

No. 769,903.

PATENTED SEPT. 13, 1904.

C. W. HUNT.  
HOISTING APPARATUS.  
APPLICATION FILED NOV. 11, 1903.

NO MODEL.

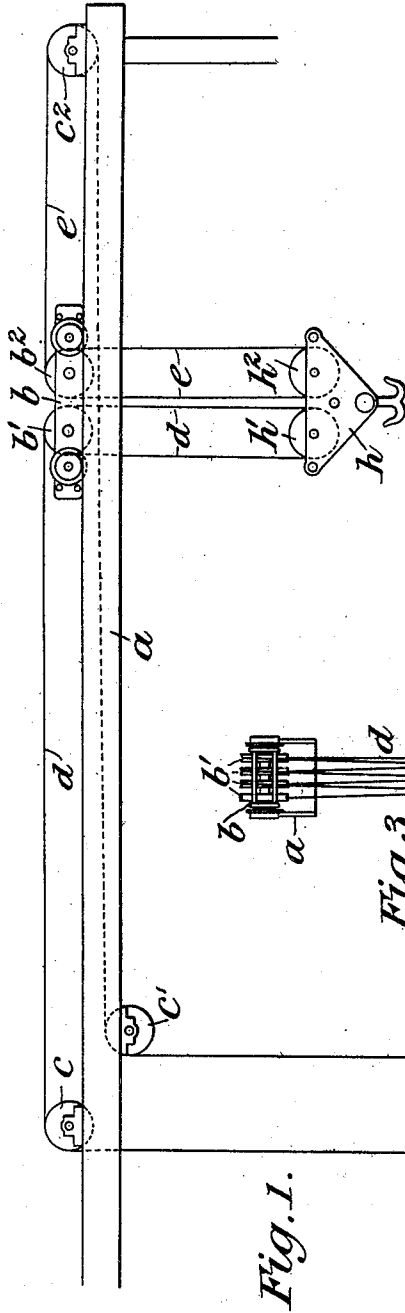


Fig. 1.

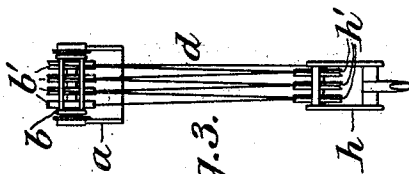


Fig. 3.

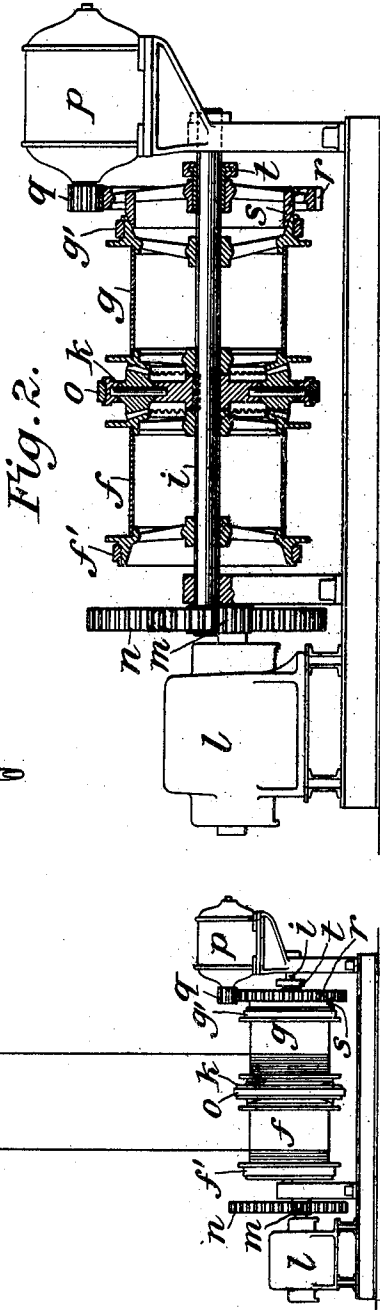


Fig. 2.

Witnesses:

A. St. Jesbera  
J. Muscoble

Inventor:

Charles Wallace Hunt  
By Redding, Kiddle & Freely  
Attys.

# UNITED STATES PATENT OFFICE.

CHARLES W. HUNT, OF NEW YORK, N. Y.

## HOISTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 769,903, dated September 13, 1904.

Application filed November 11, 1903. Serial No. 180,654. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES WALLACE HUNT, a citizen of the United States, residing in West New Brighton, in the borough of Richmond, of the city of New York, in the State of New York, have invented certain new and useful improvements in Hoisting Apparatus, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

In another application, filed November 11, 1903, Serial No. 180,653, there is shown and described a hoisting apparatus in which the two drums of the hoisting mechanism are mounted loosely and are driven by an equalizing-gear to which the power is applied, brakes being provided for the equalizing-gear and for the two drums, respectively.

The object of this invention is to provide a hoisting apparatus of the same general character which will be better adapted for some uses, particularly in that it provides for the horizontal translation of the load either while the main hoisting-engine is at work or while it is standing still, giving a somewhat greater range of movement of the load at the will of the operator. In accordance with the present invention a second motor is provided and is arranged to be coupled to one of the loosely-mounted drums through a suitable friction or other clutch, both drums being also driven by the equalizing-gear, as before.

The invention will be more fully described hereinafter with reference to the accompanying drawings, in which it is illustrated, and in which—

Figure 1 is a view in elevation, largely diagrammatic, of a hoisting apparatus which embodies the invention. Fig. 2 is a view, partly in elevation and partly in longitudinal section, showing on a larger scale the hoisting-drums and their arrangement. Fig. 3 is a detail view showing the sheaves on the boom-truck and running or hook block and the arrangement of the rope.

The boom or track  $a$  may be arranged as usual and is adapted to permit the travel thereon of the boom-truck or trolley  $b$ . It may also support the usual guide-sheaves  $c$ ,  $c'$ , and  $c''$ , over which the ropes  $d$  and  $e$  pass

from the respective winding-drums  $f$  and  $g$ , the rope  $d$  passing over the sheave  $c$  and thence about the multiple sheaves  $b'$  on the boom-truck and the multiple sheaves  $h'$  and being finally secured to the running or hook block or to the truck. The rope  $e$  passes over the sheaves  $c'$  at the inner end of the boom and thence about the sheave  $c''$  at the outer end of the boom and about the multiple sheaves  $b''$  and  $h''$  on the boom-truck and running-block, respectively, being finally secured to the running-block or the truck. The sheaves  $h'$  and  $h''$  are arranged similarly to the sheaves  $b'$  and  $b''$ , as shown in Fig. 3, and need not be separately illustrated. The drums  $f$  and  $g$  are loosely mounted and may be conveniently, although not necessarily, supported upon a common shaft  $i$ , which also carries fast thereto an equalizing-gear  $k$  of ordinary construction, this arrangement affording a convenient means of applying the power to the equalizing-gear from a motor  $l$  or driving means of any character through gears  $m$  and  $n$  of ordinary description. There is also provided a brake  $o$  of ordinary construction for the equalizing-gear, acting through the shaft or directly upon the gear, as shown, and the drums  $f$  and  $g$  are provided severally with brakes  $f'$  and  $g'$ , also of ordinary description.

In the arrangement shown in the drawings there are provided on the boom-truck for each rope four sheaves and on the running-block three sheaves, so that there are seven parts to each rope to support the load. The sheaves are grouped and arranged as shown as a matter of convenience, although it will be observed, for example, that two separate blocks having three sheaves each may be attached to the hook and also that a greater or less number of parts of the rope sustaining the load might be provided for, according to the angle at which it is desired that the load shall move with respect to the boom, as herein explained.

The two ropes  $d$  and  $e$  are wound upon the drums  $f$  and  $g$  in the same direction, and as a consequence both drums will be stationary, and the load will also be stationary whenever the equalizing-gear  $k$ , which is in operative engagement with both drums, as clearly shown

in Fig. 2, is held from rotation. Furthermore, if the equalizing-gear be rotated while both drums  $f$  and  $g$  are free the load will be hoisted vertically, while the boom-truck is stationary on the boom. If, however, the drum  $g$  be held stationary by its brake while the equalizing-gear is operated, it will be obvious that through the engagement of the equalizing-gear with both drums the drum  $f$  will be rotated at greater speed than that of the equalizing-gear and the load will be drawn inwardly. The boom-truck under these conditions will of course run horizontally on the boom; but as the load is supported from the boom-truck by a multiple number of parts of each rope—in the present instance seven—the load will move inward and upward at an angle with the boom of one in seven. On the other hand, if the direction of the rotation of the equalizing-gear be reversed and the drum  $f$  be held from rotation the rope  $e$ , being then paid out by the drum  $g$ , the load will move inward and downward at an inclination of one in seven. By a suitable regulation of the direction of rotation of the equalizing-gear and the application of the brake to one or the other of the drums  $f$  and  $g$  it will be obvious that the load can also be moved outward as well as inward at an inclination of one in seven either upward or downward.

As thus described the construction and operation of the hoisting mechanism are the same in the present case as is the case of the apparatus shown and described in the application above mentioned, Serial No. 180,653. In the present case, however, there is provided for one of the drums an additional motor, as  $p$ , wholly independent of the motor or driving means  $l$ , which may be conveniently coupled to the drum through ordinary gears  $q$  and  $r$  and a friction-clutch  $s$  of usual construction, the engagement of such clutch being controlled by ordinary means, which are sufficiently indicated by the collar  $t$ .

It will now be understood that if the equalizing-gear is standing still and power is applied to the drum  $g$  from the independent motor  $p$  the drum  $g$  will be rotated in one direction and the drum  $f$  will be rotated in the opposite direction at the same speed. The result will be to cause the travel of the boom-truck in one direction or the other, according to the direction of rotation of the motor  $p$  and of the load in the same direction without change in elevation. On the other hand, if both drums are being rotated through the equalizing-gear from the motor  $l$  to raise or lower the load the action of the second motor  $p$  upon the drum  $g$  through the clutch  $s$  will be to rotate the same in one direction or the other and to produce a corresponding ac-

celeration or retardation of the drum  $f$ , so that the load will be carried in one direction or the other at an angle which will depend upon the relative speed of rotation and upon the number of parts of the ropes which directly support the load if a multiple number of parts be provided for. In this manner the load can be made to travel vertically or horizontally or at an intermediate angle in either direction at the will of the operator. It will be understood that as the gear  $r$ , with the member of the friction-clutch carried by it, runs loosely on the shaft  $i$  the motor  $p$  can be kept running, if so desired, and that it can be stopped, started, or reversed at the will of the operator, and, further, that as the motor  $p$  is wholly independent of the motor  $l$  power can be applied from the two sources either separately or at the same time, as may be required, making it possible to move the load exactly as conditions may render desirable.

I claim as my invention—

1. In a hoisting mechanism, the combination of two drums loosely mounted, an equalizing-gear in operative relation with both drums, means to apply power to the equalizing-gear, and an independent motor operable independently of said means to apply power to one of said drums, substantially as shown and described.

2. In a hoisting apparatus, the combination of two drums loosely mounted, an equalizing-gear in operative relation with both drums, means to apply power to the equalizing-gear, a brake for said equalizing-gear, and an independent motor operable independently of said means to apply power to one of said drums, substantially as shown and described.

3. In a hoisting apparatus, the combination of two drums loosely mounted, an equalizing-gear in operative relation with both drums, means to apply power to the equalizing-gear, brakes for said drums respectively, and an independent motor operable independently of said means to apply power to one of said drums, substantially as shown and described.

4. In a hoisting apparatus, the combination of a main shaft, a motor coupled to said shaft, two drums mounted loosely on said shaft, an equalizing-gear in operative relation with both drums and fast on said shaft, a friction-clutch in operative relation with one of said drums, and an independent motor to apply power to said drum through said friction-clutch, substantially as shown and described.

This specification signed and witnessed this 7th day of November, A. D. 1903.

CHARLES W. HUNT.

In presence of—

ANTHONY N. JESBERA,  
W. B. GREELEY.