Feb. 26, 1924. **1,485,024**

E. E. GAGE

DOOR SECURING MECHANISM

Filed Feb. 26, 1920 2 Sheets-Sheet 1

Fig. 1.

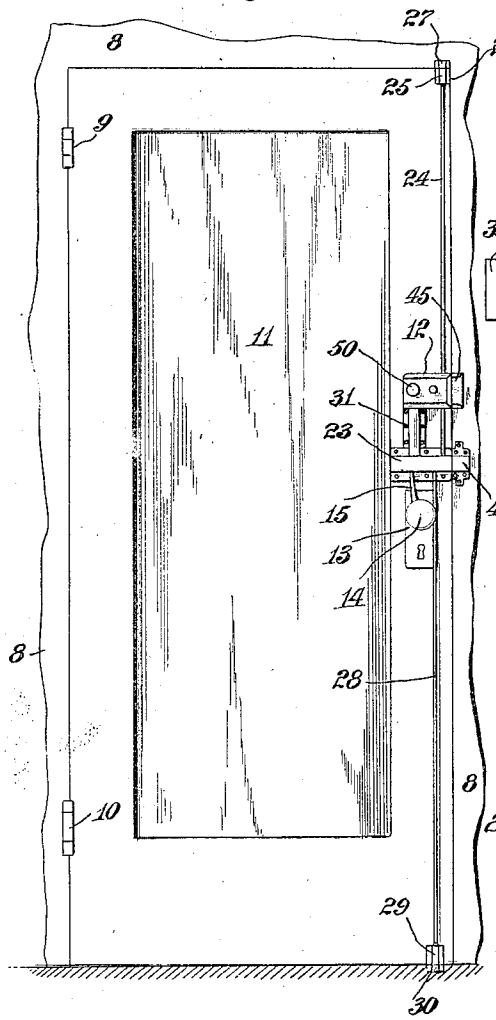
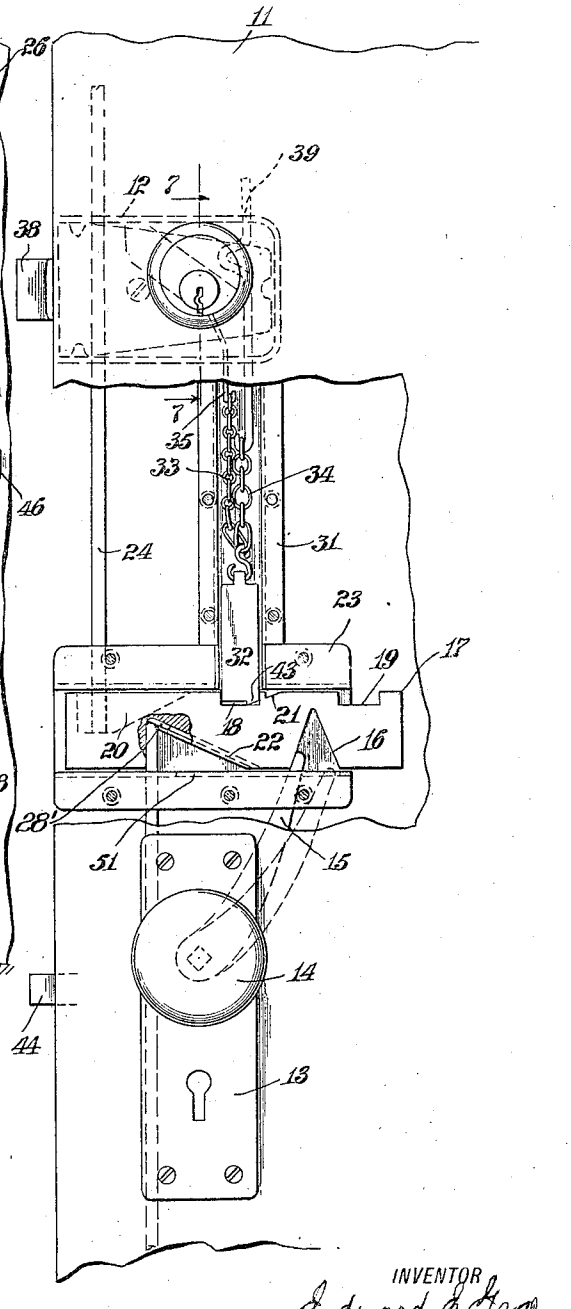


Fig. 2.



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Fig. 3.

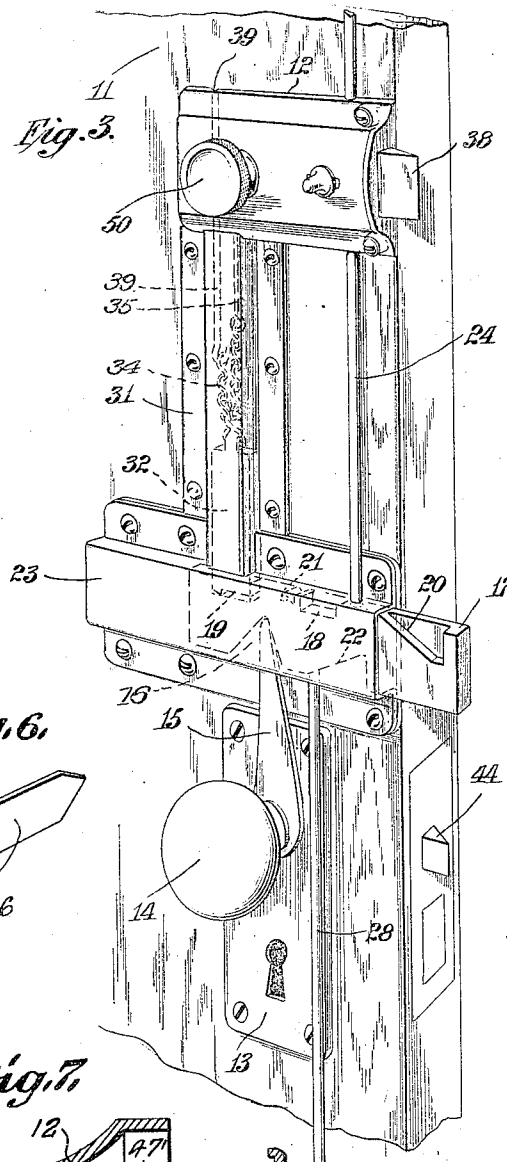


Fig. 4.

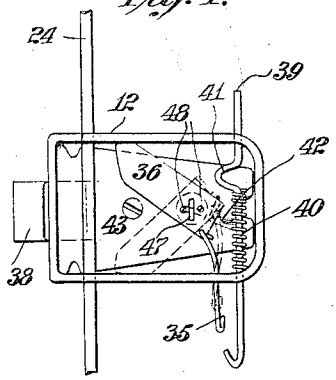


Fig. 5.

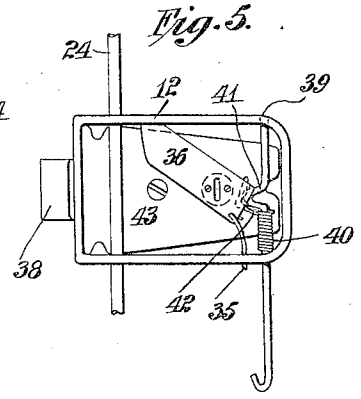


Fig. 6.

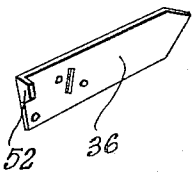


Fig. 7.

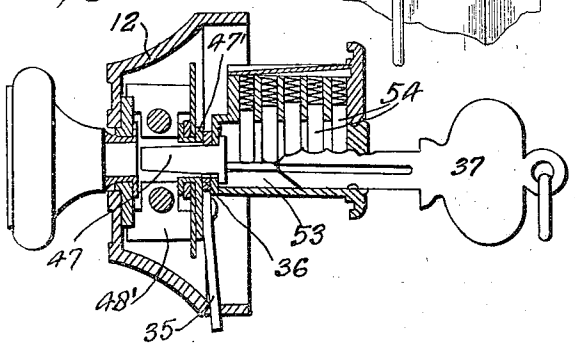
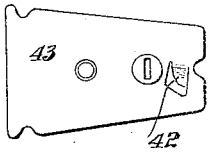


Fig. 8.



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Patented Feb. 26, 1924. 1,485,024

UNITED STATES PATENT OFFICE.

EDWARD E. GAGE, OF NEW YORK, N. Y.

DOOR-SECURING MECHANISM.

Application filed February 26, 1920. Serial No. 361,399.

To all whom it may concern:

Be it known that I, EDWARD E. GAGE, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented new and useful Improvements in Door-Securing Mechanism, of which the following is a specification.

My invention relates to fastening means for doors, and has for its object in general to provide a simple and convenient attachment which may be readily applied to the ordinary locking and latching attachments of doors and which will render such doors proof against forcible entry by such means as forcing the door by use of a jimmy, cutting out the lock, sawing or filing off the bolts or cutting a hole through the door, inserting the hand and manipulating the bolts from the inside so that the door could be opened.

In accordance with certain valuable features of my present invention a plurality of securing bolts are desirably provided for securing the door to the casing at widely separated points. In accordance therewith it is further arranged whereby the securing bolts are thrown into and retracted from their sockets by means of the door knob of the usual latch mechanism from either side of the door and it is further arranged so that they may be secured in either locked or unlocked positions by a drop bolt adapted to be controlled by hand from the inside of the door and by the key in the lock from the outside of the door. In accordance with further important features of the present invention provision is made for retaining the securing bolts in unlocked position and the latching mechanism is suitably co-related thereto whereby it will be then independently operable as a simple latch securing means to permit of readily opening the door by the turning of either knob.

My improved arrangement further provides, by means of a simple setting for effecting a "dead" locking of the securing bolts in a manner which prohibits withdrawing or opening said bolts from the inside of the door and permits of their being opened only by the lock through the instrumentality of the proper key from the outside. My improved arrangement further provides for the operation of the securing bolts as an ordinary safety lock operable by hand from the inside of the door or by key from the outside and is further operative in dead lock to similarly secure the latch from withdrawal thereby to further contribute to the security of the locking means. Additional features of my improvement consist in the arrangement of the parts whereby the lock is capable of use independently of the securing bolts controlled by the door knob and the arrangement whereby when the lock is operated by the key on the outside, to release the securing bolts from the dead lock, it will automatically reset the parts for normal operation.

The described and other important features and advantages of my present invention will be understood by reference to the accompanying drawings wherein like reference numerals are applied to the corresponding parts in the several views.

In the drawings:—

Fig. 1 is a view in elevation illustrating the inside of a door equipped with the improved locking means embodying the features of my present invention.

Fig. 2 is an enlarged detailed view in elevation taken from the opposite side with portions broken away more fully to disclose the construction.

Fig. 3 is a perspective view as seen from the inside of the door illustrating the bars in locked position.

Fig. 4 is a view in rear elevation illustrating the locking mechanism.

Fig. 5 is a similar view thereof with certain of the parts in different position.

Fig. 6 is a detailed perspective view of the drop bolt lifter.

Fig. 7 is a cross sectional view of the locking mechanism taken on line 7—7 of Fig. 2.

Fig. 8 is an elevation view of the inside lock plate.

In the drawings I have illustrated an approved and desirable embodiment of the many features of my invention in a locking means adapted for locking a door in a manner to insure against forcible entry as hereinbefore referred to. As therein disclosed 8 designates a door casing within which is hinged at 9 and 10 a door 11. Secured to the door 11 at the marginal side thereof opposite to the hinges is a lock 12 which is preferably a standard form of spring lock of the type operated by a rim pin cylinder key barrel. Secured to the door 11 at a suitable distance beneath the key lock 12 is positioned the plate 13 concealing the usual

door latching mechanism controlled by opposite rotatable door knobs in the manner well known. Located between the plate 13 and the door knob 14 on the inner side of the door an arm 15 is positioned on the squared shank to which the door knobs are fastened so as to be movable therewith. For this purpose the arm 15 is desirably formed with a squared hole fitted to the squared shank.

As indicated the upper reduced end of the arm 15 enters into a suitable notch 16 of a securing bolt 17 arranged to be slidably moved thereby. The bolt 17 as shown is also formed with notches 18, 19 and 21 in its upper marginal edge and also with a walled sided inclined depression 20 as best shown in Fig. 3. At the forward bottom side of the bolt 17 it is formed with a walled depression provided with an inclined slot 22. The securing bolt 17 is housed within a suitable casing 23 forming a suitable guide way therefor in which the securing bolt 17 is slidably movable and operable by the door knob 14 through the agency of the arm 15 as described.

Positioned to be received within the inclined depression 20 of the securing bolt the rod 24 is vertically arranged and passed through an aperture in the casing 23 for the securing bolt and also through suitable apertures in the casing of the lock 12. This rod 24 is extended to the top of the door 11 as best illustrated in Fig. 1 and to its upper end is secured to a bolt 25 slidably fitted within a holder or casing 26 secured to the door and adapted to register with a coacting socket 27 positioned on the door casing 8 as indicated. In similar arrangement the rod 28 is provided, extending downwardly from the securing bolt 17 and provided at its lower extremity with a bolt 29 slidably fitted within a suitable guide or casing attached to the door and positioned to enter the socket member 30 secured to the usual door sill or into the floor. At its upper end the rod 28 passes through an aperture in the casing member 23 and is formed at its extremity with a hooked portion 28′ fitted within the inclined guide slot 22 of the securing bolt as best shown in Fig. 2.

Slidably fitted in a retaining casing 31 providing a vertical slideway therein is a drop bolt 32 adapted to drop into position of registration with the respective notches 18, 19 and 21 formed in the upper edge of the securing bolt 17. The drop bolt 32 is arranged to be operated and controlled by the key 37 of the lock 12 from the outside of the door and by hand from the inside of the door. For the purpose suitable connections are provided and operable as follows: For operating by key from the outside of the door motion is transmitted therefrom to the drop bolt 32 by means of a drop bolt lifting member 36 suitably arranged to be moved by the key and connected by a link 35 and chain 33 to an eyelet formed in the upper portion of the drop bolt 32 as shown. Thus upon rotation of the key the lifting member 36 will be moved into position shown in dotted lines in Fig. 4 to effect a lifting of the chain 33 and correspondingly retract the drop bolt 32 into position of non-engagement with the securing bolt. For similarly retracting the drop bolt by hand a suitable lifting member 39 is provided and fitted to suitable apertures in the casing 12 of the lock. This hand lifting member is formed at its lower extremity into a hook connecting with a lifting chain 34 attached to the drop bolt 32. The means thus provided normally permits of releasing or retracting the drop bolt by means of the lifting member or rod 39.

An additional and valuable feature of my present invention consists in the association with the described mechanism of means operative when desired to lock the hand releasing member 39 against operation for releasing the drop bolt 32 for the purpose of "dead locking" the securing means from the inside of the door and permitting the releasing of the securing bolt and its associated locking means only from the outside of the door and by means of the proper key. The provision made therefor as here shown consists in providing the hand lifting member with a locking shoulder formed by an offset or bent portion 41 thereof adapted to be engaged with and secured within a suitable recess 42 formed in a fixed or stationary part of the lock 12; as here shown (Fig. 8) said depression 42 being formed in the inside cover plate 43 of said lock. The hand lifting rod 39 is fitted to the apertures in the cover plate 12 of the lock so as to permit of rotation therein whereby when the offset 41 is positioned to register with the recess 42 the key lifting member 36 will force the shoulder 41 within the recess upon its being moved into locked position. The latter, as will be understood, is effected by the engagement with the shoulder 41 of an inclined under surface of a lug 52 formed on the member 36. It is further arranged that when so positioned, upon rotation of the lifting member 36 into the locking position as shown in full lines in Figs 4 and 5, a portion of said lifting member 36 will then overlie the shoulder 41 within the recess 42 in a manner to prevent the withdrawal of said shoulder from said recess. As a result thereof the shoulder 41 will be retained within said recess and can only be released therefrom upon movement of the lifting member 36 into its unlocked position as indicated in dotted lines of Fig. 4 which latter operation can only be effected by the instrumentality of the key from the

outside. As shown a coil compression spring 40 is fitted to surround the manual release rod 39 beneath the shoulders 41 to bear thereagainst and upon the inside of the casing whereby the spring will be operative normally to elevate the lifting member 39 and also normally to withhold the shoulder 41 out of the path of lug 52 of the key lifting member 36.

As will be readily understood my improved securing means is designed to be incorporated with standard forms of latching mechanism 13 and with a standard type of spring lock 12. The latter may be of the usual standard construction as shown in Fig. 7 wherein the rotatable member 53 is normally held from rotation by the several locking pins 54. Upon the proper positioning of the locking pins 54 by means of the key 37 the rotatable operating member 53 may be rotated by means of the key to effect the movement of the locking bolt or latch 38. As shown best in Fig. 4 the drop bolt lifting member 36 is suitably attached to the rotatable part 47 of the member 53 of the standard lock 12 by being fitted to the squared inner portion 47 thereof and secured thereon by means of screws 48. In the standard form of spring lock 12 illustrated, the rotatable part 47 of the pin cylinder engages with the usual roll back 47′ which is formed with the usual lever projections engaging shoulders 48′ of the bolt carrier having connected thereto the latching bolt 38.

Operation.—Assuming that the door is unlocked and all parts in initial position as shown in Fig. 2 and that the operator is leaving the apartment or store alone and unoccupied and desires that the securing means shall be dead locked on his departure, the setting and operation of the locking means will be as follows:—The door would be opened and key 37 inserted in the lock 12 in the usual manner from the outside and will be then rotated inwardly as far as it will go so as to retract the bolt 38 and depress the lifting member 36 into the dotted position of Fig. 4. This operation will effect the lifting of the drop bolt 32 clear of the securing bolt 17 and the latter is then moved or shifted forward till flush with the edge of the door by manipulation of the door knob 14. The lip 43 of the drop bolt can then drop into the notch 21. The hand lifting member 39 is then pushed downwardly into the lock 12 as far as it will go which will bring the top of the lifting rod 39 flush with the top of the casing of the lock 12. With the shoulder 41 in this position the key is then turned in the opposite direction so as to move the key bolt lifter 36 into its elevated position as shown in full lines of Figs. 4 and 5 whereby as indicated in Fig. 5 it will force the shoulder 41 into the depression 42 and lock said shoulder therein.

It is arranged that the key can only be removed when the lifter 36 is in the latter position so that the key may now be withdrawn. With the parts so positioned the drop bolt 32 is released so as to be capable of entering into the depression 21 in the top of the securing bolt 17 which will prevent the bolt 17 from being turned back. The door is then shut from the outside and the bolt 38 of the spring lock 12 will lock automatically. The securing bolts 17, 26 and 29 are then thrown into locking position by rotation of the knob 14 and when so shifted the notch 19 of the securing bolt 17 will be brought into registration with the drop bolt 32 whereby the latter will automatically enter therein and dead lock the securing bolts from being released from the inside of the door. In this operation the bolt 26 will be locked by the action of the incline or cam 20 acting on the rod 24 and in similar manner the bolt 29 will be depressed by the action of the incline cam 22. The door now can only be unlocked by the proper key and from the outside.

In this connection it will be noted that the door knob 14 will be prevented from being turned so as to release its latch 44 by reason of the fact that the end of the arm or finger 15 is positioned in the narrow upper end of the slot 16 from which it results that locking of the securing bolt 17 by means of the drop bolt 32 will likewise dead lock the latch 44. It will also be noted that retracting of the bolt 38 of the lock 12 for instance by means of the usual finger lever 50 or by any other method except through the operation of the key will not release the drop bolt 32 from the notch 19 in the securing bolt 17 and therefore will not release the dead locking of the respective bolts 17, 26, 29 and of the latch 44 and as the top of the rod 39 is flush with the top of the casing of the lock 12 it cannot be operated till released by the key lifting member 36. As a further feature contributing to the security against forcible entry the bolts 25 and 29 are desirably of cylindrical form and rotatable on the rods 24 and 28 and therefore cannot be cut as they would rotate under pressure of a file or saw and the rod 24 is rotatable and would prevent the lock 12 from being cut out.

With the hand lifting member 39 dead locked or secured in the manner described and the several bolts being also dead locked by means of the drop bolt 32, it will be seen that a thief could not operate the bolts by cutting a hole through the door and inserting his hand for the drop bolt is enclosed within the casing 31 so as to be inaccessible from the inside. If sufficient force was used to turn the outside door knob the

arm 15 would break as it is desirably arranged to be weaker than the other parts that secure the bolts.

To unlock the door from the outside the proper key is used to operate the lock 12 to turn back the bolt 38 which operation transmits lifting movement to the drop bolt 32 withdrawing it from engagement with the notch 19 of the securing bolt 17. The lip portion 52 of the lifting member 36 will in this operation be moved from its position overlying the shoulder 41 of the lifting member 39 and the actuating spring 40 will then act to force up the member 39 to withdraw the shoulder 41 and will elevate the latter to the position shown in Fig. 4 and the mechanism has now returned automatically to a safety position that can be operated by hand from the inside of the door or by key from the outside of the door. The operator will now turn the door knob which through the arm 15 will move the securing bolt 17 back into unlocked position and during this movement the rod 24 will drop by gravity releasing the bolt 26 and the rod 29 will be carried upwardly in the slot 22 similarly to release the bolt 29. Further retracting movement of the securing bolts 17 will permit the drop bolt 32 to fall within the notch 18 in the upper surface of the securing bolt thereby securing all of the bolts operated by the door knob in unlocked position with the exception of the latch 44. It is further provided that the latter will be independently operable by a further movement permitted to the door knob which is provided for by a suitable elongation of the slot 51 in the under side of the casing 23; the extent of this movement being indicated in dotted lines in Fig. 2 and the extreme movement determined by the end wall of the slot 51.

With the parts thus returned to normal position the bolts will be operable by hand from the inside of the door upon releasing the drop bolt 32 by means of the lifter 39 which permits of the bolts being drawn into and out of their sockets by means of the door knob and releasably secured in either position by the drop bolt 32. The spring lock 12 is also now independently operable of the bolts controlled by the door knob and may be operated by the key from the outside or by hand from the inside of the door.

I have thus provided an improved securing means of simple and durable construction adapted to afford protecting means of exceptional strength against forcible entry and which will not only permit of dead locking the several securing bolts as described but moreover permits of the independent use of the respective locking means when desired and as described the rods 24 and 29 will protect the lock from being cut out.

Having now described my invention which may vary in detail without departing from the spirit thereof what I claim and desire to secure by Letters Patent is:—

1. In a door locking mechanism the combination of a key operated lock, a shiftable securing bolt, means for shifting said bolt into locked and unlocked position, a locking member associated with the securing bolt and adapted to engage therewith for locking the securing bolt against movement, manual releasing means connected with the locking member and normally operative to release the same from engagement with the securing bolt, connections from the key operated lock to the locking member operative to retract the locking member from locking engagement with the securing bolt and said manual releasing means and said lock being co-related and formed whereby the key operated lock is capable of rendering the manual releasing means inoperative when said lock is in locking position whereby the locking member may be retracted only upon the operation of the key operated lock, substantially as described.

2. In a door securing means of the character described, the combination of a cylinder key operated lock, a manually operated door latch, a shiftable securing bolt, connections from the latch to the securing bolt whereby the latter is shifted into and out of locking position, a protectively enclosed locking member associated with the securing bolt and adapted to engage the latter to secure it against movement, connections from the locking member to the cylinder lock whereby the latter will release the locking member when opened from the outside by a key, said securing bolt being formed to be engaged by the locking member in both locked and unlocked positions and being formed to permit of the independent operation of the latch in the latter position only, substantially as described.

3. A device of the character described comprising a rotatable key operated lock, a latching mechanism, a shiftable securing bolt, operating connections from the latching mechanism to the securing bolt, a protectively enclosed locking member adapted to engage the securing bolt and lock the same from movement and connections from said locking member to the key operated lock whereby the latter will be operative to release the locking member from locking engagement with the securing bolt, and additional bolts connected to the securing bolt to be operated thereby, substantially as described.

4. In a door locking mechanism the combination of a key operated lock, a shiftable securing bolt, means for shifting said bolt into locked and unlocked position, a locking member associated with the locking bolt and