Feb. 28, 1961 C. B. FRY 2,972,879

LOCK

Filed Nov. 10, 1958 3 Sheets-Sheet 1

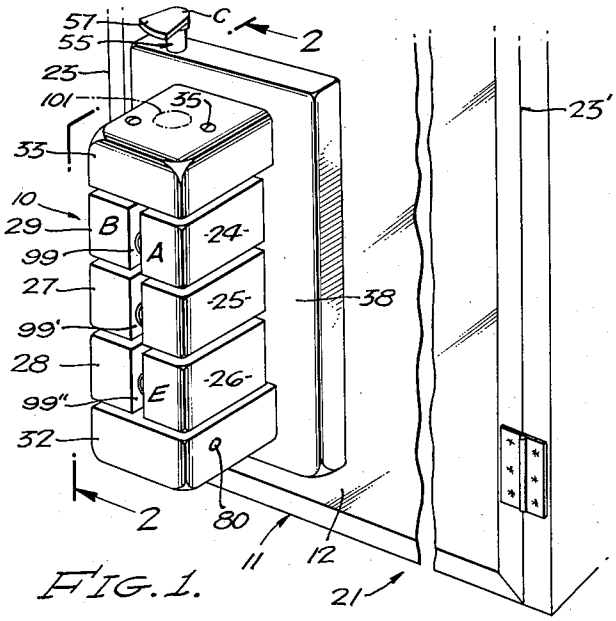


FIG. 1.

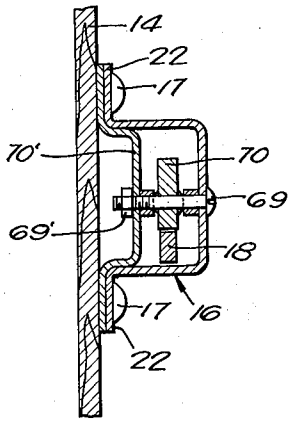


FIG. 8.

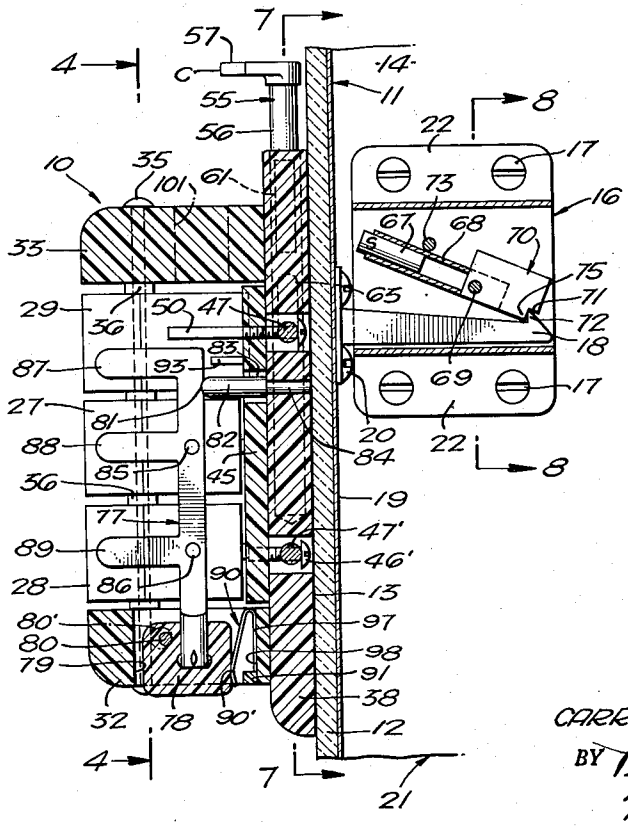


FIG. 2.

INVENTOR.
CARROLL BROOKS FRY
BY Philip Sutkow
Max Gilden
ATTORNEYS

Feb. 28, 1961 C. B. FRY 2,972,879

LOCK

Filed Nov. 10, 1958 3 Sheets-Sheet 2

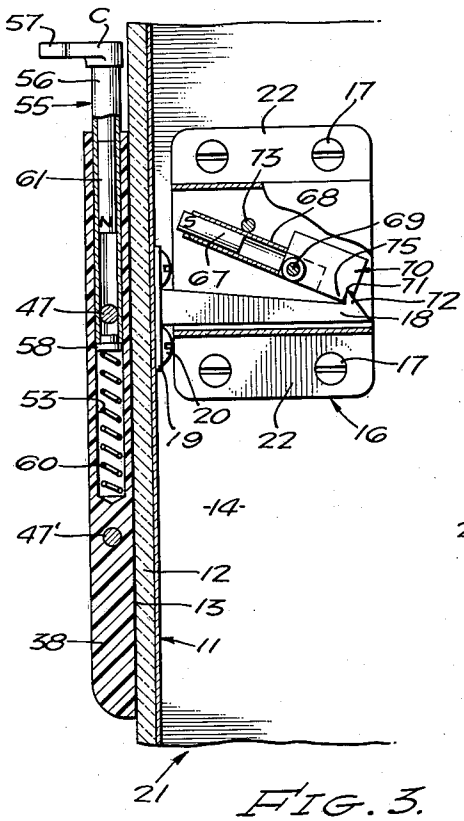


FIG. 3.

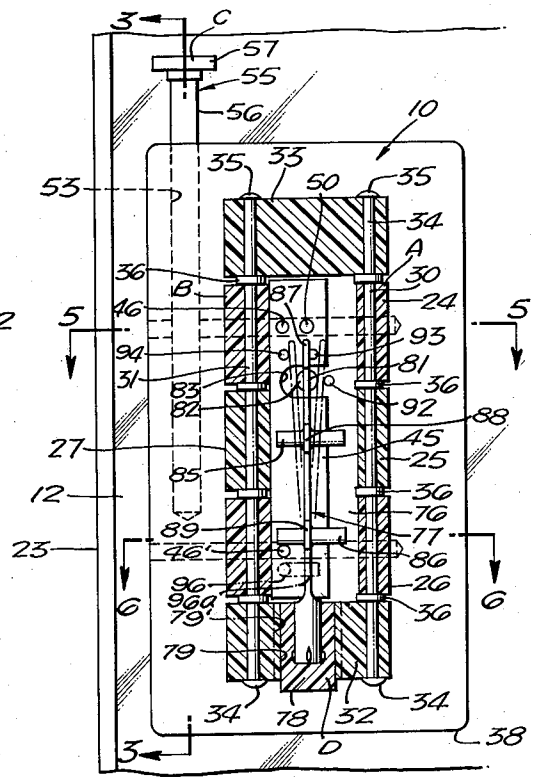


FIG. 4.

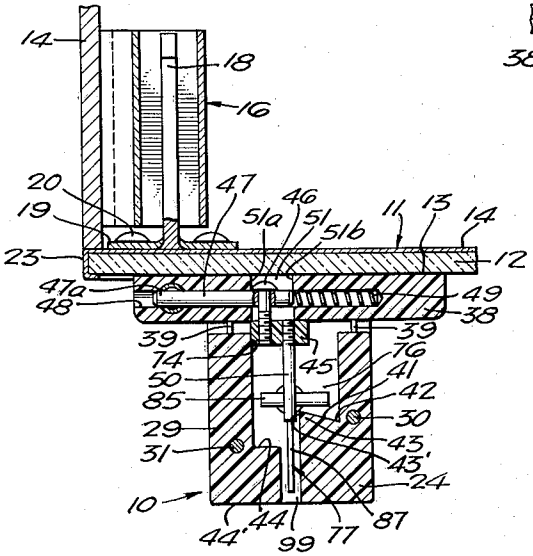


FIG. 5.

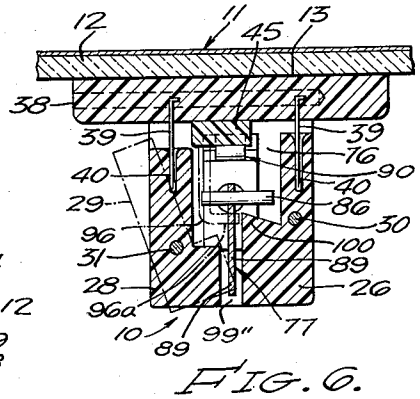


FIG. 6.

INVENTOR.
CARROLL BROOKS FRY
BY Philip Sobkow
Mark Golden
ATTORNEYS

Feb. 28, 1961 C. B. FRY 2,972,879

LOCK

Filed Nov. 10, 1958 3 Sheets-Sheet 3

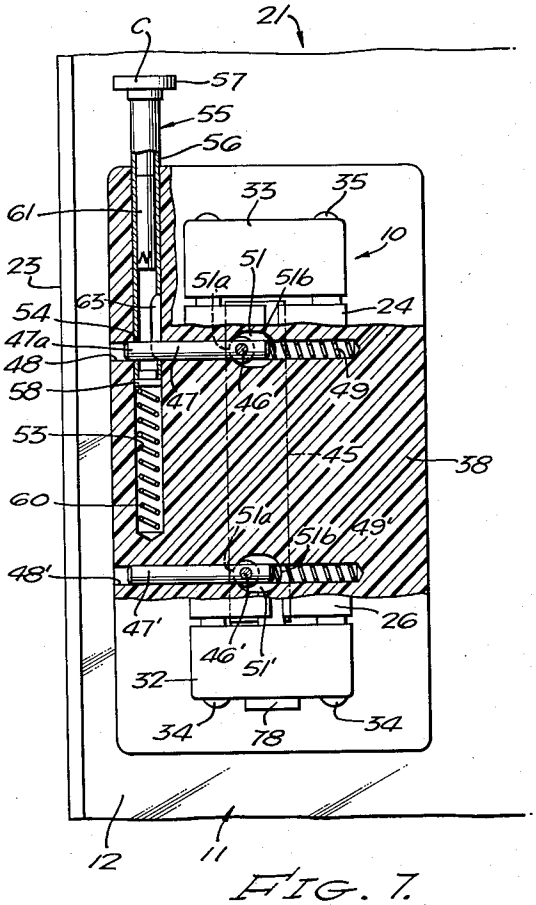
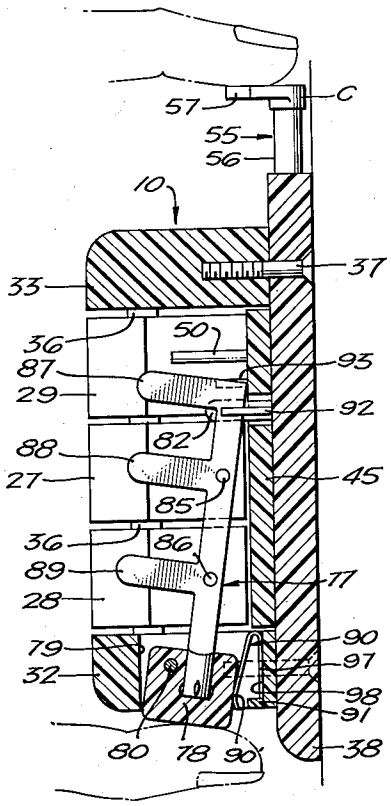


FIG. 7.

FIG. 9.



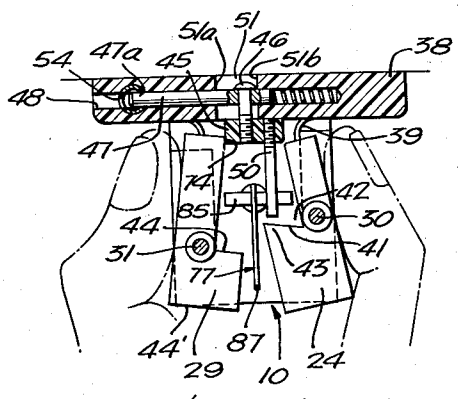
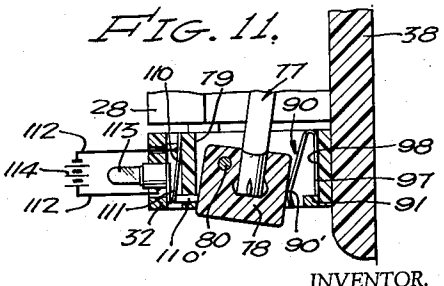


FIG. 10.

FIG. 11.



INVENTOR.
CARROLL BROOKS FRY
BY Philip Sutkow
Max Gelber
ATTORNEYS

United States Patent Office 2,972,879 Patented Feb. 28, 1961

2,972,879

LOCK

Carroll Brooks Fry, 436 N. Roxbury Drive, Beverly Hills, Calif.

Filed Nov. 10, 1958, Ser. No. 772,753

25 Claims. (Cl. 70—276)

This application is copending with my application, Serial No. 764,796, filed October 2, 1958, which is concerned with a lock having functions similar to those of the instant application.

This invention relates to a lock mechanism and is particularly concerned with a lock having digitally operated members or tumblers.

It is often desirable, where children are concerned, that a door latch be provided which cannot be operated easily by a child, yet which can be readily actuated by an adult. With conventional door latches, the latch can generally be operated by a child who has the normal muscular coordination. Hence, when it is desired that a child should not be allowed to open a door, generally the latch must be locked, for example, by a key. This is usually inconvenient when it is desired to open the door fairly often, for example, in the case of a door on a medicine chest.

Also, where narcotics, drugs and the like are kept in a cabinet, for example, in a hospital, it is important that close supervision of the cabinet be maintained to prevent unauthorized persons gaining access to the contents. This problem presents a need for a digitally operable combination lock on such cabinet doors, which lock requires for operation a knowledge of the combination, the realization that only certain tumblers must be properly actuated and that others must not be actuated, that if the latter tumblers are actuated the lock will jam and be inoperative, and the knowledge as to how the lock can be reset for subsequent proper opening thereof after it has become jammed by improper operation.

Accordingly, an object of this invention is to design a lock or latch which requires a degree of digital dexterity for operation, which most children ordinarily do not have, but which adults do possess, so that it can be operated readily by an adult but cannot be operated ordinarily by infants or children.

Another object is to provide a lock which is digitally operable, but which when improperly actuated requires resetting before the lock can be opened, such resetting requiring manipulation which can be readily carried out by an adult, but which is difficult for a child.

Still another object is to afford a lock structure which is operable by a simple digital code, but which is designed to confuse a child attempting to operate the lock.

Yet another object is to provide a lock having a plurality of digitally operable members similar in appearance, only certain ones of which are actuable for opening the lock, others of said members being inoperative for this purpose and serving as decoys which when operated prevent or interfere with operation of the lock.

A still further object is to provide a combination lock of the aforementioned type, which when improperly operated renders the lock opening mechanism inoperative, and wherein resetting of the lock is required to permit proper opening thereof.

Another object is to provide a lock which is operative to provide an audible or visual signal when the wrong combination of members or tumblers are actuated to thus jam the lock, indicating that unauthorized persons are tampering with the lock.

Still another object is to afford a lock having a multiple code.

I have found that the above objects can be accomplished by providing, according to one embodiment, a lock structure having a latch member, a slidable latch actuator for operating the latch member, means normally engaging the latch actuator and maintaining it in fixed position, and a plurality of digitally operable pivotally mounted members, one or more of which provide removable interferences normally preventing disengagement of the engaging means from the latch actuator, the others of said digitally operated members providing no such interferences. Only the former of such digitally operated members are required to be actuated for withdrawing one or more of the removable interferences. A digitally actuable operating lever is provided for thereafter operating the latch actuator engaging means to release the latch actuator and permit actuation thereof for operating the latch member. The latch member is provided with means which is responsive to operation of the latch actuator to release a tongue from engagement with a holding member, to thereby open the lock and permit the opening of a door on which the lock structure and tongue are mounted. The lock is designed so that if any of said others of the above noted digitally actuable members are manipulated, the lock will not operate.

The digitally actuable member or members which must be actuated first to remove the interferences in order to operate the latch actuator engaging means are termed herein "active tumblers" and the other digitally actuable members which do not require actuation and should not be actuated when it is desired to open the lock are termed "inactive tumblers." The inactive tumblers may be in the nature of decoys which have no operative association with the latch actuator engaging member, but function only to confuse a child and make it more difficult for the child to digitally manipulate the active tumbler or tumblers in proper sequence to operate the lock.

In a preferred embodiment, additional structure is afforded, so that if the inactive tumblers are manipulated, they will interpose a restraining member preventing operation of the latch actuator engaging means so as to prevent disengagement of the latch actuator from said means, even though the active tumblers are simultaneously or thereafter manipulated. Under these circumstances, the restraining member must first be withdrawn by proper manipulation of the restraining member, before the lock is again operable. The digitally actuable active tumblers and the digitally actuable operating lever for the latch actuator engaging means can be designed further so that if they are improperly operated they will also trip said restraining member to prevent actuation of said last mentioned means to release the latch actuator. Also, after the latch actuator engaging means has been withdrawn from latch engaging position, in preferred practice, the latch actuator requires digital manipulation for movement thereof to produce a responsive movement of the tongue engaging latch member to open the lock.

Means can also be provided so that when said restraining member has been tripped to prevent actuation of the lock in the normal manner, a light is flashed or an alarm sounded to alert those responsible that unauthorized persons are tampering with the lock. Further, if desired, means can be provided to cause a similar signal to respond after the lock has been reset, indicating that the lock has been reset and that the person resetting the lock has the proper knowledge for operating the lock.

The digitally operable members are designed of similar outer appearance and are particularly located and pur-

posely intermingled in a coded manner, so that proper operation of the lock requires a knowledge of which one or ones of such members must be actuated and which of such members should not be manipulated in order to operate the lock properly. It then requires a certain degree of digital dexterity to properly manipulate the active tumbler or tumblers, the operating lever of the latch actuator engaging means, and the latch actuator in the coded sequence while refraining from touching those inactive members which should not be handled. In the event the latter members are manipulated and the aforementioned restraining member inactivates the lock, a knowledge of how to reset the lock for proper actuation of the lock is requisite.

These requirements particularly render it difficult for a child to actuate the lock, since even if the child does have knowledge of the code, its muscular coordination is usually such that not only is it difficult for the child to operate those digitally actuable members which require operation in the sequence necessary for opening the lock, but the location of such digitally actuable members with respect to those which must not be operated, is such that in fumbling about, the child will accidentally or otherwise manipulate the latter and prevent operation of the lock, requiring its resetting, which the child is usually incapable of accomplishing.

The invention will be more clearly understood by the following description of the invention taken in connection with the accompanying drawings, wherein:

Fig. 1 is a perspective view in elevation of one embodiment of the lock structure of the invention;

Fig. 2 is a vertical section partly in elevation through the lock, taken on line 2—2 of Fig. 1;

Fig. 3 is a vertical section taken on line 3—3 of Fig. 4;

Fig. 4 is a vertical section, partly in elevation, taken on line 4—4 of Fig. 2;

Fig. 5 is a horizontal section taken on line 5—5 of Fig. 4, showing the active tumbler and operating lever for the latch actuator engaging member when the lock is in locked position;

Fig. 6 is a horizontal section on line 6—6 of Fig. 4, showing operation of certain of the inactive tumblers;

Fig. 7 is a vertical section, partly in elevation, taken on line 7—7 of Fig. 2;

Fig. 8 is a section taken on line 8—8 of Fig. 2;

Fig. 9 is a view similar to Fig. 2, showing displacement of the restraining member to a position preventing opening of the lock;

Fig. 10 shows manipulation of the active tumbler and of the operating lever for the latch actuator engaging member for opening the lock; and

Fig. 11 shows a modification of the device of Fig. 9.

Referring to the figures of the drawing, and particularly Fig. 1, the numeral 10 designates generally my lock structure having a base plate 38 which is connected by any suitable means such as by a layer of adhesive 13 (see Fig. 2) to the mirror 12 on the door 11 of a medicine chest in the home, indicated generally by the numeral 21. It will be understood of course that the lock structure of the invention also can be mounted on any other door, such as that of a drug cabinet in a hospital. Mounted on an interior wall 14 of the cabinet 21 (see also Fig. 5) is a keeper housing 16 having flanges 22 connected to wall 14 by screws 17. As seen in Figs. 2 and 5, the wall 14 on which the keeper housing is mounted is positioned normal to the cabinet door 11 and mirror 12 on which the lock structure 10 is mounted, lock 10 being positioned adjacent the opening edge 23 of door 11 and the keeper housing positioned closely adjacent the front portion of interior wall 14 and adjacent the lock structure 10. The door 11 pivots about a side edge 23' opposite the opening edge 23 in the usual manner for opening and closing the door. A tongue 18 extending at right angles to the door 11 and parallel to the wall 14 when the door is closed as shown in Fig. 5 is connected to the inner surface of the cabinet door 11 by means of screws 20 passing through flanges 19.

Mounted adjacent the bottom and top of the base plate 38 are lower and upper blocks 32 and 33, respectively, which are connected to plate 38 by screws 37 (see Fig. 9). Carried between the spaced blocks 32 and 33 in vertical alignment on one side are three like pivoting members 24, 25 and 26, all having the same outer shape and appearance, and in vertical alignment on the other side are three like pivoting members 27, 28 and 29, all having the same outer shape and appearance, the latter three members being spaced laterally from the first three members. For reasons that will be apparent hereinafter, member 24 is designated an active tumbler and its opposite member 29 an operating lever while members 25, 26, 27 and 28 are designated inactive tumblers. Referring particularly to Figs. 5 and 6, it will be seen that aligned members 24, 25 and 26 each have a generally L-shaped section with an outwardly slightly inclined inner edge 41 forming an outer tooth portion 43 having an internal notch 42. The adjacent aligned pivoting members 27, 28 and 29 each also have an L-shaped section, but with the inner surface 44 parallel to the outer surface 44'.

The members 24, 25 and 26 are strung on a rod 30 (see particularly Fig. 4) and the members 27, 28 and 29 are strung on a parallel rod 31, rods 30 and 31 being mounted at their ends on blocks 32 and 33 by means of screws 34 threaded into the ends of the rods until the heads 35 of the screws abut the blocks, and preventing axial movement of the rods. Members 24, 25 and 26 are separated from each other and from the blocks 32 and 33 by washers 36, and members 27, 28 and 29 are similarly separated by like washers. It will be understood that members 24 to 29 are loosely mounted on rods 30 and 31 so that said members are free to pivot on the rods. Each of the members 24 to 29 are, however, normally held in a neutral position, as shown in Fig. 5 and in full lines in Fig. 6, by a leaf spring 39 fastened at one end to the base plate 38, the other end of the spring being slidably received in a recess 40 formed axially in the elongated end portion of each of the L-shaped members 24 to 29.

Referring particularly to Figs. 2, 4 and 5, an actuating plate 45 is mounted for slidable movement on the base plate 38, between the aligned pivoting members 27 to 29 and the aligned pivoting members 24 to 26. Plate 45 carries a pin 50 threadably connected to the plate, the outer edge 43' of tooth portion 43 of the active tumbler member 24 being positioned closely adjacent to or contacting said pin 50, as shown in Fig. 5. The plate 45 is connected at its upper and lower portions by means of screws 46 and 46' (see also Fig. 7) to a pair of transversely positioned upper and lower parallel rods 47 and 47', respectively, positioned for slidable movement in parallel upper and lower bores 48 and 48' formed in base plate 38, the rods serving as guides for lateral or transverse displacement of the latch actuating plate 45, in the manner described below. Rods 47 and 47' are normally urged to the left, viewing Figs. 5 and 7, by compression springs 49 and 49' positioned in the inner ends of bores 48 and 48'. It will be noted that the screws 46 and 46' are disposed in apertures 51 and 51', respectively in base plate 38, and in normal locked position, springs 49 and 49' urge the rods 47 and 47' and plate 45 to the left, as seen in Figs. 5 and 7, for a distance permitted until contact of the screws 46 and 46' with the left edge 51*a* of the apertures 51 and 51', which is the position of the rods shown in Figs. 5 and 7.

In this position of upper rod 47, the outer end of rod 47 passes through an aperture 54 in a latch actuator 55 mounted for vertical slidable movement transversely of rods 47 and 47', said rod 47 thus engaging and preventing movement of said latch actuator. Latch actuator 55 is formed of a cylinder 56 slidably positioned in a bore 53 of base plate 38, the cylinder having an operating

plunger 57 at its upper end and a closure cap 58 at its lower end, aperture 54 being provided in the lower end of cylinder 56. Press fitted within cylinder 56 is a small magnet 61. On one side of cylinder 56 in alignment with the aperture 54 is a slot 63 extending upwardly from aperture 54 and longitudinally of the cylinder for a certain distance. A compression spring 60 is positioned in the lower end of bore 53 and tends to urge the cylinder 56 of the latch actuator upwardly, but such upward movement is restrained by engagement of the rod 47 in aperture 54.

Viewing Figs. 5 and 7, when the actuator plate 45 is forced to the right in the manner hereinafter described, and is displaced a distance such that the screws 46 and 46' abut the right edge 51*b* of the apertures 51 and 51', to the position shown in Fig. 10, the outer end 47*a* of upper rod 47 has retracted through the aperture 54 in cylinder 56, with the rod end 47*a* positioned in slot 63. In this position the outer end 47*a* of rod 47 will still restrain and prevent upper movement of the cylinder 56 of the latch actuator 55 by the spring 60, but now the cylinder 56 can be forced down against the action of spring 60, with the outer end 47*a* of the rod 47 riding in the slot 63 of cylinder 56, the cylinder carrying the magnet 61 downwardly for a purpose which will be made clear below. The extent of downward movement of latch actuator 55 is limited by contact of the rod end 47*a* with the upper end of slot 63.

Now turning to Figs. 2 and 3, the magnet 61 of the latch actuator cooperates with the magnet 67 located in the keeper housing 16, magnet 67 being positioned in one end of a latch member or cylinder 68 mounted for pivotal movement adjacent its opposite end on a pivot screw 69 (see also Fig. 8) passing through the outer wall of the keeper housing and fastened at its inner end to a base member 70' of keeper housing 16, by means of a nut 69'. A mass 70 is fastened to the end of cylinder 68 to normally counterbalance the cylinder 68 and magnet 67, and tends to produce clockwise rotation of cylinder 68, viewing Fig. 3, thus maintaining the cylinder 68 in abutting relation with the stop pin 73 mounted in suitable manner in the keeper housing 16. In this position of cylinder 68, a notch 71 formed in the lower outer end of the mass 70 receives a dog 72 positioned on the outer end of the tongue 18, holding the tongue latched and the door 11 in closed position, as shown in Fig. 3. The lower end of magnet 61 of the latch actuator 55 and the adjacent outer end of magnet 67 have opposite polarity as indicated in Fig. 3, so that the end of magnet 67 is attracted by the lower end of magnet 61. In the upper locking position of the latch actuator 55, as seen in Fig. 3, the lower end of magnet 61 is positioned to attract magnet 67 into a position such that the cylinder 68 is in contact with stop 73, thus maintaining the tongue 18 in locked position in engagement with the mass 70. However, when the latch actuator 55 and cylinder 56 thereof are forced downward, viewing Fig. 3, the lower end of the downwardly moving magnet 61 attracts and causes downward displacement of magnet 67. This produces counterclockwise rotation of cylinder 68 on pivot 69, moving the notch 71 upward out of engagement with the dog 72 of tongue 18, and permitting opening of door 11.

Assume now that the door 11 is in locked position, as indicated in Figs. 2, 3 and 5, and it is desired to actuate the lock to open the door. It is first necessary to press with one finger the outer surface of the active tumbler 24 to rotate it counterclockwise, an amount such that the tooth portion 43 of the member 24 clears the end of pin 50 and is no longer in interfering relation with the pin, as illustrated in Fig. 10. The outer surface of the opposite operating lever 29 is then pressed with the thumb so as to rotate member 29 clockwise as seen in Fig. 10, until the inner surface 74 adjacent the inner end of member 29 abuts the side of plate 45. Continued clockwise movement of member 29 forces the actuating plate 45 to the right until the screws 46 and 46' strike the right edge 51*b* of apertures 51 and 51'. During such movement it is noted that the notch 42 in tumbler 24 permits freedom of movement of the outer end of pin 50 carried by plate 45 without contact of the end of such pin with any part of member 24. This action of plate 45 moves the rods 47 and 47' to the right, as seen in Figs. 7 and 10, to cause the rod 47 to withdraw from aperture 54 in latch actuator 55 until the end 47*a* of rod 47 is located only in slot 63 of the latch actuator. Now the plunger 57 of the latch actuator 55 is pressed down with the finger, driving the magnet 61 downward, and attracting magnet 67 downward. This movement of magnet 67 produces counterclockwise motion of cylinder 68, withdrawing the notch 71 from the dog 72, and freeing the tongue 18 from engagement with mass 70. The door 11 can now be opened by counterclockwise rotation of the door 11, viewing Fig. 5, away from the adjacent end of wall 14, carrying tongue 18 with the door and withdrawing the tongue from the keeper housing 16.

It will be noted that when the active tumbler 24 and the operating lever 29 are released, the springs 39 will return members 24 and 29 to their initial upivoted neutral position, shown in Fig. 5. When plunger 57 is released the spring 60 urges the cylinder 56 of the latch actuator 55 upward until the end 47*a* of rod 47 reaches the bottom of slot 63, where the rod 47 is now in communication with aperture 54 in cylinder 56. The rod 47, by the action of spring 49, now automatically moves to the left, viewing Fig. 7, thus passing through aperture 54 and again engaging and locking the latch actuator 55 in its upper position, shown in Figs. 3 and 7. During such movement to the left of rod 47, similar simultaneous movement of lower rod 47' takes place under the action of spring 49'. Such movement of rods 47 and 47' is limited, as aforementioned, by abutment of screws 46 and 46' with the left edges 51*a* of apertures 51 and 51', as seen in Fig. 7. When the latch actuator returns to its initial upper position, shown in Figs. 3 and 7, magnet 67 also returns to its initial position, shown in Fig. 3. Such return of magnet 67 will also occur, regardless of the position of magnet 61, when the door is opened sufficiently wide that magnet 61 of the latch actuator is at a distance such that it no longer has any influence on magnet 67.

In closing the door 11, the door is rotated clockwise, viewing Fig. 5, until it contacts the door jam on wall 14. During such movement the tongue 18 enters the keeper housing 16 until the dog 72 on the tongue engages the notch 71 of the mass 70. Just prior to falling into the notch 71, the dog 72 passes under the lower corner 75 of the mass 70, causing the cylinder 68 to rotate momentarily counterclockwise slightly away from contact with stop 73. But as soon as the dog clears the corner 75 and drops into notch 71, the cylinder 68 rotates back a small amount clockwise until it again strikes the stop 73.

Referring now particularly to Figs. 2, 4 and 5, a restraining or interference arm 77, e.g. formed of metal or plastic, is positioned between and parallel to the two aligned rows of L-shaped members 24, 25, 26 and 27, 28, 29. The arm 77 is located in the space 76 formed between the elongated portions of said L-shaped members, and is normally free from engagement therewith. The arm 77 is attached at one end to a tumbler or support member 78 positioned in a central aperture 79 formed in the lower block 32, the tumbler 78 being mounted on a pivot 80 suitably mounted in block 32 across the aperture 79. The tumbler 78 tends to rotate arm 77 clockwise, viewing Fig. 2. The other end of arm 77 normally rests in a groove 81 in the head of a pin 82 which passes through a cutout 83 in plate 45, and has a base portion 84 press fitted into the base plate 38. The cutout 83 in plate 45 is designed so that the plate does not strike pin 82 when the plate is displaced its maximum distance to the right, viewing Figs. 4 and 5, i.e. when the screws 46 and 46' strike the right hand edge 51*b* of apertures 51 and 51', as previously described.

The upper or forward end of arm 77 is maintained in position in the groove 81 of pin 82 by means of a bent spring 90 abutting the adjacent inner edge 90' of the tumbler 78, and tending to rotate arm 77 clockwise, as viewed in Fig. 2, thus maintaining its upper end in tight contact with pin 82. Spring 90 has a bent back portion 97 which abuts an inner surface 98 of block 32 formed by the aperture 79, the lower end of spring portion 97 abutting a stop 91. It will be noted that the arm 77 is designed so that it has a spring action and can bend a small amount to displace the upper end of the arm a short distance to the right or left, viewing Fig. 4, in response to a transverse force applied from the right or left against an intermediate portion of the arm.

Referring chiefly to Figs. 2, 4 and 9, a pin 92, shorter than pin 82, is positioned closely adjacent pin 82 to the right thereof as viewed in Fig. 4, pin 92 being connected to base plate 38. Mounted on the movable actuating plate 45 above and slightly to the right of pin 82 is a pin 93, and also mounted on the movable plate 45 above and somewhat to the left of pin 82 is another pin 94, the pins 93 and 94 also being shorter than pin 82. The function of pins 92, 93 and 94 will be apparent below.

The arm 77 carries a pair of transversely extending spaced parallel pins 85 and 86, pin 85 being disposed in the space between members 25 and 27, and pin 86 in the space between members 26 and 28. As seen in Figs. 4, 5 and 6, the ends of pins 85 and 86 are normally out of contact with the inner surfaces of the elongated portions of the L-shaped members 25, 27 and 26, 28, respectively. The arm 77 also carries three outwardly extending integral fins 87, 88 and 89 (see Figs. 2, 5 and 6) in the plane of the arm 77. The fin 87 at the upper end of arm 77 is positioned in the narrow space 99 between the adjacent short portions of the L-shaped members 24 and 29 (Fig. 5), fin 88 in the narrow space 99' (see also Fig. 1) between the adjacent short portions of members 25 and 27, and fin 89 in the narrow space 99'' between adjacent short portions of L-shaped members 26 and 28. Fins 87, 88 and 89 are normally out of contact with the adjacent surfaces of members 24, 29 and 25, 27 and 26, 28, respectively.

Now assuming that one such as a child or an unauthorized person unfamiliar with the proper sequence of digital manipulation of active tumbler 24, operating lever 29 and latch actuator 55 for opening the lock as described above, instead fingers one of the inactive tumblers, say 27 or 28 and rotates it clockwise, viewing Fig. 6, so that the elongated portion of member 27 or 28 strikes the left end of pin 85 or 86, this will force the upper end of interference lever 77 out of the shallow groove 81 of supporting pin 82 and bend it to the right, as seen in Fig. 4, to a position above and between the pins 92 and 93, and the arm 77 will then be rotated clockwise, viewing Fig. 2 by the action of spring 90, to the position shown in Fig. 9, with the end of arm 77 now resting on plate 45. The sides of the arm 77 now are wedged between the right side of pin 93 on the actuating plate 45 and the left side of pin 92, as indicated in dotted lines in Fig. 4, and since pin 92 is fixed, this prevents movement of plate 45 carrying pin 93 to the right, for opening the lock.

In order to open the lock, it is now necessary to reset the interference arm 77 to its initial position on pin 82, as shown in Fig. 2. This is accomplished by pressing the finger against the tumbler 78, as shown in Fig. 9, and rotating the arm 77 counterclockwise against the action of spring 90 until the end of arm 77 has cleared the outer end of pin 82. At this point the arm 77 springs back to the left to its initial straight position, viewing Fig. 4, until the arm 77 is just over the slot 81 in pin 82, at which time the finger is released to allow the end of arm 77 to drop back into slot 81, by the action of tumbler 78 and spring 90. Now the lock is once again ready to be properly actuated for opening in the manner above described. It is thus seen that resetting of arm 77 on pin 82 by rotation of arm 77 counterclockwise in the aforementioned manner is essentially automatic.

Now assuming that the one or both inactive tumblers 25 and 26 are improperly fingered in an effort to open the lock, said tumblers being rotated counterclockwise, as viewed in Fig. 6, so that the inner surfaces of the elongated portions of these tumblers strike the right ends of pins 85 and/or 86. This will push the arm 77 to the left out of slot 81, viewing also Fig. 4, causing the end of the arm to bend and spring into position between pins 82 and 94, as shown in dotted lines in Fig. 4, with the end of arm 77 resting on plate 45 as in Fig. 9, such action being aided by spring 90. Arm 77 is now wedged between the left side of the fixed pin 82 and the right side of pin 94 on plate 45, as seen in Fig. 4, thus preventing movement of the actuating plate 45 to the right for opening the lock.

The arm 77 is reset to its initial position shown in Fig. 2 in the same manner as described previously, except that in the instant situation the arm 77 bends back slightly to the right, viewing Fig. 4, after it has been rotated counterclockwise from its position in Fig. 9, to again assume a straight position, and then the end of arm 77 springs into the groove 81 in pin 82 by the action of spring 90.

Hence it is apparent that actuation of any one or more of the inactive tumblers 25, 26, 27 and 28 in the above described manner functions as a trap which prevents opening of the lock, and requires further manipulation, unlikely to be successfully accomplished by a child or one unfamiliar with the manner of resetting arm 77 to place the lock in condition to be opened in the proper manner.

It will also be noted that if any one or more of the L-shaped members 27, 28 and 29 are fingered so as to rotate these members counterclockwise, to the dotted line position shown in Fig. 6, the inner surface of the short portion of these members will strike one or more of the adjacent fins 87, 88 or 89 on arm 77, pushing the arm 77 to the right and down between pins 92 and 93 to the position shown in Fig. 9, in the manner previously described, and preventing movement of the latch actuator plate 45 to the right for opening the lock as described above. Further, if active tumbler 24 and/or inactive tumblers 25 and 26 are fingered and rotated clockwise, viewing Figs. 5 and 6, the inner surface of the short portion of these L-shaped members will strike the adjacent fins 87, 88 and/or 89, pushing the end of arm 77 to the left and down between pins 82 and 94, again preventing motion of plate 45 to the right for opening the lock. In both of the above cases, that is, where members 27, 28 or 29 strike fins 87, 88 or 89, or where members 24, 25 or 26 strike one or more of these fins to displace the arm 77 to a position restraining movement of plate 45, as described above, resetting of the arm 77 to its initial position on the support pin 82 in the manner described above, will again be required in order to proceed properly to open the lock. It will accordingly be observed that active tumbler 24 and the operating lever 29 must be rotated in one direction only, that is, counterclockwise, and clockwise, respectively, viewing Fig. 5, in order to actuate the lock, and that if rotated in the opposite direction will jam the lock and require its resetting.

Hence, it will be seen that it requires a knowledge of which members, that is 24, 29 and 57, must be actuated for opening of the lock, and the sequence of operation of these members, as well as the knowledge that if any one or more of the members 25 to 28 should be actuated prior to or during manipulation of the members 24 and 29, or if the active tumbler 24 and/or the operating lever 29 are pivoted in the wrong direction, the lock will not open. Also, it is seen that a certain degree of digital coordination and dexterity are required for correctly handling the members 24, 29 and 57 and in proper se-

quence without the manipulation of the members 25 to 28 in order to properly unlock the lock. Any fumbling or pushing of any one of the members 25 to 28 before the member 29 is actuated will prevent the opening of the lock, and will, moreover, require a further manipulation of the arm 77 before the lock can again be actuated for opening.

Thus, it is apparent that the combination of the lock described above is proper digital operation of members A, B and C (24, 29 and 57; see Fig. 1) in sequence. Should tumbler 78 be tripped to place arm 77 in interference against opening the lock by the above combination, then operation of the lock requires proper digital operation of members D, A, B and C (78, 24, 29 and 57; see Fig. 4) in sequence to open the lock. Hence the lock in effect has two different combinations, depending on the position of arm 77 operated by tumbler 78.

Although I have shown only one active tumbler 24 required to be properly manipulated for opening the lock, I can utilize two or more such active tumblers all of which must be actuated in the proper manner in conjunction with operating lever 29 and the latch actuator 55 for opening the lock. Thus, for example, if desired, I can design the device so that both members 24 and 26 are active tumblers. This can be accomplished by providing an additional pin 96 on plate 45 (see Figs. 4 and 6), said pin being located between members 26 and 28. Pin 96 is shown in dotted lines in Figs. 4 and 6, and is disposed to the left of arm 77 in Figs. 4 and 6, and has an outer laterally extending portion 96*a* extending over arm 77 and below fin 89, the end of pin portion 96*a* being positioned closely adjacent to or abutting the tooth portion 100 of member 26. In this modification the right hand portion of the transverse pin 86 is removed.

Thus, in order to open the lock, it is necessary to first finger both of members 24 and 26 and to rotate both of these members counterclockwise to withdraw the outer tooth portions of said members from interference with the pins 50 and 96, and permit said pins to proceed to the right with plate 45 without interference, followed by clockwise rotation of the operating lever 29 to cause movement of plate 45 to the right as described above and illustrated in Fig. 10, and finally downward actuation of plunger 57 for actuation of the latching cylinder 68 in the keeper housing. It is thus seen that the instant modification provides another code for opening the lock, that is, by proper digital operation in sequence of members E, A, B and C. Moreover, rotation of one or both of the active tumblers 24 and 26 clockwise instead of counterclockwise will jam the lock in the manner previously described.

Any number of additional active tumblers and/or inactive tumblers can be added to the structure in any desired positions to increase the complexity of the code to operate the lock, and to increase the complexity of the code required to reset the lock if the interference member, e.g. arm 77, has been tripped. Instead of the tumbler 78 being mounted at the bottom of the lock in the position shown in Figs. 2 and 4, such tumbler may be mounted in the row of members 24, 25 and 26, or in the row of members 27, 28 and 29, and have an outward appearance similar to these members so as to be indistinguishable therefrom.

Further, the lock when tripped by arm 77 to its inoperative position by children or unauthorized persons can be made to operate a signal light or an alarm positioned on the lock itself or located at a place remote from the lock, to indicate that someone has tampered with the lock. Thus, for example, as shown in Fig. 11, a pin 110′ connected to a spring contact 110 can be mounted for slidable movement in response to pivotal motion of the tumbler 78, and a contact 111 fixed to the block 32. Leads 112 from these contacts connect them with a light bulb 113 mounted on block 32 and to a source of energy for the light, such as a battery 114. When the tumbler 78 is fingered to trip the arm 77, rotation of arm 77 clockwise to its inoperative position, shown in Fig. 9, cause movement of pin 110′ to cause the contact 110 to engage 111, thus closing the circuit to the bulb 113. If desired, the bulb 113 can be replaced by an alarm or bell, or by a camera actuated by the tripping of arm 77 to its inoperative position, the camera being positioned to take a picture of the tampering person. Also, if desired the light bulb or alarm can be located at a position remote from the lock, where one in attendance is apprised of the situation when the signal is obtained at said remote position.

The members 38, 45, 32, 33 and 24 to 29 inclusive can be made of any suitable material such as wood, metal, and plastics. Preferably such members are composed of a plastic, such as methyl methacrylate or cellulose acetate or cellulose acetate-butyrate. In preferred practice the colorless transparent plastics are employed, enabling visual inspection of the operating mechanisms within the lock. When transparent plastics of this nature are employed, the device can be designed so that resetting of arm 77 after it has been tripped to prevent operation of the lock requires greater manual manipulation, which is aided by visual inspection of the position of arm 77 through the transparent, e.g. plastic, outer case. For this purpose the aperture 80′ in tumbler 78, which receives pivot 80, can be made oversize, as indicated by dotted lines in Fig. 2, and the aperture 79 in which the tumbler 78 is disposed can be widened as at 79′, as indicated by dotted lines in Fig. 4. Now the arm 77 does not automatically snap into neutral position on pin 82 after simple counterclockwise rotation from its interfering position in Fig. 9, but rather requires additional guidance to thereafter move the arm to the proper position just above pin 82, due to the sidewise play in arm 77. Such resetting is aided by visual observation of the upper end of arm 77 and of the supporting pin 82 on which the end of arm 77 must be positioned for resetting. When the device is not constructed of a transparent material, a sufficiently large hole or window can be formed in the block 33, as indicated by dotted line 101 in Figs. 1 and 2, so that one can inspect the relative positions of arm 77 and pin 82 for manual resetting of arm 77 on the pin.

It will be understood that instead of digital operation of latch actuator 55, the latter can be made to operate automatically in response to movement of the plate 45 and rod 47, a distance sufficient to withdraw said rod from the hole 54 of the latch actuator. This can be accomplished by including a suitable connection between said plate or rod and said latch actuator for automatic operation thereof to open the lock when the latch actuator has thus been released from its fixed position.

It will be understood that I can also rearrange the respective positions of the active and inactive tumblers as desired to achieve the objects and results of the invention.

In addition to the aforementioned advantages of the lock structure of the invention, the lock structure hereof also possesses the following advantages: By employment of the cooperating magnets 61 and 67 for actuation of the latch member 78 in response to displacement of latch actuator 55, no mechanical connection is required between the latch member and latch actuator, thus simplifying the structure and avoiding use of mechanical components and passage thereof through the mirror 12 and door 11. Also, the attachment of the base plate 38 of the lock structure to the mirror 12 by an adhesive further simplifies the mounting of the lock structure and again avoids the use of fasteners such as bolts and clamps, which would tend to injure the mirror.

While I have described particular embodiments of my invention for purposes of illustration, it should be understood that various modifications and adaptations thereof may be made within the spirit of the invention as set forth in the appended claims.

I claim:

1. A lock which comprises a latch member, a slidable latch actuator, said latch member being operative in response to movement of said latch actuator, means normally engaging said latch actuator and maintaining it in fixed position, said means being movable with respect to said latch actuator for releasing same, said latch member being maintained in locked position when said latch actuator is in said fixed position, a digitally actuable pivotally mounted tumbler, a digitally actuable operating member mounted to operate said latch actuator engaging means to release said last mentioned means from said latch actuator, said tumbler in normal position providing an interference against actuation of said operating member, said tumbler being adapted on pivotal movement to withdraw said interference and permit actuation of said operating member, to release said latch actuator engaging means from said latch actuator, and at least one pivotally mounted digitally actuable member mounted adjacent to and of similar external shape as said tumbler, said last mentioned member being inoperative to permit actuation of said operating member.

2. A lock as defined in claim 1, including a plurality of said last mentioned pivotally mounted digitally actuable members mounted adjacent each other.

3. A lock as defined in claim 1, wherein said last mentioned pivotally mounted digitally actuable member is operative on pivotal movement thereof to provide an interference against actuation of said operating member.

4. A lock as defined in claim 3, including a plurality of said pivotally mounted digitally actuable members, each operative on pivotal movement thereof to provide an interference against actuation of said operating member.

5. A lock as defined in claim 1, including a plurality of said digitally actuatable pivotally mounted tumblers mounted adjacent each other, each in normal position providing an interference against actuation of said operating member, and a plurality of said last mentioned pivotally mounted digitally actuable members mounted adjacent each other, said last mentioned members having substantially the same external shape as said tumblers.

6. A lock which comprises a pivotally mounted latch member, an elongated digitally operable slidable latch actuator, magnetic cooperating means between said latch member and latch actuator, whereby said latch member is pivotally operative in response to movement of said latch actuator, a tongue mounted in fixed position on a door, said latch member when in locked position engaging said tongue, means normally engaging said latch actuator and maintaining it in fixed position, said latch member being maintained in locked position when said latch actuator is in said fixed position, a digitally actuable pivotally mounted tumbler, a digitally actuable operating member mounted to operate said latch actuator engaging means, said tumbler in normal position providing an interference against actuation of said operating member, said tumbler being adapted on pivotal movement to withdraw said interference and permit actuation of said operating member to operate said latch actuator engaging means and release said latch actuator, and at least one pivotally mounted digitally actuable member mounted adjacent to and of similar external shape as said tumbler, said last mentioned member being inoperative to permit actuation of said operating member.

7. A lock which comprises a pivotally mounted latch member, an elongated digitally operable slidable latch actuator, magnetic cooperating means between said latch member and latch actuator, whereby said latch member is pivotally operative in response to movement of said latch actuator, a tongue mounted in fixed position on a door, said latch member when in locked position engaging said tongue, an elongated rod mounted for slidable movement into an aperture in said latch actuator to engage same and maintain it in fixed position, said latch member being maintained in locked position when said latch actuator is in said fixed position, a slidable reciprocating plate connected to said rod for movement thereof, means guiding movement of said plate, means permitting movement of said plate a distance to withdraw said rod from said aperture, at least one digitally actuable pivotally mounted tumbler, means connected to said plate, said tumbler in normal position abutting said last named means and providing an interference against movement of said plate, said tumbler on pivotal motion thereof in one direction withdrawing said interference and permitting movement of said last mentioned means, a digitally actuable pivotally mounted operating lever mounted on pivotal motion in one direction to contact said plate and to move said plate and said rod and to release it from engagement with said latch actuator, and at least one pivotally mounted digitally actuable member mounted adjacent to and of similar external shape as said tumbler, said last mentioned member being inoperative to permit actuation of said operating lever.

8. A lock as defined in claim 7, including an interference arm mounted adjacent said at least one tumbler and said last mentioned member, means pivotally mounting said interference arm at one end, means normally holding the free end of said arm in a position free from contact with said plate, said last mentioned member on pivotal motion striking said arm and moving said arm into interfering contact with said plate, and means for digitally adjusting said interference arm to place the free end thereof on said holding means.

9. A lock which comprises a pivotally mounted latch member, an elongated digitally operable slidable latch actuator, magnetic cooperating means between said latch member and latch actuator, whereby said latch member is pivotally operative in response to movement of said latch actuator, a tongue mounted in fixed position on a door, said latch member when in locked position engaging said tongue, an elongated rod mounted for slidable movement into an aperture in said latch actuator to engage same and maintain it in fixed position, said latch member being maintained in locked position when said latch actuator is in said fixed position, a slidable reciprocating plate connected to said rod for movement thereof, means guiding movement of said plate, means permitting movement of said plate a distance to withdraw said rod from said aperture, at least one digitally actuable pivotally mounted tumbler, means connected to said plate, said tumbler in normal position abutting said last named means and providing an interference against movement of said plate, a notch on an interior surface of said tumbler adjacent the portion thereof abutting said last mentioned means, said tumbler on pivotal motion thereof in one direction withdrawing said interference and permitting movement of said last mentioned means through said notch, a digitally actuable pivotally mounted operating lever mounted for pivotal motion in one direction to contact said plate and to move said plate and said rod and to release it from engagement with said latch actuator, and at least one pivotally mounted digitally actuable member mounted adjacent to and of similar shape as said tumbler, said last mentioned member being inoperative to permit actuation of said operating lever.

10. A lock as defined in claim 7, including a plurality of said digitally actuable pivotally mounted tumblers mounted adjacent each other, each in normal position abutting said means connected to said plate and providing an interference against movement of said plate, and a plurality of said last mentioned pivotally mounted digitally actuable members mounted adjacent each other, said last mentioned members having substantially the same external shape as said tumblers.

11. In combination, a pivotally mounted door, a lock structure connected to said door adjacent the outer free edge of said door, a tongue connected to the inner surface of said door opposite said lock structure, a latch

member mounted to engage said tongue and maintain said door in locked position, said lock structure comprising a slidable latch actuator, said latch member being operative in response to movement of said latch actuator, means normally engaging said latch actuator and maintaining it in fixed position, said means being movable with respect to said latch actuator for releasing same, said latch member being maintained in locked position when said latch actuator is in said fixed position, a digitally actuable pivotally mounted tumbler, a digitally actuable operating member mounted to operate said latch actuator engaging means to release said last mentioned means from said latch actuator, means connected to said latch actuator engaging means said tumbler in normal position engaging said last mentioned means and providing an interference against actuation of said latch actuator engaging means, said tumbler being adapted on pivotal movement to withdraw said interference and permit actuation of said operating member, to release said latch actuator engaging means from said latch actuator to permit operation thereof for opening said lock, and at least one pivotally mounted digitally actuable member mounted adjacent to and of similar external shape as said tumbler, said last mentioned member being inoperative to permit actuation of said operating member.

12. The combination as defined in claim 11, including a plurality of said last mentioned pivotally mounted digitally actuable members mounted adjacent each other, and wherein said last mentioned members are each operative on pivotal movement thereof to provide an interference against actuation of said operating member.

13. The combination as defined in claim 11, including a signal means responsive to operation of said last mentioned members for providing said interference.

14. A lock as defined in claim 7, including a pivotally mounted interference arm, said arm being positioned adjacent said at least one tumbler and said last mentioned pivotally mounted digitally actuable member, a tumbler pivotally mounting said interference arm at one end, a pin, the opposite free end of said arm resting on said pin, said last mentioned member on pivotal motion in one direction abutting said arm and removing the free end of said arm from said pin, means urging said free end of said arm in engagement with said plate to prevent movement thereof by said operating lever, said last mentioned tumbler being digitally operable for resetting the free end of said arm on said pin and removing said arm from interference with said plate.

15. A lock which comprises a pivotally mounted latch member, a first magnet mounted therein, a tongue, said latch member in locked position engaging said tongue, an elongated digitally operable latch actuator, a second magnet mounted in said latch actuator, said magnets having adjacent poles of opposite attracting polarity, said latch actuator being positioned with respect to said latch member so that said attracting magnetic poles produce pivotal motion of said latch member in response to axial motion of said latch actuator, a slidable reciprocating plate mounted for slidable movement transversely of said latch actuator, means guiding movement of said plate, means limiting movement of said plate, latch actuator engaging means connected to said plate and responsive to movement thereof to engage or release said latch actuator, said latch member being maintained in locked position when said last mentioned means engages said latch actuator, a plurality of first aligned digitally actuable L-shaped pivoting members, pivotally mounted adjacent said plate and out of contact therewith, a plurality of second aligned digitally actuable L-shaped pivoting members pivotally mounted parallel to and spaced from said first aligned members, at least one of said first pivoting members being an active tumbler, a pin mounted on said plate, said at least one active tumbler in normal position abutting said pin and providing an interference against movement of said plate, said last mentioned tumbler on pivotal motion thereof in one direction withdrawing said interference and permitting movement of said last mentioned pin and said plate, at least one of said second aligned members being an operating lever mounted on pivotal motion in one direction to contact said plate and to move said plate and to release said latch actuator engaging means from engagement with said latch actuator, the others of said first pivoting members and the others of said second pivoting members being inactive tumblers in inoperative association with said plate.

16. A lock which comprises a pivotally mounted latch member, a first magnet mounted therein, a tongue, said latch member in locked position engaging said tongue, an elongated digitally operable latch actuator, a second magnet mounted in said latch actuator, said magnets having adjacent poles of opposite attracting polarity, said latch actuator being positioned with respect to said latch member, so that said attracting magnetic poles produce pivotal motion of said latch member in response to axial motion of said latch actuator, a slidable reciprocating plate, a pair of elongated parallel rods connected to said plate for movement thereof and mounted for slidable movement transversely of said latch actuator, means limiting movement of said rods and plate, one of said rods passing through an aperture in said latch actuator on limited movement of said rods in one direction to engage said latch actuator and maintain it in fixed position, said latch member being maintained in locked position when said latch actuator is in said fixed position, said last mentioned means permitting movement of said plate a distance to withdraw said one of said rods from said aperture, means biasing said latch actuator in a direction to maintain said latch member in engagement with said tongue, a plurality of first aligned digitally actuable L-shaped pivoting members pivotally mounted adjacent said plate and out of contact therewith, a plurality of second aligned digitally actuable L-shaped pivoting members pivotally mounted parallel to and spaced from said first aligned members, at least one of said first pivoting members being an active tumbler, a pin mounted on said plate, said at least one active tumbler in normal position abutting said pin and providing an interference against movement of said plate, said last mentioned tumbler on pivotal motion thereof in one direction withdrawing said interference and permitting movement of said last mentioned pin and said plate, at least one of said second aligned members being an operating lever mounted on pivotal motion in one direction to contact said plate and to move said plate and said rods and to release said one of said rods from engagement with said latch actuator, the others of said first pivoting members and the others of said second pivoting members being inactive tumblers in inoperative association with said plate.

17. A lock which comprises a pivotally mounted latch member, a first magnet mounted therein, a tongue, said latch member in locked position engaging said tongue, an elongated digitally operable latch actuator, a second magnet mounted in said latch actuator, said magnets having adjacent poles of opposite attracting polarity, said latch actuator being positioned with respect to said latch member so that said attracting magnetic poles produce pivotal motion of said latch member in response to axial motion of said latch actuator, a slidable reciprocating plate mounted for slidable movement transversely of said latch actuator, means guiding movement of said plate, means limiting movement of said plate, latch actuator engaging means connected to said plate and responsive to movement thereof to engage or release said latch actuator, said latch member being maintained in locked position when said last mentioned means engages said latch actuator, a plurality of first aligned digitally actuable L-shaped pivoting members, pivotally mounted adjacent said plate and out of contact therewith, a plurality of second aligned digitally actuable L-shaped pivoting members pivotally mounted parallel to and spaced from said first aligned

members, at least one of said first pivoting members being an active tumbler, a pin mounted on said plate, said at least one active tumbler in normal position abutting said pin and providing an interference against movement of said plate, said last mentioned tumbler on pivotal motion thereof in one direction withdrawing said interference and permitting movement of said last mentioned pin and said plate, at least one of said second aligned members being an operating lever mounted on pivotal motion in one direction to contact said plate and to move said plate and to release said latch actuator engaging means from engagement with said latch actuator, a pivotally mounted interference arm, said arm being positioned between and parallel to said first and second aligned digitally actuable pivoting members, a second pin, a tumbler connected to one end of said arm, the other free end of said arm resting on said second pin, at least some of said first and second aligned digitally actuable members on pivotal motion in a predetermined direction abutting said arm and removing the free end of said arm from said second pin, biasing means urging said free end of said arm into engagement with said plate, obstructions on said plate engaging said free end of said arm when said arm is in contact with said plate to prevent movement thereof by said operating lever, said tumbler connected to said arm being digitally pivotal against the action of said biasing means for resetting the free end of said arm on said second pin and removing said arm from interference with said plate.

18. A lock which comprises a pivotally mounted latch member, a first magnet mounted therein, a tongue, said latch member in locked position engaging said tongue, an elongated digitally operable latch actuator, a second magnet mounted in said latch actuator, said magnets having adjacent poles of opposite attracting polarity, said latch actuator being positioned with respect to said latch member, so that said attracting magnetic poles produce pivotal motion of said latch member in response to axial motion of said latch actuator, a slidable reciprocating plate, a pair of elongated parallel rods connected to said plate for movement thereof and mounted for slidable movement transversely of said latch actuator, means limiting movement of said rods and plate, one of said rods passing through an aperture in said latch actuator on limited movement of said rods in one direction to engage said latch actuator and maintain it in fixed position, said latch member being maintained in locked position when said latch actuator is in said fixed position, said last mentioned means permitting movement of said plate a distance to withdraw said one of said rods from said aperture, means biasing said latch actuator in a direction to maintain said latch member in engagement with said tongue, a plurality of first aligned digitally actuable L-shaped pivoting members pivotally mounted adjacent said plate and out of contact therewith, a plurality of second aligned digitally actuable L-shaped pivoting members pivotally mounted parallel to and spaced from said first aligned members, at least one of said first pivoting members being an active tumbler, a pin mounted on said plate, said at least one active tumbler in normal position abutting said pin and providing an interference against movement of said plate, a notch in said at least one active tumbler adjacent the portion thereof abutting said pin, said last mentioned tumbler on pivotal motion thereof in one direction withdrawing said interference and permitting movement of said last mentioned pin through said notch, and permitting movement of said plate, at least one of said second aligned members being an operating lever mounted on pivotal motion in one direction to contact said plate and to move said plate and said rods and to release said one of said rods from engagement with said latch actuator, a pivotally mounted interference arm, said arm being positioned between and parallel to said first and second aligned digitally actuable pivoting members, a plurality of contacting members extending from said arm, a second pin, a tumbler connected to one end of said arm, the other free end of said arm resting on said second pin, said first and second aligned digitally actuable members on pivotal motion in a predetermined direction each abutting one of said contacting members on said arm and removing the free end of said arm from said second pin, biasing means urging said free end of said arm into engagement with said plate, obstructions on said plate engaging said free end of said arm when said arm is in contact with said plate to prevent movement thereof by said operating lever, said last mentioned tumbler being digitally pivotal against the action of said biasing means for resetting the free end of said arm on said second pin and removing said arm from interference with said plate.

19. A lock as defined in claim 17, including a signal means operative in response to movement of said interference arm into contact with said plate to prevent movement thereof by said operating lever.

20. A lock which comprises a latch member, a movable latch actuator, cooperating magnetic means on said latch member and on said latch actuator whereby said latch member is operative in response to movement of said latch actuator, means normally engaging and maintaining said latch actuator in fixed position, said means being movable with respect to said latch actuator for releasing same, said latch member being maintained in locked position when said latch actuator is in said fixed position, means for moving said latch actuator engaging means to release same from said latch actuator, a digitally actuable tumbler, said tumbler in normal position providing an interference against actuation of said moving means said tumbler being adapted on movement thereof to withdraw said interference and permit actuation of said moving means for release of said latch actuator, and at least one digitally actuable member mounted adjacent to and of similar external shape as said tumbler, said last mentioned member being inoperative to permit actuation of said moving means.

21. A lock which comprises a latch member, a slidable latch actuator, cooperating magnetic means on said latch member and on said latch actuator whereby said latch member is operative in response to movement of said latch actuator, means normally engaging said latch actuator and maintaining it in fixed position, said means being movable with respect to said latch actuator for releasing same said latch member being maintained in locked position when said latch actuator is in said fixed position, a digitally actuable pivotally mounted tumbler, a digitally actuable operating member mounted to operate said latch actuator engaging means to release said last mentioned means from said latch actuator, means connected to said latch actuator engaging means, said tumbler in normal position engaging said last mentioned means and providing an interference against actuation of said latch actuator engaging means, said tumbler being adapted on pivotal movement to withdraw said interference and permit actuation of said operating member to release said latch actuator engaging means from said latch actuator, and at least one pivotally mounted digitally actuable member mounted adjacent to and of similar external shape as said tumbler, said last mentioned member being inoperative to permit actuation of said operating member.

22. A lock which comprises a latch member, a slidable latch actuator, said latch member being operative in response to movement of said latch actuator, a slidable rod normally engaging said latch actuator and maintaining it in fixed position, a reciprocating slidable plate connected to said rod for movement thereof, means limiting movement of said plate in opposite directions, a digitally actuable pivotally mounted tumbler, a digitally actuable operating member, said digitally actuable operating member being pivotally mounted for engaging and operating said plate on pivotal motion of said last mentioned member, means connected to said plate, said tumbler in normal position abutting said last named means

and providing an interference against movement of said plate and said rod, said tumbler being adapted on pivotal movement to withdraw said interference and permit actuation of said operating member, to operate said rod and release said latch actuator, and at least one pivotally mounted digitally actuable member mounted adjacent to and of similar external shape as said tumbler, said last mentioned member being inoperative to permit actuation of said operating member.

23. A lock which comprises a latch member, a slidable latch actuator, said latch member being operative in response to movement of said latch actuator, means normally engaging said latch actuator and maintaining it in fixed position, said latch member being maintained in locked position when said latch actuator is in said fixed position, a digitally actuable pivotally mounted tumbler, a digitally actuable operating member mounted to operate said latch actuator engaging means, said tumbler in normal position providing an interference against actuation of said operating member, said tumbler being adapted on pivotal movement to withdraw said interference and permit actuation of said operating member, to operate said latch actuator engaging means and release said latch actuator, and at least one pivotally mounted digitally actuable member mounted adjacent to and of similar external shape as said tumbler, said last mentioned member being inoperative to permit actuation of said operating member, and operative on pivotal movement to provide an interference against actuation of said engaging means, said last mentioned interference including an arm mounted adjacent said tumbler and said at least one digitally actuable member, said arm being pivotally mounted and normally free from association with said latch actuator engaging means, said arm on movement thereof by said last mentioned member interfering with release of said latch actuator engaging means from said latch actuator.

24. A lock as defined in claim 1, including a plurality of said pivotally mounted digitally actuable members disposed in a pair of oppositely positioned rows.

25. A lock which comprises a latch member, a movable latch actuator, cooperating means on said latch member and on said latch actuator whereby said latch member is operative in response to movement of said latch actuator, means normally engaging and maintaining said latch actuator in fixed position, said means being movable with respect to said actuator for releasing same, said latch member being maintained in locked position when said latch actuator is in said fixed position, means for moving said latch actuator engaging means to release same from said latch actuator, a digitally actuable tumbler, said tumbler in normal position providing an interference against actuation of said moving means, said tumbler being adapted on movement thereof to withdraw said interference and permit actuation of said moving means for release of said latch actuator, and at least one digitally actuable member mounted adjacent to and of similar external shape as said tumbler, said last mentioned member being inoperative to permit actuation of said moving means.

References Cited in the file of this patent

UNITED STATES PATENTS

386,554	Morris et al.	July 24, 1888
417,873	Lawrence	Dec. 24, 1889
1,933,126	Slattery	Oct. 31, 1933
2,730,392	Thiebaud	Jan. 10, 1956