Nov. 22, 1932. R. W. GODDEN 1,888,918

LOCK

Filed Feb. 11, 1930

Fig. 1.

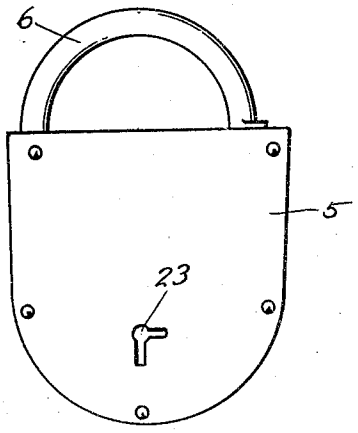


Fig. 2.

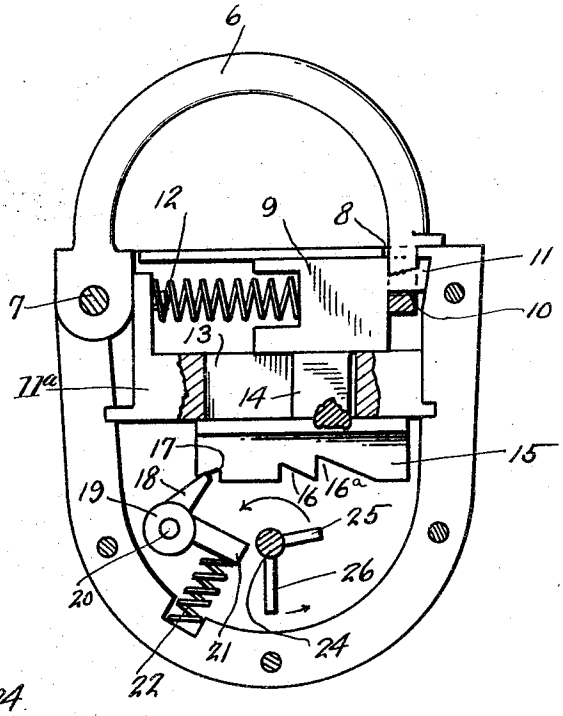
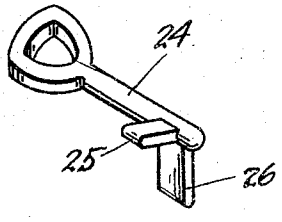


Fig. 3.



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UNITED STATES PATENT OFFICE

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LOCK

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The present invention relates to locks of the key operated type, commonly known as padlocks and has for its object to provide a lock mechanism of this character which possesses simplicity of construction, which is strong and durable, and novel in operation so as to increase the security thereof.

Other objects and advantages reside in the special construction, combination and arrangement of the various elements forming the invention as more fully hereinafter described and claimed, reference being had to the accompanying drawing forming part hereof wherein like numerals refer to like parts throughout the same, and in which:

Figure 1 is a side elevational view,

Figure 2 is a sectional view through the lock casing, and

Figure 3 is a perspective view of the key.

Referring to the drawing in detail wherein for the purpose of illustration I have disclosed a preferred embodiment of the invention, the numeral 5 designates a lock casing having a shackle 6 pivotally mounted at one end upon a pin 7 carried by the casing and with its opposite end free adapted to move into an opening 8 in the casing and be locked therein by a sliding bolt 9.

The free end of the shackle 6 is formed with an opening 10 into which a projection 11 carried by the bolt 9 is adapted to be inserted for securing the shackle in locked relation.

The bolt 9 is slidably mounted upon a frame 11^a fixedly secured within the casing. The bolt is normally urged into locked relation by an expansible coil spring 12 positioned between one end of the bolt and one end of the frame 11^a so as to yieldably urge the projection 11 into the opening 10 in the free end of the shackle.

The frame 11^a is formed with a slotted opening 13 within which a web 14 is slidably positioned, the web being carried by the bolt 9 and extended in a direction at right angles to the projection 11.

The web 14 forms a connection for a slide 15 which is positioned in engagement with the side of the frame 11^a opposite from that engaged by the bolt 9. One edge of the slide 15 is provided with notches 16, 16^a and 17, respectively.

The notch 17 is engageable by a pivoted stop 18 formed on a hub 19 and journalled on a pin 20 carried in the casing. A projection 21 also extends radially from the hub 19 and angularly with respect to the stop 18 and is engaged by an expansible coil spring 22 which also engages the casing, which urges the stop 18 into engaged position with the notch 17.

The casing is provided with a key hole opening 23 through which the key 24 is insertable. The shank of the key 24 has its inner end provided with a plurality of radially extending projections 25 and 26, respectively, of different lengths. The shorter projection 25 is engageable with the arm 21 of the stop 18 for releasing the stop 18 from the notch 17 as the key is rotated, and the longer arm 26 is engageable in succession with the notches 16^a and 16 of the slide 15. Thus means is provided to progressively move the bolt 9 out of locked position after the stop 18 has been released. Two rotations of the key are obviously necessary to accomplish the complete release of the detent.

Since the bolt 9 is at all times urged in a direction for engaging the free end of the shackle, it will be obvious that the bolt is moved into releasing position against the tension of the spring 12 by the successive engagement with the notches 16 and 16^a by the key which must be rotated more than one turn.

It will be apparent that by regulating the size or position of the notches 16^a and 16 and the associated projections 25 and 26 of the key, numerous combinations may be provided for so that the lock cannot be manipulated except through the use of the proper key.

It is obvious that some means must be provided whereby the slide and detent will be retained in the progressive position into which it is moved by the engagement of the arm 26 with the notch 16 as the key is rotated, so that upon the second turn of the key the arm 26 may be brought into engagement with the notch 16[a] and so move the detent completely out of engagement with the shackle so as to release the same. To maintain the slide in such progressive, intermediate position, pressure is brought to bear on the shackle 6 by pulling on the lock so that the elements 9 and 15 will bear frictionally against the frame 11[a] and hold the detent in the intermediate position until upon the second turn of the key, the arm 26 will engage the notch 16[a] and draw the detent out of engagement with the shackle and release it. What I claim to be new is the provision of a lock which cannot be opened by one turn of the key, and cannot be opened by more than one turn of the key unless the operator pulls upon the lock in the manner mentioned so as to hold the bolt of the lock against the action of its spring until the following turn of the key is made. Thus, there is provided a lock which cannot be operated even with the right key unless the other feature of the operation is known and employed simultaneously with the manipulation of the right key.

It is obvious that my invention is susceptible to various changes and modifications in construction without departing from the spirit of the invention or the scope of the appended claims, and I accordingly claim all such forms of the device to which I am entitled.

Having thus described my invention, what I claim as new is:

1. A lock of the type including a casing, a shackle pivoted at one end therein and adapted to enter its other end into the casing, a frame in the casing having a slot, a spring pressed slide on the upper side of the frame having detent means for locking the said other end of the shackle in the casing, another slide engaging the lower side of the frame, a connecting web between the spring pressed slide and the other slide positioned in and slidably movable in the slot of the frame, a pivoted stop member in the casing provided with an operating arm, a spring connected with the operating arm and the casing for urging the stop member in one direction, and a stop notch on the said other slide adapted to be engaged by the stop to prevent normally the withdrawal of the detent from engagement with the shackle, a plurality of progressively enlarged key notches in the said other slide, said stop member and said slide by reason of said key notches being adapted to be operated by a key whereby the detent may be withdrawn in successive steps upon sufficient force being applied to the casing to frictionally retard shackle reengaging movement of the spring pressed slide.

2. A lock comprising a casing, a shackle pivoted at one side of the casing with its free end adapted to enter a shackle opening in the casing and be held therein, a cross member secured in the casing, a longitudinal transverse opening extending through the cross member, a slidable body carried by the cross member, said slidable body comprising a detent member disposed at one side of the cross member adjacent the shackle opening and adapted to engage the free end of the shackle when it has been entered in the shackle opening, a web slidably positioned in the transverse opening in the cross member, and a key-engaging member carried by the web at the opposite side of the cross member, a spring positioned between a portion of the cross member and said detent member for maintaining the slidable body normally in the shackle engaging and retaining position; and a rotatable releasable catch for preventing unwanted movement of the slidable body into shackle disengaging position, said key-engaging member being formed with a notch for coaction with the rotatable catch, and with two key notches, said rotatable detent and said notches being adapted to be successively engaged by key means for moving the slidable body into shackle disengaging position.

3. A lock comprising a casing, a shackle pivoted at one side of the casing with its free end adapted to enter a shackle opening in the casing and be held therein, a cross member secured in the casing, a longitudinal transverse opening extending through the cross member, a slidable body carried by the cross member, said slidable body comprising a detent member disposed at one side of the cross member adjacent the shackle opening and adapted to engage the free end of the shackle when it has been entered in the shackle opening, a web slidably positioned in the transverse opening in the cross member, and a key-engaging member carried by the web at the opposite side of the cross member, a spring positioned between a portion of the cross member and said detent member for maintaining the slidable body normally in the shackle engaging and retaining position; and a rotatable releasable catch for preventing unwanted movement of the slidable body into shackle disengaging position, said key-engaging member being formed with a notch for coaction with the rotatable catch, and with key notches, said rotatable detent and said notches being adapted to be successively engaged by key means for moving the slidable body into shackle disengaging position, said two key notches being located in longitudinally spaced relation each of which is

adapted to be engaged one after another by said key means for moving the slidable body into shackle releasing position, said slidable body being adapted to be held frictionally against returning toward shackle engaging position as the key means leaves one notch to engage with the next notch, by pulling upon the casing and shackle.

In testimony whereof I affix my signature.

ROBERT W. GODDEN.