H. P. TOTHAMMER.

Loading and Unloading Ships.

No. 210,647. Patented Dec. 10, 1878.

Fig. 1

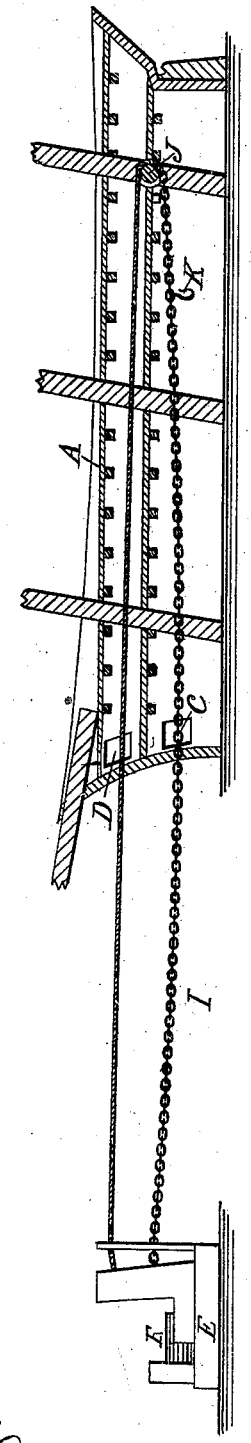


Fig. 3

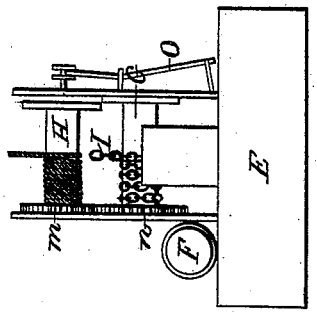
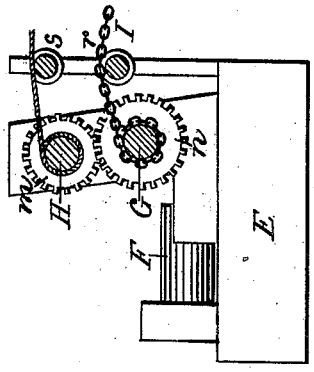


Fig. 2



Witnesses

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HANS P. TOTHAMMER, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN LOADING AND UNLOADING SHIPS.

Specification forming part of Letters Patent No. **210,647**, dated December 10, 1878; application filed September 20, 1878.

To all whom it may concern:

Be it known that I, HANS P. TOTHAMMER, of the city and county of San Francisco, in the State of California, have invented certain Improvements in Loading Timber and Lumber into and Discharging it from Ships; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings.

My invention has reference to certain improvements in the tackle which is used for discharging piles, square timber, spars, and lumber from ships, or for loading them into ships, my object being to simplify, economize, and facilitate the work, so that it can be done easier, more speedily, and with a less number of men than heretofore.

The bows of this class of ships are provided with ports leading from both their upper and lower decks, through which the piles, timbers, lumber, or spars are passed in loading and discharging the vessel. A lighter is moored at a short distance in front of the vessel, on which a steam-engine and windlass or winch are placed. A rope leads from the windlass or winch through the port-hole into the vessel.

In discharging a ship, a pile, timber, or bundle of lumber is secured to the rope, and the engine is set in motion, which winds up the rope and hauls the attached timber or lumber through the port into the water, where it is released and made into a raft, so that it can be floated ashore. In some cases it is thus hauled upon the wharf from the ship. The rope is then hauled back by hand into the hold of the vessel, to have another timber, spar, pile, or bundle of lumber attached to it.

My invention consists in mounting a secondary drum or windlass above the ordinary windlass, and connecting the two by gearing. I then lead the hauling-line from the lower windlass through the port-hole into the hold of the vessel, and back to the after-hatch, where I pass it around a sheave or pulley; thence I lead it back through the port-hole to the upper or secondary drum or windlass, so that when the engine is set in operation the rope is wound upon one drum and unwound from the other, thus causing the engine to do the entire work instead of hauling the rope back by hand, all as hereinafter more fully described.

Referring to the accompanying drawings, Figure 1 shows a longitudinal section of the ship with lighter in front and cable in position. Fig. 2 is a longitudinal section of lighter. Fig. 3 is an end view of the lighter.

Let A represent the vessel which is to be loaded or discharged. C is the lower port-hole, which leads into the hold on one side of the bow, and D is the upper port-hole, which leads to the 'tween-decks. E is the lighter, which is moored at a short distance from the vessel A, directly in line with its bow. F is the cylinder of a steam-engine, which is located upon the lighter, and G is the winding-drum or windlass, to which the power of the engine is applied to wind up the hauling-rope I. Above this drum or windlass I mount another drum or windlass, H, parallel with the drum G, and then connect the motion of one with the other by means of belts or gearing, so that both of them are rotated simultaneously by the power of the engine.

One end of the rope I is attached to the lower winding-drum, G, and thence it passes up over a sheave, *r*, in a frame which is constructed on the lighter in advance of the windlass-frame; thence it passes forward into the hold of the vessel A through the port C and back to the after-hatch of the vessel, where it passes around a sheave or pulley, J; thence it passes forward again through the port D over an upper sheave, *s*, to the upper drum or windlass, H, around which it passes, and to which it is attached, in such a manner that when one end is wound upon one drum, the opposite end is unwound from the other drum, and vice versa.

Heretofore ordinary Manila or hempen ropes have been used for this purpose, because chains or wire rope could not be successfully handled by hand; but I shall employ either chains or wire rope, which I can easily do by using the above-described arrangement of drums. This alone is a great saving, as the wire rope or chain will not be affected by the water, like ordinary rope, and will last much longer in proportion.

Usually I shall use a short hauling-chain,

as represented, which is long enough to extend from the drum G into the ship and to the farthest point from which the load is to be taken, while the remainder is a rope. This chain serves for hauling the lumber, while the rope simply hauls the chain back again.

To the chain or wire rope I will secure a hook, K, so that it can be adjusted back or forth, according to the location of the piles, timber, or lumber to be removed from or loaded into the vessel.

In discharging a vessel, the piles, timber, or lumber having been secured to this hook K, or other attachment, the engine is set in motion, so as to wind the rope or chain upon the lower drum or windlass, thus hauling the attached piles, timber, or lumber through the port C and out into the water, after which the hook is detached, and the piles, timber, or lumber are formed into a raft in the usual way. As the rope or chain is wound upon the lower drum to haul the load out, it is correspondingly unwound from the upper drum. After the load has been released the motion of the drums is reversed, so that the chain is wound upon the upper drum and unwound from the lower, thus hauling the rope or chain back into the vessel ready for another load. This is done with great celerity, so that the operation of unloading a vessel is rendered simple and less laborious.

In the present instance I have represented the upper drum or windlass as having a longitudinal motion, so that its toothed wheel *m* can be thrown out of gear or disengaged from the toothed wheel *n* of the lower drum, a lever, O, serving to move the drum longitudinally, so as to throw the gears into or out of engagement. This arrangement, in some instances, will be preferable, as the rope or chain will unwind more fully from the upper pulley when the gears are unshipped, and there will be no danger of breaking the rope by the strain upon it when the load falls into the water.

For loading timber and the like into a ship, the same operation is employed in a reverse way—that is, by hauling in instead of hauling out.

In some cases I will place both drums side by side in one shaft, and carry the rope or chain into the vessel through the port on one side of the bow and out through the port on the opposite side, so that it can haul in both directions. With this arrangement, when the load passes out through one port the hooks on the opposite side enter the opposite port, ready to have its load attached, and vice versa.

To load into or unload from the lower deck, the rope or chain is shifted so as to pass through the upper port, D; and to unload from the upper deck, the rope is passed in through the port D, and thence up through the hatchway of the vessel, so that it passes back above the upper deck, in which case two sheaves or pulleys will be used in order to carry the rope or chains over the combing of the hatch. In fact, the ropes can be applied in various ways to accommodate the various circumstances.

For communicating from the vessel with the engineer, I shall use a telephone or bell, instead of having a man to sing out the orders, as heretofore, thus saving much unnecessary loss of time and avoiding any misunderstanding of orders.

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

1. The improvement in loading piles, timbers, and lumber into or discharging it from ships, consisting in the employment of a rope or chain, I, one end of which is secured to a drum, G, and which passes into the vessel through a port, C or D, and around a sheave or pulley, J, and thence back through the port to a secondary drum, H, to which it is secured, said secondary drum being connected with and driven by the drum G, substantially as and for the purpose described.

2. The drums G H and pulleys *r s*, mounted upon the lighter E, and arranged as described, in combination with the rope or chain I, one end of which is connected with the drum G, and which passes into the vessel through the port C and around a pulley, J, and thence back to the drum H, upon which it is wound, the whole operated by a steam-engine on the lighter, substantially as and for the purpose described.

3. The drum G, mounted on the lighter E, and provided with the toothed wheel *m*, said drum being driven by a steam-engine, in combination with the longitudinally-movable drum H, with its toothed wheel *n*, and the lever O, whereby the toothed wheel *n* of the drum H is thrown into or out of gear with the toothed wheel *m* of the drum G, substantially as and for the purpose described.

In witness whereof I have hereunto set my hand and seal.

HANS PETER TOTHAMMER. [L. S.]

Witnesses:
D. B. LAWLER,
W. F. CLARK.