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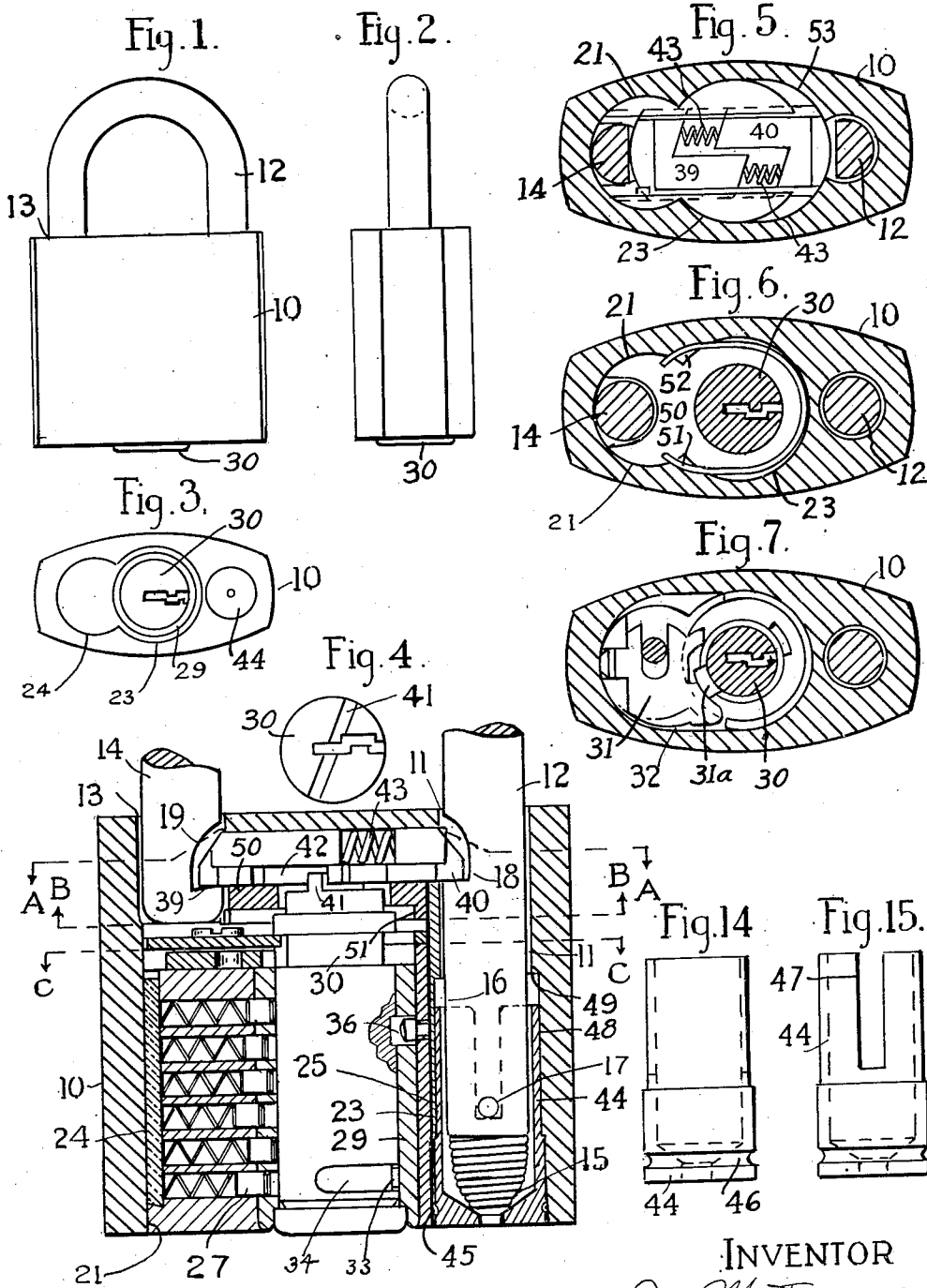
L. M. DYSON

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KEY CONTROLLED PADLOCK

Filed Sept. 22, 1945

2 Sheets-Sheet 1



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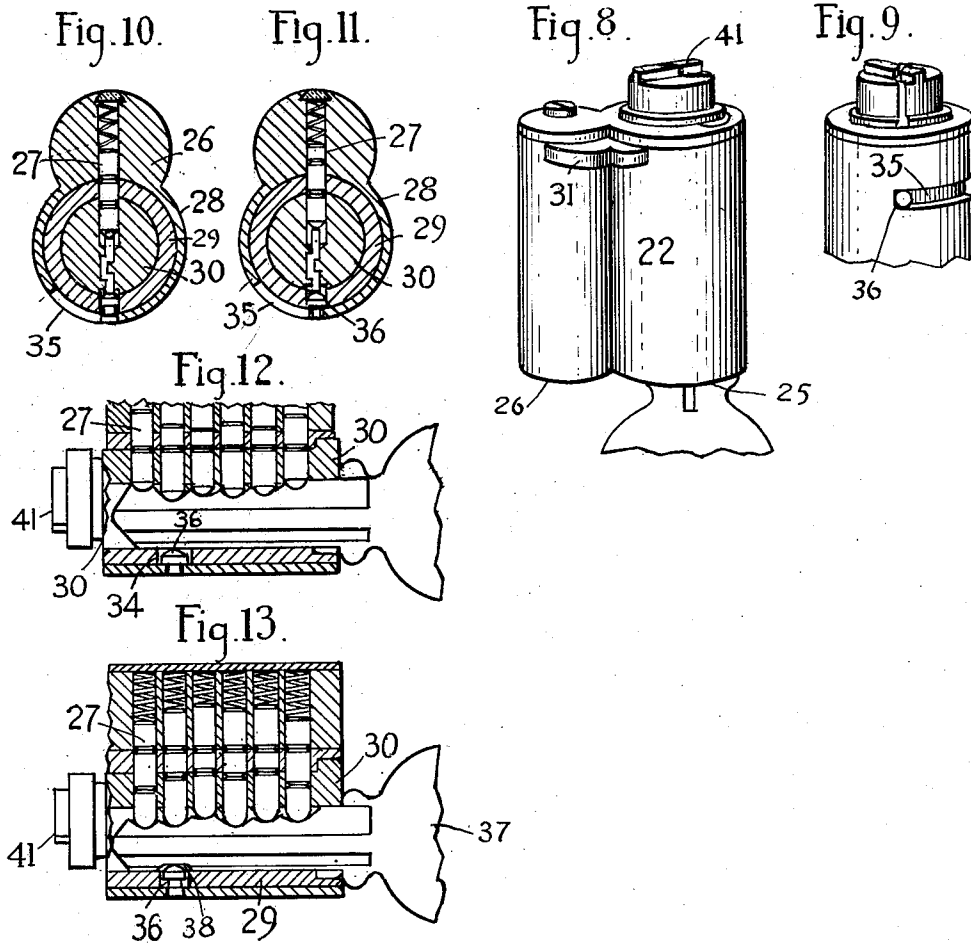
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KEY CONTROLLED PADLOCK

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6 Claims. (Cl. 70—33)

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This invention, while particularly adapted for use in a padlock, may be embodied in various forms of locks, but by reason of its adaptability to a padlock such a structure is shown for the purpose of disclosing the invention herein.

An object of the invention, among others, is the production of a lock comprising a unit in which much of the locking mechanism is contained and which may be, by the use of a proper key, removed from the lock body as a whole for such purpose as may be desired.

One form of a padlock embodying the invention and in the construction and use of which the objects herein set out, as well as others, may be attained is illustrated in the accompanying drawing, in which—

Figure 1 is an elevational side view of a lock embodying my invention.

Figure 2 is an elevational edge view of the same.

Figure 3 is an end view showing the removable unit.

Figure 4 is a view in section, on enlarged scale, through the lock lengthwise thereof and showing some of the parts in elevation.

Figure 5 is a view in cross section on a less enlarged scale and, on a plane denoted by the broken line A—A of Fig. 4.

Figure 6 is a similar view on a plane denoted by the dotted line B—B of Fig. 4.

Figure 7 is another similar view on a plane denoted by the dotted line C—C of Fig. 4.

Figure 8 is a perspective view of a portion of the unit illustrating it in side elevation.

Figure 9 is a similar view of the upper end of the unit but looking from a point at right angles to the point of view of Fig. 8.

Figure 10 is a view in cross section through the unit illustrating the parts in position with the core key placed for removal of the unit.

Figure 11 is a similar view but showing the service key turned into position to throw the bolts to release the shackle.

Figure 12 is a view in section through the lower part of the unit showing the service key in initial position to throw the bolts to release the shackles.

Figure 13 is a similar view but showing the core key ready to be turned into position to cam up the floating pin to release the unit.

Figure 14 is a side view of the thimble forming the seat for the lower end of the shackle spring.

Figure 15 is a similar view looking from a point at right angles to the point of view of Fig. 14.

In the accompanying drawings the numeral 10

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denotes the body or shell of a lock that is, as hereinbefore mentioned, in the form of a padlock, this body having a hole comprising a well 11 on one side to receive the long leg 12 of the shackle and an opening 13 on the opposite side or edge of the shell at one end thereof to receive the short leg 14 of the shackle. The long leg 12 of the shackle is seated at its inner end upon a spring 15 and a groove 16 is provided in the side of the well 11 for receiving a retaining pin 17 that prevents removal of the shackle from the case and particularly under the force of the spring 15. Locking notches 18—19 are formed in the long and short legs of the shackle to receive locking bolts 39—40 to be hereinafter fully described.

The structure as to the main part of the unit is of a character similar to that illustrated and described in my co-pending application of Serial Number 580,384, filed March 1, 1945, which resulted in Patent No. 2,481,093, issued Sept. 6, 1949, this being a companion case and drawn to details comprising divisional matter as to the means for engaging the locking bolt unit for retaining it in place, and reference is hereby made to said co-pending application for such understanding as may be further required.

The body 10 is bored from the bottom to create a recess 21 extending inwardly from one end nearly to the opposite or top end of the case to receive an insert unit 22 in which is contained much of the mechanism of the lock such as the key plug, bolt, bolt spring, pin tumblers, drivers, master pins, tumbler springs, master ring, retaining cam, and other parts, all of these parts being well known to those skilled in the art and requiring no further and detailed description herein, except as will be hereinafter specifically mentioned. This recess conforms somewhat to the shape of a figure 8 in cross section and comprises a key plug chamber 23 and a somewhat smaller tumbler chamber 24 to receive similar parts 25—26 specifically of the insert unit 22.

This insert unit comprises the part 26 which is in fact a body for support of the pin tumblers 27, and integral with said body is a sleeve 28 within which a master ring or sleeve 29 is fitted to turn. This insert unit also comprises a key plug 30 provided with a key slot and with tumblers in a manner common to pin tumbler locks. An insert retainer 31 in the form of a sliding bolt operated by a tongue 31—*a* on the inner end of the sleeve 29 is adapted to enter a slot 32 cut into the case to receive said tongue. The master ring or sleeve 29 may be rotated in a counter-clockwise direction by the use of the proper key to

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be presently described and the insert then removed from the lock body. The master ring or sleeve is provided with a stop pin 33 adapted to enter a groove 34 extending circumferentially in the plug 30; thereby permitting the plug to have a clock-wise movement by the use of a proper key to operate the bolt and release the shackle to unlock the lock.

The sleeve 28 of the insert unit is provided with a slot 35 in which a floating pin 36 carried by the master ring or sleeve 29 will enter when pushed out by the service or master key as shown in Fig. 11. This pin will block the counter-clockwise movement of the plug and the master ring or sleeve but will allow a clockwise movement of said sleeve and master key to effect operation of the lock to release the locking bolt. Prevention of counter-clockwise movement of the plug and master sleeve ensures no chance for operation by said members to release the insert unit, insertion of these keys operating against them for use for this purpose. The special or core key 37 has a notch 38 as shown in Fig. 13 to clear the floating pin 36 and thereby allow counter-clockwise movement of the master ring or sleeve to release the insert retainer and permit removal of the insert unit.

The lock comprises double locking bolts 39—40 which are adapted to enter locking notches in the short leg 14 and long leg 12 of the shackle which are adapted to move in opposite directions into said locking notches, tenons 41 on the end of the plug 30 each engaging a notch 42 in the bolt, as shown in Fig. 4 and springs 43 forcing the bolts into engagement with the long and short legs of the shackle.

The locking bolts 39 and 40 are each provided with a notch 42 into which two tenons 41 on the end of the plug enter and force the bolts in opposite directions to engage the notches in the short and long legs of the shackle, as shown in Fig. 4. The springs 43 operate upon the bolts for such locking action and the tenons force the bolts, by engagement with the notches in the shackles, to release the shackles and unlock the padlock.

It will now be seen that the key plug is operated as usual in locks of this type to lock and unlock the shackles and that a special key 37 is employed to operate the master ring or sleeve to release the unit and permit its removal.

A thimble 44 is forced into the lower end of the hole for the long leg of the shackle and the spring 15 upon which said leg is seated is enclosed within this thimble, as shown in Fig. 4. This thimble is retained in position by means of a pin 45 which projects into a groove 46 in said thimble.

The upper portion of the thimble 44 is slotted, as at 47, to slidably receive the pin 17 in the long leg 12 of the shackle and align the end of the short leg 14 with the opening 13 and permit said shackle to be lowered, against the tension of the spring 15 into locked position, as shown in Fig. 4. It will be noted that the top of said thimble 44 is spaced below a stop shoulder 49 at the top of the recess 48 so as to provide the annular groove 16 therebetween which permits rotation of the shackle when in its raised position with the pin 17 engaging the said shoulder 49.

The thimble 44 is secured against rotation in the recess 48 by means of a drive fit and retained therein against sliding movement by the pin 45. The slots 47 will prevent downward movement of the shackle except when the pin 17 is in alignment with said slots and thereby facilitate

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locating of the shackle to a position where the short leg 14 is in alignment with the hole 13 so that the lock may be easily operated, even in the dark, by simply rotating the shackle until it is felt that it is in proper position and then pushing it into locked position wherein it is engaged by the locking bolts 39 and 40.

The said locking bolts and the springs 43—43 are mounted in a supporting block 50, which is of a figure eight shape to conform with the shape of the recess 21, and the entire unit is retained in position at the top of said opening by means of a retaining spring 51 which snaps into notches 52 in side walls of said recess 21. This construction permits the locking bolt unit to be first assembled and then simply inserted in the recess 21 and locked in position, by means of the spring 51, whereupon the key operated lock unit 22 may be inserted into or removed from the casing independently of the locking bolts or locking bolt unit. The recess 21 has a side cut 53 at its upper end which extends through the wall of said recess and communicates with the opening 11 so as to permit the entry of the locking bolt 40 into engagement with the notch in the long leg 12 of the shackle.

I claim:

1. A lock of the character described comprising a body having an opening extending therethrough from the top of said body to the bottom thereof, the portion of said opening at the top of said body being of a lesser diameter than the portion at the bottom of the body and thereby providing a shoulder in said opening, a shackle having a long leg movable in said opening and a short leg adapted to extend into a separate opening in said body, a pin extending through said long leg and extending from the sides thereof to abut said shoulder and prevent removal of the shackle through the top of the body, a thimble secured against rotation in the larger portion of said opening and insertable therein from the bottom end of the body, a spring based within said thimble and pressing against the end of said long leg, the said thimble being shorter than the enlarged portion of said opening to provide a groove between the top of the thimble and said shoulder to receive the projecting ends of said pin therein and permit rotation of said shackle, and slots in the walls of said thimble adapted to receive the said projecting ends to align the short end of the shackle with its respective opening and permit downward movement of said shackle in said body for bringing the same into locking position.

2. In a lock of the character described, the combination of a body having an opening therein, a shackle leg movable in said opening and having projections on the opposite sides thereof, a recess larger than said opening communicating therewith and forming a shoulder in said body, a thimble shorter than said recess secured therein against rotation relatively to said body and having slots in the sides thereof to receive said projections to prevent rotation of the leg; the top of said thimble being spaced from said shoulder to provide an annular groove in said body for receiving said projections to permit rotation of the shackle.

3. In a lock of the character described, the combination of a body having an opening therein, a shackle movable in said opening, a recess communicating with said opening, a thimble secured within the recess and having slots in the wall thereof, a shoulder at the end of said re-

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cess, the top of said thimble being spaced from said shoulder to provide an annular groove between said thimble and opening, and a pin projecting from opposite sides of said shackle and adapted to slide within said slots to permit only longitudinal movement of said shackle into locked and unlocked positions, the said groove permitting rotation of said shackle when in unlocked position.

4. In a lock comprising a casing having an inverted bottomed recess therein, a shackle slidable into said casing, a locking bolt unit positioned at the bottom of said recess and insertable therein as a unit and comprising a support having a locking bolt slidable therein for engaging said shackle, spring means below said unit for retaining it in position within said recess, and key operated mechanism insertable within said recess as a separate unit for operating said locking bolt and removable from said recess independently of the said locking bolt unit.

5. In a lock comprising a casing having an inverted bottomed recess therein, a shackle slidable into said casing, and a locking bolt mechanism insertable in said recess and located at the bottom thereof; said mechanism including a locking bolt slidable therein, means comprising a spring member insertable into and co-operating with notches in the wall of said recess for retaining said mechanism in operative position therein, and a key operated locking unit insertable within said recess for operating said locking bolt and removable from said recess independently of the locking bolt unit.

6. In a lock including a shell having an inverted bottomed recess therein, the combination of a shackle member slidable into said recess, a

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locking bolt unit including a supporting block containing a locking bolt slidable therein and engageable with said shackle member, the said block being insertable into said recess, means following said block and engageable with notches in the walls of said recess for retaining the said locking bolt unit in operative position at the bottom of said recess, a detachable core containing a locking mechanism insertable within said recess following said retaining means, key operated means in said locking mechanism for engaging and operating the locking bolt, means engageable with the wall of the recess for securing said core within the said opening, and means for controlling said key operated means independently of the locking bolt for releasing the said core to permit removal thereof from said opening.

LOUIS M. DYSON.

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