April 4, 1933. S. H. BURTON 1,903,284

DOORLOCK

Filed Dec. 30, 1931 2 Sheets-Sheet 1

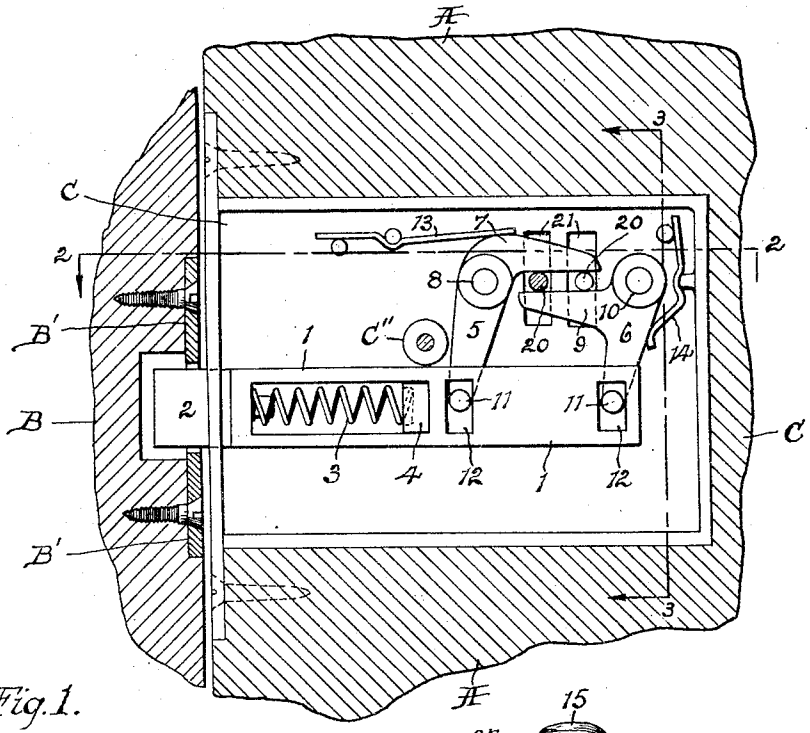


Fig. 1.

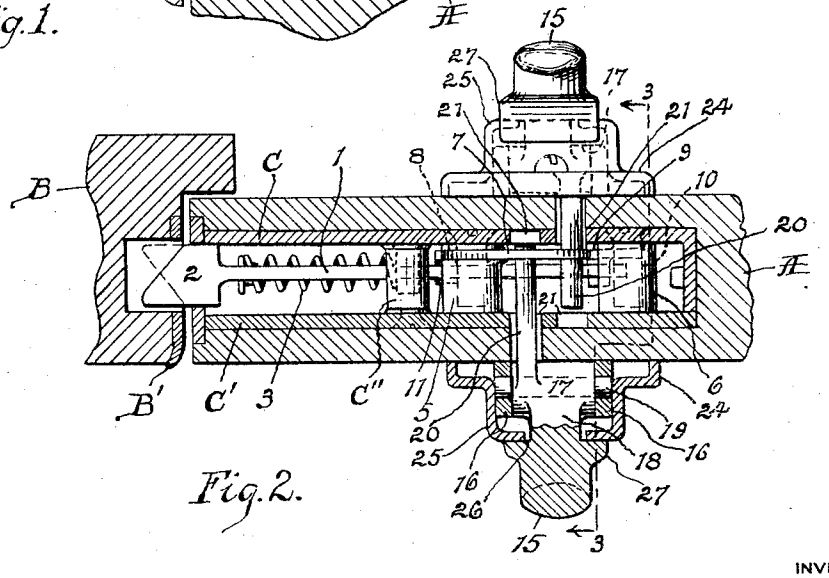


Fig. 2.

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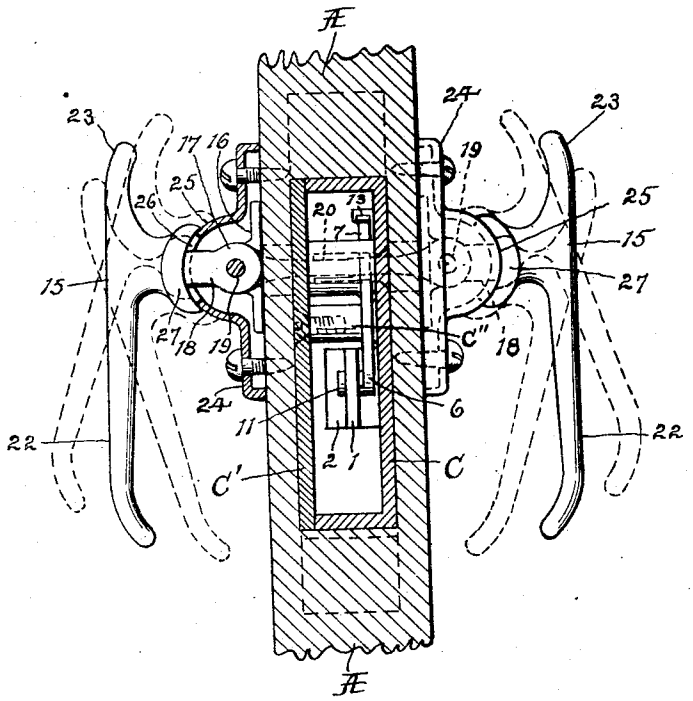


Fig. 3.

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UNITED STATES PATENT OFFICE

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DOORLOCK

Application filed December 30, 1931. Serial No. 588,828.

This invention relates to door latches or locks, and more particularly to locks or latches especially adapted for inside house doors.

An object of the present invention is to provide a construction which is such that the door may be unlatched by simple pressure upon the operating handle, as when the operator's hands are otherwise occupied, causing this handle to swing in either an upward or a downward direction, which movement in either direction will operate the latch and unlatch the door. A further object is to provide a construction wherein duplicate operating mechanism is provided at both sides of the door, which mechanism is interchangeable to adapt the same to locks applied to either edge of the door, and which lock embodies a reversible latch bolt to make the bolt applicable to a lock applied to either edge of a door.

It is also an object to provide a latch of simple construction which is positive in its operation and not liable to get out of order, and which embodies certain other new and useful features, all as hereinafter more fully set forth and particularly pointed out in the appended claims, reference being had to the accompanying drawings, wherein:

Figure 1 is a side elevation of a lock with the front cover plate of the casing thereof removed, and showing the lock as applied in use;

Fig. 2 is a transverse, horizontal section, substantially upon the line 2—2 of Figure 1; and

Fig. 3 is a vertical section, substantially upon the lines 3—3 of Figures 1 and 2.

As shown in the drawings, A indicates the door and B the door jamb or casing. The usual strike plate B′ having an opening to receive the projecting end of the usual latch bolt of the lock, is secured to the door casing in the usual manner, and inserted within a mortise in the edge of the door, is a lock casing C of the usual construction having the usual side plate C′ detachably held in place by the usual screw entering a stud C″ on the back wall of the casing.

Within the casing C, and extending longitudinally across the same is the latch bolt 1 having the usual head 2 fitting and slidable longitudinally within the usual opening in the end plate or wall of the casing, said head having the usual beveled end face to strike the strike plate B′ and force said bolt inwardly of the casing against the action of a coiled spring 3 mounted within a longitudinal slot in the bolt, said spring engaging the end of said slot at one end, and at its opposite end, an abutment block 4 which is fixedly mounted upon the back wall of the casing, all arranged in the usual manner so that the latch bolt will be normally held in a projected position by said spring.

To move said latch bolt longitudinally against the action of said spring, a pair of bell-crank levers 5 and 6 is mounted in the casing upon the back wall thereof in any suitable manner, for free swinging movement, the lever 5 being provided with a horizontally and rearwardly extending arm 7 projecting from its upper end above the horizontal plane of its pivot 8, and the bellcrank 6, having a horizontally extending arm 9 projecting forwardly therefrom and below the horizontal plane of its pivot 10. Each bell crank lever is provided at the lower end of its downwardly extending arm, with a laterally extending pin 11, each to engage within a transverse slot 12 in the bolt 1, so that upon swinging of either bell crank, the bolt will be moved longitudinally against the action of said spring 3.

To yieldingly hold the bell crank 5 turned, with the bolt 1 projected, as shown in Figure 1, a flat spring 13 is attached to the back wall of the casing with its free end resting upon the upper edge of said arm 7, and the bell crank 6 is yieldingly held in a corresponding position, by a flat spring 14 engaging the rear edge of its downwardly extending arm.

To swing these bell cranks 5 and 6 against the action of the springs 3, 13 and 14 and thus move the latch bolt 1 toward retracted position to disengage its head 2 from the opening in the strike plate B′ and thus unlatch the door, a pivoted handle 15 is attached to each surface of the door A by means of a bracket

having parallel ears 16 between which ears a cylindrical hub 17 to which the handle proper is connected by a neck portion 18, is pivoted by a pivot pin 19 passing through a longitudinal axial bore of the hub and through bearing openings in said ears. Projecting laterally from the hub 17 of each handle adjacent one end thereof, is an arm 20 and in the adjacent wall of the casing are two parallel slots 21 through one or the other of which said arm extends into the casing with its inner end portion projecting between the opposed and spaced apart edges of the arms 7 and 9 of the bell cranks 5 and 6, respectively. Therefore by turning either handle upon its pivot 19, its arm 20 comes into contact with either the arm 7 or the arm 9 and swings one of the bell cranks in a direction to retract the latch bolt 1. Therefore, whichever handle is swung, and no matter in which direction it is swung, whether up or down, the bolt will be retracted, as when the downwardly projecting end portion 22 of either handle is pressed toward the door, its arm 20 will be swung upwardly and operate the bell crank 5, and when said end is swung outwardly either by a pull thereon or by pressure toward the door upon the upwardly projecting end portion 23 of the handle, the arm 20 will be swung downwardly and operate to swing the bell crank 6 which in turn, will retract the latch bolt.

Preferably each bracket 16 and hub of the handle supported thereby, is enclosed within an escutcheon plate or housing 24, secured to the door surface in any suitable manner and these plates or housings are each formed with a hollow protuberance 25 having a semicircular surface formed concentric with the pivotal axis 19 of the handle and also with a vertical slot 26 through which the shank 18 of the handle extends, and said shank is preferably formed with a flange 27 to fit said curved surface of the protuberance and cover said slot, thus concealing the inner parts and providing an outside finish for the device.

By making the handle structures exactly alike, offsetting the arms 20 thereon toward like ends of the hubs 17, and by providing two parallel slots 21 in each wall of the casing, the operating handles may be applied to either side of the door or the lock casing may be inserted within a mortise in either edge of the door without change in the handles, and by making the latch bolt so that it may be reversed or set with either edge up, the direction of bevel of the head 2 thereof may be changed as indicated in dotted lines in Figure 2, to provide for the proper engagement thereof with the strike plate where the lock is applied to a door which closes in an opposite direction to that shown in Figure 2.

By this construction and arrangement, installation in the different positions to suit the different requirement, may be effected without change in the construction of the parts, and by reason of the particular construction of the handles, they may be operated with facility without the necessity for grasping the handle, and therefore a person whose hands are otherwise occupied, may unlatch the door by simply swinging the handle by pressure thereagainst. Further, the construction is such that the operator may pull the door closed by a straight pull on the handle without rocking it and thus operating the latch, the spring actuation of the latch causing it to catch and lock the door.

Changes in the construction and arrangement of parts as shown, may be made within the scope of the appended claims, and such changes are contemplated.

Having thus fully described my invention, what I claim is:—

1. A door lock comprising a casing, a longitudinally movable latch bolt in said casing, two bell cranks pivotally mounted in said casing and each having a laterally extending arm in opposed and overlapping relation to and spaced from said arm on the other bell crank, each bell crank being also provided with an arm operatively connected with said latch bolt, and an operating handle member pivotally supported at each side of said casing and each having an arm extending into said casing between said opposed arms on said bell cranks and each adapted to operate one of said bell cranks and retract said bolt when said arm is swung in one direction and to operate the other of said bell cranks and retract said bolt when said arm is swung in an opposite direction.

2. A door lock comprising a casing, a longitudinally movable latch bolt in said casing, a pair of bell cranks pivotally mounted in said casing and each having an arm extending laterally therefrom toward the other bell crank and in opposed and spaced relation to and in the vertical plane of said arm on the other bell crank, each of said bell cranks being provided with a downwardly extending arm connected at its lower end to said latch bolt, an operating handle member pivotally supported at opposite sides of said casing to turn about a horizontal axis, and an arm on each of said handle members extending into said casing with the inner ends of said arms projecting into said space between said opposed arms on said bell cranks, whereby each arm on each of said handle members may operate either of said bell cranks by a swinging movement of said arm.

3. A door lock comprising a casing, a longitudinally movable latch bolt in said casing, a pair of bell cranks pivotally mounted in said casing and each having a laterally extending arm in opposed relation to said arm on the other bell crank, said bell cranks being operatively connected to said latch bolt, an operating handle pivotally supported

outside said casing to turn about a horizontal axis and having an arm extending into said casing and between said opposed arms of said bell cranks to operate either of said bell cranks by a swinging movement of said arm, a housing for said pivotally supported end of said handle and formed with a protuberance extending outwardly from the door to which the lock is applied and having a semi-circular side concentric with said pivot of said handle and formed with a slot through which said handle extends, and a flange of extended length on said handle and curved to conform to the curvature of said slotted side of said protuberance to cover said slot throughout the swinging movement of said handle.

4. A door lock comprising a casing, a longitudinally movable latch bolt in said casing, a pair of bell cranks pivotally mounted in said casing and each having a laterally extending arm in opposed relation to said arm on the other bell crank, said bell cranks being operatively connected to said latch bolt, springs for yieldingly holding said bell cranks turned with their laterally extending arms swung toward each other, an operating handle at each side of said casing each formed with a horizontally extending hub portion about the axis of which said handle is adapted to turn, and an arm on each hub portion extending laterally therefrom into said casing with their inner end portions between said opposed arms of said bell cranks and with said opposed arms held by said springs in contact with said arms on said operating handles.

5. A door lock comprising a casing, a latch bolt of rectangular form in cross-section and having a head at one end to project through an opening in a wall of said casing, said head having a beveled outer end to engage a strike plate, said bolt being also formed with a longitudinal slot and with spaced apart transverse slots, a block on said casing projecting into said longitudinal slot, a spring in said longitudinal slot seated therein at one end and upon said block at its opposite end to yieldingly hold said bolt in projected position, said bolt being adapted to be reversed to bring its lower side uppermost and change the direction of the bevel of said head in use, a bell crank pivotally supported in said casing and having a downwardly extending arm provided with a laterally extending pin at its lower end to engage one of said transverse slots in said latch bolt and formed at the upper end of said bell crank with a laterally extending arm, a second bell crank pivotally supported in said casing and provided with a laterally extending arm in opposed and spaced relation to said lateral arm on said first named bell crank and also formed with a downwardly extending arm having a pin at its lower end to engage the other of said transverse slots in said latch bolt, and handle members pivotally supported at opposite sides of said casing and having arms extending between said opposed arms of said bell cranks.

6. A door lock comprising a casing formed with parallel vertical slots in opposite side walls thereof and an opening in its end wall, a latch bolt supported for longitudinal movement in said casing and having a head at one end engaging said opening in said end wall, a spring to normally hold said latch bolt with said head projected through said opening in said end wall of the casing, two bell cranks pivotally supported in said casing and each having a downwardly extending arm adapted to engage and move said latch bolt longitudinally, said bell cranks also having laterally extending arms in opposed and spaced relation, one above the other and extending across said vertical slots in said casing walls, yieldable means for normally holding said latch bar in projected position, an operating handle at each side of said casing opposite said slots, a bracket for pivotally supporting each handle, each of said handles being formed with a hub portion forming the pivotal support therefor, an arm on each hub portion extending laterally therefrom through one of said parallel vertical slots in said casing walls and between said opposed arms on said bell cranks, the said arm on the hub of one handle being offset out of longitudinal alignment with the corresponding arm on said other hub of the other handle, the outer end of each handle being formed with a downwardly extending portion to swing toward the side of said casing when the handle swings upon its pivotal support, a housing for said hub portion of each handle, said housing being formed with a wall concentric with the pivot of said handle and having a slot through which a shank portion of each handle extends, and a flange on the shank portion of each handle curved to conform to the curvature of said walls of said housings and covering said slots therein.

In testimony whereof I affix my signature.

STANLEY H. BURTON.