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HOLDING MEANS FOR CAR VESTIBULE TRAP DOORS

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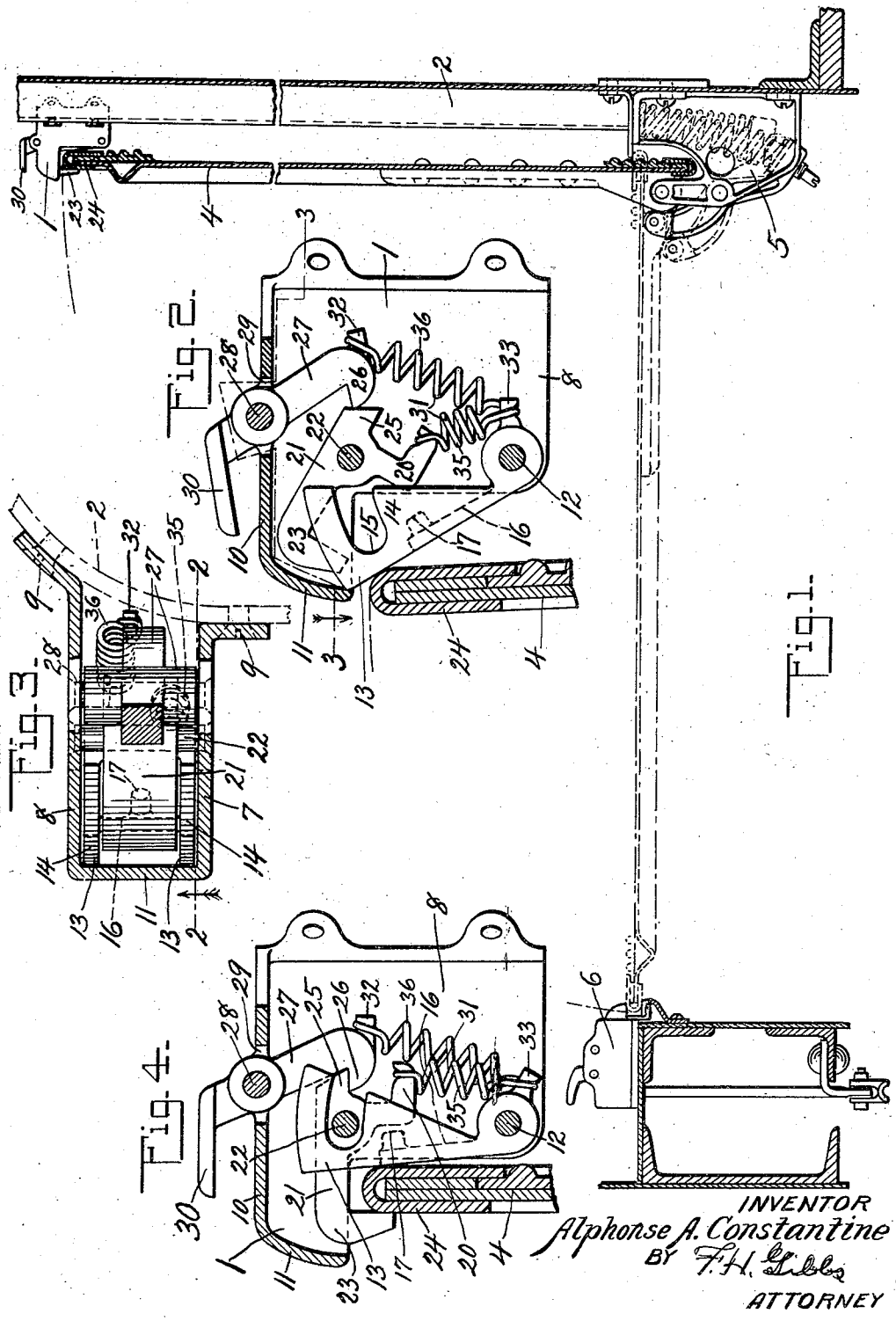

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

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HOLDING MEANS FOR CAR-VESTIBULE TRAPDOORS.

Application filed July 21, 1925. Serial No. 45,091.

Reference is had to the accompanying drawings, which illustrate the preferred form of the invention, though it is to be understood that the invention is not limited to the exact details of construction shown and described, as it is obvious that various modifications thereof within the scope of the claims will occur to persons skilled in the art.

In said drawings:

Fig. 1 is a partial vertical section of a car vestibule showing a trap door and a means for holding the door in open position, constructed in accordance with this invention, the door being shown in full lines in open position;

Fig. 2 is a vertical section of the door holding means on Fig. 1 taken on line 2—2 of Fig. 3, and showing the holding means in door releasing position;

Fig. 3 is a horizontal section taken on the line 3—3 of Fig. 2; and

Fig. 4 is a view similar to Fig. 2 showing the holding means in the door holding position.

This invention relates to a holding means for the trap doors of car vestibules and it is an object of this invention to provide an improved means for holding car vestibule trap doors in the open position. It is also an object of this invention to provide a holding means of the kind described having a lever actuated by the door to set the door holding means in door holding position and operated to force the door from the held position when the door holding means is disengaged from the door.

In the drawings, the improved door holding means 1 is shown secured to an end wall 2 of a car to hold in the open position a vestibule trap door 4 which is pivotally mounted on a door operating mechanism 5 such as is shown and described in my co-pending application, Serial No. 45,092 filed July 21, 1925, the door 4 being held in closed position as shown in dotted lines in Fig. 1 by a door locking mechanism 6 such as is shown and described in my co-pending application, Serial No. 45,090 filed July 21, 1925.

The door holding mechanism 1 comprises a casing or housing having spaced parallel sides 7 and 8 flanged to receive securing means 9 which hold the housing to the end wall 2. The side walls 7 and 8 are joined at the top by a top wall 10 and by a curved downwardly projecting front wall 11. Mounted in the side walls 7 and 8 is a pin 12 on which is pivotally mounted a lever 13 comprising spaced side members 14 having curved slots 15 and joined together for a portion of their length by the wall 16 having a projection or boss 17 thereon. The projection 17 engages with the bent arm 20 of a detent lever or latch 21 which is pivotally mounted on the pin 22 carried by the side walls 7 and 8. The detent lever 21 is provided with a hook-shaped arm 23 which engages the outer end 24 of the door 4 and with an arm 25 which is engaged by a shoulder 26 on an operating lever 27 pivotally mounted on pin 28 carried by the side walls 7 and 8. The operating lever 27 projects through an opening 29 in the top wall 10 and has its projecting end formed as an operating handle 30. Secured to one end of the bent arm 20 of the detent lever 21 is one end of the spring 31 which has its other end connected to a lug 32 formed integral with the lever 27 and its intermediate portion is caught by the arm 33 formed integral with the door operated lever 13. While the spring 31 is shown as a single spring connected to the three levers it will of course be understood that separate springs connecting the arm 20 and lever 27 with the arm 33 may be used.

With the door holding mechanism in door released position, as shown in Fig. 2, the door when raised will engage the lever 13 forcing back the lever 13 against the tension of the spring 31 which is increased as the lever 13 is forced back. As the lever 13 is forced back, the slots 15 engage the pin 22 and projection 17 contacts with the bent arm 20 of the detent lever 21 forcing the door engaging hook 23 of detent lever 21 downwardly and further increasing the tension of the portion 35 of the spring 31 between the arm 20 and the arm 33 as the arm 20 is swung upwardly. As the hook 23 is swung downwardly in engagement with the edge 24 of the door the arm 25 will move past the shoulder 26 and shoulder 26 will be drawn into engagement beneath the arm 25 by the tension of the portion 36 of the spring 31 connecting the lug 32 and the arm 33, thus locking the detent lever 21 in engagement with the door, the tension of the spring 31 being sufficient to hold the shoulder 26 beneath the arm 25

and secure the detent lever 21 in the door holding position, the parts then being as shown in Fig. 4.

To release the door the handle 30 is operated to withdraw the shoulder 26 from beneath the arm 25, an operation which increases the tension of the portion 36 of the spring. With the shoulder 26 withdrawn from beneath the arm 25 of the detent lever 21, the portion 35 of the spring 31 will operate the detent lever 21 to withdraw the door engaging hook 23 from the end 24 of the door whereupon the arm 13 will be actuated by the tension of both portions 35 and 36 of the spring 31 to force the top of the door outwardly.

What is claimed is:

1. In a door holding device, a door holding means, a locking means for said door holding means, a door operated means for actuating said door holding means to holding position and yielding means connecting said locking and door operated means.

2. In a door holding device, a door holding means, a locking means for said door holding means, a door operated means for operating said door holding means to holding position and yielding means connecting said door operated means to said door holding and locking means.

3. In a door holding device, a door holding means, a locking means for said door holding means, a door operated means for operating said door holding means to holding position and yielding means connecting said door operated and locking means and placed under increased tension by the operation of said locking means to release said door holding means.

4. In a door holding device, a door holding means, a locking means for said door holding means, a door operated means for operating said door holding means to holding position and yielding means connecting said door operated and door holding means and placed under increased tension by the operation of said door holding means to door holding position by said door operated means.

5. In a door holding device, a door holding means, a locking means for said door holding means, a door operated means for operating said door holding means into engagement with said locking means and yielding means connecting said door operated and locking means placed under increased tension upon the operation of said door holding means to door holding position by said door operated means.

6. In a door holding device, a door holding means, a locking means for said door holding means, a door operated means for operating said door holding means for engagement by said locking means and yielding means connecting said door operated means and said door holding and locking means placed under increased tension upon the operation of said door holding means by said door operated means.

7. In a door holding device, a door holding means, means for locking said door holding means in door holding position, door actuated means for shifting said door holding means to door holding position, and means connecting said locking means and said door actuated means and operating said locking means to locking position.

8. In a door holding device, a door holding means, means for locking said door holding means in door holding position, door actuated means for shifting said door holding means to door holding position and means connecting said door actuated means and door holding means and operating said door holding means to door releasing position upon movement of said locking means to release position.

9. In a door holding device, means for holding said door, means for locking said holding means in holding position and door operated means for operating said holding means to engage said locking means.

10. In a door holding device, a door holding means, means for locking said door holding means in door holding position and means resiliently connected with the locking means for operating said door upon release of said holding means.

11. In a door holding device, a door holding means, means for locking said door holding means in door holding position and means operating said door upon release of said holding means. and a yielding connection between said locking and door operating means.

12. In a pivoted closure holding device, a pivoted closure engaging element arranged to engage the free end of the closure when in open position, a latch co-acting with the pivoted element in holding the closure in open position and manually operable to permit the closure to swing to closed position, and means arranged in the path of movement of the closure for re-setting the pivoted element and actuated by the closure.

13. A door holding device comprising a casing, cooperating oppositely movable door engaging elements pivotally supported in the casing, a positive manually operable latch for retaining such pivoted elements in operative engagement with a door, such pivoted elements being arranged so that one of them will be contacted by the door and move the other into engagement with the opposite face of the latter.

14. In a pivoted door holder, a support, a pair of oppositely movable door engaging elements carried by the support and arranged to engage the opposite faces of the door incident to the opening movement of the latter, and latch means for retaining the movable elements in active engagement with the door.

15. In a pivoted door holder, a support, a

pair of oppositely movable door engaging elements carried by the support and arranged to engage the opposite faces of the door incident to the opening movement of the latter, latch means for retaining the movable elements in active engagement with the door, and means normally urging one of the movable elements against the door whereby to initially start the same to closed position upon disengagement of the latch means from the movable elements.

16. In a door holder, a support to be arranged at a point adjacent the upper end of a door hinged to swing about a horizontal axis, a resiliently urged pivoted element attached to the support and adapted to be engaged by the door when swung to a vertical position and to exert an outward thrust thereon, a movable door retaining element carried by the support and adapted to normally engage the door, and a latch normally engaging the movable door retaining element to retain the door in a vertical position which upon being rendered inoperative permits actuation of the resiliently urged element to start the door in its closing operation.

17. In combination, a casing, a pivoted lever mounted thereon to swing about an axis parallel to the axis of a hinged member to be held, an abutment pivoted in the casing and normally occupying a position to engage one face of the hinged member, a latch element pivoted to the casing and normally holding the pivoted lever in a position to engage the hinged member, and a contractile spring operatively engaging the abutment, pivoted lever and latch element to urge the same to active position.

18. In a device of the kind described, a door holding means, means for locking said door holding means and means resiliently connected to said door holding means and the locking means for operating the door upon release of the locking means.

19. In a device of the kind described, a door holding means, door actuated means for shifting said door holding means to door holding position, means for locking said door holding means in door holding position, and yielding means connecting said door holding means, locking means and door actuated means whereby upon release of the locking means said door actuated means releases said door holding means and operates the door.

20. In a device of the kind described, a door holding means, door actuated means for shifting said door holding means to door holding position, means for locking said door holding means in door holding position, yielding means connecting said door holding means and said locking means to said door actuated means whereby upon release of the locking means said door actuated means releases said door holding means and operates the door.

In witness whereof I have hereunto set my hand.

ALPHONSE A. CONSTANTINE.