No. 675,244. Patented May 28, 1901.

J. RASHKIN.

AUTOMATIC GATE ACTUATING MECHANISM FOR ELEVATORS.

(Application filed Oct. 4, 1900.)

(No Model.) 2 Sheets—Sheet 1.

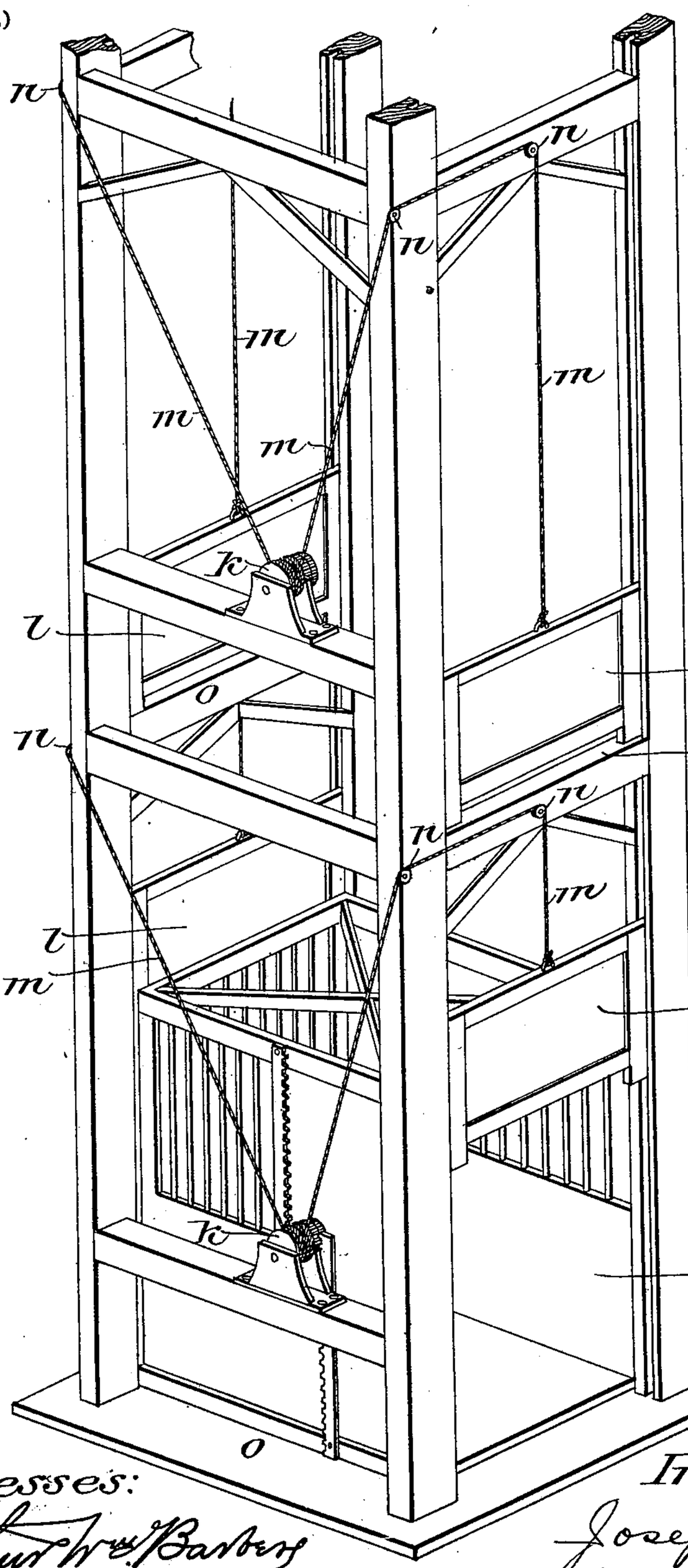

Fig. 1.

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Adelbert W. Bailey

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Fig. 2.

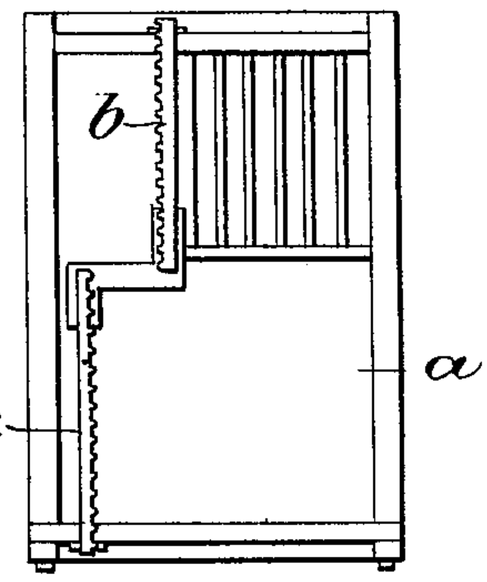


Fig. 9.

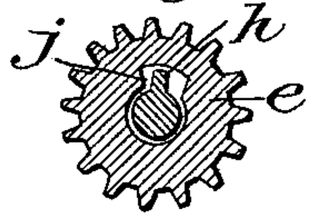


Fig. 7.

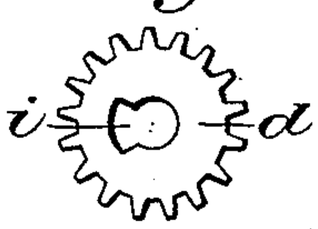


Fig. 5.

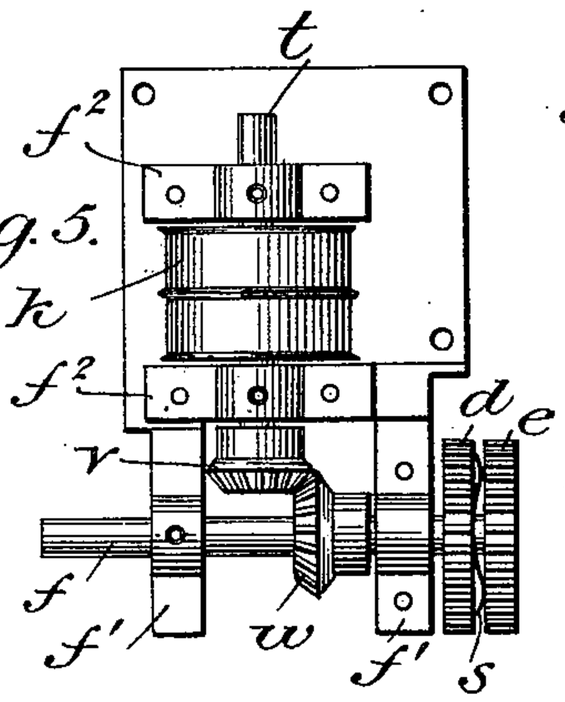


Fig. 8.

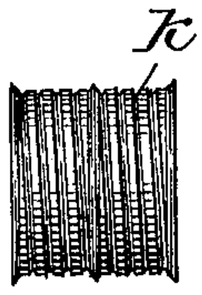


Fig. 10.

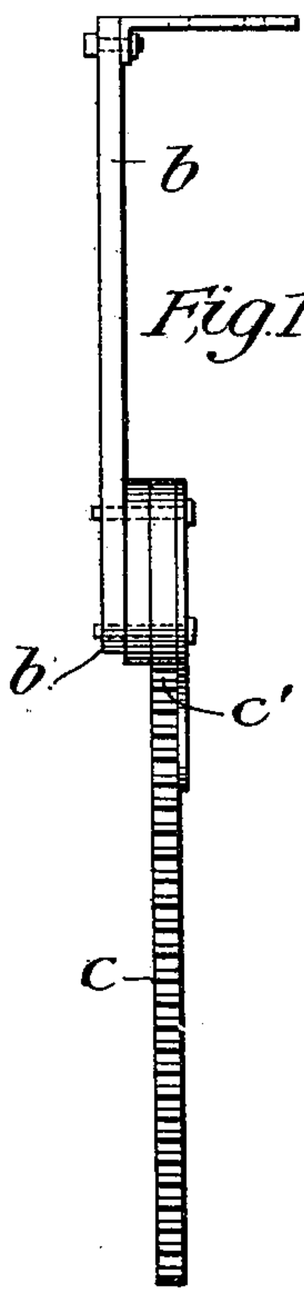


Fig. 3.

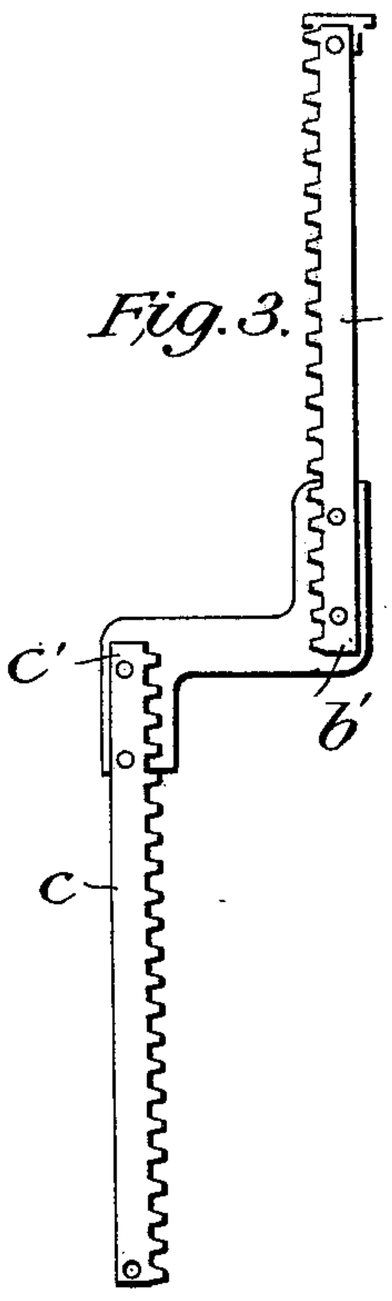


Fig. 6.

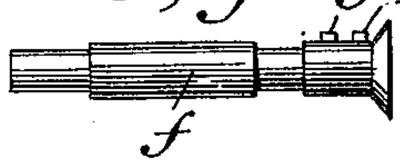
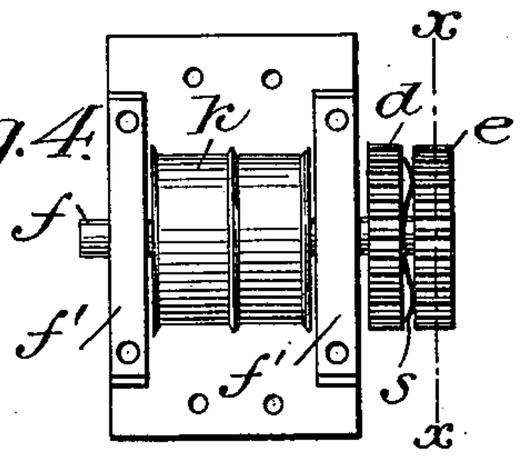


Fig. 4.



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Inventor:

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UNITED STATES PATENT OFFICE.

JOSEPH RASHKIN, OF NEW YORK, N. Y.

AUTOMATIC GATE-ACTUATING MECHANISM FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 675,244, dated May 28, 1901.

Application filed October 4, 1900. Serial No. 31,952. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH RASHKIN, a subject of the Czar of Russia, and a resident of the borough of Bronx, in the city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Automatic Gate-Actuating Mechanism for Elevators, of which the following is a specification.

My invention relates to improvements in mechanism for actuating the gates of elevator-wells in which the gates are automatically operated by the passing of the car.

The object of my invention is to provide a safe and effective means for opening and closing the gates placed at the several entrances to elevator-wells in buildings and similar places, so that the gate will be opened automatically as the car reaches the floor at which the gate is placed and will be closed as the car leaves the floor without any action on the part of the operator. I attain this object by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of the frame of the elevator-well and the elevator-car. Fig. 2 is a side elevation of the elevator-car. Fig. 3 is a view of the racks. Fig. 4 is a view of my improved pinions, winding-drum, and bearing. Fig. 5 is an optional form of the same adapted to be used in elevator-wells where it is desired to economize space. Fig. 6 is a view of the shaft and studs. Fig. 7 is a side view of one of the pinions. Fig. 8 is a view of the winding-drum. Fig. 9 is a sectional view of the pinion and its shaft, taken at the line X X, Fig. 4. Fig. 10 is a side view of the racks.

Similar letters refer to similar parts throughout the several views.

To the side of an elevator-car *a* of the usual construction I attach the racks *b* and *c*, so arranged that the pinion *d* will lie in the path of the rack *b* and engage with it and pinion *e* will lie in the path of the rack *c* and engage with it as the elevator-car is moved vertically along the elevator-well, the racks *b* and *c* being carried by the car in such manner that the pinion *d* will leave the rack *b* as the pinion *e* engages the rack *c*. The pinions *d* and *e* are loose on the shaft and each has an enlarged groove or key-slot cut in the bearing over the keys or studs *g* and *h*, respectively, permitting a partial reverse revolution of the pinion without disturbing or moving its shaft, and vice versa. A winding-drum *k* is rigidly fixed to the shaft *f* between the bearings *f' f'*, in which the shaft *f* is journaled. The bearings may be of any desired form—such, for example, as are shown at Figs. 4 and 5.

To the several gates *l l* opening upon the elevator-well on each floor of a building or other structure, I attach a rope or cable *m*, which is then passed through pulley-blocks *n n* and attached to the winding-drum *k*, which is rigidly attached to the pinion-shaft *f*, journaled upon the bearings *f' f'*, attached to the side wall of the well or other unyielding object.

Upon the side of the elevator-car I attach the racks *b* and *c*, the rack *b* lying in the plane of the pinion *d* and the rack *c* lying in the plane of the pinion *e*, the position of the adjacent ends *b' c'* of the racks *b* and *c* being such as to permit the free passage of the pinions, so that the pinion *d* will clear the rack *b* as the pinion *e* engages the rack *c*.

As the elevator-car moves upward along the elevator-well and approaches a floor *o* the rack *b* will engage the pinion *d* and cause it to revolve as the car moves on its way. A partial revolution of the pinion will cause the side of the key slot or groove *i* or *j* in the eye of the pinions *d* and *e*, respectively, to engage the feather-stud *g* or *h*, respectively, and thus turn the shaft *f*, causing the winding-drum *k*, mounted thereon, to revolve and wind the rope or cable *m*, which passing through the pulley-blocks *n n* raises the gate *l* and opens the approach or entrance to the elevator, the pinion *d* being at the lower extremity and about to leave the rack *b* as the gate reaches the highest point. As the elevator-car passes the floor the rack *c* engages the pinion *e* and gently lowers the gate by an operation the reverse of that above described. The same operation is repeated at each floor as the car approaches and leaves it.

It is necessary where two racks are used that there be little or no interval between the disengagement of one rack and the engagement of the other, and where in such cases from any cause the second rack is engaged

before the first is clear or where there has been a sudden reverse movement of the elevator the cogs necessarily break. I have obviated this defect by the use of the enlarged key-slots described above and by placing between the pinions *d* and *e* a flat spring *s* of sufficient strength and bearing against the pinions with sufficient force to prevent any independent movement after the pinions *d* and *e* leave their respective rack-bars *b* and *c*. The result of this arrangement is that the rack carried by the car turns its respective pinion only so long as it actually engages it, and when the rack leaves the pinion the latter remains in the same relative position as to its shaft and feather-key as while engaged by the rack, the key bearing against the side of the key-slot from which the motion was imparted to the shaft. It is obvious, therefore, that when for any reason the movement of the elevator is reversed or the first pinion does not clear its rack before the second pinion is engaged the enlarged key-slot and spring permit sufficient free movement to avoid accident or damage to the machine.

An optional form of my improved gate-actuating mechanism is shown at Fig. 5. It is often impracticable in the small elevator-shafts sometimes used to place the entire mechanism in the elevator-well. In such event I use the form of mechanism shown at Fig. 5, in which the entire mechanism may be placed in an aperture in the wall or in other convenient location, the pinions *d* and *e* projecting into the elevator-shaft only far enough to engage the rack-shafts *b c*.

Having thus described my invention, what I claim is—

In a device of the nature described the combination of an elevator-car, two racks mounted thereon, two pinions journaled upon an adjacent fixed structure, one of said racks lying in the vertical plane of one pinion and the other rack lying in the vertical plane of the other pinion, each pinion having an enlarged key-slot, a spring bearing upon the said pinions, a shaft carrying said pinions, keys respectively connecting said pinions with said shaft, said keys being smaller than the key-slots, a winding-drum on said shaft, a gate, and a cable connecting said drum and gate, substantially as shown and described.

Signed at New York this 21st day of September, 1900.

JOSEPH RASHKIN.

Witnesses:

ARTHUR WM. BARBER,

HENRY H. CURRAN.