

Jan. 19, 1954

S. SEGAL

2,666,661

LOCK

Filed May 17, 1950

2 Sheets-Sheet 1

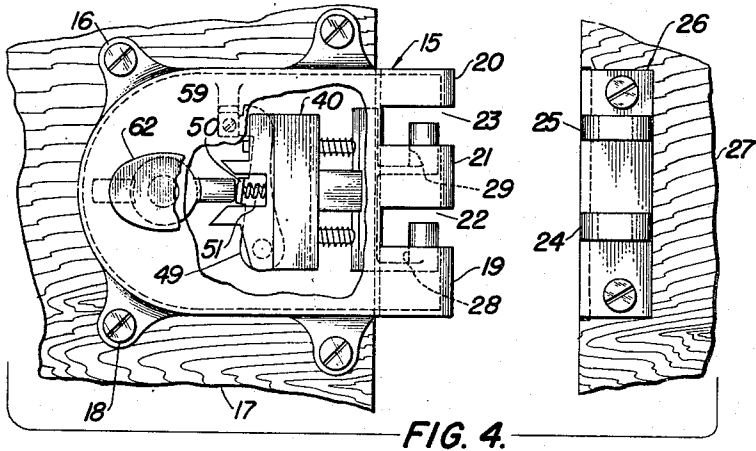


FIG. 4.

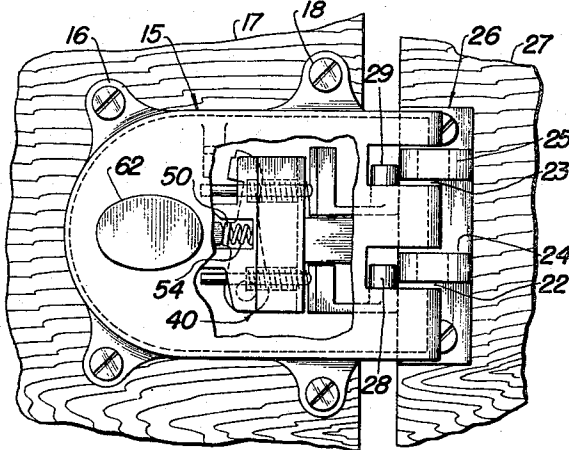


FIG. 5.

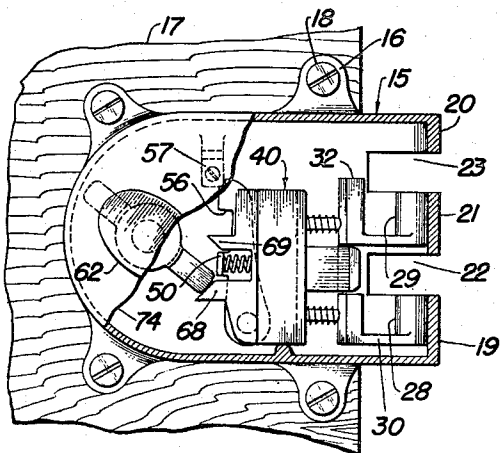


FIG. 3.

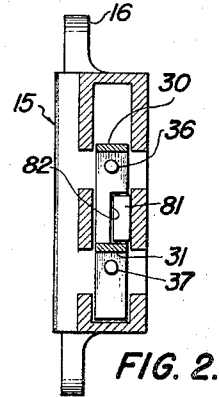


FIG. 2.

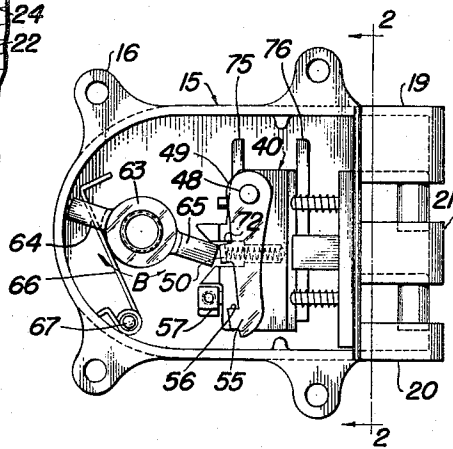


FIG. 1.

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2 Sheets-Sheet 2

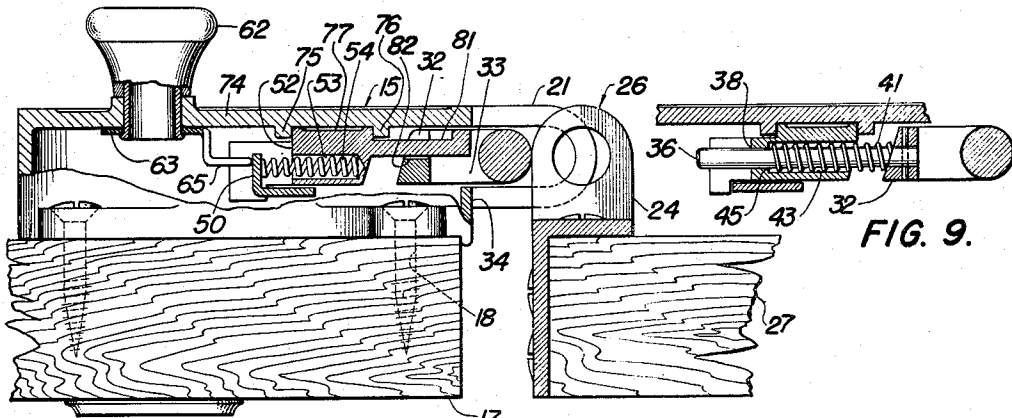


FIG. 7.

FIG. 9.

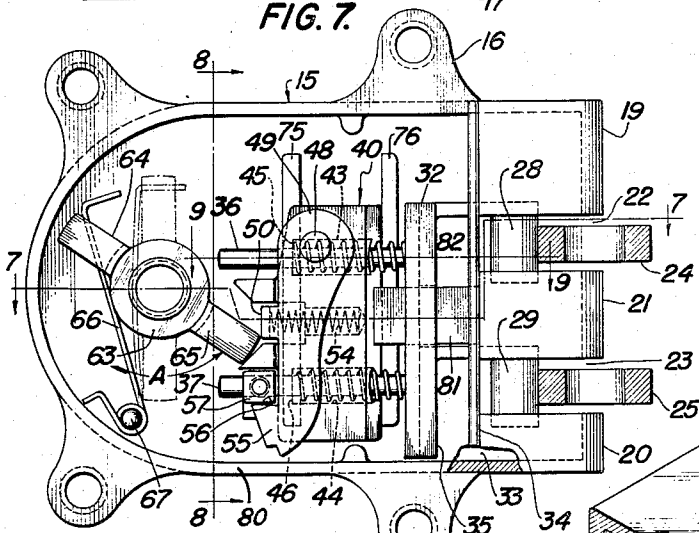


FIG. 6.

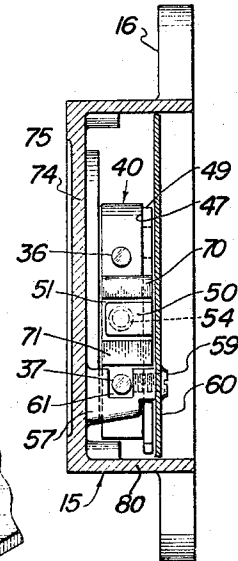


FIG. 8.

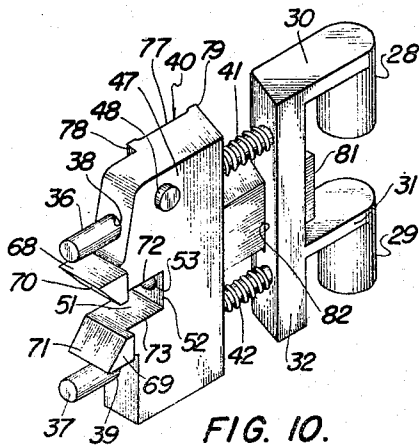


FIG. 10.

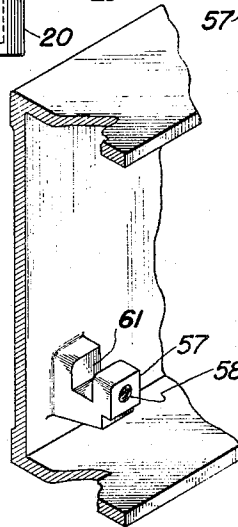


FIG. 11.

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2,666,661

LOCK

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Application May 17, 1950, Serial No. 162,454

10 Claims. (Cl. 292—159)

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This invention relates to locks, particularly to locks made according to my prior inventions and commercially known as "Segal Locks."

In locks of the above mentioned category, or those of similar structure in which bolts are adapted to be brought into interlocking engagement with the ears of a coacting keeper, where either the lock structure or keeper is movable relative to the other, it frequently happens that the bolts have been inadvertently brought either partially or fully into locking position before the lock structure and keeper have been brought into operative or close relation; and when this occurs, the keeper engages the bolts with damaging effects. This is a common occurrence in the type of lock in which bolts must be positively manipulated both into their locked and unlocked positions, as in the said "Segal" type of lock, especially when either the lock or keeper is on a sliding door. In such a case, the keeper may inadvertently be brought forcibly into engagement with the partially or fully closed bolts, there being direct impact in a direction normal to the path of movement of the bolts. It has been found that under such circumstances the bolts and their mountings become bent or otherwise mutilated, requiring either a repair job or the entire replacement of the bolt mechanism.

It is accordingly primarily within the contemplation of my invention to obviate the dangers aforementioned in "Segal" locks and others similarly constructed, by providing a yieldable structure which will permit the bolts to move in the direction of the impact, that is, at right angles to their normal path, thereby preventing damage thereto. And in this aspect of my invention it is an important object to enable this action to occur when the bolts are in a partially locked position, or fully locked, and to remain in their locked positions both during and after the impact.

It is a further object of my invention to provide a structure capable of operating in the manner above mentioned, and yet which will require relatively few changes in the lock mechanism, whereby the advantages both in manufacture and utility of my said lock will be fully retained.

It is also an object of my invention to provide a lock structure having a tumbler device actuated by a helical spring, in place of the conventional leaf or wire spring, and whereby it will have the further advantage of enabling the said spring together with other similar springs to be readily assembled with a minimum of effort.

Still another object of my invention is to pro-

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vide, in a device of the above mentioned class, a movable guard member coactively associated with the bolt members, to prevent the insertion of a wire or other implement for disengaging the tumbler while the device is in its locked condition.

And it is within my contemplation to provide a device capable of performing the objectives herein mentioned and yet that is simple to operate, positive in action, and inexpensive to fabricate.

Other objects, features and advantages will appear from the drawings and the description hereinafter given.

Referring to the drawings,

Figure 1 is a rear view of a lock according to a preferred form of my invention, with the rear plate removed, showing the bolts in their locked positions, but with the tumbler retracted and the knob-actuated bar in a position just prior to that of opening the lock.

Figure 2 is a section of Figure 1 taken along line 2—2.

Figure 3 is a front view of the lock, with a portion of the front casing removed for purposes of clarity, showing the bolts in their open position.

Figure 4 is a front view of a lock, substantially like that of Figure 3, but showing the lock attached to a framework, and the keeper attached to a sliding door, the bolts being shown in a partially locked position, and the door being shown spaced from the lock and moving toward the lock.

Figure 5 is a view like Figure 4, but showing the door closer to the lock and the ears of the keeper in engagement with the bolts, said bolts and the mounting therefor being shown in a partially retracted position.

Figure 6 is an enlarged rear view substantially like Figure 1, but showing the engagement of the ears of the keeper with the bolts when in their fully locked position, the knob-actuated arms and coacting spring being shown by dot-dash lines in normal position.

Figure 7 is a fragmentary section of Figure 6 taken substantially along line 7—7.

Figure 8 is a section of Figure 6 taken along line 8—8.

Figure 9 is a fragmentary section of Figure 6 taken along line 9—9 thereof.

Figure 10 is a perspective view of the slidable bolt carriage and bolt assembly, with the bolt elements and pins in a partially retracted position, and

Figure 11 is a fragmentary perspective of a portion of the casing showing the slotted boss adapted to receive the rear cover of the device

and to permit the movement therepast of a pin on the bolt mounting during its operative retraction.

In the preferred embodiment of my invention illustrated in the drawing, the lock comprises a casing 15 having apertured extensions 16 thereon for attaching the lock to the structure 17. The arrangement is such that the fasteners 18 which extend through the extensions are disposed outside of the casing and do not interfere with the interior mechanism thereof as is the case in many conventional constructions; and because of this construction, the entire unit can readily be detached without disassembling the lock.

The casing contains the hollow end loops 19 and 20 and a perforated loop 21 therebetween, providing spaces 22 and 23 for accommodating therebetween the ears 24 and 25, respectively, of the keeper 26 mounted on the sliding door 27. The lock mechanism is provided with spaced bolts 28 and 29 which are movable transversely relative to said spaces 22 and 23, in conventional manner, so that when the ears 24 and 25 are in coactive alignment with loops 19, 20 and 21, the said bolts will be in interlocking engagement with said ears to hold the keeper and lock casing together.

The said bolts 28 and 29 are mounted upon arms 30 and 31 extending at right angles from the slidable bolt base 32, said base being disposed, when the bolts are in their locked position, within the front recess 33 in the side wall 34 of the casing. The said base contains the extension 35 which serves as a guard covering the adjacent portion of the recess 33 in wall 34. The arrangement is hence such, as will become more clearly apparent hereinafter, as to constitute an obstructing member to prevent a wire or other implement from being inserted through recess 33 into the casing for disengaging the tumbler from its locking position.

Affixed to base 32 are the two spaced pins 36 and 37, these extending oppositely from arms 30 and 31, and being slidably mounted within the apertures 38 and 39, respectively, extending through the slidable bolt carriage 40. Mounted over said pins are the helical springs 41 and 42, these extending into the respective cavities 43 and 44 in carriage 40 and being in abutment with the respective shoulders 45 and 46 constituting the innermost walls of said cavities. It is thus apparent that springs 41 and 42 of maximum length are provided, so that they may adequately be capable of absorbing the shock of impact between the keeper and the inadvertently closed bolts.

Extending from the carriage 40 is the slide bar 81, disposed between the pins 36 and 37 and parallel thereto, said bar being preferably of polygonal cross section and being in slidable engagement with the recess 82 disposed at the front medial portion of the bolt base 32. The arrangement is hence such, as will hereinafter more clearly appear, that the base 32, together with the bolts 28 and 29 carried thereby, may be operatively retracted against the action of said springs 41 and 42 towards the carriage 40.

Protruding beyond the rear surface 47 of the carriage 40 is the pivotal mounting 48 for the tumbler 49, the latter containing the lip 50 intermediate its ends and in substantial registry with the slot 51 in carriage member 40. Extending inwardly from floor 52 of the slot into the body of the carriage is the cavity 53 which

contains therein the helical spring 54 in yieldable abutment with the said lip 50. Substantially in the region of the extremity of tumbler 49, opposite the pivotal mounting 48, is the locking extension 55, the locking surface 56 thereof being in abutment (Figure 6) with the adjacent surface of boss 57. The said boss contains a threaded hole 58 therein for receiving the screw 59 (Figure 3) attaching the rear plate 60 to the interior of the casing. The said boss also contains the slotted portion 61 adapted to permit the said pin 37 to move therepast when the bolts and the associated parts are retracted under the force of an impact, as will more clearly hereinafter appear.

The casing is provided with a conventional knob 62 operatively connected to a ring 63 from which extend the diametrically opposite actuating arms 64 and 65, these arms (together with the connected knob) being normally urged by spring 66, mounted at 67, into the dot-dash positions shown in Figure 6, whereby said arms are normally out of engagement with the tumbler. Although only a knob 62 is shown operatively connected with the actuating arms 64 and 65, it is understood that other conventional means may also be employed, such as a key-operating cylinder that may be connected to said arms in a manner well known to those skilled in the art. The showing of such a cylinder has been omitted, since it is not necessary for the understanding of the present invention.

Flanking the slot 51 are the extensions 68 and 69, these containing the bevelled guide walls 70 and 71 respectively, the lateral walls 72 and 73 of the slot 51 merging with said extensions 68 and 69. Said bevelled surfaces 70 and 71 are so proportioned that they will accommodate therealong the arm 65 when it is rotatively actuated into engaging position with the lip 50, as will hereinafter appear.

The inner surface of the front wall 74 of the casing contains the two tracks 75 and 76, these being spaced to accommodate therebetween the extension 77 of the carriage 40, the edges 78 and 79 being in slidable engagement with the said tracks 75 and 76, respectively, whereby the carriage 40 and its associated parts may be slidably actuated transversely of the casing to bring the bolts 28 and 29 into locking and unlocking positions, as will more clearly hereinafter appear.

When the bolts are in their locked position, as is indicated in Figure 6 (regardless of whether or not said bolts have been retracted due to their engagement with the ears 24 and 25), the locking extension 55 is in engagement with the boss 57, making it impossible for the carriage 40 to move upwardly to its unlocking position. If it is desired to unlock the door, the knob 62 is operatively manipulated to swing the arm 65 in the direction of arrow A (Figure 6); and when this movement continues, said arm will engage the lip 50 (Figure 1) and cause a pivotal retraction of tumbler 49 against the action of spring 54, thereby freeing extension 55 from the boss 57. A continued movement of the arm 65 in the direction of arrow B (Figure 1) will cause said arm to engage wall 72 of the extension 68, thereby moving the entire carriage 40 upwardly along the tracks 75 and 76. When the carriage reaches its extreme position under the influence of the actuating arm 65, such as in the position of Figure 3, the arm will clear extension 68, to return to its normal position under the influence of spring 66. The movement of carriage 40

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causes its associated part to move correspondingly with it, the pins 36 and 37 and the bar 81 carrying the base 32 and bolts 28 and 29 into open position. To lock the mechanism the reverse operation is performed, in obvious manner.

Figure 6 illustrates the operation of this device when there is an inadvertent engagement of ears 24 and 25 with the previously locked bolts 28 and 29. Under the influence of said engagement, the bolts 28 and 29 are retracted substantially to the position shown in Figure 6, thereby forcing the base 32 and the pins 36 and 37 into a correspondingly retracted position, said pins slidably moving through the apertures 38 and 39 in the carriage 40 against the action of springs 41 and 42. It is to be noted that the carriage 40 cannot move under the influence of the impact above described, because of its engagement with track 75 which serves as a stop for holding the carriage against such movement. In this retracted position, pins 36 and 37 extend beyond the carriage 40 as clearly indicated in Figure 6, there being no obstruction whatsoever to said retracting movement of the pins, particularly since the only possible obstructing element, the boss 57, contains the slot 61 therein which permits such rearward movement of pin 37.

It will be observed that in the retracted position of the bolts 28 and 29 as illustrated in Figures 6 and 7, the guard extension 35 is moved rearwardly beyond the wall 34; but since said guard 35 extends substantially to wall 30, it constitutes an obstruction behind wall 34 protecting the inner portion of the casing. Hence, although the opening 33 still remains uncovered, any wire instrument inserted therethrough cannot, as aforesaid, pass guard 35 to disengage the tumbler 48, or otherwise affect the mechanism.

The operation is similar when the bolts are only partially closed, as shown in Figures 4 and 5. Here again the inadvertent closing of the door will cause the ears 24 and 25 to engage the bolts 28 and 29, and cause a retraction thereof, and of the associated parts, precisely in the manner described with reference to Figure 6. It is to be observed that particularly in the case of such a partial closure of the bolts is there considerable danger of mutilating the ends, since the cantilever support of the bolts may more readily permit a bending thereof that might occur than when the bolts are in their fully locked positions. But with the construction of my invention, since these bolts give with the closing movement of the ears, the danger of any such bending or mutilation will be obviously eliminated.

It should be noted that the spring 54 replaces the conventional wire or leaf spring for tumblers, said spring normally urging the tumbler into its projected position shown in Figures 6 and 7, with the lip spaced from the floor 52 of the slot 51. The arrangement is hence such that there is ample room to permit the lip to enter the slot 51 when it is operatively actuated by arm 65 in the manner above described.

It will also be observed that in fabricating the carriage member 40, it is a relatively simple matter to provide a drill fixture for boring the holes 43, 44 and 53, for the respective springs 41, 42 and 54. The construction is thus such as to provide a simple means for accommodating the most effective and most easily assembled springs for the lock mechanism.

The mechanism above described, and the oper-

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ation thereof, enable "Segal" and similar type locks to be safely employed in structures, such as sliding door arrangements, where there is danger of mutilating or destroying the bolts due to an inadvertent partial or full locking thereof. Heretofore the avoidance of such a situation was only possible with the less effective spring retractable latches; but it is now possible, with my invention, to provide that safety feature with the positive locking and unlocking mechanism of the "Segal" type of construction.

In the above description, the invention has been disclosed merely by way of example and in preferred manner; but obviously many variations and modifications may be made therein. It is to be understood, therefore, that the invention is not limited to any specific form or manner of practicing same, except insofar as such limitations are specified in the appended claims.

I claim:

1. In a lock of the type having a casing with a plurality of spaced end loops and a coating keeper with ears adapted for interlocking engagement with said loops, bolt means transversely movable within the casing and into operative interlocking relation with said keeper, said bolt means being mounted in said casing for the longitudinal movement, and spring means normally urging said bolt means outwardly in a longitudinal direction, said bolt means being movable inwardly in a longitudinal direction relative to the casing, against the action of said spring means, by external force applied against said bolt means in a longitudinal direction, regardless of the relative transverse position of said bolt means, when said bolt means is not interlocked with said keeper.

2. In a lock of the type having a casing with a plurality of spaced end loops and a coating keeper with ears adapted for interlocking engagement with said loops, bolt means transversely movable within the casing and into operative interlocking relation with said keeper, said bolt means being also movable longitudinally relative to the casing between two limiting positions, one being a maximum projected position and the other a maximum retracted position, and spring means urging the bolt means towards said projected position.

3. In a lock of the type having a casing with a plurality of spaced end loops and a coating keeper with ears adapted for interlocking engagement with said loops, a locking mechanism comprising spaced bolts movable transversely relative to the casing and through said loops and ears for interlocking the casing and the keeper, a carriage mounted in said casing, means holding said carriage against longitudinal movement relative to said casing, said carriage having a pair of spaced cavities extending therethrough in a longitudinal direction, said bolts being mounted on a base, spaced pins projecting rearwardly from said base and fitting within said cavities to permit said bolts to move longitudinally relative to the casing in a direction substantially normal to the operative movement of the bolts through said loops and ears, and spring means urging said bolts outwardly into engagement with the outer ends of said loops.

4. In a lock, the combination according to claim 1, further provided with a carriage movable transversely within the casing, tumbler means supported by the carriage, and actuating means for the carriage and tumbler and adapted operatively to move the carriage transversely, the

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carriage being operatively connected to the bolt means whereby the transverse movement of the former will move the latter transversely.

5. In a lock, the combination according to claim 1, further provided with a carriage movable transversely within the casing, said bolt means including a base provided with a recess extending longitudinally relative to the casing, a bar extending from the carriage longitudinally of the casing and in slidable engagement with said recess, whereby the transverse movement of the carriage will cause the bar to move the bolt means transversely.

6. In a lock, the combination according to claim 1, further provided with a carriage movable transversely within the casing, said bolt means including a base provided with a recess extending longitudinally relative to the casing, a bar extending from the carriage longitudinally of the casing and in slidable engagement with said recess, whereby the transverse movement of the carriage will cause the bar to move the bolt means transversely, and longitudinal guide means affixed to the bolt means and in slidable engagement with the said carriage.

7. In a lock, the combination according to claim 3, in which said locking mechanism includes a base slidably mounted within the casing, and arms extending outwardly from said base, said spaced bolts being each mounted on one of said arms, a recessed portion in said base, a carriage movable transversely within the casing, a bar extending from the carriage longitudinally of the casing and in slidable engagement with said recessed portion, whereby the operative transverse movement of the carriage will move the bolts through said loops and ears.

8. In a lock, the combination according to claim 1, further provided with a carriage movable transversely within the casing but held against longitudinal movement therein, the carriage having means projecting therefrom into engagement with the bolt means whereby the movement of the former will actuate the latter, tumbler means supported by the carriage, and actuating means for the carriage and tumbler and adapted operatively to move the carriage transversely, the carriage having a cavity therein, a tumbler spring within the cavity, the tumbler having a lip in yieldable engagement with the tumbler spring for yieldably holding it in an operative locking position.

9. In a lock, the combination according to claim 1, further provided with a carriage movable transversely within the casing, a bar extending

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from the carriage longitudinally of the casing and in slidable engagement with the bolt means, whereby the transverse movement of the carriage will cause the bar to move the bolt means transversely relative to the casing, and longitudinal guide means affixed to the bolt means and in slidable engagement with the said carriage, further provided with tumbler means supported by the carriage, a boss for supporting a suitable cover plate for the casing and adapted for operative locking engagement with the tumbler, said boss being partially disposed in the path of said guide means, the boss being slotted to permit the said guide means to move therepast.

10. In a lock of the type having a casing with a plurality of spaced end loops and a coating keeper with ears adapted for interlocking engagement with said loops, a pair of parallel tracks mounted within said casing and extending in a transverse direction relative thereto, a carriage mounted on said tracks for transverse movement relative to said casing, actuating means for moving said carriage on said tracks, said carriage having a plurality of apertures disposed longitudinally of said casing, a bolt base mounted in said casing forwardly of said carriage, said bolt base having a plurality of guide pins projecting rearwardly therefrom in longitudinal alignment with said apertures, each of said guide pins being slidable in the aperture with which it is aligned, spring means mounted on said guide pins exerting constant force against said bolt base to urge said bolt base outwardly from said carriage in a longitudinal direction relative to said casing, a recess in said bolt base, said recess extending longitudinally relative to said casing, a bar extending forwardly from said carriage into engagement with said recess, whereby transverse movement of said carriage is effective to move said bolt base transversely of said carriage, a pair of arms extending forwardly from said bolt base, and a bolt mounted on each of said arms, said bolts being normally held in vertical alignment with said end loops by pressure of said spring means against said bolt base.

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References Cited in the file of this patent
UNITED STATES PATENTS

| Number | Name | Date |
|-----------|------------|---------------|
| 1,373,353 | Roden | Mar. 29, 1921 |
| 1,404,556 | Sprung | Jan. 24, 1922 |
| 1,546,644 | Freysinger | July 21, 1944 |