R. H. HILL.

Safety Attachment for Elevators.

No. 210,693. Patented Dec. 10, 1878.

Fig: 1.

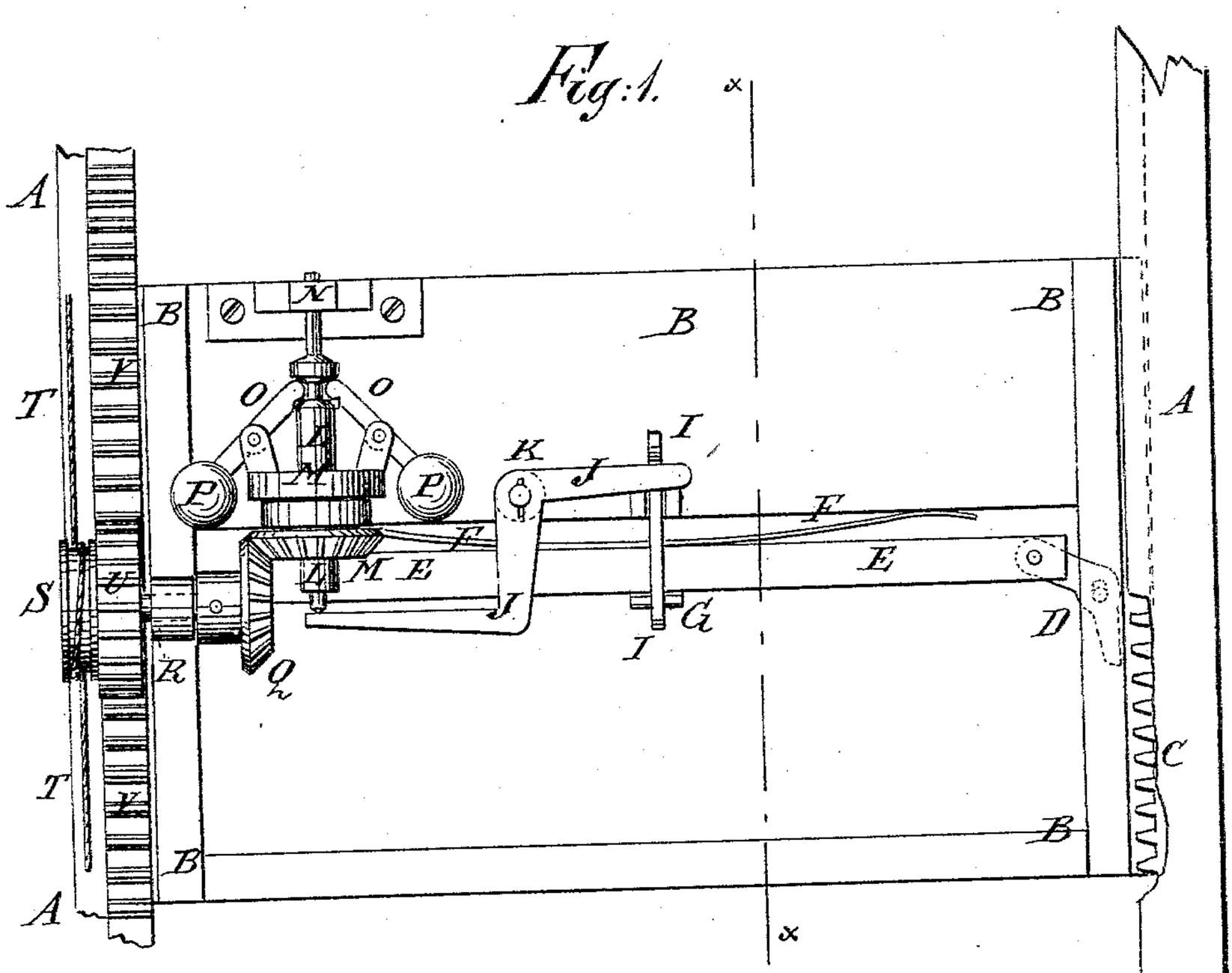


Fig: 2.

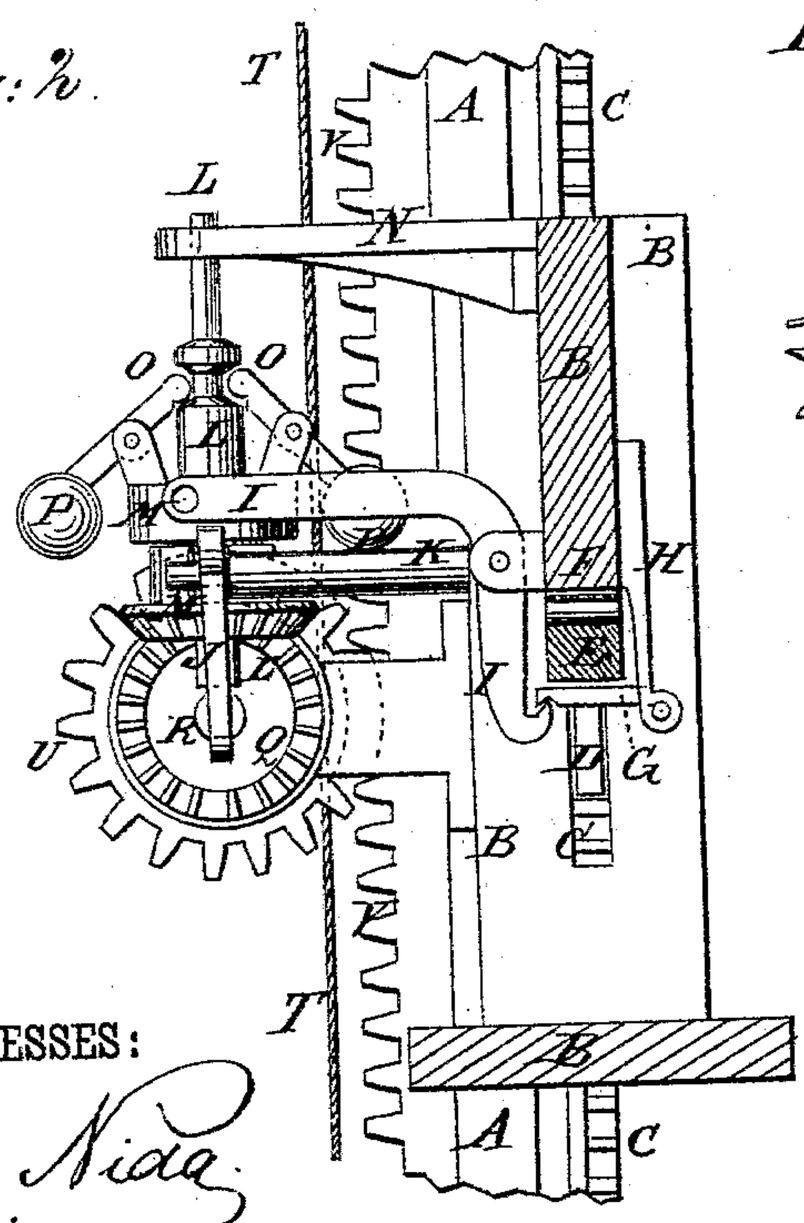
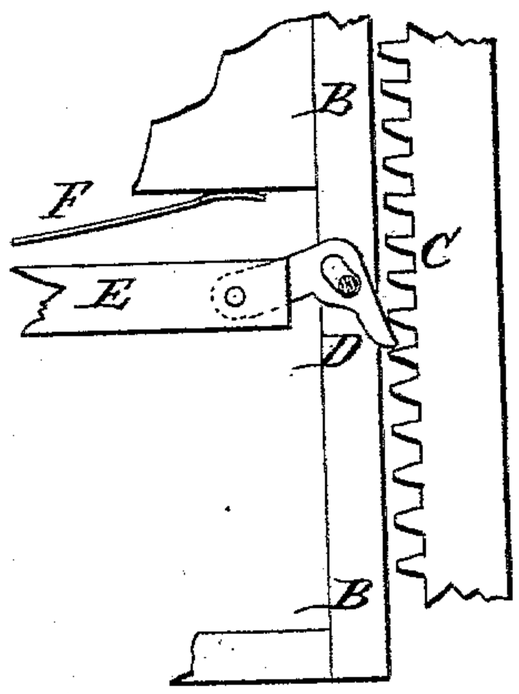


Fig: 3.



WITNESSES:

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RICHARD H. HILL, OF NEW HAVEN, CONNECTICUT.

IMPROVEMENT IN SAFETY ATTACHMENTS FOR ELEVATORS.

Specification forming part of Letters Patent No. **210,693**, dated December 10, 1878; application filed July 23, 1878.

To all whom it may concern:

Be it known that I, RICHARD H. HILL, of New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Safety Attachments for Elevators, of which the following is a specification:

Figure 1 is a front view of my improved attachment, shown as applied to the ways, the carriage, and the safety-bar of an elevator. Fig. 2 is a vertical section of the same, taken through the line *x x*, Fig. 1. Fig. 3 is a detail view, showing the rack and pawl of the safety-bar.

Similar letters of reference indicate corresponding parts.

The invention will first be described in connection with the drawings, and then pointed out in the claim.

A represents the ways of the elevator, upon which the carriage B moves up and down.

To the ways A are attached the racks C, with which the outer ends of the lever-pawls D engage. The pawls D are slotted to receive the pins by which they are pivoted to the carriage B, to give them the necessary play.

The inner ends of the pawls D are pivoted to the ends of the safety-bar E, which is placed beneath the cross-bar of the carriage, and between which and the said cross-bar is interposed a spring, F, so that the said safety-bar may be thrown down, when released, by its own weight, and by the elasticity of the spring F, causing it to act promptly in projecting the pawls D and stopping the descent of the carriage.

The safety-bar E is held up, holding the pawls D away from the racks C, by the latch G, one end of which is hinged to an arm, H, attached to the cross-bar of the carriage B, and its other end rests upon the hook formed upon the end of the bent lever I. The lever I is bent at right angles, and is pivoted, at or near its angle, to supports attached to the cross-bar of the carriage B.

The outer end of the lever I rests upon the end of the lever J, which is bent twice at right angles, or nearly at right angles, and is pivoted at its upper angle to the outer end of an arm, K, attached to the cross-bar of the carriage B.

Upon the other end of the lever J rests the lower end of the spindle L, which passes up through the bevel-gear wheel M, and its upper end works in bearings in an arm, N, attached to the cross-bar of the carriage B.

In the upper part of the spindle L is formed a ring-groove to receive the upper ends of the levers O, which are pivoted to the upper part of the bevel-gear wheel M, and to the lower ends of which are attached the governor-balls P.

The teeth of the bevel-gear wheel M mesh into the teeth of the bevel-gear wheel Q, attached to the inner end of the short shaft R, which revolves in bearings attached to the carriage B, and to its outer end is attached the pulley S, around which passes a turn of the rope T.

The ends of the rope T are attached to the upper and lower parts of the way A.

If desired, the pulley S and rope T may be replaced by a gear-wheel, U, and rack V, in which case the gear-wheel U is attached to the outer end of the shaft R; and the rack V, into the teeth of which the teeth of the said gear-wheel U mesh, is attached to the ways A.

With this construction, as the elevator-carriage moves up and down at ordinary speed the balls P remain in their normal position; but should the speed increase so as to become dangerous, the balls P will be thrown outward, causing the levers O to force the spindle L downward, which movement operates the levers J I, releases the latch G, and allows the safety-bar E to drop, throwing the lever-pawls D into gear with the racks C, and stopping the descent of the carriage B.

I am aware that it is not new to use pawls in the base of platform and connected with the lifting-rope, or to release pawls by the operation of a governor upon a tripping device; but these necessitate the disconnection of hoisting-rope and pawls before the latter can be operated.

What I claim as new and of my invention is—

The combination, with the way-frame A, having the fixed racks C, of a carriage, B, provided with slotted pivoted pawls D, the latch-arm G, and the arm K, the levers I J, and the sliding governor-spindle L, all arranged substantially as and for the purpose specified.

RICHARD H. HILL.

Witnesses:
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