

(No Model.)

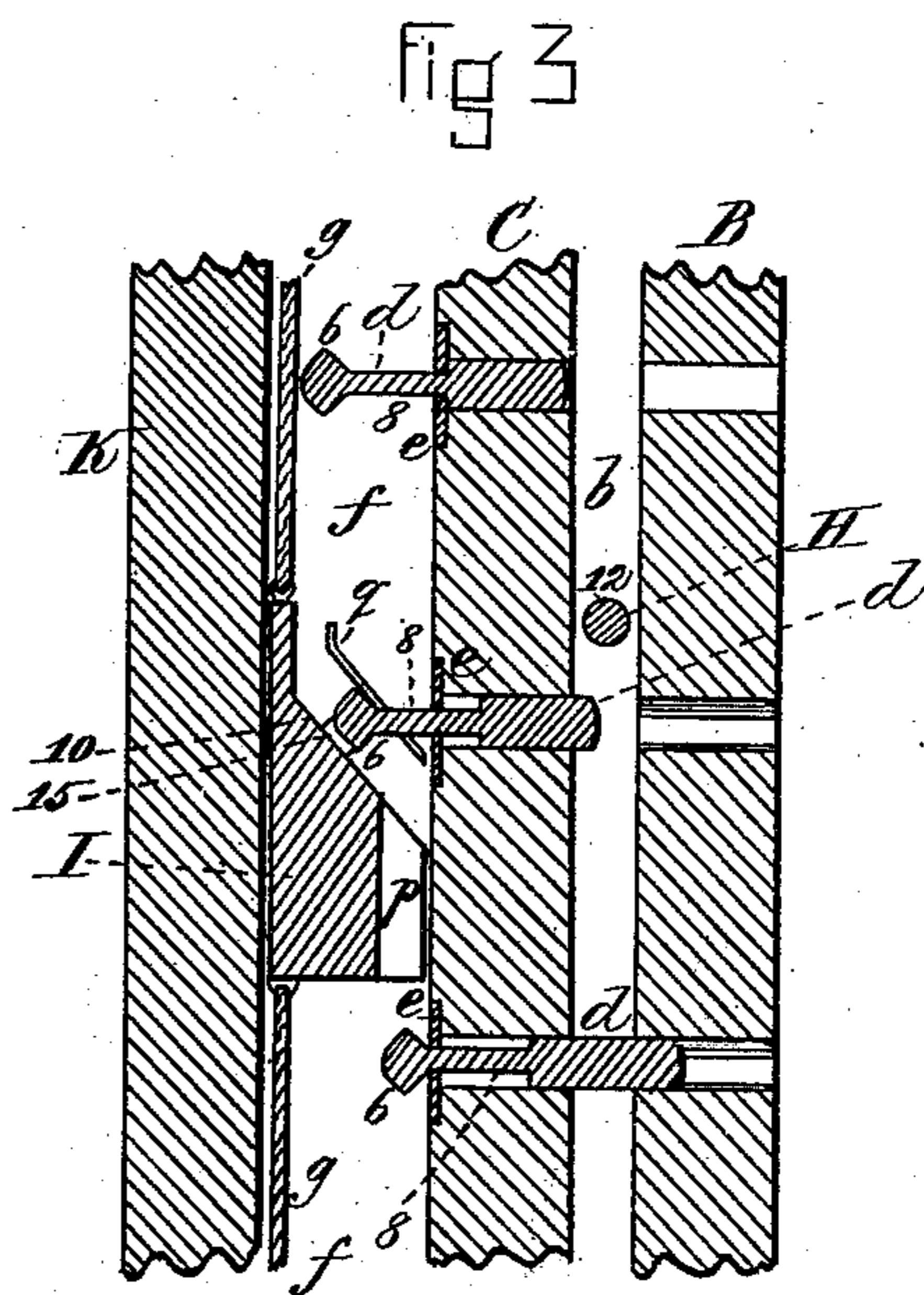
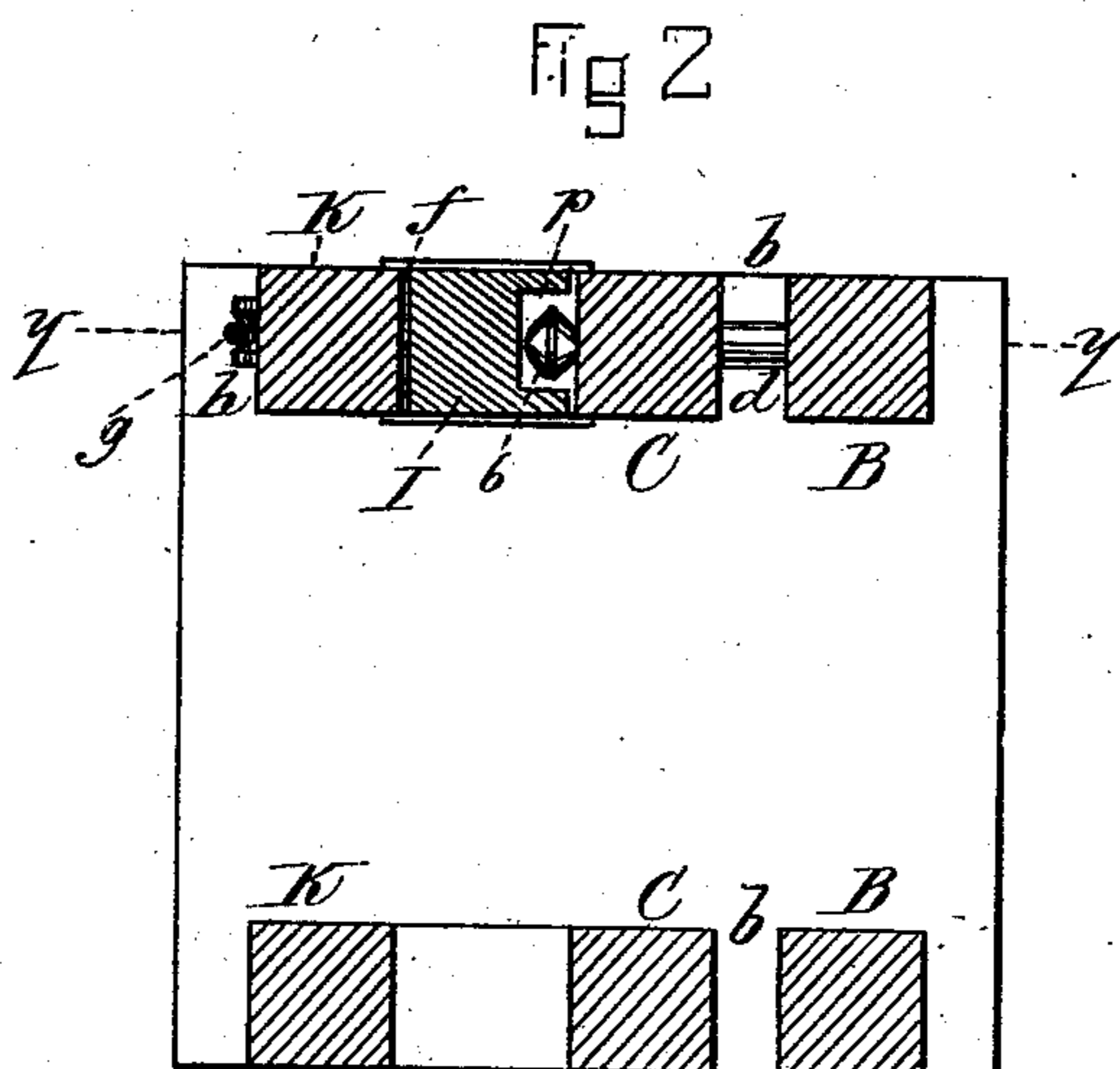
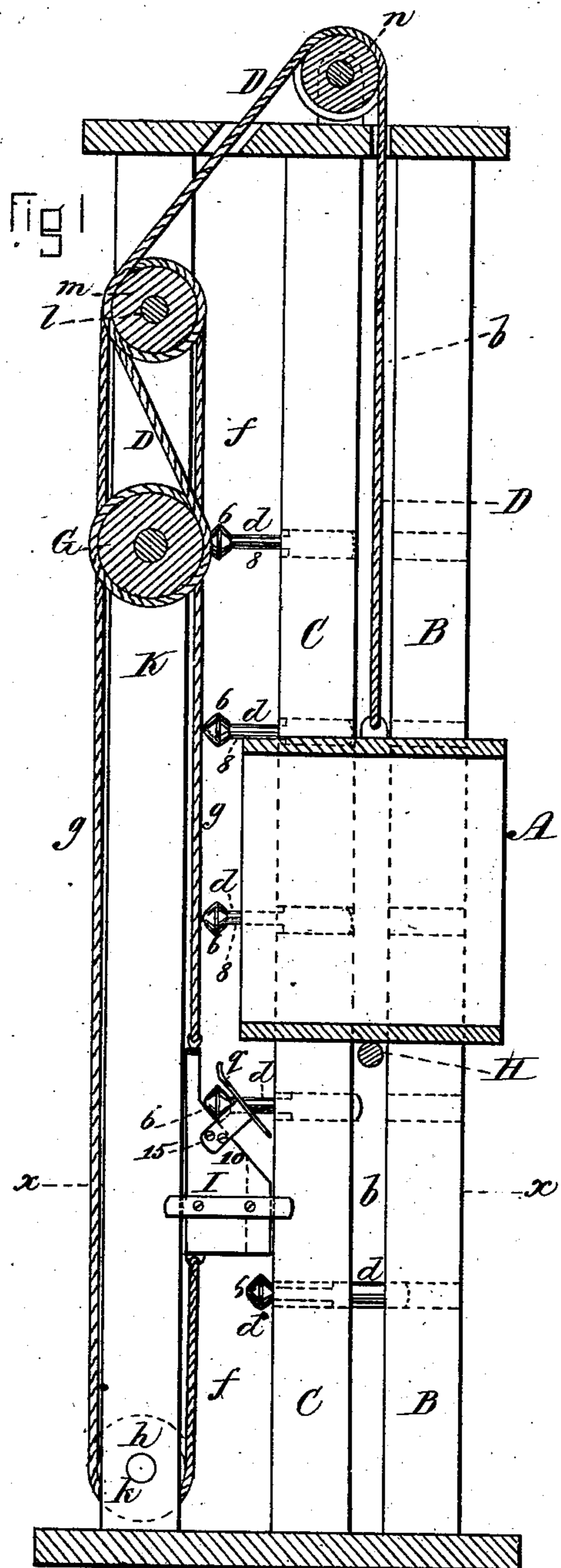
2 Sheets—Sheet 1.

N. P. CLEAVES.

SAFETY ATTACHMENT FOR ELEVATORS.

No. 272,413.

Patented Feb. 20, 1883.



WITNESSES
W. J. Cambridge
Chas. E. Griffin

INVENTOR
N. Porter Cleaves
per H. Tschernacher

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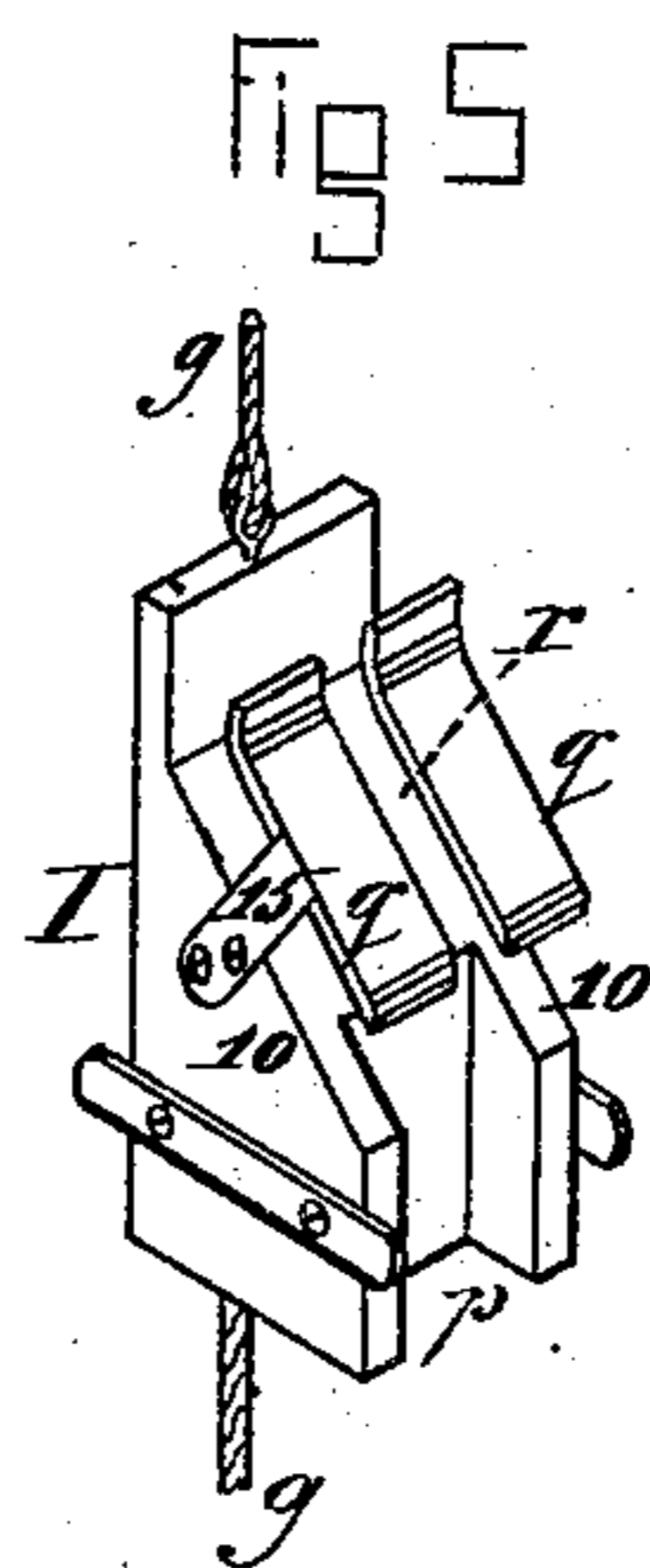
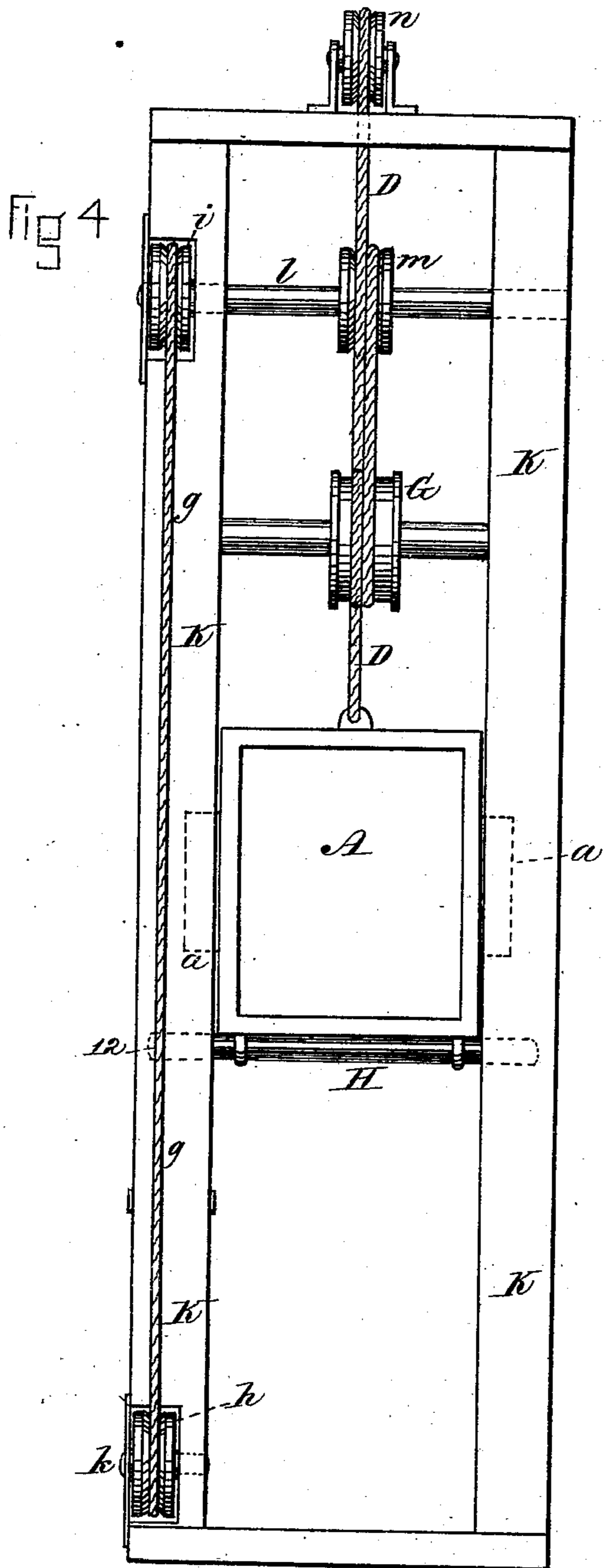
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Att'y

UNITED STATES PATENT OFFICE.

N. PORTER CLEAVES, OF BOSTON, MASSACHUSETTS.

SAFETY ATTACHMENT FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 272,413, dated February 20, 1883.

Application filed January 8, 1883. (No model.)

To all whom it may concern:

Be it known that I, N. PORTER CLEAVES, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Safety Attachment for Elevators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a section representing an elevator-car and its vertical guides with my improved safety attachment applied thereto. Fig. 2 is a horizontal section through the same on the line *x x* of Fig. 1. Fig. 3 is a vertical section through the same on the line *y y* of Fig. 2. Fig. 4 is a rear elevation of the same. Fig. 5 is a perspective view of the pin-actuating block.

My invention has for its object to provide a simple and perfectly reliable device for immediately arresting the descent of an elevator-car in the event of the breakage of the hoisting-rope.

To this end my invention consists in a car having a strong bar or projection extending out into the space between the two uprights or vertical guides at the side of the car, these guides being provided with a series of horizontal pins or bolts which are adapted to be successively pushed in below the car as it rises, across the space between the two guides, and withdrawn on the descent of the car, in advance thereof, in time to allow of its passage, the bolts or pins being pushed in and withdrawn at the desired times by independent mechanism not connected with the car, as hereinafter set forth.

In the said drawings, A represents an elevator-car, on each of two sides of which are two uprights or vertical guides, B C, which extend, as usual, from the top to the bottom of the elevator-well, the car being steadied and kept in its proper position by means of a piece, *a*, on each side, fitting, as usual, within the space *b* between the guides B C.

D is the hoisting-rope by which the elevator-car is raised or lowered, this rope being wound around a hoisting-drum, G, which may

be located in any convenient position and driven by any suitable power.

The pair of guides B C on one side of the car are provided with a series of horizontal sliding pins or bolts, *d*, which, when pushed in, extend across the space *b* and intercept the path of a stout metal bar, H, which is secured to the under side of the platform of the car A, and extends out at each side thereof into the space *b*, as seen dotted in Fig. 4. Each of the pins *d* is provided with a head, *e*, and is turned down at 8, the smaller portion sliding through an aperture in a plate, *e*, by which the pin is kept in place and prevented from being drawn out too far. As the car A is drawn up by its rope D the pins *d* are successively pushed in immediately after the passage of the car, and withdrawn one at a time as the car descends, in the following manner.

I is a block which is adapted to slide vertically within the space *f* between the guide C, through which the pins *d* slide, and an upright or standard, K, which is arranged at a short distance from the guide C, parallel therewith, and extends likewise from the bottom to the top of the elevator-well. This block I, which is provided on its inner side with an incline, 10, for a purpose to be hereinafter described, is steadied and kept within the space *f* by suitable guides, and is securely attached at the top and bottom to a rope or belt, *g*, stretched tightly over two pulleys, *h i*, the shaft *k* of the pulley *h* being supported in a bearing in the standard K, while the shaft *l* of the pulley *i* has its bearings in the standard K and another similar standard, K, placed opposite thereto.

Around or over another pulley, *m*, on the shaft *l* passes the hoisting-rope D on its way from the hoisting-drum G to the pulley *n*, the motion of the rope D being thus communicated through the pulley *m*, shaft *l*, and pulley *i* to the rope *g*, whereby the block I is caused to be positively raised and drawn down with the elevator-car, the pulleys *i m* being of the same diameter, in order that the block I and car A may always travel at the same speed, as is necessary to maintain their proper relative positions with respect to each other.

If preferred, a chain may be substituted for the rope *g*, in which case the pulleys *h i* would be replaced by sprocket-wheels, and with this latter construction all liability of slip would be avoided and the possibility of the block I getting out of its proper position thus effectually prevented.

On the inner side of the block I is a groove, *p*, Figs. 2, 3, and 5, which allows the block to lie close to the guide C and the projecting heads 6 of the pins or bolts *d* without interfering therewith.

On the ascent of the car A, as the block I is drawn up therewith its incline 10 is brought successively into contact with the heads 6 of the pins *d*, as seen in Fig. 1, each pin being thus pushed in by the incline across the space *b* between the guides B C as soon as the end 12 of the bar H has risen above it, and consequently, in the event of the breakage of the hoisting-rope, the descent of the car will be immediately arrested by the end 12 of the bar H being caught by the pin *d* last pushed in by the block I, all possibility of the further dropping of the car being thus prevented with absolute certainty.

On each side of the block I, over the incline 10 and at a short distance therefrom, is secured an inclined plate, *q*, having on its outer side an offset, 15, by means of which it is attached to the block, the space *r*, Fig. 5, between these two plates *q* being a little greater than the width of the shank of a bolt, *d*, under the head, while the lower ends of the plates *q* lie close to the side of the guide C, which causes them to catch over the heads of the bolts *d* as the block descends, the bolts being thus withdrawn by the movement of the inclined inner surfaces of the plates *q* in contact with the inner sides of their heads 6, as seen in Fig. 3, and thus as the car descends and the block I is drawn down therewith the shank of each bolt *d* is successively withdrawn from the space *b* immediately before the end 12 of the bar H arrives opposite thereto, thus leaving the car free to descend, as usual. Should the hoisting-rope break on the descent of the car, the movement of the rope *g* will be instantly stopped, and the block I will remain stationary, and not drop with the car, which will descend only until the bar H reaches the first pin or bolt, *d*, below the one withdrawn by the block just before the breakage of the rope, it being absolutely essential to have the block I operated by mechanism not connected with the car, so that it may stop independently thereof, and thus prevent the pins below from being withdrawn, as would be the case if the block were connected with the car.

Although I prefer to employ two plates *q*—one on each side of the block I—it is evident that a single plate *q*, adapted to catch over the heads of the bolts on one side of the shank, would serve to withdraw them, but would not produce such an even draft, and would there-

fore be less desirable than the construction shown.

The relative position of the block I with respect to the car should be such as to cause each pin *d*, as the car ascends, to be pushed in as soon as possible after the bar H has passed it, and on the descent of the car to be withdrawn a little before the bar H reaches it, thus diminishing the distance which the car would fall, on the breaking of the hoisting-rope, to a minimum, in order to prevent the car from attaining a dangerous momentum.

The pins or bolts *d* may be arranged at any suitable distance apart, and, if desired, the guides B C on the opposite side of the car may be provided with a series of pins *d* and an actuating-block, I, similar to those above described, which would be preferable to the single series of pins on one side, for the reason that each projecting end of the bar H would be caught and supported on the breaking of the rope, and unequal strain and possible injury to the car or mechanism thus avoided.

Instead of the bar H, any suitable projection or projections extending out into the space or spaces *b*, and of sufficient strength to hold the car, may be employed, if preferred; and in lieu of the block I, with its incline 10 and plate or plates *q*, any other equivalent mechanism not connected with the car may be employed for pushing in and withdrawing the pins or bolts *d*, in the manner above described.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a safety attachment for elevators, the combination, with an elevator-car, of a standard or upright placed in close proximity therewith, and having a series of pins or bolts adapted to be successively pushed in on the ascent of the car to intercept the path of a bar or projection thereon, and withdrawn singly on the descent of the car, in advance thereof, to allow of its passage by mechanism not connected with the car, substantially as and for the purpose set forth.

2. In a safety attachment for elevators, the combination of the uprights or guides B C, provided with a series of horizontally-sliding pins or bolts, *d*, an elevator-car, A, having a bar or projection, H, extending into the space *b* between the guides B C, and the block I, provided with means for pushing in and withdrawing the pins *d*, and having a movement in the elevator-well coincident with that of the car by independent mechanism not connected therewith, whereby the block is caused to remain stationary on the breaking of the hoisting-rope, all operating substantially in the manner and for the purpose described.

3. In a safety attachment for elevators, the combination, with the elevator-car and the guides B C, with their sliding pins or bolts *d*, of the block I, provided with an incline, 10, for pushing in the pins, and an inclined plate or plates, *q*, for withdrawing the same, and

having a movement in the elevator-well coincident with that of the car by independent mechanism not connected therewith, substantially as and for the purpose set forth.

5. 4. In a safety attachment for elevators, the combination, with the elevator-car and the guides B C, with their sliding pins or bolts *d*, of the pin-actuating block I, secured to a rope or chain, *g*, passing over pulleys or wheels *h*

i, and deriving its motion through suitable connections with the hoisting-rope, all substantially as and for the purpose described.

Witness my hand this 3d day of January,
A. D. 1883.

N. PORTER CLEAVES.

In presence of—

P. E. TESCHEMACHER,

W. J. CAMBRIDGE.