

L. H. DUPONT.
COMBINATION PADLOCK.
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972,171.

Patented Oct. 11, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

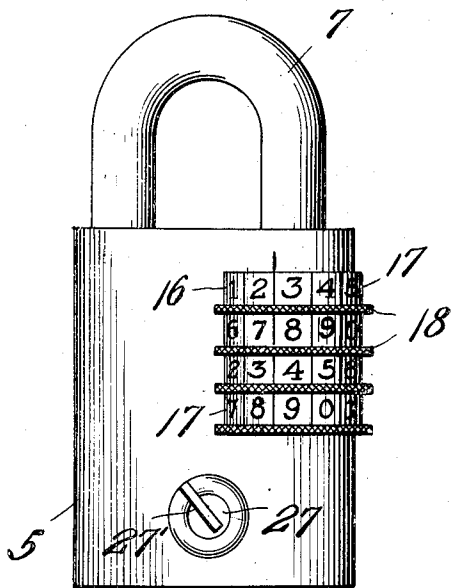
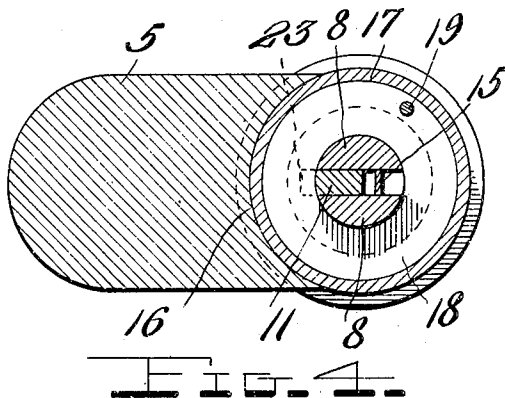
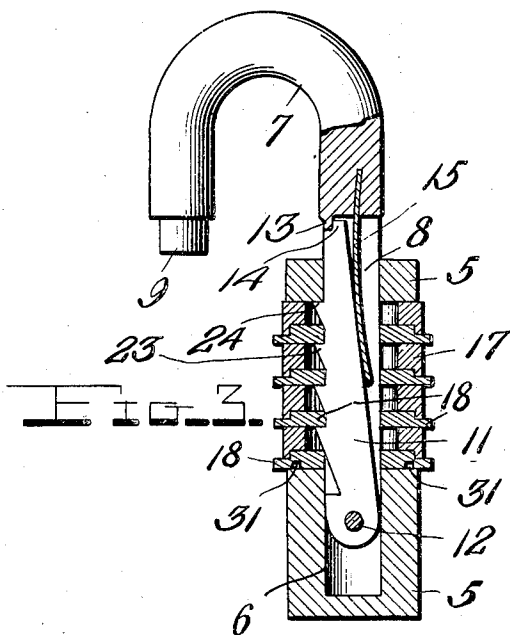
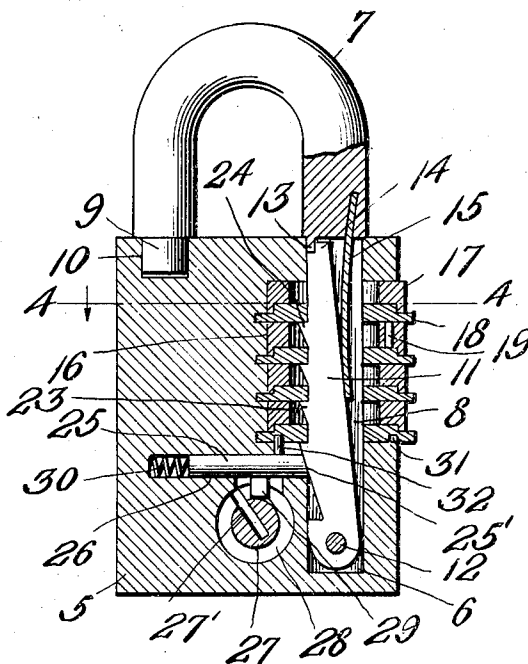


Fig. 2.



Witnesses

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COMBINATION-PADLOCK.

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To all whom it may concern:

Be it known that I, LOUIS H. DUPONT, a citizen of the United States, residing at Nashville, in the county of Davidson and State of Tennessee, have invented certain new and useful Improvements in Combination-Padlocks, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to a combination padlock and has for its object to provide a very novel form of lock having means co-operating with the combination locking means and adapted to be independently actuated to unlock the shackle.

Another object is to provide a slidable key-actuated bolt which is rendered inoperative by the use of the combination locking means, and may be operated when said combination is not being used.

A further object is to provide a plurality of circular locking members mounted upon an extension of the padlock shackle within the body of the lock, and key actuated means coöperatively engaged with one of the locking members normally locked against actuation by said member and adapted to be actuated to unlock the shackle when said member is moved to a predetermined position.

A still further object is to provide a padlock of very simple construction which is absolutely positive in its operation, may be inexpensively manufactured and is admirably adapted for use upon safe deposit boxes, lock boxes in post-offices, lockers and similar places where locks of this character are commonly employed.

With these and other objects in view the invention consists of the novel construction, combination and arrangement of parts, hereinafter fully described and claimed, and illustrated in the accompanying drawings in which:—

Figure 1 is a side elevation of a padlock constructed in accordance with the present invention; Fig. 2 is a vertical section thereof showing the same locked; Fig. 3 is a similar view after the combination has been operated and the padlock shackle lifted from locking engagement with the body; Fig. 4 is a section taken on the line 4—4 of Fig. 2; Fig. 5 is an enlarged detail section illustrating the operation of the sliding bolt with relation to the combination disks or plates; Fig. 6 is an enlarged bottom plan view of the lowermost combination disk; Fig. 7 is a detail perspective

view of one of said disks; Fig. 8 is a similar view of one of the indicating members; Fig. 9 is a detail perspective view of the sliding bolt.

Referring to the drawings, 5 indicates the body of the padlock, which as shown is rectangular in form, though it will, of course, be understood that this portion of the lock may be of any desired external configuration. A circular opening or recess 6 is formed in the body 5 adjacent to one of the longitudinal edges thereof and extends from the top to a point adjacent to the bottom of the body. The shackle 7 of the padlock is formed with an extended shank 8 which is adapted to be received within the opening 6. The other shank of the bowed shackle 7 is formed with a reduced extremity 9 which is adapted to be received in a socket 10 in the top of the body when the shackle is locked in position. The extension 8 is bifurcated, such bifurcation extending the entire length of the extension to the top of the lock body 5. Within this bifurcation a locking bar 11 is pivoted, the pivot pin 12 extending through the same and through the shackle extension adjacent to its lower end. A shoulder 13 is formed on the shackle and extends into the bifurcation at the upper end thereof. This shoulder is adapted to be received within a recess 14 formed on the upper inner edge of the locking bar, whereby the inward pivotal movement of said bar will be limited. The bar is normally disposed in engagement with this shoulder by means of a leaf spring 15 which is secured at one end in the body of the shackle and bears upon the outer edge of the locking bar.

The opening 6 in the body 5 is enlarged adjacent to its upper end, as shown at 16, this enlarged opening extending entirely through the vertical edge portion of the body. A plurality of indicating members 17 are disposed within the opening 16 upon the shackle extension 8 and are held in spaced relation to each other by means of the disks 18, the peripheries of which are knurled whereby they may be conveniently rotated. Each of the indicating members 17 is provided upon its outer face with the numerals 0 to 9, one of the numerals on each of said members being adapted to register with an index point upon the body 5, whereby the numerals will be brought into vertical alignment, and the combination of such numerals which is required to open the lock will be

obtained, as hereinafter set forth. Each of the rotatable disks 18 is adjustably connected to the indicating members 17 by means of a pin 19 which is carried by the disk and is adapted to be positioned in any one of a plurality of apertures 20 formed in the indicating members 17. These apertures 20 are in alinement with the numerals on the outer face of the indicating member. Each of the disks 18 is also formed with a recess 21 which opens into the central opening 22, through which the shackle shank extends. Thus the recess 21 may be alined with any one of the numerals of the combination carried by each of the members 17, and when the proper numerals are brought into vertical alinement the recess 21 of each of the disks 18 will register so that the shackle 7 may be raised to remove the extension 9 thereof from the socket 10 and thus release the same from locking engagement with the body 5. The locking bar 11 is formed on its inner edge with a plurality of notches or teeth 23 to provide shoulders 24 which engage with the under side of each of the disks 18 and prevent the release of the shackle 7 when the combination numerals are not arranged in their proper order. It will be noted that the opening in the disks 18 through which the shackle shank 8 extends is of sufficient diameter to allow of the free movement of the teeth 23 when the shackle is lifted. The unlocked position of the shackle is clearly shown in Fig. 3, and it will be noted that the teeth of the locking bar have movement upwardly through the alined recesses in the disks 18 until the uppermost tooth engages with the shoulder formed by the enlargement 16 of the opening 6, when such upward movement will be limited. When brought to this position the shackle may be rotated upon the top of the lock body or disposed at right angles thereto, and the teeth 23 and spring 15 will hold the shackle in its elevated position until they are again brought into alinement with the recesses 21. The pressure of the spring upon the locking bar which engages the teeth thereof with the locking members is sufficient to overcome the weight of the shackle and hold the same in its elevated position until pressure is brought to bear thereon. The shackle may be entirely removed from the body 5 by forcing a sharp instrument between the inner edge of the locking bar and the opening 6, thus pressing the bar inwardly against the tension of the spring 15 when the shackle may be withdrawn. The combination members 17 and the disks 18 may then be entirely removed, and the pins 19 carried by each of the operating disks inserted in another of the apertures 20 in the members 17, and the combination of numerals necessary to unlock the shackle altered as may be desired by the user. In

this manner a very simple form of combination lock is provided which is very positive in its operation and wherein the parts are so arranged that its incorporation in a lock of the character above set forth is effected without necessitating a great expense in its production.

My improved lock is particularly designed for locking safe deposit boxes, post-office lock boxes, cash boxes, lockers etc., and in order to increase its utility and serviceability when applied to this purpose, I also provide means whereby the device may be unlocked by means of a key. To this end a sliding bolt 25 is arranged in the body 5 of the lock within a recess 26 which extends into the opening 6 and is disposed at right angles thereto. A plug 27 is positioned transversely in the lock body and is formed with a circumferential groove 28 in which a lug 29 formed on the bolt 25 extends. A retractile spring 30 is disposed in the recess 26 between the inner end of the releasing bolt and the end of the recess and acts to normally dispose the releasing bolt into the position illustrated in Fig. 2. It will be noted that the outer end of the bolt is beveled, as shown at 25' and is engaged with the inner inclined edge formed by the lower tooth on the locking bar 11. This releasing bolt is adapted to be actuated by the insertion of the key in the key slot 27' of the plug. Upon turning the key it will be noted that the same will engage with the lug 29 and force the bolt against the inner edge of the locking bar 11 to move the same outwardly within the bifurcated shank 8 against the tension of the spring 15 so that the teeth 23 of the bar may be disposed within the periphery of this shackle shank and the shackle thus released from locking engagement with the lock body. It will, however, be obvious that if this releasing bolt were operable at all times that the combination locking means would be ineffective, and it is therefore necessary that means be provided for rendering the actuation of the sliding bolt impossible when the combination locking means is in use. I accomplish this purpose by providing the lowermost disk 18 with an annular groove 31 in its under side. This groove has communication with the recess 21 through a short groove 31' which connects the annular groove with said recess. A pin 32 is threaded or otherwise secured in the releasing bolt adjacent to its outer end and is disposed in the groove 31, so that when the combination locking means is being used, the disposition of the end of the pin 32 in the groove 31 will prevent any reciprocation of the releasing bolt to force the locking bar 11 inwardly. When, however, the numerals of the combination are brought into the proper alinement, this pin will be movable into the short

connecting groove 31' which communicates with the recess 21, whereupon the key may be inserted and the bolt 25 forced against the edge of the locking bar 11 to release the same. It will be apparent that the person knowing the combination may move only the lower indicating member 17 until the numeral of the combination carried thereby is in alinement with the index mark on the body 5, when the bolt 25 may be actuated without requiring the adjustment of the remaining numeral carrying members. Thus considerable time is saved while those who are ignorant of the proper combination will have no means whatever of ascertaining when the pin 32 is disposed in position to be moved into the communicating groove 31'.

By means of the combination and arrangement of elements above set forth, a lock is provided which may be operated by means of the combination or by the ordinary padlock key. When the combination is not being used, the communicating groove 31' of the lowermost disk 18 may remain in alinement with the pin 32 so that the lock may be readily opened by the turning of the key. The ease and rapidity with which a lock of this character may be operated, and its positive operation provides a device which is admirably adapted for the purposes specified and its unauthorized operation is rendered almost impossible. The security of the contents of the receptacle to which the lock is applied will thus be assured to the owner.

From the foregoing it will be seen that I have provided a combination padlock which is of comparatively simple construction, and the various elements of which may be readily assembled or disassembled. It is also easy to manipulate, provides a variety of combinations of numerals which may be easily and quickly changed and may be manufactured at a minimum cost.

A number of minor modifications may be resorted to without materially departing from the essential features or sacrificing any of the advantages of the invention, and I reserve the right to make such alterations as I may deem best within the scope of the claims.

Having thus described the invention what is claimed is:

1. A combination padlock comprising a body, a shackle removably engaged in said body, a locking bar carried by said shackle, a plurality of locking members adapted to be engaged by said bar to lock the shackle in the body, and key actuated means slidably mounted in the body and normally held against actuation by one of said locking members, said actuating means being adapted to move the locking bar when said locking member has been moved to releasing position whereby the shackle may be un-

locked from the body irrespective of the positions of the remaining locking members.

2. A combination padlock comprising a body, a shackle removably engaged in said body, a plurality of rotatable locking members arranged in the body, means carried by the shackle adapted to be engaged by said locking members to secure the shackle in its locked position and means movably engaged with one of said locking members adapted to be engaged with the locking means carried by the shackle and normally held against actuation by said member, said means being adapted to release the locking means carried by the shackle from engagement with said members, when said last mentioned member has been moved to a predetermined position whereby the shackle may be released from locking engagement with the body irrespective of the positions of the remaining members.

3. A combination padlock comprising a body, a shackle removably engaged in said body, a locking bar carried thereby a plurality of independently rotatable, combination locking members carried by said body adapted to lock the shackle therein, and means coöperatively engaged with one of said combination locking members adapted to be independently actuated to unlock said shackle when the locking member is rotated to a predetermined position.

4. A combination padlock comprising a body, a shackle removably engaged in said body, a plurality of independently rotatable, combination locking members disposed in said body, means carried by the shackle engaging with said members to lock the shackle in the body, a key-actuated bolt in said body adapted to engage said locking means to move the same to unlocking position, and means for preventing the actuation of said releasing bolt.

5. A combination lock comprising a body, a shackle removably engaged in said body, a plurality of independently rotatable, combination locking members disposed in said body, pivoted means carried by the shackle engaging with the members to secure the shackle in locked position, a spring actuated sliding bolt adapted to engage with said locking means to move the same to an unlocking position, a pin carried by said bolt engaging in an annular groove in the under side of one of said rotatable members, whereby said bolt will be held against sliding movement, said member having a radial groove communicating with said annular groove adapted to receive said pin, and means for actuating said sliding bolt.

6. A combination lock comprising a body, a shackle removably engaged therein having an extended shank, a plurality of independently rotatable, combination locking members disposed in said body, the shank of

said shackle extending through said members, a pivoted locking bar carried by said shank having teeth on the inner edge thereof normally held in yielding engagement with the under side of each of said members, said members each having a slot therein communicating with the central shank-receiving opening, a spring actuated slidable bolt disposed in said body engaged with the inner edge of said locking bar and adapted to force the same inwardly whereby the teeth thereof may be moved through the recesses in said members, a pin carried by said bolt adjacent to its outer end disposed in an annular groove in the under side of the lowermost rotatable member, said member having a radial groove connecting said annular groove with the recess therein, said bolt being held against sliding movement by the positioning of said pin in the annular groove when the shackle is locked in the body by the rotatable locking member.

7. A combination padlock comprising a body, a shackle removably engaged in said body, a locking bar carried by said shackle, a plurality of independently rotatable combination locking members carried by said body adapted to lock the shackle therein, in combination with key actuated means co-operatively engaged with one of said locking members adapted to release the locking bar to unlock said shackle irrespective of the arrangement of the remaining locking members.

8. A combination padlock comprising a

body, a shackle removably engaged in said body, a plurality of independently rotatable combination locking members disposed in said body, a locking bar carried by the shackle engaging with said members to lock the shackle in the body, means normally holding said bar in locking position, in combination with key actuated means mounted in the body to co-operatively engage with one of said locking members said member being adapted for independent actuation irrespective of the arrangement of the remaining locking members.

9. A combination padlock comprising a body, a shackle removably engaged in said body, a plurality of independently rotatable combination locking members disposed in said body, a spring held locking bar carried by the shackle normally in locking engagement with said members, in combination with a key actuated slidable bolt engaged with one edge of said locking bar to release the same from locking engagement with said members, and means carried by said bolt engaged with one of said members adapted to prevent the actuation of said bolt when all of said members are in locking engagement with the bar.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

LOUIS H. DUPONT.

Witnesses:

HENRY C. MILLER,
AMBROSE CRUSS.