Jan. 26, 1960 S. WIENER 2,922,298

REMOVABLE PLUG LOCK MEANS

Filed March 9, 1954 2 Sheets-Sheet 1

Fig. 1

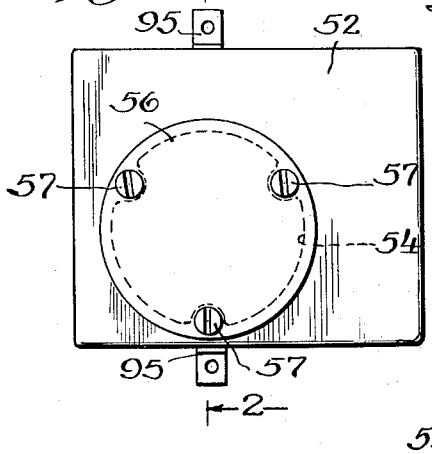


Fig. 3

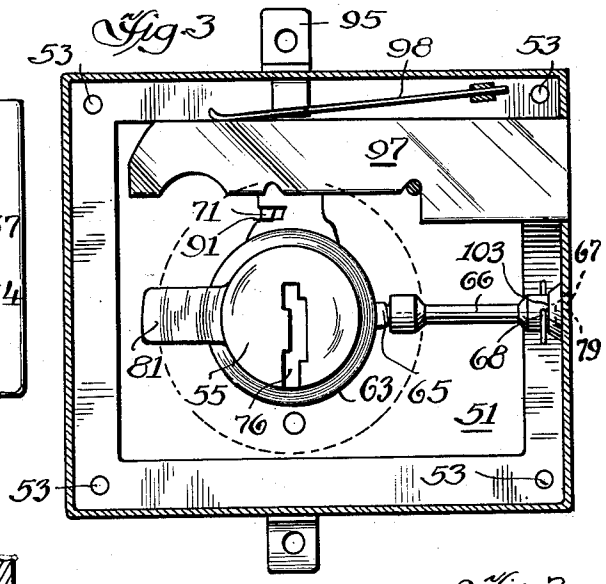


Fig. 2

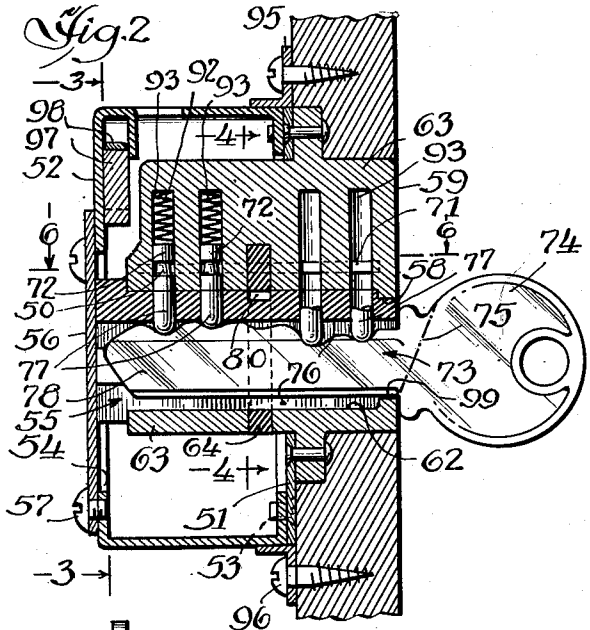


Fig. 7

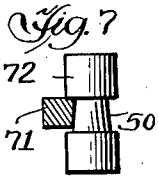


Fig. 4

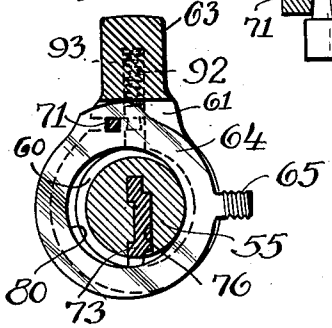


Fig. 5

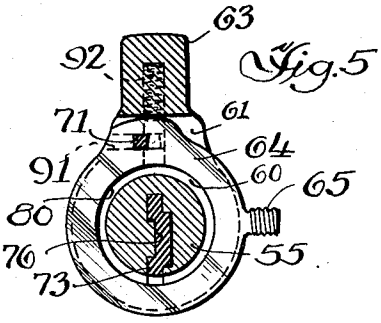
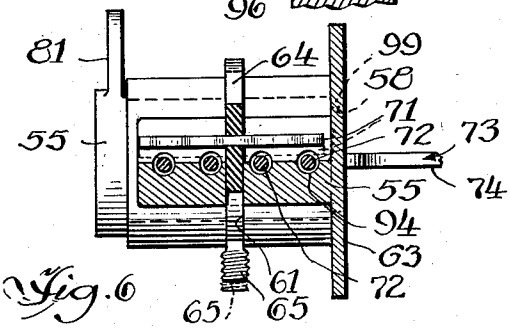


Fig. 6



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Jan. 26, 1960 S. WIENER 2,922,298

REMOVABLE PLUG LOCK MEANS

Filed March 9, 1954 2 Sheets-Sheet 2

Fig. 8

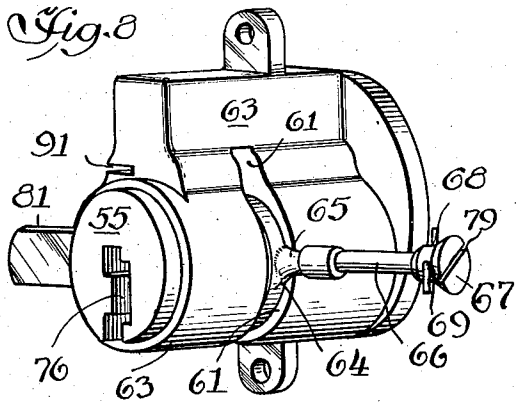


Fig. 9

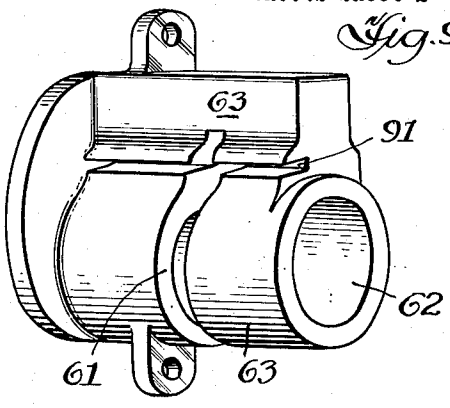


Fig. 10

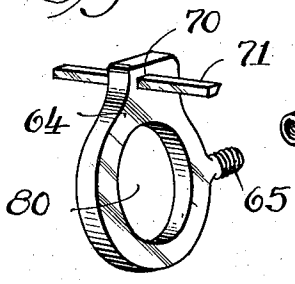


Fig. 16

Fig. 11

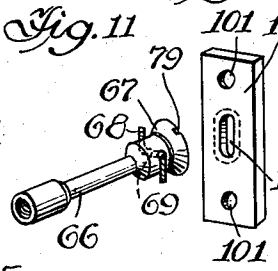


Fig. 12

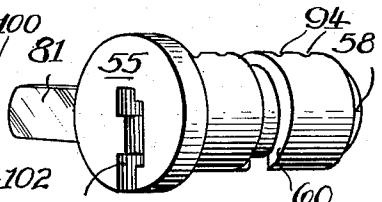


Fig. 14

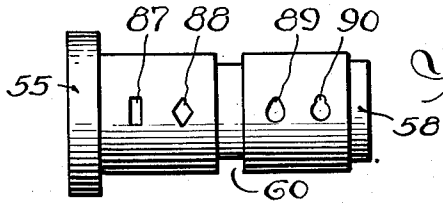


Fig. 13

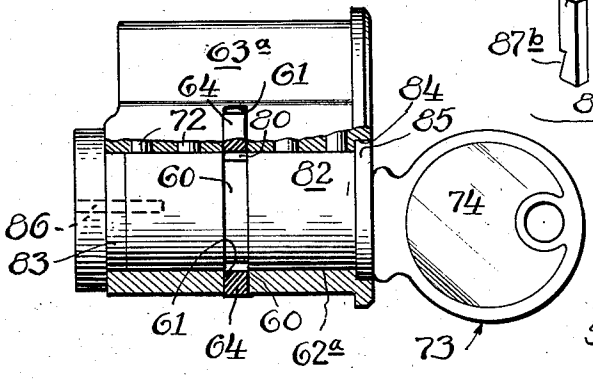
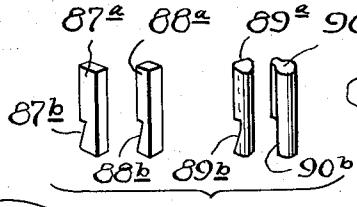


Fig. 15



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2,922,298

REMOVABLE PLUG LOCK MEANS

Siegbert Wiener, Chicago, Ill.

Application March 9, 1954, Serial No. 415,005

25 Claims. (Cl. 70—367)

This application relates to a lock mechanism known to the art as a removable core lock means, and this application is related to and is copending with my earlier application filed October 30, 1948, Serial No. 57,555 for a Removable Core Lock Means, now abandoned.

The general object of my present invention is to improve and simplify the construction of a lock of this nature, and to render the same more reliable and efficient in operation.

A more specific object is a new driver pin blocking means that is an integral part of the lock means.

Another object is the creation of a removable plug lock means wherein the plug is directly removable from the lock means without also removing the driver pins and the driver pin holding portions of the lock means, and wherein no accessory tool is necessary to accomplish this plug removal.

Another object is the creation of a removable plug cylinder lock means wherein the plug is directly removable from the remainder of an assembled lock means that is in operative position and condition without the removal and disassembly of any portion of the lock means other than the plug retaining portions thereof.

Other and more specific objects will be apparent from the following description made in connection with the accompanying drawings.

In the drawings

Figure 1 is a rear view of a removable plug lock constructed in accordance with my invention.

Figure 2 is a transverse section of my lock taken in a plane represented by line 2—2 of Figure 1, but showing the lock attached to a door.

Figure 3 is a rear inside view of my lock taken in a plane represented by the line 3—3 in Figure 2.

Figure 4 is a transverse section of the cylinder portion of the lock taken on the line 4—4 of Figure 2.

Figure 5 is a section similar to Figure 4, but showing a different phase of operation.

Figure 6 is a transverse section of the cylinder portion of the lock taken on the line 6—6 of Figure 2.

Figure 7 is a detailed view of one of the driver pins being engaged by the slide piece.

Figure 8 is a perspective view of the assembled cylinder portion of the lock including the plug, the slide piece and related operating parts.

Figure 9 shows the disassembled cylinder case.

Figure 10 shows the slide piece and the stoppage member.

Figure 11 shows the adjusting rod.

Figure 12 shows the plug.

Figure 13 is a different form of cylinder portion showing in partial section a sectional plug within the cylinder portion.

Figure 14 is a top view of a modified plug showing other shapes of pin tumbler channels.

Figure 15 shows various types of driver pins.

Figure 16 shows an edge plate that might be used in conjunction with the type of cylinder portion shown in Figure 13.

The term "cylinder" when used in this application with the words "portion," "lock," and "case" is used in its broadest sense in regard to locks containing rotating plugs, and does not imply that the item is cylindrical in shape.

In my drawings similar letters and figures refer to the same or similar parts throughout the several views. As this is a copending application, I am starting with the numeral 50 to avoid possible confusion. In this application I am using the term "removable plug" instead of "removable core" as used in my earlier application in order to emphasize the differences between my locks and the locks previously known to the art. In my descriptions "front" designates that portion of the part described which, in normal lock operation, is closest to the front of the lock. The front of the lock, of course, is the face of the lock, which face, when the lock is in position attached to a door, drawer, etc. has a keyhole exposed for the entry of the proper key for said lock. Of course some locks would have more than one front, but the examples described in this application have for convenience been locks with only one front.

Referring to the drawings, I show a lock comprising a lock case having a front lock case portion 51, and a back lock case portion 52, which back lock case portion 52 may be secured to the front lock case portion 51 as by rivets 53, and which back lock case portion 52 has an opening 54 of a size and position sufficient to allow the plug 55 and the slide piece 71 of the lock to pass through said opening. This opening 54 during normal operation of the lock is covered by a removably attached cover 56, which cover is held in place by screws 57. The cover 56 may be near or abutting the plug 55. This cover 56, positioned as per above, also stops rearward longitudinal movement in the bore 62 of an unlocked plug 55. The plug 55 is cylindrical in shape and has a groove 58 around the front of the circumference, so the front of the plug 55 fits flush with the lock front 59 when the plug 55 is fully inserted into the bore 62 of the lock cylinder. This bore 62 is overlapped at the front by a flange 99, which flange 99 blocks the forward longitudinal movement of the plug 55. There is a second groove 60 (see Figure 12) around the circumference of the plug 55 at a position to correspond with the cutout 61 (see Figure 8) across the cylinder case 63.

In this cutout 61 there is a stoppage member 64 with an opening 80 of a size to permit the passage of the plug 55 through said opening. At the side of this stoppage member 64 there is a threaded shank 65 to which the threaded adjusting rod 66 is attached. The adjusting rod 66 in Figure 3 passes through the hole 103 at the right edge of the lock case, but said rod 66 cannot be moved longitudinally because the head 67 prevents inward motion and the bent pin 68, which has been inserted into the hole 69 and bent prevents outward motion, so that any turning of the rod head 67 results in sidewise movement of the stoppage member 64. The right edge of the lock case is shown with a countersunk portion surrounding the hole 103 in order that the head 67 will not protrude. If the lock is of the type shown in Figure 13, the rod 66 is first put through the hole 102 in the edge plate 100 shown in Figure 16; the pin 68 is inserted in hole 69 and is then bent over, and the rod 66 is then inserted through a hole made in a door or the like, said hole having been made in registration with the threaded shank 65 of the lock. The rod 66 is attached to the shank 65 by means of the threads, and then the

edge plate 100 is attached to the door or the like by means of fastening devices put through the holes 101. The edge plate 100 then prevents longitudinal movement of the rod 66. The adjusting rod 66 can be turned with a screw driver by means of the slot 79, and by turning the adjusting rod 66 the sideways movement of the stoppage member 64 can be controlled. The stoppage member 64 also has another opening 70 through which a slide piece 71 is placed. The slide piece 71 makes contact with the spool type driver pins 72 at the indentation 50 of said driver pins, and the slide piece 71 is of a shape to properly co-operate with the said driver pins 72 when the said driver pins 72 are in their respective alined driver pin channels 93 in non-locking position. The slide piece 71 can be moved sideways in the slide channel 91 and, if it is so desired, lengthwise in a direction substantially parallel to the alinement of the driver pin channels 93 by moving slide piece 71 rearwards through the opening 70 in the stoppage member 64, best seen in Figures 9 and 10. The rearward movement of the slide piece 71 can be continued through the opening 54 in the back lock case portion 52 after the cover 56 is moved out of slide piece blocking position.

The opening 54 of the back lock case portion 52 is large enough and in such position that the slide piece 71 can be removed rearwards both from the opening 70 in the stoppage member 64 and from the slide channel 91 all the way out of the entire lock construction when the cover 56 has had two of the screws 57 removed, the third screw 57 loosened, and the cover 56 has then been moved to a position wherein the rearward removal of the slide piece 71 will not be blocked. A good way to perform rearward removal of the slide piece 71 is, after the cover 56 has been put into non-covering position, to put an elongated hook end tool into the lock from the opening 54, and, after inserting the hooked end in front of the slide piece 71, to pull the slide piece 71 backwards until the rear of the slide piece 71 protrudes backwards beyond the rear of the cylinder case 63; then the slide piece 71 can be pulled out of the lock by using a grasping tool.

The removability feature of the slide piece 71 makes possible the assembly of the lock by insertion of the stoppage member 64 into the cutout 61 of the cylinder case 63 from the side opposite the slide channel 91. After the stoppage member 64 is in proper position in the cutout 61, the slide piece can be inserted into the opening 70 in the stoppage member 64. Obviously it is also possible to operate the lock as a lock with the slide piece omitted from the lock construction.

It, however, is not necessary to always make the lock means in such a manner that the slide piece 71 can be separated from the stoppage member 64. These two parts can be combined as one piece, designated a combination retainer, capable of performing both the driver pin holding and plug retaining functions.

The key 73 operates the lock. To remove the plug 55, the bow 74 of the key 73 is first detached by any suitable means from the shank 78 of the key at about the place indicated by the broken line 75 in Figure 2. The shank 78 portion of the cut key is then inserted into the keyway 76 in the usual manner, thereby unlocking the plug 55 for arcular movement. The stoppage member 64, and with it the slide piece 71, is then moved into the driver pin holding position (best seen in Figure 5) by turning the adjusting rod 66 until the slide piece holds the driver pins 72 in their respective driver pin channels 93.

In normal lock operation the stoppage member 64 is in the position shown in Figure 4. As can readily be seen, the opening 80 is so located in the stoppage member 64 that when the slide piece 71 is free from engagement with the driver pins 72, part of the stoppage member 64 extends into the groove 60, thereby blocking the longitudinal movement of the plug 55. But when the slide piece 71 is holding the driver pins as is shown in Figure 5, the opening 80 is in position to allow the plug 55 to pass through said opeing.

The next procedure in removing the plug 55 from the lock after the stoppage member 64, and with it the slide piece 71, have been moved into the driver pin holding position, is to move the cover 56. This can best be done by removing two of the screws 57 and loosening the third screw 57. By sufficient movement of the cover 56 in either direction, the plug 55 will become fully exposed. The plug 55 is then removed from the bore 62 by exerting slight pressure on the front of the plug 55. As can readily be seen, the plug and the plug alone then comes out of the bore 62 without the driver pins 72 or the driver pin springs 92 coming out of their respective driver pin channels 93.

The shank 78 of the key 73 can then be easily removed from the plug 55, and the combination of the plug can be changed in the usual manner.

When reinserting the same plug 55 or a substitute similar size and design plug, the reverse procedure is used, except that it is not necessary to have a key shank in the keyway of the plug. The pin tumblers would be in their lowest positions in the plug, and the only thing to be careful about it is to be sure the pin tumblers would not spill during the plug insertion.

However, if the lock has been designed to use the type of driver pin wherein the indentation is longer than the depth of the key bitting, such as driver pin 90*a* having the indentation 90*b*, as shown in Figure 15, it is not necessary to remove the bow 74 from the shank 78 of the key to effect the plug removal. In this case the slide piece 71 will limit only downward movement of the driver pins, so that after the slide piece 71 is put into driver pin holding position, the key 73 can be pulled out from the keyway 76. Then the plug is removed in the manner previously described.

It is not necessary that the fastening devices, other parts, relative positions, etc., be exactly as shown on my drawings.

For example, in a lock having conventional straight sided driver pins, any shape slide piece that would retain the driver pins in their respective driver pin channels while the lock is in unlocked condition could be used.

In Figure 13 I use the same principles for a night latch type lock cylinder. This lock cylinder has a sectional plug consisting of a back section 83 and a front section 82, which front section has a flange 85 at the front of its circumference. Movement of the back section 83 is controlled by the front section 82 by way of the pins 86. In this lock cylinder the front section 82 of the plug is removable through the front of the lock, and it is not necessary to cut the key to accomplish the removal of said front section. Interchanging front sections is similar to interchanging plugs as decribed earlier, except that with the front ections, the key is used to pull out the front section frontwards from the bore.

It is not intended to limit the driver pins of this invention to spool type driver pins. Driver pins of any other workable design may be used.

Figure 14 shows a modified plug having a variety of differently shaped channels 87, 88, 89, and 90, in which channels can be inserted the driver pins 87*a*, 88*a*, 89*a*, and 90*a*, shown in Figure 15. As these pins and channels for them are not cylindrical, these driver pins need be notched only on their slide piece engaging side as per notches 87*b*, 88*b*, 89*b*, and 90*b*.

While applicant has thus described the invention generally, and has pointed out certain important features of its construction, additional important features will be apparent upon reading the specification, and these additional features will be covered in the claims appended hereto. It should also be understood that the conception on which this invention is based may readily be embodied in structures other than those that are shown and de-

scribed herein, so the claims to be allowed should not be limited to the shown and described structures.

The term "lock means" designates not only a lock, but also those constructions wherein portions of the object being locked are used comparable with lock parts, etc.

The term "non-locking position" designates that position of the parts involved that allows the plug to be rotated.

The terms "plug" and "plug section" as used in this application, and the meanings of these two terms are interchangeable. The term "plug section" is usually used where a front removal section of a sectional plug could also be used, but both terms also include any other plug or type of plug that can be used.

Having thus disclosed my invention, I claim:

1. Lock means comprising a housing having a front wall and a back plate secured to the front wall, said back plate having a portion spaced from the front wall, a cylinder case having a bore, said cylinder case being joined to the front wall and said cylinder case extending into the housing at an aperture in the front wall, a releasable key operated plug within said bore, said back plate portion having an opening in registration with said bore, and said opening being of a size for affording passage of a cylinder having the largest diameter possible for a cylinder that can pass into said bore, and a movable closure closing the opening in said portion, said closure being movable from its closing position, and said closure bearing against the end of the plug when the closure is in closing position.

2. Lock means comprising a housing having a front wall and a back plate secured to the front wall, said front wall having an aperture, a cylinder case having a bore, said cylinder case being joined to the front wall and said cylinder case extending into the housing at said aperture, a releasable key operated plug within said bore, said back plate having a portion spaced from the front wall, said portion having an opening of a size for affording passage of a cylinder having the largest diameter possible for a cylinder that can pass into said bore, said opening being in registration with said bore, and plug retaining means, said plug retaining means being an element positioned in said lock means in a manner whereby a portion of said element can be moved into and out of the path through which said cylinder can pass into said bore when said plug is not in said bore, said element thereby releasably retaining said plug within said bore when said lock means is in assembled, attached, operating, and unlocked condition.

3. Lock means comprising a housing having a front wall and a back cap secured to the front wall, said back cap having a portion spaced from the front wall, a cylinder case having a bore, curved walls surrounding said bore, said cylinder case being joined to the front wall and said cylinder case extending into the housing at an aperture in the front wall, a releasable key operated plug within said bore, said portion having an opening in registration with said bore, and said opening being of a size for affording passage therethrough of a cylinder having the diameter size of a little less than the width apart of diametrically opposite curved walls surrounding said bore, and relative to said cylinder case a movably mounted stoppage member, said stoppage member being movable in a direction transverse to the axis of said plug, said stoppage member being positioned on the lock means along the path through which said cylinder can pass into said bore when said plug is not in said bore, said stoppage member normally being in a position wherein said stoppage member extends into said path blocking movement of said plug from said bore, and said stoppage member being changeable to a position wherein said stoppage member no longer extends into the path and which position in a phase of operation allows removal of said plug from the bore when said lock means is in assembled, attached, operating, and unlocked condition.

4. A locking device comprising a front lock case portion, a back lock case portion, a cylinder lock mounted at an aperture of said front lock case portion, said cylinder lock having a bore, a removable plug in said bore, said cylinder lock having spring pressed tumbler portions, and said cylinder lock having within said locking device while said locking device is capable of performing its normal locking and unlocking functions integrated means whereby said bore can in a phase of operation be kept clear of said spring pressed tumbler portions during plug removal and plug insertion operations, said back lock case portion having an opening of a size and location sufficient for affording passage of said plug, and manipulatable plug retaining means, said plug retaining means normally being in a position whereby holding engagement with said plug is made so that said plug is held in its normal operating position within the bore, but which plug retaining means can also be so manipulated that the said plug retaining means will allow release of the holding engagement of said plug thus enabling said plug to be removed from the bore.

5. A pin tumbler lock means comprising a cylinder case having a bore, alined driver pin channels, and a slide channel, said slide channel being transverse to and communicating with driver pin channels, a pin tumbler plug in said bore, driver pins in said driven pin channels, and relative to said cylinder case a movably mounted slide piece in said slide channel, said slide piece being manipulatable toward and from the driver pin channels in directions transverse to the alinement of said driver pin channels, said slide piece normally being out of contact with the driver pins while said slide piece is in said slide channel and while the lock means is performing its locking and unlocking functions, but which slide piece is capable of manipulation until it is in driver pin contact, making holding engagement with said driver pins at a time when said plug is in unlocked condition thereby allowing the unlocked plug to be removed from the bore without the driver pins being forced into the emptied bore.

6. A lock comprising a cylinder case having a bore for a pin tumbler plug, driver pin channels, driver pins in said driver pin channels, a pin tumbler plug within the bore, said plug being removable rearwards from the bore, integrated means contained in said cylinder case while said lock is capable of performing its locking and unlocking functions whereby in a phase of operation the driver pins are kept clear of the bore during plug removal and during plug insertion operations, a lock front that overlaps a portion of said plug, pin tumbler channels in said plug, said pin tumbler channels being positioned to correspond with the positions of said driver pin channels, a back lock case portion having an opening of a size and location for affording passage of the plug, and a releasable plug retaining means other than the driver pins and other than the pin tumblers releasably retaining said plug.

7. A pin tumbler lock means comprising a cylinder case having a bore, alined driver pin channels, and a slide channel, said slide channel being transverse to and communicating with driver pin channels, a pin tumbler plug in said bore, driver pins in said driver pin channels, and relative to said cylinder case, a movably mounted slide piece in said slide channel, said slide piece normally being out of contact with the driver pins while said slide piece is in the slide channel and while the lock means is performing its locking and unlocking functions, but which slide piece and cylinder case are capable of manipulation, one toward the other, when said plug is in unlocked condition, in a direction transverse to the alinement of said driver pin channels until said slide piece is pressing against the driver pins and said slide piece is in driver pin contact, making holding engagement, and said slide piece and said cylinder case also being capable of manipulation, one away from the other,

in a direction transverse to the alinement of said driver pin channels until said slide piece is no longer in driver pin contact.

8. An integrated pin tumbler lock means comprising a cylinder case having a bore, alined driver pin channels, and a slide channel, said slide channel being transverse to and communicating with driver pin channels, a pin tumbler plug in said bore, driver pins in said driver pin channels, relative to said cylinder case a movably mounted slide piece in said slide channel, and a stoppage member connected to said slide piece, said stoppage member releasably retaining the plug in the bore, said stoppage member normally being in a position wherein a portion of said stoppage member intercepts movement of the plug from the bore, and the position of said stoppage member relative to said cylinder case can be varied in a phase of operation by manipulation that causes movement in directions transverse to the alinement of said driver pin channels until positions are reached wherein said stoppage member does not intercept movement of the plug from the bore, and the position of said stoppage member relative to said cylinder case can be varied by manipulation that causes movement in reverse directions until said stoppage member and said cylinder case are again in their normal relative positions.

9. A pin tumbler plug lock means as set forth in claim 8, wherein a change in the relative positions of the stoppage member and the cylinder case will also cause a similar change in the relative positions of said slide piece and said cylinder case, and said slide piece being so connected to said stoppage member that when said plug is in unlocked condition and when said stoppage member does not intercept movement of the plug from the bore, said slide piece, in a phase of operation, will be making driver pin holding engagement at positions where said slide channel communicates with driver pin channels.

10. A pin tumbler lock means as set forth in claim 9, wherein there is a means whereby the position of said stoppage member relative to said cylinder case can be varied by manipulation which means, extends to a periphery of the lock means and which means can be operated without the disassembly of the lock means.

11. In a lock means comprising a cylinder case having a bore, alined driver pin channels, and a slide channel, said slide channel being transverse to and communicating with said driver pin channels, and said slide channel extending to the rear of said cylinder case, a removable plug in said bore, driver pins in said driver pin channels, and a stoppage member having an aperture of a size to permit passage of said plug, said stoppage member having a relationship with said cylinder case whereby one is movable in relation to the other in a direction transverse to the alinement of said driver pin channels, said stoppage member in a phase of operation being manipulatable to a position wherein said stoppage member allows removal of said plug when said plug is in unlocked condition; a slide piece in said slide channel, said slide piece being removable from and insertable into said slide channel, said stoppage member and said slide piece having means whereby said slide piece is connected to and held in position in said slide channel by said stoppage member, said slide piece being capable of making holding engagement with said driver pins at locations where the slide channel communicates with driver pin channels.

12. In a lock means comprising a cylinder case having a bore and driver pin channels, a releasably retained plug in said bore, the walls of said driver pin channels having openings, and driver pins in said driver pin channels, a movable plug retaining means having a driver pin impeding portion shaped to make holding contact with said driver pins, said holding contact being at the openings in the walls of the driver pin channels, said plug retaining means also having a plug retaining portion releasably retaining the plug within the bore.

13. A lock cylinder comprising a casing having a bore and driver pin channels, the walls of said driver pin channels having openings, a releasably retained plug in said bore, driver pins in said driver pin channels, a movable slide piece shaped to enable said slide piece to make holding contact with said driver pins, said holding contact being at the openings in the walls of said driver pin channels, and relative to said casing a movably mounted stoppage member, the slide piece being connected to said stoppage member and coacting with said stoppage member, which stoppage member releasably retains said plug within the bore, said stoppage member normally being in a condition which impedes movement of the plug from the bore, but which stoppage member can be changed from its normal plug movement impeding condition, thereby allowing removal of the plug from its bore.

14. A lock means comprising a cylinder case having a bore and driver pin channels, the walls of said driver pin channels having openings, driver pins in said driver pin channels, a releasably retained plug section in said bore, a movably mounted driver pin impeding element, said driver pins and said element having engaging portions located in positions so that holding engagement can take place between the portions of said element and the portions of said driver pins, said holding engagement being capable of preventing movement of said driver pins from their respective driver pin channels while the plug section is in unlocked condition, a movably mounted stoppage member connected to said element, said stoppage member having an aperture of a size and position that allows passage of said plug section therethrough at a time when said plug section is in unlocked condition simultaneously with said portions being in holding engagement, yet which stoppage member is so shaped that in normal position, said stoppage member blocks passage of said plug section from said bore, said stoppage member and said element being so joined and being so variable in relation to said driver pins and said plug section that when said stoppage member allows passage of said plug section past said stoppage member, said portions will be in holding engagement, and a movement controlling means for controlling the movements that cause variance in relationship between the combination of said stoppage member and said element, and said driver pins and said plug section, said movement controlling means being for the purpose of so controlling movement that the element and the stoppage member will be in plug section release position only when it is desired to have them in that position.

15. A lock means as set forth in claim 14, wherein the movement controlling means consists of a rotatably mounted rod having a threaded portion plus a shank attached to the stoppage member and extending from the stoppage member, said shank having a mating thread thereon for engagement with the threaded portion of said rod.

16. A lock comprising a cylinder case having a bore and alined driver pin channels, the walls of said driver pin channels having openings, a plug section in said bore, said plug section having a groove in its circumference, said cylinder case having a cutout in a position corresponding to the groove in the plug section, driver pins in said driver pin channels, a stoppage member normally extending into the groove of said plug section, a slide piece coacting with said stoppage member, said slide piece normally being out of contact with said driver pins, and said slide piece and saidd river pins having engaging portions, said stoppage member and said slide piece having relationship to said cylinder case, said relationship being capable of change by movement of related parts in directions transverse to the alinement of said driver pin channels until said stoppage member no longer extends into said groove and until said engaging portions are in holding contact.

17. In a lock comprising a cylinder case having a

bore and driver pin channels, the walls of said driver pin channels having open spaces, a plug in said bore, driver pins in said driver pin channels, a movable device comprising a bar portion joined to a plate section, said bar portion being shaped so when said plug is in unlocked condition, said bar section can be moved into holding contact with said driver pins at the open spaces in the walls of said driver pin channels, the bar portion being joined to said plate section in such relationship that the plate section, which normally is in a position that blocks movement of the plug from the bore, in being moved to a position wherein said plate section no longer blocks movement of the plug from the bore, moves the bar portion into driver pin holding position, thereby causing the driver pins to be retained in their respective driver pin channels during plug removal and plug insertion operations.

18. In a lock as set forth in claim 17, wherein there is also a movement controlling means whereby movement of the device is controlled, said movement controlling means extending to a periphery of the lock.

19. A pin tumbler lock means comprising a lock case having an aperture in a wall of said lock case, said aperture being for the purpose of allowing a manipulation controlling means to be exposed at a periphery of the lock means, a cylinder case having a bore and driver pin channels, said driver pin channels having openings in the walls thereof, a pin tumbler plug in said bore, said pin tumbler plug being removable from the bore, driver pins in said driver pin channels, relative to said cylinder case a movably mounted slide piece to releasably hold the driver pins in their respective channels during the plug removal and plug insertion operations, a movably mounted stoppage member to coact with said slide piece, said stoppage member normally being in a position wherein said stoppage member retains said plug in the bore, but said stoppage member is manipulatable to a position and condition wherein said stoppage member does not retain the plug in the bore, and said stoppage member is so connected to said slide piece that when said stoppage member is manipulated to such position, said slide piece is also manipulated until said slide piece reaches a position and condition wherein said slide piece makes holding engagement with said driver pins at the openings in the walls of said driver pin channels causing said driver pins to be retained within their respective driver pin channels, and a manipulation controlling means that is exposed at a periphery of the lock means through said aperture.

20. In a key operated pin tumbler lock, a cylinder case having driver pin channels and a bore, driver pins in said channels, a removable plug in said bore, a keyway in said plug, and a driver pin blocker that interacts with the sides of said driver pins, said driver pins having indentations on their sides for interaction with said driver pin blocker, said indentations being of such length that a key can be withdrawn from the keyway when the driver pin blocker is in blocking position and before the plug is removed from said bore.

21. A lock comprising a casing having a bore and driver pin channels, the walls of said driver pin channels having openings in the sides thereof, driver pins in said driver pin channels, a plug section in said bore, said plug section having a groove on its circumference, a cutout in said casing, said cutout extending from said bore at the position of the groove on the circumference of the plug section contained in said bore, a movably mounted combination retainer comprising a driver pin impeding portion, said portion being of a shape and size to enable said portion to make holding contact with said driver pins at the openings in the walls of said driver pin channels, said portion normally being out of contact with said driver pins, and said combination retainer also comprising a section connected to said portion, said section being positioned in the cutout and normally extending into the groove on the plug section circumference, in which position said section retains said plug section within the bore, yet which combination retainer, when the lock is in unlocked condition, can be manipulated into driver pin holding contact position, and in which position the section which is manipulated in connection with the manipulation of the driver pin impeding portion will be wholly out of the groove in said circumference on said plug section, thereby allowing said plug section to be freely removable from the bore.

22. A lock comprising a casing having a bore, a plug section movable in said bore, tumbler portions in openings in said casing and plug section, said tumbler portions being settable by a bitted key adapted to be inserted in a keyway formed in said plug section, abutment surfaces on said tumbler portions, said abutment surfaces being for the purpose of and being at a location for making contact with an impeding device, open spaces in the walls of said openings, an impeding device capable of making holding contact with the abutment surfaces, said holding contact being at said open spaces, said impeding device having a space relationship with the tumbler portions so that the space between the tumbler portions and the impeding device can be varied, means for varying the space between the impeding device and the tumbler portions, said impeding device being adapted when in impeding position to impede tumbler portions in their respective openings, said tumbler portions having longitudinal indentations adjacent to said abutment surfaces and extending in a direction toward said bore, said indentations being of a length greater than the depth of the key bittings that are insertable into the keyway to a greater depth than the location of the respective tumbler portion relative to the keyway.

23. A lock comprising a casing having a bore, a plug section movable in said bore, said casing and said plug section having openings, the openings of the plug section corresponding with the openings in the casing, tumblers in openings in said casing and plug section, a retainer mounted so that the position of said retainer relative to said plug section can be varied in directions transverse to the axis of the plug section, and said retainer being adapted when in a retaining position to retain said plug section in said bore, and said retainer being adapted when in release position to allow release of said plug section from said bore, said lock having a channel so located that said channel communicates with tumbler containing openings, an impeding device in said channel, said channel being considerably larger than said impeding device, said impeding device being so mounted that said impeding device can make holding contact with said tumblers, and said impeding device being so mounted that the space relationship between said impeding device and the tumblers can be varied, and means whereby the space relationships between the retainer and the plug section and between the impeding device and the tumblers can be varied, the relationship of the impeding device to the retainer being such that the impeding device can impede the tumblers when the plug section is in unlocked condition, and the retainer is in release position and the relationship, size, and shape of said channel, said impeding device, and said tumblers being such that said impeding device is capable of remaining in said lock out of holding contact with the tumblers while the lock is in attached and assembled condition and while the lock is performing its normal locking and unlocking functions.

24. In a lock having a casing, said casing having a bore, a plug section in said bore, said casing and plug section having openings, the openings in the plug section corresponding with the openings in said casing, tumblers in openings in said casing and plug section, said lock having a channel that communicates with the openings in the casing, a tumbler impeding device in said channel, said tumbler impeding device being considerably smaller than said channel, and said tumbler impeding device being

of such shape and having such relationship with the other portions of said lock that said impeding device is capable of making holding engagement with tumblers at locations where said channel communicates with openings in said casing when said lock is in unlocked condition, and which tumbler impeding device is capable of being moved out of holding engagement and still remain in the lock while the lock is in assembled and attached condition and while the lock is performing its normal locking and unlocking functions.

25. In a lock as set forth in claim 24, in which there is also a movement controlling means connected to said tumbler impeding device, said movement controlling means extending to a periphery of the lock in order that said tumbler impeding device can be moved into and out of holding engagement in an assembled and attached lock without requiring disassembly and detachment of the lock.

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