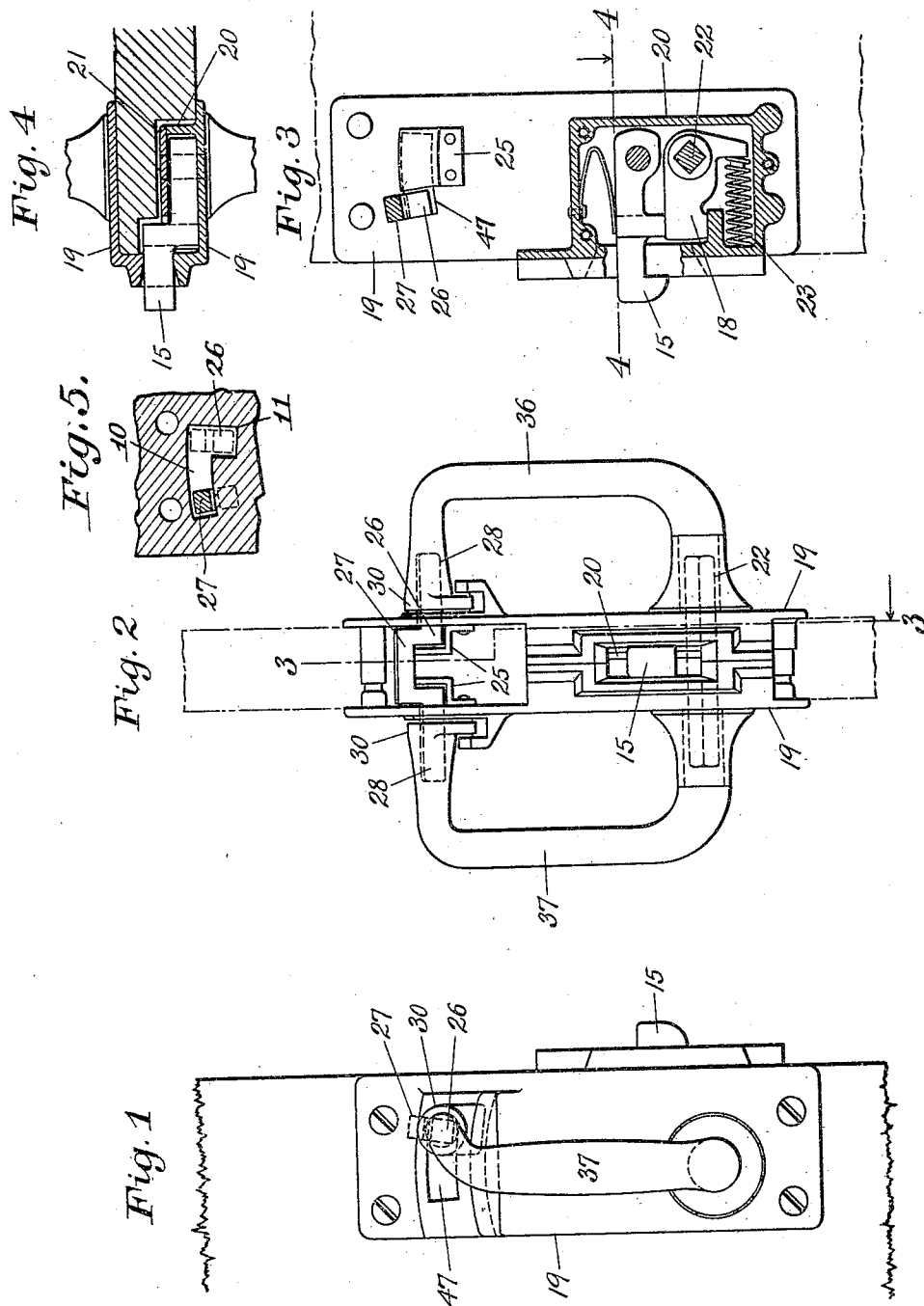


F. E. HOWARD.
DOOR LATCH.
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UNITED STATES PATENT OFFICE.

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DOOR-LATCH.

945,540.

Specification of Letters Patent.

Patented Jan. 4, 1910.

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To all whom it may concern:

Be it known that I, FRANK E. HOWARD, a citizen of the United States, and resident of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Door-Latches, of which the following is a full, clear, and exact specification.

This invention relates to improvements in latch mechanism for sliding doors, of the class shown in U. S. Patent 720,349, granted Feb. 10, 1903, to C. P. and F. E. Howard.

Figure 1 is a side view of my improved latch mechanism shown in position on a door. Fig. 2 is a front edge view of the said mechanism, the door being indicated only by dot-and-dash lines. Fig. 3 is a side view in section on the line 3—3 of Fig. 2, showing the interior mechanism; and Fig. 4 is a plan view in section taken on the line 4—4 of Fig. 3. Fig. 5 is a side view showing a preferred method of mortising the door for completely masking the opening.

In this invention the latch and its immediately associated devices are appurtenant to one of the side plates, instead of being mounted in a separate lock frame, which must be mortised in from the edge of the door, as in the patent above referred to. Thus in the present invention all the mechanism is carried by the two side plates, instead of being in three separate parts. These parts must be carefully set in working alinement with each other, in fitting them to a door; and it is much easier thus to fit the two side plates in alinement than it is to bring a third member, seated in an independent mortise, into working alinement with the other two parts.

The present invention also comprises means for connecting the swinging handles or other parts of door mechanism through an elongated slot or opening in the door, in such a way as to avoid having a direct opening through the door at the elongated portion of the opening.

In the mechanism of the aforesaid patent, the coupling rod 40 extends straight through a slotted elongated opening 47 in the door plates and door, so that a considerable portion of that elongated opening is exposed to view entirely through the door at both positions of the handles. It is desirable to avoid these direct through-going

openings, and thereby prevent the passage therethrough of air, cinders, dust and other matter with which the air is laden, especially in and around railway cars, on which these latches are extensively used. In the present invention these difficulties are overcome by providing a shield or screen between the two faces of the door, and thus substantially covering the elongated opening, or at least the portions thereof which are in view when the latch mechanism is at rest, and by making the coupling or connecting rod with an offset which arches over the shield or screen.

The latch 15, its tumbler 18, the spindle 22 and the swinging handles 36 and 37 are in construction, function and mode of operation substantially like the correspondingly numbered parts in the aforesaid patent. In this invention, however, the latch 15 and the tumbler 18 are pivotally supported upon the inner side of one of the door plates as 19, being preferably inclosed in a casing 20 appurtenant to the plate, and provided with the customary lock cover 21. By thus having the latch mechanism appurtenant to one of the side plates, the door may be mortised or recessed from the side to receive the casing 20, without the exercise of any particular care or skill, it being only necessary to cut away the wood to clear the casing, since the latter is supported, not by the wood, but by the door plate, instead of having to mortise the door accurately from the edge thereof so as to support the latch mechanism in correct working position relative to its operating mechanism as in the case of the aforesaid patent. The door plates are applied to opposite sides of the door, and their correct relative position is easily determined and established.

In the arrangement of the latch mechanism shown herein a coiled spring 23 is used for operating the tumbler 18, instead of a flat spring, as shown in the aforesaid patent.

In order to avoid exposing a direct passage through the door at the elongated portion of the slotted opening 47 in each of the side plates, one or more screens or shields 25 are located between the two side plates. One of these screens is preferably fastened to each of the door plates 19, as best shown in Figs. 2 and 3, by means of screws or rivets. These screens are herein shown to be

fastened to the side plates on the under sides of the elongated openings; and extend upwardly slightly beyond the boundaries of these openings, so as to shut out the direct range of sight through those openings. The coupling rod 26, instead of being straight as shown in the aforesaid patent, is herein provided with a crooked or offset portion 27, best shown in Figs. 1 and 2, which arches over the screen or screens 25, the ends 28 being in line with each other, and extending through the slotted openings 47 of the side plates, and into the ends of the loop form handles 36 and 37, thereby coupling these two handles to swing together in the same way, and to the same effect as in the aforesaid patent.

For convenience, both in assembling the parts of this latch mechanism, and for applying it to a door, the coupling rod 26 is preferably made detachable from both of the handles 36 and 37; and in such cases the screens 25 are not made to extend the full length of the slotted openings 47, a portion of those openings being left uncovered as shown in Fig. 3, sufficient to enable the coupling rod 26 to be slipped into place, without removing or otherwise disturbing the screens 25, which in such cases may be riveted firmly to place. In most instances, however, the length of screen shown in Fig. 3, and the extent therein shown to which the screen covers the opening, is sufficient, since the portion of the slotted opening not thus covered by the screen is the portion at which the handles stand when in their closed position as shown in Fig. 1, at which position the enlarged shoulders 30 of the handles 36 and 37 adjacent to the slotted openings 47 sufficiently cover the end of the slot 47 which is not covered by the screen or screens 25. In such an arrangement, when the handles 36 and 37 are moved away from the position shown in Fig. 3, to open the door, the left hand end of the slot 47, as viewed in Fig. 3, would be exposed and show an opening clear through the door. But this exposure occurs only at intervals and for a short time during the opening movement of the door, the handles being for the greater part of the time in their closed position shown in Figs. 1 and 3. Where it is desired to entirely mask or cover the slotted opening so that no portion of it shows the aperture at any time, the door may be mortised as shown in Fig. 5. The right hand end of the mortise 10 is extended downwardly at 11 to permit the insertion of the coupling rod 26, the entering position of which is shown by dot-and-dash lines. The coupling rod can then be moved to the left to the position shown in full lines in the same figure, after which the door plates 19 with their appurtenant screens 25 may be applied each from its own side of the door. Thus the screens when in

the position shown in Fig. 3 will cover the downward extensions 11 of the mortise, while the sight through the left hand ends of the elongated openings 47 will be closed by the intervening unmortised portion of the door.

The means herein shown for connecting the moving parts of latch mechanism through a slotted opening in a door, may be employed otherwise than in connection with swinging handles, or with handles which operate upon the particular kind of latch mechanism herein shown.

It is considered desirable, as being indicative of the character of the mechanism, to have the slotted openings 47 in the side plates visible from both sides of the door, rather than to cover them on the outside as might readily be done by extending the flange-like projections from the hubs 37 toward the left as shown in Fig. 1, far enough to cover the openings 47 on their outer sides. But such external covers would tend to mask or conceal the real character of the door mechanism; and would make less evident to strangers the manner of operating the door. With the elongated openings 47 plainly showing on both sides of the door, it is evident at once, even to those who may be approaching such a door mechanism for the first time, that the handle is to be swung in the direction of the visible opening. By the present invention I am enabled to preserve this useful and suggestive feature of the visible elongated opening, while overcoming the objections of a through-going opening, which could be looked through, and would permit the passage of cold air, cinders and dirt.

As stated in the aforesaid patent 720,349, the ends of the slot in the plate serve as abutments or stops against which the coupling rod bears when pushing the door open or shut, by means of the handles. In some instances it is desirable, and even necessary, to apply the lock mechanism only upon one side of a door, so that the door can only be operated from that side. In such instances the through-going feature of the coupling rod may be omitted or modified so that it only projects into the extended slot in the door plate far enough to utilize the ends of the slot as abutments in the manner above referred to. In such instances, the screen may obviously be set closer to the slot or aperture in the plate which it is to cover, the purpose or function of the screen, however, being the same, namely to close the bottom of the slot or aperture to prevent direct sight therethrough of whatever may be behind the slot; and also to prevent the passage of air, dust or cinders. In such cases also the method of attaching or fastening the screen may be varied to suit different conditions. For example, the edge or edges

of the screen may be secured to the plate by riveting, or soldering, or clenching, in various equivalent and well understood ways.

I claim as my invention:—

5 1. The combination, in door latch mechanism, of a pair of door plates for opposite sides of a door, a pair of handles mounted on opposite sides of the plates, a latch mounted on the inside of one of the plates, and operatively connected with the swing-
10 ing handles, and a coupling rod connecting the outer swinging ends of the handles to swing together.

2. The combination, in door latch mechanism, of a pair of apertured door plates for the opposite sides of a door, a pair of handles mounted for swinging movement on the outer sides of the plates, a spindle common to the two handles, a latch mounted on the inner side of one of the plates and operatively connected with the handles, a coupling rod extending through the apertures and shouldered behind the two plates and connecting the outer swinging ends of the
25 handles together, the said apertures being larger than the said rod to permit the said swinging movement.

3. The combination of a door plate provided with an aperture, and latch mechanism mounted on said plate, including a swinging handle, the swinging end of which is provided with a portion extending through the aperture and shouldered behind the said plate.

35 4. The combination of door plates for opposite sides of a door, provided with apertures, and latch mechanism, including swinging members extending inwardly through said apertures, and offset behind said plates.

5. The combination of a door provided with elongated openings in its opposite faces, a screen located between the two door faces and substantially covering the said openings, and latch mechanism having a swinging member extending through the door and through said openings, and having an offset portion extending over the said screen.

6. The combination, in door latch mechanism, of a latch, a pair of swinging handles mounted upon opposite sides of the door and operatively connected with the latch, a coupling rod connecting the outer swinging ends of the handles through an elongated opening
55 in the door, and a screen located between the faces of the door and substantially covering the elongated opening, the coupling rod being offset over the screen.

7. The combination, in door latch mechanism, of a swinging latch, a pair of swinging handles mounted upon opposite sides of the

door, and operatively connected with the latch, a coupling rod connecting the outer swinging ends of the handles through elongated apertures in the faces of the door, and a screen located between the two faces of the door, and substantially covering the range of sight through the two apertures, the portion of the coupling rod which lies between the faces of the door being arched over the intervening screen.

8. The combination, in door latch mechanism, of a pair of door plates, each having a swinging handle thereon, latch mechanism carried by one of the plates and extending within the faces of the door, means for connecting the two swinging handles with the latch to raise the latter by the swinging movement of the handles, a coupling rod connecting the outer swinging ends of the handles through elongated openings in the plates, and a screen located between the said plates and substantially covering the elongated openings therein, the coupling rod being offset over the screen.

9. The combination, with a door, of door plates secured on opposite sides of the door, a swinging latch located between the plates, operating handles mounted on the outer sides of the respective plates, and provided with means for operating the latch by their swinging movement, portions of the outer swinging ends of the handles being provided with shoulders engaging behind the said plates.

10. The combination, with a door, of apertured door plates secured on opposite sides of the door, a swinging latch located between the said plates, and pivotally supported by one of them, operating handles mounted upon the outer sides of the respective plates, and provided with portions extending inwardly through the said apertures, and offset to form shoulders behind their respective plates, and means for operating the latch by the swinging movement of the handles.

11. The combination of a door plate having an extended slot, and latch mechanism mounted on said plate including a swinging handle, the swinging end of which is provided with a projection extending into said slot, the plate being provided with a screen extending across the opening formed by said slot.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses, this 6th day of March, 1906.

FRANK E. HOWARD.

Witnesses:

NELLIE PHOENIX,
W. H. HONISS.