

No. 815,706.

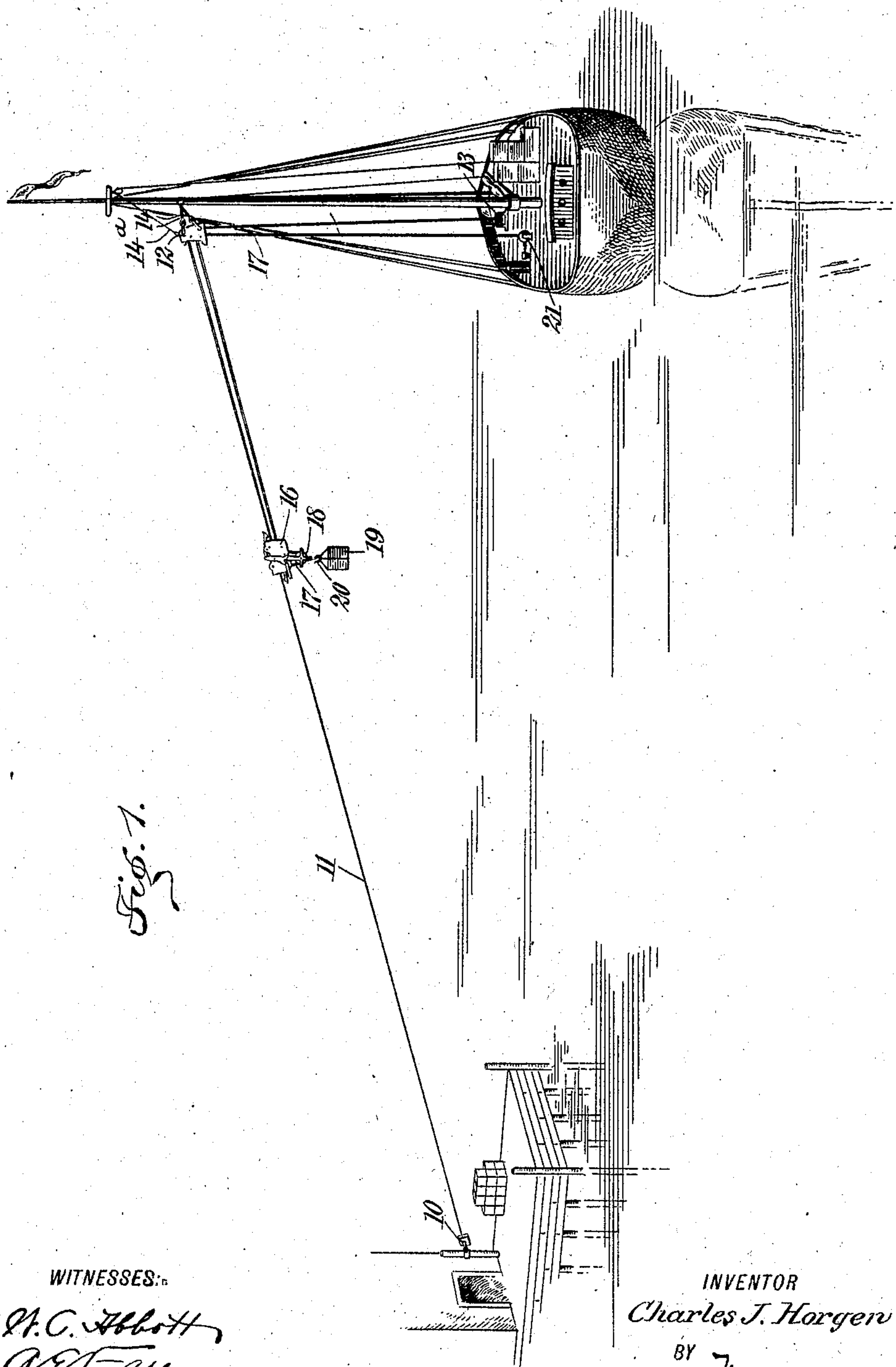
PATENTED MAR. 20, 1906.

C. J. HORGEN.

HOISTING AND CONVEYING APPARATUS.

APPLICATION FILED MAY 13, 1905.

2 SHEETS—SHEET 1.



WITNESSES:

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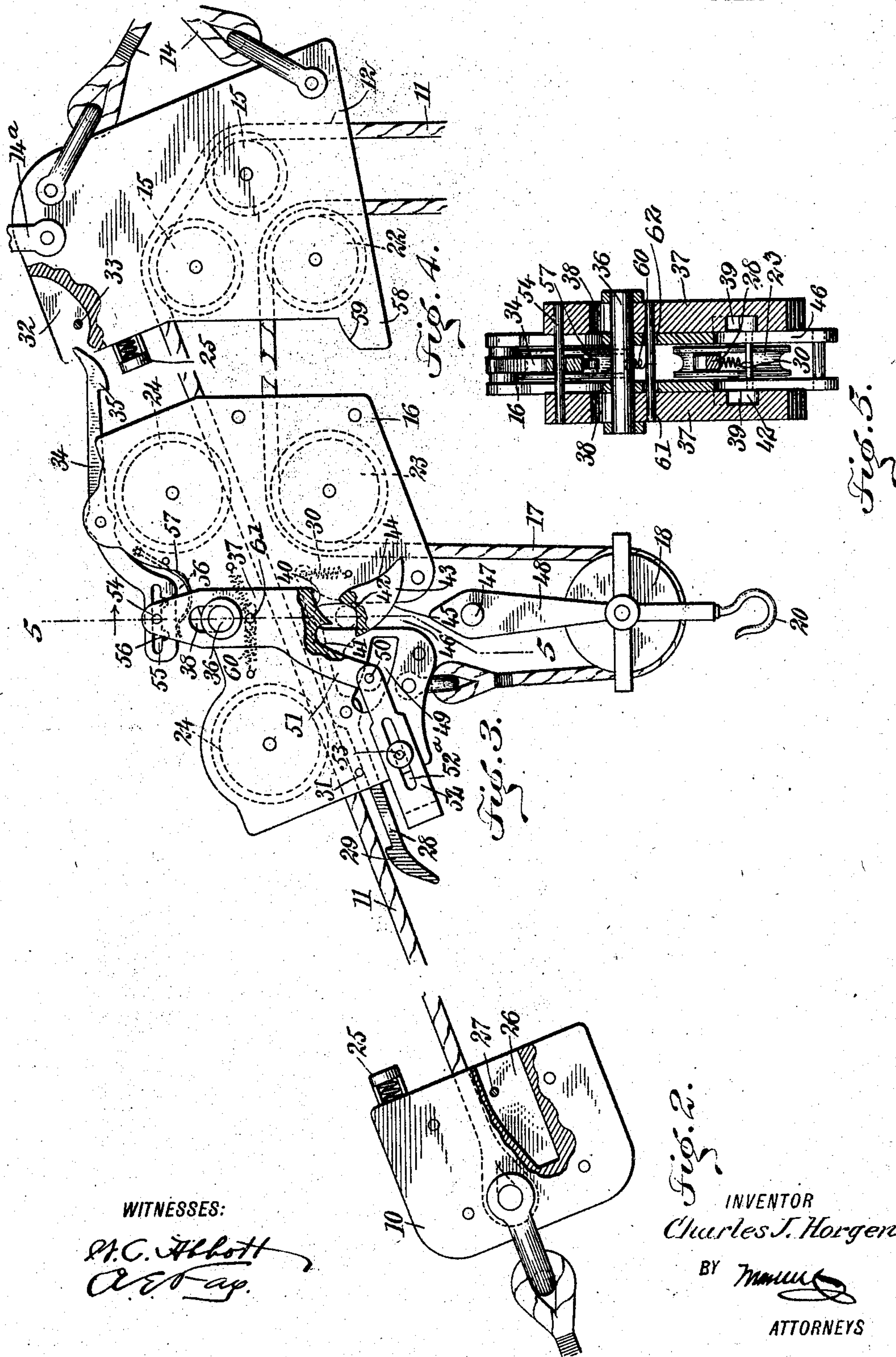
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WITNESSES:

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Fig. 2.
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UNITED STATES PATENT OFFICE.

CHARLES J. HORGAN, OF NEW YORK, N. Y.

HOISTING AND CONVEYING APPARATUS.

No. 815,706.

Specification of Letters Patent.

Patented March 20, 1906.

Application filed May 13, 1905. Serial No. 260,243.

To all whom it may concern:

Be it known that I, CHARLES J. HORGAN, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Hoisting and Conveying Apparatus, of which the following is a full, clear, and exact description.

My invention relates to a device for hoisting and conveying purposes in general, and is especially applicable to loading and unloading ships.

The invention comprises a cable or similar flexible element placed on an incline and a carriage mounted on the cable and adapted to move along it, the carriage being provided with automatic means for manipulating a pulley to assist in the several operations of loading and unloading.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view showing a boat fitted up with an apparatus embodying the principles of my invention. Fig. 2 is a side elevation, partly in section, of a block constituting an anchor for the lower end of the hoisting apparatus with parts in section to show interior construction. Fig. 3 is a similar view of the carriage. Fig. 4 is a similar view of the upper block, and Fig. 5 is a sectional view on the line 5-5 of Fig. 3.

Fig. 1 shows a wharf provided with a block 10, connected with a stationary support in any desired manner and having a cable or other flexible element 11 secured thereto. This cable passes upwardly at an angle of about twenty degrees to a block 12 and through the same to a windlass 13 on the boat. The block 12 is preferably connected with the mast of the boat by means of two short cables 14, constituting a triangle, and a halyard 14^a from the masthead, hooked to the upper side of the block, and is provided with pulleys 15 (shown in dotted lines in Fig. 4) for guiding the cable 11. Riding on the cable 11 is a carriage 16, to which is secured the end of a cable 17. This cable passes under a pulley 18, which is vertically movable with respect to the carriage and is designed to carry a load. The cable 17 then passes

through the carriage to the block 12 and from there down to a hoisting-engine 21 on the boat. The block 12 is provided with a pulley 22 for guiding the cable and the carriage with a pulley 23 for the same purpose. The carriage is mounted on wheels 24, running on the cable 11. Each of the blocks has a buffer 25 for yieldingly resisting the jar of the carriage when it strikes it. Means are also provided for automatically locking the carriage to each block when it strikes. For this purpose the block 10 is constructed with a cavity 26, having a pin 27, passing transversely across it.

On the carriage is located a pivoted lever 28, having a catch 29, adapted to engage the pin 27 when brought into proper position. A spring 30 normally holds the hook in proper position for engaging the pin. A pin 31 is employed on the carriage to limit the movement of the lever in one direction. The other block is provided with a cavity 32, having a pin 33, and on the carriage is mounted a second lever 34, having a catch 35 for engaging the last-named pin. In order to operate these levers to automatically unlock them at the proper times and to support the load while the carriage is moving along the cable 11, the following mechanism is provided: Transversely across the carriage extends a shaft 36. On the outside of the carriage two bars 37 are placed, each bar having an elongated slot through which they are pivoted on the shaft 36. This permits a vertical motion as well as a swing motion. Each of the bars is provided with a channel 39 upon its inner surface. This channel is formed with three cam-surfaces 40, 41, and 42, the latter being located at the top of an extension 43, which is provided with two other cam-surfaces 44 and 45 on the right and left hand side thereof. The carriage having a vertical slot 46 adjacent to the position occupied by the channel 39 when it is in normal position, a pair of studs 47 on a frame 48, which supports the pulley 18, is free to move upwardly into the channel 39. This arrangement is provided so that the pulley 18 and the weight supported thereby can be carried directly by the carriage through the instrumentality of the cam-surface 42, on which the stud 47 is adapted to rest. The carriage is also formed with a slot 49 for receiving a stud 50, mounted on a pro-

jection 51 on the arm 37. This stud engages a reciprocating bar 52 and is operated by it. This bar has an elongated slot 52^a, in which operates a stud 53, mounted in a stationary position on the carriage.

At the upper end the arms 37 are provided with a transverse pin 54, which passes through a slot 55 in the lever 34. This slot is formed with two depressions 56, large enough to receive the pin 54. A spring 57 normally holds the lever 34 in the proper position for keeping the catch 35 low enough to engage the pin 33 when the carriage moves against the block 12. The block 12 is provided with a nose or projection 58, the upper surface 59 of which is curved and inclined for a purpose which will be stated below.

Springs 60 are employed to suspend the bars 37 and keep them in central position, but permit them to yield. These springs are connected with the pins 61, which can reciprocate in slots 62 in the carriage 16.

The operation of the device will now be described. Assuming the stud 47 to be in the channel 39 and resting on the surface 42, as shown in dotted lines in Fig. 3, and that the cable 17 is being let out, so that the carriage slides down the inclined cable 11, it will be seen that when the carriage engages the buffer 25 the end of the bar 52 will engage the outer surface of the block 10. This pushes the bar rearwardly with respect to the carriage and swings the arms 37 about the shaft 36, so that the surface 42 will move out of the way of the stud 47. This removes the support of the latter and it drops out. The weight of the pulley 18 now causes it to descend, taking with it the cable 17, which is being paid out at the other end under control of the brake. The descent of the pulley to the desired place will be readily understood. In an obvious manner the catch 29 engages the pin 27 when the carriage reaches the position described above, and also when the bar 52 is pushed inwardly the pin 54 engages the left-hand slot 56. This holds the arms 37 in the position in which they were forced by the bar 51. As the arms 37 are normally held in an elevated position by springs 60, the ascent of the pulley 18 when the hoisting-engine is operated to raise it will cause the studs 47 to slide up the cam-surface 45 and engage the cam-surface 41, which at that time is in registration with the slot 46. Further force applied by the hoisting-engine will operate to cause the studs to engage the bar 28, which is located behind the slot 46, and disengage the catch 29 from the pin 27. This allows the carriage to move upwardly along the cable, and when this operation commences the studs 47 will settle back onto the cam-surface 42, and this will pull the arms 37 into their lowermost position, bringing them also back to central position, with the pin 54 between the two slots 56.

When the carriage reaches the block 12, the catch 35 is at first in such a position that it cannot engage the pin 33 on account of the weight on the arms 37; but the continued operation of pulling on the cable 17 forces the studs 47 to rise against the cam-surface 40 and then to drop along the cam-surface 44 and force the arms to the rear, so that the pin 54 will engage the right-hand depression 56 and the pulley will slide off from its support. The engine is stopped at this time and the weight lowered to the deck by the ordinary means, it being controlled, as usual, by a brake or the like. Before this occurs the carriage is forced up the incline 59, so that it is left in a position with its front lower surface on the inclined surface 59, and as soon as the weight is removed from the surface 42 the spring 57 is free to act to force the catch into engagement with the pin 33, so as to lock the carriage to the block. In raising the load and pulley to the block again the first operation is to cause the studs 47 to engage the surface 41 and drop back against the surface 42 when the strain on the cable caused by the hoisting-engine is removed. As the carriage is held up by the surface 59 until this time, it will be seen that the weight of the pulley and load thereon will free the catch 35 from the pin 33 and allow the carriage to slide down this incline and then run down the inclined cable. From this point the operations described above can be repeated.

Among the advantages of the invention are the fact that the carriage runs on a cable which can be adjusted from the boat to suit the circumstances, and a single operating-cable is used to operate the carriage, all changes of direction and motion from vertical to inclined being effected automatically by the mechanism described.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A hoisting and conveying device, comprising a pair of blocks located at a distance from each other and adapted to be connected by an inclined cable, the upper of said blocks being provided with a lateral projection having an inclined curved upper surface, and a carriage movable from one block to the other and adapted to be supported on said inclined surface.

2. A hoisting and conveying device comprising an inclined cable, a block at each end thereof, a carriage movable along the cable, a second cable having an end secured to the carriage and passing over one of said blocks, a pulley connected to the second cable below the carriage, means for allowing the pulley to move with the second cable, means for connecting the pulley with and mounting it on the carriage, means for automatically securing the carriage to each block when it comes

in contact therewith, and a curved inclined surface on the upper block adapted to receive the carriage and support it.

3. A hoisting and conveying device comprising an inclined cable, a block at each end thereof, a carriage movable along the cable, a second cable having an end secured to the carriage and passing through one of said blocks, a pulley mounted on the second cable below the carriage, means operable by gravity for securing the pulley to the carriage, means on the upper block for receiving and supporting the carriage, and means for automatically disengaging the carriage from the upper block when the pulley is drawn up by the second cable into engagement with the carriage.

4. A hoisting and conveying device, comprising a carriage, an arm pivotally mounted thereon, resilient means for suspending said arm from the carriage, said arm being provided with a slot and with a surface in the slot by means of which a load is adapted to be supported, means for moving the arm to such a position as to disengage a load from said supporting-surface, and means for holding the arm in such position.

5. A hoisting and conveying device, comprising a carriage, an arm pivotally mounted thereon, resilient means for suspending said arm from the carriage, said arm being provided with a slot and with a surface in the slot by means of which a load is adapted to be supported, means for moving the arm to such a position as to disengage a load from said supporting-surface, means for holding the arm in such position, said last-named means being yieldable, and means on the arm for causing the latter to swing into position for supporting the load when the load is brought into contact with it from below.

6. A hoisting and conveying device, comprising a carriage, an arm pivotally mounted thereon and capable of vertical movement, means for yieldingly supporting said arm from the carriage, said arm being provided with a slot having a surface adapted to support a load, and two cam-surfaces located below the first-mentioned surface and converging toward each other at a point below the first-mentioned surface and to one side thereof.

7. A hoisting and conveying device, comprising a carriage, an arm pivotally mounted thereon, resilient means for suspending said arm from the carriage, said arm being provided with a slot and with a surface in the slot by means of which a load is adapted to be supported, and means for moving the arm to such a position as to disengage a load from said supporting-surface, said arm being also provided with two cam-surfaces located below the first-mentioned surface, converging toward each other to a point at one side of

the first-mentioned surface, and the slot being provided with cam-guiding surfaces above the first-mentioned surface.

8. A hoisting and conveying device, comprising a movably-supported arm, said arm being provided with a slot for receiving a load-supporting device, the arm having cam-guiding surfaces located adjacent to said slot and cam-surfaces located below the guiding-surfaces, and a movable bar connected with the arm and adapted to move the arm when the bar engages the stop.

9. A hoisting and conveying device, comprising a movably-supported arm, said arm being provided with a slot for receiving a load-supporting device, said slot having a surface for supporting said load-supporting device, a pair of cam-surfaces located above said first-mentioned surface, said arm also having a pair of cam-surfaces located below the first-mentioned surface and extending to one side thereof in a downward direction, and a movable bar connected with said arm and adapted to move the arm when the bar engages a stop.

10. A hoisting and conveying device, comprising a movably-supported arm, said arm being provided with a slot for receiving a load-supporting device, said slot having a surface for supporting said load-supporting device, a pair of cam-surfaces located above said first-mentioned surface, said arm also having a pair of cam-surfaces located below the first-mentioned surface and extending to one side thereof in a downward direction, a movable bar connected with said arm and adapted to move the latter, and yielding means for holding the arm in its extreme positions.

11. A hoisting and conveying device, comprising a carriage, an arm pivotally mounted thereon and adapted to support a load, a pair of blocks against which the carriage is adapted to move, a catch on the carriage adapted to be operated by the load when the latter is brought into engagement with the arm, said catch being adapted to hold the carriage in contact with one of said blocks and to support said arm, means for swinging said arm on the carriage, and means on said catch for holding the arm in its extreme positions.

12. A hoisting and conveying device, comprising a carriage, an arm pivotally mounted thereon, said arm being provided with a pin, and a lever for locking the carriage in stationary position, said lever having two depressions in which said pin is adapted to engage for holding the arm in its extreme positions.

13. A hoisting and conveying device comprising a carriage, an arm pivotally mounted thereon and capable of vertical motion, said arm being provided with a pin, a lever for locking the carriage in stationary position,

said lever having a slot provided with two
depressions in which said pin is adapted to
engage, resilient means for holding said arm
in elevated position, means for supporting
5 the load, and means on the arm for engaging
said load-supporting means.

In testimony whereof I have signed my

name to this specification in the presence of
two subscribing witnesses.

CHARLES J. HORGAN.

Witnesses

JNO. M. RITTER,
A. E. FAY.