

H. G. TESSMER.
SAFETY DEVICE FOR ELEVATORS.
APPLICATION FILED MAR. 16, 1912.

1,042,172.

Patented Oct. 22, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

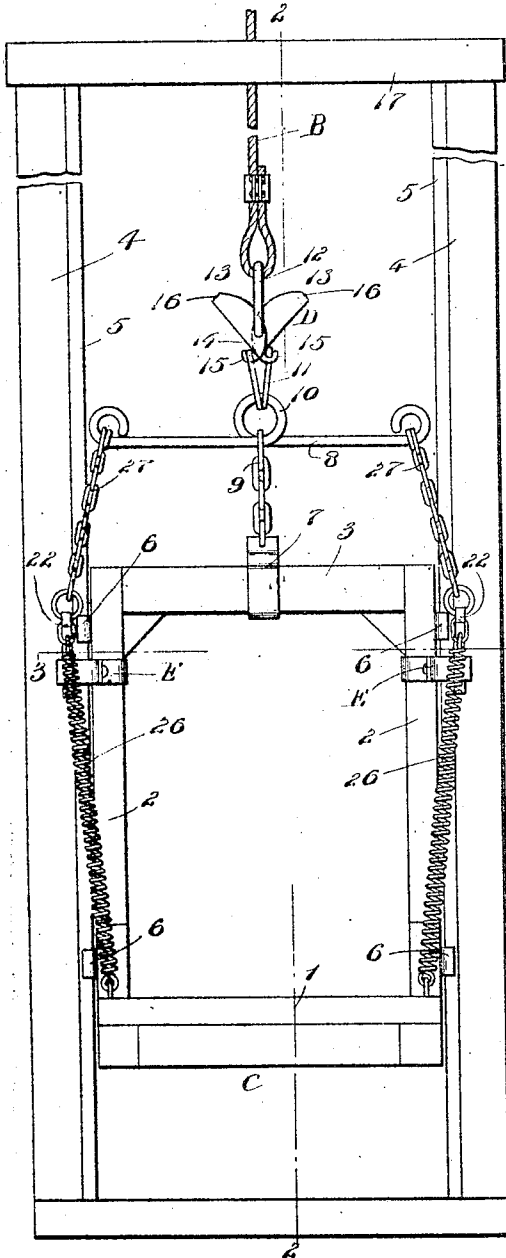
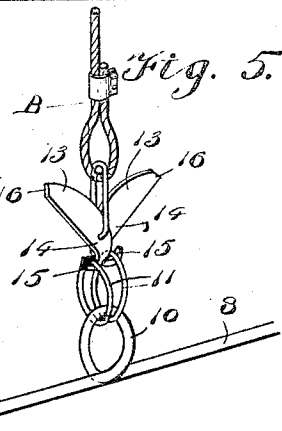
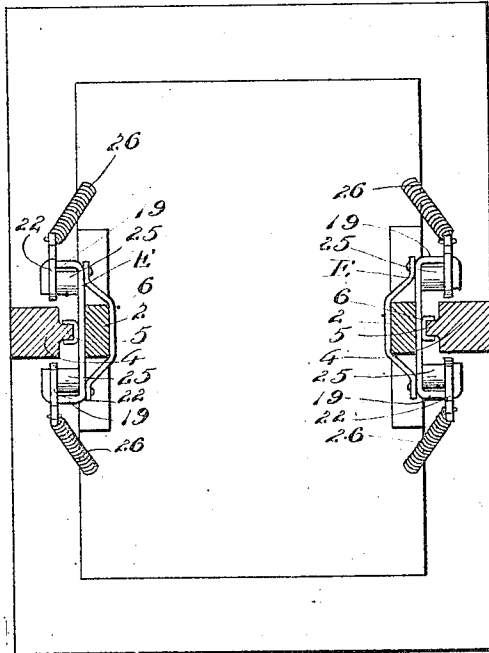


Fig. 3.



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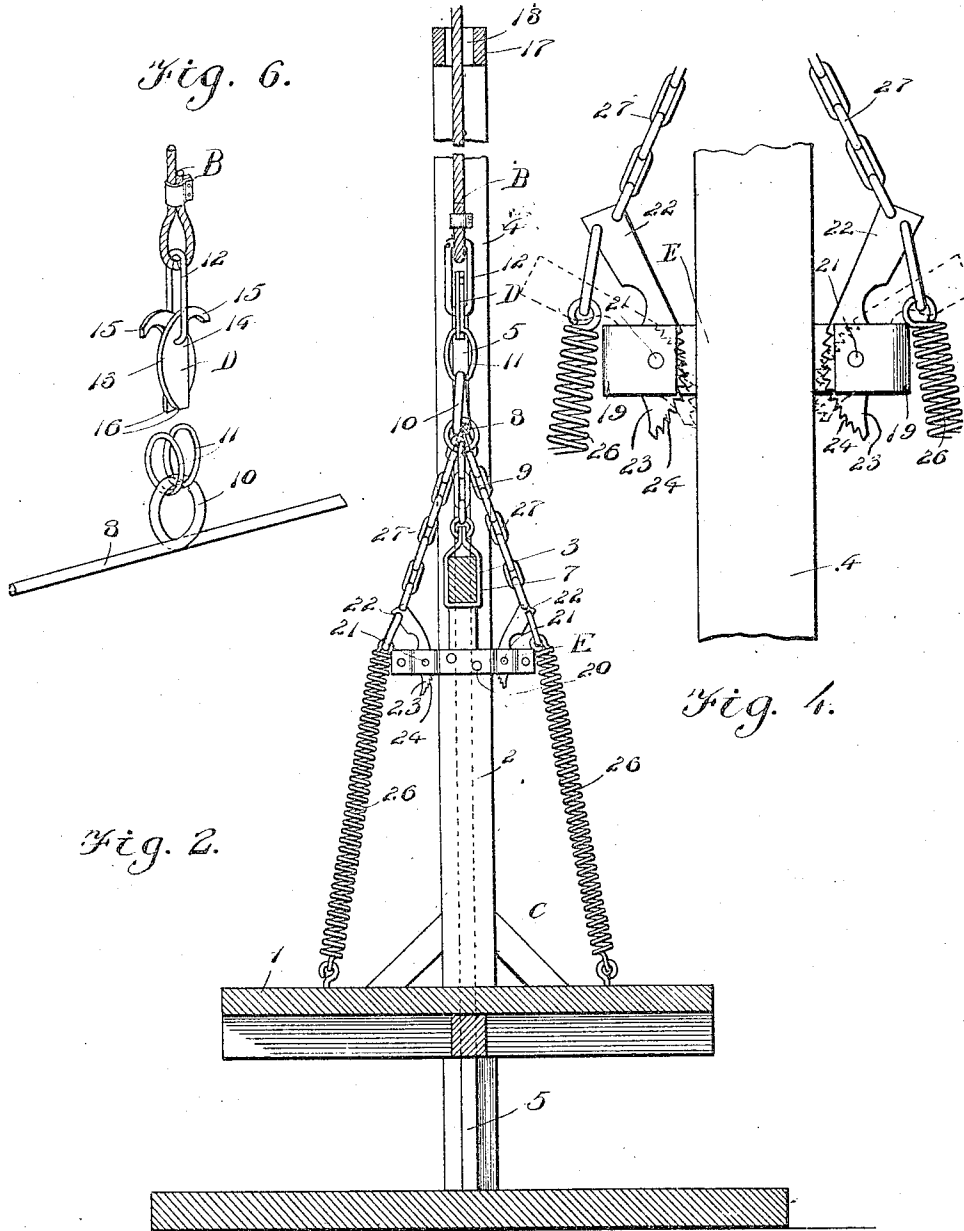
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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SAFETY DEVICE FOR ELEVATORS.

1,042,172.

Specification of Letters Patent.

Patented Oct. 22, 1912.

Application filed March 16, 1912. Serial No. 684,245.

To all whom it may concern:

Be it known that I, HERMAN G. TESSMER, a citizen of the United States, residing at Pittsburg, in the county of Crawford and State of Kansas, have invented new and useful Improvements in Safety Devices for Elevators, of which the following is a specification.

This invention relates to elevators, and it has particular reference to safety devices for passenger and freight elevators.

The principal object of the invention is to provide a simple and improved device whereby the elevator car and the hoisting cable will become automatically disconnected if the hoisting action is continued beyond a predetermined point, thereby avoiding the danger of collision between the elevator car and the roof, cap beam or other obstruction at the upper limit of the predetermined movement of the car.

The invention is adapted to operate in connection with safety means whereby the car, when descending by gravity owing to a broken or disconnected hoisting cable, will be automatically arrested, thereby avoiding danger to the occupants of the car; said safety means, which has been herein shown and described for the purpose of illustration, being described and claimed in a companion application, Serial No. 695,913, filed May 8, 1912.

With these and other ends in view which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts which will be hereinafter fully described and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes, alterations and modifications within the scope of the claims may be resorted to when desired.

In the drawings,—Figure 1 is a front view of an elevator constructed in accordance with the invention. Fig. 2 is a vertical sectional view taken on the line 2—2 in Fig. 1. Fig. 3 is a horizontal sectional view taken on the line 3—3 in Fig. 1. Fig. 4 is a detail side elevation, showing the safety grips or clutch members in position for hoisting and with

dotted lines showing said grips in position to arrest the downward movement of the car. Fig. 5 is a perspective detail view, showing the safety device for disconnecting the hoisting element from the car, illustrating the operation of the same. Fig. 6 is a perspective detail view of the safety device showing the same disconnected from the hoisting bar.

Corresponding parts in the several figures are denoted by like characters of reference.

The elevator car C, a simple conventional form of which has been illustrated, includes a platform 1, side members 2 and a top cross bar 3. The car is shown as being guided for vertical movement between uprights 4, 4 having guide strips 5 on their inner faces, said guide strips being engaged by clips 6 on the uprights 2 of the car. The construction of these parts may, however, be modified to any desired extent, the invention being applicable to elevator structures of all kinds.

The top cross bar 3 of the car is provided with a clamp 7 with which a hoisting bar 8 is connected by a flexible element, such as a short chain 9. The hoisting bar is provided with a centrally disposed loop or eye 10 with which a pair of links 11 are connected. The flexible hoisting element B, which may consist of a chain, rope or cable, has a terminal link 12 of elongated shape, said link supporting a pair of pivoted connecting members D, each including an upwardly extending wing or cam member 13 and a downwardly extending shank 14 having a terminal hook 15. The hooks 15 of the respective connecting members D extend outwardly with reference to the pivotal axis of the members D so as to engage the links 11 connected with the hoisting bar 8, and the wings or cams 13 of said connecting members diverge upwardly and present arcuate edges 16 adapted to engage the underside of the cross bar or cap piece 17 connecting the upper ends of the uprights 4 or such other obstruction as may lie in the path thereof when the car supported by the hoisting element moves upward beyond a predetermined limit. When such contact occurs the wings or cams 13 will be spread apart, thus disconnecting the hooks 15 by sliding them from beneath the links 11, thus disconnecting the car from the hoisting element. Simultaneously the wings or cam portions 13 will over-

balance the hook carrying shanks 14 causing the connecting members D to become inverted and enabling them to pass through the guide aperture 18 for the hoisting element with which the cap piece 17 is provided, thereby avoiding injury to the framework or to the building.

It is understood that the cap piece may represent the roof or ceiling of the building or structure in which the elevator is located.

Each of the uprights 2 of the elevator car carries a clamp or bracket E on the external side or face thereof, said clamp or bracket being bent to form U-shaped or hook-shaped ends 19. The clamps E are reinforced by straps 20 extending across the inner faces of the uprights 2. The U-shaped ends of the clamps E support shafts or journals 21 on which the safety catches consisting of levers 22 are journaled, said levers being provided with cam-shaped heads 23 which are provided with sharp-edged teeth or ratchets 24 having abrupt shoulders adapted to engage the uprights 4 or the guide strips 5, as may be preferred. In the drawings the catch members have been shown as engaging the uprights 4. Spools or spacing members 25 of the journals 21 serve to hold the levers 22 in proper engaging position. The ends of the levers 22 which extend outwardly from the uprights 4 are connected by means of springs 26 with the floor of the elevator car or with any suitable point of attachment which will enable the springs to so actuate the levers as to keep the heads 23 in engaging position with reference to the uprights 4. The outer ends of the levers 22 are also connected by flexible elements such as chains 27 with the ends of the hoisting bar 8. The flexible elements 27 are so proportioned to the flexible element 9 whereby the elevator car is suspended from the hoisting bar 8 that when the flexible element 9 is held taut by the weight of the elevator car, the flexible elements 27 will pull the levers 22 against the tension of the springs 26 sufficiently to disengage the corrugated faces of the heads 23 from the uprights 4. When, on the other hand, the flexible element 9 becomes slackened, owing to disengagement of the elevator car from the hoisting element or from any other cause, the tension of the springs 26 will actuate the levers 22 to throw the corrugated heads 23 into engagement with the uprights 4, thereby checking the descent of the car.

From the foregoing description, taken in connection with the drawings hereto annexed, the operation and advantages of this invention will be readily understood. It is obvious that if through inadvertence or ac-

cident the car continues its upward course beyond a predetermined limit, the safety device including the connecting members D will be actuated, thus disconnecting the car from the hoisting element and inverting the members D, enabling them to pass through the guide aperture provided for the hoisting element, enabling the passage of the latter without injury and permitting the elevator car to drop. As soon as the elevator car becomes disconnected and drops down the shaft, the springs 26 will actuate the levers 22, the corrugated heads of which will engage the uprights 4 and immediately check the descent of the car.

Having thus described the invention, what is claimed as new, is:—

1. In an elevator, a car having a pair of hoisting links connected therewith; a flexible hoisting element including an elongated link, and a cap piece having an aperture through which the hoisting element is guided, in combination with a collapsible connecting device including members invertibly pivoted on the elongated link of the flexible hoisting element and having hooks engaging the hoisting links of the car and adapted to be disconnected therefrom by contact of portions of said members with the apertured cap piece whereby said members are inverted and collapsed; the aperture in the cap piece being proportioned to permit the passage of the connecting device when collapsed.

2. In an elevator, guiding means including uprights and a top piece, the latter having an aperture, a hoisting element guided through the aperture and having a terminal elongated link, connecting members pivoted on the link and having upwardly diverging wings with arcuate cam edges and downwardly extending shanks provided with terminal hooks that extend outwardly with reference to the pivotal axis of the connecting members, an elevator car guided on the uprights, a hoisting member connected with the car and having a central eye, and links connecting said eye with the hooks on the shanks of the connecting members; said shanks being overbalanced by the wings to become inverted when disengaged from the links, and the aperture in the top piece through which the hoisting element is guided being proportioned to permit the passage of the connecting members when thus inverted.

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

HERMAN G. TESSMER.

Witnesses:

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