

Dec. 20, 1927.

1,653,487

E. D. WHITE

SAFETY LOCK

Filed Jan. 5, 1924

2 Sheets-Sheet 1

Fig. 1.

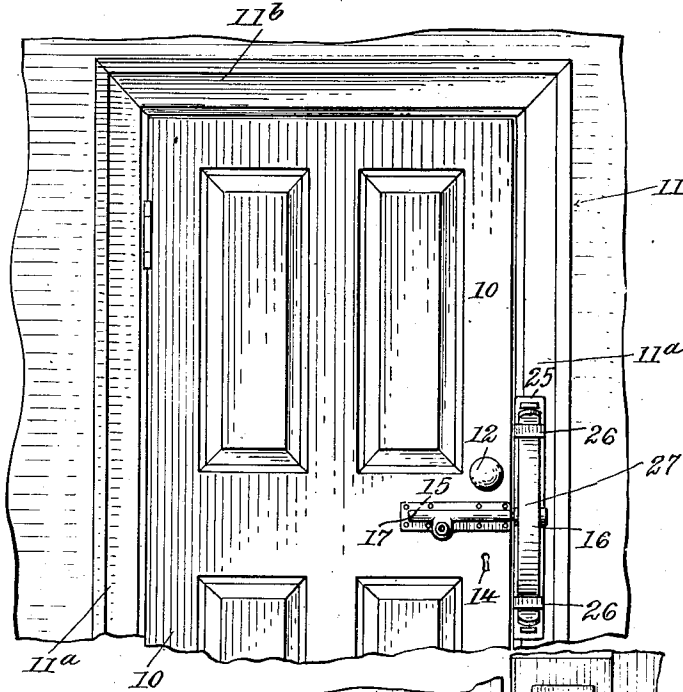
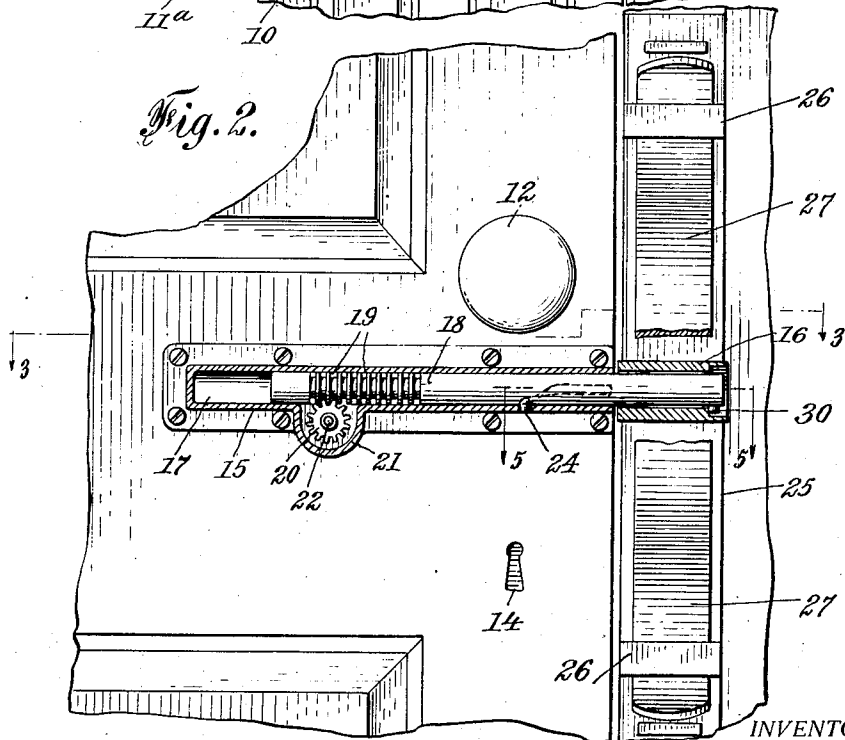


Fig. 2.



INVENTOR
Elijah D. White
 BY *Comad A. Duteich*
 his ATTORNEY

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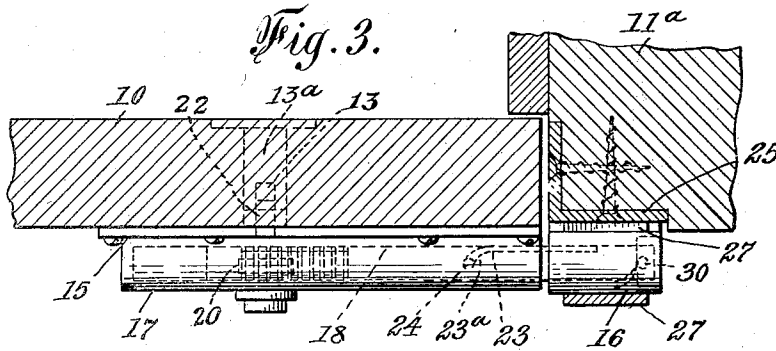


Fig. 4.

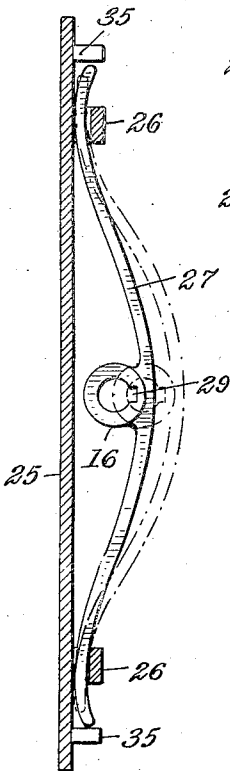


Fig. 5.

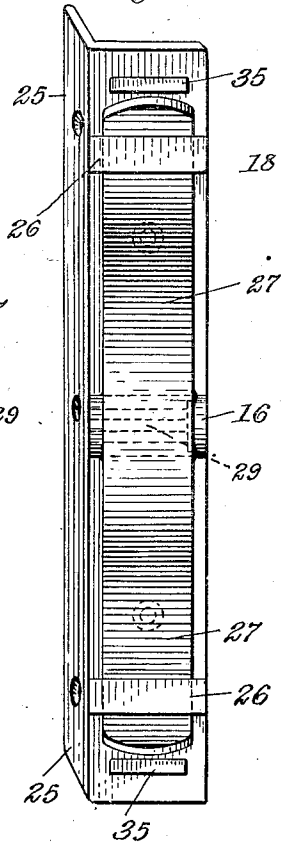


Fig. 6.

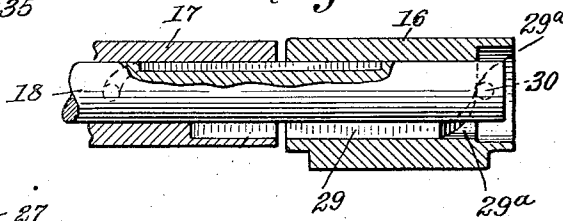
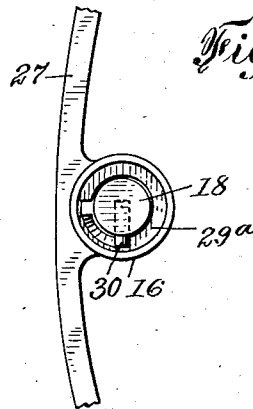


Fig. 7.



INVENTOR
Elyah D. White
BY *Conrad A. Dietrich*
his ATTORNEY

Patented Dec. 20, 1927.

1,653,487

UNITED STATES PATENT OFFICE.

ELIJAH D. WHITE, OF BROOKLYN, NEW YORK.

SAFETY LOCK.

Application filed January 5, 1924. Serial No. 634,503.

My invention relates to improvements in safety locks for doors and the like, and the same has for its invention to provide a simple, efficient and inexpensive lock which may be readily applied to a door frame.

Further, said invention has for its object to provide a lock which may be locked or unlocked in the same manner as an ordinary lock, but so constructed as to prevent the unauthorized opening of the door.

Further, said invention has for its object to provide a lock by means of which a door may be secured in its closed position in such manner that the same will yield inwardly without releasing the lock, when an instrument or tool is introduced between the door and its frame for the purpose of prying or forcing the door.

Further, said invention has for its object to provide a lock in which the bolt may be interengaged with its keeper and permit of an inwardly yielding movement of said parts without disengagement of the bolt from its keeper.

Other objects will in part be obvious and in part be pointed out hereinafter.

To the attainment of the aforesaid objects and ends my invention consists in the novel details of construction, and in the combination, connection and arrangement of parts hereinafter more fully described and then pointed out in the claims.

In the accompanying drawings—

Figure 1 is a front elevation showing a door and the frame therefor equipped with one form of safety lock constructed according to and embodying my said invention;

Fig. 2 is an enlarged detail face view of a part of the door and frame, and showing the construction of the lock and the keeper therefor, the same being partly broken away and in section;

Fig. 3 is a horizontal section on the line 3—3 of Fig. 2;

Fig. 4 is a side view of the keeper and its mounting, the latter being partly sectioned;

Fig. 5 is a perspective view of the keeper and its mounting;

Fig. 6 is a detail horizontal section on the line 5—5 of Fig. 2; and

Fig. 7 is a detail end view of the keeper.

In said drawings, 10 designates a door of the usual construction and 11 the frame comprising the stiles 11^a and lintel 11^b. 12 denotes the knob for operating the usual lock mechanism which is arranged within the

casing socketed in the edge of the door. The safety lock which is designed to supplement the ordinary lock which is controlled by the knob 12 and a key to be inserted into the keyhole 14 comprises a casing 15 secured to the door, and a keeper part 16 which is secured to a leaf spring 27 yieldingly supported upon an angle plate 25 by loops 26 fixed to said plate, the latter being secured in a suitable recess with the stile 11^a. The casing 15 is provided with a longitudinal housing 17 within which works a bolt 18. The bolt 18 is provided adjacent to its inner or rear end with a series of annular projections or ribs 19 forming a rack adapted to be engaged by a pinion 20 located in a recessed portion 21 of the housing 17. 22 denotes a shaft having a pinion 20 fixed at its inner end arranged within the casing 17, and its outer end 13, which extends into a key-hole opening 13^a in the door 10, of suitable outline or contour to be engaged by a key, or by a cylinder adapted to be actuated by a key.

The bolt 18 is provided adjacent to its outer or forward end with a recess 23 terminating at its inner end in a cam groove 23^a into which extends a projection 24 provided upon the inner side of the cylindrical housing 17 which serves to cause the bolt 18 to be rotated when the same is projected or retracted by the pinion 20 when actuated by the key or device for operating the same.

The keeper 16 is integrally secured to one surface (here shown as the inner surface) of a comparatively heavy leaf spring 27, and is transversely recessed to receive the outer end of bolt 18. The inner surface of the keeper 16 is provided with a longitudinal slot or recess 29 to receive the projection or catch 30 provided at the outer end of bolt 18. The outer end of the slot or recess 29 terminates in a cam face 29^a at the outer end of the keeper to be engaged by the projection or catch 30 on the bolt 18 when said bolt is fully projected and rotated.

The operation of the lock is as follows: As ordinarily operated, it merely becomes necessary to insert the key in the keyhole or aperture 14 of the lock provided upon the outer surface of the door, and by turning the same impart a rotary movement to the shaft 22 and the pinion 20 thereon, which will cause the said pinion 20 to project the bolt 18 outwardly. As the bolt 18 is so moved outwardly, the projection 24, which

extends into the spiral recess 23, will cause the bolt to be rotated, and this, in turn, will cause the projection 30 at the outer end of the bolt to engage with the cam face 29 of the keeper 16 and cause said projection to engage therewith.

If an attempt be made to force open the door by means of a tool or other implement inserted between the door and the side of the stile 11^a, the door will yield inwardly by reason of the fact that the keeper 16 is movably supported by the spring 27 within the loops 26, and will therefore move outwardly without permitting the end of the bolt 18 to become disengaged from the keeper 16.

The outward movement is against the action of spring 27, the ends of said spring moving within the loops which thus serve to guide the movements of the spring and keeper. As soon as the force acting upon the spring is withdrawn, the latter will resume its original position. To maintain keeper 16 properly positioned relative to bolt 18, stops 35 may be provided against which the ends of spring 27 normally abut, thus fixing the position of the keeper relative to said stops.

To unlock the door in the regular way, it merely becomes necessary to insert the key in the keyhole in the outer surface of the door and rotate the same in the opposite direction from that first described, whereby the bolt 18 will be partially rotated in order to free the projection 30 at the outer end thereof from its engagement with the L-shaped recess 29 in the keeper 16, and thence permit of the bolt being retracted.

Having thus described my said invention what I claim and desire to secure by Letters Patent is:

1. A safety lock for fastening a hinged movable member to a fixed member, said lock comprising a bolt mounted on the movable member, and a keeper yieldably mounted on said fixed member, and adapted to yield in the direction of movement of said hinged member when said bolt and said keeper are in engagement, substantially as specified.

2. A safety lock for fastening a movable member to a fixed member, said lock comprising a bolt mounted on the movable member, and a keeper movably mounted on said fixed member to yield inwardly, when said movable member is moved inwardly without releasing the bolt from the keeper, substantially as specified.

3. A safety lock for fastening a movable member to a fixed member, said lock comprising a bolt mounted on the movable member, a keeper movably mounted on said fixed member to yield inwardly when said movable member is moved inwardly, and means for opposing the inward movement of said keeper, substantially as specified.

4. A safety lock for fastening a movable member to a fixed member, said lock comprising a bolt mounted on the movable member, a keeper movably mounted on said fixed member to yield inwardly in the direction of movement of said movable member when said bolt and said keeper are in engagement, and resilient means for opposing the inward movement of said keeper, substantially as specified.

5. A safety lock for fastening a movable member to a fixed member, said lock comprising a bolt mounted on the movable member, a keeper movably mounted on said fixed member to yield inwardly when said movable member is moved inwardly, and means for guiding said keeper in its movement, substantially as specified.

6. A safety lock for fastening a movable member to a fixed member, said lock comprising a bolt mounted on the movable member, a keeper movably mounted on said fixed member to yield inwardly, and means for guiding said keeper in its movement, said means comprising brackets secured to said fixed member, and a member fixed to said keeper and operating in said brackets, substantially as specified.

7. A safety lock for fastening a movable member to a fixed member, said lock comprising a bolt mounted on the movable member, a keeper movably mounted on said fixed member to yield inwardly when said movable member is moved inwardly without releasing the bolt from the keeper, and means for guiding said keeper in its inward movement, said means comprising a member fixed to said keeper and slidably mounted upon said fixed member, substantially as specified.

8. A safety lock for fastening a movable member to a fixed member, said lock comprising a bolt mounted on the movable member, a keeper movably mounted on said fixed member to yield inwardly when said movable member is moved inwardly, resilient means for opposing the inward movement of said keeper, and means for guiding said keeper in its inward movement, substantially as specified.

9. A safety lock for fastening a movable member to a fixed member, said lock comprising a bolt mounted on the movable member, a keeper movably mounted on said fixed member to yield inwardly, a spring fixed to said keeper for opposing the inward movement of said keeper, and guide members for said spring, substantially as specified.

10. A safety lock for fastening a movable member to a fixed member, said lock comprising a bolt mounted on the movable member, a keeper mounted on said fixed member, a rack carried by said bolt, an operating pinion with said rack for advancing or retracting the bolt into or out of said

keeper, means for locking said bolt in said keeper, and means for rotating the bolt as it is advanced to render said locking means effective and for rotating said bolt as it is retracted to render said locking means ineffective, substantially as specified.

11. A safety lock for fastening a movable member to a fixed member, said lock comprising a bolt mounted on the movable member, a keeper mounted on said fixed member, a rack carried by said bolt, an operating pinion with said rack for advancing or retracting the bolt into or out of said keeper, said bolt having a catch, said keeper having a cam face with which said catch engages to lock said bolt in said keeper, and means for rotating said bolt as it is advanced to bring said catch into engagement with said cam face, and to move said catch out of engagement with said cam face when the bolt is retracted, substantially as specified.

12. A safety lock for fastening a movable

member to a fixed member, said lock comprising a bolt mounted on the movable member, a keeper mounted on said fixed member, a rack carried by said bolt, an operating pinion with said rack for advancing or retracting the bolt into or out of said keeper, said bolt having a catch, said keeper having a cam face with which said catch is adapted to engage to lock said bolt in said keeper, a projection fixed in position relative to said movable member, said bolt having a cam slot in which said last-named projection extends so that said bolt is rotated as it is advanced to bring said catch into the recess in said keeper and to move said catch out of engagement with said cam face when the bolt is retracted, substantially as specified.

Signed at the city of New York, in the county and State of New York, this 26th day of May, one thousand nine hundred and twenty-two.

ELIJAH D. WHITE.