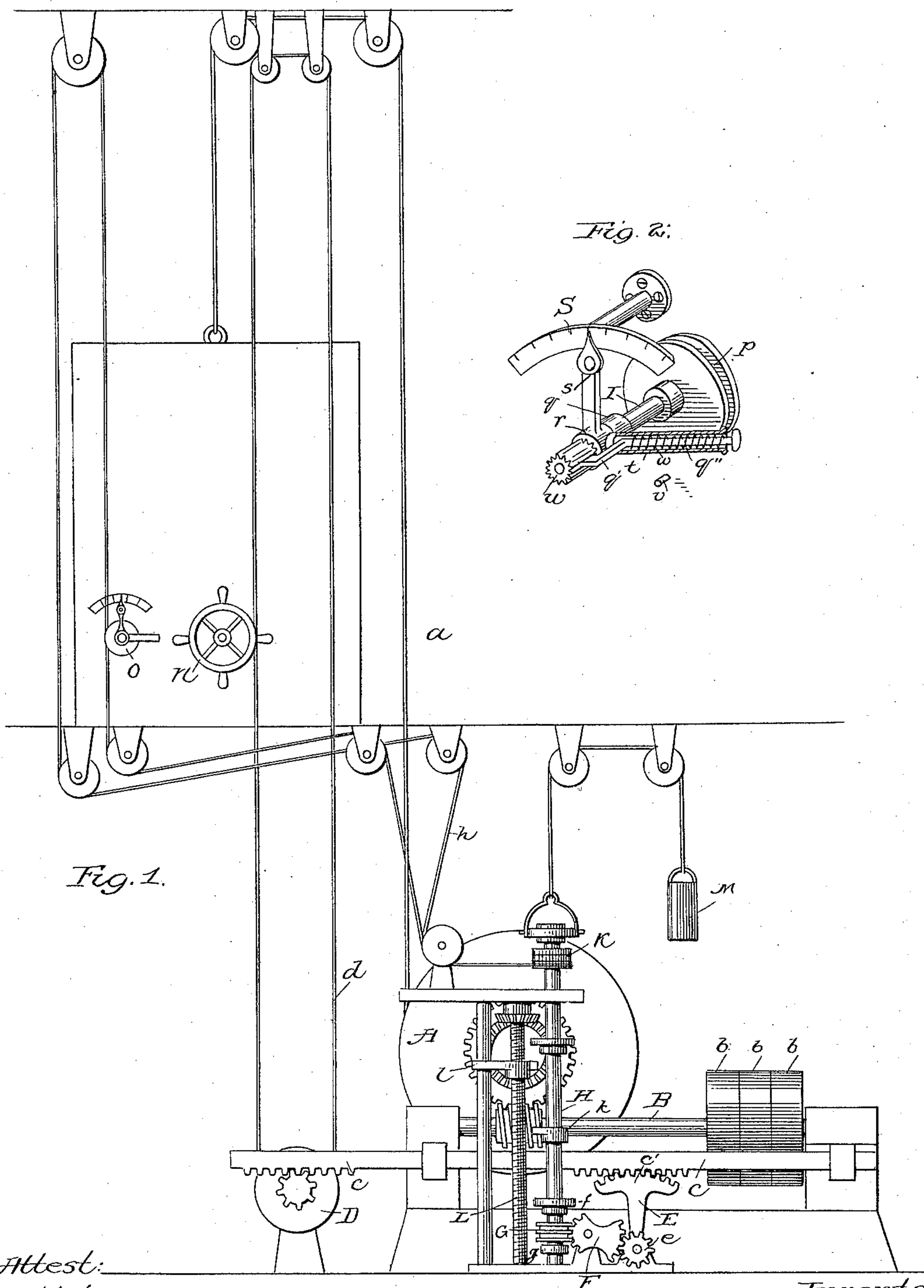


(No Model.)

G. C. TEWKSBURY & F. M. REYNOLDS.
ELEVATOR.

No. 302,602.

Patented July 29, 1884.



Attest:

F. E. Middleton
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Inventor
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UNITED STATES PATENT OFFICE.

GEORGE C. TEWKSBURY AND FRANK M. REYNOLDS, OF NEWARK, N. J.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 302,602, dated July 29, 1884.

Application filed December 5, 1883. (No model.)

To all whom it may concern:

Be it known that we, GEORGE C. TEWKSBURY and FRANK M. REYNOLDS, of Newark, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Elevators; and we do hereby declare that the following is a full, clear, and exact description of the same.

This invention relates to elevators in which an automatic stop mechanism is used capable of being set for any given stopping-point in the line of movement of the elevator-car. The first point in the invention is a slip motion, whereby the car is brought gradually to the same stopping-place, whether moving upward or downward. The second is an improved indicator for the car, in connection with the mechanism, by means of which the stopping of the car is assured at the indicated point.

The invention consists, further, in improved details of construction, whereby the automatic stopping mechanism (shown in Letters Patent heretofore granted to Geo. C. Tewksbury) is adapted to be combined with mechanism for stopping and starting the car through the agency of an attendant thereupon.

In the accompanying drawings, Figure 1 represents the mechanism in side elevation, in connection with the car, which is left open to show the starting and indicating devices. Fig. 2 is a perspective view of the indicator detached from the car.

In these drawings, A represents a drum on which a hoisting-rope, *a*, is wound. This is driven by an ordinary worm-gear from the shaft B, provided with the ordinary belt-pulleys, *b b b*. The belt-shifting bar C, by movement across the face of the pulleys, shifts the belts for stopping, starting, or reversing, in the ordinary manner. This bar at the other end is provided with a rack, *c*, which meshes with a pinion fixed to pulley D, which is adapted to be moved by rope *d*, which rope, passing up the well through the car and operating in an obvious manner, serves to shift the belt on the pulleys *b*. On the same bar C is another rack, *c'*, which is in engagement with the segment E, having a pinion, *e*, fixed to it and turning on the same axis. The pinion engages with a double segment, F, a segmental rack on the other end of which engages with the rack-sleeve G, provided with

circumferential ribs or teeth. This rack-sleeve has limited sliding movement on the shaft H between fixed collars *f* and *g*. The shaft H is substantially the same as that shown in Letters Patent granted Reynolds and Tewksbury, July 3, 1883, No. 280,670, and need not be herein particularly described. The rope *h* passes around the pulley K on the shaft H, and extends up the elevator-well, within the car and down over suitable pulleys, returning to its connecting-pulley K. It may be operated within the car and the shaft H be turned by its operation, so as to bring any one of the studs or projections *k* into line with the stud *l* on the screw-shaft L. It will be understood that this screw-shaft is connected by bevel-gears to the drum, and the nut carrying the stud *l*, being held from turning, is caused to advance by the rotation of the drum until it strikes the projection *k*, when it moves the shaft H longitudinally, and through the segments F E moves the bar C and shifts the belt. This is substantially the operation described in the patent last mentioned.

The moving stud *l*, when the car is going one way, strikes with its lower face upon the upper face of the stud *k*, and in going the other way strikes with its upper face upon the lower face of the stud *k*. It would therefore happen, as the car is arrested by the motion of the stud *l*, that it would not be stopped at exactly the same point both when descending and ascending. The variation and movement would amount in extent to the sum of the thickness of the two studs. In order to compensate for this, the sleeve G is made loose between the collars heretofore described, and the shaft H is thus allowed a sufficient amount of movement before its fixed collar *f* or *g*, as the case may be, strikes the sleeve G and acts upon the shifting mechanism. The shaft H is free to move vertically, and is provided with a counter-balance, M, connected to the shaft by rope and swivel. The rope *d*, through which the belt is shifted by hand, goes once around a wheel, N, provided with handles. The wheel turns freely when the car is going up and down, thus traveling on the rope; but when the car is stationary the turning of the wheel acts upon the bar C through the pinion and rack and shifts the belt.

The indicator is shown at O. It is placed

in any suitable position in the car, as shown in Fig. 1, and the rope *h* runs once around it. The construction of the indicator and operation are shown more clearly in Fig. 2. The pulley *p* is fixed to the shaft I, which has suitable bearings in the car-frame. Next to a collar, *g*, on the shaft I is a sleeve, *r*, which carries the index-finger *s*, moving over a graduated segment, *S*, which is mounted upon a bracket fixed to the wall of the car. This sleeve *r* turns on the shaft I when not held thereto by the pawl *q'*, which pawl is attached to a slide, *q*², within the handle *t* of the sleeve *r*. The pawl *q'* is held normally out of gear with the ratchet-wheel *w* on the shaft I by a coil-spring, *u*, encircling the slide *q*² within the handle *t*. The stop-pin *v* limits the movement of the handle, which has sufficient movement, however, to allow the index-finger to pass over the face of the graduated segment. When the pawl is thrown into connection with the ratchet-wheel *w*, it is apparent that the shaft may be turned, and with it the pulley *p*, which will move the index-finger over the segment.

The segment is marked with numbers indicating the different floors, and as the rope *h* passes around the pulley *p*, movement of the wheel, when the car is stationary, will move the rope and will turn the shaft H, thus setting a stud, *k*, for the desired floor at the same time that the finger is moved to the number on the segment indicating that floor. The connection with the wheel and the spacing upon the segment are properly adjusted to the distance of the particular stud *k* from the starting-point of the stud *l*. When the pawl is out of gear, the wheel turns freely as the car goes up and down. The pawl is in engagement only when the car is stationary, for then the attendant sets the apparatus for any desired floor.

We do not confine ourselves to the particular mode of connecting the rope to the wheel or pulley, nor to the precise details of construction of the apparatus. The essential point in this part of the invention is an index-finger capable of connection with the rope, and means for moving it, and a rope for shifting the shaft which carries the stop projections, and mechanism for connecting or disconnecting the wheel.

We claim as our invention—

1. The combination, with the mechanism of the elevator and the shaft H, having projections *k*, of the rack-sleeve G, and collars upon the shaft, as *f* and *g*, set at a distance from the sleeve, and mechanism between said rack-sleeve and the shifting-bar, substantially as described.

2. In combination with the automatic stop apparatus of an elevator, a rack-connection between the shaft which carries the stop projections and the belt-shifting bar, said bar having limited movement in relation to the rack, as and for the purpose set forth.

3. In an elevator, and in combination with an automatic stop mechanism, an indicator connected to said mechanism by means of rope *h*, or equivalent connection, said indicator being attached to the car, and adapted to turn over a graduated scale and adjust the stop mechanism, substantially as described.

4. The wheel or pulley mounted on a suitable shaft within the car of an elevator, and connected by a rope or equivalent device to the automatic stop mechanism, an index-finger mounted loosely on the same shaft, and a pawl and ratchet, whereby said finger is connected to the shaft, substantially as described.

5. The combination, in an elevator, of the automatic stop mechanism and a hand mechanism, substantially as described.

6. In combination with the shifting-bar C, the shaft H, provided with stops or projections adapted to be brought into line with the moving projections connected to the drum, and intermediate gearing, whereby motion of the shaft is communicated to the bar, in combination with the hand-rope and wheel connected to the said bar C, substantially as described.

7. The combination, in the described elevator, of the shaft H and counter-weight M.

8. The combination, in the described elevator, of the hand-wheel N, the rope, and means for connecting the rope with the shifting-bar C, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

GEO. C. TEWKSBURY.
FRANK M. REYNOLDS.

Witnesses:

JOHN A. OSBORN,
WM. H. BALL.