Sept. 22, 1936. W. C. EDWARDS 2,054,898

DOOR OPERATOR

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Fig. 1.

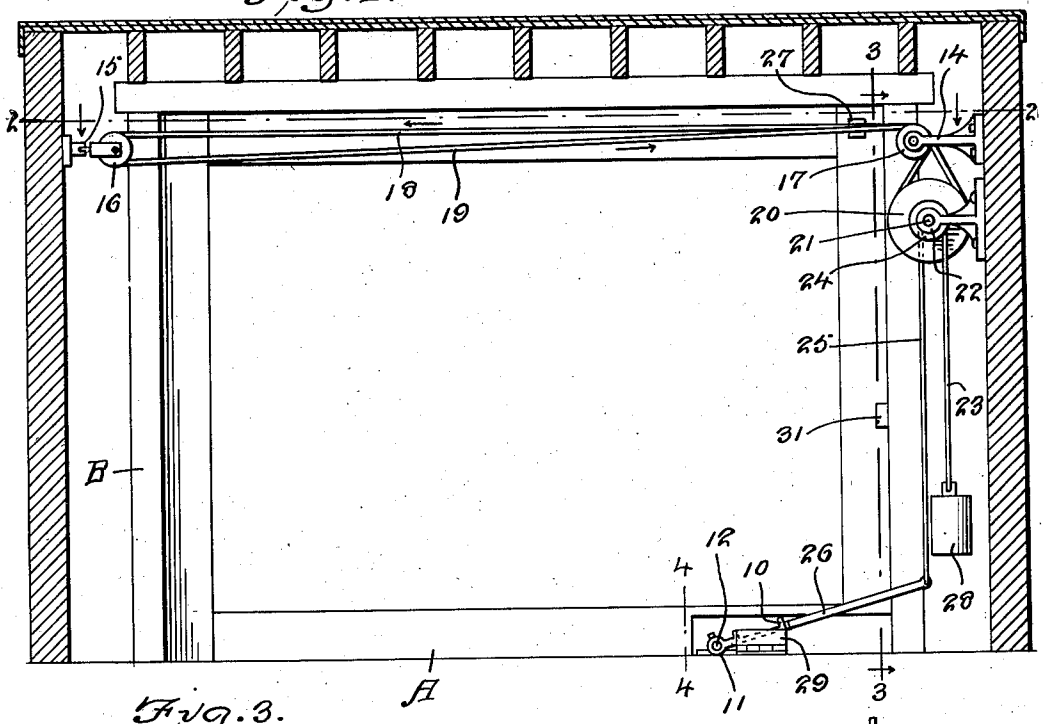


Fig. 3.

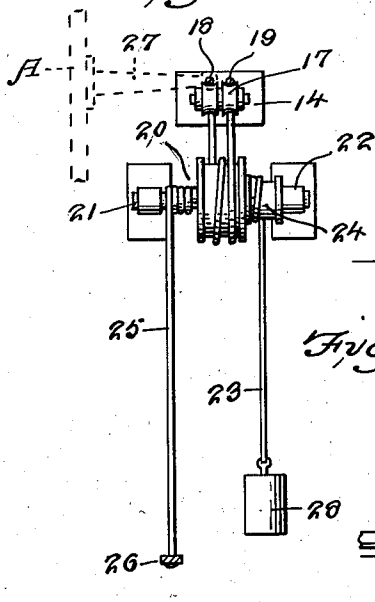


Fig. 5.

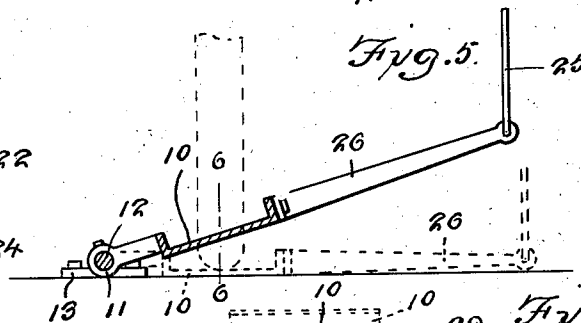


Fig. 6.

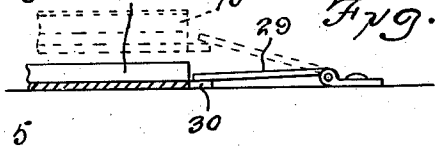


Fig. 4.

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Fig. 2.

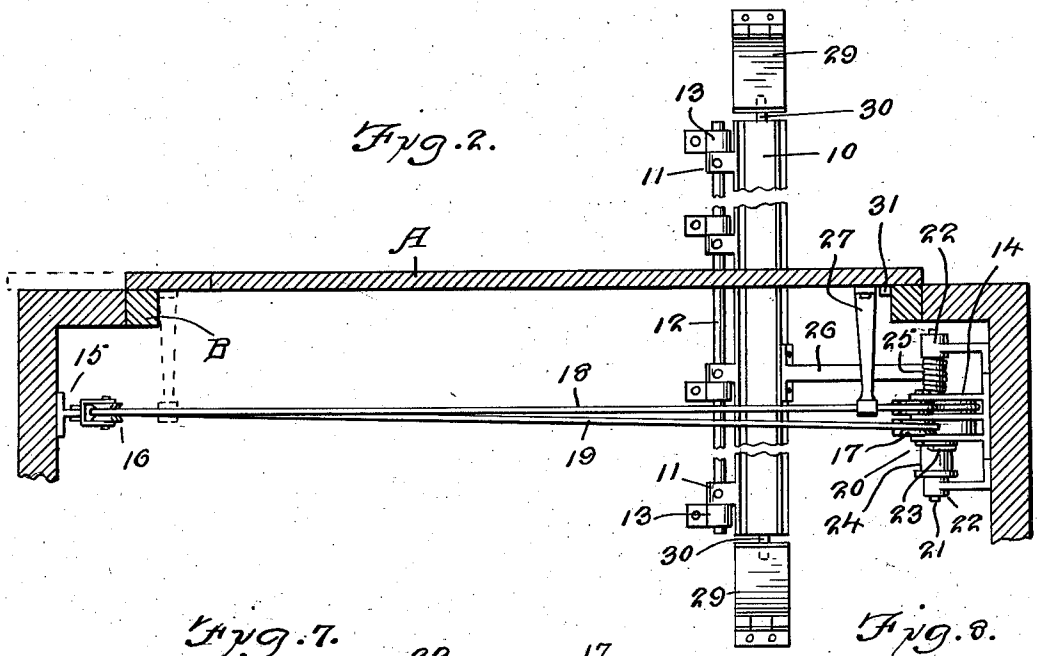


Fig. 7.

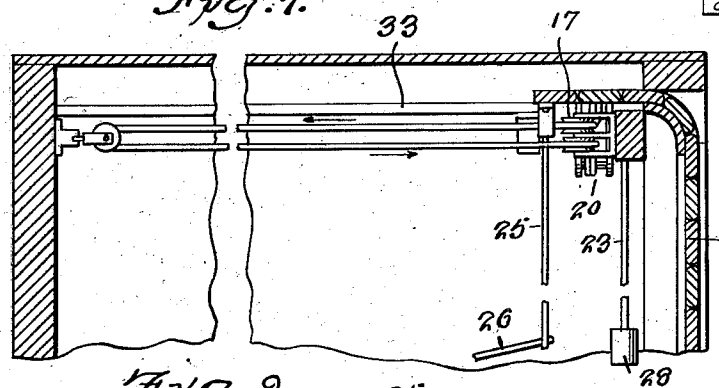


Fig. 8.

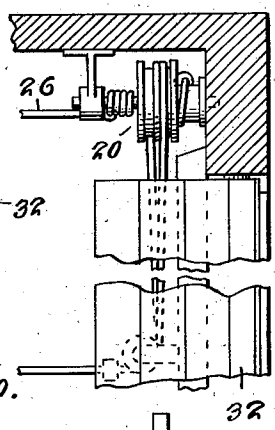


Fig. 9.

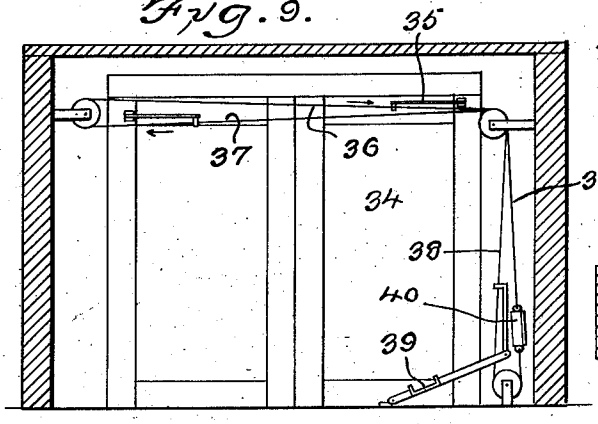
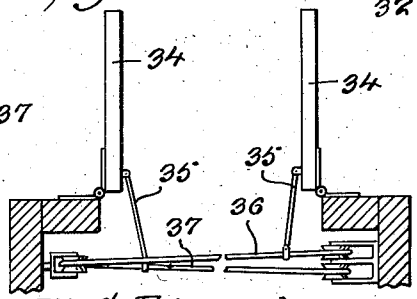


Fig. 10.



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Patented Sept. 22, 1936

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UNITED STATES PATENT OFFICE

2,054,898

DOOR OPERATOR

William C. Edwards, Little Rock, Ark.

Application November 19, 1935, Serial No. 50,579

4 Claims. (Cl. 268—40)

The invention relates to an automatically operated door and more especially to automatic opening and closing mechanism for doors, gates or the like.

The primary object of the invention is the provision of mechanism of this character, wherein through the use of a tread plate or rail the same will operate for the automatic opening of a door, gate or the like and subsequent to such opening the door, gate or the like will close, thereby eliminating the manual handling of the door, gate or the like for this purpose.

Another object of the invention is the provision of mechanism of this character, wherein the assembly thereof and the parts under such assembly are novel so that the automatic operation of a door, gate or the like is assured when a vehicle is driven onto a tread plate, rail or other actuating medium, the mechanism being applicable to either sliding or swinging doors, gates or the like.

A further object of the invention is the provision of mechanism of this character, wherein pressure from a load and the freeing of such pressure effects the automatic operation for opening and closing of a door, gate or the like and the actuator for such mechanism constitutes an approach to a way as guarded by such door, gate or the like and manual handling of the same will be avoided.

A further object of the invention is the provision of mechanism of this character, which is comparatively simple in construction, thoroughly reliable and efficient in its operation, automatic in action and inexpensive to manufacture and install.

With these and other objects in view, the invention consists in the features of construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawings, which disclose the preferred embodiment of the invention and pointed out in the claims hereunto appended.

In the accompanying drawings:

Figure 1 is an elevation of a doorway showing the mechanism constructed in accordance with the invention applied for the opening and closing of a door for said doorway.

Figure 2 is a sectional view on the line 2—2 of Figure 1 looking in the direction of the arrows.

Figure 3 is a sectional view on the line 3—3 of Figure 1 looking in the direction of the arrows.

Figure 4 is a sectional view on the line 4—4 of Figure 1.

Figure 5 is a sectional view on the line 5—5 of Figure 4.

Figure 6 is a sectional view on the line 6—6 of Figure 5.

Figure 7 is a fragmentary vertical transverse sectional view through a doorway and door showing a modified form of mechanism for the opening and closing of such door.

Figure 8 is a fragmentary top plan view thereof.

Figure 9 is a view similar to Figure 1 showing a further modification of the invention.

Figure 10 is a horizontal sectional view thereof with the doors of the swinging type in open position.

Similar reference characters indicate corresponding parts throughout the several views in the drawings.

Referring to the drawings in detail, particularly Figures 1 to 6, inclusive, A designates generally a sliding door which is of conventional kind and is mounted in any suitable manner for its sliding movement to close a doorway or frame B. This door A is automatically opened and closed by the mechanism constituting the present invention and hereinafter fully described.

The mechanism comprises a tread rail or plate 10 preferably formed with an upper channeled side to accommodate the tired wheel of a vehicle and this rail or plate is disposed to extend forwardly and rearwardly with relation to the door A at one side of the doorway or frame B so that the vehicle when tracking the rail or plate can make entry or exit to and from an enclosure as guarded by the door on the opening of the latter. The rail or plate 10 has pivot ears 11 fixed to a horizontally disposed turning shaft or pivot pintle 12 journaled in bearings 13, these being suitably fixed or stationarily mounted at a foundation of an enclosure or of a road bed so that the said rail or plate 10 is vertically movable for swinging action.

Arranged inwardly of the door A close thereto and fixedly supported are overhead brackets 14 and 15, respectively, the latter carrying a single pulley 16 while the bracket 14 is equipped with double pulleys 17, all of which have trained thereover a cable including the reversely traveling upper and lower stretches 18 and 19, these being adapted for reverse winding on a winch or windlass 20, its axle 21 being journaled in suitable bearings 22 while reversely wound upon this axle is a weight cable 23 this being adapted for winding and unwinding on a drum 24 and an actuator cable 25 which is adapted for winding

and unwinding on the axle 21 and is connected with an arm 26 fixed to and extended from the rail or plate 10. With the upper stretch 18 of the cable trained over the pulleys 16 and 17 is engaged an anchoring arm 27, this being carried by the door near the lead edge thereof and at the inner face of the same. Now it will be apparent that when the cable including the stretches 18 and 19 is operated the door A if opened will close and if closed will open, the opening of the door being automatically effected by pressure upon the rail or plate 10 while the closing of the door is accomplished by a weight 28 carried by the weight cable 23 on relieving pressure from the rail or plate 10.

Fore and aft of the rail or plate 10 are hinged depressing triggers 29, these resting upon extension ears 30 on the rail or plate 10 so that when a vehicle wheel rides upon either trigger 29 and onto the rail or plate 10 the latter will be actuated for operating the cable including the stretches 18 and 19 and on actuation of this rail or plate 10 the door which is normally closed will be automatically opened, there being provided on the door A a stop 31 which limits the closing movement thereof. The door A is susceptible of the automatic opening thereof from either side of the same due to the disposition of the rail or plate 10 and the triggers 29 cooperating therewith, these being beyond opposite sides of the door and onto which travels the vehicle wheel when making an approach to the door.

In Figures 7 and 8 of the drawings there is shown a slight modification, wherein the door 32 is of the flexible overhead sliding kind operating in suitable trackways 33 and with which the mechanism hereinbefore described is associated for the automatic opening and closing thereof.

In Figures 9 and 10 of the drawings there is shown a further modification, wherein the doors 34 are of the horizontally swinging duplex type and these have pivotally connected thereto the links 35 which also have a pivotal connection with the upper and lower stretches 36 and 37, respectively, of the cable 38, these stretches traveling reversely to each other and by such travel the doors will be automatically opened and closed. The cable 38 is actuated by the rail or plate 39 similarly to the working of the rail or plate 10 so that by imparting motion to the cable 38 the reversely trained stretches 36 and 37 thereof will automatically actuate the links 35 and thus the doors 34 will open and close automatically.

On the cable 38 is a suitable weight 40, this being necessary to the proper working of the mechanism when the mechanism is employed for use on doors in homes or other places.

It is to be understood that the device or mechanism in its use is not limited to doors, gates or the like, which are opened by the weight of an automobile as such mechanism or device can be operated by the weight of a person.

What is claimed is:

1. The combination with a doorway frame and a movable door, gate or the like, of a traveling cable having reversely movable stretches and having connection with the door, gate or the like, a normally raised laterally inclined depressible rail extending through the doorway to opposite sides and having an upper channel for guiding a vehicle wheel, means for imparting travel to the cable, a weighted cable coacting with said means and connected with said rail, and triggers arranged at opposite ends of the rail for guiding the vehicle wheel into the channels of the rail from either side of the doorway and initially depressing the said rail by pressure from said wheel.

2. The combination with a doorway frame and a movable door, gate or the like, of a traveling cable having reversely movable stretches and having connection with the door, gate or the like, a normally raised laterally inclined depressible rail extending through the doorway to opposite sides and having an upper channel for guiding a vehicle wheel, means for imparting travel to the cable, a weighted cable coacting with said means and connected with said rail, triggers arranged at opposite ends of the rail for guiding the vehicle wheel into the channels of the rail from either side of the doorway and initially depressing the said rail by pressure from said wheel, and extensions at opposite ends of the rail and forming bearings for said triggers.

3. The combination with a doorway frame and a movable door, gate or the like, of a traveling cable having reversely movable stretches and having connection with the door, gate or the like, a normally raised laterally inclined depressible rail extending through the doorway to opposite sides and having an upper channel for guiding a vehicle wheel, means for imparting travel to the cable, a weighted cable coacting with said means and connected with said rail, triggers arranged at opposite ends of the rail for guiding the vehicle wheel into the channels of the rail from either side of the doorway and initially depressing the said rail by pressure from said wheel, extensions at opposite ends of the rail and forming bearings for said triggers, and overhead hanger and guide means for said traveling cable.

4. The combination with a doorway frame and a movable door, gate or the like, of a traveling cable having reversely movable stretches and having connection with the door, gate or the like, a normally raised laterally inclined depressible rail extending through the doorway to opposite sides and having an upper channel for guiding a vehicle wheel, means for imparting travel to the cable, a weighted cable coacting with said means and connected with said rail, triggers arranged at opposite ends of the rail for guiding the vehicle wheel into the channels of the rail from either side of the doorway and initially depressing the said rail by pressure from said wheel, extensions at opposite ends of the rail and forming bearings for said triggers, overhead hanger and guide means for said traveling cable, and a pivotal mounting for said rail.

WILLIAM C. EDWARDS.