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ELEVATOR PLATFORM SAFETY LOCK

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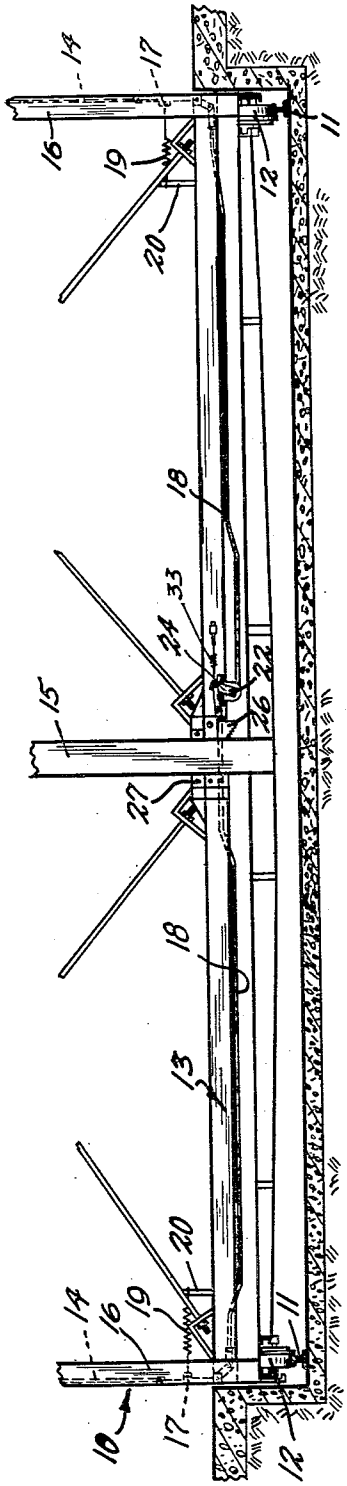


FIG - 1

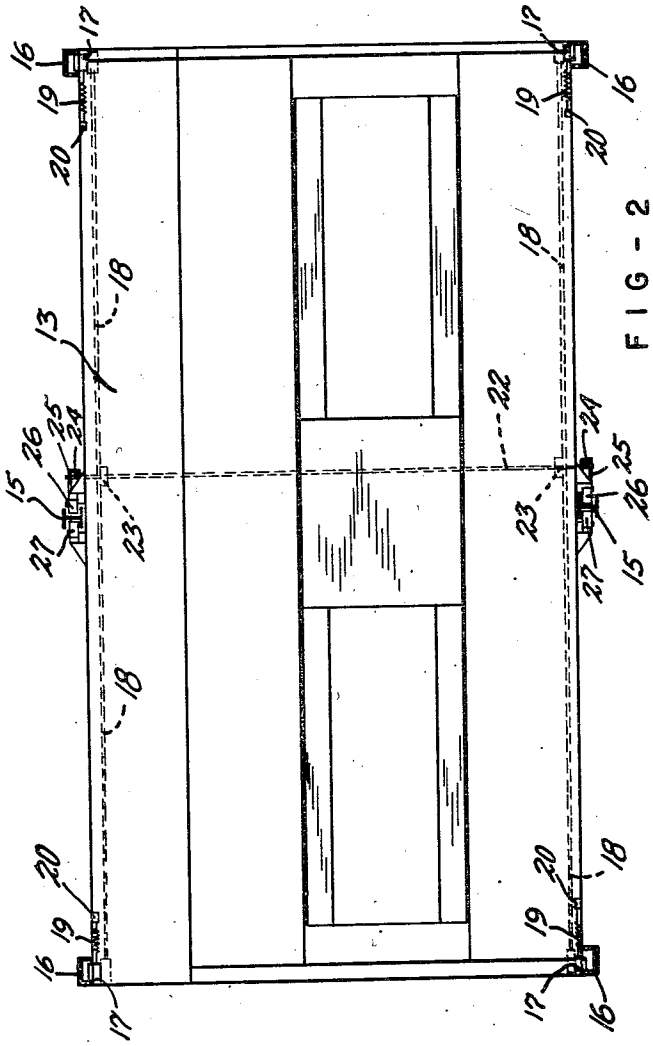


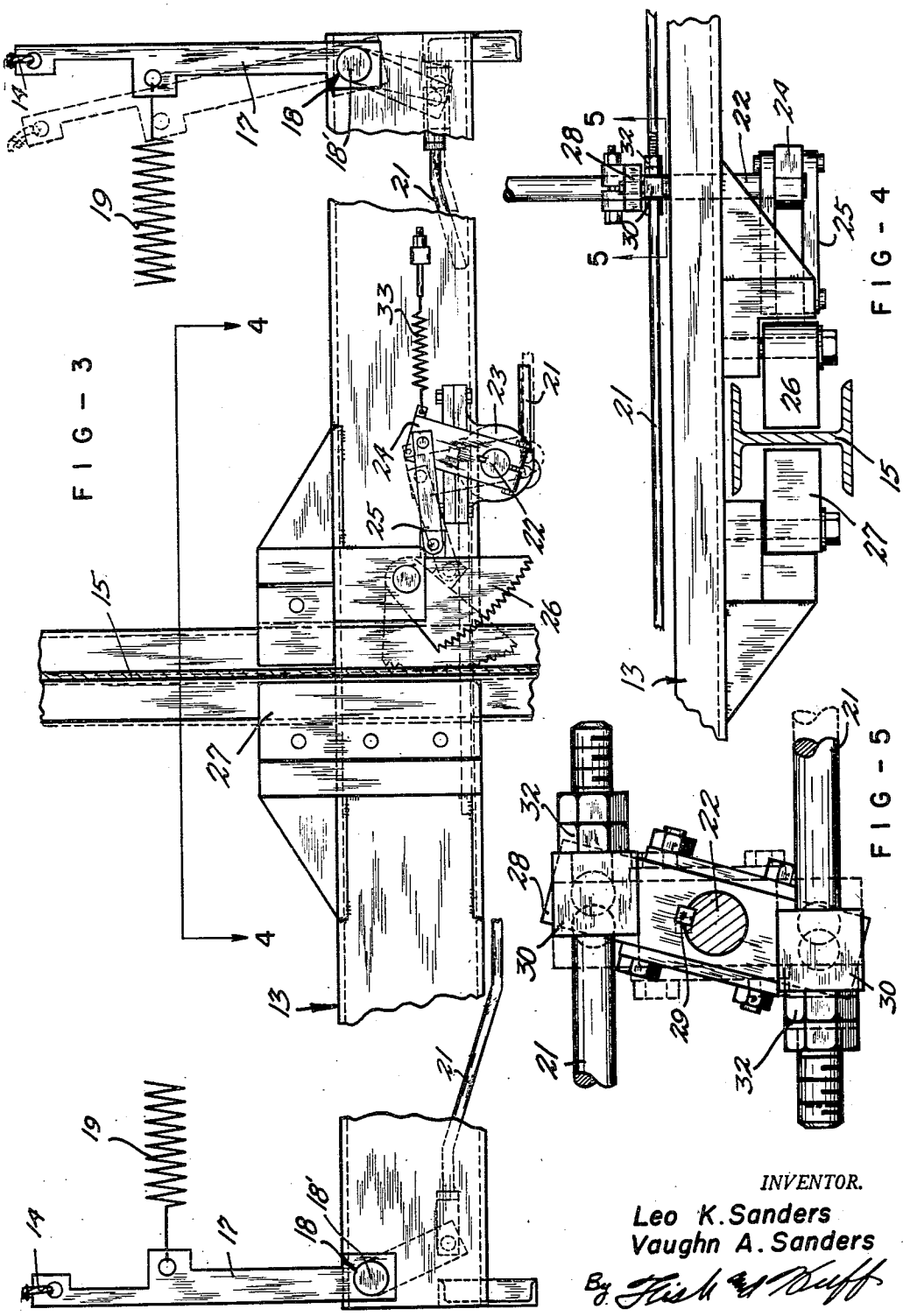
FIG - 2

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2,788,864

# ELEVATOR PLATFORM SAFETY LOCK

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1 Claim. (Cl. 187—80)

This invention relates to elevators and more particularly to a safety lock for an elevator platform.

One object of the invention lies in the provision of a safety lock for an elevator platform which lock is adapted to cooperate with a vertically extending fixed element and secure the platform against downward movement in the event its normal means of support relaxes.

Another object of the invention lies in the provision of an elevator platform safety lock having a gripping device adapted to securely grip a vertically extending fixed element when actuated by relaxation of the normal platform support means.

Another object of the invention lies in the provision of an elevator platform safety lock which is available for instant use when found necessary and one which operates only when the normal support means of the platform fails and thus it is not subject to wear of any consequence and therefore one which is not liable to become inoperative.

Another object of the invention lies in the provision of an elevator platform safety lock which is adapted to operate by reason of the relaxation of the normal support means for the platform and therefore one which is designed to secure the platform against falling even before any substantial downward movement of the released platform.

Another object of the invention lies in the provision of an elevator platform safety lock which is inexpensive to manufacture and may be assembled with facility from a minimum number of parts.

These and other objects of the invention will become apparent during the course of the following description and drawings wherein a preferred form of the invention is disclosed. It should be understood however that the drawings and description are illustrative only and are not intended to limit the scope of the invention except insofar as it is defined in the appended claim.

In the drawing:

Figure 1 is a fragmentary vertical elevation of the lower portion of a traveling vehicle elevator;

Figure 2 is a horizontal cross section taken just above the platform;

Figure 3 is an enlarged side elevation of the platform having parts broken away for convenience of illustration;

Figure 4 is a fragmentary horizontal cross section as at line 4—4 of Figure 3; and,

Figure 5 is a view taken at line 5—5 of Figure 4.

Referring now more particularly to the drawings, it will be seen that we have disclosed in Figure 1 an elevator **10** of the type particularly designed for elevating automotive vehicles for storage purposes and one that is supported on parallel rails **11** by means of flanged wheels **12** journaled on and supporting the elevator **10**. The elevator **10** is provided with a vertically movable platform **13** which is adapted to transport a vehicle to the level desired for storing.

Operation of the elevator platform **13** is clearly disclosed in our Patent No. 2,626,065 of January 20, 1953,



and it is not considered necessary to include a detailed description thereof in this work except to disclose that the elevator platform **13** is suspended at its corners by means of powered normally taut cables **14**.

In carrying out the present invention we provide fixed vertical elements **15**, one at each side of the elevator platform and positioned midway its length. It will, however, be understood that the conventional guideways **16** at the corner of the platform may be employed in lieu of the intermediate guideways **15** if convenient.

The cables **14** are secured to the upper ends of laterally biased levers **17** which are hinged at **18** to the platform **13** by means of horizontally extending hinge pins **18'**. The means for laterally biasing the levers **17** are shown to be springs **19** under tension which are secured to the levers **17** intermediate their lengths and have their opposed ends secured to a fixed member **20** rigid with the platform **13**. Each lever **17** extends below the fulcrum or hinge pin **18'** and is there pivotally secured to a link **21** which extends longitudinally of the platform **13**.

In the present embodiment of the invention we have provided a horizontal transverse rock shaft **22** journaled in bearings **23** carried by the platform **13** and disposed in spaced relation to the guideway or fixed element **15**. The rock shaft **22** is provided at each end with a crank arm **24** which is connected by means of a pivotal link **25** to a gripping dog **26** journaled on the platform **13** in such relation to the fixed element **15** as to be movable into gripping relation therewith when actuated by rocking movement of the rock shaft **22**. A cooperating pressure block **27** is carried by the platform **13** adjacent to the fixed guideway **15** and is constructed and arranged to cooperate with the gripping dog **26** to prevent lateral bending of the fixed guideway **15** when gripped by the dog **26** and therefore cooperates with the gripping dog **26** to form means operable to grip the fixed guideway **15** when actuated.

The inner ends of the links **21** are adapted to rock the rock shaft **22** when any number of the levers **17** are moved laterally over the axis of their respective hinge pins **18'** by action of the tension springs **19**. To accomplish this function we provide a cross bar **28** having an aperture midway its length and adapted to receive the rock shaft **22**. A key **29** is provided to secure the cross bar relative to the rock shaft **22**. It will thus be seen that movement of the cross bar **28** circumferentially with relation to the axis of the rock shaft **22** will cause the shaft **22** to rock.

Pivotally supported at the ends of the cross bars **28** are bearing blocks **30** which are adapted to rotate on axes parallel to the axis of the rock shaft **22**. Each bearing block is provided with an aperture through which a companion link **21** is slidably engaged. It will be seen that the work movement of opposed links **21** is in opposed directions and the links are therefore provided with abutment stops **32** which are formed by threading a nut and a lock nut on the free end of the link **21** after it has been passed through the aperture of bearing block **30** whereupon movement of each link in the work direction will cause abutment stops **32** to strike the bearing blocks **30** and shift the cross bar **28** to the position indicated by broken lines in Figure 5 and thus rock shaft **22**, actuating gripping dog **26**. It will be noted that any one of the links **21** may rock the shaft **22** while the movement of the other bearing blocks **20** effected thereby will cause the blocks to slide over their respective links **21** permitting the movement of rock shaft **22**.

A tension spring **33** is secured to the crank arm **24** to normally position the gripping dog **26** out of gripping relation to the fixed guideway **15**.

From the foregoing description it is obvious that relaxation of any number of the cables **14** will cause their cooperating levers **17** to hinge laterally and thus actuate

the gripping dog 26 to immediately grip the fixed guideway 15 and prevent downward movement of the platform 13.

Having thus described our invention, we claim:

In combination with an elevator suspended by powered normally taut cables, and a fixed vertical guideway associated therewith to guide vertical movements thereof; a safety lock comprising a pressure block rigidly secured to said elevator and disposed adjacent to said guideway; a gripping dog pivotally carried by said elevator adjacent to said guideway diametrically opposed to said pressure block and when actuated cooperating therewith to grip said guideway, whereby the elevator is supported against downward movement; a horizontally disposed rock shaft journaled on said elevator and operably connected to actuate said gripping dog when rocked; a transverse bar secured to said rock shaft and slidably receiving oppositely extending links at diametrically opposed points spaced from the rock shaft; abutment stops carried by each link for engaging and moving said bar to rock said



shaft when a link is moved in a direction opposed to the working movement direction of the opposed link; said links each having its outer end pivotally secured to a vertical lever hinged to said elevator on a horizontal axis; said cables being secured to the upper ends of said levers and supporting the elevator thereby; and spring means biasing said levers for movement laterally out of alignment with said cables, whereby relaxation of any said cable effects lateral movement of its companion lever to effect work stroke movement of its companion link.

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