Dec. 7, 1937. G. F. MAYER 2,101,264

PADLOCK

Filed Dec. 21, 1935

Fig. 1.

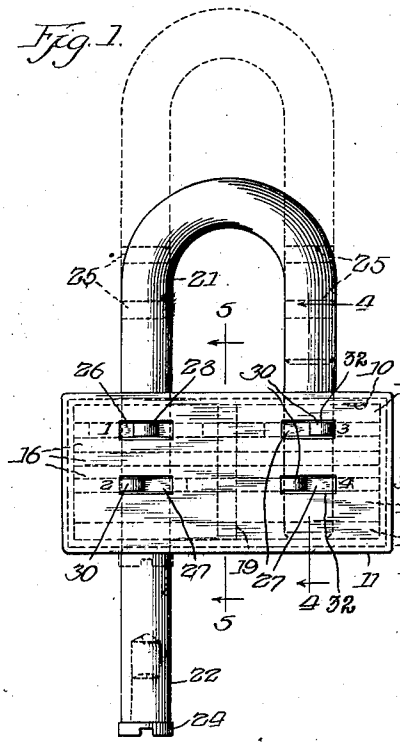


Fig. 2.

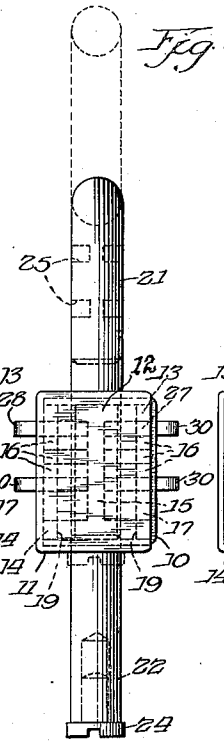


Fig. 3.

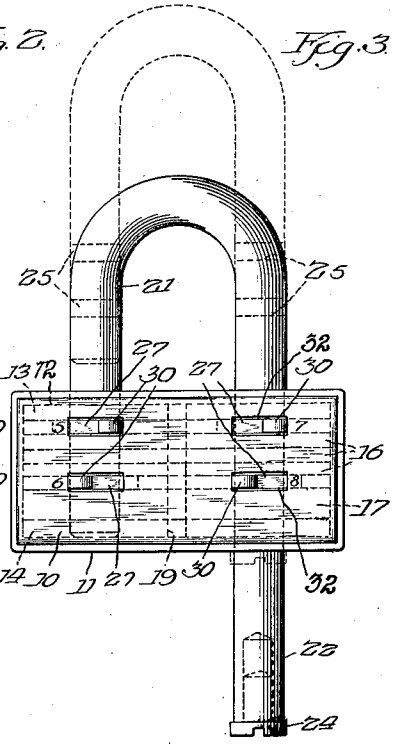


Fig. 4.

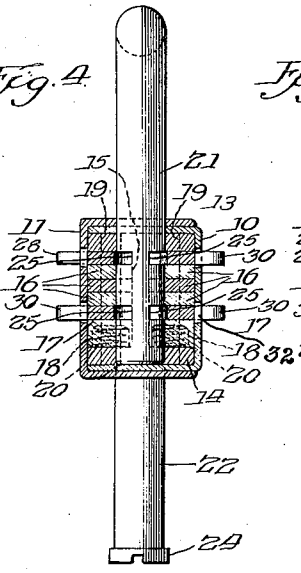


Fig. 5.

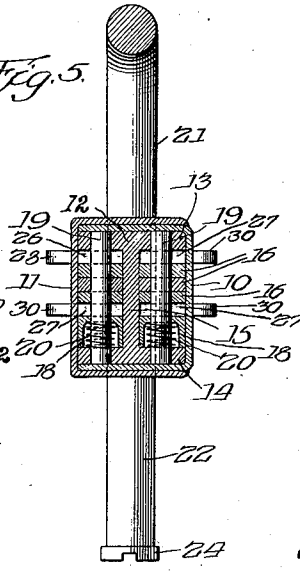


Fig. 6.

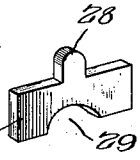
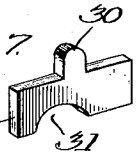


Fig. 7.



Inventor:
George F. Mayer:
By Wilkinson Huxley Byron & Knight
Attys

Patented Dec. 7, 1937 2,101,264

UNITED STATES PATENT OFFICE

2,101,264

PADLOCK

George F. Mayer, Chicago, Ill.

Application December 21, 1935, Serial No. 55,536

5 Claims. (Cl. 70—25)

My invention relates to permutation padlocks and has particular reference to a padlock having the shackle extending through the body of the lock itself, the shackle serving to hold the sections of the body in operative relation with each other and at the same time being removable therefrom for the purpose of changing the lock combination as may be desired.

Another and further object of my invention is the provision of a permutation padlock which is extremely simple in operation, is adapted for a multitude of uses, and which can be easily and cheaply manufactured.

A further object of my invention is the provision of a padlock which is simple in construction, is extremely strong, cannot easily be picked, and which can be set to almost innumerable combinations by the owner, if so desired, after the lock is sold and put into service.

Another and further object of my invention is the provision of a padlock having a plurality of sliding tumblers therein having projected portions forming fingerpieces thereon which extend through the casing on each side thereof and are adapted to be operated by the fingers of the operator, with the tumblers projecting out of the front and rear sides of the lock casing so that in locking and unlocking the device, even though the operator is being observed, the movement of the tumblers can be seen from only one side, the tumblers at the rear side of the lock being moved to their proper positions preferably out of the view of anyone observing the operations of the operator. In this manner the position of the tumblers at the rear side of the lock cannot be observed, thereby adding a measure of security to my improved lock which is not possible with locks of this type as heretofore manufactured.

These and other objects of my invention will be more fully and better understood by reference to the accompanying sheet of drawings and in which—

Figure 1 is a side elevational view of my improved padlock, the shackle being shown in open position in dotted lines;

Figure 2 is an end view of the lock shown in Figure 1;

Figure 3 is a view of the reverse side of the lock shown in Figure 1;

Figure 4 is a sectional view on line 4—4 of Figure 1;

Figure 5 is a vertical sectional view on line 5—5 of Figure 1;

Figure 6 is a perspective view of one of the tumblers used in the lock; and

Figure 7 is a perspective view of another one of the tumblers used in the lock.

Referring now specifically to the drawing and in which like reference characters refer to like parts throughout, the body of the lock comprises a casing 10, preferably rectangular in shape and closed at each of its ends and on three of its sides and open at its other side, with a cover 11 therefor which is similar in construction and adapted to be fitted over the casing 10 in telescopic arrangement therewith, as shown particularly in Figures 4 and 5 of the drawing. The casing 10 has a frame member 12 mounted therein, of substantially the same length as the casing, and I-shaped in cross section, having an upper flange portion 13 and a lower flange portion 14, and a web portion 15 which connects the flange portions 13 and 14.

Mounted in the casing 10 and extending longitudinally thereof between the flanges 13 and 14 and on each side of the web 15, is a plurality of spacers 16, 16, three on each side in the form shown, with a pair of spacers 17, 17 being provided which are fitted against the flange 14 on their lower sides and have their edges fitted against the web 15, with recesses 18, 18 provided therein on the lower side thereof. A pair of pins 19, 19 is mounted on each side of the web 15 and extend in a vertical direction through the spacers 16 and the spacers 17, with springs 20, 20 positioned around the pins 19, 19 in the recesses 18, 18 for the purpose of holding the tumblers against movement of their own weight or against easy movement, but allowing them to be moved easily between the spacers for proper operation of the lock.

A shackle 21 is provided, the long end 22 of which extends completely through the casing 10 through appropriate openings formed in the upper and lower walls of the casing 10 and through holes formed in the upper and lower walls of the cover 11, in register with the openings in the casing 10 when the casing 10 and the cover 11 are in assembled position. The shackle serves to hold the cover 11 and casing 10 in assembled relation, the long end of the shackle having a screw 24 extending longitudinally into the end thereof, the head of the screw 24 being slightly larger in diameter than the openings in the casing 10 and cover 11 so the shackle cannot be removed from the casing until the screw 24 is removed from the long end 22 of the shackle 21. The short end of the shackle 21 extends

through openings formed in the upper sides of the casing 10 and cover 11, and in normal locked position of the padlock rests upon the lower wall of the casing 10. Vertical holes are formed in the member 12 through the flanges 13 and 14 and web 15 through which both the long and short ends of the shackle pass, these holes being in alignment with the holes formed in the upper and lower walls of the casing 10 and cover 11. The spacers 16 and 17 have semi-circular recesses formed in their sides adjacent the web 15, these recesses being in alignment with the holes in the casing 10, cover 11, and member 12 to allow for the free movement of the shackle 21. A plurality of transversely extending slots 25, 25 are formed in both the long and short ends of the shackle, these slots being in spaced vertical relation with each other on the shackle, and in register with each other in horizontal relation on each of the sides of the shackle as shown.

Tumblers 26 and 27 are provided, the tumblers 26 being generally rectangular in shape and having a projection 28 forming a fingerpiece on one side thereof which extends outward through appropriate slots formed in the sides of the casing 10 or cover 11, depending upon the particular location of the tumbler 26. The tumbler 26 on the under side thereof has a semi-circular recess 29 therein, the central portion of the recess 29 being directly opposite the lug or fingerpiece 28 formed on the tumbler 26. The tumbler 26 is of the same thickness as the slots 25 formed in the shackle, and is adapted to engage therein when the shackle is in locked position in the padlock.

The tumbler 27 has a fingerpiece 30 thereon and a recess 31 on the opposite side thereof, this recess being semi-circular in form, and as will be noted, is slightly to one side of the fingerpiece 30 instead of being directly opposite the fingerpiece, as is the case with the tumbler 26 illustrated in Figure 6, and in other respects is the same size and form as the tumbler 26.

In the form shown, provision is made for four tumblers, such as shown in Figures 6 and 7, to be placed on each side of the frame 12, the upper tumblers being placed between the flange 13 and the upper pair of spacers 16, as shown, with the fingerpieces extending outward and projecting through appropriate slots 32 formed in the sides of the casing 10 and cover 11. A similar set of tumblers is placed in the lower part of the frame 12 on each side of the web 15 between the lowermost pair of spacers 16 and the bottom spacers 17, with the fingerpieces extending outward and through the slots 32 similarly formed in the sides of the casing 10 and cover 11. These slots 32, in the form shown, are substantially the same length as the diameter of the shackle 21, although they may be of various lengths, as may be desired, and may have identifying numbers placed thereon, as shown particularly in Figures 1 and 2, for purposes of giving the purchaser or user of the lock the proper combination when the lock is manufactured or sold.

In placing the tumblers in position, the spacers are moved apart a sufficient distance to receive the tumblers, and the action of the springs 20 around the pins causes sufficient friction to be maintained on the sides of the tumblers and the spacers to prevent the tumblers from moving of their own weight and causes them to be held in proper position against easy or accidental movement.

I prefer in assembling the lock to use only one or two tumblers of the form shown in Figure 6, although they may be omitted entirely if desired. It will be noted that in the tumblers shown in Figure 7, the recess 31 is in offset relation with respect to the fingerpiece 30, thereby providing what I prefer to call the long and short end of the tumbler, referring to the distance from the ends of the tumbler to the beginning of the recess 31. When the tumblers are placed in position in the lock, I place them in such manner that movement in a direction toward the long end of the tumbler serves to bring the recess 31 into register with the vertically extending holes through the casing and out of engagement with the shackle 21, thereby unlocking the shackle 21. In placing the tumblers in the lock, therefore, provision may be made, in view of the fact that they are reversible, for placing them in the lock so that some of the tumblers will be moved in one direction while others are moved in the opposite direction in order to lock and unlock the shackle. If desired, of course, the operator may use only one tumbler for purposes of locking the shackle in position in the casing or all of the tumblers may be placed in locking position if desired. When using tumblers of the type illustrated in Figure 6, it is necessary to bring the fingerpiece in direct opposite relation with respect to the center of the shackle 21, in which position these tumblers are out of engagement with the recesses in the shackle 21 and the shackle is therefore in unlocked position, while the tumblers may be moved in either direction for engagement with the shackle, bringing them into locked position.

In assembling the lock the spacers are placed in the frame at one side thereof and the tumblers placed in position. The casing is thereupon slipped over the flanges of the member 12 so that the fingerpieces project out through the openings in the side wall of the casing 10. The tumblers may thereupon be placed between the spacers exactly opposite the first mentioned spacers and the cover 11 placed in position over the walls of the casing 10. The screw 24 is then removed from the long end of the shackle 21 and the shackle placed in position through the casing, the long end being placed entirely through the casing, and the screw 24 being placed in position in the end of the leg. The tumblers, in the meantime, have been aligned to properly clear the opening through the body of the lock. The shackle in this position is in unlocked condition and may be freely moved into and out of the casing, placed through a hasp for locking purposes, and when it is desired to lock the device the shackle is placed into position so that the short end is inside of the body of the lock, whereupon the tumblers, as many as may be desired, are moved manually into locked position, thereby holding the shackle in locked position until the tumblers are properly manually aligned to release the shackle from the lock.

Should the operator desire to change the combination at any time, it may be done by removing the shackle from the lock, removing the cover 11 from the casing and changing the position of the tumblers, or reversing the position of the tumblers of the type illustrated in Figure 7 for one side of the lock. If desired, the casing 10 may be removed allowing the operator to have access to the tumblers at the opposite side, so that these tumblers may be changed at will, and the lock assembled in the reverse order as hereinabove described and the shackle reversed in po-

sition. The casing is not held together by means other than the shackle, so that it is easily removed for purposes of changing or altering the combination as may be desired.

While I have described more or less precisely the details of construction, I do not wish to be understood as limiting myself thereto, as I contemplate changes in form and the proportion of parts and the substitution of equivalents as circumstances may suggest or render expedient without departing from the spirit or scope of my invention.

I claim:

1. A padlock comprising in combination a casing consisting of a pair of members in telescopic arrangement with each other, having registering openings in two of the sides of said casing at one end thereof and at one side only at the opposite end, a frame in said casing, a plurality of sliding tumblers mounted in said frame on each side thereof and a shackle extending through said casing having long and short ends, the said shackle having tumbler slots formed in both the long and short ends thereof.

2. A padlock comprising in combination a casing consisting of a pair of members in telescopic arrangement with each other, having registering openings in two of the sides of said casing at one end thereof and at one side only at the opposite end, a frame in said casing having upper and lower flanges on each side thereof, a plurality of sliding tumblers mounted in said frame on each side thereof between the flanges of said frame and a shackle extending through said casing, the said shackle having tumbler slots formed in both the long and short legs thereof, the said tumblers being reversibly positioned in said frame whereby various combinations may be formed.

3. A padlock comprising in combination a casing consisting of a pair of members in telescopic arrangement with each other, having registering openings in two of the sides thereof at one end of the casing and registering openings in one side thereof at the other end of said casing, a shackle having long and short leg portions, the long leg portion extending through said casing, means in said shackle to prevent its removal from said casing when in unlocked position, a channel member in said casing and locking tumblers in said casing slidably mounted in said channel member and having finger pieces extending through the sides of the said casing adjacent the said locking tumbler.

4. A padlock comprising, in combination, a casing, a shackle extending through said casing having tumbler receiving recesses in at least one of the legs thereof, a frame in said casing having upper and lower flanges in each side thereof, tumblers in said casing mounted between the flanges of said frame member having finger pieces extending through the sides of the casing, and spacers in said casing between the tumblers in a vertical direction.

5. A padlock comprising, in combination, a casing, a frame in said casing of I-shape in cross section, a shackle having tumbler receiving slots therein extending through the said casing and the said frame, spacers in the said casing between the flanges of the said frame, and sliding tumblers in said casing having finger pieces extending through the walls of the casing.

GEORGE F. MAYER.