

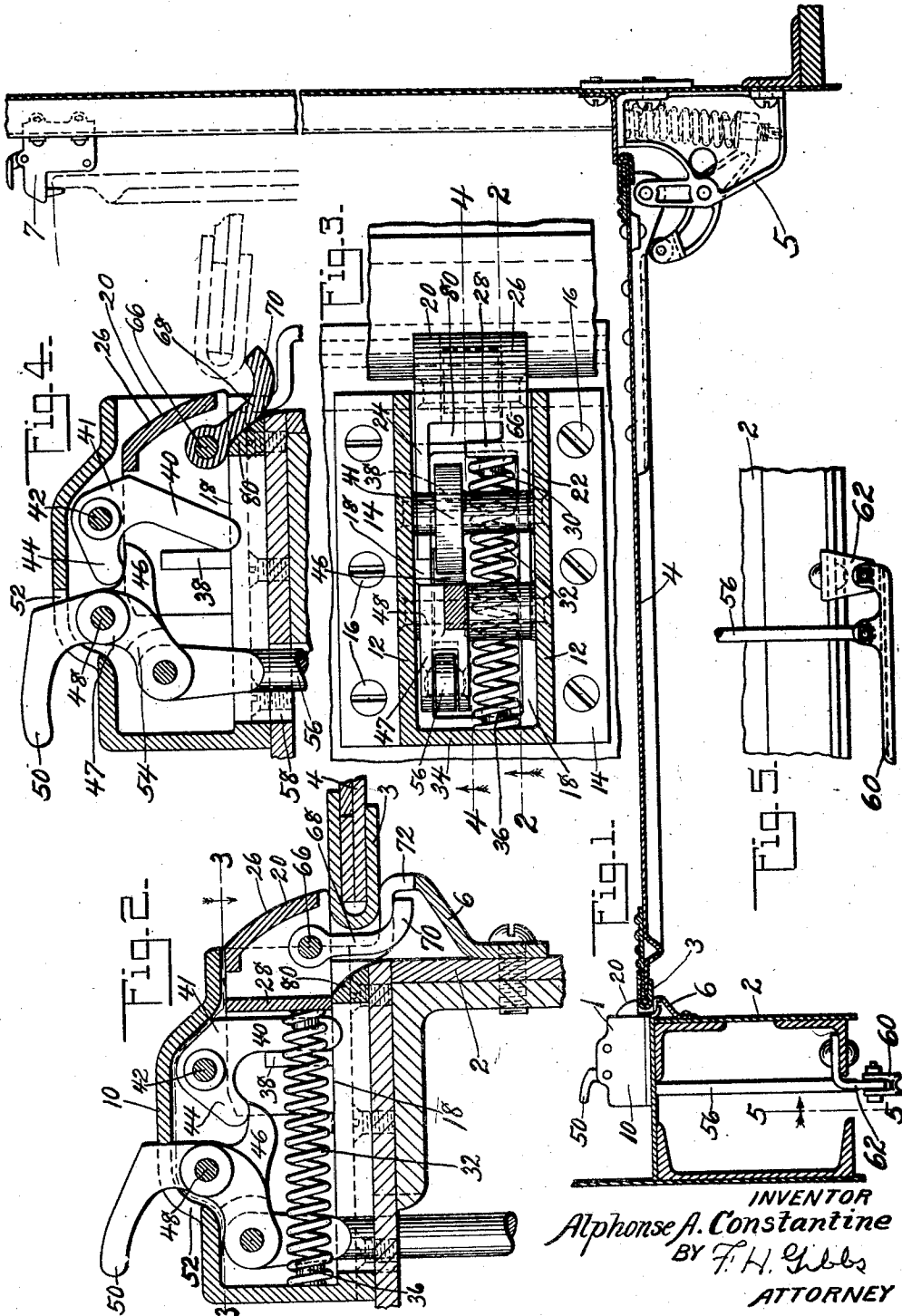
Nov. 2, 1926.

1,605,392

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LOCKING MECHANISM FOR CAR VESTIBULE TRAP DOORS

Filed July 21, 1925



UNITED STATES PATENT OFFICE.

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LOCKING MECHANISM FOR CAR-VESTIBULE TRAP DOOR.

Application filed July 21, 1925. Serial No. 45,090.

In the drawings:—

Fig. 1 is a partial vertical section of car vestibule showing a trap door equipped with trap door lock constructed in accordance with this invention, the door being shown in closed position;

Fig. 2 is a vertical section of the trap door lock of Fig. 1 taken on the line 2—2 of Fig. 3 and showing the lock in door-locking position;

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

Fig. 4 is a vertical section taken on the line 4—4 of Fig. 3 and showing the lock in the door releasing and starting position; and

Fig. 5 is a fragmentary section taken on the line 5—5 of Fig. 1 showing a means for operating the lock from without the car.

This invention relates to locking means for the trap doors of car vestibules and it is an object of this invention to provide an improved mechanism of the class described in which a sliding locking bolt, spring pressed to the locking position, carries a door lifting means which initiates the opening of the door, the door lifting means being shielded by the locking bolt when the bolt is in the door locking position and operated by the movement of the bolt to the door releasing position. It is also an object of this invention to provide an improved operating means for the sliding bolt of a locking mechanism of the class described.

In the drawings the improved locking mechanism 1 is shown applied to platform end sill 2 of a car vestibule so as to engage the edge 3 of the vestibule trap door 4, the trap door being operated by a door operating mechanism 5 such as is shown in my co-pending application, Serial No. 45,092 filed July 21, 1925.

The door locking mechanism 1 serves to retain the door in its closed position in engagement with the door stop and rest 6, the door being held in its open position by door holding mechanism 7 such as is shown in my co-pending application Serial No. 45,091 filed July 21, 1925.

The door locking mechanism 1 comprises a casing or housing 10 having side walls 12 provided with outwardly projecting flanges 14 by means of which screws or other fastening means 16 secure the casing 10 to the platform end sill 2. The walls 12 of the

housing 10 are thicker at the bottom to provide inwardly projecting shoulders 18 which serve as guides or slides for the irregularly shaped bolt 20 which rests on the shoulders 18 and projects through an opening at one end of the casing. The bolt 20 is formed with spaced parallel side walls 22 and 24 which are joined at their outer ends by a curved end wall 26. The side wall 22 is provided with an inwardly extending projection 28 carrying a boss 30 which serves to position one end of a spring 32 confined between the projection 28 and the end wall 34 of the housing 10, the other end of the spring 32 being positioned by a boss 36 formed integral with the end wall 34. The side wall 24 is provided with an inwardly extending projection 38 which is engaged by an arm 40 of a bell crank lever 41 pivotally mounted on a pin 42 carried by the side walls 12 of the housing 10. The other arm 44 of the bell crank lever 41 is engaged by an arm 46 of an irregularly shaped lever 47 pivotally mounted on a pin 48 carried by the side walls 12 of the housing 10. The lever 47 is formed with an operating arm 50 which projects through an opening 52 in the top wall of the housing 10 and with an arm 54 pivotally connected to one end of a link 56. The link 56 projects through an opening 58 in the platform end sill and has its other end pivotally connected to an operating lever 60 having one end pivotally secured to a bracket 62 carried by the angle 64.

Mounted in the side walls 22 and 24 of the bolt 20 is a pin 66 upon which is pivotally mounted a lever 68 having its free end curved outwardly as at 70. When the bolt 20 is in locking position the lever 70 extends between the outer edge 3 of the door 4 and the edge of the door opening and projects into an opening 72 formed in the door stop and support 6, the curved outer end 70 projecting slightly beneath the edge 3 of the door.

When the door is locked in closed position, the locking mechanism will be in the position shown in Fig. 2 with the bolt 20 held over the outer edge 3 of the door by the spring 32 and with the lever 68 extending into the opening 72 and beneath the edge 3 of the door. To withdraw the bolt 20, the bolt will be operated either by operating the lever 60 or the operating arm 50,

which will cause the arm 46 to operate the bell crank lever 41, which due to engagement of its arm 40 with projection 38 on the bolt 20 will retract the bolt from above the edge of the door when either the lever 60 or the arm 50 is pressed downwardly. Movement of the bolt 20 inwardly of the casing 10 will bring the lever 68 into contact with the curved cross piece 80 which connects the side walls 12 of the housing at the bottom and lies substantially flush with the edge of the door opening. Engagement of the lever 68 with the cross piece 80 will force the free end of the lever 68 upwardly into engagement with the outer edge 3 of the door as the bolt 20 is moved into the housing 10 so that as the bolt is retracted the outer edge 3 of the door will be forced upwardly by the end of the lever 68. Releasing the operating lever 60 or the arm 50 after the door is raised will permit the spring 32 to force the bolt outwardly whereupon the lever 68 will drop into the opening 72 in the door stop 6. Dropping the door to its closed position will cause the outer edge 3 of the door to engage the curved outer face 26 of the bolt 20 whereupon the bolt will be forced back sufficiently to permit the door to engage with the stop 6 whereupon the spring 32 will force the bolt 20 outwardly into door locking position.

It will be noted that the outward movement of the bolt 20 is limited by the engagement of the arm 50 with the front wall of the opening 52 and that the lever 68 is mounted so as to be protected by the side walls 22 and 24 and the end wall 26 of the bolt.

What is claimed is:

1. In a trap door locking mechanism, a door locking means and a door actuating means movably mounted on said locking means.
2. In a trap door locking mechanism, a door locking means and a door actuating means pivotally mounted on said door locking means.
3. In a trap door locking mechanism, a door locking means and a door actuating means movably mounted on said locking means and operated by movement of said door locking means.
4. In a trap door locking mechanism, a door locking means and a door actuating means pivotally mounted on said door locking means and operated by movement of said door locking means to door releasing position.
5. In a trap door locking mechanism, a sliding bolt, a door actuating means carried by said bolt and means operating said door opening means to open the door upon retraction of said bolt.
6. In a trap door locking mechanism, a sliding bolt and a door actuating means

carried by said bolt, said door opening means being shielded by said bolt.

7. In a trap door locking mechanism, a sliding bolt and a door actuating means pivotally mounted on said bolt.

8. In a trap door locking mechanism, a sliding bolt, an operating lever for said bolt and a door actuating means carried by said bolt, said door actuating means being operated by movement of said bolt.

9. In a trap door locking mechanism, a sliding bolt, an operating lever to retract said bolt, means yieldingly pressing said bolt outwardly and a door actuating lever carried by said bolt and operated by the retraction of said bolt.

10. In a trap door locking mechanism, a sliding bolt, an operating lever to retract said bolt, and a door actuating lever pivotally mounted on said bolt.

11. In a trap door locking mechanism, a sliding bolt, an operating lever to retract said bolt and a door actuating lever pivotally mounted on said bolt, said door opening lever being operated by the retraction of said bolt.

12. In a trap door locking mechanism, a sliding bolt, an operating lever to retract said bolt, a door actuating lever pivotally mounted on said bolt and means shielding said door actuating lever carried by said bolt, said door opening lever being operated by the retracting of said bolt.

13. In a trap door locking mechanism, a sliding bolt, a door actuating lever pivotally mounted on said bolt and a fixed abutment engaging said lever upon retraction of said bolt.

14. In a trap door locking mechanism, a bolt, a door actuating lever carried by said bolt and an abutment operatively engaging said lever upon movement of said bolt.

15. In a trap door locking mechanism, a sliding bolt, a door actuating lever pivotally mounted on said bolt, yielding means pressing said bolt outwardly, an operating lever for said bolt and means for operating said operating lever.

16. In a trap door locking mechanism, a sliding bolt, a door actuating lever pivotally mounted on said bolt, yielding means pressing said bolt outwardly and operating means to retract said bolt, said bolt shielding said door actuating lever.

17. In a trap door locking mechanism, a housing, a bolt slidably mounted in said housing, a bell crank lever within said housing and operatively connected to said bolt and a lever pivotally mounted in said housing and having an arm operatively engaging said bell crank lever and an arm projecting through an opening in said housing.

18. In a trap door locking mechanism, a housing, a bolt slidably mounted in said

housing, a bell crank lever mounted within
said housing and operatively connected to
said bolt and a lever operatively connected
to said bell crank lever and operable from
5 both sides of the trap door.

19. In a trap door locking mechanism, a
housing, a bolt slidably mounted in said
housing, a bell crank lever operatively con-
nected to said bolt and an operating lever
10 mounted in said housing and operatively
connected to said bell crank lever.

20. In a trap door locking mechanism, a
housing, a locking bolt mounted in said
housing, a bell crank lever operatively con-

nected to said bolt, an operating lever 15
mounted in said housing and operatively
connected to said bell crank lever and yield-
ing means engaging said bolt and housing.

21. In a trap door locking mechanism, a
housing, a locking bolt mounted in said 20
housing, a bell crank lever operatively con-
nected to said bolt, an operating lever
mounted in said housing and operatively
connected to said bell crank lever and door
actuating means carried by said bolt. 25

In witness whereof I have hereunto set
my hand.

ALPHONSE A. CONSTANTINE.