

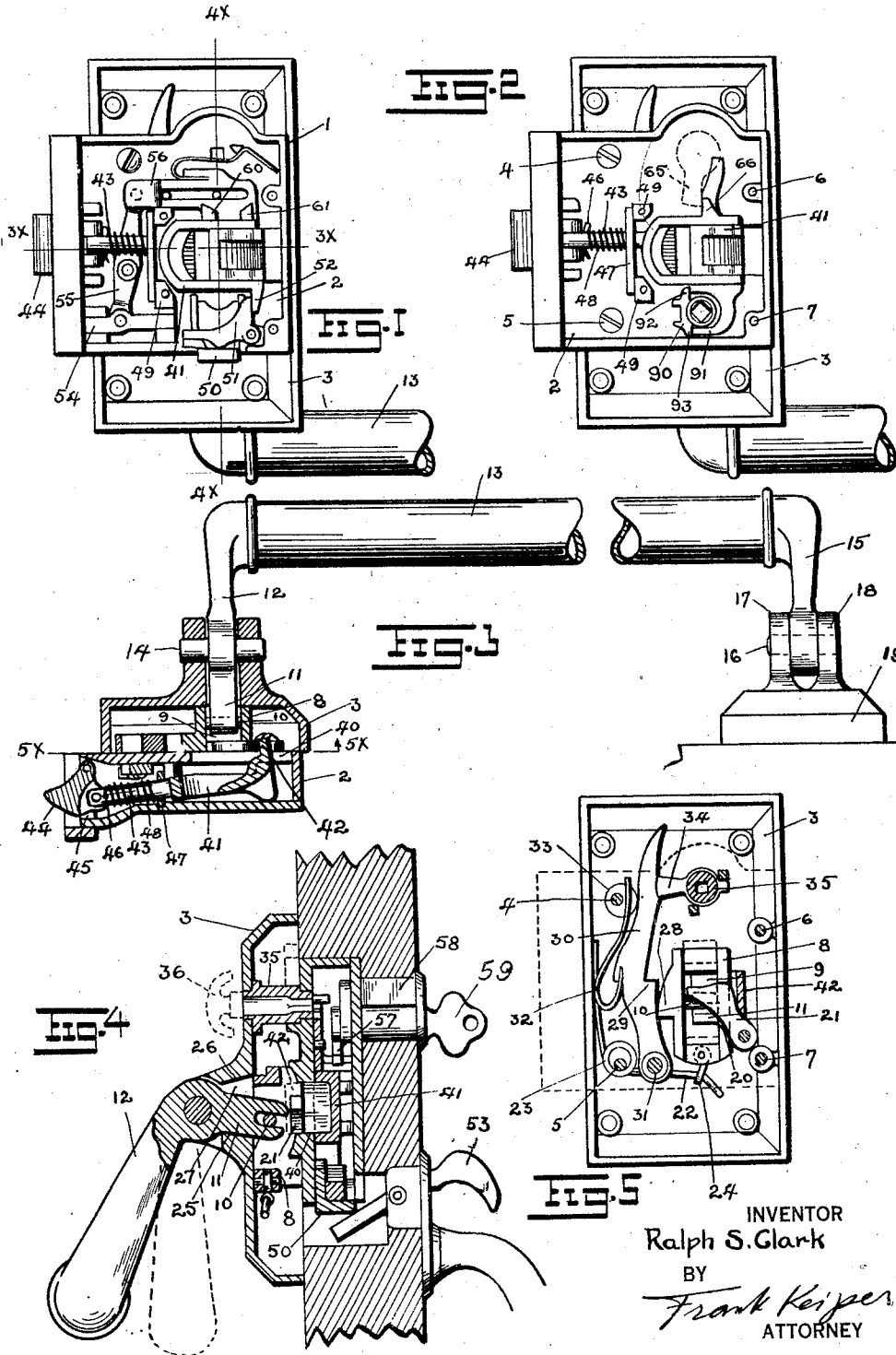
May 26, 1925.

1,539,350

R. S. CLARK  
EMERGENCY LOCK

Filed Jan. 29, 1923

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

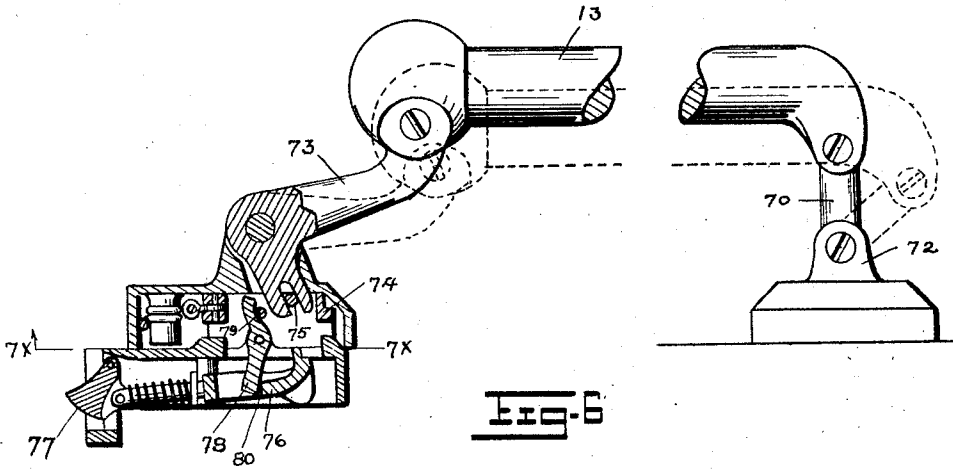


FIG. 6

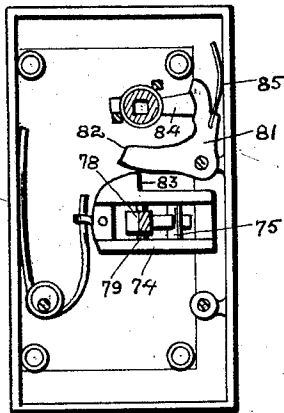


FIG. 7

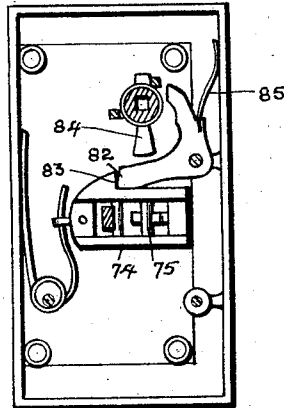


FIG. 8

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# UNITED STATES PATENT OFFICE.

RALPH S. CLARK, OF ROCHESTER, NEW YORK.

## EMERGENCY LOCK.

Application filed January 29, 1923. Serial No. 615,593.

*To all whom it may concern:*

Be it known that I, RALPH S. CLARK, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Emergency Locks, of which the following is a specification.

The object of this invention is to provide a new and improved locking mechanism for an emergency lock.

Another object of this invention is to combine all of the operating mechanism into a unitary structure that can be readily and quickly mounted on the door.

These and other objects of this invention will be fully illustrated in the drawings, described in the specification and pointed out in the claims at the end thereof.

In the accompanying drawings:

Figure 1 is a front elevation of the emergency lock embodying the new structure with the cover plate of the lock removed therefrom.

Figure 2 is a similar view of a slightly modified form of the lock with some of the locking mechanism eliminated.

Figure 3 is a horizontal sectional view of the locking and operating lever, the section being taken on the line 3<sup>x</sup>-3<sup>x</sup> of Figure 1.

Figure 4 is a vertical sectional view of the locking mechanism illustrated in Figures 1 and 3, the section being taken on the line 4<sup>x</sup>-4<sup>x</sup> of Figure 1.

Figure 5 is a vertical longitudinal section of the lock, the section being taken on the line 5<sup>x</sup>-5<sup>x</sup> of Figure 3.

Figure 6 is a horizontal sectional view of a modified form of the locking mechanism and the operating mechanism of the emergency lock.

Figures 7 and 8 are vertical longitudinal sections of the locking mechanism illustrated in Figure 6, the section being taken on the line 7<sup>x</sup>-7<sup>x</sup> of Figure 6.

In the several figures of the drawings like reference numerals indicate like parts.

Emergency locks are used on public buildings, schools, factories, etc. so that in case of fire or other emergency the door automatically unlocks from the inside by simply pushing the long locking bar toward the door. In this way anyone within the building can open the door without operating the lock with a special latch or key.

Such emergency locks have heretofore

been made and used, but the locking mechanism forming the subject matter of my present invention is an improvement over these older locks and improves both the operating action of such a lock as well as makes the lock more readily applicable to the doors.

As illustrated in the drawings, the locking mechanism is mounted in a casing 1 which is divided into two sections, one containing the auxiliary locking mechanism and the other the locking mechanism proper. The casing is, therefore, made up of two sections, an outer smaller section 2, and an inner larger section 3. These two sections are fastened together by means of the screws 4, 5, 6 and 7, which pass through the inner side of the outer or smaller section 2 of the casing into suitable lugs provided in the inner or larger section of the casing. In this way a partition is formed between the inner and the outer casing between which and the inner wall of the inner or larger casing the auxiliary locking mechanism is mounted. This locking mechanism comprises the sliding member 8 having an elongated opening 9 provided in the middle thereof. This opening is bridged in the middle by the cross pin 10 which in turn is straddled by the bifurcated end 11 of the operating lever 12. The operating lever 12 is formed on the end of the horizontal bar 13 and its fulcrum pin 14 forms the bearing for one end of the horizontal bar 13 to swing thereon. The other end of the bar 13 has a crank 15 formed thereon that is mounted to swing on the pin 16 carried between the lugs 17 and 18 of the supporting plate 19. This supporting plate is attached to the inside of the door in line with the locking mechanism so that on the swinging of the bar 13 the operating lever 12 is rocked and operates to unlock the locking mechanism of the emergency lock as will hereinafter be described.

The sliding member 8 has an elongated notch 20 cut into one side thereof into which the free end of the swinging cam member 21 is adapted to project. This cam member is pivoted at one side of the sliding member 8 and its left hand side is curved so that the correspondingly curved shoulder provided on the lower end of the notch 20 operates to swing the cam member 21 to the right on the upward movement of the sliding member 8. This upward movement of the sliding mem-

ber 8 is caused by the swinging of the horizontal bar from its full line position to its dotted line position as illustrated in Figure 4. As illustrated in Figure 5 the upward movement of the sliding member 8 is opposed by the tension of the spring 22. The central portion of this spring is wound around the lug 23 and one end rests against the end of the casing. The other end of the spring engages in the eye of the link 24 pivoted at the lower end of the sliding member 8. This normally holds the sliding member 8 in its lowermost position in which the bifurcated end 11 of the operating lever 12 rests against the shoulder 25 and arrests a further downward movement of the sliding member 8. In the same way the upward movement of the sliding member is limited by the swinging of the inner end 11 of the operating lever from the shoulder 25 to the shoulder 26 forming the ends of the slot 27 through which this lever extends to make engagement with the pin 10 of the sliding member 8 as heretofore pointed out.

The sliding member 8 has a shoulder 28 formed on the left hand side thereof. This shoulder is adapted to engage with a corresponding shoulder 29 formed on the swinging latch 30. This latch is pivoted on the pin 31 mounted in the casing 1 and has a bow spring 32 anchored to the back thereof. The free end of this spring rests against the side of the lug 33. This operates to normally force the latch 30 toward the sliding member 8 so that when this member is moved up by the operation of the horizontal bar the shoulder 29 of the latch 30 engages under the shoulder 28 of the sliding member 8 and prevents a return of this sliding member to normal position. This holdback mechanism will hold the emergency lock unlocked as will hereinafter be described.

For the purpose of keeping the latch inoperative so that the sliding member cannot make engagement with it a small crank 34 is provided. This crank is carried on the inner end of the sleeve 35 which is mounted to rotate in a suitable bearing provided in the casing as illustrated in section in Figure 4. The sleeve 35 can be rotated by means of a removable thumb turn 36 so that the crank 34 can be moved toward or away from the latch 30. When the crank is turned into the position illustrated in Figure 5 the latch 30 is forced to the left and held in a position in which the shoulder 29 of the latch and the shoulder 28 of the sliding member 8 pass each other so that the sliding member 8 cannot be held back by the latch. When the crank 34 is turned into vertical position by means of the removable thumb turn 36 the latch 30 is forced back by the spring 32 toward the sliding member 8 with the result that as soon as the sliding member is operated it is locked in its uppermost position

as above pointed out from which it cannot be released until the removable thumb turn 36 is turned to turn the crank 34 against the latch. This moves this latch until the shoulder 29 thereof passes out from underneath the shoulder 28 to allow the spring 22 to draw the sliding member 8 back to its normal position.

The mechanism of the emergency lock that has been so far described is the mechanism that operates the locking mechanism proper. Its movement is transmitted through the slot 40 provided in the partition between the two sections of the case 1. For this purpose the locking bolt 41 has a lug 42 projecting from its rear side and this lug is adapted to project through the slot 40 and engage behind the swinging cam member 21. When, therefore, the sliding member 8 rocks the swinging cam member 21 to the right as above pointed out the lug 42 and with it the locking bolt 41 is forced to the right with this cam member. In this way the upward movement of the sliding member 8 caused by the depression of the horizontal bar 13 is changed into a horizontal movement of the sliding bolt 41.

The sliding bolt comprises a yoke having a stem 43 projecting from one end thereof and this stem extends from the yoke to the swinging locking latch 44 to which it is pivotally connected. This swinging locking latch is pivoted on the casing 1 in the opening 45 in the end of the casing and is adapted to swing in and out therefrom on the operation of the locking bolt 41.

Surrounding the stem 43 of the locking bolt and spaced between the cotter pin 46 and the guide plate 47 is the coil spring 48. The guide plate 47 through which the stem of the locking bolt passes is forced against the side of the pair of stationary lugs 49, 49 and the locking bolt itself is normally drawn to the left to keep the lug 42 in engagement with the back of the swinging cam member 21. In this way all of the moving parts of the locking mechanism are held in engagement with one another ready for instant movement on the operation of the horizontal bar 13.

This much of the locking mechanism pertains to the emergency operation of the lock because as soon as any one presses against the horizontal bar 13 on the inside of the door the operating lever 12 is rocked and moves the sliding member 8 upwardly so that swinging cam member 21 is forced to the right and with it the locking bolt 41. The swinging locking latch to which the locking bolt is connected is thus swung inwardly to unlock the door.

For the purpose of operating the lock from the outside of the door a latch, key or knob or a combination of them may be provided. In Figure 1 is illustrated a latch

mechanism which comprises the sliding member 50 and the bell crank 51. The sliding member 50 is adapted to slide up into the casing through a suitable opening therein and in so doing rocks the bell crank 51. This bell crank makes contact with the depending lug 52 formed on the locking bolt 41. In this way any upward movement of the sliding member 50 operates to move the locking bolt to the right and unlocks the latch 44.

When it is desirable to prevent the unlocking of the lock from the outside by means of the sliding member which is controlled by the thumb lever 53 illustrated in Figure 4, an auxiliary locking mechanism comprising the sliding bolt 54, lever 55, sliding member 56 and crank 57 controlled by the barrel lock 58 is used. These members are illustrated in Figures 1 and 4 and are mounted in the casing so that on turning the key 59 of the barrel lock 58 the crank 57 which engages between the lugs 60 and 61 of the sliding member 56 moves this sliding member and rocks the lever 55. The lever 55 in turn moves the locking bolt 54 until the end of the locking bolt 54 can be made to project over the end of the bell crank 51 to prevent its movement and in turn the operation of the locking bolt through the sliding member 50.

Instead of the sliding member 50 a rocking thimble 90 may be mounted in the yoke 91 provided on the under side of the locking bolt 41. This thimble is adapted to be rocked by a knob and on the operation of the knob in either one or the other direction the shoulder 92 and 93 of the thimble force the locking bolt to the right to unlock the lock.

Instead of the sliding member 50 the lock may be provided with a barrel lock for the purpose of operating the lock from the outside of the door. In this case a crank 65 illustrated in dotted lines in Figure 2 is used to operate the locking bolt. This crank may be mounted on the inner end of the barrel lock so that on the operation of the barrel lock the crank 65 is rotated to force the lug 66 projecting up from the locking bolt 41 to the right and with it the locking bolt to swing the locking latch into its unlocked position.

In Figures 6 to 8 inclusive I have illustrated a slightly modified form of the emergency lock. In this form of the lock the horizontal bar 13' is made to swing to one side instead of down to operate the emergency locking mechanism. For this purpose one end of the bar 13 is pivoted to the link 70 which in turn is pivoted to a base plate 72 while the other end is pivoted to a modified operating lever 73.

This sidewise movement of the bar 13' is communicated to the modified sliding mem-

ber 74 which in this case is mounted to move horizontally in the lock casing. The operating lever 73 is provided with a bifurcated end that engages the pin 75 of the sliding member 74 and moves the sliding member as above pointed out.

The unlocking movement of the bar 13' from left to right in Figure 6 moves the sliding member 74 from right to left. This moves the locking bolt 76 from the left to the right by means of the reversing lever 78 which is mounted in the lock casing. This pulls back the latch and unlocks the door. This lever 78 rests with one end against a pin 79 carried by the sliding member 74 and the other end rests against the shoulder 80 of the locking bolt 76. In this way a movement to the right of the bar 13' caused by forcing the horizontal bar against the door rocks the lever 78 and forces the locking bolt 76 to the right for the unlocking of the swinging locking latch 77 and releases the door.

The hold back attachment for this modified type of lock is made up of the bell crank latch 81 which corresponds to the lever 30 of the lock illustrated in Figures 1 to 5 inclusive. The shoulder 82 on one end of the bell crank engages the shoulder 83 on the sliding member whenever the crank 84 is turned to allow the spring 85 to force the bell crank to the right and the sliding bolt 76 is operated to unlock the latch 77. In this way the latch may be held in the unlocked position in the same manner as the lock illustrated in Figures 1 to 5 inclusive.

To the modified lock illustrated in Figures 6 to 8 may be added any one or all of the auxiliary locking members of the lock that have been described in connection with the lock illustrated in Figures 1 to 5 so that the modified lock can be adapted for use in the same manner as the lock described above.

The lock illustrated is for a door that is hinged on the left and locks on the right as one advances toward the bar 13. If a lock of this kind is to be used on a door that is hinged on the right the position, shape and movement of the parts must be changed to correspond.

I claim:

1. In an emergency lock, the combination of a swinging bar, an actuating member actuated by said bar, a locking bolt operated by said actuating member, and means to simultaneously lock said actuating member and said swinging bar in a predetermined position and hold said locking bolt in its unlocked position.

2. In an emergency lock, the combination of a swinging bar, an actuating member actuated by said bar, a latch mounted adjacent to said actuating member, means carried on said actuating member to engage

said latch, said latch being adapted to rigidly hold said actuating member and said swinging bar in a predetermined position.

3. In an emergency lock, the combination of a swinging bar, an actuating member actuated by said bar, a latch mounted adjacent to said actuating member, means carried on said actuating member to engage said latch, said latch being adapted to rigidly hold said actuating member and said swinging bar in a predetermined position, and means adapted to disengage said latch from said actuating member.

4. In an emergency lock, the combination of a swinging bar, an actuating member actuated on the swinging of said bar, a locking bolt, means for connecting said locking bolt with said actuating member, a latch adapted to engage said actuating member, means for swinging said latch to either allow said latch to engage said actuating member or hold it free from said actuating member and prevent its engagement with said actuating member.

5. In an emergency lock, the combination of a casing, an operating lever mounted in said casing, a base plate, an arm mounted to swing on said base plate, a bar connecting said operating lever with said arm, an actuating member mounted in said casing, said actuating member being connected to said operating lever, and means adapted to engage said actuating member to lock said bar in a predetermined position, a locking bolt mounted in said casing and connected with said actuating member, said locking bolt being simultaneously locked with said bar.

6. In an emergency lock, the combination of a lock casing, an operating lever mounted in said casing, a supporting base plate, an arm pivoted to said base plate, a bar connecting said operating lever with said arm, an actuating member operated by said operating lever, a latch mounted adjacent to said actuating member, said latch being adapted to engage said actuating member and hold it in a predetermined position to lock said bar in a corresponding predetermined position, a locking bolt mounted in said casing and connected with said actuating member, said locking bolt being simultaneously locked with said bar.

7. In an emergency lock, the combination of a lock casing, an operating lever mounted in said casing, an actuating member connected to said operating lever, a latch mounted in said casing adjacent to said actuating member, said latch being adapted to engage said actuating member and hold said actuating member in a predetermined position, a connecting member actuated by said actuating member, a locking bolt engaging said connecting member, yielding means to hold all of said members in a

predetermined position, a swinging bar connected to said operating lever, said swinging bar and said locking bolt being held in a predetermined position on the engagement of said latch with said actuating member.

8. In an emergency lock, the combination of a lock casing, an operating lever mounted on said casing, a sliding member mounted to slide within said casing, said operating lever being connected to said sliding member, a shoulder formed on said sliding member, a latch mounted adjacent to said sliding member, a shoulder formed on said latch, means adapted to allow said shoulder on said latch to engage said shoulder on said sliding member to hold said sliding member and its operating lever in a predetermined position.

9. In an emergency lock, the combination of a lock casing, an operating lever mounted on said casing, a sliding member mounted to slide within said casing, said operating lever being connected to said sliding member, a shoulder formed on said sliding member, a latch mounted adjacent to said sliding member, a shoulder formed on said latch, means adapted to allow said shoulder on said latch to engage said shoulder on said sliding member to hold said sliding member and its operating lever in a predetermined position, a cam formed on said sliding member, a locking bolt, a cam member interposed between said cam of said sliding member and said locking bolt, said cam and cam member being adapted to move said sliding bolt on the movement of said sliding member.

10. In an emergency lock, the combination of a lock casing, an actuating member mounted in said casing, an operating lever for said actuating member, a hold back member adapted to engage said actuating member and prevent the movement of said actuating member in one direction, a locking bolt actuated by said actuating member, an auxiliary operating member engaging said locking bolt and means to lock said auxiliary operating member against movement.

11. In an emergency lock, the combination of a lock casing, a sliding member mounted to slide in said casing, an operating lever mounted on said casing, a pin carried by said sliding member, said operating lever being adapted to engage said pin, a latch mounted adjacent to said sliding member, said latch being adapted to engage said sliding member and hold said sliding member in a predetermined position, a cam member mounted adjacent to said sliding member, a cam surface provided on said sliding member, said cam member being adapted to engage said cam surface, said sliding member being adapted to swing said cam member.

12. In an emergency lock, the combination of a lock casing, a sliding member mounted to slide in said casing, an operating lever mounted on said casing, a pin carried by said sliding member, said operating lever being adapted to engage said pin, a latch mounted adjacent to said sliding member, said latch being adapted to engage said sliding member and hold said sliding member in a predetermined position, a cam member mounted adjacent to said sliding member, a cam surface provided on said sliding member, said cam member being adapted to engage said cam surface, said sliding member being adapted to swing said cam member, a locking bolt, a lug provided on said locking bolt, said lug being adapted to engage said cam member.

In testimony whereof I affix my signature.

RALPH S. CLARK.