Nov. 10, 1925. 1,560,897

L. A. DEXTER

DOOR LATCH

Filed Sept. 15, 1924 2 Sheets-Sheet 1

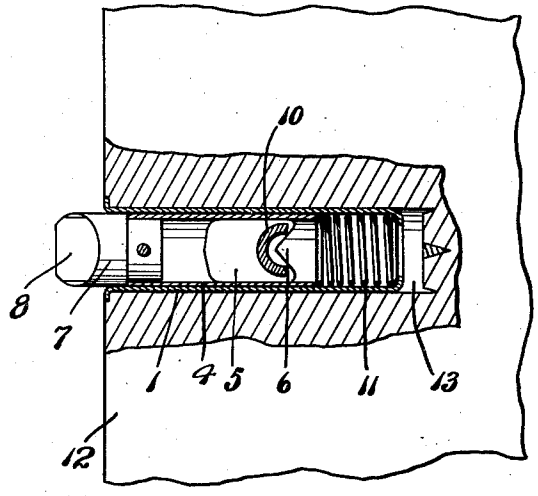


Fig. 1.

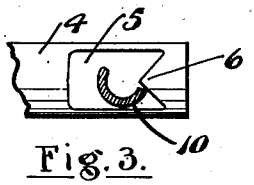


Fig. 3.

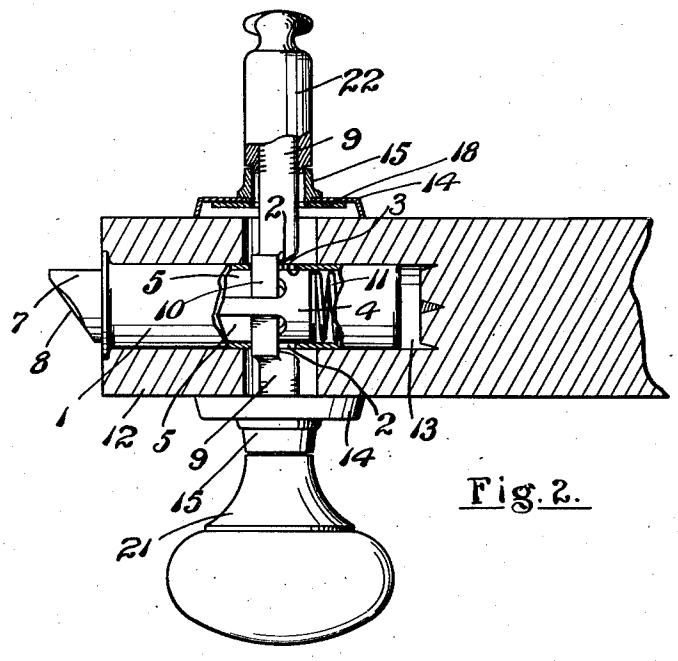


Fig. 2.

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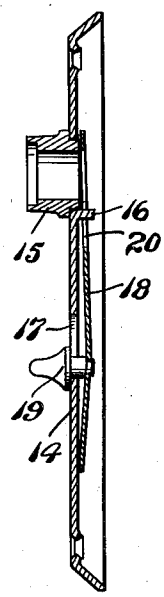


Fig. 4.

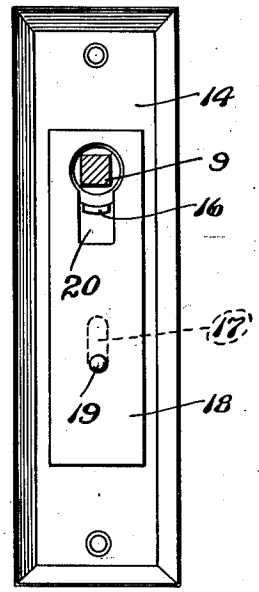


Fig. 5.

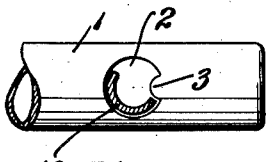


Fig. 6.

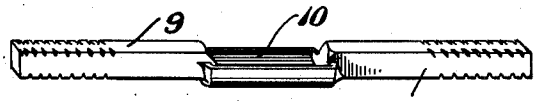


Fig. 7.

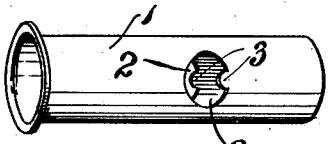


Fig. 8.

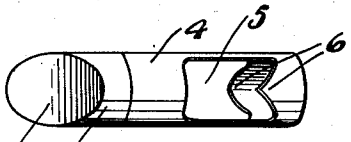


Fig. 9.



Fig. 10.

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Patented Nov. 10, 1925. 1,560,897

UNITED STATES PATENT OFFICE.

LUCIEN A. DEXTER, OF GRAND RAPIDS, MICHIGAN.

DOOR LATCH.

Application filed September 15, 1924. Serial No. 737,689.

To all whom it may concern:

Be it known that I, LUCIEN A. DEXTER, a citizen of the United States of America, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Door Latches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a latch which is adapted for use on screen doors particularly, though in no sense limited to the one type of door as it may be used on any form of swinging door, gate or the like. The present invention includes many improvements in construction over the structure shown in my Patent No. 1,502,022 issued July 22, 1924 and is concerned with various improvements whereby the cost of manufacture is very materially lessened without detriment to the operation of the latch structure. The invention also includes a novel form of locking device to be used in connection with the latch whereby, when the same is in operative position with the door closed the latch may be held against operation with a consequent locking of the door in position.

For an understanding of the invention and the construction embodying the same, reference may be had to the following description taken in connection with the accompanying drawings, in which,

Fig. 1 is a fragmentary vertical section through a door equipped with the latch structure which is shown in longitudinal section.

Fig. 2 is a fragmentary horizontal section through the edge portion of the door, the latch being shown partly in plan and with parts broken away and in section for a better disclosure of the section.

Fig. 3 is a fragmentary side elevation and partial section of the latch bolt and the operating bar therefore.

Fig. 4 is a central vertical section through the locking escutcheon plate forming one feature of the invention.

Fig. 5 is a rear elevation thereof.

Fig. 6 is a view similar to that shown in Fig. 3, of the outside casing of the latch structure and illustrating the stop which limits the rotative movement of the operating member of the latch.

Figs. 7, 8 and 9 are perspective views respectively of the operating bar, outer casing and latch bolt of the construction, and

Fig. 10 is a side elevation of a coil spring used which normally projects the latch bolt outwardly.

Like reference characters refer to like parts in the different figures of the drawings.

In the construction of the latch an outer casing 1 of sheet metal is made, cylindrical in form having its outer end open and equipped with an out-turned lip or flange while at its inner end the metal is turned inwardly to partly close said inner end as shown in Fig. 1. This casing or housing 1 is formed with diametrically opposed openings 2 therein circular in form except at the rear sides thereof where a portion of the metal is left as indicated at 3 to form stops for a purpose which will hereafter appear. Within this outer casing the latch bolt is slidably mounted. The bolt includes a cylindrical member 4 open at both ends, made of sheet metal and at diametrically opposed sides provided with elongated openings 5 therein substantially rectangular in shape except that at the rear end of each the metal from the member 4 is cut to extend forwardly and make triangular shaped lugs 6, the same being positioned directly opposite each other. In the open front end of the member 4 a head 7 is received and permanently secured in place in any desired manner as by passing a pin through the inner end of the same and the opposite sides of the member 4. This head extends a distance beyond the member 4 and at one side is beveled as indicated at 8.

When the latch bolt made as thus described is placed within the outer casing or housing 1 the openings 5 in the latch bolt and 2 in the casing come into conjunction so as to permit the passage of an operating bar therethrough. This bar at each end portion thereof is square in cross section and substantially midway between its ends is shaped into semicylindrical form as indicated at 10, this part 10 extending through the casing and latch bolt, as shown in Fig. 2. A coil spring 11 is seated within the outer casing 1 and is disposed between the inner latch bolt member 4 and the inner end of the casing 1, the same under compression exerting a force which tends to move the member outwardly and retract the triangular projection 6, as shown in

Fig. 1, that is with the points thereof extending into the concavity of the part 10 of the operating bar. It is evident that on turning the bar in either direction the latch bolt will be retracted with a compression of the spring 11. The bolt however can be retracted only a definite distance as the edges of the part 10 of the operating bar when moved in either direction to an extreme position engage against the stops 3 as shown in Fig. 6.

A latch as thus described is adapted to be installed in the free vertical edge of the swinging door such as indicated at 12, a cylindrical opening 13 being bored into the door at its free end for the reception of the casing and latch bolt. An opening transverse to the opening 13 is bored through the door for the passage of the operating bar which is intersected through said transverse opening in the door, the latch housing, and the latch bolt so that an end 9 of the operating bar projects outwardly beyond each side of the door.

An escutcheon or face plate 14 may be placed at each side of the door each being equipped with a sleeve 15 through which the ends 9 of the operating bar pass, this plate may be secured to the door by means of screws or like fastenings. The plate at the outer side of the door may be plane and not equipped with the locking arrangement but on the inner side of the door it is preferred that a locking mechanism be applied to the escutcheon plate so as to hold the lock against operation when the lock mechanism is not in locking position. To this end a lug 16 is struck integral from the plate 14 directly below the opening in the plate where the sleeve 15 is attached (see Figs. 4 and 5) and below the point of attachment of the sleeve 15 a vertical slot 17 is cut in the plate. A spring member 18 is located against the rear side of the plate 14 and an operating knob 19 is attached thereto having a reduced stem passing through the slot 17 and the attachment is such that the spring member 18 bears with considerable force at each end against the rear side of the escutcheon plate 14. Adjacent its upper end this plate is provided with a circular opening so that the operating bar may pass freely therethrough and joining with the opening at the lower side is a rectangular notch 20. When the plate 18 is in lower position, as shown in Fig. 4, the circular openings in the sleeves 15 and in the plate 18 align so that the square portion 9 of the operating bar may turn freely. But on moving the plate 18 upwardly said part 9 of the operating bar is received in the notch 20 and cannot turn from its position wherein the latch bolt is projected outwardly from the casing 1. It is evident that the plate 18 may be readily moved up and down through manual operation of the knob 19.

At the outer side of the door 12 a knob 21 is attached to the projecting end portion 9 of the operating bar and at the inner side of the door a suitable handle, such as is indicated at 22, may be attached to the inner end portion 9 of the bar. The particular type and design of handle or knob used is not material to the invention.

The construction described is very economical to manufacture all the parts being very simply and cheaply formed from metal while the assembly of the parts is very simple and inexpensive. The latch is installed on a door by anyone, no skill being required for the installation. The appended claims define the invention which is to be considered comprehensive of all forms of structure coming within their scope.

I claim:

1. In a latch construction, an elongated housing of sheet metal open at its outer end and formed with openings in opposed sides thereof, said openings being of circular form and having stop members projecting thereinto at one side, a latch bolt slidably mounted within the housing, spring means located between the inner end of the bolt and the inner end of the housing tending to move the bolt outwardly, said bolt having openings in opposite sides thereof with triangular shaped projections extending thereinto at their inner ends, an operating bar passing transversely through the openings in the housing and latch bolt, said bar having an intermediate section of substantially semicircular form and adapted to be manually turned about its longitudinal axis to move the latch bolt inwardly on rotation of the bar in either direction, substantially as described.

2. In a latch construction, a latch bolt having an opening therethrough, a pointed projection extending from the bolt into said opening, a housing in which the bolt is slidably mounted having openings in opposite sides thereof and an operating bar passing through the openings in the housing and bolt, said bar being substantially square in cross section at each end and having an intermediate portion of substantially semicircular form, substantially as described.

3. In a latch construction, an elongated cylindrical housing open at its outer end, a latch bolt slidably mounted in the housing having an opening therethrough between its ends and with a pointed projection having inclined sides extending into the opening at the rear end thereof, said housing having openings in opposite sides in alignment with the opening in the latch bolt, spring means between the rear end of the latch bolt and the inner end of the housing adapted to normally project the latch bolt outwardly, and

an operating bar extending through the housing and bolt, said bar at each end being substantially square in cross section and between its ends being shaped into substantially semicircular form, said intermediate section being adapted to engage said projection on the latch bolt to move the same inwardly against the spring on turning the operating bar in either direction about its longitudinal axis.

4. In a latch construction, an elongated housing open at its outer end, a spring within the housing at its opposite end, a latch bolt including an inner cylindrical portion of sheet metal and an outer strike portion secured to the outer end of said inner cylindrical portion, said inner cylindrical portion having elongated openings in opposite sides thereof with pointed projections having inclined sides extending into said openings at the rear ends thereof, and said housing having circular openings at opposite sides thereof in alignment with the openings in the latch bolt, and an operating bar passing through the openings in the housing and latch bolt, said bar being substantially square in cross section at its end portions and intermediate its ends being formed into substantially semicircular form, said intermediate portion being adapted to engage the projections on the latch bolt to move the same inwardly against the spring on turning the operating bar about its longitudinal axis in either direction, substantially as described.

In testimony whereof I affix my signature.

LUCIEN A. DEXTER.