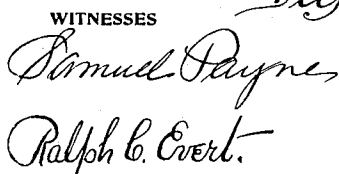


1,017,332.

3 SHEETS—SHEET 1.



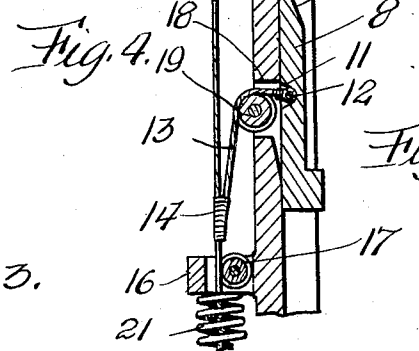
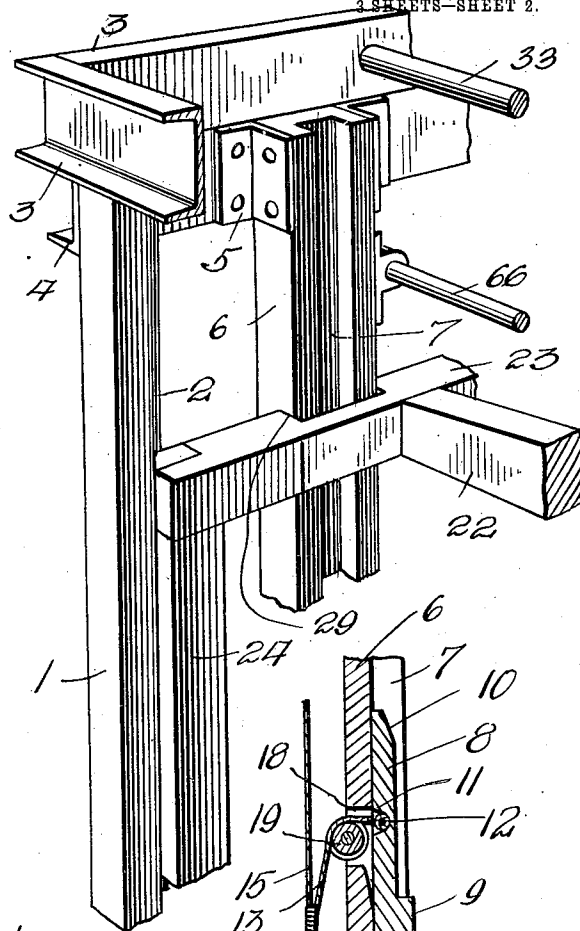
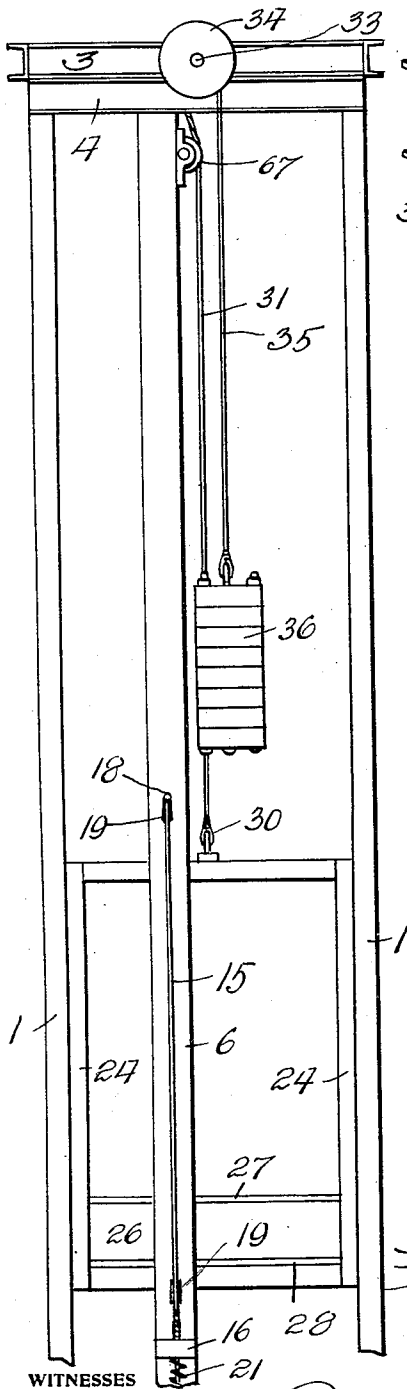
48 *Fig. 2.*
INVENTOR
F. Sowinski.
BY *M. E. Ever*
ATTORNEYS

F. SOWINSKI.
ELEVATOR SAFETY DEVICE.
APPLICATION FILED OCT. 25, 1911.

1,017,332.

Patented Feb. 13, 1912.

3 SHEETS—SHEET 2.



WITNESSES

Samuel Payne.
Ralph C. Evert.

INVENTOR

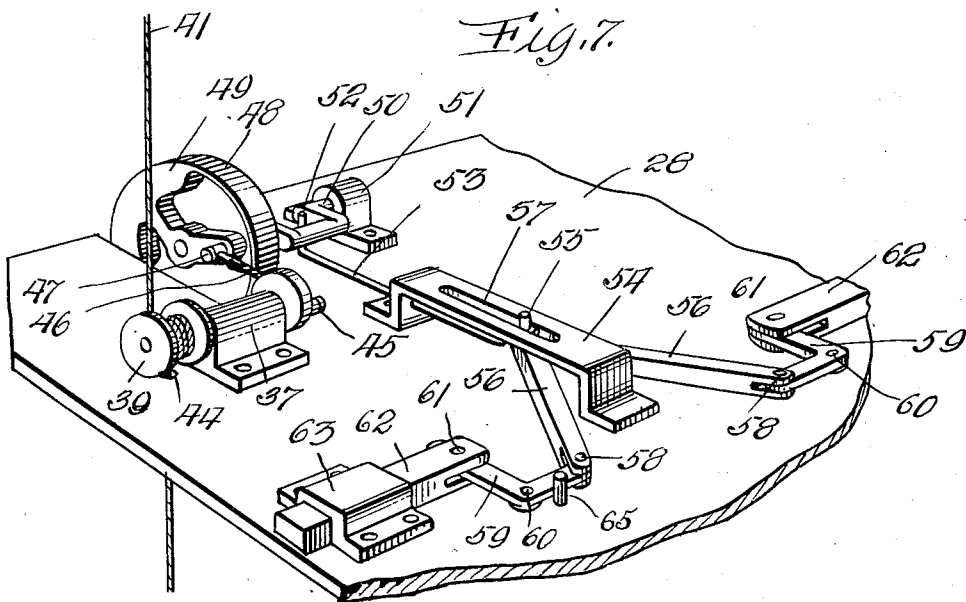
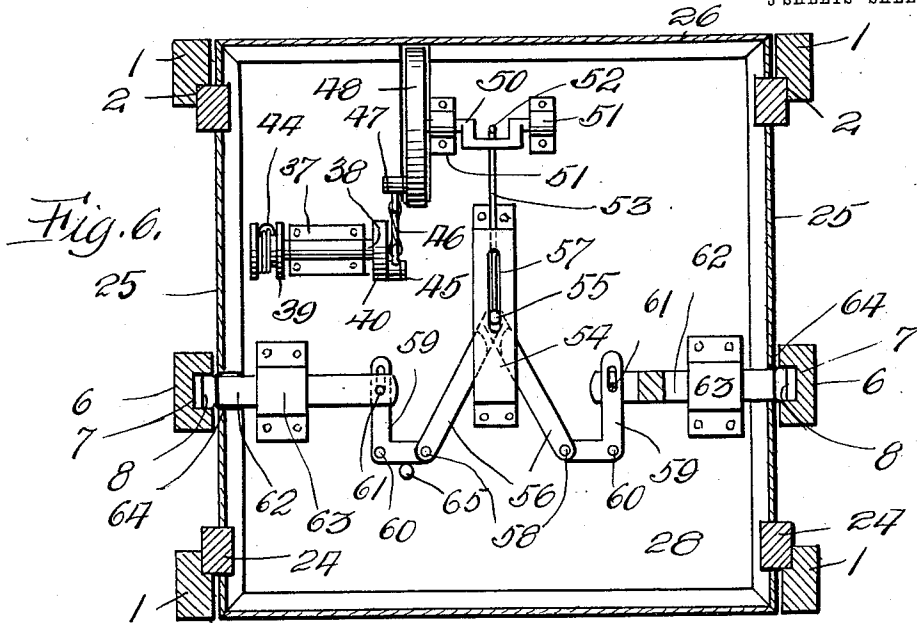
F. Sowinski.
BY *M. E. Co.*
ATTORNEYS

F. SOWINSKI.
ELEVATOR SAFETY DEVICE.
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Patented Feb. 13, 1912.

3 SHEETS—SHEET 3.



WITNESSES

Samuel Payne.
Ralph C. Evert.

INVENTOR

F. Sowinski.
BY *H. E. ...*
ATTORNEYS

UNITED STATES PATENT OFFICE.

FRANK SOWINSKI, OF DETROIT, MICHIGAN.

ELEVATOR SAFETY DEVICE.

1,017,332.

Specification of Letters Patent.

Patented Feb. 13, 1912.

Application filed October 25, 1911. Serial No. 656,596.

To all whom it may concern:

Be it known that I, FRANK SOWINSKI, a subject of the Emperor of Austria-Hungary, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Elevator Safety Devices, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to elevator safety devices, and the primary object of my invention is the provision of positive and reliable means, in a manner as will be hereinafter set forth, for retarding and eventually stopping
15 an elevator cage when it exceeds the limit of speed, thereby preventing the destruction of property and in all probability the loss of life by the sudden dropping or descent of an elevator.

20 Another object of this invention is to provide an elevator shaft with yieldable stop blocks that prevent a sudden cessation in the movement of an elevator, and eventually stop the same, thereby preventing injury to
25 the occupants or contents of the elevator cage.

A further object of this invention is to provide a safety device that can be advantageously used in connection with freight
30 elevators, the device being easily installed and highly efficient for the purposes for which it is intended.

With the above and other objects in view, the invention resides in the novel construction, combination and arrangement of parts
35 to be hereinafter specifically described and then claimed.

Reference will now be had to the drawings, wherein like numerals denote corresponding parts throughout the several views,
40 in which:—

Figure 1 is a front elevation of the elevator safety device, Fig. 2 is a vertical sectional view of the same, Fig. 3 is a side elevation of the device, Fig. 4 is an enlarged
45 perspective view of a portion of the elevator shaft and cage, Fig. 5 is an enlarged vertical sectional view of a portion of the elevator shaft, illustrating the yieldable stop
50 blocks, Fig. 6 is a horizontal sectional view of the safety elevator device, and Fig. 7 is a perspective view of a false bottom forming part of the elevator cage.

The reference numerals 1 denote the guides
55 of an elevator shaft, said guides having a rectangular formation from one end of the

shaft to the opposite end thereof. The guides are grooved throughout their length, as at 2 and the upper ends of said guides are connected by a rectangular frame 3 made
60 of channel bars. The side guides are connected by additional channel bars 4 provided with angle bars 5 supporting the upper ends of vertical stop block holders 6, said holders having the lower ends thereof
65 braced in a manner similar to the upper ends. The stop block holders are oppositely disposed in closer proximity to the front guides 1 than the rear guides and said holders have the confronting faces thereof
70 provided with longitudinal grooves 7 extending throughout the entire length of said holders.

Arranged in the grooves 7 are stop blocks 8, these blocks being arranged at each floor
75 of the elevator shaft. The blocks have the lower ends thereof provided with shoulders 9 and the upper ends of said blocks are beveled, as at 10. The inner faces of the blocks are recessed, as at 11 and anchored in said
80 recesses by pins 12 are the ends of branch cables 13, said cables being connected, as at 14 to a main cable 15. The upper end of the main cable is attached to a stop block, as best shown in Fig. 2, and the lower end
85 of said cable extends through a guide 16 carried by the holder 6, at the bottom of the elevator shaft. Within the guide 16 is a sheave 17 to insure an easy movement of
90 the cable 15, and revolubly mounted in openings 18 provided therefor in the holders 6 are sheaves 19 for the same purpose in connection with the branch cables 13. The
95 lower end of the cable 15 is provided with a weight 20 and encircling said cable, between the weight 20 and the guide 16, is a coiled spring 21.

The elevator cage comprises a beam 22, side bars 23, vertical bars 24, a rectangular floor frame composed of channel bars 25 and 26, a main floor 27 and a false bottom 28.
100 The side bars 23 have vertical grooves 29, whereby said side bars can slide upon the holders 6.

Attached to the beam 22 by an eye bolt 30
105 is a hoisting cable 31 that is attached to and wound upon the drum 32 mounted upon a shaft 33 journaled in the frame 3. One end of the shaft 33 has a drum 34 to which is attached and wound thereon a cable 35
110 having a counter balance weight 36. The opposite end of the shaft 33 can be con-

nected to a suitable hoisting mechanism (not shown).

The false bottom 28, at one side thereof, is provided with a bearing 37 for a shaft 38. Mounted upon one end of said shaft is a spool 39 and mounted upon the opposite end thereof is a wheel 40. Having two or three turns around the spool 39 is a cable 41, one end of said cable extending through an opening 42 in the main floor 27 and upwardly to a rod 43 carried by the frame 3, said cable having the end thereof attached to said rod. The opposite end of the cable extends downwardly through an opening 44 in the false bottom 28 and is suitably anchored at the bottom of the elevator shaft, preferably similar to the upper end of said cable.

The wheel 40 is provided with a wrist pin 45 and attached to said pin by a flexible pitman 46 is a wrist pin 47 of an over balanced wheel 48. This wheel is cored out to provide a peripheral weight 49 opposite the wrist pin 47, the weight 49 normally maintaining the flexible pitman 46 taut. The over balanced wheel is mounted upon a crank 50, journaled in bearings 51, carried by the false bottom 28. The crank portion of the shaft 50 engages the hook-shaped end 52 of a connecting rod 53, said rod extending into a bracket 54 mounted upon the false bottom 28. The rod 51 is connected by a pin 55 to toggles 56, said pin extending upwardly through the slot 57 formed in the bracket 54. The toggles 56 are pivotally connected, as at 58 to bell crank levers 59 pivotally mounted, as at 60 upon the false bottom 28. The bell crank levers 59 are pivotally connected, as at 61 to arms 62 slidably mounted in bearings 63, carried by the false bottom 28. The arms 62 are adapted to project through openings 64 provided therefor in the channel bars 25 and engage the yieldable stop blocks 8. The bell crank levers 59 are limited in their movement by a pin 65, carried by the false bottom 28. To maintain the hoisting cable 31 centrally of the elevator cage, the holders 6 are connected by a transverse shaft 66 and revolvably mounted upon said shaft is a guide sheave 67.

In operation, the raising and lowering of the elevator cage at a normal speed revolves the shaft 38 at a normal speed and the diameter of the wheel 40 is such with relation to the over balanced wheel 49, that said wheel will be oscillated through the medium of the flexible pitman 46. As this wheel is oscillated, the crank shaft 50 is rocked

without imparting a movement to the connecting rod 53, but immediately upon the cage excelling its speed, the shaft 38 is rapidly revolved and the wheel 48 is moved to that extent as to cause the crank portion of the shaft 50 to impinge the hook-shaped end 52 of the connecting rod 53, shift said rod and the toggles 56 thereof, whereby the bell crank levers 59 will be moved to shift the arms 62 outwardly into the path of the shoulders 9 of the yieldable stop blocks 8. As the blocks 8 recede, the speed of the cage is gradually decreased on account of the blocks elevating the cables 15, the weights attached thereto, and the compression of the springs 21. The movement of the cage is eventually stopped and after the parts have been restored to their normal position, the operation of the cage can continue. A sudden descent of the elevator cage may be caused by the breaking of the hoisting cable 31, or by fault of the hoisting mechanism, however, the speed of the elevator cage can be regulated whereby after it has reached a limit, its movement will be retarded by an operation of the mechanism carried by the false bottom 28.

From the foregoing it will be observed that the over balanced wheel 48 serves as a governor for actuating a connecting rod and arms, when the speed limit is reached, and that the governor is continuously oscillated during the continuation of the elevator cage by a cable that extends from one end of the elevator shaft to the opposite end. This mechanism, combined with the yieldable stop blocks, provides a safety device that is free from injury by ordinary use and efficient as a safety factor in connection with the operator of an elevator cage.

What I claim is:—

In an elevator safety device, the combination with guides, and a cage movably mounted between said guides, of stop block holders, yieldable stop blocks arranged in said holders, a governor carried by said cage, a cable fixed relatively to said cage and adapted to impart an oscillatory movement to said governor, arms carried by said cage, and means actuated by an increase of movement of said governor to shift said arms outwardly into the path of said yieldable stop blocks.

In testimony whereof I affix my signature in the presence of two witnesses.

FRANK SOWINSKI.

Witnesses:

A. G. GRZEZINSKI,
M. GRZEZINSKI.