No. 741,481. PATENTED OCT. 13, 1903.

W. S. FULWIDER.

SAFETY DEVICE FOR ELEVATORS.

APPLICATION FILED FEB. 2, 1903.

NO MODEL.

Fig. 1.

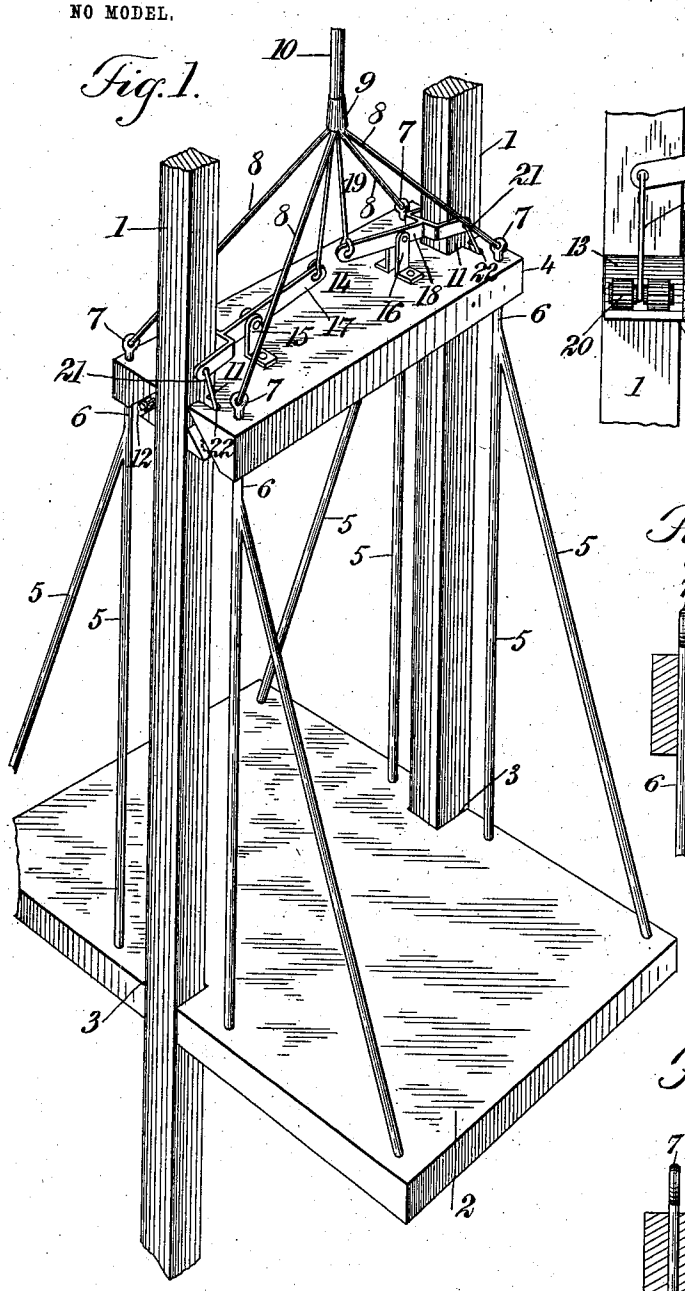


Fig. 2.

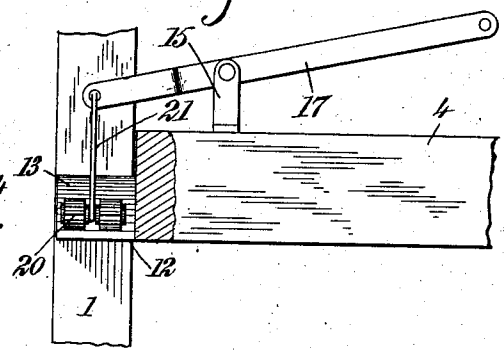


Fig. 3.

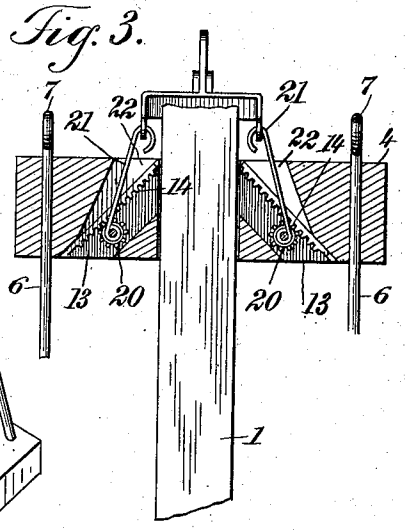
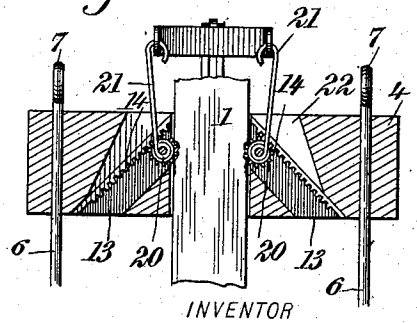


Fig. 4.



WITNESSES:

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No. 741,481. Patented October 13, 1903.

UNITED STATES PATENT OFFICE.

WALTER S. FULWIDER, OF DIAMOND, INDIANA.

SAFETY DEVICE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 741,481, dated October 13, 1903.

Application filed February 2, 1903. Serial No. 141,494. (No model.)

To all whom it may concern:

Be it known that I, WALTER S. FULWIDER, a citizen of the United States, and a resident of Diamond, in the county of Parke and State of Indiana, have invented new and useful Improvements in Safety Devices for Elevators, of which the following is a full, clear, and exact description.

The present invention appertains to elevators, and has particular reference to certain novel and useful improvements in safety devices for the same.

Primarily my object in the present instance is to provide the car or cage of the elevator with means which should the cable supporting the car be accidentally severed or broken will engage with the standards or vertical supports of the walls of the well and will check the descent of the car to the bottom of such well.

A further object of the invention is to so mount my improved safety means relatively to the top cross bar or head of the car or cage that should the rope or supporting-cable break the weight of the cage will be brought to bear upon the safety devices through the cross-head, and thereby force or press such devices into abutting contact with the vertical standards.

A further object of the invention is to construct an elevator apparatus which shall be exceedingly simple, while possessing the essential features of durability and positiveness of operation.

With these and other objects of a similar nature in view my invention consists in the construction, combination, and arrangement of parts, as is described in this specification, delineated in the accompanying drawings, and set forth in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of an elevator having my improvements applied thereto. Fig. 2 is a view in side elevation of one of the improved safety gripping devices, a portion of the cross-head of the car being broken away to show the location of portions of the aforesaid devices. Fig. 3 is a transverse vertical sectional view taken through one end of the cross-head of the elevator and showing the arrangement of the gripping device when in its normal inoperative position; and Fig. 4 is a similar view showing the device engaging one of the standards of the frame of the elevator, the gripping means occupying the position they will assume to check the descent of the car in the case of the severing of the supporting-cable.

Referring now to the accompanying drawings in detail, 1 1 designate two vertical parallel standards composed of any suitable material, either timber or metal, said standards being adapted to act as a frame for the cage or car of the elevator to slide in. As will be seen in the present instance, the car comprises the platform or base portion 2, having recesses or cut-away portions 3 3 therein, which recess portions permit the passage of the vertical standards 1 1, and the platform is connected to the cross bar or head 4 of the elevator through the medium of supporting rods or arms 5, and it will be seen that these supporting-arms 5 are bifurcated and terminate in a single stem 6, the stems extending through the corners of the cross-head, and said stems have eye portions 7 formed on the portion above the cross-head, each of which eyes receives one end of a flexible connecting-cable 8. It will be noted that there are a number of these connecting-cables, one for each eye portion, and they are connected at their point of convergence 9 with the cable 10, which supports the car or cage. The cross-head 4 is recessed or provided with an inwardly-extending cut-away portion 11 at each end to enable the cross-bar to slide on the vertical standards when the cage is traveling up or down. For the purpose of checking the cage in its descent and to prevent accidents I have provided an improved safety device, which I will now proceed to describe.

Extending diagonally upward from the under side of the cross-head into communication with the recesses or cut-away portions 11 of the aforesaid block are the diagonal passages or slots 12, there being in all four of such diagonal slots—two at each end of the cross-head—and the construction and arrangement of these slots will be clearly seen in Fig. 1. Secured within the slots 12 are the inclined or diagonally-arranged rack-bars

13, there being one of such bars 13 for each slot, and such bars are inclined toward the standards 1, as is clearly seen in Figs. 3 and 4. These rack-bars are preferably in the form of angle-plates, and the under side of the top face of each bar is serrated or toothed, as at 14. Secured to the top surface of the cross-head are suitable brackets 15 and 16, which brackets support, respectively, the bifurcated lever-arms 17 and 18. The stems or shank portions of such arms are apertured and have secured thereto the rods 19 19, said rods being fastened at their other ends to the cable 10. The extensions or fingers forming the bifurcated portions of the arms 17 and 18 just described are adapted to receive between them the vertical standards 1 1, and each of said fingers is connected with a cog-pinion 20 through the medium of a hanger-rod 21 passing upward through slots 22, communicating with the diagonal slots 12, the construction being such that the pinions are adapted to slide or move over the toothed portion of the rack and engage with the sides of the standards 1 1 in case the cable should be broken.

From the above description, taken in connection with the accompanying drawings, the operation of my device will be readily apparent. The car when the parts are arranged as shown in Fig. 1 is presumed to be in its working operative condition, and the safety cog-rollers 20 occupy the position in engagement with the rack substantially as shown in Figs. 2 and 3; but if during the passage of the cage or car the rope or cable should be suddenly severed through any accident and the unsupported car starts to move rapidly down through the force of gravity to the bottom of the well the levers 17 and 18, no longer supported, have a tendency to swing upward at their bifurcated ends, thereby causing the cog-pinions 20 connected therewith to travel up the inclined rack-surfaces and engage with the sides of the stanchions or standards 1 1, the weight of the car assisting in causing the serrated or toothed rollers to be embedded in the standards, as is clearly seen in Fig. 4, and the car will be brought to a stop, thereby avoiding being dashed to the bottom of the well.

It will be seen that I have provided a safety device for elevators which is exceedingly simple, yet at the same time always acts positively in checking the accidental descent of the car, and at the same time it may be applied to any type of elevators, for while I have shown and herein described for the purpose of illustration one particular embodiment of my invention I wish it to be understood that I do not limit myself to the precise details of construction shown herein, as there may be modifications and variations in some respects without departing from the principle of the invention or sacrificing any of the advantages thereof.

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

1. The combination with a frame, and a car movable therein, of means for checking the movement of the car, such means comprising a lever pivoted to vertical supports on said car, said lever having a bifurcated head portion, a toothed pinion suspended from each arm of the bifurcated head portion, and inclined cog-racks positioned in slots formed in the cross-head of the car, the construction being such that the pinions are adapted to be moved along the racks into contact with the frame to prevent the movement of the car, substantially as set forth.

2. The combination with a frame, of a car slidably mounted therein, said car having a cross-head provided with inclined converging slots formed at the ends thereof, inclined rack-bars mounted in the converging slots, a hoisting-cable, a flexible connection between the hoisting-cable and the cross-head of the car, a lever pivotally mounted on said cross-head, a toothed pinion pivotally secured to the end of said lever, said pinion engaging with the rack in the inclined slotted portion of the cross-head, said pinion being adapted by the upward movement of the lever end to which it is pivoted to be moved into engagement with the frame when the hoisting-cable is severed, whereby to check the descent of the car.

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

WALTER S. FULWIDER.

Witnesses:
TENBROOK MCCARTY,
F. M. SINER.