C. CONKLIN.

HOISTING APPARATUS.

APPLICATION FILED OCT. 27, 1908.

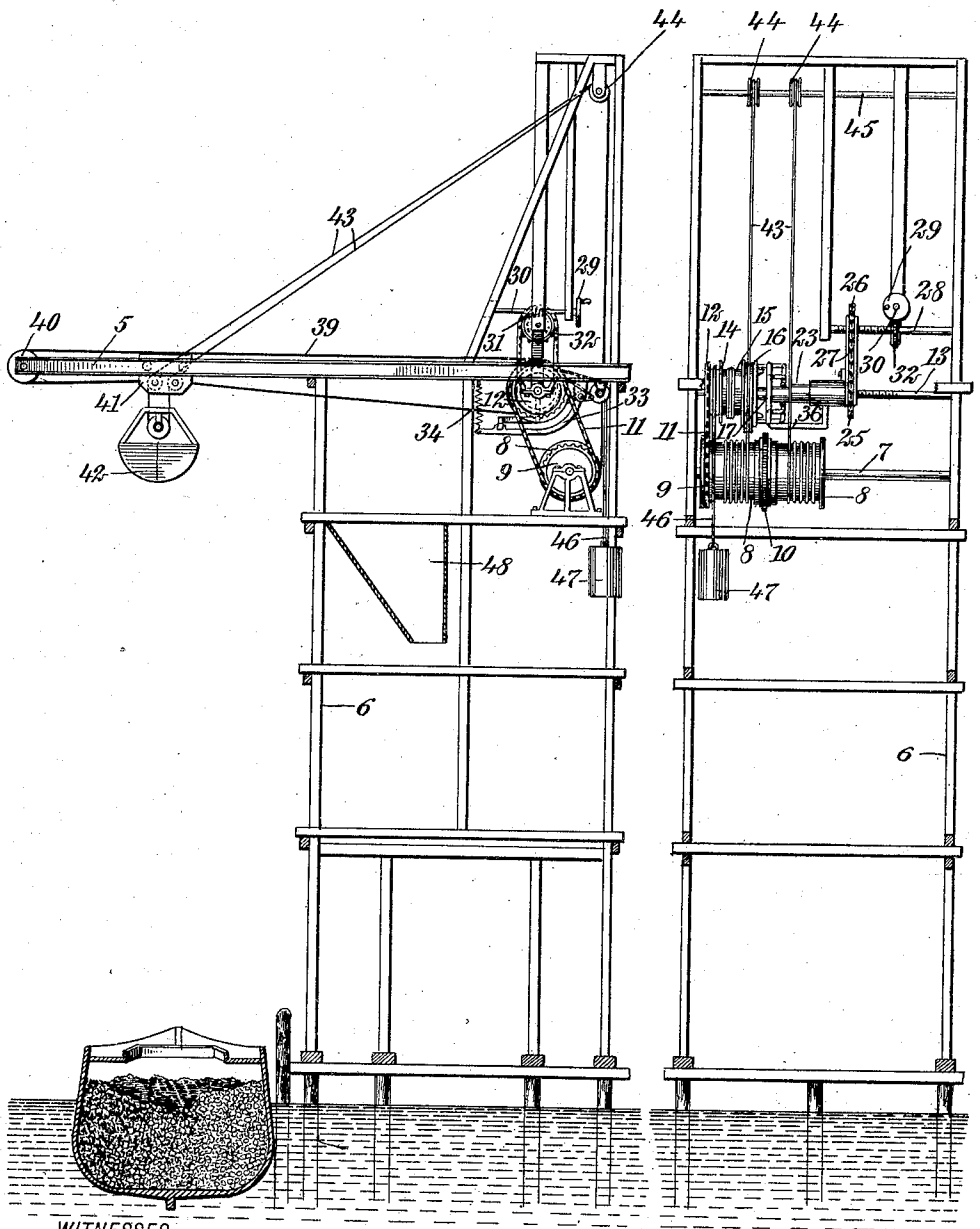
923,022.

Patented May 25, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

Fig. 2.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 3.

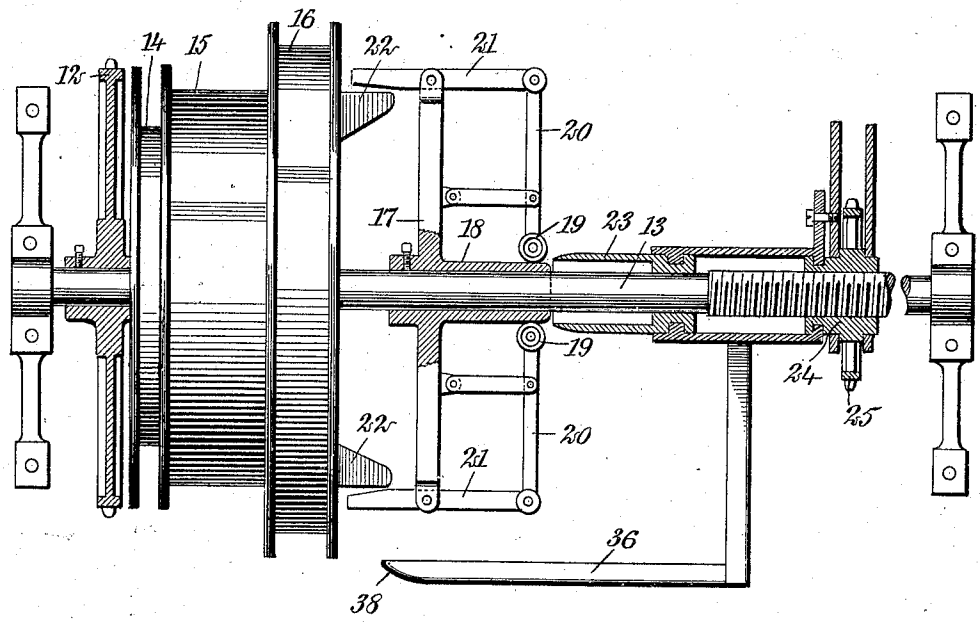
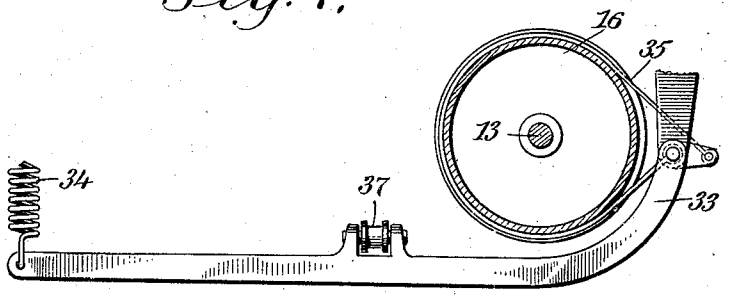


Fig. 4.



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UNITED STATES PATENT OFFICE.

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HOISTING APPARATUS.

No. 923,022. Specification of Letters Patent. Patented May 25, 1909.

Application filed October 27, 1908. Serial No. 459,676.

To all whom it may concern:

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

The invention is an improved hoisting apparatus of the character embodying a horizontal or slightly inclined boom on which the load is raised and moved laterally to the point of discharge.

It is the object of the invention to automatically cause the load carrier to travel laterally on the boom when it reaches the proper elevation, and after passing to the point of discharge and releasing the load, to be automatically returned to initial position upon throwing the hoisting mechanism out of gear, the point to which the load carrier moves outwardly on the boom being capable of adjustment, whereby the carrier may be dropped at the most advantageous point for loading.

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 views.

Figure 1 is a side elevation of my improved hoisting apparatus, showing the same located in a position for unloading ships; Fig. 2 is a rear end elevation of the apparatus; Fig. 3 is a side view, partly in section, of the mechanism for moving the load carrier laterally; and Fig. 4 is a fragmentary sectional view showing the brake for the mechanism shown in Fig. 3.

The hoisting apparatus has a boom 5, ordinarily in the form of two parallel rails and supported on a framework or tower 6 either in a horizontal position or slightly downwardly and outwardly inclined. On a shaft 7 journaled on the tower, and driven by the usual hoisting engine, are two drums 8, 8, a sprocket wheel 9 in fixed relation thereto, and an intermediate gear 10 to which the power of the engine is applied. The sprocket wheel 9, by a chain 11, drives a sprocket wheel 12 which is fixed to a shaft 13, the latter also carrying a weight drum 14, a cable drum 15 and a brake drum 16, all of the drums being rigidly connected together and journaled on the shaft. At one side of the drums is a clutch consisting of a spider 17 having an extended hub portion 18 on which are adapted to seat rollers 19 carried by radiating arms 20, which latter are pivoted to levers 21 fulcrumed to the spider and movable into the path of projections 22 carried by the drums when the rollers 19 are moved from the hub 18. The actuating member of the clutch is in the nature of a thimble 23 having a conical point and adapted to telescope over the hub 18. The point of the thimble is slidable on the shaft and is free to revolve relatively to its inner portion which is carried by a nut 24 which is revoluble with respect thereto and threaded on the shaft 13. The nut 24 carries a sprocket wheel 25 which is connected with a sprocket wheel 26 by a chain 27. The sprocket wheel 26 is threaded to a shaft 28 which is manually revolved by a handle or handwheel 29 connected therewith by the shaft 30, worm 31 and worm-wheel 32. The threads of the shafts 13 and 28 have the same pitch and are of the same hand, whereby when the handle 29 is operated, the sprocket wheels 25 and 26 will move forwardly or rearwardly at the same rate.

At one side of the brake drum 16, a bell-crank lever 33 is fulcrumed and extends forwardly underneath the drum a substantial distance, with the free end supported and drawn upwardly by a spring 34. A brake band 35 passes around the drum, with one end attached to the short arm of the lever 33 and the other arm connected with its fulcrum, this manner of applying the band causing the same to brake the drum when the longer arm of the lever is raised An arm 36 is rigid with the non-revoluble portion of the thimble 23 and is movable crosswise of the lever 33 when the clutch is thrown in, at which time it engages a roller 37 carried by the lever and forces the latter downwardly, releasing the brake. The arm 36 has a bevel or cam extremity 38 in order that it will readily ride upon the roller.

The drum 15 has a cable 39 wound a number of times thereabout and passing over a sheave 40 journaled between the rails of the boom at the outer end thereof, the free ends of the cable being attached to a carriage 41 movable upon the boom, which carries a bucket or other load carrier 42 by means of cables 43 which respectively pass to the drums 8 over sheaves 44 carried on a shaft 45 journaled in an elevated position on the tower. The drum 14 has an attached cable

46 which carries a weight 47, the latter being sufficiently heavy to revolve the drums 14, 15 and 16 and move the load carrier outwardly on the boom when the hoisting drums are thrown out of gear with the hoisting engine. The discharge of the load carrier is generally in a hopper or chute 48 which leads to any desired point.

In the operation of the apparatus, the nut is adjusted on the shaft 13 to cause the clutch to disengage when the bucket or load carrier reaches the required point on the overhanging portion of the boom. At this point when the carrier is moving outwardly on the boom the braking arm will be released from the braking lever and the brake will be instantaneously applied, preventing the further revolution of the drums 14, 15 and 16 and consequently further lateral travel of the load carrier. The cables 43, which during this time have been unwinding from the drums 8, will continue to unwind until the load carrier drops to the point of loading. When the load carrier is filled, the hoisting mechanism is thrown in gear with the hoisting engine in a well known manner, drawing the load carrier upwardly to the boom 5. When the load passes to a point near the boom, the nut 24, which during this time has been traveling toward the drum 16, engages the clutch, causing the drum 15 to draw the carrier inwardly and the drum 14 to wind up the weight 47. At the instant the clutch engages, the braking arm depresses the braking lever and releases the brake, allowing the drums 14, 15 and 16 to run free. As the load carrier reaches the point of discharge and the load is released, the hoisting mechanism is again thrown out of gear with the hoisting engine and the weight 47 drops, revolving the drums and moving the carrier outwardly on the boom to initial position. When this position is reached, the clutch is disengaged, the brake instantly applied and the load carrier drops vertically under its own weight. It is thus seen that by my improvements no further care on the part of the operator of the hoisting engine is required, other than throwing the hoisting mechanism in and out of gear respectively at the beginning of hoisting and when the load carrier reaches the point of discharge. The hoisting engine is never reversed but runs in one direction only.

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

1. In a hoisting apparatus, a support, a load carrier, hoisting means for the load carrier, means for moving the carrier laterally on the support to the point of discharge, having a clutch automatically moved into engagement by the lifting operation of the hoisting means, and gravity operated means for returning the carrier on the support after the load has been discharged, and releasing said clutch.

2. In a hoisting apparatus, a support, a load carrier, hoisting means for the load carrier, means for moving the carrier laterally on the support to the point of discharge, having a clutch automatically moved into engagement by the lifting operation of the hoisting means, a brake, and gravity-operated means for returning the carrier on the support after the discharge of the load, operating to release the clutch and apply the brake.

3. In a hoisting apparatus, a support, a load carrier, hoisting means for raising the carrier on the support, a shaft, means for driving the shaft from the hoisting means, a drum journaled on the shaft, a cable carried on the drum and connected with the carrier for moving the carrier laterally on the support, a clutch for connecting the drum to the shaft, means for automatically throwing the clutch into operation when the carrier reaches a predetermined elevation, whereby the carrier is moved laterally on the support to the point of discharge, and means for automatically returning the carrier and releasing the clutch when the hoisting means is thrown out of gear.

4. In a hoisting apparatus, a support, a load carrier, means for raising the load carrier on the support, a shaft, means for moving the carrier laterally on said support, carried by said shaft, a clutch for throwing the last mentioned means into operation when the carrier reaches a predetermined elevation, and a nut threaded on the shaft for operating the clutch.

5. In a hoisting apparatus, a support, a load carrier, hoisting means for hoisting the load carrier on the support, a shaft, means for driving the shaft from the hoisting means, a drum journaled on the shaft having a cable connected with the carrier, a clutch for actuating the drum from the shaft when the carrier reaches a predetermined point, a nut threaded on the shaft for throwing the clutch into and out of operation, and means for adjusting the nut on the shaft independent of the revolution of the shaft.

6. In a hoisting apparatus, the combination of a support, a load carrier, means for hoisting the load carrier on the support, a shaft, a drum journaled on the shaft, a cable for moving the carrier laterally on the support, operated by said drum, a clutch for driving the drum from the shaft, a nut threaded on the shaft for throwing the clutch into and out of operation, a brake for stopping the revolution of the drum, and means carried by the nut for releasing the brake when the clutch is engaged.

7. In a hoisting apparatus, the combination of a support, a load carrier, means for

hoisting the load carrier on the support, a shaft, a drum journaled on the shaft, a cable for moving the carrier laterally on the support, operated by said drum, a clutch for driving the drum from the shaft, a nut threaded on the shaft for throwing the clutch into and out of operation, a brake for stopping the revolution of the drum, means carried by the nut for releasing the brake when the clutch is engaged, and independent means for applying the brake when the clutch is disengaged.

8. In a hoisting apparatus, a support, a load carrier, means for hoisting the load carrier on the support, means driven from the hoisting means for moving the carrier laterally on the support when the carrier reaches a predetermined elevation, a clutch for throwing the last mentioned means into operation, having a shifting member, a brake for said last mentioned means, and a device carried by said member for releasing the brake when the clutch is thrown into operation.

9. The combination of a support, a load carrier, hoisting means for raising the load carrier on the support, a shaft driven from the hoisting means, means for moving the load carrier laterally on said support, journaled on said shaft, a clutch for connecting the last mentioned means with the shaft when the load carrier reaches a predetermined elevation, and means for automatically operating the clutch, controlled by the revolution of the shaft.

10. In a hoisting apparatus, a boom, a load carrier, hoisting drums, a shaft driven from the hoisting drums, a drum journaled on the shaft and arranged near the inner end portion of the boom, an endless cable passing over said drum and movably supported on the outer end portion of the boom, cables passing from the load carrier to the hoisting drums, and means to automatically connect the said drum with the shaft when the load carrier reaches a predetermined point relatively to the boom when the carrier is moving to the place of discharge, automatically disconnected from the shaft at the same point in the return movement of the carrier.

11. In a hoisting apparatus, a boom, a load carrier, a hoisting drum, a shaft driven from the hoisting drum, a drum journaled on the shaft and arranged near the inner end portion of the boom, an endless cable passing over said journaled drum and movably supported on the outer end portion of the boom, a cable passing from the load carrier to the hoisting drum, and a clutch carried by the shaft to automatically connect the drum and shaft together when the load carrier reaches a predetermined point relatively to the boom when the carrier is moving to the place of discharge, automatically disconnected from the shaft at the same point in the return movement of the carrier.

12. In a hoisting apparatus, a boom, a load carrier, a hoisting drum, a shaft driven from the hoisting drum, a drum journaled on the shaft and arranged near the inner end portion of the boom, an endless cable passing over said journaled drum and movably supported on the outer end portion of the boom, a cable passing from the load carrier to the hoisting drum, means to automatically connect the said journaled drum with the shaft when the load carrier reaches a predetermined point relatively to the boom when the carrier is moving to the place of discharge, automatically disconnected from the shaft at the same point in the return movement of the carrier, and means to adjust the last mentioned means to change the position of the load carrier, when the journaled drum is connected and disconnected with the shaft.

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

CHARLES CONKLIN.

Witnesses:
W. W. Holt,
Everard B. Marshall.