APPARATUS FOR LOADING VESSELS.

1,013,925.


To all whom it may concern:

Be it known that I, JOHN T. CLARK, a citizen of the United States, residing in the city of New York, borough of Manhattan, county and State of New York, have invented a certain new and useful Apparatus for Loading Vessels, of which the following is a specification.

This invention is an apparatus for handling freight, and merchandise generally, and it is adapted, more particularly, for loading vessels.

The object of the invention is to save labor in handling freight when loading the same into a vessel, whereby a vessel may be loaded rapidly and economically.

The invention embodies a number of distinctly novel features, some of which are as follows: first, a car or cage provided with a movable member, or a plurality of movable members, whereby upon lowering the car or cage to a predetermined position the movable member or members will be tilted for the purpose of automatically discharging the load; second, means for controlling the descent of a loaded car or cage whereby the load may be prevented from dropping below the level of the deck until the operator releases the controlling mechanism and said load may be arrested at any point in its descent for the purpose of discharging the load at a desired level; and, third, means whereby the car or cage when unloaded will be lifted automatically to a point where another load is to be deposited thereon.

In the accompanying drawings I have illustrated one practical embodiment of the invention, but the construction shown therein is to be understood as illustrative only, and not as defining the limits of the invention.

Figure 1 is a view, partly in vertical section through a vessel, and partly in side elevation, illustrating my loading apparatus in operative position over a hatch opening, the cage being shown in a raised position. Fig. 2 is a view similar to Fig. 1 with the cage in the lower position illustrating the operation of discharging a load from said cage. Fig. 3 is a side elevation of the loading apparatus, the cage being in a raised position, said view illustrating said loading apparatus on an enlarged scale as compared with Figs. 1 and 2. Fig. 4 is a front elevation of the apparatus shown in Fig. 1, the 55 counterweight being omitted. Fig. 5 is a plan view of the apparatus shown in Figs. 3 and 4.

In the practical embodiment of the invention shown in the drawings, I employ a platform, A, upon which is erected a supporting frame, B, the latter consisting preferably of inclined members, b, and cross bars, b'. The platform may be of any suitable construction, but it is provided with an opening, a, the opposite side walls of which are beveled as indicated at a' in Fig. 3, said opening, a, being of sufficient size to enable a car or cage, C, to pass into said opening.

The car is shown as consisting of a skeleton bottom frame, c, upright side frames, c', and cross rails, c'', uniting the side frames. The bottom of the car or cage is movable relative to the bottom frame, and in the embodiment of the invention shown said movable bottom consists of two movable members, C', C''. The inner edges of the movable members are adapted to rest upon a supporting rail, c'', attached to the bottom frame, but the opposite outer edges of members C', C'', are hinged or pivoted in any suitable way, as at c'', to the bottom frame. When the apparatus is to be used for loading barrels or casks, it is preferred to employ members, C', C'', which are curved on 15 their upper sides whereby the barrels or casks will become seated upon the members in a way to be retained against movement relative to the car when the latter is lowered in a vessel. Obviously the particular form of the members, C', C'', is not an essential feature. As the car reaches the limit of its lower movement the members, C', C'', are lifted so as to assume the oppositely inclined positions shown more clearly in Fig. 2, whereby the load will be discharged automatically from the car and at the respective sides thereof. The elevation of the movable bottom members is effected by means of legs, C', which are attached to said bottom members 80 bars at the inner edges thereof, said legs depending below the skeleton frame of the car so that the legs will strike against the bottom of the vessel's hull or against an object in the path of the car, whereby as the car reaches the limit of its downward move-
ment the legs will operate to elevate the inner edges of the hinged members and thus discharge the load from the car.

The cage or car is suspended flexibly from a suitable hoisting mechanism by means of cables, D. The cables are fastened to the cross rails, c, of the cage so that said cables will diverge when the cage is lowered, as shown in Fig. 2, for the purpose of suspending the cage in a manner to preclude any displacement of the load upon said cage during the lowering operation. The suspending cables are separately coiled on winding drums, E, which are fast with a horizontal shaft, F. Said shaft is journaled in suitable bearings, j, attached to frame, B, for the shaft to occupy a position above the platform, A. The winding drums are suitably spaced on shaft, F, for suspending cables, D, to be coiled upon said drums, whereby the drums are adapted for rotation with the shaft so as to coil the cables on the drums and elevate the car, or to uncoil said cables from the said drums and lower the car.

For the purpose of controlling rotation of shaft, F, and drums, E, so that the load imposed upon the car, and to retain said car in a stationary raised position during the operation of depositing a load upon said car, there is employed a suitable form of brake mechanism which cooperates with the shaft. Said brake mechanism is shown as consisting of brake drums, G, G', brake bands, H, H', and a brake shaft, I. Said brake shaft is mounted for rotation in suitable bearings, i, attached to cross rail b' of frame B. The shaft is provided at its ends with cranks, j', to which are fastened one end of brake bands, H, H', the other ends of said brake bands being secured at k to cross rail, b', see Fig. 4. The brake shaft is provided with the rearwardly extending arm, j, carrying a weight, J, which operates to turn shaft, I, in a direction to forcibly apply the brake bands to brake drums, G, G', whereby shaft, F, is held from rotation.

An attendant stationed at the hoisting mechanism is able to operate the brake mechanism for the purpose of allowing the cage or car to have vertical movement, said operating means being shown as a lever, K, fastened to the rock shaft. It will be understood that the lever may be depressed for the purpose of turning the rock shaft against the action of weight, J, and when so operated the rock shaft will release the brake bands from the brake drums, thus allowing shaft, F, and drums, E, to rotate freely.

I, L, designates a counterweight adapted to elevate the cage or car automatically when a load is discharged therefrom, the weight of said counterweight exceeding the weight of the car when the latter is free from a load. As shown, the counterweight is provided with a sheave, l, which is positioned to ride within a bight or loop of a cable L'. One end of said cable, L', is anchored in a suitable way to a part of a stationary frame, B, as for example by wrapping it around a cleat, f', see Fig. 3. The other part of the cable is coiled upon a counterweight drum, M, fixed to shaft, F, for rotation therewith, but said counterweight cable, L', is coiled on its drum in an opposite direction to that in which the suspended cables, D, are coiled upon drums, E, whereby the counterweight, L, is adapted to descend by uncoiling the cable, L', from drum, M, simultaneously with the operation of elevating the cage or car by coiling the suspending cables upon the drums, E.

N designates a runway or skid adapted to be positioned in operative relation to platform, A, of the loading apparatus. This runway or skid is adapted to lie in a substantially flush relation with the bottom frame, c, and one of the bottom members, C', of the cage when the latter occupies a raised position within the platform, A, whereby the load may be rolled from said N upon the bottom member or members of the car.

For the purpose of precluding the casks, 95 barrels, or other load from rolling into a loading position below the hoisting mechanism when the cage is lowered within the vessel, I employ suitable means for intercepting the movement of the barrels, etc. As shown, said means is embodied in a bar, O, adapted to extend across the frame of the hoisting mechanism and to lie in the path of the barrels. Said stop-bar, O, is pivoted by a bolt, o, to one of the said 100 frames, b, but the other end of said stop bar is retained in position by a keeper, o' fastened to the other side frame, see Figs. 3 and 4.

The operation may be described as follows: With the car in a raised position, as shown in Fig. 3, it occupies a compact relation with respect to the hoisting mechanism and platform, A, the bottom members, C', C', being in substantially the horizontal plane of the runway or skid, N. The counterweight is lowered and the brake is applied during the operation of loading the car. Before rolling the casks or barrels upon the car, the operator lifts stop bar, O, and then proceeds to roll one cask or barrel across bottom member, C', so that it will rest upon bottom member, C', and afterward rolls another cask into position upon bottom member, C', whereby the car is loaded with two casks, although it is evident that the car may be constructed to carry more than two casks. The stop bar is
a cure by Letters Patent, is: 60

comes filed with freight, the eggs, 10

in contact with the bottom of the hull, 15

or with an obstruction in the path of the 20

car, whereby the bottom members, C', C", 25

will be raised to the inclined positions 30

shown in Fig. 2 and automatically discharge 35

the load from the car. The counterweight, 40

L, operates to automatically return the car to 45

a raised position, the brake mechanism 50

being unapplied. With the car in a raised 55

position the operations herebefore described 60

are repeated.

In Fig. 1 of the drawings I have shown 65

the loading apparatus in operative position 70

upon a vessel, the hold of which is to be filled with barrels, casks or other 75

merchandise. The apparatus operates automatically to discharge the load into the hold at any point for the reason that as the hold becomes filled with freight, the legs, C', C", of the car will contact with the upper layer of 85

barrels or other freight so as to automatically discharge the load from the car at different levels. It is evident, however, that the loading apparatus may be used in connection with vessels having decks as indicated in Fig. 2, and in such event suitable provision is made for operating the bottom members of the cage so as to automatically discharge the load upon the bottom of the hull or at either of the decks of the vessel.

In another application, Serial Number 576,592, filed by me on even date herewith, I have disclosed an elevator wherein a cage is confined for vertical movement within suitable guides, said vertical movement of the cage in an upward direction being effected by a counterweight and the descent of the loaded cage being controlled by a brake mechanism. Accordingly, no claim is made in this application to the aforesaid subject matter, a characteristic feature of the present invention being a portable apparatus adapted to be positioned over the hatchway of a vessel, said apparatus employing cables adapted to suspend a load carrier for swaying movement within the hold of a vessel.

Having thus fully described the invention, what I claim as new, and desire to secure by Letters Patent, is:

In an apparatus for loading merchandise into vessels, a frame adapted to be positioned at the hatchway of a vessel, hoisting mechanism carried by the frame, a cage suspended by said hoisting mechanism, said cage being provided with a movable load platform, means for tilting said load platform to an inclined position when the cage is lowered a predetermined distance within the hold of a vessel, and means for controlling the up and down movement of said cage.

2. In an apparatus of the class described, a cage, a plurality of movable members carried thereby, means cooperating with the respective movable members for tilting said movable members in oppositely inclined directions, and means for controlling the vertical movement of the cage.

3. In an apparatus for loading merchandise into vessels, a portable frame adapted to be positioned upon the deck of a vessel and over a hatchway therein, hoisting mechanism carried by the frame, a cage suspended by said hoisting mechanism for movement within the hold of a vessel, said cage being provided with a plurality of load platforms, means for operating said load platforms so as to move them into oppositely inclined positions upon the descent of the cage to a predetermined position into the hold of a vessel, a counterweight for automatically elevating the cage when unloaded, and means for controlling the movement of said cage.

4. In an apparatus of the class described, a cage, a plurality of movable members carried thereby, said movable members being independent of each other, means for operating said members whereby the loads thereon will be discharged simultaneously in opposite directions from the cage, and means for controlling the vertical movement of said cage.

5. In an apparatus of the class described, a cage, a plurality of movable members carried thereby, means for operating said members whereby the members will be inclined in opposite directions to each other for automatically discharging the load from the respective sides of the cage, and means for controlling the vertical movement of the cage.

6. In an apparatus for loading merchandise into vessels, a frame adapted to be positioned upon the deck of a vessel and over the hatchway therein, hoisting cables, means carried by the frame for winding and unwinding said hoisting cables, a cage suspended by the hoisting cables for movement within a hold of a vessel, said cage being movable into substantially flush relation to a base of said frame when in a raised loading position, and said cage being retained in a stationary loading position by contact with said frame, and means for controlling the vertical movement of the cage.

7. In an apparatus of the class described, a cage, means for lowering said cage, a plurality of disconnected movable platforms carried by the cage, and means for tilting
said movable platforms and in opposite directions to each other when the cage is lowered a predetermined distance, whereby the loads are automatically discharged at the respective sides of the cage.

8. In an apparatus for loading merchandise into vessels, a frame adapted to be positioned across the hatchway of a vessel, hoisting mechanism including a plurality of cables supported by said frame, a cage suspended by the cables for swaying movement within the hold of a vessel, said cage being retained in a stationary loading position by engagement with the frame, and means for controlling the vertical movement of said cage.

9. In an apparatus for loading merchandise into vessels, a frame adapted to be positioned across the hatchway of a vessel, hoisting mechanism carried by said frame, a cage suspended by the hoisting mechanism for movement within the hold of a vessel, the upward movement of said cage being arrested by the frame and said cage being retained by engagement with the frame in a stationary loading position, substantially flush with the base of said frame, and means for controlling the vertical movement of the cage.

10. In an apparatus for loading merchandise into vessels, a frame adapted to be positioned across the hatchway of a vessel, said frame having a cage-receiving opening in the base thereof, hoisting mechanism carried by said frame, a cage suspended by the hoisting mechanism for movement within the hold of a vessel, said cage entering the opening in the base of the frame and adapted to be retained by engagement with the frame in a stationary loading position relative to said frame and the hatchway of the vessel, and means for controlling the vertical movement of the cage.

11. In an apparatus for loading merchandise into vessels, a frame adapted to be positioned across the hatchway of a vessel, hoisting mechanism carried by the frame, said hoisting mechanism including a plurality of cables, a cage suspended by the cables for movement within the hold of a vessel, said cage being free to swing within the vessel's hold, means for retaining the cage in fixed relation to the frame when said cage is elevated to a loading position, and means for controlling the vertical movement of the cage.

12. In an apparatus for loading merchandise into vessels, a frame adapted to be positioned across the hatchway of a vessel, a shaft carried by said frame, a plurality of winding drums carried by the shaft, a cage, cables attached to the cage and wound separately on said drums, brake bands cooperated with the brake drums, a brake shaft to which the brake bands are attached, means whereby the brake bands are normally applied to the brake drums, and means for operating the brake shaft.

13. In an apparatus for loading merchandise into vessels, a frame adapted to be positioned across the hatchway of a vessel, a shaft carried by said frame, a plurality of winding drums carried by the shaft, a cage adapted to be lowered into the hold of a vessel, cables attached to the cage and wound separately on said drums, means operable at will for controlling the rotation of the shaft, a counterweight drum, a counterweight cable coiled on said drum, and a counterweight suspended by the cable and adapted to elevate the cage when a load is discharged therefrom into the hold of a vessel.

14. In an apparatus for loading merchandise into vessels, a frame adapted to be positioned across the hatchway of a vessel, a shaft carried by said frame, a plurality of winding drums rotateable with the shaft, a plurality of cables each adapted to be wound upon or unwound from one of said drums, a cage suspended in an operative position by the plurality of cables, said cage being free to swing within the hold of a vessel and to be moved up and down therein by the action of the drums and cables, a separate drum rotateable with the shaft, a cable provided with a counterbalance and coiled upon the separate drum for automatically lifting the cage when a load is discharged therefrom, and a separate brake mechanism for controlling the rotation of the shaft and the up and down movements of the cage within the vessel's hold.

15. In an apparatus for loading merchandise into vessels, a frame adapted to be positioned across the hatchway of a vessel, hoisting mechanism carried by said frame, said hoisting mechanism including a plurality of cables, a cage suspended in operative position by said plurality of cables, said cage being free to swing and to move vertically within the hold of a vessel, a counterbalance for automatically lifting the cage when the load is discharged therefrom, and brake mechanism for controlling the up and down movements of the cage within the vessel's hold.

16. In an apparatus of the class described, a cage, the bottom of which is formed of members each pivoted to the cage at one edge of said member, and means on said pivoted members for tilting the same into positions inclined reversely to each other, whereby the loads may be discharged from the cage in opposite directions.

17. In an apparatus for loading merchandise into vessels, a cage the bottom of which is formed by members pivoted at their outer
edges to the cage for movement in oppositely inclined positions, a rail fixed to the cage and upon which the pivoted members are supported, and a depending member on each 5 of the pivoted members for tilting the latter and discharging the component parts of a load from the cage in opposite directions.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN T. CLARK.

Witnesses:
WESTMINSTER ABBEY,
EDGAR C. LE BLANC.