W. K. MARVIN.

HOISTING APPARATUS.

No. 46,257. Patented Feb. 7, 1865.

Fig: 1

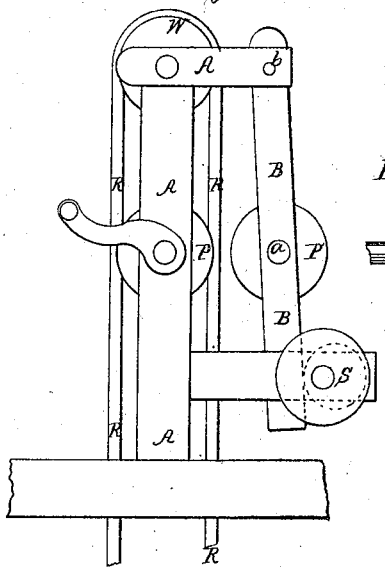


Fig: 3

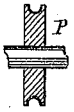


Fig: 2

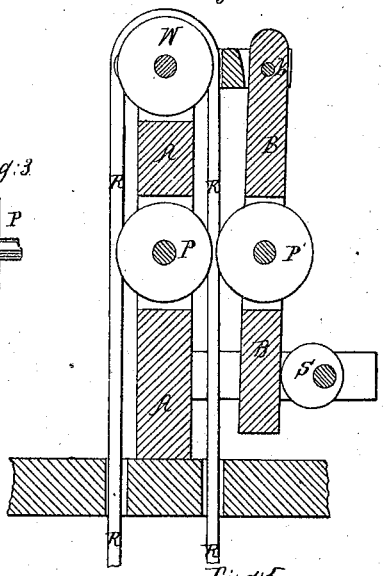


Fig: 4

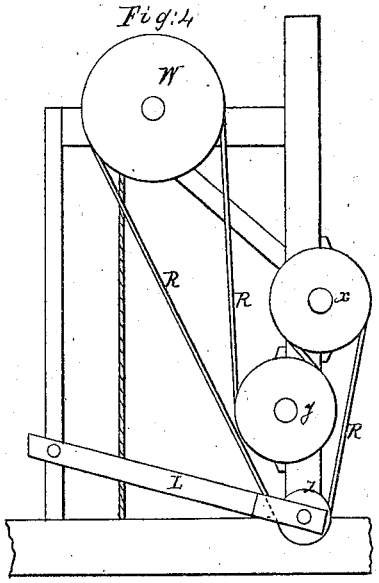
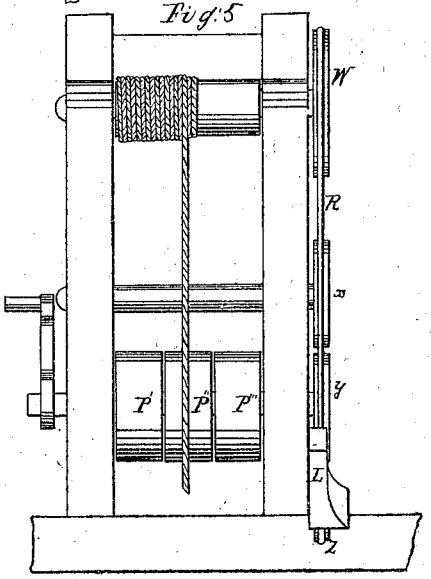


Fig: 5



Witnesses

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UNITED STATES PATENT OFFICE.

WALTER K. MARVIN, OF NEW YORK, N. Y.

IMPROVEMENT IN HOISTING APPARATUS.

Specification forming part of Letters Patent No. **46,257**, dated February 7, 1865.

To all whom it may concern:

Be it known that I, WALTER K. MARVIN, of New York, in the county and State of New York, have invented certain new and useful Improvements in Hoisting Apparatus; and I hereby declare that the following, taken in connection with the accompanying drawings, forms such a full, clear, and exact description of the same as will enable others skilled in the art to make and use the same.

My invention has for its object the economical application to hoisting apparatus, of otherwise ordinary or suitable construction, of available power, derived from some prime mover, thereby to save labor and time, and consequently expense.

In most store-houses, factories, and other like buildings of two or more stories merchandise or other articles are generally conveyed to or from the upper stories by means of an elevator consisting of a drum or windlass, around which is wound the rope or cable attached to the platform. Upon the shaft of the drum is mounted the "wheel," so called, in the crease or groove of which is passed an endless cord of such length as to traverse the different stories of the building. When the cord is pulled, the wheel is rotated, which causes the windlass or drum to wind up the rope or cable and thus to elevate the platform to any desired height. Such is the hoisting apparatus as generally used in most of our warehouses. Now, the ordinary mode of operating this apparatus is by direct application of the force of men or animals. In the former instance, but comparatively small weights can be raised; in the latter much time is necessarily consumed by the back and forth travel of the animals. From this outline of the apparatus heretofore used, and of its method of operating the same, the nature of the improvement subject of this patent will be more readily understood and appreciated.

In the accompanying drawings, Figure 1 is a side elevation, and Fig. 2 a sectional view, of an elevator constructed in accordance with my invention. Fig. 3 is a detail view in section of one of the pulleys, hereinafter referred to.

In the said figures the drum or windlass and platform and other accessories of the hoisting apparatus, with the exception of the wheel, are omitted, as my improvement is adaptable to any hoisting apparatus in use.

The wheel W is hung in suitable bearings in a frame, A, and is here shown grooved to confine the endless rope R. At some distance below the wheel, (it is immaterial where located, provided it be within the space of the pendent portion of the rope,) there is a fixed pulley, P, preferably of a diameter equal to that of the wheel or pulley W, and opposite this fixed pulley, and in the plane thereof, there is a movable pulley, P′—that is, a pulley whose bearings *a* are arranged within a beam, B, swinging upon a fixed point of suspension, *b*. This beam may be made of two branches, or it may be slotted to contain the pulley P′. The grooves of the pulleys P and P′, which are made of cast-iron, are shown to be of semicircular section, but I prefer to make them shallower, so that the rope may not be wholly inclosed and liable to be compressed when the fixed and loose pulley are brought together.

In order to increase the frictional hold of the pulleys P and P′ upon the rope, I form a lining of the groove of vulcanized india-rubber, which I have found can be made to permanently adhere to the surface of the groove by vulcanizing the same upon the pulleys. To this effect the lining is formed of a proper vulcanizable compound, which is put in a plastic state in the groove of the pulley. An annular mold is then applied to the periphery of the pulley, closed, and put into the heater to be vulcanized. To facilitate the operation of the swinging beam, I use an eccentric, S, to which may be attached a lever or hand-wheel, so that by lifting or depressing the lever or by rotating the hand-wheel the eccentric is caused to move the beam which brings the pulleys P and P′ into frictional contact with the rope. With the fixed pulley is geared or otherwise connected the prime mover, so that rotary motion may be imparted to it at pleasure. If there be a steam-engine in the vicinity, steam-power can be advantageously employed to drive the pulley P; if not, any other available power can be used, or a horse-power can be specially used for supplying the power to the hoisting apparatus.

The operation is as follows: The pulley P, being supposed driven by some motive power,

it will be understood it will freely revolve between the pendent rope without imparting any motion thereto; but when it is desired to lift a weight or platform, then it is only necessary to pinch the rope, by bringing the pulley P′ into frictional contact with the rope and pulley P, the force of compression being regulated according to the weight to be raised. This arrangement thus affords the means of working the apparatus without a brake, as the speed and power can be easily controlled by slackening or increasing the pressure of one pulley against the other.

A modified form of this apparatus is shown in Figs. 4 and 5, representing, respectively, a side and front elevation. Like in the former, the force is applied to the hoisting apparatus by friction, but the friction instead of being produced by compression is here attained by tension. In the said figures, W is the wheel or main pulley, being mounted upon the shaft of the windlass. Two fixed grooved pulleys, *x* and *y*, are arranged in the frame-work of the apparatus, and an endless cord or rope, R, is placed over the pulleys, as shown in the drawings, or in any other manner which is equivalently the same. A fourth grooved pulley, F, secured in the end of a swinging lever, L, is used to take up the slack of and to produce tension upon the rope and to bind the pulleys, so as to cause their moving in unison, if either be driven. The movement of a steam-engine or other prime mover may be transmitted by belting to the pulleys P′ P″ P‴, the second of which is fast while the other two are loose on the shaft of the grooved pulley.

It will be understood that the operation of this machine is like the one before described, the pulleys being brought into frictional relation by pressing on the lever L with a force proportionate to the weight to be lifted.

Having thus described my invention, and the manner in which the same is or may be carried into effect, I claim—

The method herein described of applying power to hoisting apparatus by the employment of friction-pulleys operating by compression upon a rope or cable, or the equivalent therefor, substantially in the manner herein set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

WALTER K. MARVIN.

Witnesses:

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