(No Model.) 2 Sheets—Sheet 1.

W. EDSON & N. M. LOWE.

SAFETY ATTACHMENT FOR ELEVATORS.

No. 263,773. Patented Sept. 5, 1882.

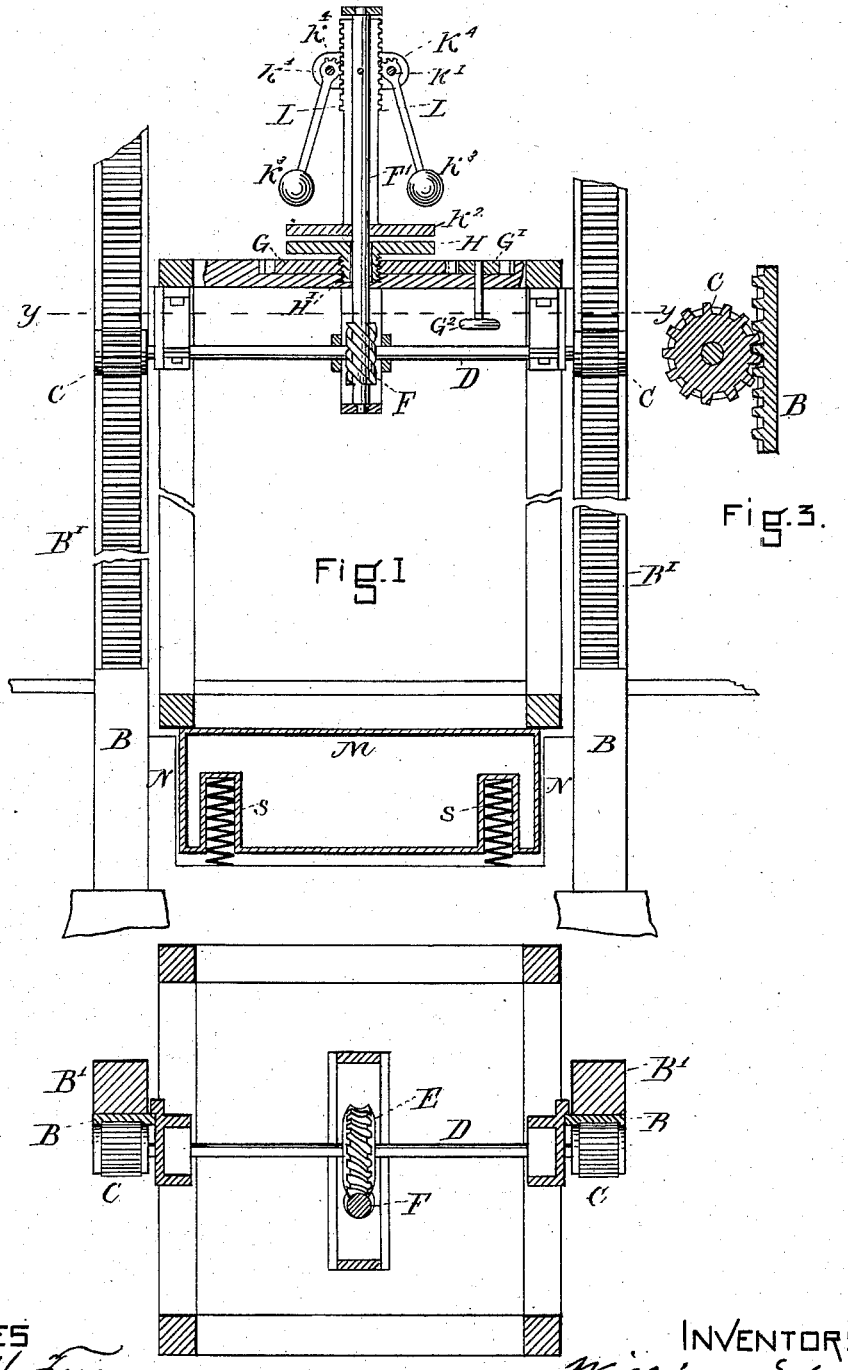

Fig. 1

Fig. 3.

Fig. 2.

WITNESSES
Helen M. Teegan
Alex. Evans

INVENTORS
William Edson
Nathaniel M. Lowe

N. PETERS, Photo-Lithographer, Washington, D. C.

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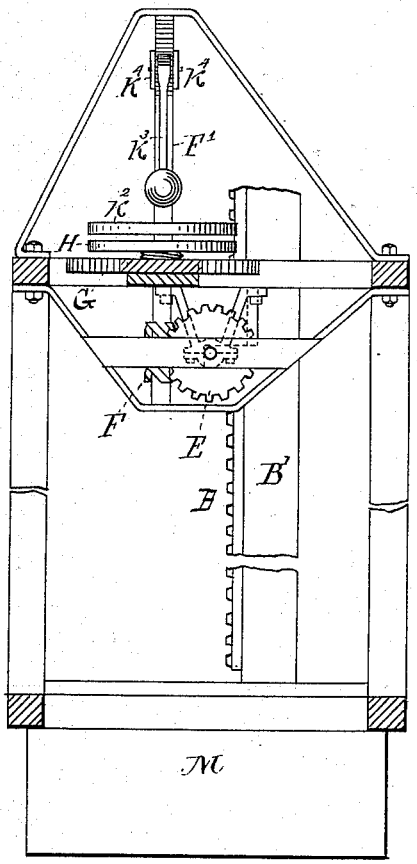
Fig. 4.



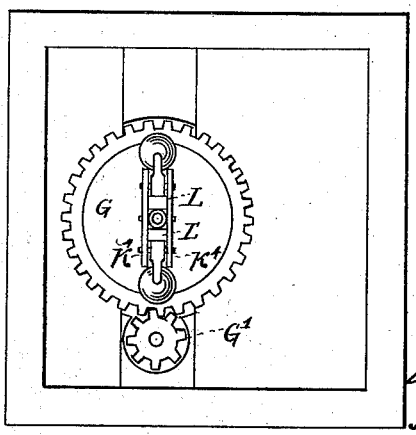


Fig. 5

WITNESSES

Helen M. Fagan

Walter Evans

INVENTORS

William Edson

Nathaniel M. Lowe

UNITED STATES PATENT OFFICE.

WILLIAM EDSON AND NATHANIEL M. LOWE, OF BOSTON, MASSACHUSETTS.

SAFETY ATTACHMENT FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 263,773, dated September 5, 1882.

Application filed March 3, 1882. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM EDSON and NATHANIEL M. LOWE, both of Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Safety Attachments for Elevators, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a view partly in elevation and partly in vertical section. Fig. 2 is a cross-section taken on the line *y y*, Fig. 1. Fig. 3 is a vertical cross-section, showing one of the supporting-pinions and its rack. Fig. 4 is a view partly in elevation and partly in section at right angles to the view shown in Fig. 1. Fig. 5 is a plan of the governing and adjusting device.

In Figs. 1 and 2, B represents a rack, which is firmly attached to the vertical post B′. There is one of these racks B at each side of the elevator, as shown in Figs. 1 and 2.

C C, Figs. 1 and 2, are pinions or small spur-gears, which engage with the racks B B. These pinions C C are attached to the ends of the cross-shaft D, the said cross-shaft D being firmly attached to the elevator-carriage by proper housings, as shown in Figs. 1 and 4.

From the above it will be understood that whenever the elevator-carriage is raised or lowered the pinions C C and the cross-shaft D must revolve, and also that if these parts—namely, the rack B, pinions C C, shaft D, and their housings—are made strong enough to sustain the entire weight of the elevator-carriage and its loads, and that if the pinions C C were not allowed to revolve, then the elevator-carriage would be held in place, and that if they are allowed to revolve their velocity would be proportionate to the velocity of the vertical movement of the elevator-carriage.

We will now proceed to describe our invention, which consists in attaching to the shaft D and the said pinions a device which shall regulate their velocity of revolution. This we do by the following means: A worm-gear wheel, E, Figs. 2 and 4, is attached to the shaft D. This gear E engages with a worm, F, on the vertical shaft F′ and causes it to revolve when the elevator is in motion with comparatively great velocity. The vertical shaft F′ has attached to it suitable ears or projections, K^4, Figs. 1, 4, and 5, to which are hung at the point K′ two governor-arms, K^3 K^3, which are so attached that when the vertical shaft F′ revolves the governor-arms are also made to revolve, and consequently to swing outward to an extent due to the velocity to which they are driven.

To avoid making the governor device so large as to be cumbersome, we have attached the friction-plate K^2, to assist in checking the too rapid revolution of the shaft F′. This is done by making the upper ends of the governor-arms, as shown at K′, Fig. 1, in the form of segment-gears, and in providing two upright racks, L L, Figs. 1 and 5, to connect the same with the upper friction-plate, K^2.

H is a lower friction-plate, made adjustable vertically, but so fixed that it cannot revolve, and has attached to its lower side a hollow screw, H′, said screw entering in the nut G, (see Figs. 1 and 5,) this nut G having on its periphery gear-teeth, which engage with the pinion G′, this pinion G′ being operated by the hand-wheel G^2, Fig. 1. By turning the hand-wheel G^2 the screw-nut G is made to revolve, and, operating on the screw H′, elevates or depresses through it the lower friction-plate, H—in other words, adjusts it in relation to the upper friction-plate, K^2. The action of this friction device is as follows: Whenever the velocity of the shaft F′ is sufficient to throw out the governor-arms K^3 K^3, they, acting, through the racks L L, depress the friction-plate K^2 and force it against the lower friction-plate H, thus checking the velocity of the governor, and, acting through the shaft F′, worm-gear F E, shaft D, and pinions C C, regulate the velocity with which the elevator-carriage can descend, although this action does not stop the carriage altogether. These friction-plates may be so adjusted to each other as to admit of the elevator-carriage moving slightly faster when the hoisting apparatus is out of order than it would move when the hoisting apparatus is in order, so that although the governing device is in motion whenever the carriage is in motion, whether the hoisting apparatus is in order or not, there is no friction between the plates K^2 and H when the hoisting apparatus is in order.

M, Figs. 1 and 4, represents an inverted

tank, which is intended to fit nearly air-tight into a recess made at the base N N of the elevator. This tank is supported on springs S S, which are sufficiently elastic to throw up the tank M, (when the elevator is not resting upon it,) so that while the elevator is rising this tank M will rise a limited distance above the floor—a foot or more, for instance—and there remain until the elevator in its descent strikes it. Then, as the tank M fits nearly air-tight into its receptacle, it will give a very great resistance against sudden depression, and thus prevent the elevator from coming to an abrupt stop.

Although we have shown in the drawings and described in the specification the tank M and its co-operative parts, we do not wish to claim the same in this application, as it will form the subject-matter of a subsequent application.

We claim—

1. In an elevator, the combination of the racks B B, pinions C C, shaft D, and gear E F with the shaft F′, provided with ears or projections K^4 K^4, arms K^3 K^3, the racks L L, disks K^2 and H, all operating together substantially as described, and for the purpose set forth.

2. In an elevator-carriage, the combination of the shaft F′, provided with ears or projections K^4 K^4 and arms K^3 K^3, the racks L L, and the upper friction-plate, K^2, with the lower friction-plate, H, and mechanism for operating these parts, all substantially as described, and for the purpose set forth.

WILLIAM EDSON.
NATHANIEL M. LOWE.

Witnesses:
HELEN MARIA FEEGAN,
NATHL. EVANS.