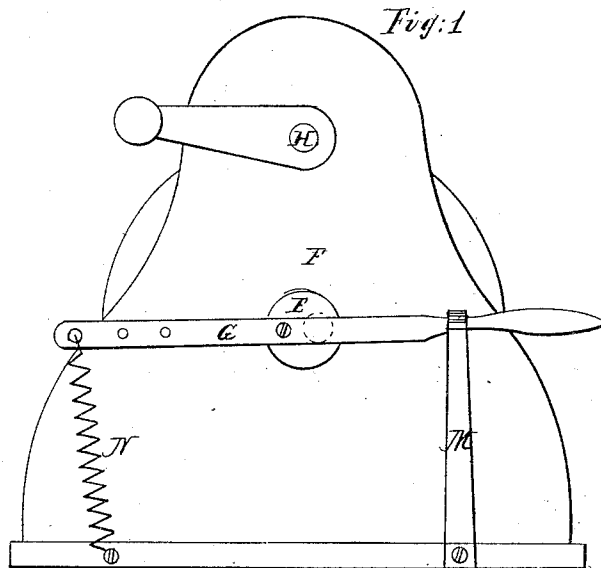
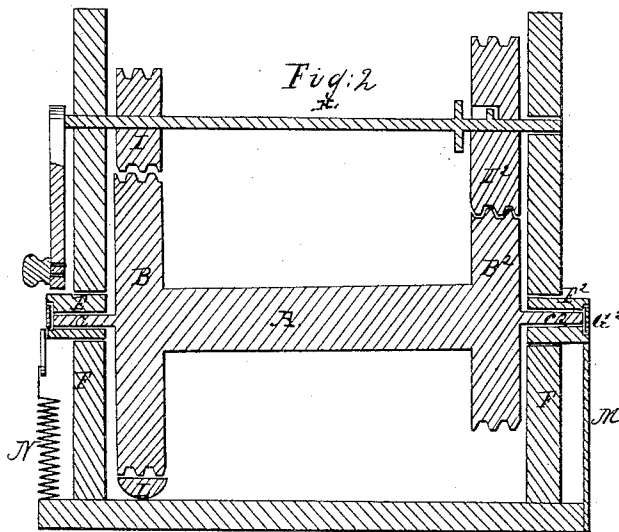


W. D. ANDREWS.
HOISTING APPARATUS.

No. 69,384.

Patented Oct. 1, 1867.



Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM D. ANDREWS, OF NEW YORK, N. Y.

IMPROVEMENT IN HOISTING APPARATUS.

Specification forming part of Letters Patent No. 69,384, dated October 1, 1867.

To all whom it may concern:

Be it known that I, W. D. ANDREWS, of the city, county, and State of New York, have invented new and useful Improvements in Hoisting and other Apparatus; and that the following description, taken in connection with the accompanying drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements, by which my invention may be distinguished from all others of a similar class, together with such parts as I claim and desire to have secured to me by Letters Patent.

The present invention relates to hoisting apparatus, although the improvements embraced therein may be applied to other purposes.

This invention consists of a windlass or other drum or shaft, revolving in bearing-boxes upon a suitable frame, having two large friction-wheels, of different diameters, secured upon it at or near the ends of the shaft, with a driving-shaft placed parallel, or nearly parallel, to the windlass-shaft, and revolving in suitable bearings upon the same frame. This driving-shaft has two small friction wheels or pinions, of different diameters, with surfaces grooved to correspond with the large wheels, and their difference of diameters also corresponding with the difference of diameters of the large wheels. One of these pinions is secured upon the shaft by a feather, which permits a slight end motion, and guarantees the proper contact and releasing of the grooves in the respective wheels.

As the shafts must deviate slightly from a parallel position, (when one pair at least of the wheels are in contact,) for the purpose of bringing the surfaces in close connection, the wheels and pinions are slightly reduced in diameter toward their outer ends, such reduction being in the ratio of their respective diameters. To compensate for the slight change in the line of the movable shaft, the eccentric cylindrical boxes are adjusted a little free in their bearings.

In the accompanying plate of drawings the present invention is illustrated, Figure 1 being a view or elevation from one end of the

windlass drum or shaft; and Fig. 2, a vertical section taken in the plane of the line *x x*, Fig. 1.

A in the drawings represents a windlass or other drum or shaft, provided with friction-wheels B and B², one at or near each end, these wheels being made of different diameters, and concentric with the centers of the drum-shaft C¹, which projects from each end of the drum A at C and C², concentric with it and its wheels. The bearings of the shaft C C² are in cylindrical boxes E E², and are eccentric to their centers. These boxes are arranged to turn in cylindrical bearings formed in the upright parallel side pieces or frames, F. G G² are lever-handles secured to the outer ends of boxes E E², by which handles the boxes can be turned in their bearings, and the drum-shaft or either of its ends thereby thrown to or from the driving-shaft. H is the driving-shaft, placed above the drum or shaft A, and arranged to turn in bearings in the parallel uprights or frames F. The driving-shaft is provided with two friction pinion-wheels, I and I², of different diameters—the smaller one, I, in position to engage with the larger friction-wheel, B, and the larger one, I², with the smaller friction-wheel, B², on drum A.

In the figures of the drawings the drum A, by its smaller friction-wheel, B², is shown as engaged with the driving-shaft, through its larger pinion, I², to do which the end C² of the drum-shaft is raised by properly turning the bearing-box E², in which it is eccentrically hung, and also by turning the other box, E, in the contrary direction, to bring the larger wheel, B, out of connection with its pinion I. Thus, as is obvious, the revolution of the drum will be through its smaller friction-wheel and larger pinion on the driving-shaft, consequently having a speed in direct proportion to their relative sizes; and to change the speed of the drum it is only necessary to throw out the wheel above described as in connection, and to bring in the wheel at the opposite end of the drum, when the speed will be in direct proportion to the relative sizes of such wheel and the pinion with which it interlocks.

L is a brake, hung so as to be brought to bear against the under side of the larger wheel

on the drum-shaft, for the purpose of stopping the drum, holding it in position when not in contact with the pinions, and for regulating and retarding its motion when lowering a weight attached to it.

For holding the lever-arms attached to the eccentric boxes in position when the wheels are out of contact, spring-catches M are provided at the proper points therefor; and to throw them into contact when levers are released from said catches, spiral springs N are suitably applied to them.

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

The use of two plain or grooved friction-

wheels, of different diameters, upon one shaft, when the same are operated and driven by two similar friction-wheels, of different diameters, on one driving-shaft, placed nearly parallel thereto, and so arranged that the speed and power may be varied by bringing into contact the larger wheel and smaller pinion, or the smaller wheel and larger pinion, by means of the eccentric bearing, as shown and described, or other equivalent device, for the purpose and object as stated.

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