

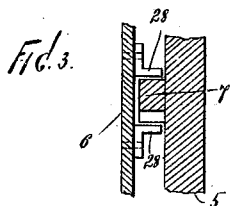
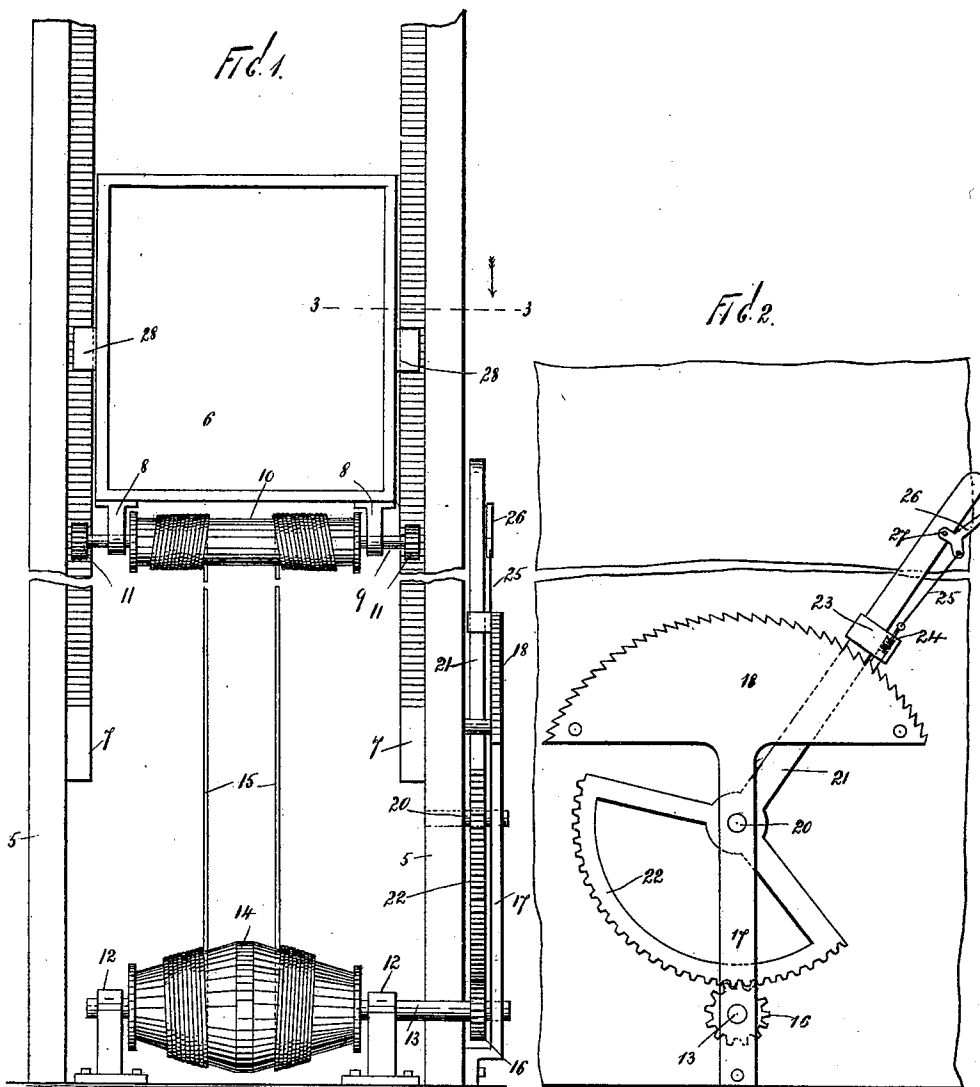
No. 636,809.

Patented Nov. 14, 1899.

T. KEENAN.
HOISTING APPARATUS.

(Application filed Dec. 1, 1898.)

(Model.)



WITNESSES
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UNITED STATES PATENT OFFICE.

THOMAS KEENAN, OF NEW YORK, N. Y., ASSIGNOR TO THE SCOTCH
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HOISTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 636,809, dated November 14, 1899.

Application filed December 1, 1898. Serial No. 697,943. (Model.)

To all whom it may concern:

Be it known that I, THOMAS KEENAN, a citizen of the United States, residing at New York, (Brooklyn,) in the county of Kings and State
5 of New York, have invented certain new and useful Improvements in Hoisting Apparatus, of which the following is a full and complete specification, such as will enable those skilled in the art to which it appertains to make and
10 use the same.

This invention relates to hoisting apparatus; and the object thereof is to provide improved means for operating elevator-cars, lifts, and other devices of this class, whereby
15 complete control of the car or lift is secured together with absolute safety.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which—

20 Figure 1 is a vertical section of an elevator-shaft and showing a side elevation of a car or lift and the apparatus which I employ for raising and lowering the same; Fig. 2, a side view at right angles to Fig. 1. Fig. 3 is a section
25 on the line 3 3 of Fig. 1.

In the drawings forming part of this specification the separate parts of my improvement are designated by the same numerals of reference in each of the views, and in said
30 drawings, reference being made to Fig. 1, I have shown at 5 the opposite sides of an elevator-shaft and at 6 an ordinary elevator-car or lift, which may be of any desired form or construction and may consist of an ordinary
35 platform, if desired, and in the practice of my invention I secure to the opposite sides 5 of the elevator-shaft and centrally thereof vertical rack-bars 7, the teeth of which are on the side thereof.

40 Secured to the bottom of the elevator-car are hangers 8, in which is mounted a car-controlling shaft 9, which is provided, as shown in Fig. 1, with a central drum 10, and the shaft 9 is provided at each end with a pinion
45 11, and the pinions 11 are rigidly secured to said shaft 9 and operate on and in connection with the rack-bars 7, and the said shaft 9 is in parallel alinement with the teeth of said rack-bars.

50 Any suitable means may be provided for operating the shaft 9, so as to raise and lower

the car, and in Figs. 1 and 2 the bottom of the elevator-shaft is provided with suitable bearings or supports 12, in which is mounted a power-shaft 13, which is provided centrally
55 with a double conical drum 14, the largest portion of which is at the center and the ends of which taper, as shown in the drawings.

Secured to and wound on the opposite ends of the drum 14 are cables 15, which are also secured to and wound on the drum 10. By turning
60 the shaft 13 to the right the shaft 9 will also be turned in the same direction and the elevator-car will be raised.

In operating the shafts 13 and 9, as described, the cables 15 are wound on the drum
65 14 and unwound from the drum 10 as the elevator-car is raised, and when the elevator-car descends the cables 15 are wound on the drum 10 and unwound from the drum 14.

70 The cable or cables 15 are wound on the drums 10 and 14 in opposite directions, and by reason of this fact and the connection between the pinions 11, secured to the shaft 9, and the rack-bars 7 the elevator-car cannot
75 descend except as the shaft 13 is turned, so as to unwind the cable or cables from the drum 14, this operation resulting in turning the shaft 9 and drum 10, secured thereto, so as to wind the cable or cables on said drum
80 10, and in the operation of the car or lift the drums 10 and 14 are always turned in opposite directions, and the shaft 9 and drum 10 cannot turn except as the shaft 13 and drum
85 14 are turned, and the cable or cables 15 being always held taut it will be apparent that the car or lift cannot fall unless said cable or cables are broken.

In Figs. 1 and 2 I have shown devices for regulating the movement of the shaft 13, and
90 these devices consist of a pinion 16, secured to the end of said shaft, and a bracket 17, secured above and below said shaft and provided at its upper end with a segmental head
95 18, having ratchet-teeth 19, and pivoted at 20 is a hand-lever 21, having at its lower end a segmental gear-head 22, which operates in connection with the pinion 16. The lever 21 is also provided at 23 with a keeper, which is
100 secured thereto and which carries a vertically-movable spring-operated pawl 24, which operates in connection with the segmental

head 18, and said pawl is connected by a rod 25 with a hand-lever 26, which is pivoted to the lever 21 at 27.

By grasping the upper end of the lever 21 and pulling it in the direction of the operator the shaft 13 will be turned to the right, the cables 15 will be wound on the drum 14 and unwound from the drum 10, and the drum 10 will be turned to the right and will raise the elevator-car, and by moving the hand-lever 21 backwardly the shaft 13 will be turned in the opposite direction and the elevator-car will be lowered.

This device is simple in construction and is particularly adapted for dumb-waiters and all forms of elevators or hoisting apparatus where it is only necessary to raise the elevator-car a short distance, and it will be apparent that the device will operate with but one of the cables 15, the object in providing two of said cables being to secure greater strength and also to distribute the strain on both ends of the shaft 9 at the bottom of the elevator-car.

The elevator-car or lift is also provided with side brackets or jaws 28, between which the rack-bars 7 pass, said brackets or jaws serving to hold the car or lift in the proper position and also to hold the pinions 11 of the shaft 9 in connection with said rack-bars.

In order to secure the proper operation of the apparatus, I also make the drum 10 larger in diameter than the pinions 11, and while this apparatus is directly adapted for use in connection with dumb-waiters and other forms of hoisting apparatus where it is only necessary to raise the elevator-car or lift a short distance it will be apparent that the said apparatus may be used in tall buildings, where it is desired to raise heavy loads to great heights, all that is necessary being to provide proper means for controlling and operating the shaft 13.

As hereinbefore stated, the cable or cables 15 are wound on the drums 10 and 14 in opposite directions, and by reason of this fact and the further fact that the drum 10 is of less diameter than the pinions 11 the shaft 9, to which the drum 10 is secured, cannot turn so as to allow the car or lift to fall, and said shaft 9 cannot revolve so as to lower the car or lift only as the shaft 13 is allowed to turn, it being understood that as the car or lift descends the cable or cables are wound on the drum 10 and unwound from the drum 14, and by reason of this operation there is never any slack in the cable or cables.

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

1. An elevator-shaft provided with vertical rack-bars at its opposite sides, a car or lift between said rack-bars, a shaft supported by and beneath the bottom of said car or lift and provided with pinions at its opposite ends which operate in connection with said rack-

bars, and means for operating said shaft, consisting of a drum mounted thereon, a cable wound on said drum, a power-shaft mounted in the bottom of the elevator-shaft, a drum mounted thereon, and with which said cable is connected, and means for operating said power-shaft, substantially as shown and described.

2. An elevator-shaft provided with vertical rack-bars at its opposite sides, a car or lift between said rack-bars, a shaft supported by and beneath the bottom of said car or lift and provided with pinions at its opposite ends which operate in connection with said rack-bars, and means for operating said shaft, consisting of a drum mounted thereon, a cable wound on said drum, a power-shaft mounted in the bottom of the elevator-shaft, a drum mounted thereon, and with which said cable is connected, and means for operating said power-shaft, consisting of a pinion mounted on one end thereof, and a lever pivotally supported above said pinion and provided with a segmental gear-head which operates in connection therewith, substantially as shown and described.

3. An elevator-shaft provided with vertical rack-bars at its opposite sides, a vertically-movable car or lift mounted between said rack-bars, a shaft supported beneath the bottom of said car or lift and provided at its ends with pinions rigidly secured thereto and gearing with said rack-bars, a drum secured to said shaft, a power-shaft mounted in the bottom of the elevator-shaft and provided with a drum, and cables connected with each of said drums, and wound thereon in opposite directions, and means for operating said power-shaft, substantially as shown and described.

4. In an apparatus of the class described, the combination of the rack-bars 7, having teeth on their sides, an elevator car or lift mounted between said rack-bars, a shaft 9 suspended beneath said car or lift, and provided at its ends with pinions gearing with said rack-bars, a drum 10 secured to said shaft, a power-shaft mounted in the bottom of the elevator-shaft and provided with a drum 14, cables 15 wound on the drums 10 and 14 in opposite directions and means for operating and controlling the shaft 13, substantially as shown and described.

5. In an apparatus of the class described, the combination of the rack-bars 7, having teeth on their sides, an elevator car or lift mounted between said rack-bars, a shaft 9 suspended beneath said car or lift, and provided at its ends with pinions gearing with said rack-bars, a drum 10 secured to said shaft, a power-shaft mounted in the bottom of the elevator-shaft and provided with a drum 14, cables 15 wound on the drums 10 and 14 in opposite directions and means for operating and controlling the shaft 13, consisting of a pinion 16 secured thereon, a seg-

mental gear-head 22 pivoted above said pin-
ion and provided with a lever 21 having a
spring-operated pawl 24, and a segmental
head 18 having ratchet-teeth in connection
5 with which said pawl operates, substantially
as shown and described.

In testimony that I claim the foregoing as

my invention I have signed my name, in pres-
ence of the subscribing witnesses, this 30th
day of November, 1898.

THOMAS KEENAN.

Witnesses:

F. A. STEWART,

A. C. McLOUGHLIN.