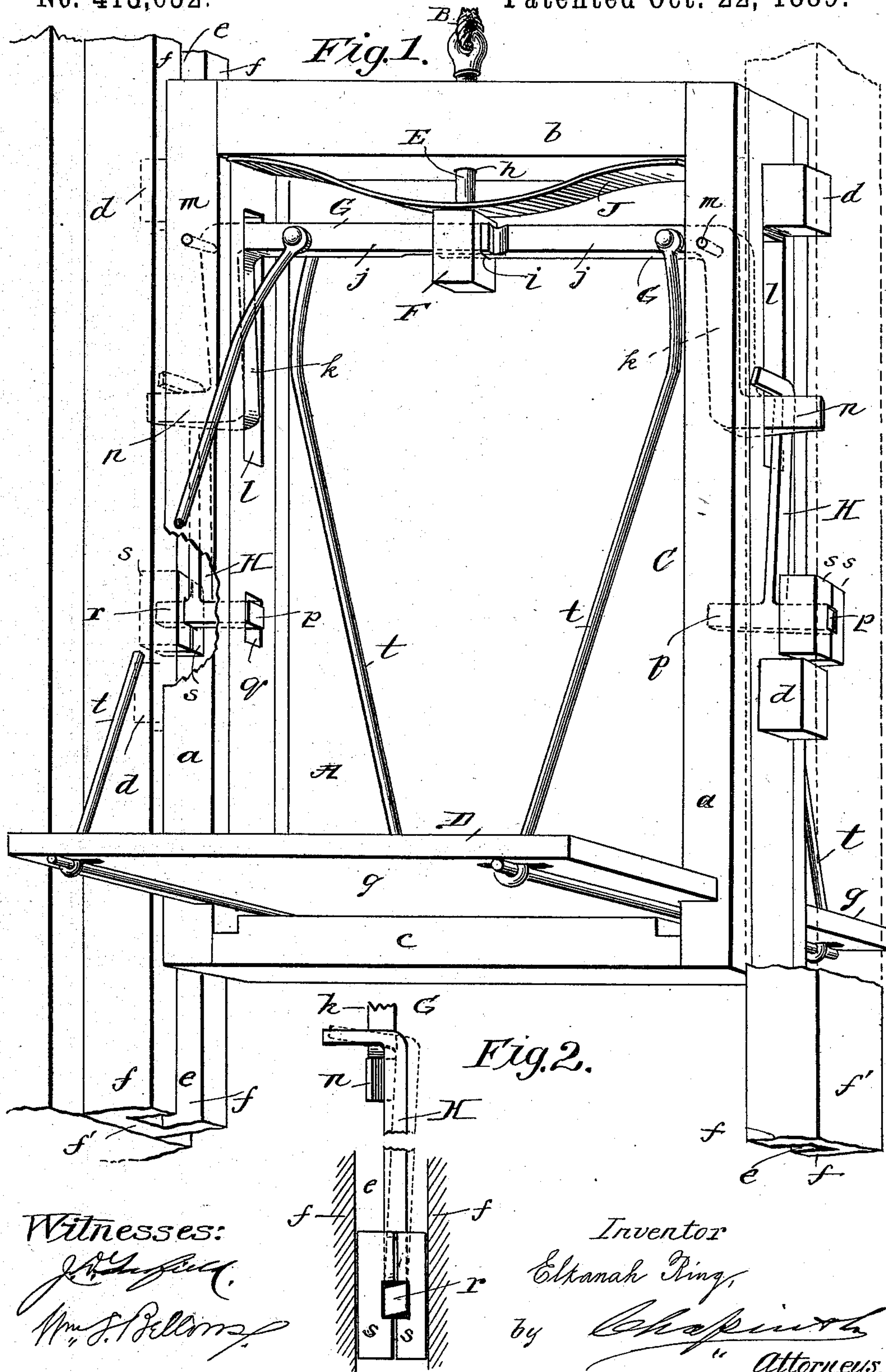


(No Model.)

E. RING.
SAFETY DEVICE FOR ELEVATORS.

No. 413,632.

Patented Oct. 22, 1889.



UNITED STATES PATENT OFFICE.

ELKANAH RING, OF WESTFIELD, MASSACHUSETTS, ASSIGNOR OF ONE-THIRD
TO JAMES NOBLE, JR., OF SAME PLACE.

SAFETY DEVICE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 413,632, dated October 22, 1889.

Application filed July 1, 1889. Serial No. 316,147. (No model.)

To all whom it may concern:

Be it known that I, ELKANAH RING, a citizen of the United States, residing at Westfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Safety Appliances for Elevators, of which the following is a specification.

This invention relates to that class of safety appliances for elevators which become operative to check the falling of the car on the breaking of the hoisting-cable, the object of the invention being to provide simple and entirely efficient means for the purpose indicated; and the invention consists in the construction and combination of the various parts, all substantially as will hereinafter more fully appear, and be set forth in the claims.

In the accompanying drawings the present invention is illustrated, Figure 1 being a view in perspective showing the vertical guiding-ways of a hoistway and an elevator-car movable therein, having the safety appliances of the present invention thereon. In said view a part of one of the vertical guideways for the elevator and of the side of the elevator-car frame are shown as broken away for clearer illustration; and Fig. 2 is a view in detail of a portion of one of the vertical channel-ways of the hoistway, showing a pair of separable friction engaging blocks and means for actuating them for their engagement of the opposing side walls of the said vertical channel-way.

The elevator-car A, which may be of any general form, whether a simple frame and platform, as shown, or an inclosed structure, as usually provided in passenger-elevators, consists of two parts C and D, one mounted on the other, whereby on the proper occasion it may move thereon, and the part C consists of a frame having side uprights *a a*, an upper uniting cross-beam *b*, and also other lateral bracing, as the cross-beam *c*, the said side uprights being provided with guiding-tongues *d d*, which project into the vertical channel-ways *e* at the sides of the hoistway, which channel-ways, as shown, are formed of heavy channel-irons having the opposing side walls *f f* and the common uniting back

portion *f'*. The part D consists, essentially, of the floor or platform *g* and suspension devices, whereby the same is normally held in its uppermost disposition on the frame-like part C, which devices will be now described.

E represents a vertical shaft or spindle adapted to have an axial play through a vertical hole *h* in the upper uniting cross-beam *b* of the frame C, to the upper end of which the hoisting-cable B is secured, while on the lower end thereof it has formed thereon or is provided with a clasp-block F, into the aperture *i* of which the upper and inner ends of a pair of double-angled or Z-shaped levers G are entered, said levers each by the horizontal arm *j* thereof extending outwardly, its elbow and vertical portion *k* being disposed within a vertical slot *l* in the side upright *a*, being at such elbow portion pivoted, as at *m*, to swing on said upright in a plane coincident with both of said Z-levers, and the lower arm *n* of each of such levers in its thickness is of a tapering form, as shown, and projects outwardly beyond the outer face of the upright.

H H represent a pair of levers of inverted-T form, one member *p* of the lower cross-bar of each thereof being disposed in a horizontal aperture *q* in the adjacent side upright, while upon and inclosing the other member *r* of such lower cross-bar, which projects into the channel-way *e*, is placed a pair of separable friction engaging blocks *s s*. The main vertical portions of the T-levers H lie by their edges alongside the tapered edges of the arms *n* of the pivoted Z-levers, and it will be noted on an inspection of Fig. 2 particularly that the cross-sectional shape of the arms *n* with relation to the inner side walls of the separable blocks *s s* is such that, on a tilting motion thereof, as would be occasioned by swinging the T-levers, of which they are a part, in a plane across that of the Z-levers, the said arms would exert a cam or prying action to force the said blocks *s s* outwardly and into a bearing on the inner side walls of the channel-ways, in which ways said blocks normally fit loosely, so as to run freely with the elevator without bind in the ways.

The floor *g* of the elevator is suspended by the rods *t t*, which by their upper ends

are bolted to the upper horizontal arms of the **Z**-levers, between the pivotal points *m* thereof and the clasp-block **F**. A stiff spring **J** is applied to exert a pressure between the under side of the upper cross-beam *b* of the frame **C** and the arms *j j* of the **Z**-levers, it in the disposition particularly shown bearing upon the clasp-block **F**. With all the elevator appliances in proper working condition, by the hoisting-rope **B**, connected to the vertical shaft or spindle **E**, said spindle is maintained in an uppermost position, and of course maintains with it the arms *j j* of the **Z**-levers also in their uppermost positions, compressing the spring, and by the pivots *m m*, passed through the uprights *a a*, and the elbows of said **Z**-levers, the said frame **C** is supported from said levers, and, as before mentioned, the floor is supported from said levers; but in the event of the breakage of the hoisting-cable the spring reacts downwardly on the inner ends of the arms *j j*, swinging the **Z**-levers so that their lower inclined arms *n n* swing outwardly, acting on the **T**-levers **H H** to tilt the cross-piece thereof, and by the members *r* of said cross-piece to spread the separable friction engaging blocks to a hard bearing on the side walls *f* of the channel-ways, and the other member *p* of each lever having a bearing in the aperture *q* in the side upright of frame **C**, supports said frame and prevents its falling. The spring **J** is provided so that at the time of the severing of the rope (when otherwise the parts **C** and **D**, if of corresponding specific gravities, would move downwardly together as one) such spring will exert a pressure downward on the **Z**-levers, and through them on the engaging blocks, to cause the latter to bind. Then, the rope being parted, the weight on the floor, through the suspension-rods *t*, exerts a further force on the **Z**-levers for a greater exertion on the separable blocks to insure their harder bind on the walls of the channel-ways, and the greater the load on the floor the greater will be the certainty of the safety appliances performing their required service.

What I claim as my invention is—

1. The combination, with the vertical ways of the elevator-hoistway and separable friction engaging blocks normally movable freely therein, of the elevator consisting of two parts, one a frame and the other the elevator car or platform, adapted for vertical movement on said frame, angular levers **G G**, pivotally mounted on said frame, and by their inner members each connected to and upwardly held by the hoisting-cable and having their other members of wedge form, levers **H**, having a supporting engagement with said frame and adapted to be engaged by the wedge-formed members of said angular levers, and provided with the angular members *r* of cam form, disposed between said separable friction engaging blocks, suspension means for supporting the car or platform from said levers **G**, and the spring applied to react on said levers **G**, substantially as described.

2. The combination, with the vertical ways of the elevator-hoistway and the separable friction engaging blocks normally freely movable therein, of the elevator consisting of two parts, one the frame **C**, comprising the vertical uprights *a a*, having guiding-tongues *d d* and slots *q q* therein, and the cross-beam *b*, and the other part comprising the floor or platform vertically movable in said frame **C**, the spindle **E**, vertically movable through said cross-beam *b*, to the upper end of which the hoisting-cable is attached, the levers **G G**, pivotally supported on said frame **C**, and by their upper arms each connected to said spindle and having their lower arms *n* of wedge form, suspension means between said levers and said platform, the levers **H**, adapted to be engaged by said wedge-shaped arms *n*, having transverse members *p p* engaging said slots, and also having the transverse members *r r* of cam form disposed between said friction engaging blocks, and the spring **J**, substantially as described.

ELKANAH RING.

Witnesses:

WM. S. BELLOWES,

G. M. CHAMBERLAIN.