(No Model.) 2 Sheets—Sheet 1.

W. N. ANDERSON.

ELEVATOR SAFETY DEVICE.

No. 455,148. Patented June 30, 1891.

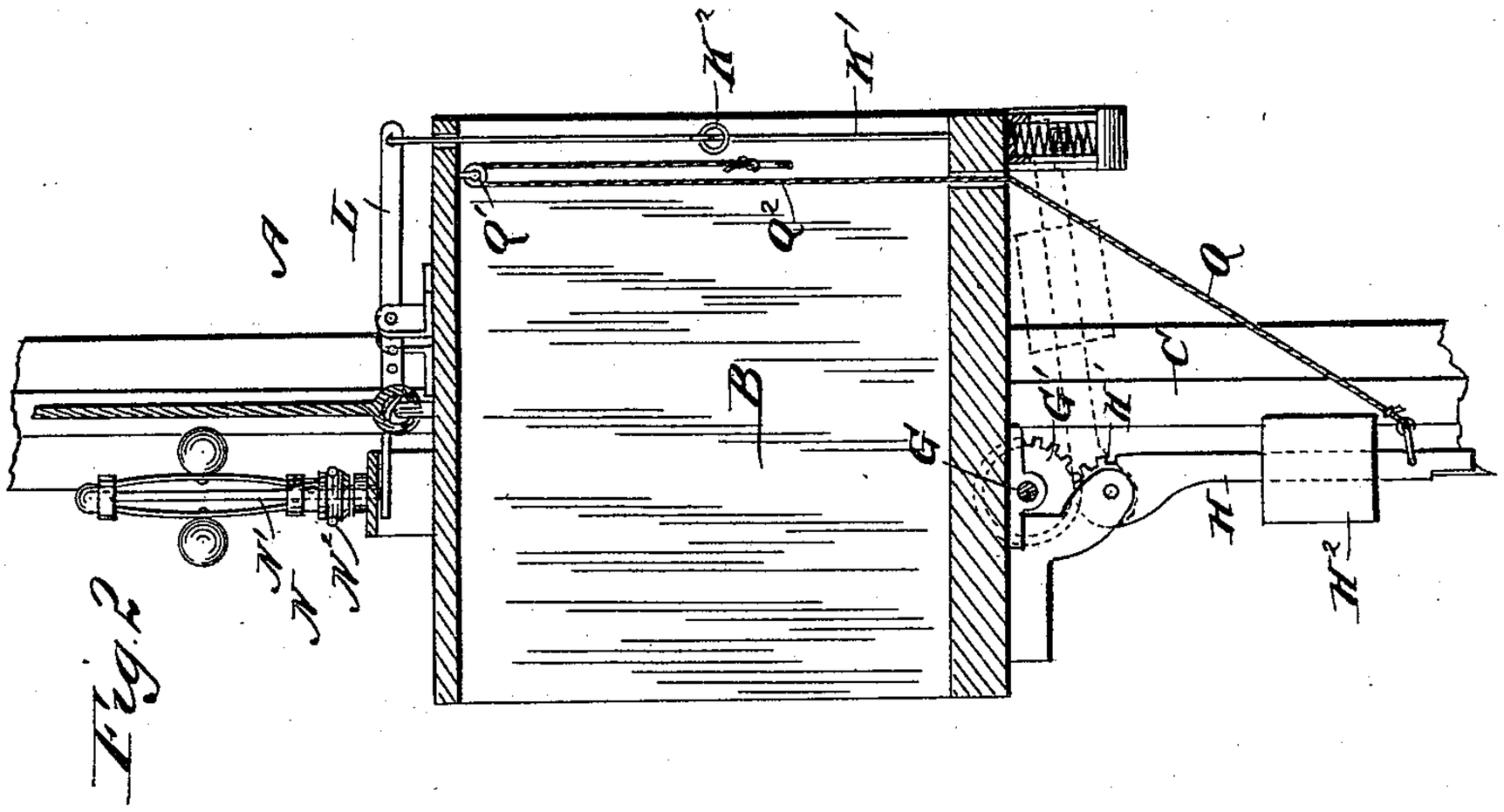

Fig. 2.

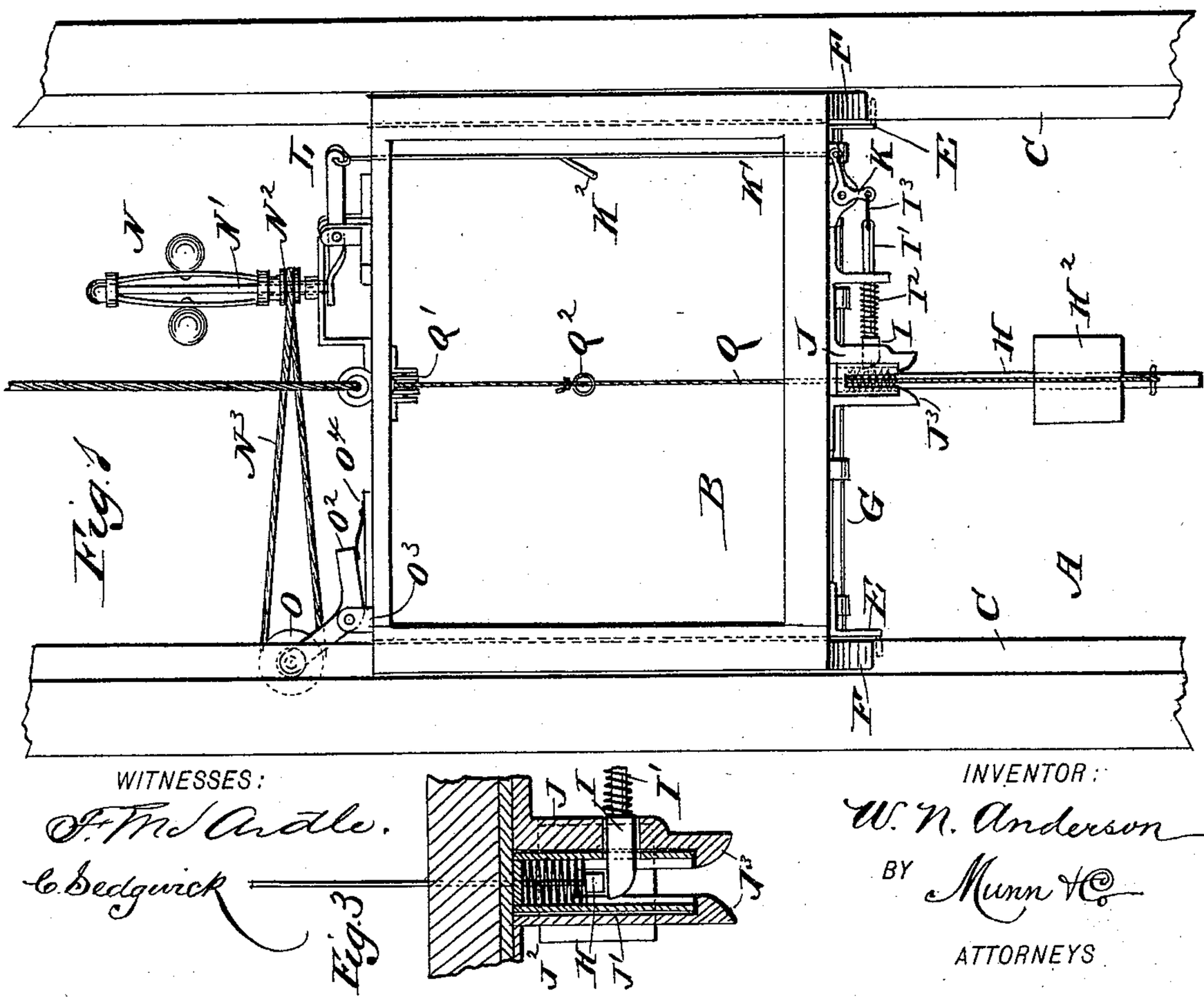

Fig. 1.

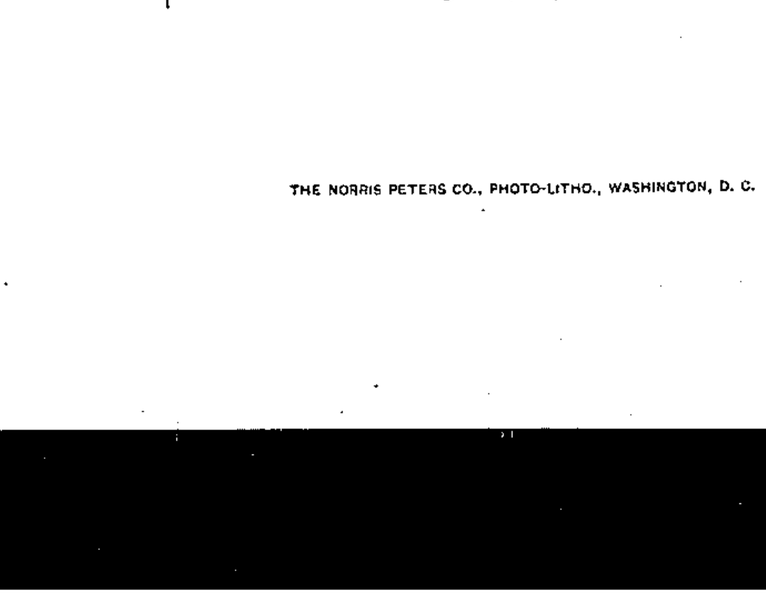

Fig. 3.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 5

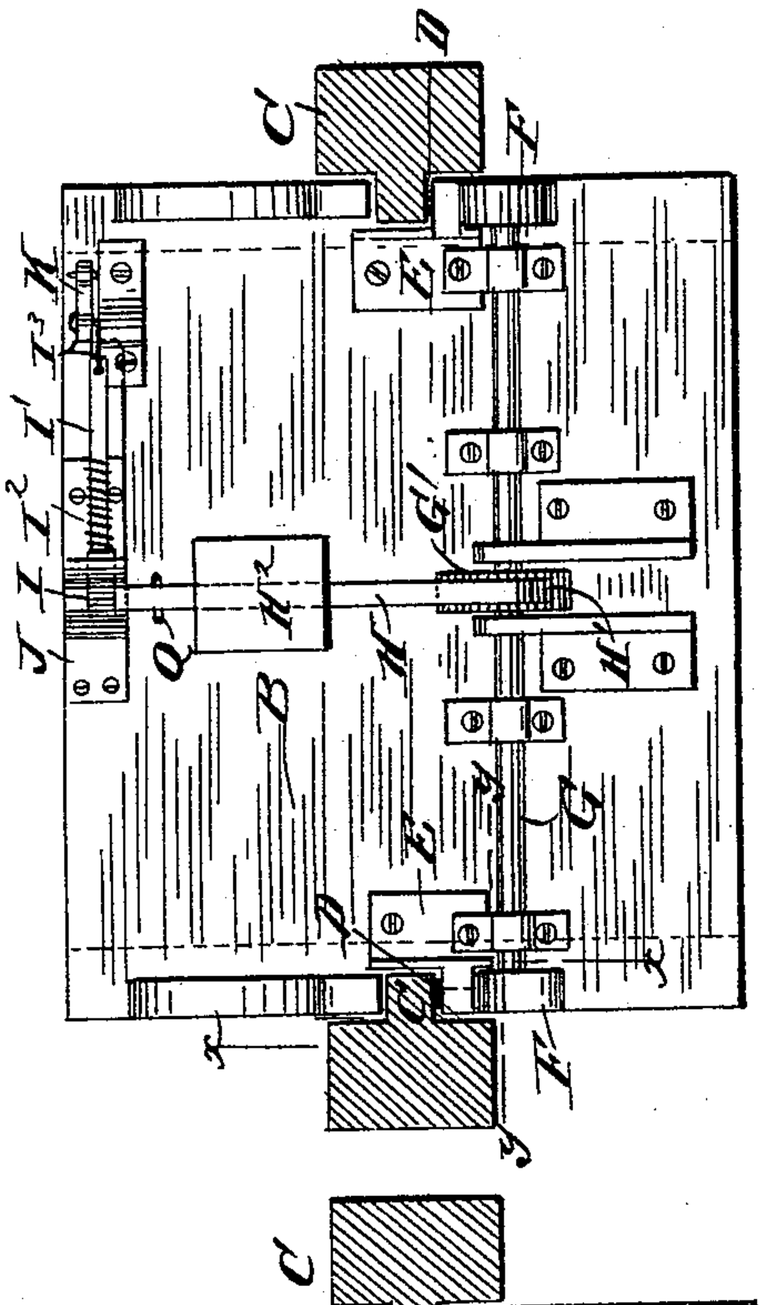


Fig. 8

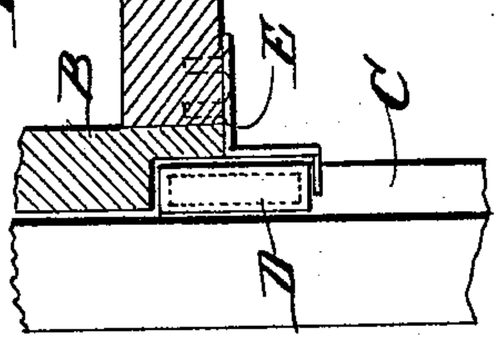


Fig. 4

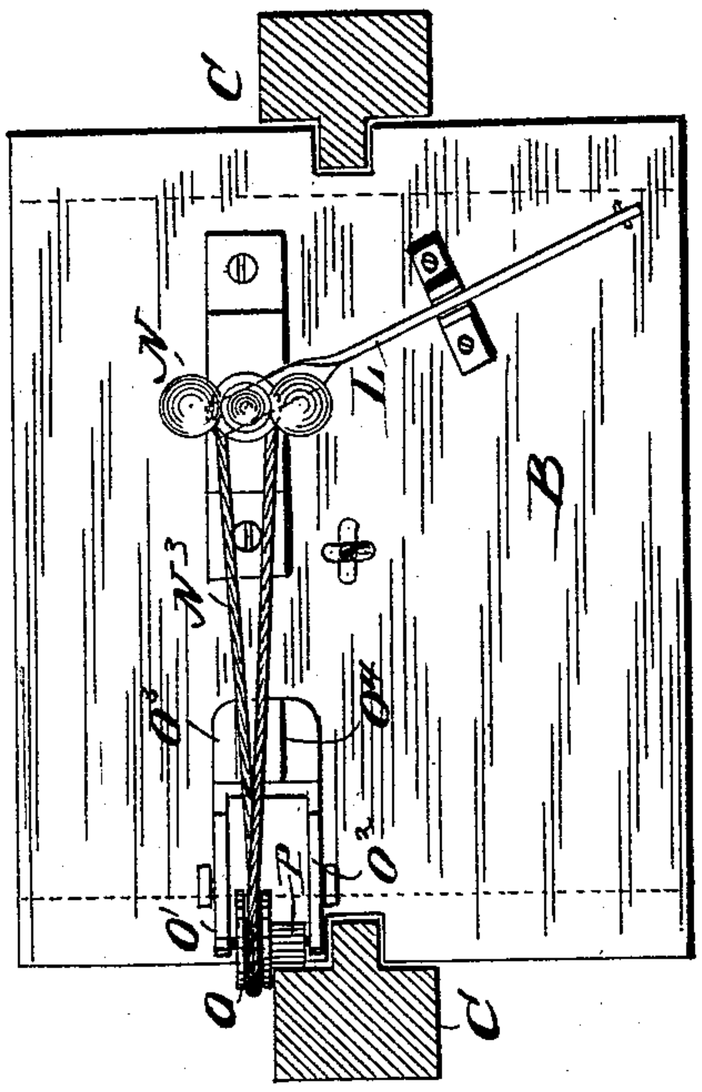


Fig. 7

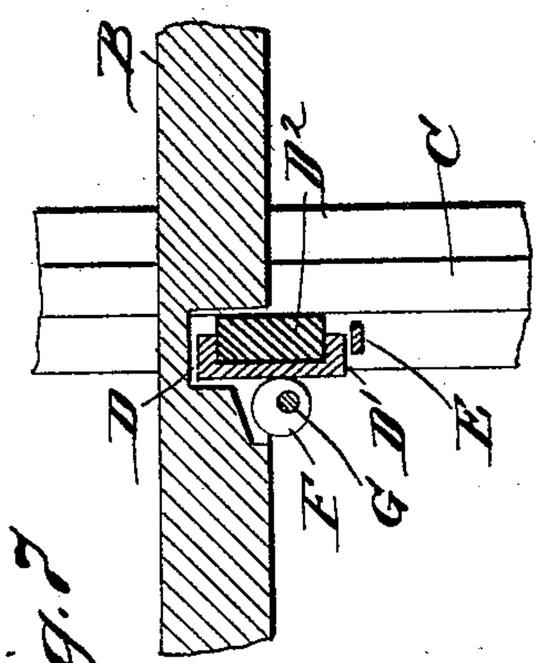
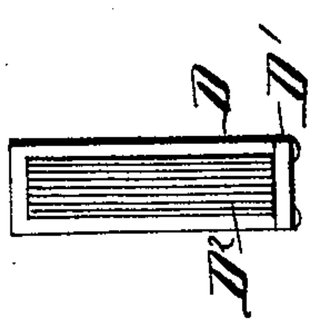


Fig. 6



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INVENTOR:

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UNITED STATES PATENT OFFICE.

WILLIAM N. ANDERSON, OF SAN RAFAEL, CALIFORNIA.

ELEVATOR SAFETY DEVICE.

SPECIFICATION forming part of Letters Patent No. 455,148, dated June 30, 1891.

Application filed October 21, 1890. Serial No. 368,837. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM N. ANDERSON, of San Rafael, in the county of Marin and State of California, have invented a new and Improved Elevator-Brake, of which the following is a full, clear, and exact descripton.

The object of the invention is to provide a new and improved elevator-brake, specially designed for use on passenger and freight elevators, and which is simple and durable in construction, automatically brakes the carriage in case of accident as soon as the carriage exceeds a normal rate of speed, and which brake is at all times under the full control of the operator.

The invention consists of certain parts and details and combinations of the same, as will be hereinafter fully described, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of the improvement as applied. Fig. 2 is a transverse section of the same. Fig. 3 is an enlarged sectional front elevation of the catch and the lever supported by the catch. Fig. 4 is a plan view of the improvement as applied, the elevator guide-posts being in section. Fig. 5 is a bottom view of the elevator-carriage provided with the improvement, the lever being in a locked position. Fig. 6 is an enlarged face view of one of the brake-shoes. Fig. 7 is a transverse section of the same and adjacent parts on the line *x x* in Fig. 5, and Fig. 8 is a rear face view of the same with part of the carriage in section on the line *y y* in Fig. 5.

The improved brake, as shown in the accompanying drawings, is applied to an elevator A, having a carriage B, mounted to travel in the usual manner on the posts or guideways C, erected in the elevator-shaft.

The posts or guideways C are adapted to be engaged on one of their sides by brake-shoes D, held in place by suitable brackets E, secured to the under side of the bottom of the elevator-carriage B. Each of the brake-shoes D is preferably of the construction illustrated in Figs. 6, 7, and 8, being provided with a metallic casing D′, containing a block D^2, made of rubber or other suitable elastic material. The block D^2 extends beyond the casing D′ and is adapted to engage the respective sides of the elevator-posts C.

On the back of the casings D′ of the brake-shoes D are adapted to act the eccentrics F, secured on the end of a shaft G, mounted to turn in suitable bearings on the under side of the bottom of the carriage B. At or near the middle of the shaft G is secured a gear-wheel G′ in mesh with a segmental wheel H′, formed on the fulcrumed end of a lever H, fulcrumed in suitable bearings on the under side of the bottom of the carriage B.

The lever H is weighted by a suitable weight H^2, and its free end is adapted to be engaged by a catch I, which serves to hold the said lever in a horizontal position, as is illustrated in Figs. 3 and 5. The catch I is fitted to slide in a suitably-constructed casing J, fastened on the under side of the bottom of the carriage B and provided with a slotted tube J′, containing a spring J^2, adapted to press on top of the lever H, so as to force the same out of the slot of the tube J′ when the catch I is withdrawn from underneath the end of the lever H. The lower end of the casing J has rounded-off forks J^3, between which the lever H is adapted to pass in order to pass into the slot of the tube J′ to be engaged by the catch I, as shown in Fig. 3. The tube J′ serves to guide the free end of the lever.

The catch I is provided with a stem I′, fitted to slide in a bearing on the casing J and carrying a coil-spring I^2, pressing with one end against the said bearing and with its other against the enlarged end of the catch I, as is plainly shown in Fig. 1. The spring I^2 serves to hold the catch I in an innermost position, so as to prevent accidental displacement of the catch I from underneath the lever H. The outer end of the stem I′ of the catch I is pivotally connected by a link I^3 with one arm of a bell-crank lever K, fulcrumed on the under side of the bottom of the carriage B, the other arm of the said bell-crank lever being connected with the upwardly-extending rod or rope K′, passing through the elevator-carriage B, to connect with one end of the lever L, fulcrumed on top of the carriage B. The rod or rope K′ is provided with a suitable handle K^2 within

the carriage B, so that the rope can be actuated by the operator of the elevator.

On top of the free end of the lever L presses the stem N′ of the governor N, of any approved construction, mounted on top of the carriage B and provided with the usual pulley N^2, connected by a belt N^3 with a pulley O, secured on a shaft O′, mounted to turn in suitable bearings O^2, fulcrumed on a bracket O^3, secured on top of the elevator-carriage B. On the shaft O′ is secured a friction-wheel P, traveling on one of the posts C, so as to impart a rotary motion to the shaft O′ whenever the carriage B moves up and down in the shaft of the elevator. In order to hold the friction-wheel P in frictional contact with the posts C, a spring O^4 presses against the bearing O^2, so as to swing the said friction-wheel P toward the respective posts C. The rotary motion imparted to the shaft O′ by the up-and-down movement of the elevator-carriage B is transmitted by the pulley O, the belt N^3, and the pulley N^2 to the governor N, so that the latter is in operation as long as the carriage B ascends and descends in the elevator-shaft. The lever H is also connected at or near its free end with a rope Q, extending upward through the bottom of the carriage B in and through the latter to pass over a pulley Q′, mounted on the ceiling of the carriage B. The downwardly-hanging end of the rope Q is provided with a ring Q^2, adapted to be taken hold of by the operator, so as to apply the brakes gradually, whenever desired, the catch I having been previously withdrawn by the operator pulling on the handle K^2.

The operation is as follows: When the device is in its normal position, the lever H is supported by the catch I, as is illustrated in Figs. 3 and 5. In this position the eccentrics F bear lightly on the brake-shoes D, so that the latter do not press onto the posts or guideways C, and the elevator-carriage B is free to move up and down in the usual manner. Now in case the carriage-hoisting rope or the machinery connected with the said rope breaks the carriage rapidly descends on the guide-posts; but as soon as this takes place the speed at which the governor N is driven increases and the governor-stem N′ presses on the lever L, so as to exert an upward pull on the rope or rod K′, thus actuating the bell-crank lever K, whereby the catch I is withdrawn from underneath the lever H and the latter is forced out of the tube J′ by the spring J^2 and its own weight H^2. The lever thus swings downward and by the segmental gear-wheel H′, engaging the gear-wheel G′, turns the latter, thus imparting a rotary movement to the shaft G, which moves the eccentrics F against the brake-shoes D, so that their elastic blocks D^2 are forced against the posts or guideways C. The carriage B is thus braked and either remains stationary or moves slowly down to the bottom of the shaft. The weighted lever H can be reset quickly by the operator pulling on the handle Q^2 of the rope Q, so that the lever H swings upward and presses against the catch I, so that the latter slides outward against the tension of the spring I^2, and when the lever is above the said catch I the latter is forced into its normal position underneath the lever H. Now in case the operator desires to brake the carriage B at any time he first pulls upward on the handle K^2, at the same time holding on to the rope Q. The pulling on the rope or rod K′ withdraws the catch I, and by the operator then slacking up on the rope Q permits the lever H to swing downward below the catch I. The lever H is then entirely under the control of the operator having hold of the rope Q. By slacking the latter to considerable extent the lever H swings downward and actuates the eccentrics F, as previously described, so as to force the brake-shoes D into frictional contact with the posts of the elevator-shaft. Thus it will be seen that the carriage is automatically braked in case of accident as soon as the carriage exceeds a normal rate of speed, and at the same time the brake mechanism is under the full control of the operator, to be applied whenever desired.

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

1. In an elevator-brake, the combination, with brake-shoes adapted to engage shaft-posts and arranged on the elevator-carriage, of eccentrics adapted to engage the said brake-shoes, a shaft carrying the said eccentrics and provided with a gear-wheel, and a weighted lever fulcrumed on the elevator-carriage and provided with a segmental gear-wheel in mesh with the said gear-wheel, substantially as shown and described.

2. In an elevator-brake, the combination, with brake-shoes adapted to engage shaft-posts and arranged on the elevator-carriage, of eccentrics adapted to engage the said brake-shoes, a shaft carrying the said eccentrics and provided with a gear-wheel, a weighted lever fulcrumed on the elevator-carriage and provided with a segmental gear-wheel in mesh with the said gear-wheel, a catch adapted to support the free end of the said lever, and a governor connected with the said catch and actuated by the movement of the elevator-carriage, so that when the latter exceeds a normal rate of speed the said governor withdraws the said catch from underneath the said lever, substantially as shown and described.

3. In an elevator-brake, the combination, with brake-shoes adapted to engage shaft-posts and arranged on the elevator-carriage, of eccentrics adapted to engage the said brake-shoes, a shaft carrrying the said eccentrics and provided with a gear-wheel, a weighted lever fulcrumed on the elevator-carriage and provided with a segmental gear-wheel in mesh with the said gear-wheel, a

catch adapted to support the free end of the said lever, a governor connected with the said catch and actuated by the movement of the elevator-carriage, so that when the latter exceeds a normal rate of speed the said governor withdraws the said catch from underneath the said lever, intermediate mechanism for connecting the said catch with the said governor, and a pulley arranged on the elevator-carriage and held in contact with one of the guide-posts of the elevator-carriage, said pulley being connected with the said governor, substantially as shown and described.

4. In an elevator-brake, the combination, with brake-shoes arranged on the elevator-carriage and adapted to engage the guide-posts, of eccentrics adapted to move the said brake-shoes in frictional contact with the guide-posts, a shaft carrying the said eccentrics and provided with a gear-wheel, a weighted lever fulcrumed on the elevator-carriage and provided with a segmental gear-wheel in mesh with the said gear-wheel, and a rope connected with the said weighted lever and extending into the elevator-carriage to be under the control of the operator, substantially as shown and described.

5. In an elevator-brake, the combination, with a weighted lever, eccentrics actuated by the said weighted lever, and brake-shoes adapted to be actuated by the said eccentrics, of a catch adapted to support the free end of the said lever, a bell-crank lever pivotally connected with the said catch, and a rod or a rope connected with the said bell-crank lever and extending into the elevator-carriage to be under the control of the operator, substantially as shown and described.

6. In an elevator-brake, the combination, with a governor adapted to actuate the brake-shoes, of a pulley held in frictional contact with one of the elevator-posts and connected with the said governor, a pivoted bearing carrying the said pulley, and a spring pressing on the said bearing to hold the said pulley in frictional contact with the elevator-post, substantially as shown and described.

WM. N. ANDERSON.

Witnesses:
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J. W. KEYS.