

C. W. HUNT.
HOISTING APPARATUS.
APPLICATION FILED FEB. 20, 1902.

3 SHEETS—SHEET 1.

NO MODEL.

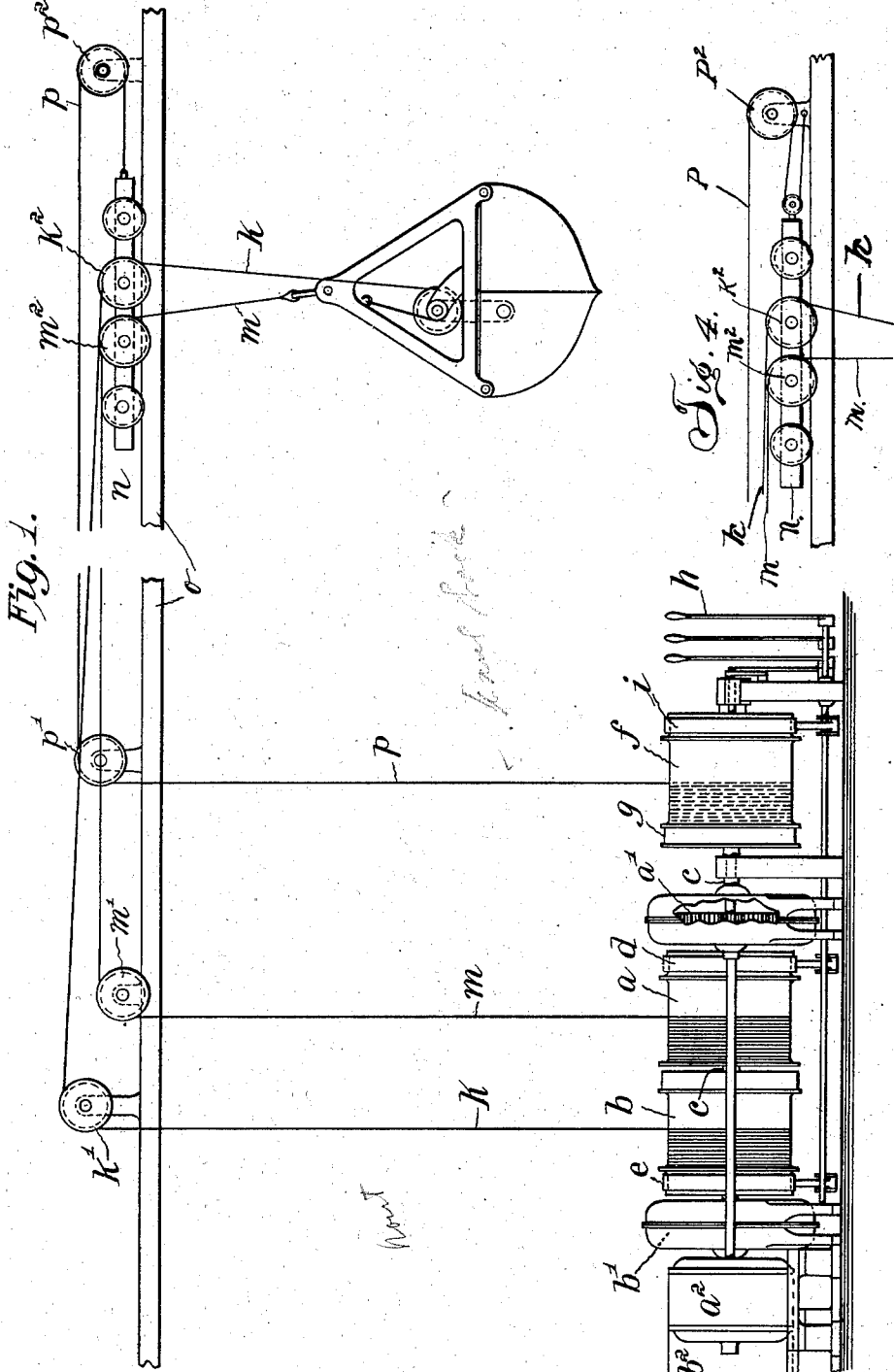


Fig. 1.

Fig. 4.

Fig. 5.

Witnesses
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Charles Wallace Hunt
By his Attorneys
Redding, Kidelle & Greiner

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NO MODEL.

3 SHEETS—SHEET 2.

Fig. 2.

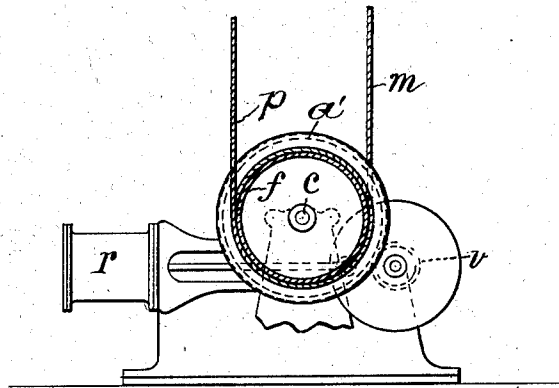
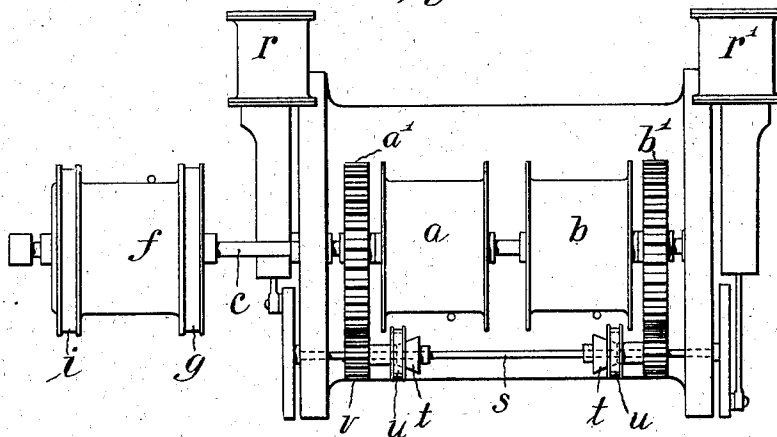


Fig. 3.



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No. 729,868.

PATENTED JUNE 2, 1903.

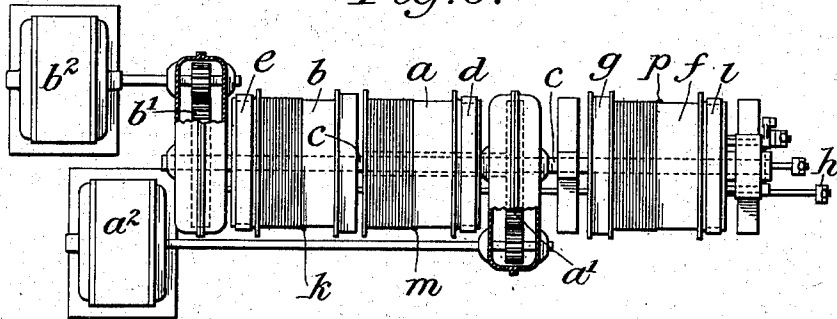
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NO MODEL.

3 SHEETS—SHEET 3.

Fig. 5.



Attest:

A. N. Jesbera,
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UNITED STATES PATENT OFFICE.

CHARLES WALLACE HUNT, OF WEST NEW BRIGHTON, NEW YORK.

HOISTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 729,868, dated June 2, 1903.

Application filed February 20, 1902. Serial No. 94,873. (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, borough of Richmond, city of New York, 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.

This invention relates to hoisting apparatus of the general character of that shown in Letters Patent of the United States No. 624,811, dated May 9, 1899, in which the load is raised or lowered and is translated in a substantially horizontal plane and in which provision is made for the opening and closing of the bucket or shovel.

The object of the invention is to improve the construction and arrangement of such apparatus, so as to facilitate the operation thereof, to reduce the work to be performed by the driving means, and to relieve the stresses on the mechanism.

The invention will be more fully described hereinafter with reference to the accompanying drawings, in which for the purposes of explanation it is represented as embodied in a suitable structure, and in which—

Figure 1 is a view, partly in elevation and partly in outline, of so much of a complete structure as is necessary to enable the invention to be understood, the driving means being represented as electric motors. Figs. 2 and 3 are respectively an end elevation and a plan view illustrating the application of steam-motors as the driving means, Fig. 2 being partly in section. Fig. 4 is a detail view illustrating the connection of the outhaul-rope to the trolley over a sheave carried on the trolley-frame. Fig. 5 is a plan view of the arrangement of the apparatus as shown in Fig. 1.

In the structure represented in the drawings two drums *a* and *b* for raising and lowering the load and for opening and closing the bucket or shovel, respectively, are represented as mounted upon a common shaft *c*, the drum *b* being preferably fixed to the shaft to rotate therewith, while the drum *a* is pref-

erably loose on the shaft *c*. Each drum *a* and *b* is represented as having secured to it a gear *a'* and *b'*, respectively, to be driven through suitable intermediate gearing from corresponding motors *a²* and *b²*, respectively, and the drums may be coupled mechanically, as by a suitable clutch. Each drum is also preferably provided with an independent brake, (marked *d* and *e*, respectively,) which may be controlled through suitable mechanism not necessary to be described herein. A third drum *f* for effecting the translation of the load in one direction or the other is arranged to be coupled to the drum *b* to rotate therewith when desired and for this purpose may be loosely mounted on the shaft *c* and be coupled therewith by means of a clutch *g*, the fast member of which is fixed to the shaft *c*. The clutch may be operated by any suitable mechanism, not necessary to be described, the operating-handle therefor being indicated at *h*. The drum *f* is also provided with a brake *i*, which may be controlled by any suitable means. A rope *k* for opening and closing the bucket or shovel is extended from the drum *b* over a guide-sheave *k'* and thence over a guide-sheave *k²* on the trolley *n* to the opening and closing devices on the bucket, which may be of ordinary construction and need not be further described. The hoisting-rope *m*, which is wound on the drum *a* in the same direction as the rope *k* on the drum *b*, passes over a suitable guide-sheave *m'* and thence to the trolley-frame *n*, as shown in Fig. 1, or over a sheave *m²* on the trolley-frame *n*, which is arranged to travel, as usual, on a suitable track or support *o*. The free end of the hoisting-rope *m* is connected to the load in any suitable manner. The rope *p* for effecting the translation of the load is connected to the drum *f* and is wound thereon in the opposite direction from that in which the hoisting-rope *m* is wound on the drum *a*. From the drum *f* the rope *p* passes over suitable guide-sheaves *p'* and *p²* and is then connected to the trolley-frame *n* instead of passing over a sheave thereon to the load, as has been usual heretofore.

The rope *p* may be attached directly to the trolley-frame, as shown in Fig. 1, or it may

pass over a sheave carried on the trolley-frame and be attached to a fixed point, as shown in Fig. 4, in which case the drum *f* should be twice as large as the drum *b*.

5 It will be obvious that any suitable form of braking, clutching, and driving mechanisms may be employed and that the drums may be arranged in any convenient manner—as, for example, in tandem—that is, with their 10 axes parallel, the driving-gears being arranged accordingly. One alternative form of driving mechanism is represented in Figs. 2 and 3, in which steam-motors *r* and *r'* are indicated as the source of power for the respective drums *a* and *b*. As represented in Fig. 15 3, the steam-motors may be coupled to the counter-shaft *s*, which is provided with a clutch *t*, a brake *u*, and a driving-pinion *v* for each drum *a* and *b*, suitable means (not 20 necessary to be shown) being provided for controlling the several clutches and brakes. By this arrangement, as will be obvious, the drums *a* and *b* may be operated and controlled as desired. The drum *f* in this 25 construction may be mounted upon the common shaft *c*, as before described, and provided with a clutch *g* and a brake *i* for controlling its rotation.

30 Mention is made herein of a "shovel" to contain the load and to be opened or closed by the rope *k*; but it will be understood that such a shovel is merely representative of the class of well-known devices of this character which are adapted to be controlled by a rope 35 from the hoisting mechanism for the purpose of dumping the load whenever desired, dumping buckets and skips being other examples of this class of devices.

40 In the operation of the improved apparatus drum *b* is first started to wind up the rope *k* sufficiently to close the shovel in which the coal or other material is to be handled. The drum *a* is then started and winds up the hoisting-rope *m* at the same rate, either taking a 45 part of the load or not, as may be desired. During the hoisting of the load an inward stress is put upon the trolley, but is met until such time as the load is to be translated by the rope *p*, which is attached to the trolley and to the drum *f*, the latter being held 50 from rotation by its brake or detaining device. When it is desired to bring the trolley and suspended load inward, the drum *f* is coupled to the drum *b* to rotate therewith by such means as the clutch *g* on the shaft *c*. 55 The rope *p* being wound on the drum *f* in a direction opposite to that in which the rope *k* is wound on the drum *b*, it is obvious that the rope *p* will be paid out as fast as the 60 ropes *k* and *m* are wound up, so that the inward movement of the trolley under the stress of the ropes *k* and *m* will be permitted. If it is desired to translate the load outward, the driving means are reversed, so 65 that the ropes *k* and *m* are paid out as fast

as the rope *p* is wound up, the load being thereby held at the same height. If it is desired to move the load in a diagonal direction, the drum *f* may be allowed to slip (if its clutch acts frictionally) while the other 70 drums are hoisting or lowering. It will be obvious that the stress of the rope *p*, tending to revolve the drum *f* and shaft *c* in one direction, is balanced by the stress of the ropes *k* and *m*, tending to revolve the drums *a* and 75 *b* together with the shaft *c* in the opposite direction. The drum *f* is therefore in balance with the drums *a* and *b*, with torsion stress on the drum-shaft. Under these conditions the motor is run forward or backward 80 to move the trolley inward or outward, as may be desired, and has to overcome only the friction of the trolley, ropes, and sheaves. When the shovel is over the dumping-place, the drums *a* and *f* are held stationary by their 85 respective brakes or detaining devices and the drum *b* is rotated alone in a direction to cause the shovel or bucket or skip to dump its contents. After this action the several 90 drums are operated, as above described, to move the trolley to the desired point, and the drum *f* is then held by its detaining device, while the drums *a* and *b* are allowed to rotate backward to lower the shovel.

95 Various changes in the construction and arrangement of the several parts of the improved apparatus will readily suggest themselves, and it is therefore to be understood that the invention is not limited to the particular construction and arrangement shown 100 and described herein.

I claim as my invention—

1. A hoisting apparatus, comprising a trolley, a support therefor, a shovel or bucket, a drum and rope for hoisting the shovel, a drum 105 and rope for controlling the shovel or bucket, both of said ropes being wound on their respective drums in the same direction and passing over the trolley, means for driving said drums either separately or together, 110 means for holding said drums from rotation, a third drum and rope for effecting translation of the load, the rope passing from said drum over an outer guide to the trolley and being wound on its drum in a direction op- 115 posite to the winding of the other two ropes on their drums, means to couple the third drum to one of the other two drums to rotate therewith, and means to hold the third drum from rotation, substantially as de- 120 scribed.

2. In a hoisting apparatus, comprising a trolley, a support therefor, a shovel or bucket, a drum and rope for hoisting the shovel, a drum and rope for controlling the shovel or 125 bucket, both of said ropes being wound on their respective drums in the same direction and passing over the trolley, means for driving said drums either separately or together, 130 means for holding said drums from rotation,

a driving-shaft upon which the hoisting-drum is fixed, a third drum and rope for effecting translation of the load, the rope passing over an outer guide to the trolley and being wound
5 on its drum in a direction opposite to the winding of the other two ropes on their respective drums, a clutch to couple the third drum to said shaft to rotate therewith, and

means to hold the third drum from rotation, substantially as described. 10

This specification signed and witnessed this 8th day of February, A. D. 1902.

CHARLES WALLACE HUNT.

In presence of—

ANTHONY N. JESBERA,
M. A. BRAYLEY.