

(No Model.)

2 Sheets—Sheet 1.

C. C. ILG.
SAFETY APPARATUS FOR ELEVATORS.

No. 598,151.

Patented Feb. 1, 1898.

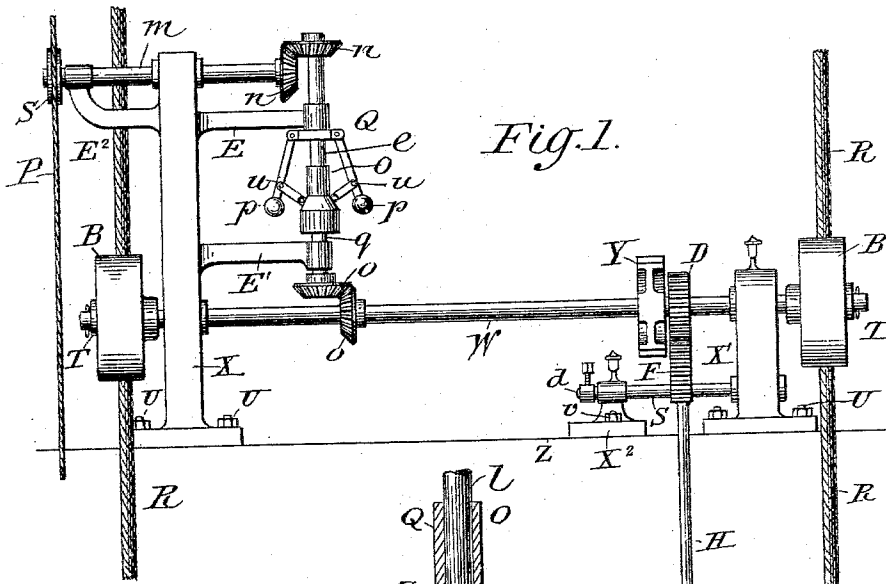


Fig. 3.

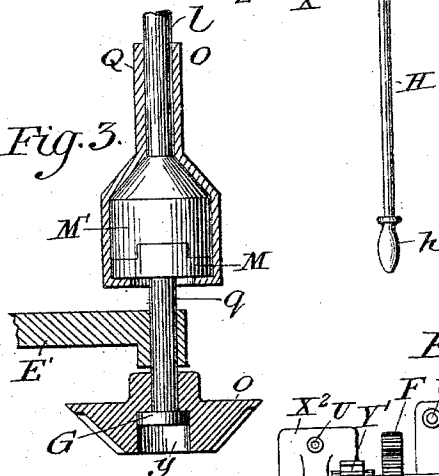


Fig. 2.

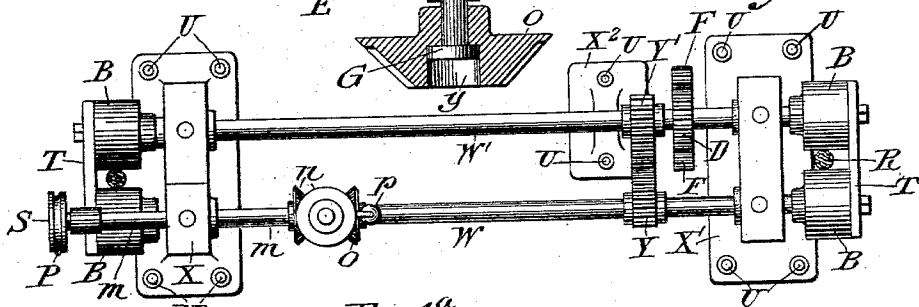


Fig. 4.

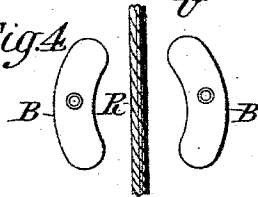


Fig. 4.

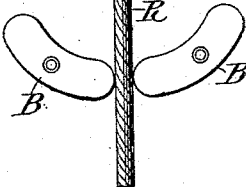
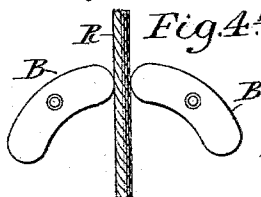


Fig. 4.



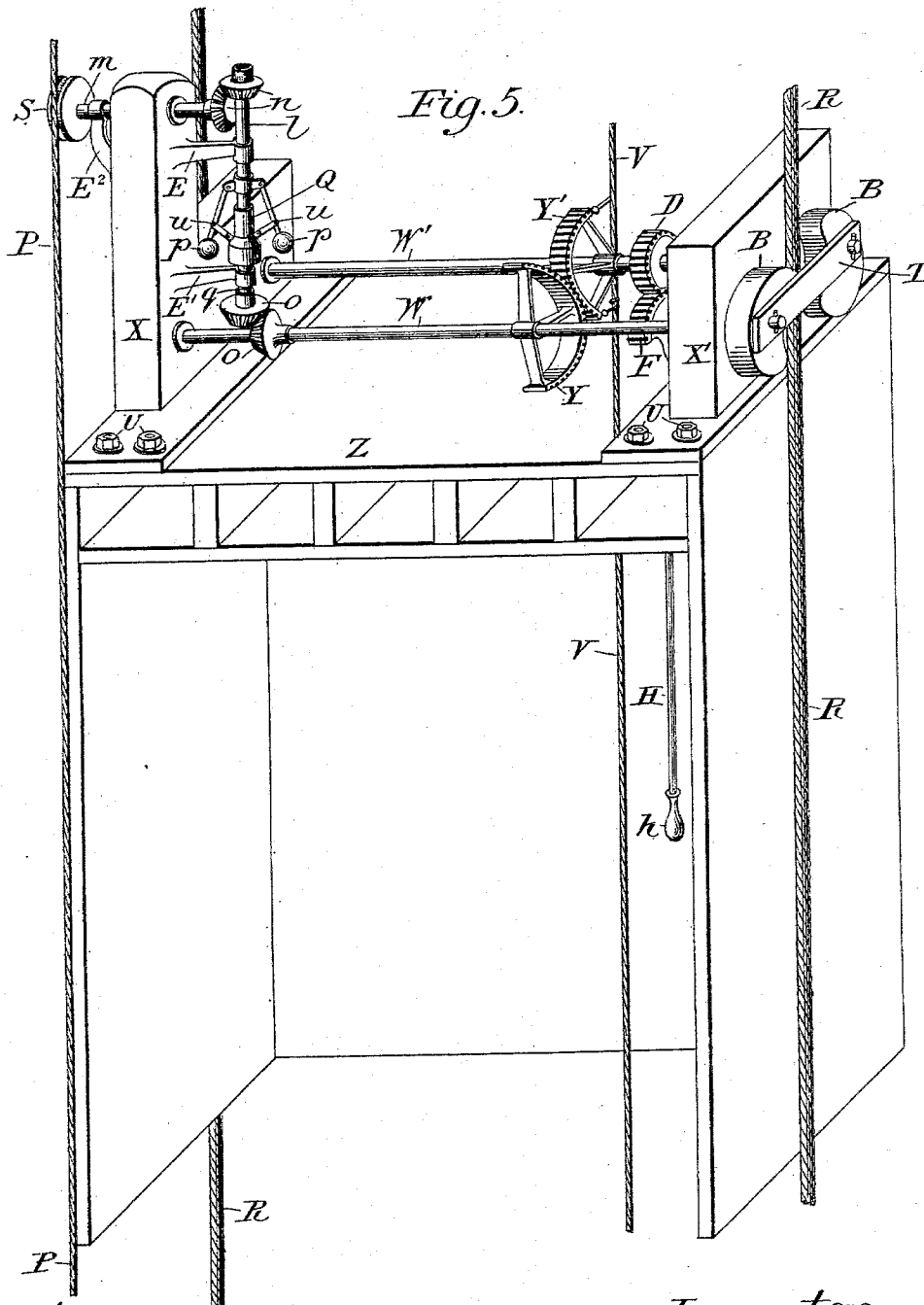
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UNITED STATES PATENT OFFICE.

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SAFETY APPARATUS FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 598,151, dated February 1, 1898.

Application filed July 11, 1896. Serial No. 598,840. (No model.)

To all whom it may concern:

Be it known that I, CARL CHRISTIAN ILG, a citizen of the Empire of Austria-Hungary, residing at New York, county and State of New York, have invented a new and useful Improvement in Safety Apparatus for Elevators, of which the following is a specification.

My invention relates to improvements in automatic brake apparatus for elevators, in which a friction-wheel mounted upon the elevator-car is driven by a stationary rope extending upward through the elevator-shaft, the wheel being in frictional engagement with the rope. From the friction-wheel a regulator provided with a clutch device is driven, which device serves to effect the operation of a series of brake-blocks adapted to cooperate with a rope, cable, or other stationary appliance extending from top to bottom of the elevator-shaft.

The objects sought to be attained by my invention may be briefly stated as follows: first, the stopping of the elevator-car in the event of its speed becoming unduly great; second, the bringing of the car to an immediate stop in case the driving-cable should break; third, the providing of suitable means for moving the car to a safe position should it stop as aforesaid.

I will now describe an apparatus embracing the features of my invention, subsequently defining the novelty of the same in claims.

In the accompanying drawings, Figure 1 is a front view of an apparatus embodying my invention. Fig. 2 is a top view of the same. Fig. 3 is a cross-section, enlarged, of the regulator shown in Fig. 1, illustrating the clutch device. Certain portions are, however, omitted in this figure. Figs. 4, 4^a, and 4^b are side views of certain brake-blocks comprised in the apparatus and which are shown in different positions. Fig. 5 is a perspective view of an apparatus embodying the improvement mounted upon the top of an elevator-car.

Similar letters of reference designate corresponding parts in all figures.

The upright X, erected upon the top of the elevator-car Z, carries the rotary shaft *m*, to one extremity of which there is secured the friction-wheel S. For the purpose of greater lateral rigidity this shaft may turn in bearings in a bracket E², extending from the up-

right X. The wheel S is in frictional engagement with a rope P, of suitable material, connected at its ends to the bottom and top of the elevator-shaft. The other end of the shaft *m* is provided with one of a pair of bevel-wheels *n n*, the other one of the pair being fixedly attached to a shaft *e*, which is rotated in bearings located at the extremity of a bracket E, extending from the upright X, by the engaging bevel-wheels.

Directly below and in line with the shaft *e* there is mounted a short shaft *q* in bearings in the bracket E'. This latter shaft is adapted to move not only rotarily, but also lengthwise. The adjacent ends of the shafts *e* and *q* are provided with clutch members M' and M, by means of which the two shafts may be connected and driven as one. The engagement and disengagement of this clutch is effected by a regulator O, consisting of arms *u u*, pivoted to a collar on the shaft *e*, and centrifugal balls *p p*, secured to the free ends of the arms. A vertically-movable sleeve Q is connected by links with the arms *u u*. This sleeve extends downwardly below the clutch member M, under the bottom surface of which a shoulder on the sleeve projects. Evidently from this construction when the balls rise the sleeve Q ascends and the members of the clutch are brought into engagement. A contrary movement of the balls will serve to disengage the clutch, the shaft *q* dropping down under its own weight.

W is a shaft journaled in bearings in the upright X and the upright X'. This shaft carries at each extremity a brake-block B, while intermediate of its ends there is affixed to it a bevel gear-wheel *o*, which coacts with a second bevel-wheel *o* at the lower extremity of the shaft *q*. This shaft *q* is provided with an enlargement G at its lower extremity, which plays in a recess *y* in the gear-wheel *o* at the extremity of the shaft. This will permit the longitudinal movement of the shaft *q* without causing the disengagement of the pair of gears *o o*.

A second horizontal shaft W', substantially parallel to the shaft W, is journaled in bearings in the uprights X and X', the two shafts being compelled to move in unison by engaging gear-segments Y and Y'. The shaft W' carries also at its extremities the brake-blocks

B B, which, with the brake-blocks at the ends of the shaft W, constitute two pairs of the same, one at each side of the elevator-car. Each pair of brake-blocks coacts with a stationary rope, cable, or the like R, extending from top to bottom of the elevator-shaft, and the extremities of the two shafts at each side of the elevator-car are connected by a plate T, the better to keep the rope, &c., R from sliding out of place.

s is a hand operating-shaft supported in the upright X' and the pillow-block X². d is a collar for preventing lengthwise movement of this shaft, which latter has a gear-segment F meshing with the gear-wheel D, affixed to the shaft W'. From the shaft s there extends a lever H, having a handle h within reach of the elevator-man in the elevator-car.

The upper and lower parts of the segment Y' are connected to a rope V, which passes through the elevator-car, as shown in Fig. 5, moving up and down with the same. Should the lifting-cable of the car break, a relative movement of the car and rope takes place, resulting in the adjustment of the brake-blocks into a braking position, and thus automatically bringing the car to a stop.

The uprights X and X' may be fastened to the top of the car by any suitable means—for instance, bolts U.

The shape of the brake-blocks B is plainly shown in Figs. 4, 4^a, and 4^b, as well as the method in which the same operate, Fig. 4^a showing the position of the blocks when the descent of the elevator-car is braked and Fig. 4^b their position when preventing a too rapid rise of the car.

The operation of the apparatus may be briefly described as follows: The regulator O is driven through the medium of the rope P and friction-wheel S, as already described. Should the movement of the elevator-car in either direction become too rapid, the member M of the clutch is raised into engagement with the member M' and the shaft W is turned in its bearings. Simultaneously with this movement of the shaft W the shaft W' is turned and the pairs of brake-blocks at the ends of the respective shafts are brought into a braking position. The brake-blocks may be disengaged from the ropes R R by means of the lever H and its connections, the operation of which is plainly evident from the

drawings. If the brake-blocks are thrown into operation and pressed against the ropes R R as a result of the breaking of the hoisting-cable, the movement of the lever H will serve to permit the elevator-car to rapidly commence its descent under its own weight, whereupon the car will be braked through the operation of the regulator and connecting devices. Further movement of the lever will cause a further movement of the car, which may finally be brought to a desired position.

Having described my invention, what I consider as new, and desire to secure by Letters Patent, is—

1. In a safety device for elevators, the combination of a friction-wheel mounted upon the elevator-car, a rope extending the length of the elevator-shaft and imparting motion to the friction-wheel, a pair of shafts rotarily mounted on the elevator-car and gearing connecting said shafts with each other, brake-blocks secured to the ends of said shafts, means with which said blocks coöperate, a regulator driven from said friction-wheel, and mechanism comprising a clutch, through which said regulator turns one of said parallel shafts, the regulator serving to engage or disengage the members of the clutch, substantially as specified.

2. In a safety device for elevators, the combination of a friction-wheel mounted upon the elevator-car, a rope extending the length of the elevator-shaft and imparting motion to the friction-wheel, a pair of shafts rotarily mounted on the car and gearing connecting said shafts with each other, brake-blocks secured to the ends of said shafts, means with which said brake-blocks coöperate, a regulator driven from said friction-wheel, mechanism comprising a clutch, through which said regulator turns one of said parallel shafts, the regulator serving to engage or disengage the members of the clutch, a rope extending the length of the elevator-shaft and mechanically connected with one of the said shafts for causing the automatic operation of the braking-blocks, and a hand-lever for disengaging the blocks, substantially as specified.

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