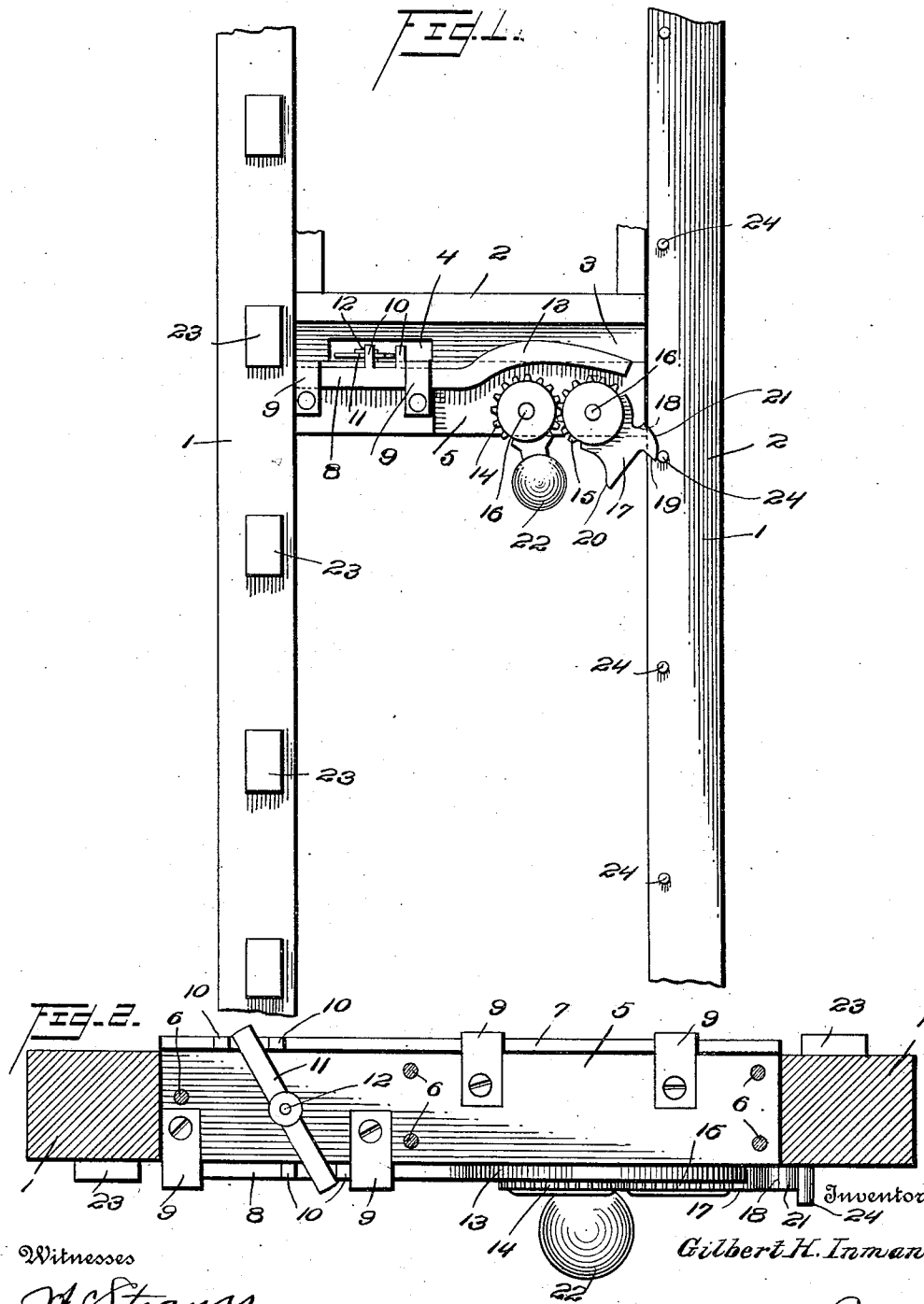


G. H. INMAN.
SAFETY DEVICE FOR ELEVATORS.
APPLICATION FILED MAY 15, 1911.

1,016,014.

Patented Jan. 30, 1912.

2 SHEETS—SHEET 1.



Witnesses

A. Strauss
R. H. Krenkel.

By

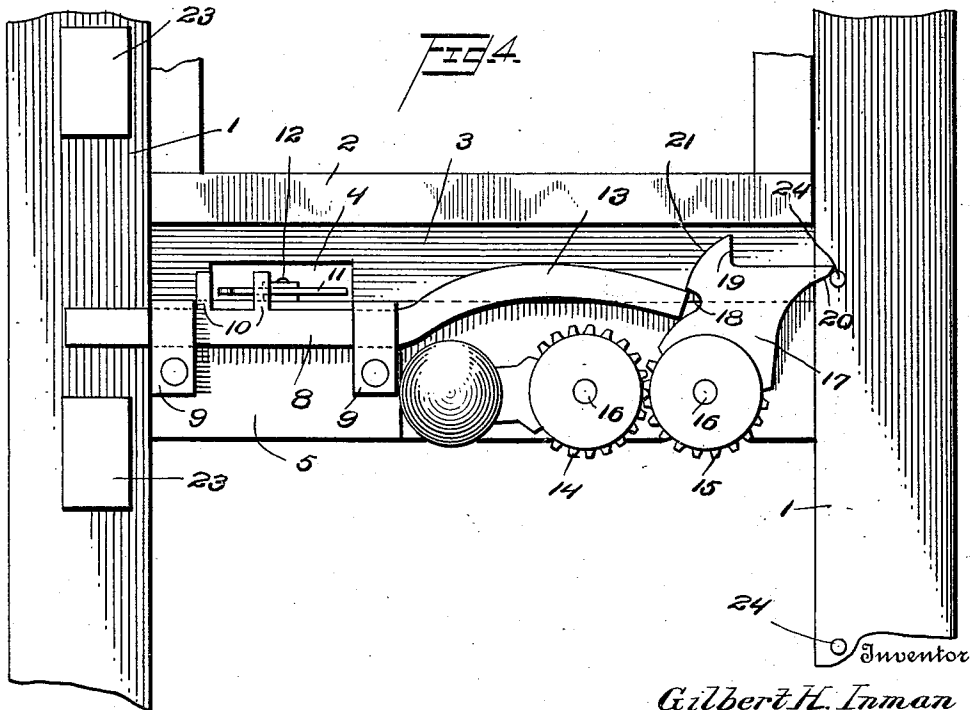
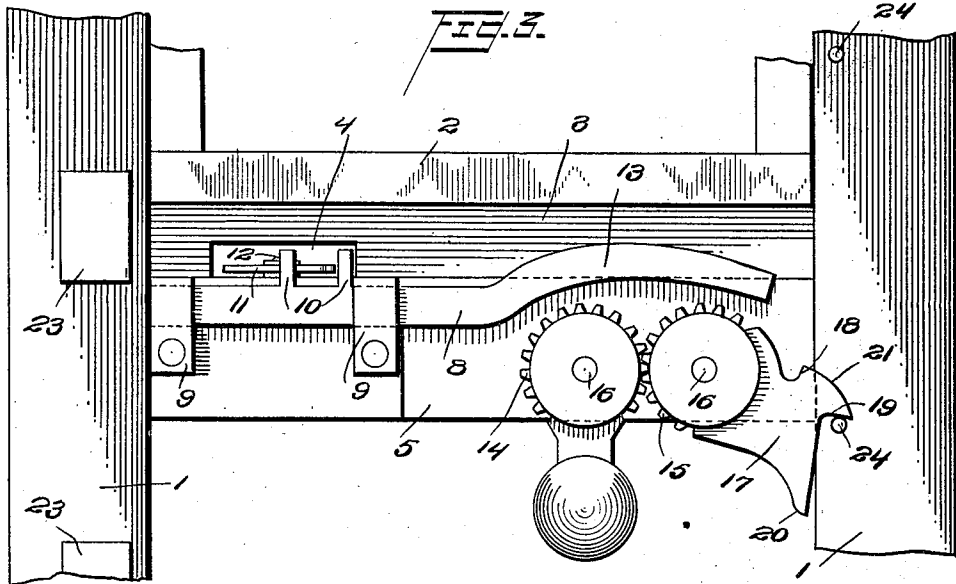
Joshua R. T. Potts.
Attorney

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Gilbert H. Inman

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UNITED STATES PATENT OFFICE.

GILBERT H. INMAN, OF CAMDEN, NEW JERSEY.

SAFETY DEVICE FOR ELEVATORS.

1,016,014.

Specification of Letters Patent.

Patented Jan. 30, 1912.

Application filed May 15, 1911. Serial No. 627,121.

To all whom it may concern:

Be it known that I, GILBERT H. INMAN, a citizen of the United States, residing at Camden, in the county of Camden and State of New Jersey, have invented certain new and useful improvements in Safety Devices for Elevators, of which the following is a specification.

My invention relates to improvements in safety devices for elevators, the object of the invention being to provide a safety device which may be used in connection with any ordinary elevator car, and which will not interfere with the ordinary operation of the elevator car, but which will, when the elevator car falls, catch and hold the elevator car against downward movement.

A further object is to provide improvements of this character which can be installed on elevators in use, and which may be depended upon to absolutely prevent an elevator car from falling but a very short distance, should its supporting devices give way.

With these and other objects in view, the invention consists in certain novel features of construction and combinations and arrangements of parts, as will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings: Figure 1, is a fragmentary view in elevation illustrating the elevator with my improved safety mechanism in the position it would assume if the elevator car were ascending. Fig. 2, is a plan view of the bar 5, and in section through the supporting bars 1, showing the safety mechanism. Fig. 3, is a fragmentary view showing the position of the parts when the elevator car is descending, and Fig. 4, is a view showing the safety mechanism in position as it throws the bolts to catch the elevator car.

1, 1, represent the two upright or guide bars, and 2 is my improved elevator car which is guided between the bars 1, 1, and has a transverse bar 3 secured to its lower face, and recessed as shown at 4. A second transverse bar 5 is secured by bolts 6 to the bottom of bar 3, and constitutes a support for my improved safety mechanism, which will now be described. On opposite sides of bar 5, bolts 7 and 8 respectively are mounted in metal straps 9, and are provided with upwardly projecting fingers 10, between which the ends of a lever 11 project. This

lever 11 is pivoted between its ends in the recessed portion 4 as shown at 12, and compels the bolts 7 to slide in unison but in opposite directions.

The inner end of bolt 8 is curved as shown at 13, and below this curved portion 13, two intermeshing gears 14 and 15 respectively are supported on pivot pins 16 secured in bar 5. To the gear 15, a plate 17 is secured or made integral, and is of the peculiar shape shown, that is, it is provided with three distinct shoulders 18, 19, and 20 respectively, and between the shoulders 18 and 19, the plate 17 is curved as shown at 21 forming a cam face for a purpose which will hereinafter appear. A weighted arm 22 is secured to, or made integral with, gear 14, so as to hold gear 15 and plate 17 in a normal position, and return it to such position. Along one face of one bar 1, and the opposite face of the other bar 1, blocks 23 are fixed in any approved manner, and project out far enough to be engaged by bolts 7, and 8, when the latter are moved outwardly. On one of the bars 1, and arranged an equal distance apart and with suitable relation relative to the blocks 23, are pins 24 which are engaged by the plate 17 as the elevator car moves upwardly and downwardly.

The operation is as follows: Normally the parts are in the position shown in Figs. 1, 2, and 3, and Fig. 1 shows the parts as they are positioned when the elevator car is moving upwardly. As the elevator car moves upwardly, the cam face 21 rides against each pin 24, causing the plate 17 to swing, but this motion is very slight, as the weighted arm 22 holds the parts in normal position. When the elevator car descends, the shoulder 19 of plate 17 will strike the pins 24, but plate 17 will be moved but a comparatively short distance, and will be returned to its normal position by the weighted arm 22, before plate 17 reaches the next pin 24. In the event the supporting cable should break, or for any reason the elevator car should fall, shoulder 19 will strike the first pin it comes in contact with, with sufficient force to throw plate 17 upwardly and rearwardly, overcoming the weighted arm 22, and as the elevator car is rapidly descending, weighted arm 22 will not be able to return the plate 17 to normal position, before shoulder 20 strikes the next pin 24, and a continued downward movement of the elevator car causes the parts to be moved

to the position shown in Fig. 4, shoulder 18 serving to engage the end of bolt 8, and forcing it longitudinally. As both bolts 7 and 8 are connected by the lever 11, they will both be moved longitudinally in the path of blocks 23, and will bring the elevator car to a quick stop and support the same. It will therefore be noted that during the ordinary operation of the elevator car, although plate 17 strikes each pin 24 as the elevator car ascends and descends, the weighted arm 22 will return plate 17 to normal position from pin to pin. Only in the event therefore, of a drop will the speed of the elevator car be sufficient to move the plate so that the weighted arm 22 cannot prevent shoulder 20 from striking pin 24. When this does occur, the bolts 7 and 8 are operated and the elevator car stopped.

Various slight changes might be made in the general form and arrangement of parts described without departing from my invention, and hence I do not limit myself to the precise details set forth, but consider myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A bolt operating safety mechanism for elevator cars comprising two intermeshing gears, a weighted arm on one gear, devices on the car mounting, and a plate on the other gear adapted to move into and out of engagement with said devices, substantially as described.

2. A bolt operating safety mechanism for elevator cars comprising two intermeshing gears, a weighted arm on one gear, devices on the car mounting, a plate on the other gear adapted to move into and out of engagement with the said devices, blocks on the car mounting, and a sliding bolt adapted to be engaged by said plate and moved into the path of the blocks when said plate is given an abnormal movement by the dropping of the elevator car, substantially as described.

3. A safety device for elevator cars comprising a bar adapted to be secured to an elevator car, a bolt mounted to slide on said bar, blocks fixed to the elevator mounting and into the path of which said bolt is adapted to be moved, a vertical series of pins on the elevator car mounting, two intermeshing gears on said bar, a plate fixed to one of said gears and having three independent shoulders and a cam edge, said cam edge constructed to engage the pins as the elevator car ascends, the intermediate shoulder adapted to engage said pins as the elevator car descends, a weighted arm fixed to the other gear and returning said plate to normal position between the pins during the

normal operation of the elevator car, but said arm overcome by a sudden shock as the intermediate shoulder strikes a pin, when the elevator car falls, causing one extreme shoulder to strike the next pin below, and the opposite extreme shoulder to engage the bolt and force the bolt into the path of said blocks, substantially as described.

4. The combination with parallel upright guide bars, and an elevator car movable between them, of a transverse bar secured to the elevator car, a longitudinally movable bolt supported on said last-mentioned bar, intermeshing gears supported on said last-mentioned bar, a weighted arm connected to one gear, a plate on the other gear, blocks fixed to one of the vertical bars, pins on the other vertical bar in the path of movement of said plate, and said plate having shoulders to engage one of said pins and move said bolt only when said elevator car descends at an unusual speed, substantially as described.

5. The combination with parallel upright guide bars, and an elevator car mounted to move between them, of a bolt secured to the elevator car and mounted to slide, intermeshing gears having rotary mounting on the elevator car, a longitudinal series of pins on one of said vertical bars, a longitudinal series of blocks on the other of said vertical bars, a plate fixed to one of said gears and movable into contact with the pins, a weighted arm on the other of said gears controlling the movement of said plate during the normal operation of said elevator car, but overcome by a quick engagement of the plate with one of the pins when the elevator car falls, whereby said plate will strike and move the bolt into position to engage one of the blocks, substantially as described.

6. The combination with parallel upright guide bars, and an elevator car movable between them, of a transverse bar secured to the elevator car, a longitudinally movable bolt supported on said last-mentioned bar, intermeshing gears supported on said last-mentioned bar, a weighted arm connected to one gear, a plate on the other gear, blocks fixed to one of the vertical bars, pins on the other vertical bar in the path of movement of said plate, and said plate having shoulders to engage one of said pins and move said bolt only when said elevator car descends at an unusual speed, a second bolt mounted to slide in a direction opposite to the movement of the first-mentioned bolt, a lever fulcrumed between its ends and connecting said bolts, and blocks on the other of said vertical bars to receive said last-mentioned bolt, substantially as described.

7. The combination with parallel upright guide bars, and an elevator car mounted to move between them, of a bolt secured to the

elevator car and mounted to slide, inter-
meshing gears having rotary mounting on
the elevator car, a longitudinal series of
pins on one of said vertical bars, a longitu-
dinal series of blocks on the other of said
vertical bars, a plate fixed to one of said
gears and movable into contact with the
pins, a weighted arm on the other of said
gears controlling the movement of said plate
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vator car, but overcome by a quick engage-
ment of the plate with one of the pins when
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to engage one of the blocks, a second bolt 15
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necting said bolts, and blocks on the other
of said vertical bars to receive said last- 20
mentioned bolt, substantially as described.

In testimony whereof I have signed my
name to this specification in the presence of
two subscribing witnesses.

GILBERT H. INMAN.

Witnesses:

R. H. KRENKEL,
CHAS. E. POTTS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."