

C. A. KEEL.
 AUTOMATIC SLIDING DOOR LATCH.
 APPLICATION FILED JAN. 6, 1912.

1,057,433.

Patented Apr. 1, 1913.

2 SHEETS—SHEET 1.

Fig. 1.

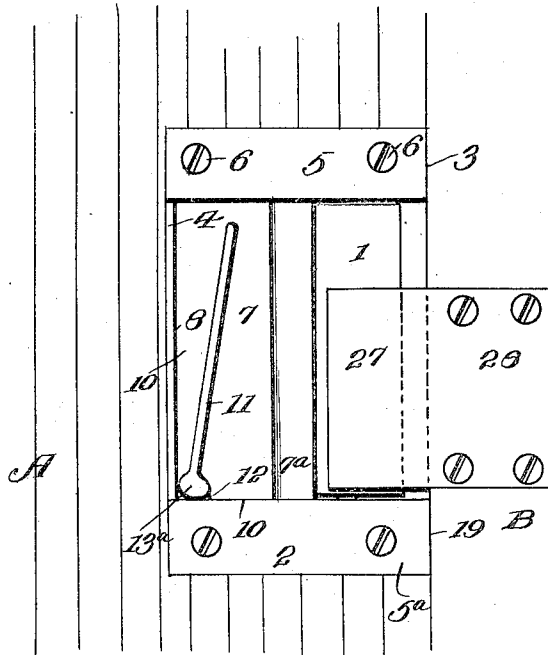


Fig. 2.

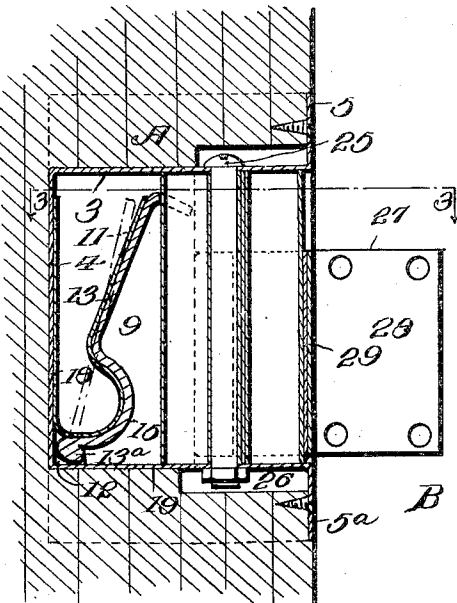
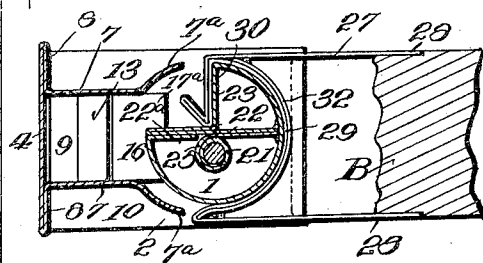


Fig. 3.



Inventor
 C. A. Keel.

Witnesses

William E. Speer
Juana M. Fallon

By *Hammett*

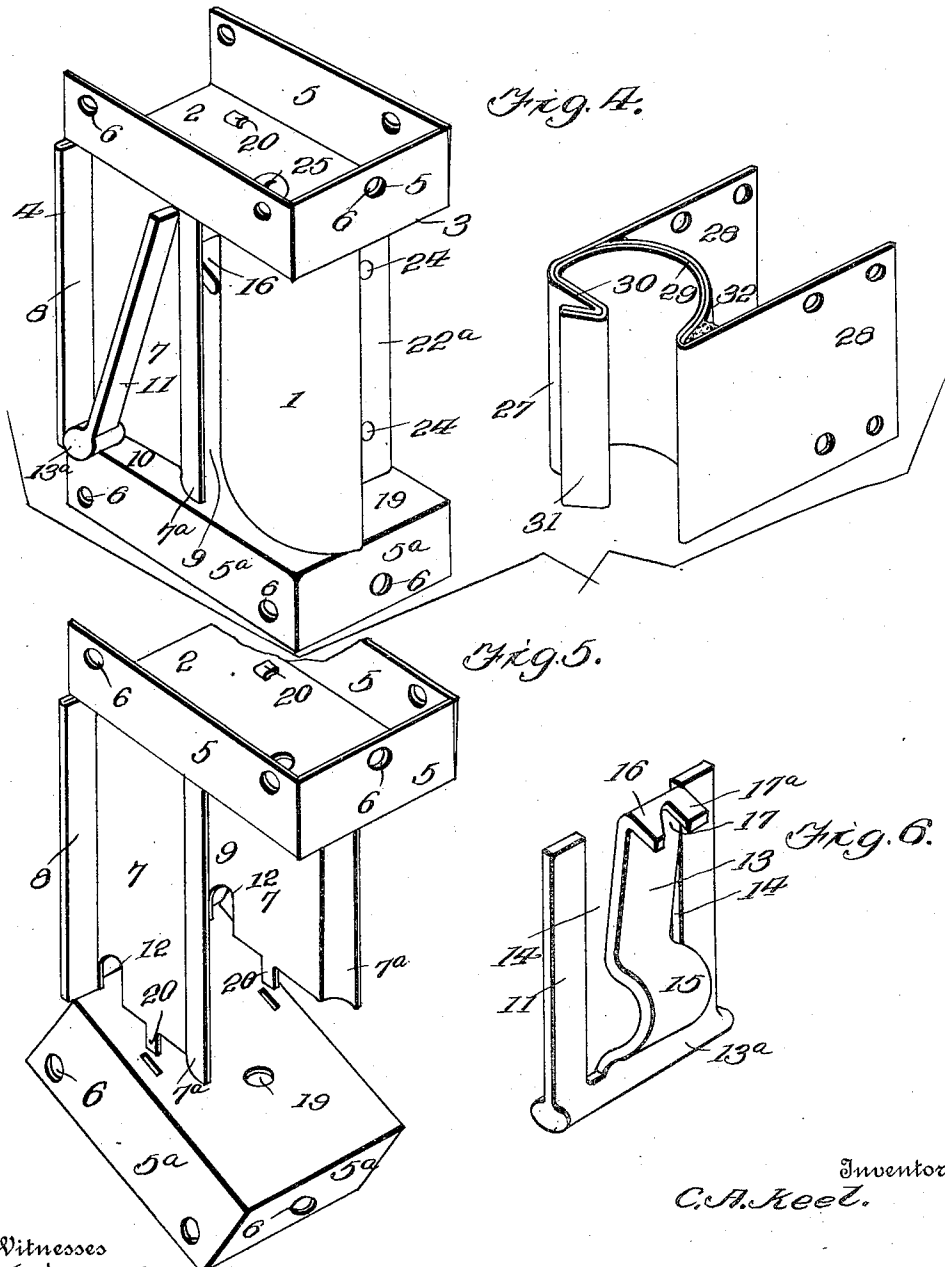
Attorney

C. A. KEEL.
 AUTOMATIC SLIDING DOOR LATCH.
 APPLICATION FILED JAN. 6, 1912.

1,057,433.

Patented Apr. 1, 1913.

2 SHEETS-SHEET 2.



Witnesses
Edmund Espey
Juana M. Fallon

Inventor
C. A. Keel.

By *H. A. Macey*, Attorneys

UNITED STATES PATENT OFFICE.

CHARLES A. KEEL, OF HAMLIN, KANSAS.

AUTOMATIC SLIDING-DOOR LATCH.

1,057,433.

Specification of Letters Patent.

Patented Apr. 1, 1913.

Application filed January 6, 1912. Serial No. 669,810.

To all whom it may concern:

Be it known that I, CHARLES A. KEEL, citizen of the United States, residing at Hamlin, in the county of Brown and State of Kansas, have invented certain new and useful Improvements in Automatic Sliding-Door Latches, of which the following is a specification.

This invention relates to latches and particularly to latches for sliding doors.

The main object of the invention is the provision of a catch which may be released from either side of the door by the fingers of the operator in attempting to slide the door and which will automatically engage a keeper upon the closing of the door.

A further object is the provision in a door latch of a rotatable catch, and means for yieldably holding said catch in an operative position and positively holding it in its closed or locked position until the latch is manually actuated.

A further object is to provide, in connection with a rotatable catch, a detent of very simple construction which will accomplish the ends referred to in the preceding paragraph.

A further object is to so construct the latch that it may be formed of very few members, each member formed of a single piece of sheet metal and all of said members being readily and cheaply made and assembled.

A still further object is to produce a latch having no projecting portions liable to catch in clothing, but in which the operating parts are either housed or protected or else so formed as to have surfaces against which the clothing will not catch.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims.

For a full understanding of the invention and the merits thereof, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a side elevation of the improved door latch mounted on a sliding door; Fig. 2 is a vertical section through the middle of the same parallel to the face of the door; Fig. 3 is a horizontal cross section on the line 3—3 of Fig. 2; Fig. 4 is a perspective view of the device detached

from the door; Fig. 5 shows the casing in process of construction from a blank; Fig. 6 is a perspective view of the member constituting the detent and operating arms.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

For the purpose of illustration, the improved latch of this invention is shown as mounted upon a sliding door A adapted to close against a door jamb B.

One member of the latch comprises a substantially cylindrical catch 1 having a quarter sector omitted therefrom, the catch being journaled in a casing or mounting member 2 which also constitutes a casing to the locking means for the catch. This casing is preferably, though not necessarily, constructed of sheet metal in the manner illustrated in Fig. 5. The casing consists of a back 4, the oppositely disposed ends 3 and the oppositely disposed sides 7. Preferably the casing is formed of an integral blank of sheet metal bent to the form shown in Figs. 4 and 5 in a manner which will be obvious to metal workers, the ends 3 being bent at right angles to the back 4, and the margins of the ends being bent at right angles to provide marginal attaching flanges 5 having countersunk screw holes 6. The metal at the junction of the sides 7 and the back 4 is returned upon itself and extends inward as at 8 so as to reinforce the back. The sides 7 are parallel to each other and at right angles to the back 4 and thus the ends 3, the back 4 and the sides 7 inclose on three sides a chamber 9 designed to contain a spring actuated detent, as will be later described. The margin of each side 7 is outwardly flared as at 7^a, and these outwardly flared margins 7^a with the corresponding returned portions 8 form exterior depressions or recesses 10, within which the detent operating arms 11 are designed to move. It will be noticed that the rebent portions 8 of the back also constitute stops to the arms 11 in their rearward movement, while the flared portions 7^a constitute stops limiting the forward movement of the arms 11.

It will be noted that the sides 7 are cut-away to produce oppositely disposed notches 12 adjacent to the junction of the reinforcement 8 of the back and the lower end member 19 and communicating with the chamber 9, which constitute bearings for the

pivoted detent 13 which is preferably formed, as shown in Fig. 6, of a single piece of sheet metal having longitudinal slits 14 adapted to receive the sides 7. The arms 11, thus exposed on each side of the casing, constitute means for operating the detent. The lower portion of the detent is convex at 15 to conform to a spring and the upper terminal of the detent is bent outwardly to form a lip 16 which is provided with a V-shaped recess 17, one wall of which is straight to form a tooth 17^a radially disposed to the catch 1 and adapted to engage the latter, the other wall of the recess being disposed tangentially to the curved face of the catch.

Attention is directed to the integral construction of the detent 13 and the arms 11, the three members being formed of one piece of metal having its lower end rounded to form a fulcrum 13^a, said detent being disposed out of the plane of the arms 11 to afford a seat for an angular leaf spring 18, one leaf of which is curved and fits closely to the detent, the other leaf being straight and disposed in contact with the back 4. This spring is interposed between the detent and the back in the chamber 9 and presses outwardly on the detent.

It will be noted that the sides 7, which inclose the chamber 9, diverge and flare outwardly at their outer margins 7^a and constitute stops to the arms 11 in their forward movement before the catch 1 is mounted in place. These flared portions further act as stops to prevent excessive rotation of the catch 1.

In assembling the device the spring and detent are placed within the chamber 9 with the sides 7 disposed in the slits 14. The lower portion 19 of the mounting member or casing 2 is then bent upwardly parallel to the upper portion 3 and into engagement with the lower ends of the sides 7, said sides being provided on each end with fastening lips 20 which pass through the adjacent portions 3 and 19 and are bent over to secure the parts in this relation. The lower portion 19 now holds the detent and spring in place in the chamber 9 and also constitutes a bearing to the rounded portion 13^a of the detent and the arms. The edges of the lower portion 19 are bent downwardly to form attaching flanges 5^a, similar to the flanges 5, the flanges 5^a being likewise provided with screw holes 6.

The catch 1 is rotatably mounted between the portions 3 and 19, said catch being substantially cylindrical in form and preferably constructed of a single piece of sheet metal. The catch is so shaped as to provide a cylinder deprived of a quarter sector, thus producing a V-shaped recess having reentrant walls. Preferably in forming the catch, one end of a metal strip is rolled

upon itself to produce a tubular bearing 21. The sheet then projects at a tangent to the bearing 21, and is bent back upon itself and beyond said bearing to form a diametrical wall 22. After this, the metal is again bent back upon itself to the center of the cylinder, then at a right angle to the previously described wall 22, thus forming a wall 23 which is perpendicular to the wall 22, the exposed portion 22^a of which, in conjunction with the wall 23 constitute reentrant walls defining a V-shaped recess. The sheet of metal is then curved to produce the periphery of the cylinder and the end of the sheet bent inwardly along the adjacent side of the wall 22^a and secured thereto, preferably by rivets 24. The adjoining portions of the catch are secured together by solder or the like, and the device presents a neat appearance and is simple and extremely strong. In mounting the catch between the portions 3 and 19, a bolt 25 is passed through the portion 3, the bearing 21 and the portion 19 and secured in this position by the nut 26. Attention is directed to the fact that the bearing 21 is eccentric to the circumference of the catch and disposed adjacent the junction of the wall 23 and the wall 22^a of the recess.

Mounted on the door jamb B and opposite to the catch 1, is a keeper 27 preferably formed of a single piece of sheet metal bent to produce spaced attaching leaves 28 connected by a semicircular portion 29 which is of slightly larger diameter than the catch 1 and is adapted to receive the latter. One of the leaves and the adjacent side of the semicircular portion 29 are extended and bent inwardly on the diameter of the semicircular portion, thus overlapping the recess in said portion and forming a lip 30 adapted to engage the wall 23 of the recess of the catch. The terminal margin 31 of the lip 30 is angularly disposed in advance of the lip so as to strike the catch first and cause the latter to rotate into engagement with the lip. If desired, the portion 29 may be reinforced and strengthened by a correspondingly shaped leaf 32 which is secured in place on the convex side of said portion.

In attaching the device to a door, a rectangular portion is removed from the edge thereof to permit the casing 2 to be slid into place and secured by screw, bolts or the like which are passed through the screw holes 6. It will be noted that the casing comes flush with the face and edge of the door and presents a neat appearance. The catch, being secured to the door on each side thereof, cannot be detached from the door when the latter is closed.

The keeper 27 is secured to the door jamb on each side thereof with the curved portion 29 projecting from the jamb in a posi-

tion to engage the catch 1. The keeper should be placed as low as possible on the jamb so that if the door A should sag, because of being improperly hung, no interference with the interengagement of the catch and keeper will result.

To illustrate the operation of the device, let us first assume that the door A is open. The tension of the spring 18 causes the recessed lip 16 to bear against the catch 1 at two points. The catch being eccentrically mounted will be caused to rest in a position in which the wall 23 will be in line to pass by the lip 30 of the keeper, since in any other position only one of the bearing points of the lip 16 will engage the catch and thus a lateral pressure will be exerted on said catch which will tend to rotate it until the other bearing point engages the catch, when it will come to rest. On sliding the door toward the jamb, the terminal 31 strikes the wall 22^a and causes the catch to rotate against the tension of the spring 18. This movement of the catch brings the wall 23 behind the lip 30, swings the periphery of the catch into contact with the curved portion 29 and finally brings the wall 22^a to a position where the detent snaps out and engages said wall and holds the parts in this relation. To open the door, the fingers of the operator are inserted in the adjacent recess 10 and press against the operating arm 11 mounted therein. This action overcomes the tension of the spring 18 and shifts the detent out of engagement with the catch which permits the latter to be rotated by the keeper as the door slides away therefrom. Upon the release of the arm 11, by the operator, the spring 18 again causes the detent to assume its bearing upon the catch 1, which latter, for the reasons previously stated, assumes a position ready for reengagement with the keeper 27. Should the catch 1 be accidentally rotated while the door is open, the detent bearing on the catch will tend to prevent excessive rotation thereof and the flared portions 7^a will act as stops and finally interrupt the rotation of the catch in either direction.

Attention is directed to the fact that this improved door latch comes flush with the door, there being no projecting parts to catch the clothes or interfere with passage through the door opening. If desired, the keeper may be mounted in a recess and thus offer no interference to passage thereby. This point is of great importance, since in many door latches, projecting catches and the like offer constant menace to persons passing through the door opening.

In constructing a sliding latch in accordance with this invention, a simple, durable and efficient device, is produced which is free from liability to break or get out of order, since the parts are all constructed of sheet

steel or the like. The device is neat in its appearance, automatic in its action and self-adjustable. It may be used on right and left doors and either single or double doors without any changes in its construction and may be operated from either side of the door. Furthermore, the door is held tight against the building, as well as close to the door jamb.

Although the improved latch has been described as preferably constructed of sheet metal, the invention is not necessarily limited to this material, as the parts could be stamped, or cast and still be within the scope of the invention. Furthermore the catch 1 could be made from a rolled or cast bar of metal of sufficient length to permit a number of the catches to be made therefor and thus materially decrease the cost of production and simplify the manufacture of the article.

Having thus described and set forth the merits of the device, it is hereby claimed:

1. A door latch including a rotatable catch, a spring actuated detent yieldably holding the catch in engageable position, and a keeper adapted to strike against the catch and rotate the latter into engagement therewith and into locked engagement with the detent.

2. A door latch including an eccentrically mounted cylindrical catch having a recess, a spring actuated detent adapted to bear against the catch and hold the catch with the recess in exposed position, and a keeper adapted to strike against one wall of the recess and rotate the other wall into engagement with said keeper.

3. A door latch including a catch having a recess, means bearing against the catch to hold the latter with the recess presented in one direction, and a keeper adapted to strike against one wall of the recess and rotate the other wall into engagement with said keeper.

4. A door latch including a rotatable catch having a recess formed therein and provided with a bearing surface eccentric to the axis of rotation of the catch, a spring depressed detent yieldably contacting with said bearing surface to maintain the catch in engageable position, and a keeper adapted to strike against one wall of the recess and rotate said catch into detachable engagement with the detent and bring the other wall of the recess into engagement with the keeper.

5. A door latch including a rotatable catch, a mounting member having spaced end portions constituting bearings for the catch, said member being formed with spaced sides positioned between the end portions, thus producing a chamber, a spring actuated detent mounted within the chamber and adapted to detachably engage the

catch, and a keeper adapted to strike against the catch and rotate the latter into engagement therewith and into detachable engagement with the detent.

5 6. A door latch including a rotatable catch, a mounting member having spaced end portions constituting bearings for the catch, said member being formed with spaced sides positioned between the end portions, each side forming a stop to the catch
10 to prevent excessive rotation thereof, and a keeper designed to strike against the catch and rotate the latter into engagement therewith.

15 7. A door latch embodying a rotatable cylindrical catch, said catch being provided with a recess having reëntrant walls, a bearing provided within said catch eccentric to the periphery thereof, a pin passing through
20 said bearing to mount the catch, a detent yieldably bearing against the catch and tending to maintain it with the recess thereof in exposed position, and a keeper adapted to strike against one wall of the recess
25 and rotate the catch to bring the other wall of the recess into engagement with the keeper and cause the catch to be engaged by the detent.

30 8. The combination with a door and the jamb thereof, of a rotatable catch mounted on the door, means yieldably engaging the catch to hold the latter in engageable position, and a keeper secured to the jamb and adapted, when the door is moved into proximity thereto, to strike against the catch
35 and rotate the latter into engagement therewith and into locked engagement with said means.

40 9. A door latch including a catch, a casing having spaced sides inclosing a chamber,

said casing constituting a mounting member for the catch, a catch-engaging spring-actuated detent mounted in the chamber and provided with longitudinal slits to receive
45 the sides of the casing, the exterior parts of the detent thus producing operating arms, and a keeper adapted to strike against the catch and rotate the latter into engagement with the detent.

10. A door latch including a rotatable
50 catch, a mounting member carrying said catch and provided with sides inclosing a chamber, each side being formed with an exterior recess, a detent mounted in the chamber and adapted to detachably engage
55 the catch, operating arms disposed in the exterior recesses and connected with the detent, and a keeper adapted to strike against the catch and rotate the latter into engagement therewith and into engagement with
60 the detent.

11. A door-latch including an eccentrically mounted rotatable catch, a keeper arranged to engage with the catch and rotate the same into locking engagement
65 therewith, and a detent for the catch normally yieldably bearing against the same, at the portion thereof nearest the axis of the catch whereby to hold the catch in position for engagement by the keeper, the said detent
70 being arranged also for engagement with the catch whereby to hold the same in locked engagement with the keeper.

In testimony whereof, I affix my signature in presence of two witnesses.

CHARLES A. KEEL. [L. S.]

Witnesses:

E. T. JACQUES,

C. M. BERKLEY.