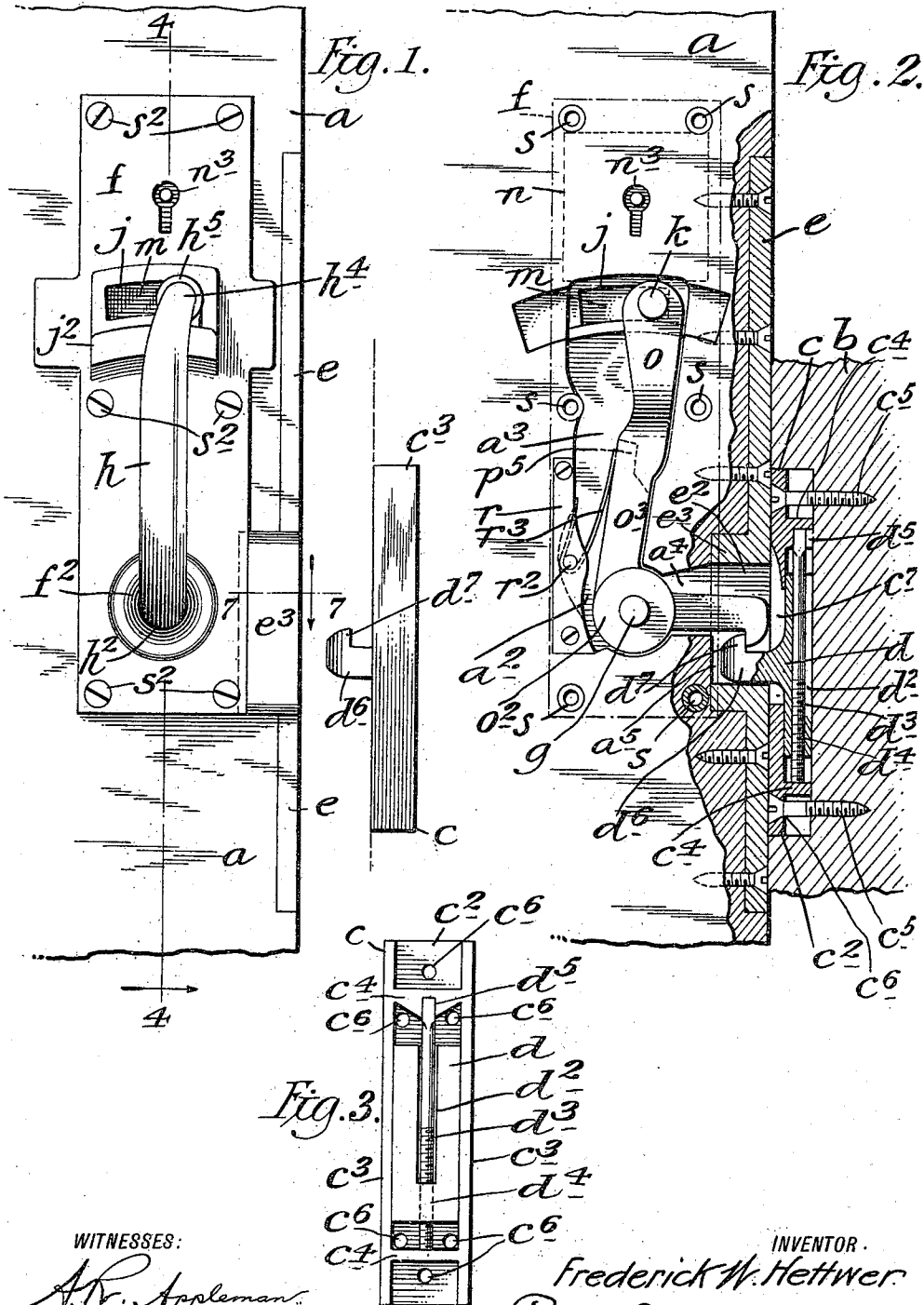


975,037.



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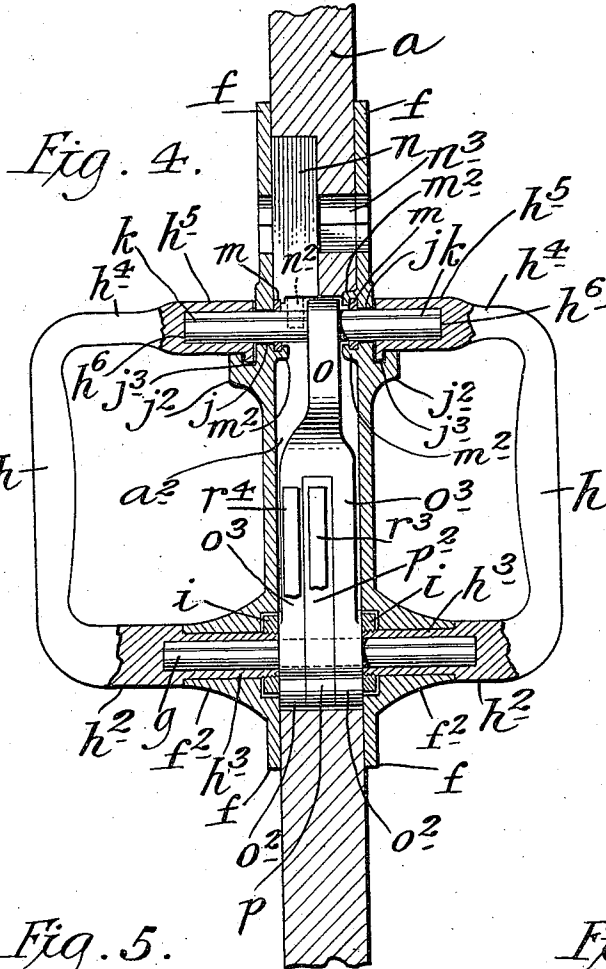


Fig. 8.

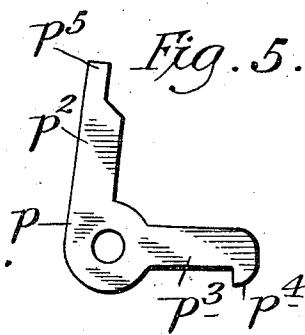
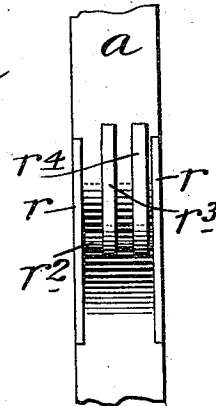
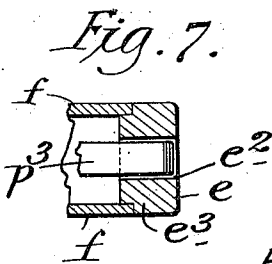


Fig. 6.



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UNITED STATES PATENT OFFICE.

FREDERICK W. HETTWER, OF BROOKLYN, NEW YORK.

SLIDING-DOOR LOCK.

975,037.

Specification of Letters Patent.

Patented Nov. 8, 1910.

Application filed July 19, 1910. Serial No. 572,696.

To all whom it may concern:

Be it known that I, FREDERICK W. HETTWER, a citizen of the United States, and residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Sliding-Door Locks, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to door locks, and particularly to locks designed for use in connection with sliding doors such as are used on street cars, elevated railway cars, subway cars and the like; and the object thereof is to provide a lock of this class which is simple in construction and operation and which will not get out of order and frequently need repair, and the construction of which is such that the fastening of the door is automatically performed when the door is closed, the said lock being provided at each side of the door with yoke-shaped handles which are swung backwardly in the operation of unfastening and opening the door, and which are also used to close the door.

My invention is an improvement on a well-known form of lock of the class specified, and is fully disclosed in the following specification of which the accompanying drawing forms a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which;—

Figure 1 is a side view of a part of a sliding door provided with my improved lock and showing also that part of the lock which is connected with the door frame; Fig. 2 a sectional side view showing part of the door frame and part of the door and showing my improved lock, one side plate, or that part thereof which is secured to the door being removed; Fig. 3 an inside view of that part of the lock which is connected with or secured to the door frame; Fig. 4 a section on the line 4—4 of Fig. 1; Fig. 5 a detail view of a part of the lock which is secured to or in the door and which operates in connection with that part of the lock which is secured to or in the door frame; Fig. 6 a side view of a plate, two of which are employed in connection with that part of the lock which is secured to or in the door; Fig. 7 a

partial section on the line 7—7 of Fig. 1, 55 and;—Fig. 8 an inside view of a detail of a spring construction shown in Figs. 2 and 4.

In the drawing forming part of this specification I have shown at *a* a part of a sliding door, and at *b* a part of the door frame, 60 and in the practice of my invention I counter-sink in the face of the door frame *b* a casing *c* consisting of a front plate *c*² and side plates *c*³ and provided adjacent to each end with transverse members *c*⁴, and said casing *c* is secured in the door frame by screws *c*⁵ passed through holes *c*⁶ in the front plate thereof.

The front plate *c*² of the casing *c* is provided with a central longitudinal slot *c*⁷, and 70 mounted in said casing and movable between the transverse members *c*⁴ is a sliding block *d*, in the back of which is a longitudinal groove *d*², in which is placed a screw *d*³. The groove *d*² does not extend entirely 75 through the block *d*, the lower end portion of said screw being passed through a threaded aperture *d*⁴ in line with said groove and the upper end portion of said screw is angular in cross section and adapted to fit in 80 a corresponding recess *d*⁵ in the transverse member *c*⁴ of said casing *c*, while the lower end portion of said screw bears on the transverse member *c*⁴.

The block *d* and screw *d*³ may thus be removed from the casing *c*, and by turning the said screw by means of the angular upper end thereof the block *d*³ may be adjusted on said screw into any desired position and said block and screw may then be returned to 90 their position in said casing and vertically of the door frame. The block *d* is provided centrally with an outwardly directed catch *d*⁶ having an upwardly directed nose piece *d*⁷.

Within the door *a* is formed an L-shaped 95 chamber *a*², the longer end *a*³ of which extends upwardly and the shorter member *a*⁴ of which extends and opens outwardly in the direction of the door frame, and secured to the edge of the door is a plate *e* provided 100 with an aperture *e*², around which is a boss *e*³, and said aperture communicates with the shorter member *a*⁴ of the chamber *a*² and extends below the same, or is provided with a downwardly directed extension *a*⁵ adapted 105 to receive the catch *d*⁶ of the block *d* when the door is closed.

Secured to the opposite sides of the door

and inclosing the chamber a^2 are lock plates f , and passing transversely through the heel portion of the chamber a and through the plates f is a bolt g , and at the point where the bolt g passes through said plates the latter are provided with conical collars or projections f^2 .

My improved lock also comprises two yoke-shaped handle members h , one at each side of the door, and the lower arms of these handle members are provided with sleeves h^3 which enter the conical collars or projections f^2 , and screwed on to the inner ends of said sleeves are nuts i which fit in corresponding recesses in the inner faces of the plates f as clearly shown in Fig. 4 and are adapted to turn in said recesses. The plates f are also provided at a predetermined point above the conical collars or projections f^2 with transversely ranging and arc-shaped slots or openings j below which are transverse curved shoulders or projections j^2 , in the top surfaces of which are grooves j^3 , and the upper arms h^4 of the yoke-shaped handles h are provided with heads h^5 in which are formed sockets h^6 adapted to receive the ends of a bolt k passed transversely through the slots or openings j , and in the operation of the door as hereinafter described the yoke-shaped arms h may be swung forwardly and backwardly and the bolt k in this operation moves forwardly and backwardly in the slots or openings j , and mounted on said bolt and on the inner sides of the lock plates f are slide plates m , one of which is shown detached in Fig. 6, and these plates keep the slots or openings j closed at all times.

Mounted in the door between the top end portions of the lock plates f is an ordinary lock n comprising a casing having a bolt n^2 , and this bolt is adapted to be operated by a key inserted through a key hole n^3 in either side of the door, and the object of this lock and its bolt n^2 is to lock the handles h of my improved door lock against operation when the door is closed, or at any other time; but the lock n and its method of operation forms no part of my invention.

The plates m are movable in four keepers m^2 , three of which are formed on or in connection with the plates f , in the form of construction shown, and the other of which is formed on or in connection with the casing of the lock n , but these keepers may be formed in any desired manner so as to hold the plates m in proper position.

The bolt k passes through the upper end portion of an arm o , the lower end portion of which is fork-shaped in form and the separate legs thereof provided with heads o^2 through which the bolt g passes and mounted on the bolt g between the side portions o^2 of said arm is a bell crank lever p , one arm p^2 of which ranges upwardly and the other arm p^3 of which ranges outwardly, and is

provided with a downwardly directed nose p^4 adapted to engage the nose d^7 of the catch d^6 formed in connection with the block d which is mounted on the screw d^3 .

The upwardly directed arm p^2 of the crank lever p is provided with a projection p^5 adapted to fit in a corresponding recess at the upper end of the fork in the arm p^3 , and secured in the back of the chamber a is a casing or plates r as shown in detail in Figs. 2, 4 and 8, and in or to which is secured, as shown at r^2 , a spring r^3 which is adapted to bear on the back of the upwardly directed arm p^2 of the crank lever p , and another spring r^4 is also secured in or to the casing or plates r and normally bears on one side portion of the arm o , and serves to force said arm outwardly.

One of the lock plates f is provided with threaded bushings s , and in practice screws s^2 are passed through the other lock plate and into said bushings, and this securely binds the said plates together and also binds the separate parts of the lock, or that part thereof which is secured to or in the door together, and by taking out the screws s^2 the plates f may be disconnected and detached from the door, and at the same time the separate parts of the lock may be taken out and disconnected for repair or other purposes.

The boss e^3 which is formed in connection with the plate e and incloses the aperture e^2 reinforces the door at this point and protects the catch d^6 of the block d , and the arm p^3 of the crank lever p , and prevents injury to the door in the operation of these parts, while the casing c protects the door frame and prevents injury thereto and the plate e and lock plates f protect the door and also prevent injury thereto.

The operation will be readily understood from the foregoing description when taken in connection with the accompanying drawing and the following statement thereof. Supposing the door to be in a closed position as shown in Fig. 2. In this position the arm p^3 of the crank lever p engages the catch d^6 , as clearly shown in said figure. If now it is desired to open the door one of the yoke-shaped arms h is grasped from either side of the door and moved backwardly. This operation moves both of said yoke-shaped arms backwardly as will be readily understood, the bolt k sliding in the slots or openings j , and at the same time the upper arm of the lever p is moved backwardly, the outwardly directed arm p^3 of said lever is raised and disconnected from the catch d^6 and the door may be moved backwardly and opened by the same operation.

In order to close the door all that is necessary is to grasp one of the yoke-shaped handles h and pull it forwardly. This operation moves the door into the closed position

as shown in Fig. 2, and in this operation the nose p^4 of the arm p^3 of the lever p strikes the nose d^7 of the catch d^6 and moves upwardly thereover and drops into the engaging position, as shown in said figure, and this operation of the lever p is automatic, as will be readily understood, said operation being made automatic by the spring r^3 .

As hereinbefore stated the slide plates m close the transverse slots or openings j at all times and this prevents any dust or dirt from entering the lock or that part thereof which is secured to the door.

If by reason of the sagging of the door or of the door frame, or if for any other reason the catch d^6 of that part of the lock which is secured to the door frame should need adjustment at any time, all that is necessary is to open the door and detach the casing c from the door frame and adjust the block d from the screw d^3 as herein described.

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

1. A lock of the class described, comprising two side plates and two vertically arranged yoke-shaped handles, a bolt passing through said side plates and into the lower arms of said handles, a bolt passing through said side plates and into the upper arms of said handles, said last named bolt being movable in transverse slots or openings formed in said side plates, a fork-shaped arm mounted on the first named bolt and through the upper end of which the other bolt passes, a crank lever mounted on the first named bolt between the side members of said arm, and provided with upwardly and outwardly directed members, and a spring for forcing said lever outwardly, said lever and said arm being provided with means for limiting said outward movement of said lever.

2. In a lock of the class described, two side plates, a bottom bolt passing through the bottom parts thereof, a top bolt passing through transverse slots in the top part of said plates and movable transversely in said slots, yoke-shaped handles mounted on the end portions of said bolts, slide plates mounted on the top bolt and adapted to close said slots, a fork-shaped arm mounted on the bottom bolt and through the upper end of which the top bolt passes, a crank lever mounted on the bottom bolt and one arm of which extends upwardly and the other outwardly, said arm and said crank lever being provided with means for limiting the outward movement of said lever, and springs

for forcing said lever and said arm outwardly.

3. The combination with a sliding door of a lock device, said device consisting of two plates secured to the opposite sides of the door, a bolt passing through the bottom part of said plates and through said door, a top bolt passing through the top portions of said plates and through said door, arc-shaped handles mounted on the opposite end portions of said bolts, the top bolt being also movable backwardly and forwardly in transverse slots or openings in said plates, slide plates mounted on said bolt and adapted to close said slots or openings, a fork-shaped arm mounted on the bottom bolt and through the upper end of which the top bolt passes, a crank lever mounted on the bottom bolt between the side portions of said arm and provided with upwardly directed and outwardly directed members, said lever and said arm being provided with means to limit the outward movement of the crank lever, a spring for forcing said crank lever outwardly and a spring for forcing said arm outwardly.

4. In a lock of the class described, two side plates, a bottom bolt passing through the bottom parts of said plates, a top bolt passing through transverse slots in the top part of said plates and movable transversely in said slots, handle members mounted on the end portions of said bolts, an arm mounted on the bottom bolt and through the upper end of which the top bolt passes, and a crank lever mounted on the bottom bolt and one arm of which extends upwardly and the other outwardly, said arm and said crank lever being provided with means for limiting the outward movement of said lever, and means for forcing said lever and said arm outwardly.

5. In a lock of the class described, a catch device comprising a casing having a front plate provided with an opening, a rod removably mounted back of said plate, and a block adjustable on said rod and provided with a catch arm which extends outwardly through said opening.

In testimony that I claim the foregoing as my invention I have signed my name in presence of the subscribing witnesses this 18th day of July 1910.

FREDERICK W. HETTER.

Witnesses:

C. E. MULREANY,
JOSEPH GLANZROK.