

R. C. LEWIS.

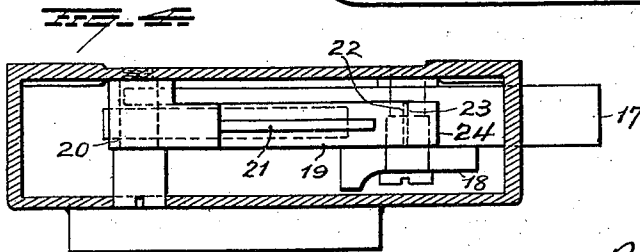
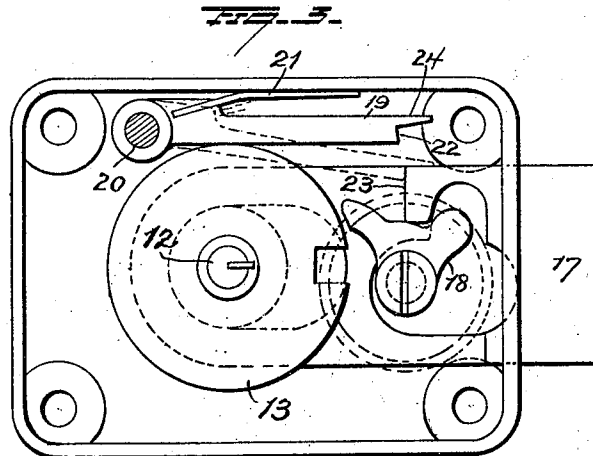
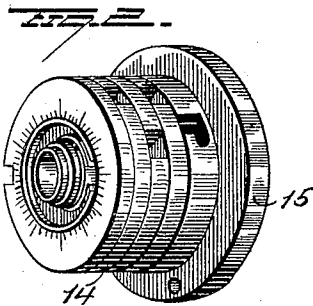
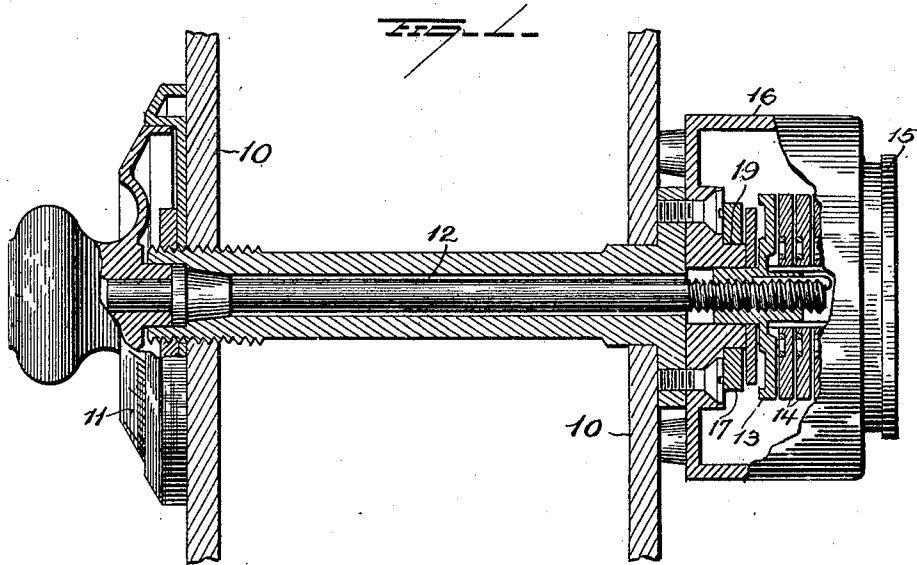
DIAL LOCK.

APPLICATION FILED MAR. 25, 1921.

1,398,642.

Patented Nov. 29, 1921.

2 SHEETS—SHEET 1.



Inventor

R. C. Lewis

By Seymour Wright

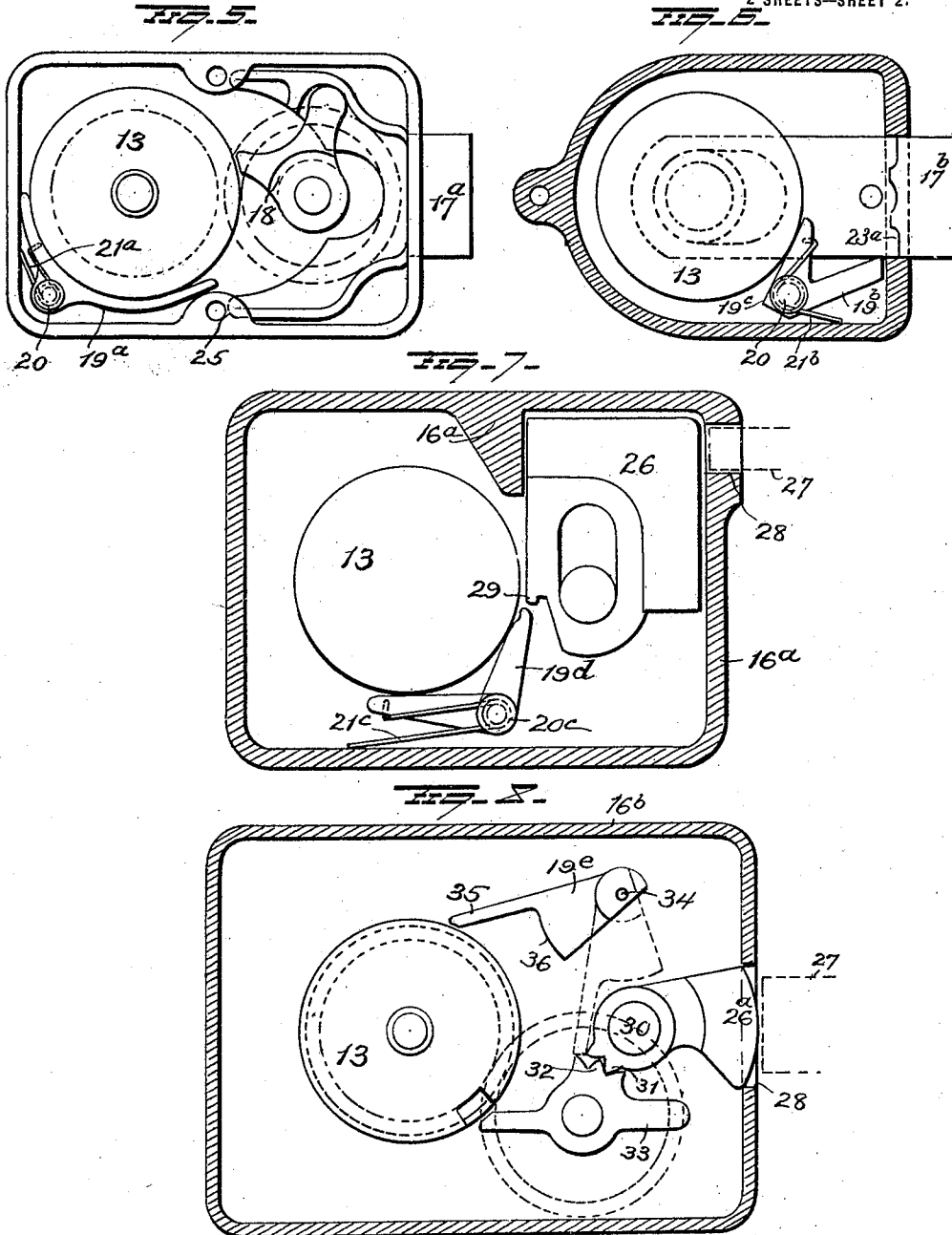
Attorney

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Inventor

R. C. Lewis

By Seymour & Bright

Attorney

UNITED STATES PATENT OFFICE.

ROLLIN C. LEWIS, OF STAMFORD, CONNECTICUT, ASSIGNOR TO THE YALE & TOWNE
MANUFACTURING COMPANY, OF STAMFORD, CONNECTICUT.

DIAL-LOCK.

1,398,642.

Specification of Letters Patent.

Patented Nov. 29, 1921.

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To all whom it may concern:

Be it known that I, ROLLIN C. LEWIS, a citizen of the United States, and a resident of Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Dial-Locks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an improvement in dial locks.

Locks of this type are sometimes attacked by first removing the dial, and then driving the spindle back into the lock case. The inner end of the spindle contacting with the curb, or the driving cam on the spindle contacting with the adjacent tumblers dislodges the curb together with its associated stack of tumblers and also the driving cam on the spindle, thus removing all protection from the bolt mechanism, so that the bolt can then be easily retracted from outside.

The object of this invention is to provide an automatic deadlock normally held in inoperative position by the driving cam, but which, when the driving cam has been displaced from its normal position, moves into position to deadlock the bolt or the bolt guard as the case may be, and thus prevent the retraction of the bolt.

In the accompanying drawing, Figure 1 is a view in section through a safe door showing the dial, spindle and lock case, the latter being broken away to show the tumbler mechanism; Fig. 2 is a view of the curb and its attached tumblers; Fig. 3 is a view in vertical longitudinal section through the lock case, showing the deadlocking lever in its normal position out of contact with the bolt; Fig. 4 is a view in plan of the deadlocking lever, bolt and fence, the top of the bolt case being removed and Figs. 5, 6, 7 and 8 are views similar to Fig. 3 of modifications.

10 represents a safe door, 11 the dial and 12 the spindle which connects the dial 11 with the cam 13 which drives the disk tumblers 14. The tumblers 14 are mounted and secured on a sleeve carried by the curb 15 detachably secured to the lock case 16, and are actuated by dial, spindle and driving cam 13 the latter being secured to the spindle 12. As the tumblers are assembled on and carried by the curb, it follows that if the

latter be detached from the lock case, or forced rearwardly from its normal position, the tumblers will be moved with it.

The lock case 16 with its tumblers and bolt mechanism are attached to the inner side of the door, and when the parts are assembled as shown in Fig. 1, the driving cam 13 which as before explained is secured to and carried by the spindle 12, rests against the adjacent face of the first tumbler 14 of the series and actuates the latter in the well known manner.

17 is the bolt which is actuated by the fence 18, and in Fig. 3 the bolt is shown as mounted at its rear end on the hub 19 of bolt case 16.

In the operation of the lock the dial is turned in the proper direction to bring the gatings in the tumblers into alinement and also in position for the fence to enter said gatings, and then by turning the fence by any of the well known means the bolt will be retracted.

The parts as thus described may be of the ordinary and well known constructions now in common use.

As previously stated, locks as thus constructed, are sometimes attacked from the outside by first removing the dial, and then driving or forcing the spindle and driving cam inwardly. This inward movement of the spindle and driving cam, acting against the tumblers forces off the curb and its tumblers and leaves the bolt mechanism free to be actuated from the outside.

My invention as previously stated consists in a safety latch or deadlocking device normally held in inoperative position by the driving cam but which when the cam is forced rearwardly as above explained is released and moves into position to deadlock the bolt and prevent its retraction from the outside.

In the construction shown in Figs. 3 and 4 the deadlocking device 19 is in the form of a latch pivoted at 20 and normally resting on the driving cam as shown in full lines in Fig. 3. This latch 19 is yieldingly held against the periphery of the driving cam by the spring 21, secured at one end in a kerf in the latch and bearing at its other end against the inner face of the lock, and is provided adjacent its free end with a shoulder 22, adapted when the latch drops into the dotted position shown in Figs. 3, to fall be-

hind the shoulder 23 on the bolt, with its free end 24 resting on the top of the bolt, the said projecting free end limiting the drop or downward movement of the lever.

5 From the foregoing it will be seen that if the driving cam 13 be forced rearwardly by the driving in of the spindle 12, it will pass from under the deadlocking latch 19 and permit the latter to drop to its dead-
10 locking position and positively hold the bolt against inward movement.

In the construction shown in Fig. 5 the pivoted deadlocking latch 19^a is curved to engage the periphery of the driving cam and is pivoted to the lock case intermediate
15 its ends. A spring 21^a yieldingly holds one free end of the curved lever against the driving cam, the latter operating to hold the other free end out of the path of the
20 end 25 of the bolt 17^a. If with this construction, the driving cam be forced rearwardly and thus release the deadlocking latch or lever 19^a, the spring 21^a will then be free to turn the latch or lever into posi-
25 tion to deadlock the bolt.

In the construction shown in Fig. 6 the deadlocking lever 19^b is in the form of a bell crank lever pivoted at 20, one arm of the bell crank being yieldingly held against
30 the driving cam by the spring 21^b and the free end of the other arm being in a plane below the shoulder 23^a on the bolt 17^b. If with this construction the driving cam be driven rearwardly and out of contact with
35 the bell crank, the spring 21^b will turn the bell crank so that the dead locking end thereof will be in the path of shoulder 23^a and prevent the retraction of the bolt, the toe 19^c at the shoulder of the bell crank
40 limiting the turning movement of the latter and operating to hold the dead locking end of the same in position to prevent the bolt from being retracted.

In Fig. 7 I have shown the improvement
45 applied to a bolt guard 26, that is to say, to a guard which prevents the bolt from being retracted while the guard is in its locking position. This guard is actuated in the same manner and by the same means as
50 a bolt, and differs from the latter in that it does not project from the lock case 16^a in which it is mounted and when in locking position as shown, prevents the inner end of the bolt 27 from entering the case. In this
55 figure the lock case 16^a is provided with a bolt opening to receive the inner end of the bolt 27, or a bolt connected with the bolt mechanism of the door or other part to which the lock is applied.

60 When the bolt 27 is projected or in locking position, it is in the position as shown in Fig. 7, and cannot be retracted until the guard 26 has been moved to a position to uncover the hole 28 in the lock-case 16^a and
65 permit the rear end of bolt 27 to enter the

latter. The guard 26 is actuated in the same manner and by the same means as the bolts of the locks shown in the other figures. If however the tumblers and driving cam be displaced as previously explained, it
70 could readily be actuated from the outer side and thus uncover the hole 28, and to prevent such action I have provided the deadlocking lever or safety latch 19^d. One arm of the lever bears against the periphery
75 of the driving cam and is yieldingly held there by the spring 21^c, with its other end adjacent the shoulder 29 on the guard. If the driving cam be displaced so as to release lever 19^d, the spring 21^c will turn lever
80 19^d on its pivot 20^c and carry the free end of said lever under shoulder 29 on the guard and thus deadlock the latter in a position covering the bolt hole 28 and absolutely prevent the retraction of bolt 27.
85

In the construction shown in Fig. 8 the guard 26^a is pivoted at 30 to the lock case 16^b and normally closes the opening 28 through which the rear end of the bolt 27 enters. This hub of the guard is provided
90 with teeth 31 which mesh with the teeth 32 on the hub of the fence 33, hence when the fence is free to enter the gatings in the tumbler and driving cam the guard will be turned up and out of the path of the bolt
95 thus permitting the rear end of the latter in its retracting movement to enter the lock case. To prevent the operation of the guard in the event the driving cam should be displaced, I have provided the safety or dead-
100 locking latch 19^e which latter is pivoted at 34 with its free end 35 normally resting on the periphery of the curb 15, as shown in full lines. If however the curb be displaced, this latch drops by gravity and the end 35
105 thereof falls into engagement with the rear tooth 32 of the fence as shown in dotted lines in Fig. 8 and prevents the fence from being turned, and the shoulder 36^a on the safety latch or lever 19^e passes over the
110 guard and it, together with the end 35 engaging the teeth on the fence, operate to lock the fence and also the guard against movement, and consequently prevents re-
115 traction of the bolt 27.

In all the forms the safety device is normally supported by a part of the removable unit of the lock hence if the unit to wit, the curb, cam tumbler and spindle be dis-
120 lodged the safety device will operate to deadlock the bolt.

It is evident that other changes and modifications may be made for accomplishing the same end, hence I would have it understood that I do not confine myself to details, but
125 claim broadly a deadlocking or safety latch normally held in inoperative position, but which upon the displacement of the driving cam of the lock mechanism is moved to a position to prevent the actuation of the un-
130

locking mechanism from the outer side of the door.

Having fully described my invention what I claim as new and desire to secure by Letters-Patent, is:—

1. In a lock, the combination of a series of tumblers, a driving cam for the same, a fence, a movable member held in locking position by the tumblers and fence and a safety latch normally held in inoperative position by its engagement with the periphery of the driving cam, and adapted to move to deadlock said movable member in the event the driving cam should be forced rearwardly from its normal position.

2. In a lock, the combination of a series of tumblers, a driving cam for the same, a fence, a movable member held in locking position by the tumblers and fence, and a pivoted safety latch normally held in inoperative position by its engagement with the periphery of the driving cam and adapted to move to a position to deadlock said movable member if the driving cam should be forced rearwardly from its normal position.

3. In a lock, the combination of a series of tumblers, a driving cam for the same, a fence, a movable member held in locking position by the tumblers and fence, and a spring actuated safety latch normally held in inoperative position by its contact with the periphery of the driving cam and adapted to be moved by its spring to a position to deadlock said movable member by the removal of the driving cam.

4. In a lock, the combination of a series of tumblers, a driving cam for the same, a fence, a bolt held in projected or locking position by the fence and tumblers and a spring actuated safety latch normally held in inoperative position by the driving cam and adapted, if the driving cam should be displaced rearwardly, to move into contact with the bolt and deadlock the same in its projected position.

5. In a lock, the combination of a series of tumblers, a driving cam for the same, a fence, a bolt held in projected or locking position by the fence and tumblers, and a safety latch pivoted at one end and nor-

mally resting against the periphery of the driving cam, the free end of said latch adapted to move to a position to directly engage and deadlock the bolt in the event the driving cam should be displaced.

6. In a lock, the combination of a series of tumblers, a driving cam for the same, a fence, a bolt held in projected or locking position by the fence and tumblers and a spring pressed safety latch pivoted at one end and normally held in inoperative position by its engagement with the driving cam, the said latch being provided at its free end with a shoulder adapted to move behind a shoulder on the bolt, and with an end projection adapted to rest on the bolt when the latch is released by the displacement of the driving cam.

7. In a lock, the combination with a lock case, a tumbler within the lock case, a spindle, and a driving cam on the spindle, the said tumbler, cam and spindle constituting a unit that would be displaced by forcing the spindle inwardly, a movable member and a safety latch normally held in inoperative position by its engagement with a part of said unit and adapted to move to deadlock said movable member in the event the part of said unit normally supporting the latch should be forced rearwardly from its normal position.

8. In a lock, the combination of a curb, a series of tumblers carried by the curb, a driving cam for the tumblers, a spindle carrying said driving cam, a movable member normally held in locking position by the tumblers, and a safety latch normally held in operative position by its engagement with the periphery of the driving cam and adapted to move to deadlock said movable member if the driving cam should be forced rearwardly from its normal position.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses:

ROLLIN C. LEWIS.

Witnesses:

JOHN H. BODWELL,
CHARLES A. BERRY.