May 27, 1958 R. W. WALTERS 2,836,051

LOCK FOR NARROW STILE DOORS

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Fig. 1.

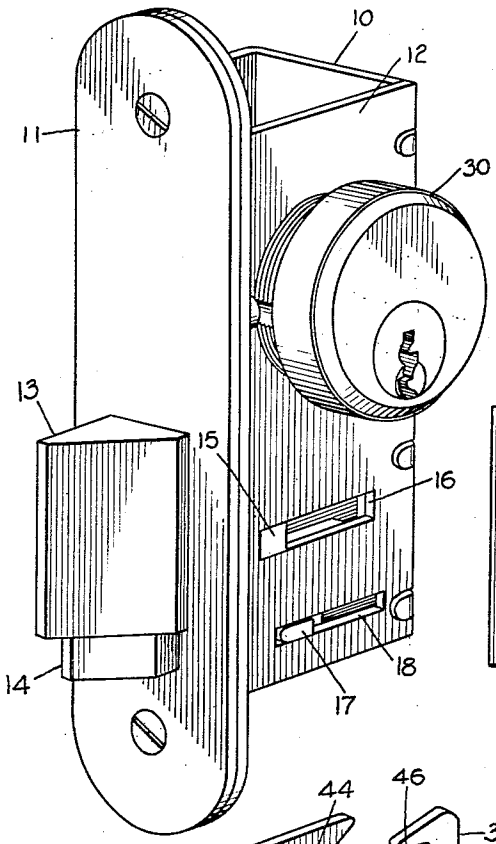


Fig. 2.

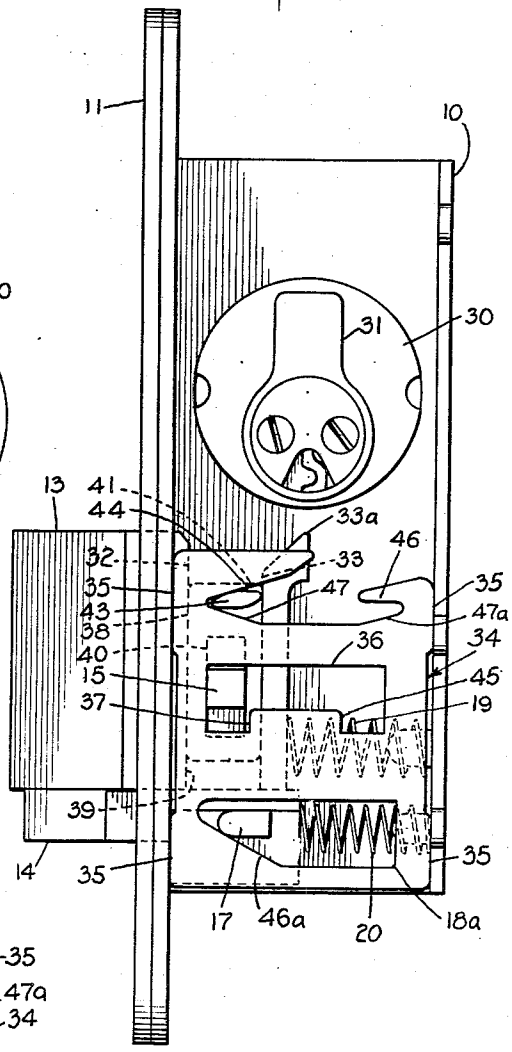
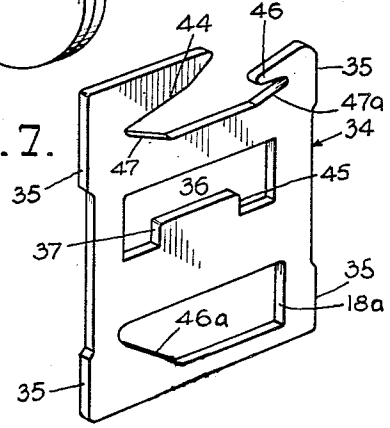


Fig. 7.



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Fig. 3.

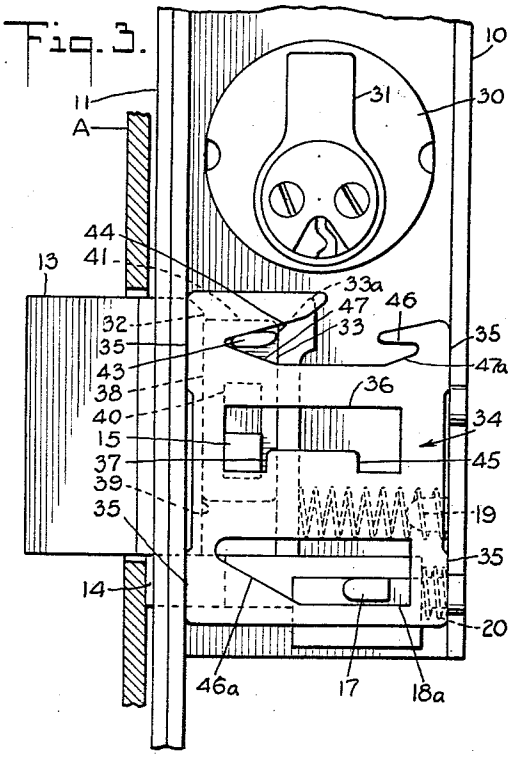


Fig. 4.

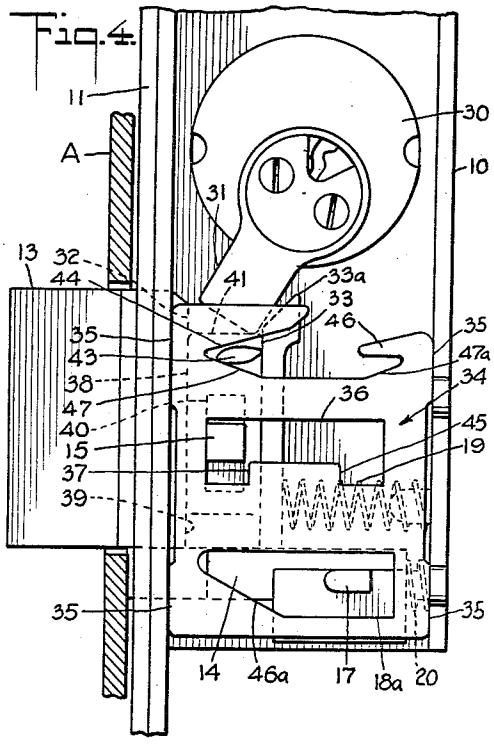


Fig. 5.

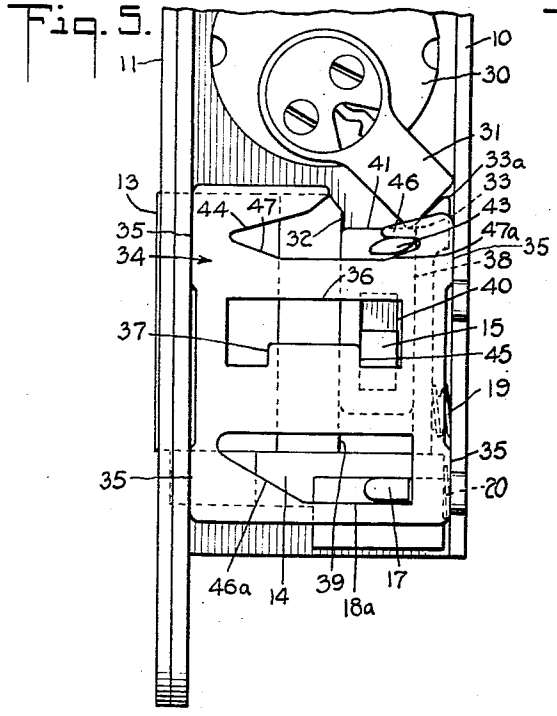
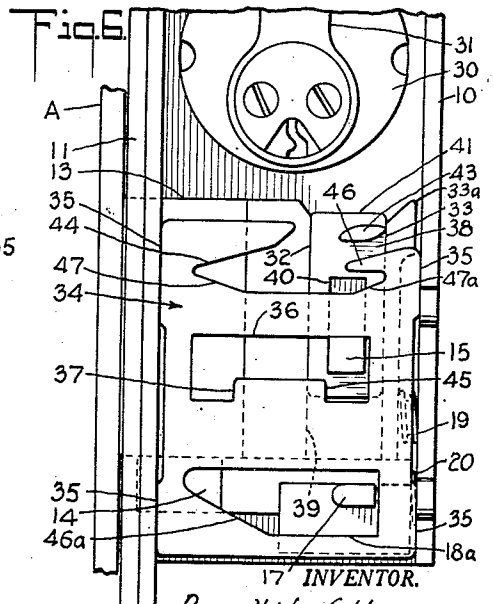


Fig. 6.



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Fig. 8.

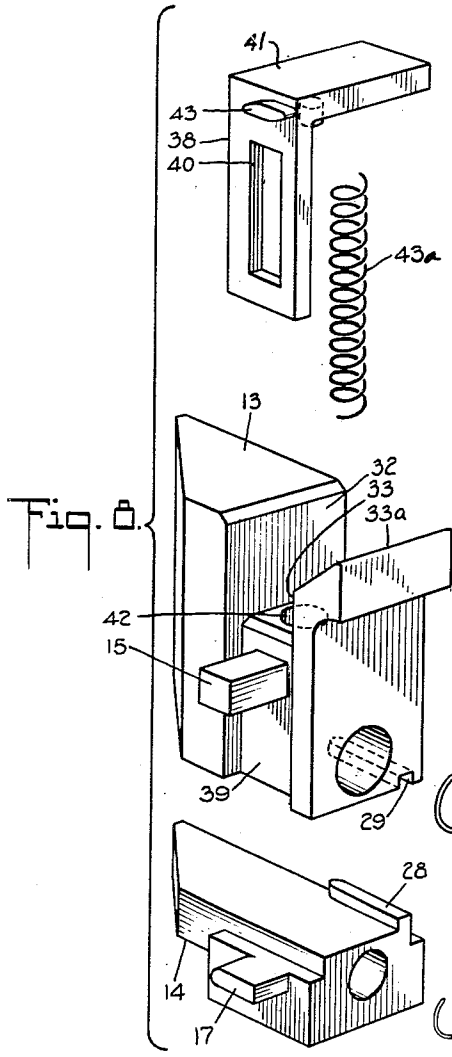
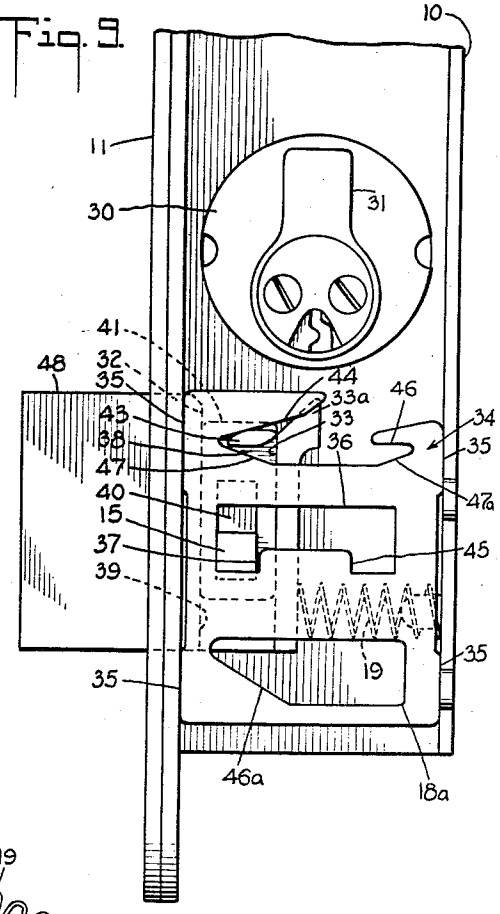


Fig. 9.



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United States Patent Office 2,836,051 Patented May 27, 1958

2,836,051

LOCK FOR NARROW STILE DOORS

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Application April 25, 1955, Serial No. 503,638

19 Claims. (Cl. 70—151)

This invention relates to a narrow backset lock for doors with narrow stiles. I particularly contribute by my invention a narrow stile lock having novel means for controlling and deadlocking the lock bolt.

Those persons skilled in the art will understand that narrow stile locks have very limited space available for the lock mechanism. This creates a considerable problem, particularly in the designing of satisfactory means that will act automatically for deadlocking the bolt. The bolt itself must be short in order that it may move to retracted position in the lock, yet the deadlocking means must be arranged to coact with the bolt when fully projected. The lock mechanism naturally includes manual or key operated means that move the bolt and that simultaneously control the deadlocking action. All of this structure must operate in the very short space that is available in a narrow stile lock.

It will be appreciated also that it is very desirable to construct the bolt as a latchbolt that is deadlocked, but that can be depressed through engagement with a strike. However, a further problem is involved in utilizing such an arrangement in a narrow stile lock, since additional means for controlling the deadlocking action must then be mounted in the short space within the lock. In conventional locks, it is customary to utilize a trigger bolt for this purpose, as will be appreciated, but a trigger bolt requires considerable space within the lock and prior art constructions are not suited to narrow stile locks. In the narrow stile lock that I have now conceived, I utilize deadlocking means that have very considerable advantages over the prior art, and that enable me particularly to equip the lock with a latchbolt and a trigger bolt that controls the deadlocking of the latchbolt.

As an important feature of my invention, I utilize in my lock a novel deadlocking tumbler that, together with the coacting parts of the lock, may be utilized in a relatively short space in the lock. More particularly, I form the deadlocking tumbler with surfaces through which it is in direct coacting relation to a trigger bolt, a latchbolt, and actuating means for the tumbler, and I do not require intermediate parts for the tumbler action. I prefer to arrange these tumbler surfaces one above the other, so that the tumbler will coact with both bolts and the actuating means at points that are substantially aligned in a vertical direction. The tumbler itself moves vertically, and this together with the particular form of the tumbler enables me to arrange the lock mechanism in a very narrow lock case.

As a further feature, I so construct my lock that the deadlocking tumbler can dog the latchbolt in retracted position. When acting in this way, the tumbler again coacts with the latchbolt and tumbler actuating means at points that are substantially aligned in a vertical direction. Of course, the tumbler and trigger bolt are not then in coacting relation, since the trigger bolt is effective only when the latchbolt is projected.

I have thus outlined rather broadly the more important

features of my invention in order that the detailed description thereof that follows may be better understood, and in order that my contribution to the art may be better appreciated. There are, of course, additional features of my invention that will be described hereinafter and which will form the subject of the claims appended hereto. Those skilled in the art will appreciate that the conception on which my disclosure is based may readily be utilized as a basis for the designing of other structures for carrying out the several purposes of my invention. It is important, therefore, that the claims be regarded as including such equivalent constructions as do not depart from the spirit and scope of my invention, in order to prevent the appropriation of my invention by those skilled in the art.

In the drawings:

Fig. 1 is a perspective view of my novel narrow stile lock.

Fig. 2 is a side view of my lock with a part of the lock case removed.

Fig. 3 is similar to Fig. 2, but with the bolt dogged in locking position and engaged with a strike.

Fig. 4 shows the key plug cam moving the deadlocking tumbler out of dogging position preparatory to retracting the bolt.

Fig. 5 shows the bolt retracted by the key plug cam and dogged in this position by the tumbler.

Fig. 6 shows the bolt retracted through engagement with the strike.

Fig. 7 is a detail view of my novel deadlocking tumbler.

Fig. 8 is an exploded view showing parts of my lock.

Fig. 9 shows my novel deadlocking tumbler utilized with a deadbolt.

Referring now more particularly to Fig. 1 of the drawings, I show my novel lock equipped with a rectangular case 10 having a front plate 11, and a side 12 that is removable for the purpose of assembling the lock mechanism. The particular construction of the lock case 10 is not important to an understanding of my invention, but it should be observed that the case is quite short from front to back so that the lock can be mounted in a very narrow door stile. I further show the lock equipped with a bevelled latchbolt 13 and a trigger bolt 14 that slide between projected and retracted positions on the case. I shall describe the bolts 13, 14 in greater detail, but it will be best to state first that the latchbolt 13 and trigger bolt 14 coact with a strike in the usual way. Thus, upon closing of the door, the bevelled surface of the latchbolt 13 moves against the strike and this bolt together with trigger bolt 14 are depressed by the strike, as in Fig. 6 of the drawings. The latchbolt 13 then moves to projected position behind the strike while the strike holds trigger bolt 14 depressed, as will be understood by those skilled in the art, and as I show in Fig. 3, thereby effecting deadlocking of the latchbolt 13.

The latchbolt 13 and trigger bolt 14 are necessarily short, as may be clearly seen in the drawings, so that these bolts can move to retracted position in the narrow case 10. For guiding the bolt movement, a lug 15 on latchbolt 13, shown in detail in Fig. 8, moves in a slot 16 in the lock case 10, as may be seen in Fig. 1. A lug 17 on trigger bolt 14 moves similarly in a slot 18. A coil spring 19 is engaged between latchbolt 13 and the back of case 10 to press the bolt toward projected position, and a coil spring 20 similarly presses the trigger bolt 14. As is usual in trigger bolt mechanisms, the trigger bolt 14 is retracted through a retracting movement of latchbolt 13, and for the particular purpose I form trigger bolt 14 with a spline 28, best seen in Fig. 8, that is engaged in a slot 29 in latchbolt 13. For retracting the latchbolt 13, I show the lock case 10 equipped at each side with a con-

ventional lock cylinder 30 having a rotating keyplug on which is a cam 31. It is to be understood, however, that I may very well utilize a handle for rotating a cam 31 at one side of the lock. I form the upper portion of latchbolt 13 with a vertical slot having opposed surfaces 32, 33 against which either cam 31 is adapted to move whereby to slide the latchbolt to projected or retracted positions.

For deadlocking the latchbolt 13 of my extremely novel lock, I utilize a tumbler 34, best seen in Fig. 7, that moves vertically in the lock case 10 between dogging and release positions relatively to latchbolt 13. This tumbler 34 preferably is a flat plate sliding between the side of case 10 and the bolts 13, 14, with edge portions 35 through which the tumbler is in bearing relation to the front and back of case 10. I form the tumbler 34 with a horizontal slot 36 in which the latchbolt lug 15 moves as latchbolt 13 moves between projected and retracted positions. At the front end of slot 36, I form tumbler 34 with a notch having a deadlocking surface 37 that moves into opposed relation to latchbolt lug 15 through upward movement of tumbler 34, as may be seen in Fig. 3, when the latchbolt 13 is in projected position. The tumbler 34 is then in dogging position, and deadlocks the latchbolt 13. I shall describe in detail the manner in which the trigger bolt 14 controls this dogging action of tumbler 34, but it will be well first to describe the means I utilize for moving the tumbler.

For the particular purpose, I mount a cam 38 to slide in a vertical groove 39 that is formed in one side of latchbolt 13, as well shown in Fig. 8. Since the latchbolt lug 15 is positioned actually in groove 39, I form cam 38 with a slot 40 that enables the cam to move relatively to the lug. Through the particular arrangement, the cam 38 moves bodily with latchbolt 13 as the bolt moves between projected and retracted positions, but slides vertically relatively to the latchbolt. On the upper portion of cam 38 is a horizontal arm 41 lying intermediate the surfaces 32, 33 of the latchbolt slot. Below the arm 41, I form the latchbolt 13 with a bore 42, Fig. 8, in which I mount a coil spring 43*a* that acts against arm 41 to press the cam 38 upwardly. Further, cam 38 has at its outer side an integral lug 43.

I particularly form the upper part of tumbler 34 with an inclined portion 44 (Fig. 7) under which cam lug 43 moves when latchbolt 13 moves to projected position, as in Fig. 3. The upward spring pressure of the cam 38 thereby acts against tumbler 34 for moving the tumbler to dogging position. It should be observed that the inclined tumbler portion 44 is directly above the deadlocking surface 37 on the tumbler so that the deadlocking and tumbler actuation take place at points that are substantially aligned vertically. This arrangement, together with further features that I shall describe, enables the tumbler to coact with the latchbolt 13 and sliding cam 38 in my extremely narrow lock.

Referring now to Fig. 4, it will be seen that either keyplug cam 31, when rotating to retract the latchbolt 13, will move against the arm 41 on sliding cam 38 and will thereby depress this cam 38. It will be observed further that I form the tumbler 34 with a surface 47 opposed to the inclined tumbler portion 44. By depressing the sliding cam 38, the keyplug cam 31 moves the lug 43 against the tumbler surface 47, and thereby moves tumbler 34 downwardly to release position, as clearly shown in Fig. 4, with the free slot 36 opposite latchbolt lug 15. This enables the keyplug cam 31 by continuing its rotation to move the latchbolt 13 to fully retracted position, as in Fig. 5.

I prefer to utilize the tumbler 34 also for dogging the latchbolt in retracted position, as may be seen in Fig. 5. For this purpose, I form the rear end of the tumbler slot 36 with a notch having a rearwardly disposed dogging surface 45, as best seen in Fig. 7. I further form the upper part of tumbler 34 with a portion 46 under which the cam lug 43 will engage, as in Fig. 5, when the latchbolt 13 is moved by one of the keyplug cams 31 to retracted position. When lug 43 is thus engaged, the keyplug cam 31 by its rotation moves away from sliding cam 38 and over an upper portion 33*a* on latchbolt 13. Through its engagement with latchbolt portion 33*a*, the keyplug cam 31 holds latchbolt 13 in retracted position against the pressure of latchbolt spring 19. With keyplug cam 31 acting in this way, the spring pressure of cam 38 is effective through lug 43 to press the tumbler 34 upwardly to dogging position. Tumbler surface 45 is then in opposed relation to the latchbolt lug 15, and holds the latchbolt retracted. The keyplug cam 31 will naturally continue its rotation until it reaches a neutral position, and will not then be engaged with the latchbolt portion 33*a*. In opposed relation to the tumbler portion 46, I form the tumbler 34 with a surface 47*a* that is the counterpart of the surface 47. Therefore, when the keyplug cam 31 rotates clockwise in Fig. 5, it moves tumbler 34 downwardly out of dogging position, with further rotation of plug cam 31 projecting the latchbolt.

I shall now describe the novel arrangement whereby the trigger bolt 14 controls the tumbler 34. It will be remembered that the lug 17 on the trigger bolt 14 moves in slot 18 in the side of the lock case, Fig. 1. When so moving, the lug 17 moves relatively to an opening 18*a* in tumbler 34, Fig. 7. Directly below the deadlocking surface 37, I form opening 18*a* of tumbler 34 with an inclined surface 46*a* with which trigger lug 17 coacts when the trigger 14 is in projected position, as is best shown in Fig. 2, for holding tumbler 34 out of deadlocking relation to latchbolt lug 15. While I prefer to use the relatively large opening 18*a* to form the tumbler surface 46*a*, I do not wish to be limited to an opening since the surface 46*a* may very well be formed on a projecting part of the tumbler. It is necessary to know principally that the trigger bolt lug 17 moves directly against the inclined tumbler surface 46*a*, and coacts with this portion 46*a*, moreover, at a point that is substantially aligned in a vertical direction relatively to the deadlocking surface 37 and the tumbler actuating portion 44. It will be realized, of course, that it is the spring pressure of trigger bolt 14 that acts against the inclined surface 46*a* through lug 17 for holding tumbler 34 in a lower or release position, as in Fig. 2. To do this, the spring pressure of the trigger bolt overcomes the pressure of the spring 43 that tends always to hold tumbler 34 in its deadlocking position of Fig. 3.

To enable the latchbolt spring 19 to move the latchbolt 13 to projected position in the strike, I form the upper tumbler portions 44, 46 in spaced relation to one another, as is clearly shown in the drawings. Thus, when the latchbolt 13 is depressed by the strike A, as in Fig. 6, the spring pressure of the sliding cam 38 causes the cam lug 43 to move above the tumbler portion 46, so that this lug does not then move tumbler 34 to dogging position. In other words, the cam lug 43 coacts with the tumbler portion 46 only when the keyplug cam 31 retracts the latchbolt 13, as in Fig. 5, and tumbler 34 does not move to dogging position when the strike depresses the latchbolt 13.

In the novel structure that I have thus far described, I utilize the tumbler 34 for controlling a latchbolt, but I can very well utilize this tumbler for controlling a dead bolt 48, as is shown in Fig. 9. I show bolt 48 assembled with a spring 19 like that utilized to press latchbolt 13 to projected position, but I shall refer to bolt 48 as a dead bolt since it enables me to achieve the type of action contributed by a conventional dead bolt. My lock when constructed with the dead bolt 48 has in most respects the same structure that I have already described. Of course, dead bolt 48 does not have a bevel as does latchbolt 13, and the tumbler in this case will be actuated only by the keyplug cam 31. In other words, this particular

type of lock does not have a trigger bolt for controlling the tumbler 34. I can, however, utilize the same tumbler 34, and I can standardize to a very large extent the manufacture of the lock parts for both types of narrow stile lock.

To facilitate a full understanding of my invention, it will be best to review the operation of my novel lock with reference to the figures of the drawings.

In Fig. 1, the latchbolt 13 and the trigger bolt 14 are in projected position, this being the normal position of both bolts when the door is open and the bolts are not dogged in retracted position. The lock parts are now in the position shown in Fig. 2. The spring pressure of trigger bolt 14 acts against the inclined surface 46*a* on tumbler 34 through the trigger lug 17, thereby overcoming the spring pressure of the sliding cam 38 and holding the tumbler in its lower or release position. In this position of the tumbler, of course, the free slot 36 is aligned relatively to the latchbolt lug 15, so that the latchbolt 13 can move to retracted position.

In Fig. 3, the latchbolt 13 is in projected position, as in Fig. 2, but the door is closed and trigger bolt 14 is held depressed by strike A so that its lug 17 no longer coacts with the inclined tumbler surface 46*a*. The sliding cam 38 now acts through the engagement between its lug 43 and the inclined tumbler portion 44 to move the tumbler upwardly to dogging position, with the dogging surface 37 of the tumbler 34 in opposed relation to the latchbolt lug 15. This deadlocks the latchbolt 13.

In Fig. 4, we see what happens when one of the keyplug cams 31 rotates from the Fig. 3 position, preparatory to retracting the latchbolt 14. The keyplug cam 31 first moves against the top of the sliding cam 38 and depresses this cam. This causes the lug 43 on the sliding cam to coact with surface 47 on tumbler 34, whereby to move the tumbler to its lower or release position, all as shown in Fig. 4. The tumbler surface 37 has now moved away from latchbolt lug 15, and the free slot 36 is aligned relatively to lug 15. Upon continued rotation, keyplug cam 31 coacts with the vertical latchbolt surface 33 and moves latchbolt 13 to retracted position, as shown in Fig. 5.

During its rotation to the Fig. 5 position, keyplug cam 31 has held the sliding cam 38 depressed so that its lug 43 has moved under the portion 46 on tumbler 34. Upon moving the latchbolt 13 to retracted position, the cam 31 by its rotation moves away from sliding cam 38, as shown in Fig. 5. Cam 31 simultaneously moves over the upper portion 33*a* on latchbolt 13, thus acting to hold the latchbolt in retracted position against the pressure of latchbolt spring 19. This enables the sliding cam 38 to move upwardly by its spring pressure, while acting through its lug 43 to move tumbler 34 upwardly to dogging position, all as shown in Fig. 5. The tumbler surface 45 now coacts with latchbolt lug 15 to dog latchbolt 13 in retracted position. When rotating further to its normal neutral position, keyplug cam 31 will, of course, move away from the upper tumbler portion 33*a*.

Fig. 6 shows what happens when the latchbolt 13 is depressed by the strike A during the closing movement of the door. The strike A has, of course, depressed the bolt 13 from the position shown in Fig. 2, with the latchbolt lug 15 moving in the free slot 36 of tumbler 34. Since this movement takes place without rotation of either keyplug cam 31, the sliding cam 38 is not held depressed during the bolt movement, and the spring pressure of sliding cam 38 causes this cam to move upwardly as the lug 43 leaves the inclined tumbler portion 44. Thereby the lug 43 moves above the tumbler portion 46 and does not coact with this portion 46 to move the tumbler 34 upwardly. Since the tumbler now remains in the release position shown in Fig. 6, the latchbolt spring 19 can press the latchbolt 13 to projected position in the strike A, as in Fig. 3, when the door reaches closed position.

I believe that those skilled in the art will now realize that I have contributed a novel lock structure of very considerable value. Through my invention, I am able to construct a lock that can be mounted on an extremely narrow door stile, but that is equipped nevertheless with a deadlocking latchbolt controlled by a trigger bolt. Moreover, the deadlocking mechanism of my novel lock operates extremely well, whether controlling a latchbolt or a dead bolt. In fact, the novel features of my deadlocking mechanism, while particularly adapted for narrow stile locks, may be utilized to advantage on other locks. I believe, therefore, that the value of my invention will be fully understood.

I now claim:

1. In a lock of the class described, a latchbolt movable between projected and retracted positions, a tumbler for dogging the latchbolt in projected position, a movable cam, means through which the latchbolt when moving to projected position moves said cam into coacting relation to the tumbler, a spring pressing the cam and acting through said cam when it is in coacting relation to the tumbler to press the tumbler to a position dogging the latchbolt, a trigger normally spring projected and adapted to move to a retracted position through engagement with a strike, a part on said trigger coacting with the tumbler when the trigger is in projected position, and a surface on said tumbler through which the trigger part by its coaction applies the spring pressure of the trigger to overcome the spring pressure of the cam whereby to hold the tumbler out of dogging position.

2. In a lock of the class described, a latchbolt movable between projected and retracted positions, a tumbler for dogging the latchbolt in projected position, a trigger normally spring projected and adapted to move to a retracted position through engagement with a strike, a part on said trigger coacting with the tumbler when the trigger is in projected position for holding the tumbler out of dogging relation to the latchbolt, a cam coacting with the tumbler when the latchbolt is projected, a spring pressing said cam and acting through the cam to press the tumbler toward dogging position when the cam is in coacting relation to the tumbler, said cam by its pressure moving the tumbler to dogging position when the trigger is retracted, and a manually operated member adapted to move the said cam and tumbler out of dogging position and for retracting the latchbolt.

3. In a lock of the class described, a latchbolt movable between projected and retracted positions, a tumbler for dogging the latchbolt in projected position, a movable cam, means through which the latchbolt when moving to projected position moves said cam into coacting relation to the tumbler, a spring pressing the cam and acting through the cam when it is in coacting relation to the tumbler for pressing the tumbler to a position dogging the latchbolt, a tumbler surface through which said cam when depressed against the pressure of its spring is adapted to move the tumbler out of dogging position, a manually operated member for so depressing said cam and for retracting the latchbolt, a trigger normally spring projected and adapted to move to a retracted position through engagement with a strike, a part on said trigger coacting with the tumbler when the trigger is in projected position, and a surface on said tumbler through which said trigger part by its coaction applies the spring pressure of the trigger to overcome the spring pressure of the cam whereby to hold the tumbler out of dogging position.

4. In a lock of the class described, a latchbolt movable between projected and retracted positions, a tumbler movable from a lower position to an upper position to dog the latchbolt, a movable cam, means through which the latchbolt when moving to projected position moves said cam into coacting relation to the tumbler, a spring pressing the cam and acting through said cam when it is in coacting relation to the tumbler to press the tumbler to said upper position, a tumbler surface through which said

cam when depressed against the pressure of its spring is adapted to move the tumbler downwardly out of dogging position, a manually operated member for so depressing said cam and for retracting the latchbolt, a trigger normally spring projected and adapted to move to a retracted position through engagement with a strike, a part on said trigger coacting with the tumbler when the trigger is in projected position, and a surface on said tumbler through which said trigger part by its coaction applies the spring pressure of the trigger to overcome the spring pressure of the cam whereby to hold the tumbler in its lower position out of dogged relation to the latchbolt.

5. In a lock of the class described, a latchbolt movable between projected and retracted positions, a tumbler movable from a lower to an upper position to dog the latchbolt, a trigger normally spring projected and adapted to move to a retracted position through engagement with a strike, a part on said trigger coacting with the tumbler when the trigger is in projected position for holding the tumbler in lower position out of dogging relation to the latchbolt, a spring pressed cam having a part coacting with the tumbler when the latchbolt is projected, said cam by its spring pressure acting through said part of the cam for moving the tumbler to upper dogging position when the tumbler is not held by the trigger, said tumbler having a surface against which said cam part acts for moving the tumbler downwardly out of dogging position when the cam is depressed, and a manually operated member for depressing the cam and tumbler and for retracting the latchbolt.

6. In a lock of the class described, a latchbolt movable between projected and retracted positions, a tumbler plate movable relatively to the latchbolt and formed with a deadlocking surface, a part on the latchbolt with which the deadlocking surface coacts when the tumbler plate is in a dogging position whereby to deadlock the latchbolt in projected position, said latchbolt part limiting the tumbler plate movement between dogging and release positions, a spring pressed cam pressing the tumbler plate to dogging position when the latchbolt is projected, a trigger normally spring projected and adapted to move to a retracted position through engagement with a strike, a part on said trigger coacting with the tumbler plate when the trigger is in projected position, a surface on said tumbler plate through which said trigger part by its coaction applies the spring pressure of the trigger to overcome the spring pressure of the cam whereby to hold the tumbler plate out of dogging position, and a manually operated member for retracting the latchbolt.

7. In a lock of the class described, a latchbolt movable between projected and retracted positions, a tumbler movable vertically relatively to the latchbolt and formed with a deadlocking surface, a part on the latchbolt with which the deadlocking surface coacts when the tumbler is in an upper dogging position whereby to deadlock the latchbolt in projected position, said latchbolt part limiting the tumbler movement between said upper dogging position and a lower release position, a spring pressed cam pressing the tumbler upwardly when the latchbolt is projected, a trigger normally spring projected and adapted to move to a retracted position through engagement with a strike, a part on said trigger coacting with the tumbler plate when the trigger is in projected position, a surface on said tumbler through which said trigger part by its coaction applies the spring pressure of the trigger in a downward direction to overcome the spring pressure of the cam whereby to hold the tumbler out of dogging position, and a manually operated member for retracting the latchbolt.

8. In a lock of the class described, a latchbolt movable between projected and retracted positions, a tumbler movable relatively to the latchbolt and formed with a deadlocking surface, a part on the latchbolt with which the deadlocking surface coacts when the tumbler is in a dogging position whereby to deadlock the latchbolt in projected position, a spring pressed cam pressing the tumbler to dogging position when the latchbolt is projected, a surface on said tumbler through which the cam when depressed against the pressure of its spring is adapted to move the tumbler out of dogging position, a manually operated member for depressing the cam and tumbler and for retracting the latchbolt, a trigger normally spring projected and adapted to move to a retracted position through engagement with a strike, a part on said trigger coacting with the tumbler when the trigger is in projected position, and a surface on said tumbler through which said trigger part by its coaction applies the spring pressure of the trigger to overcome the spring pressure of the cam whereby to hold the tumbler out of dogging position.

9. In a lock of the class described, a latchbolt movable between projected and retracted positions, a tumbler movable relatively to the latchbolt and formed with a deadlocking surface, a part on the latchbolt with which the deadlocking surface coacts when the tumbler plate is in a dogging position whereby to deadlock the latchbolt in projected position, a spring pressed cam adapted to move the tumbler when the latchbolt is in projected position, a portion on the tumbler formed substantially in vertically aligned relation to said deadlocking surface and through which said cam acts to move the tumbler to dogging position, a release surface formed on the tumbler in opposed relation to said tumbler portion and through which the cam when depressed is adapted to move the tumbler out of dogging position, a manually operated member for depressing the cam and tumbler and for retracting the latchbolt, a trigger for controlling the dogging movement of the tumbler, and a surface through which said trigger acts formed on the tumbler in substantially aligned relation to the said deadlocking and release surfaces and tumbler portions.

10. In a lock of the class described, a latchbolt movable between projected and retracted positions, a tumbler for dogging the latchbolt in projected position, a slide movable bodily with the latchbolt, a lug on said slide movable into coacting relation to the tumbler as the latchbolt moves to projected position, a spring pressing the slide whereby the lug on the slide when coacting with the tumbler presses the tumbler to dogging position, a trigger normally spring projected and adapted to move to a retracted position through engagement with a strike, a lug on said trigger movable against the tumbler through a movement parallel to the slide lug as the trigger moves to projected position, and a surface on the tumbler through which said trigger lug applies the spring pressure of the trigger to overcome the spring pressure of the slide whereby to hold the tumbler out of dogging relation to the latchbolt.

11. In a lock of the class described, a latchbolt movable between projected and retracted positions, a tumbler for dogging the latchbolt in projected position, a trigger normally spring projected and adapted to move to a retracted position through engagement with a strike, a lug on said trigger movable against the tumbler as the trigger moves to projected position whereby to hold the tumbler out of dogging relation to the latchbolt, a slide movable bodily with the latchbolt, a lug on said slide movable into coacting relation to the tumbler as the latchbolt moves to projected position, a spring pressing the slide whereby the lug on the slide presses the tumbler to dogging position when the tumbler is not held by the trigger lug, said tumbler having a surface against which the slide lug acts for moving the tumbler out of dogging position when the slide is depressed, and a manually operated member for depressing the slide and tumbler and for retracting the latchbolt.

12. In a lock of the class described, a latchbolt movable between projected and retracted positions, a tumbler plate for dogging the latchbolt in projected position, a trigger

normally spring projected and adapted to move to a retracted position through engagement with a strike, a lug on said trigger, a surface on the tumbler plate against which the trigger lug is adapted to move when the trigger moves to projected position whereby to hold the tumbler out of dogging relation to the latchbolt, a spring pressed slide movable bodily with the latchbolt, a lug on said slide, and a portion on the tumbler plate with which the slide lug is engaged when the latchbolt is in projected position whereby the spring pressure of the slide holds the tumbler plate in dogging position when said plate is not held by the trigger lug.

13. In a lock of the class described, a bolt movable between projected and retracted positions, a tumbler for dogging the bolt, a movable cam, means moving said cam into coacting relation to the tumbler when the bolt moves into projected position, a spring pressing the cam and acting through said cam when it is in coacting relation to the tumbler for pressing the tumbler to a position dogging the bolt, a surface on the tumbler against which the cam acts when depressed against the pressure of said spring to move the tumbler out of dogging relation to the bolt, a manually operated member for so depressing the cam and for projecting and retracting the bolt, a portion on the tumbler against which the cam is adapted to move when the manually operated member moves the bolt to retracted position, and the cam by its spring pressure on said tumbler portion adapted to move the tumbler to dog the bolt in retracted position.

14. In a lock of the class described, a latchbolt spring pressed to projected position and movable to retracted position, a tumbler for dogging the latchbolt, a spring pressed cam coacting with the tumbler when the latchbolt is projected for pressing the tumbler to a position dogging the latchbolt, a surface on the tumbler against which the cam acts when depressed to move the tumbler out of dogging relation to the latchbolt, a manually operated member for depressing the cam and tumbler and for effecting projecting and retracting movements of the latchbolt, a trigger normally spring projected and adapted to move to retracted position through engagement with a strike, a surface on the tumbler with which the trigger coacts when in projected position to overcome the spring pressure of the cam whereby to hold the tumbler out of dogging position, a portion on the tumbler against which the cam is adapted to move as the manually operated member moves the latchbolt to retracted position, and the cam by its spring pressure on said tumbler portion adapted to move the tumbler to dog the latchbolt in retracted position.

15. In a lock of the class described, a latchbolt normally spring pressed to a projected position, a manually operated member for moving the latchbolt to retracted position against the pressure of its spring, a tumbler movable between dogging and release positions relatively to said latchbolt, a spring pressed cam movable incidental to movement of the latchbolt, a portion on said tumbler with which said cam coacts upon movement of the latchbolt into retracted position by the manually operated member, said tumbler portion formed with a surface through which the cam by its coaction applies its spring pressure to press the tumbler toward dogging position, a part on said latchbolt through which the manually operated member acts after moving the latchbolt to retracted position to hold the latchbolt in said position until the cam pressure moves the tumbler to dogging position, and a surface on said cam against which the manually operated member acts when moving the latchbolt to depress the cam whereby to move the tumbler out of dogging position.

16. In a lock of the class described, a bolt movable between projected and retracted positions, a tumbler movable between dogging and release positions relatively to the bolt, a movable cam, means whereby said cam is in coacting relation to the tumbler when the bolt is in projected and retracted positions, a spring pressing said cam when in coacting relation to the tumbler for moving the tumbler to dogging position, a surface on the tumbler against which the cam acts when depressed against its spring pressure to move the tumbler out of dogging relation to the bolt, a manually operated member for depressing the cam and tumbler and for projecting and retracting the bolt, said manually operated member releasing the cam when the bolt is moved into projected or retracted position, and a bolt portion through which the manually operated member acts after moving the bolt to retracted position to hold the bolt in said position until the cam pressure moves the tumbler to dogging position.

17. In a lock of the class described, a latchbolt movable between projected and retracted positions, a tumbler plate formed with a surface for deadlocking the latchbolt, a spring pressed cam movable with the latchbolt, a portion on the tumbler plate with which said spring pressed cam coacts when the latchbolt is in projected position whereby to press the tumbler plate to deadlocking position, said tumbler plate having a surface with which said cam coacts for moving the tumbler plate out of deadlocking position when the cam is depressed, a key operated member for depressing the cam and tumbler plate and for retracting the latchbolt, a trigger normally spring projected and adapted to move to a retracted position through engagement with a strike, a part on said trigger coacting with the tumbler plate when the trigger is in projected position, and a surface on the tumbler plate through which said trigger part by its coaction applies the spring pressure of the trigger to overcome the spring pressure of the cam whereby to hold said plate with its deadlocking surface out of deadlocking relation to the latchbolt.

18. In a lock of the class described, a latchbolt movable between projected and retracted positions, a tumbler plate formed with a slot, a latchbolt part movable in said slot as the latchbolt is moved between projected and retracted positions, said tumbler slot formed with a surface for deadlocking the latchbolt, a spring pressed cam coacting with the tumbler when the latchbolt is in projected position, a portion on the tumbler plate through which said spring pressed cam by its coaction presses the tumbler plate whereby to place its deadlocking surface in dogging relation to the said latchbolt part, said tumbler plate having a surface with which said cam coacts for moving the tumbler plate out of dogging position when the cam is depressed, a manually operated member for depressing the cam and tumbler plate and for retracting the latchbolt, a trigger normally spring projected and adapted to move to a retracted position through engagement with a strike, a part on said trigger coacting with the tumbler plate when the trigger is in projected position, and a surface on the tumbler plate through which said trigger part by its coaction applies the spring pressure of the trigger to overcome the spring pressure of the cam whereby to hold said plate with its deadlocking surface out of dogging relation to the latchbolt.

19. In a lock of the class described, a latchbolt normally spring pressed to a projected position, a manually operated member adapted to move the latchbolt to a retracted position against the pressure of its spring, a tumbler movable into and out of a position for dogging said latchbolt, a spring pressed cam movable incidental to the movement of the latchbolt, a surface on said cam against which said manually operated member when moving the latchbolt acts also to move the cam against the pressure of its spring, said manually operated member upon moving the latchbolt into retracted position being adapted to move away from said cam surface, a portion on said tumbler against which the cam applies its spring pressure when the manually operated member so moves away from the cam surface whereby to press the tumbler

to dogging position, said tumbler formed with an open part past which the cam is adapted to move as the manually operated member moves the latchbolt toward retracted position, and said cam by its spring pressure moving in said open part away from the said tumbler portion when the latchbolt moves to retracted position through engagement with a strike so that the cam does not then move the tumbler to dogging position.

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