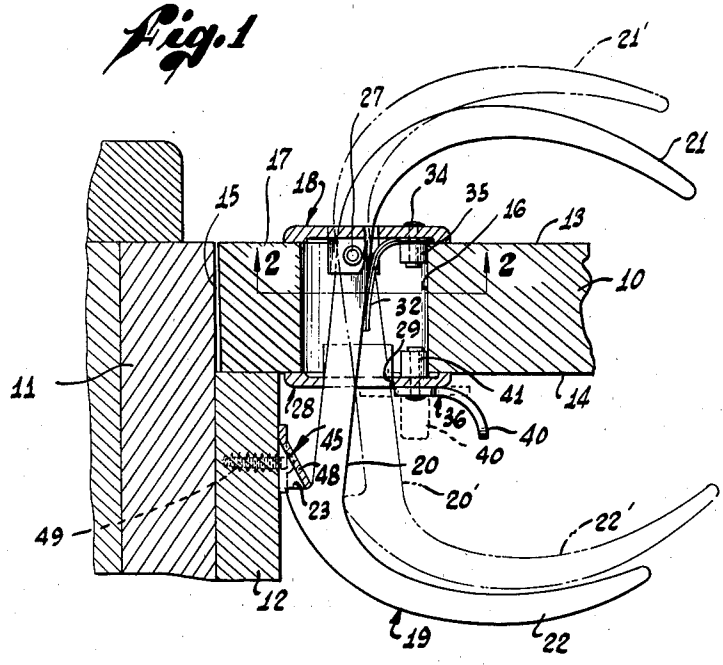
May 20, 1958 F. J. RUSSELL 2,835,524

TILTING DOOR LATCH

Filed April 2, 1956

Fig. 1



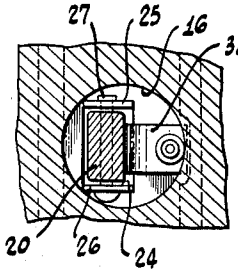


Fig. 2

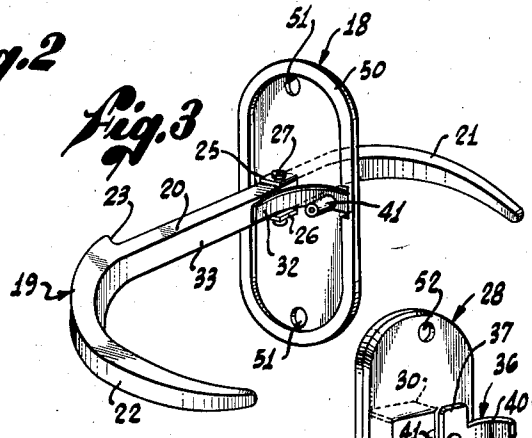


Fig. 3

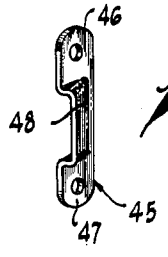


Fig. 5

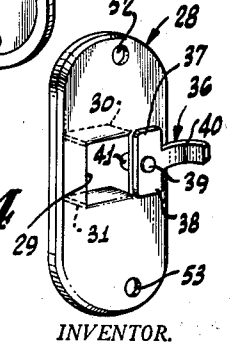


Fig. 4

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TILTING DOOR LATCH

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4 Claims. (Cl. 292—128)

The invention relates to door hardware and has particular reference to a tilting latch of a type which has been found popular for use on screen doors and doors of that general nature. The device can more properly be described as a latch inasmuch as it is capable of latching a door to retain same in closed position or of unlatching same to permit its opening.

Considerable attention has been given to the improvement of locks and latches due to the tremendous demand for devices of this kind in the country's expanding residential building program. Latches and locks which for a considerable period have been looked upon as standard have been the subject matter of some rather fundamental improvements directed in the main toward making latches more adaptable to new types of construction.

Quick and easy action is demanded to a greater extent than previously. More especially, because of the ever rising cost of skilled labor, attention has been given to locks and latches in the interest of less cumbersome construction and quicker installation.

Although certain types of tubing latches have already been made the subject matter of recent developments and inventions, these for the main part have not as yet departed from complexity of structure chiefly featuring the older types of devices and have numerous objections based upon cost and inability to be kept in good working condition under adverse circumstances.

It is therefore among the objects of the invention to provide a new and improved tilting latch mechanism which is simple in structure, inexpensive to manufacture, and which at the same time results in a durable installation on the door.

Another object of the invention is to provide a new and improved tilting latch for doors capable of accommodating itself with great facility to doors of different thicknesses wherein the number of parts has been reduced in quantity to virtually a minimum and which are so constructed that they can be easily indexed with respect to each other by making use of a suitable small cylindrical hole or aperture formed transverse with respect to the door and located a substantial distance inward from the edge of the door designed normally to engage the door jamb.

Still another object of the invention is to provide a new and improved tilting latch which is positive in action and which comprises relatively few parts in the combination when assembled on a door, the structure being one which is adapted to be located a substantial distance from the edge of the door, thereby preserving to the greatest degree possible a rather substantial thickness of the wood which comprises the door, the structure of the device being such that it is capable of easy and accurate installation by workmen not specially skilled in the installation of lock hardware, and also being one capable of accomplishment in a relatively short length of time without any sacrifice in the accuracy of placement of the device in position.

With these and other objects in view, the invention

consists in the construction, arrangement and combination of the various parts of the device whereby the objects contemplated are attained, as hereinafter set forth, pointed out in the appended claims and illustrated in the acompanying drawings.

In the drawings:

Figure 1 is a transverse sectional view of a fragment of a door and frame showing the tilting latch mounted thereon.

Figure 2 is a cross-sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a perspective view of a portion of the device disassembled and viewed from the rear of the outside escutcheon plate.

Figure 4 is a perspective view of the inside escutcheon plate.

Figure 5 is a perspective view of the strike plate.

In an embodiment of the invention chosen for the purpose of illustration a door **10** is shown mounted for cooperation with a door frame **11** and jamb strip **12**. The door has an outside face **13**, an inside face **14**, and an end or edge face **15**, the edge face being bevelled slightly as customary in the trade. A hole **16** usually cylindrical in form is bored or drilled in a transverse direction between the outside face **13** and the inside face **14**. It will be noted that the hole **16** is spaced a rather substantial distance from the edge face **15** leaving therebetween a heavy thickness **17** of the wood or other material of which the door **10** is constructed.

As viewed to good advantage in Figure 3 taken in connection with Figure 1, an outside escutcheon plate **18** is adapted to carry the composite handle structure **19**. The handle structure consists of a transverse bar **20** much greater in length than the thickness of the door **10**. On the outside end of the bar is an arcuate elongated handhold **21** which extends horizontally and in a general way parallel to and spaced from the outside face **13** of the door. At the other end of the bar is an inside handhold **22** of similar construction except that at the junction of the handhold **22** with the bar there is a srike shoulder **23**.

In the escutcheon plate **18** at a more or less central position is a rectangular opening **24** on two sides of which are located tabs **25** and **26**. The tabs provide a space between them sufficient to freely encompass the outer end portion of the bar **20** and have the bar rotatably mounted upon the tabs by means of a suitable hinge pin or rivet **27**. It will be noted that the small dimension of the rectangular opening **24** is materially wider than the small dimension of the bar **20** so that the bar is free to rotate or pivot within the opening.

An inside escutcheon plate **28** is also provided with a rectangular opening **29** except that the breadth of the opening **29** is for all practical purposes about twice the thickness of the bar **20**. Tabs **30** and **31** are located on opposite end edges of the opening **29**.

In order to normally tilt the bar **20** in a clockwise direction, as viewed in Figure 1, so as to be in a potential latch plate engaging position, there is provided a leaf spring **32**, the inner end of which lies in flat face to face engagement with a surface **33** of the bar and the outer end of which is anchored to the inside face of the escutcheon plate **18** by means of a rivet **34**. It will be noted that on the inside end of the rivet is a block **35** which serves not only as a washer to press upon the leaf spring but also serves as a block which can press into contact with the wall of the cylindrical hole **16**.

On the escutcheon plate **28** is a lock arm or locking trigger **36** having wings **37** and **38** rotatably secured to the escutcheon plate **28** adjacent the rectangular opening **29** by means of a rivet **39**. A finger **40** enables the

lock arm to be rotated or pivoted upon the rivet **39** by an operator. The lock arm can be rotated either in a clockwise or counterclockwise direction, as viewed in Figure 3, in order to place a corresponding one or the other of the wings **37**, **38** in position over the rectangular opening **29** so that the corresponding wing engages the surface **33** of the bar **20**, thereby making it impossible to tilt the bar by manipulation of the outside handhold **22**. The rivet **39** is provided with a block **41** on the inside end which serves not only as a washer for the rivet but also as an engagement against the wall of the cylindrical hole **16**.

A strike plate **45** has wings **46** and **47** on opposite ends between which is an obliquely extending latch retainer element **48**. The strike plate is adapted to be attached to the jamb **12** at the location indicated by means of screws **49**.

When installing the device herein described the cylindrical hole **16** is first drilled through the door **10**. The size of the cylindrical hole will be chosen so that it will be small enough to have pressed simultaneously into three locations on the wall of the cylindrical hole edges of the tabs **25** and **26** and also the surface of the block **35**. By properly selecting the diameter of the cylindrical hole, all of these points will simultaneously engage the wall of the hole. The handle structure **19** is then extended through the hole from the outside face of the door by inserting first the handhold **22** and then extending the bar **20** through the hole **16**. Since the handle structure and escutcheon plate **18** are joined together as an initial sub-assembly, the handle structure is therefore impressed into the hole until a circumferential edge **50** of the escutcheon plate **18** lies flat against the outer surface **13** of the door at a location surrounding and covering the outside end of the cylindrical hole **16**. As noted particularly in Figure 2, when this has been accomplished the rod **20** will be indexed into position as well as the handholds **21** and **22** by reason of the fact that edges of the tabs **25** and **26** and an exterior line along the surface of the block **35** will simultaneously fit against corresponding parts of the wall of the cylindrical aperture, thereby indexing or centering the escutcheon plate and consequently the handle structure with respect to the door and the hole therein. The escutcheon plate may then be fastened to the wood of the door by inserting screws, not shown, through holes **51** in the escutcheon plate.

The escutcheon plate **28** may be applied by first applying the plate to the inside handhold **22** so that the rectangular opening **29** is passed over the handhold and the inner end portion of the bar **20**. Again corner edges of the tabs **30** and **31** are located such that when a part of the exterior surface of the block **41** is in engagement with the wall of the hole **16**, edges of the tabs **25** and **26** will also lie in engagement with the wall of the hole. Screws, not shown, may then be inserted through holes **52** and **53** in the escutcheon plate **28**, thereby to anchor the escutcheon plate to the wood of the door **10**. The handle structure is then properly tiltably mounted in the cylindrical hole of the door **10** ready for operation.

When the door is swung to closed position against the jamb **12**, as that portion of the handhold **21** adjacent the strike shoulder **23** strikes against the retainer element **48**, it slides along a sloping base of the retainer element and will be swung against tension of the spring **32** to approximately the broken line position **20'**, **21'**, **22'**, as illustrated in Figure 1.

After the shoulder **23** passes the innermost edge of the retainer element **48** the shoulder will reassume the dotted line position illustrated in Figure 1 and engage behind the edge of the retainer element. The bar and shoulder will be impressed into that position by action of the leaf spring **32**. Should it be desired to lock the door against opening when in this position, it is necessary only to rotate the lock arm **36** by manipulation of the finger **40** until either the wing **37** or the wing **38** is positioned opposite the surface **33** of the bar. When this locking has been accomplished, pulling upon the outside handhold **21** or pushing upon the inside handhold **22** will not tilt the bar **20** and hence will not unlatch the bar from engagement with the strike plate by reason of the interposition of the lock arm **36**. When it be desired, however, to unlock the latch, the lock arm is again rotated to the position illustrated in Figure 4, at which time pulling upon the handhold **21** or pushing upon the handhold **22** will tilt the bar **20** against tension of the spring **32** until the shoulder **23** is disengaged from the strike plate, at which time the door **10** can be swung open.

It will be noted further that the length of the bar **20** is great enough so that the strike plate can be located a substantial distance from the outermost face of the door jamb **12**. Should the device be applied to a door of greater thickness than the door **10**, the length of the bar will permit installation since there is no engagement endwise of the inside escutcheon plate **20** with the bar. The bar will swing back and forth across the rectangular opening **29** of the inside escutcheon plate with sufficient freedom regardless of where it may be located. In such instance, however, the strike plate will be secured to the door jamb at a location somewhat nearer the outside face of the jamb.

There has accordingly been described herein a tilting latch for doors which by enumeration of the necessary parts involved will be found to constitute an assembly of substantially a minimum number of parts so arranged that the inside and outside escutcheon plates can be adjusted with respect to each other depending upon the thickness of the door and which can be readily attached directly to the door itself, thereby to index the operating parts in proper position.

While I have herein shown and described my invention in what I have conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of my invention, which is not to be limited to the details disclosed herein but is to be accorded the full scope of the claims so as to embrace any and all equivalent devices.

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

1. A latch for doors having a cylindrical hole extending from face to face of the door at a location removed from a vertical edge by a distance slightly exceeding the thickness of a stop comprising an outside escutcheon plate having inwardly extending spaced tabs and having a handle opening therebetween, a handle having elongated outside and inside handholds overlying the respective faces of the door and a bar connecting said handholds, said bar having one end extending through the handle opening and tiltably secured to said tabs, a leaf spring engaging a side of said bar remote from the stop, an attachment securing said spring to the outside escutcheon plate and an extension on said attachment, said extension and said tabs being spaced from each other and forming an indexing engagement with the wall of said hole whereby to index said outside escutcheon plate, and an inside escutcheon plate for the opposite face of the door having a handle opening therethrough, tabs at the sides of said opening, a lock arm and an attachment pivotally securing said lock arm to the inside escutcheon plate at a location adjacent said bar, and an extension on said last attachment at the inner face of the inside escutcheon plate spaced from said last identified tabs, said last identified extensions and tabs having positions extending into an indexing engagement with the wall of said hole.

2. A latch for a door having a cylindrical hole extending from face to face of the door at a location removed from a vertical edge by a distance slightly exceeding the thickness of a stop comprising an outside escutcheon plate having a handle opening therebetween,

a handle having elongated outside and inside handholds overlying the respective faces of the door and a latching bar anchored integrally to said handholds and having a latching projection thereon fixed in position relative to the bar and said handholds, said bar having one end extending through the handle opening and tiltably secured to said tabs, a leaf spring engaging a side of said bar remote from the stop, an attachment securing said spring to the outside escutcheon plate and a projection on said attachment extending inwardly in a direction substantially parallel to said tabs, said projection and said tabs being spaced to form a multiple point engagement with the wall of said hole whereby to index said outside escutcheon plate, and an inside escutcheon plate for the opposite face of the door having a handle opening therethrough, tabs at the sides of said opening substantially in alignment with the first identified tabs and spaced apart a distance greater than the thickness of said bar whereby to permit free operating movement of the bar therebetween, said tabs having positions extending inwardly into engagement with the wall of said hole, and a lock comprising an arm pivotally secured to said inside escutcheon plate having a wing rotatable into engagement with said bar in latched position, and an extension from the inside face of said inside escutcheon plate at the point of attachment of said tab adapted to engage the wall of said hole whereby to index said inside escutcheon plate.

3. A latch for a door having a cylindrical hole extending from face to face of the door at a location removed from a vertical edge by a distance slightly exceeding the thickness of a stop and wherein a mass of the material of the door remains between the hole and said edge, said latch comprising an outside escutcheon plate having inwardly extending relatively short flat tabs spaced in parallel relationship and having a handle opening therebetween, a one-piece handle member having elongated outside and inside handholds overlying the respective faces of the door and a bar connecting said handholds, said bar having one end extending through the handle opening and tiltably secured to said tabs, a leaf spring engaging a side of said bar remote from the stop, an attachment securing said spring to the outside escutcheon plate and a projection on said attachment, said projection being spaced at equal distances from said tabs and said projection and tabs forming a three point engagement with the wall of said hole whereby to index said outside escutcheon plate, and an inside escutcheon plate for the opposite face of the door having a handle opening therethrough, a pair of relatively short flat tabs at opposite edges of the handle opening, said tabs being spaced in parallel relationship and in respective alignment with said first identified tabs, a portion of said handle member comprising a shoulder facing said door and a latch on said stop in a position of engagement with the shoulder when the door is closed, a lock comprising an arm pivotally secured to said inside escutcheon plate having a wing rotatable into engagement with said bar in latched position, and an extension from the inside face of said inside escutcheon plate at the point of attachment of said tab located at equal distances from said last tabs, said tabs and said extension being adapted to engage the wall of said hole whereby to index said inside escutcheon plate at a location opposite and in alignment with the outside escutcheon plate.

4. A latch for doors having a cylindrical hole extending from face to face of the door at a location removed from a vertical edge by a distance slightly exceeding the thickness of a stop comprising an outside escutcheon plate having a handle opening therethrough and having a handle structure with latch means thereon pivoted to the plate, a series of at least three inwardly extending projections on the plate spaced in accordance with the location of said handle structure, an inside escutcheon plate for the opposite face of the door having a handle opening therethrough through which said handle structure extends, a blocker on the inside plate cooperable with the handle structure, and a series of at least three inwardly extending projections on the inside escutcheon plate in indexing relationship with the projections on the outside escutcheon plate, the projections on both said plates having positions extending into an indexing engagement with the wall of said hole.

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