERIOR, WISCONSIN, ASSIGNOR TO SUPERIOR IRON WORKS COMPANY, OF SUPERIOR, WISCONSIN, A CORPORATION OF WISCONSIN.

BOAT CRANE.

Application filed August 26, 1921. Serial No. 495,690.

To all whom it may concern:

Be it known that I, FRANK R. ZIMMERMAN, a citizen of the United States, residing at Superior, in the county of Douglas and State of Wisconsin, have invented certain new and useful Improvements in Boat Cranes, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to boat cranes and has special reference to a traveling, collapsible and foldable crane for canal boats.

The principal object of the invention is to produce an adjustable crane of the character described for boats navigating restricted waters such as canals or the like wherein occur numerous fixed bridges under which it becomes necessary for the boats to pass from time to time and in which event the clearance intermediate of the deck of the boat and the bridge is limited, necessarily limiting the distance anything carried by the boat can project above the deck thereof.

Another object is to produce a device of this character which may be quickly and conveniently adjusted to or from its operative position.

Other objects and advantages will appear in the further description of the invention.

Referring to the accompanying drawing forming part of this application in which like reference characters indicate like parts:

Figure 1 represents a vertical cross sectional view of a canal boat showing one of the improved cranes in operative position thereupon;

Figure 2 is an end elevation of a crane,

Figure 3 is an enlarged transverse sectional view of the trolley track showing the pivotal connection of the upper end of the supporting legs in elevation;

Figure 4 is a top plan view of the pivotally united ends of the supporting legs,

Figure 5 is a view similar to Figure 3 showing one of the track suspending yokes and the trolley in elevation.

Figure 6 is a side elevation of one of the suspending yokes;

Figure 7 is a plan view of the hinged connection of one jib of the crane showing the upright mast in section, and

Figure 8 is an elevation of the lugs forming the pivotal connection of the jib.

1 represents the hull of a modern canal

boat having the hatch coaming 2 elevated somewhat above the deck, leaving a fore and aft space or runway 3 intermediate of said coamings and the outer edge of the boat, such being common in vessels of this character. It is understood by those versed in the art that the hatch coamings 2 are not continuous the full length of the boat but only about the hatches, leaving spaces flush with the space or deck 3 intermediate of the hatches, and into one of which spaces it may be desirable at times to lower the crane.

In carrying out the herein described embodiment of the invention, a track rail 4 is securely fixed approximately in the center of the deck in each space 3, fore and aft of the boat. On one of the rails 4 is mounted a power carriage 5, and spaced therefrom the dolly 6 which respectively support the normally oblique legs 7 and 8 of one side of the crane. These legs are pivotally united at their upper ends as at 9, and suspended therefrom is the thwartship crane track which is composed of the two spaced channel bars 10. These bars are held in their fixed spaced relation to each other by suitable U-shaped yokes 11, a pair of which, indicated at 12, are so spaced adjacent either end of the centermost portion of the trolley track as to be cooperatively assembled with the pivotal connection 9 of the upper ends of the legs of the crane, they being suitably shaped for such purpose.

As an additional support for the power carriage 5 I have shown a flat wheel 13 upon the inner side thereof which may rest directly upon the deck 3 and assist in stabilizing the carriage, and, if desired, any form of rail gripping device, as indicated at 39, may be employed for holding the carriage or dollies in clamped relation to the rails 4.

Upon the opposite side of the boat to that carrying the pair of legs just described are a similar pair of crane supporting legs 14, they being connected at their upper ends to the trolley track in exactly the same manner as the legs 7 and 8, and are pivotally supported at their lower ends upon two dollies 15 of the same construction as that shown at 6 associated with the legs 7 and 8.

These vehicle supports for the lower ends of the legs are held together by a line 16 of suitable predetermined length and when

it is desired to raise or lower the crane it is only necessary to connect each pair of carriages which support the legs by a suitable block and tackle engaged in the shackles 17 and 18, provided for that purpose. This block and tackle may be operated by hand or any convenient source of pulling power as for example the nigger head 19 on the winch 20 mounted on the power carriage 5. This carriage may also have a motor 21 mounted thereupon for operating the winch 20. In this manner the vehicle supports for the legs may be drawn together for elevating the trolley track or slacked away from each other for lowering the trolley track onto the deck of the boat.

I have shown at 22 and 23 diagonal guys thwartship of the boat for bracing the crane, there being a pair of such guys for both the forward and after side of the crane.

As before stated the trolley track is composed of two spaced channel bars 10, facing each other, and the central portion of this track extends slightly beyond the pivotal connection of the supporting legs at either end thereof. Attached to either end is an extension or jib, indicated at 24, each jib being connected to the upper side of the central portion of the track by a hinged joint illustrated in Figures 7 and 8, the pivotal point of which is indicated at 25.

Upon each of said pivotal points 25 upwardly extends a short fabricated mast 26 comprising the two channel bars 27 having the inboard and outboard guy lines 28 and 29 respectively attached in the upper end thereof, this pivotal connection of the jib and the mast being for the purpose of allowing both to fold inwardly upon the central body portion as the jib is raised and tipped over for such purpose, which is done, of course, at such time as when the trolley track is lowered upon the deck of the boat. It is readily seen that this positioning and collapsing of the crane will snugly stow away same on the deck of the boat with but little if any projection thereof above the hatch coaming 2.

The hoisting or load supporting trolley is indicated at 30 and may be of any ordinary type except that I prefer to employ one having three sets of sheaves as indicated at 31, 32 and 33, which permits of the line leading to the double sheave block 34 and the dead end of the hoisting cable to occur at the extreme outer end of the jib of the trolley carriage on the opposite side of the boat to that on which the power winch is carried, thus permitting of the trolley being run back and forth without affecting the elevation of the load carried thereby.

I have illustrated the dead or stationary end of the hoisting cable as occurring at 35, which is the extreme outer end of the jib in which the single sheave 37 is mounted;

it being understood that a double sheave, indicated at 36, is fixed upon the outer end of the opposite jib. This hoisting cable extends from its dead end fastening, adjacent the single sheave 37, to and about the sheave 33 in the trolley, thence down and about the double sheave block 34, up to and around the sheave 32 in the trolley, back to and around the sheave block 34, up to and around the sheave 31 in the trolley, around one of the sheaves 36 in the end of the jib, thence back to and around one of the triple sheaves 38, down to the hoisting mechanism. The endless trolley pulling line, controlled by the hoisting mechanism at 20, passes upwardly therefrom to and around two of the triple sheaves 38, around one of which one side of the line passes to and around the sheave 37 adjacent the dead end of the hoisting line, and thence longitudinally of the track of the crane to and around one of the sheaves 36 at the end of the opposite jib from where it returns to the triple sheave 38 around the opposite side of one of which it returns again to the hoisting mechanism; the triple sheave 38 being mounted upon the upper end of the leg 7.

It is apparent to those versed in the art that the hinged connection of the jibs to the central portion of the trolley track may be disposed vertically upon one side thereof instead of horizontally which would permit of the jibs being swung laterally instead of vertically.

From the foregoing it is evident that I have devised an exceedingly simple, adjustable, folding boat crane for handling freight to and from the vessel and one that may be readily collapsible and occupy the least space possible when it becomes necessary for the boat to pass under fixed bridges or the like or for lashing to the deck of the vessel for safety when at sea.

Having thus described my invention, what I claim and desire to secure by Letters Patent, is:

1. The combination with a boat of the character described of a foldable, traveling crane carried transverse the deck of the boat, collapsible means for raising and lowering the crane at either end thereof, said crane having pivotally adjustable portions at the ends thereof for extending beyond the sides of the boat, substantially as described.

2. A folding, traveling boat crane of the character described comprising two pairs of obliquely disposed adjustable supporting legs, one pair adjacent either side of the boat and supported upon the deck thereof, a trolley track pivotally suspending from the apexes of the supporting legs of the crane, longitudinally extending jibs pivotally mounted to either end of the track, means for adjusting the lower ends of the legs towards or from each other for raising

or lowering the trolley track, a trolley within the track and means for operating same.

3. The combination with a boat of the character described of a traveling collapsible crane carried upon the deck thereof and means whereby the crane may be raised and lowered transverse the deck of the boat, substantially as and for the purpose described.

4. The combination with a crane of the character described, for mounting upon a

boat, of extensions upon either end of the crane pivotally attached thereto and means for raising and lowering the crane whereby the entire crane may be folded down onto the boat and within the limits of the width thereof, substantially as described. 15

In testimony whereof I hereunto affix my signature in the presence of two witnesses. 20
FRANK R. ZIMMERMAN.

Witnesses:

A. W. PHINNEY,
FRED MICHAEL.