Oct. 12, 1937. R. H. GREEGOR 2,095,695

GUIDE FOR SAFETY DEVICES ON DOORS

Filed Aug. 28, 1936 3 Sheets-Sheet 1

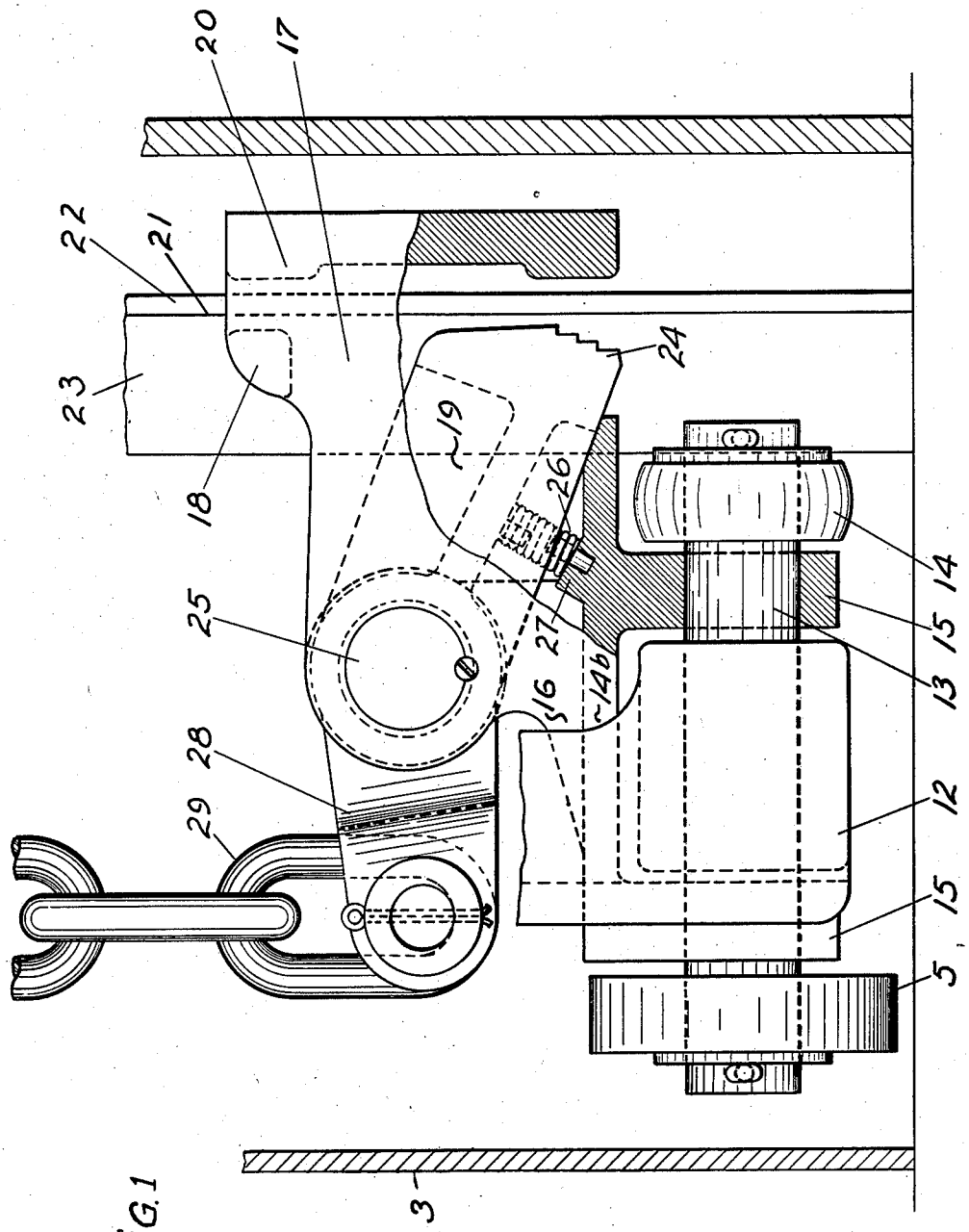


FIG. 1

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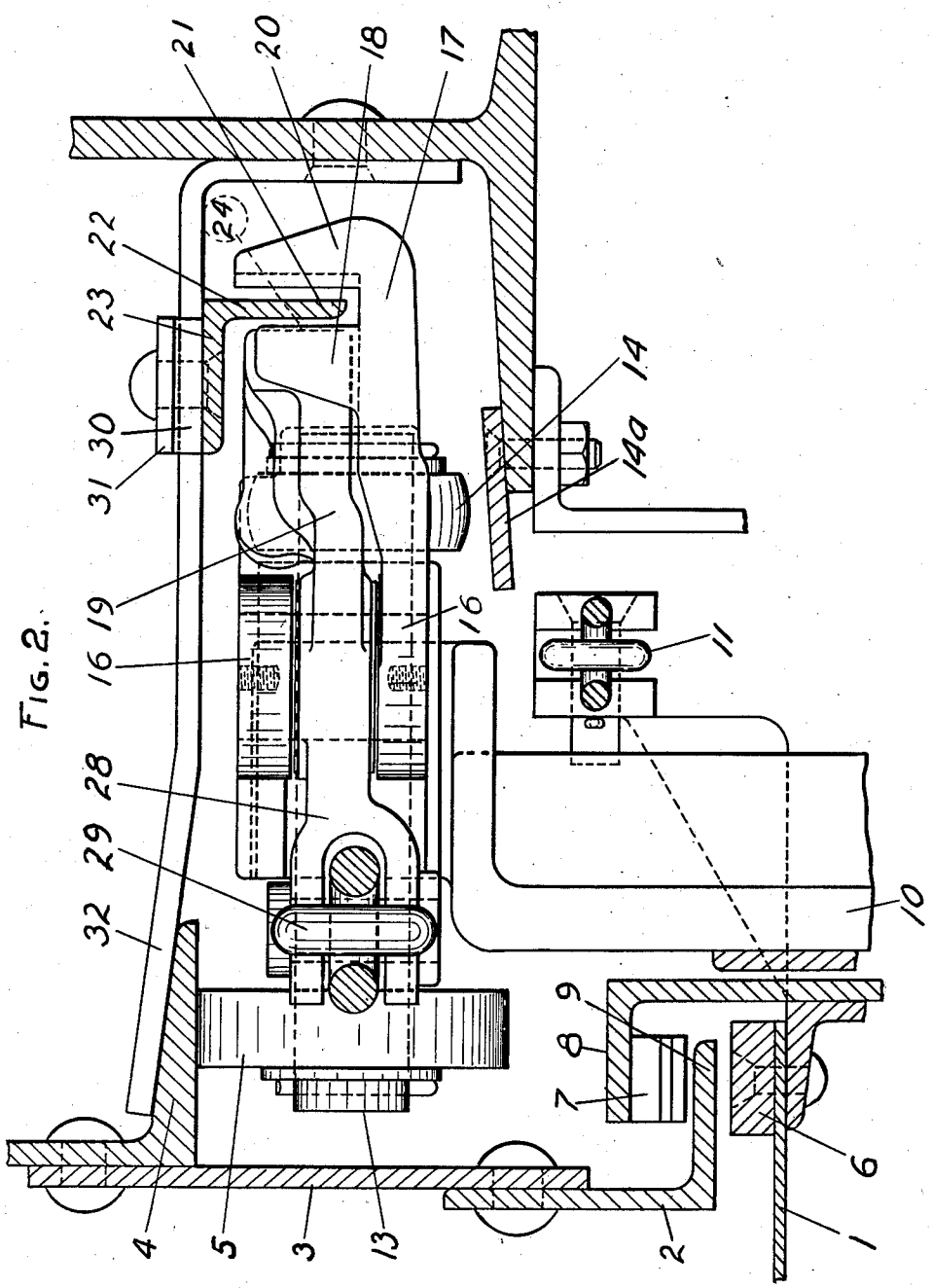


FIG. 2.

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Filed Aug. 28, 1936 3 Sheets-Sheet 3

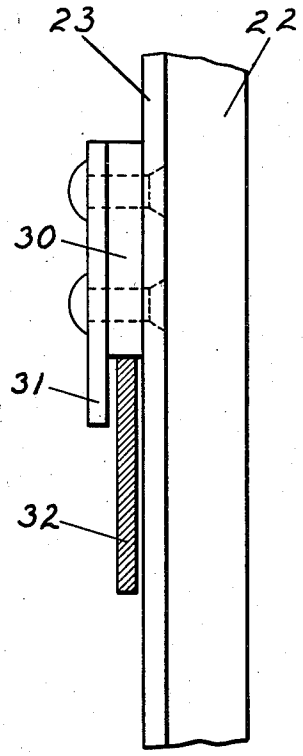


FIG. 3

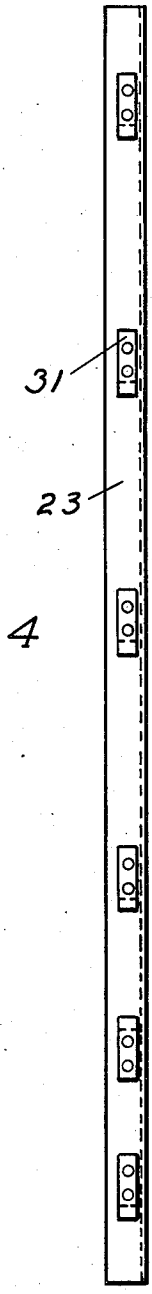


FIG. 4

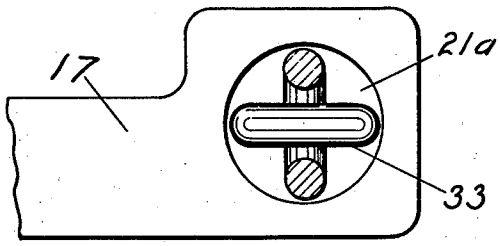


FIG. 5

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Patented Oct. 12, 1937

2,095,695

UNITED STATES PATENT OFFICE

2,095,695

GUIDE FOR SAFETY DEVICES ON DOORS

Ralph H. Greegor, Columbus, Ohio, assignor to General Door Company, Reno, Nev., a corporation of Nevada

Application August 28, 1936, Serial No. 98,362

11 Claims. (Cl. 20—19)

My invention relates to improvements in door-operating mechanisms and has for its object to provide an improved means for preventing the accidental closing of a vertically-moving door.

The particular object of this invention is the provision of means comprising a flexible or floating member that is engaged by the clamping member to prevent the undesired accidental closing of the door.

Heretofore, this member has been stationary, so that the locking mechanism would rub against it, causing friction, which delayed and impeded the operation of the door when the lock was not in operation and in some cases the movement of the door was sufficient to bring the locking detent in engagement with this member, stopping the door entirely when an accident made that unnecessary.

In order to permit the free operation of the door under its normal conditions of operation, it is the object of the present invention to provide a member that is gripped by the lock of either flexible character or floating character to obviate these disadvantages heretofore inherent in locks of this type.

The general arrangement of the door and the type of lock employed is more fully illustrated and described in R. H. Greegor Patent No. 1,998,233 of April 16, 1935.

Referring to the drawings, Figure 1 is a front elevation of the locking mechanism.

Figure 2 is a top plan view showing the locking, floating rail, the guides and supports, and the door in section.

Figure 3 is a section on the line 3—3 of Figure 2, showing the rigid locking rail mounted to float laterally on guides to prevent friction during the normal operation of the door.

Figure 4 is a front elevation of the locking rail.

Figure 5 is a view similar to Figure 2 but modified to show a flexible member, such as a chain, substituted for the locking rail, with the guide jaw provided with a hole to receive the chain.

Referring to the drawings in detail, 1 indicates a door which extends laterally to the left hand to close a door opening 2 to one side of the vertical angular column structure generally designated 3, which is provided with a channel flange 4 on which rolls the roller 5. The door 1 is also provided with wear plates 6 and 7, respectively mounted on the door and upon an angle 8 mounted on the door. This serves to guide the door vertically along the angle iron 9. Mounted on the door is a bracket 10 to which is connected the chain 11 which runs to a barrier section. Mounted on the bracket 10 is a sleeve 12 carrying a transverse shaft 13, on one end of which is mounted the roller 5 and on the other end of which is mounted the roller 14, engaging the roller guide 14*a*. There is also mounted on this shaft a jaw 14*b* having ears 15 with eyes which receive the shaft 13. This jaw carries the locking mechanism for emergency locking. The jaw 14*b* consists of a vertically extending plate 16, one side of which is formed with a laterally-extending plate 17 having a projecting lug 18 for limiting the movement of the bit lock 19. It is also provided with a flange 20. The projecting members 18 and 20 form between them a groove 21. Into this groove projects the angle plate 22 of the locking rail 23. This rail is engaged by the serrated face 24 of the locking bit 19 that is pivoted at 25 upon the plates 16. It is normally impelled upwardly on the right-hand side by the spring 26 between the locking bit 19 and the abutment 27 on the plate 14*b* upon which the spring rests. The left-hand end of the locking bit 19 is extended into a jaw 28, to which is connected the chain lift 29 that is connected to the lifting mechanism. In the event this lifting mechanism should fail and the door start to drop, the spring 26 would cooperate in moving the serrated face 24 of the bit 19 into engagement with the flanged plate 22 of the locking rail 23.

Heretofore, the lateral movements of the door brought about frictional engagement during normal operation of the door of the plate 17 with the flanged member 22, and between the flanged member 22 and the projecting shoulders 18 and 20. This impeded the free vertical operation of the door sections and was objectionable. If the lateral movement of the door, which meant the lateral movement of the plate 17, happened to be excessive, it would even bring the serrated face 24 of the locking bit 19 into engagement with the locking rail member 22 and halt the movement of the door.

The present invention, as will be hereinafter described, is devoted primarily to the elimination of these difficulties. This elimination is accomplished in one form as shown in Figures 1, 2 and 3, by mounting the angular locking rail members 22 and 23 so that they can float back and forth and prevent the friction and binding heretofore described. The member 23 is provided with a plurality of spacer plates 30 and guide plates 31. The spacer plates extend over the top of the transverse guide plates 32, while the plates 31 overlap the upper edge of the guide plates 32. The guide plates 32 are mounted upon the flanges 4 of the jamb and upon the building column or other rigid support. There are a plurality of these guide plates 32, spacer plates 30 and overlapping plates 31. Thus the locking rail member 22 can slide back and forth to acommodate the lateral movement of the door without binding the locking mechanism during normal operation of the

door. When the door needs to be locked by the locking bit 19 by reason of an accident, the face 24 of the locking bit can still engage the locking rail 22 and draw it downwardly so that its spacer plates 30 rest on top of the guide plates 32 and the downward movement of the door is halted.

As will be seen in Figure 4, the same objective could be accomplished by a chain 33 passing through an eye 21a in the end of the plate 17. This chain would be engaged by the serrated face 24 of the steel bit 17. The chain is attached at the top and bottom of the opening or in any other suitable manner. Likewise, a flexible strip could be substituted for the chain without changing the principle of my invention.

It will be understood that I desire to comprehend within my invention such modifications as may be necessary to adapt it to varying conditions and uses.

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

1. In combination, a door, means for lifting the door, locking means connected to said door and normally held inoperative by said lifting means and adapted upon the lifting means becoming inoperative to lock said door against further downward movement, and a floating means adapted to be engaged by said locking means to prevent the downward movement of the door, and means to guide said floating means laterally to prevent friction between the locking means and the floating means during the normal operation of the door.

2. In combination, a door, means for lifting the door, locking means connected to said door and normally held inoperative by said lifting means and adapted upon the lifting means becoming inoperative to lock said door against further downward movement, and a floating means adapted to be engaged by said locking means to prevent the downward movement of the door, and means to guide said floating means laterally to prevent friction between the locking means and the floating means during the normal operation of the door, and means to resist the downward movement of the floating means when the locking means locks to it.

3. In combination with a door, means to lift the door, means associated therewith for guiding the door, means connected therewith for receiving a locking rail, a locking rail, means to support said locking rail so that it can float laterally while resisting its downward movement, and a lock mounted on said guiding means adapted to engage with said rail when the lifting means is rendered inoperative, and means connecting said lock to said lifting means to render it inoperative during the normal operation of the door by the lifting means.

4. In combination with a door, means to lift the door, means associated therewith for guiding the door, means connected therewith for receiving a locking rail, a locking rail, means to support said locking rail so that it can float laterally while resisting its downward movement, and a lock mounted on said guiding means adapted to engage with said rail when the lifting means is rendered inoperative, and means connecting said lock to said lifting means to render it inoperative during the normal operation of the door by the lifting means, and yielding means for moving said locking means into engagement with the floating locking rail when an accident renders the lifting means of the door inoperative.

5. In a door, an emergency lock comprising a floating locking rail and a lock normally held inoperative against locking with the locking rail, said rail being adapted to move freely without binding laterally during the vertical movement of the lock with respect thereto when the lock is in its unlocked position.

6. In an emergency lock for a door, a floating guide rail adapted to have lateral movement, means to support said rail for lateral movement and against downward movement, a locking mechanism comprising a jaw adapted to engage said locking rail to cause it to move laterally during the normal operation of the door and to hold the locking rail in locking position during the abnormal operation of the door, and a lock normally out of engagement with said locking rail adapted to engage therewith and force it against one arm of the jaw during the abnormal operation of the door.

7. In a door, an emergency lock comprising a floating locking means, guiding means supporting a lock associated therewith, and a pivoted lock normally held inoperative, out of engagement with said locking means and adapted to an abnormal locking to engage with said locking means and force it against said guiding means.

8. In a door, an emergency lock comprising a jaw mounted on a door, a lock pivoted on the jaw and connected with the chain lift of the door, a floating locking means mounted within said jaw, and means of supporting said floating locking means for lateral movement but against downward movement.

9. In a door, a plate mounted thereon having an eye, a flexible member supported adjacent the top and bottom of the opening passing through said eye, and a pivoted locking member adapted to engage said flexible member, and a lifting chain for lifting said door connected to said pivoted locking member to normally maintain it out of engagement with said flexible member.

10. In a door, a bracket thereon, rollers mounted on said bracket, a locking guide plate having means for receiving a floating locking means, a floating locking means adapted to move laterally but not vertically, a pivoted lock adapted to engage said floating locking means, and a chain connected to said lock for normally holding it inoperative whereby if said chain should fail, the door would be prevented from descending by the engagement of said lock with said floating locking means.

11. In combination in a door, of a door, a bracket thereon, guide rollers mounted on said bracket, a slotted plate mounted on said bracket adapted to engage with a vertically disposed angular locking rail insertable therein, means of supporting said rail against downward movement while permitting free lateral movement, and a pivoted locking bit mounted on said plate adapted to engage with said locking rail, a chain for lifting said door normally connected to said locking bit to hold it inoperative, and means associated with said bit upon the release of said chain for forcing the locking bit into engagement with the locking rail.

RALPH H. GREEGOR.