

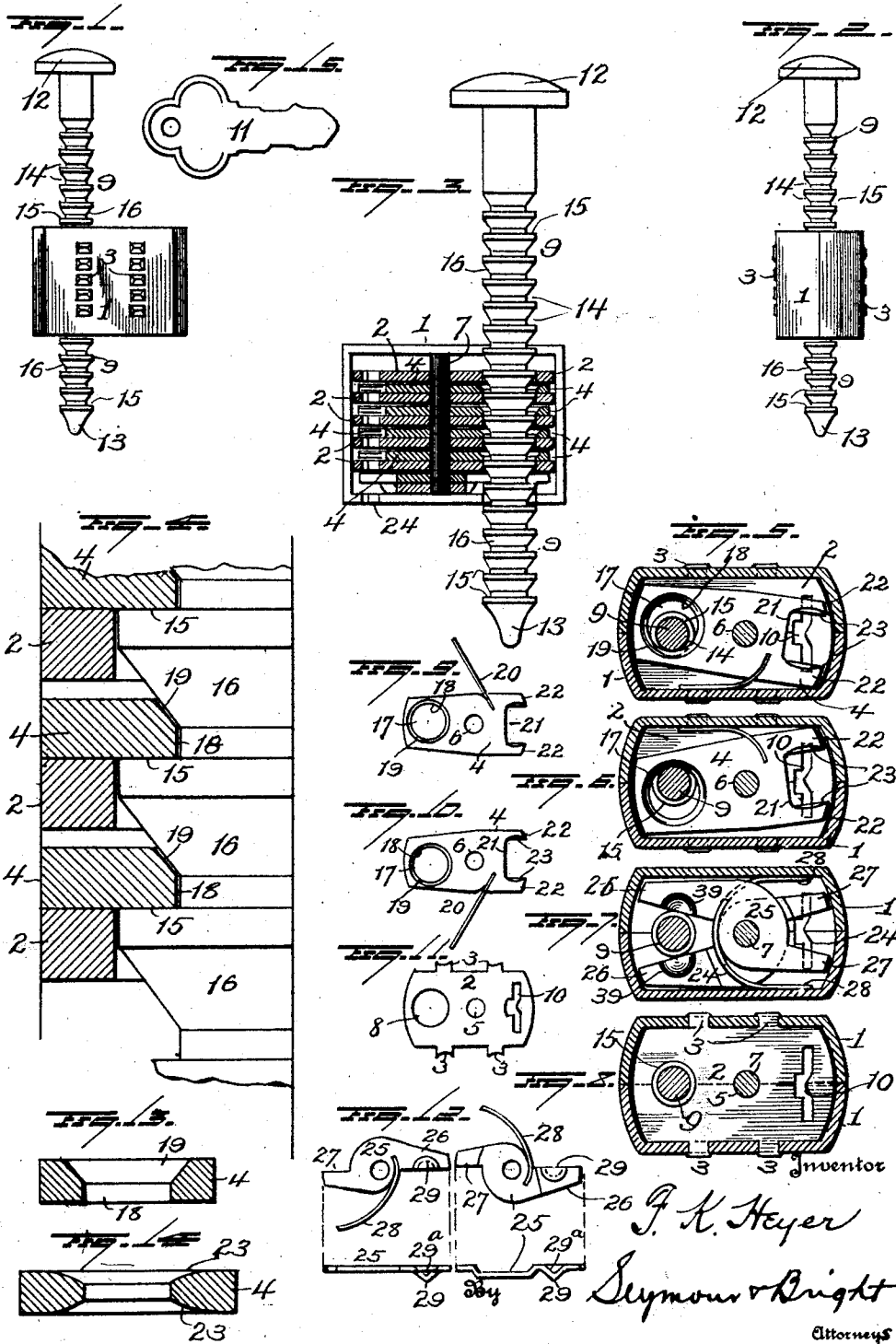
**July 13, 1926.**

F. K. HEYER

**1,592,696**

PADLOCK

Filed Nov. 14, 1925



Patented July 13, 1926.

1,592,696

# UNITED STATES PATENT OFFICE.

FREDERIC K. HEYER, OF STAMFORD, CONNECTICUT, ASSIGNOR TO THE YALE AND TOWNE MANUFACTURING COMPANY, OF STAMFORD, CONNECTICUT.

## PADLOCK.

Application filed November 14, 1925. Serial No. 69,050.

This invention relates to improvements in padlocks and more particularly to such as employ a shackle consisting of a single leg, one object of the invention being to provide a padlock of the type specified in which a plurality of key-controlled tumblers are employed to engage shoulders formed on the shackle when the shackle is passed through openings in said tumblers, the construction being such that the shackle may be passed freely in one direction through the tumblers but positively prevented from movement in the opposite direction except when the tumblers shall have been adjusted with the use of a proper key.

With this and other objects in view, the invention consists in certain novel features of construction and combinations of parts as hereinafter set forth and pointed out in the claims.

In the accompanying drawings,—

Figure 1 is a view in elevation of my improved padlock.

Figure 2 is a view taken at right angles to Fig. 1.

Figure 3 is a sectional view with the shackle in elevation.

Figure 4 is an exaggerated fragmentary view showing portions of the tumblers and shackle.

Figures 5, 6, 7 and 8 are transverse sectional views.

Figures 9 and 10 are views illustrating the tumblers but on a smaller scale than shown in Figures 5 and 6.

Figure 11 is a view of one of the cheek or spacer plates.

Figure 12 is a view illustrating the key guards.

Figure 13 is a sectional view through the shackle engaging portion of a tumbler.

Figure 14 is a sectional view through the key engaging portion of a tumbler, and

Figure 15 is a view of the key 11.

The casing of the lock is preferably made in two sections 1—1 which are secured together by means of cheek plates or spacers 2, the latter having projections 3 which pass through suitable holes in the casing members and upset as illustrated in Figure 8. A plurality of cheek plates will be employed and serve the purpose of separators for a plurality of tumblers 4. The cheek plates 2 are provided near their central portions with holes 5 which align with holes 6 in the

tumblers for the passage of a shaft 7 which provides a pivotal mounting for the tumblers. Each cheek plate is also provided with a hole 8 for the passage of a shackle 9 and with a slot 10 for the accommodation of a key 11. The shackle 9 is provided at one end with a head 12 and at its other end with a tapering portion 13. Between the head 12 and the tapering portion 13, the shackle is provided with a plurality of circumferential grooves 14 which provide shoulders 15 and a portion of the wall of each of said grooves is made tapering as indicated at 16. Each tumbler 4 is formed near one end with an opening 17 for the passage of the shackle and said hole is so shaped as to provide a cylindrical portion 18 and a tapering portion 19. The tumblers may be divided into two sets which are normally pressed in opposite directions by means of springs 20 so that the two sets of tumblers will be moved normally in opposite directions respectively so that one set of tumblers may be made to engage shackle shoulders at one side of the shackle and the tumblers of the other set caused to engage shackle shoulders at the other side of the shackle, as will be clearly apparent from a comparison of Figures 5 and 6 of the drawings. The end of each tumbler farthest removed from the hole 17 through which the shackle passes, is formed with a recess 21 providing diametrically opposite key engaging fingers or projections 22, each of which is beveled inwardly from the respective faces of the fingers as indicated at 23 so that the key 11 may be readily inserted or removed from the lock. The fingers or projections 22 of the several tumblers are so formed or proportioned that when a proper key is passed between them, all the tumblers will be moved to correctly align all the holes 17 so that the walls of none of them or any portions of said tumblers will engage shoulders of the shackle. under which conditions the shackle may be withdrawn from the lock structure.

With the construction and arrangement of parts as above described, the shackle may be readily removed to any desired extent in one direction through the lock structure but will be positively prevented from withdrawal until the holes 17 in the tumblers shall be brought into alignment with the use of a key.

The shackle will be passed through the

lock structure from one end of the latter but the key will be inserted from the opposite end, for which latter purpose the casing is provided with a key slot indicated at 24.

5 Guards 25 are located within the lock casing near the end thereof through which the key is inserted and these guards are provided with fingers 26 which normally close the shackle passage and with fingers 27  
10 which project across the key passage. The fingers 27 of the guards and the fingers 26 are maintained normally in close proximity to each other respectively by means of  
15 springs 28 and the fingers 26 are provided with projections 29 to be engaged by the shackle when it is passed in one direction through the lock structure and to be separated by the shackle so that when the shackle has been passed through the lock,  
20 the guards will be made to assume the positions shown in Figure 7. It will be observed that the shaft 7 affords a pivotal mounting for the guards 25 as clearly indicated in Figure 7. The projections 29 on the guard  
25 fingers 26 are intended to prevent the entrance of the shackle at the key end of the padlock, and said projections have counter-sunk or beveled surfaces intended to receive the tapering end 13 of the shackle and thus  
30 allow the shackle to easily force the guards apart as said shackle is passed through the padlock from the end thereof opposite that into which the key is to be inserted.

Having fully described my invention  
35 what I claim as new and desire to secure by Letters-Patent, is:

1. In a padlock, the combination of a casing, a plurality of tumblers pivotally mounted in said casing and having holes  
40 through which a shackle may pass, a shackle having a plurality of shoulders to be engaged by the tumblers, each of said tumblers having a portion of the hole therein made tapering and the shackle having tapering  
45 portions between the shoulders thereof, and springs for pressing the tumblers to locking position with the shoulders of the shackle and said tumblers having key engaging means whereby said tumblers may be re-  
50 leased from locking relation with the shackle when a proper key is inserted.

2. In a padlock, the combination with a casing and a shackle having a plurality of shoulders, of a plurality of tumblers pivotally mounted in the casing and having holes  
55 through which the shackle may pass, springs normally tending to move the tumblers into locked relation with shoulders of the shackle, and fingers on each tumbler, each  
60 finger having its inner side beveled from both faces of the finger and the fingers of the several tumblers so arranged and proportioned that upon the insertion of a proper key the tumblers will be moved so as to  
65 bring the holes through which the shackle

passes into alignment and to release the tumblers from locking relation to the shackle and permit withdrawal of the latter.

3. In a lock, the combination of a casing having aligned openings for the passage of  
70 a shackle, said casing also having a key opening, key controlled locking means for the shackle, and pivoted spring-pressed guards operable normally to obstruct the key opening and one of the shackle openings  
75 in the casing.

4. In a padlock, the combination of a casing having openings for the passage of a shackle, a shackle, a plurality of spring-pressed key-controlled means in said casing  
80 for locking said shackle in different positions, and spring-pressed guards normally operable to close one of the shackle openings in the casing.

5. In a padlock, the combination of a casing having openings for the passage of  
85 a shackle, a shackle, a plurality of spring-pressed key controlled means in said casing for locking said shackle in different positions, and spring-pressed guards normally  
90 operable to close one of the shackle openings in the casing, said shackle having a tapering end portion for cooperation with said guards to open them when the shackle is  
95 passed through the casing.

6. In a padlock, the combination of a casing having aligned openings for the passage of a shackle, said casing also having  
100 a key opening, a shackle, a plurality of spring-pressed, key controlled locking tumblers cooperable with said shackle, and spring-pressed guards operable to close one of the shackle openings and having parts normally obstructing the key opening.

7. In a lock, the combination of a casing  
105 having aligned openings for the passage of a shackle and having a key hole at one end, key controlled locking means for the shackle, and guard means normally closing the shackle opening at the key-hole end of the casing, whereby insertion of the shackle  
110 at this end of the casing will be prevented.

8. In a lock, the combination of a casing having aligned openings for the passage of a shackle and having a key hole at one end,  
115 key controlled locking means for the shackle, and guard means normally closing the shackle opening at the key-hole end of the casing, whereby insertion of the shackle at this end of the casing will be prevented,  
120 said guard means being beveled for engagement of the shackle to move the guard means aside when the shackle is passed through the casing from the end thereof opposite the end  
125 having the key-hole.

9. In a lock, the combination of a casing having aligned openings for the passage of a shackle and having a key hole at one end,  
130 key controlled locking means for the shackle, and guard means normally closing the

shackle opening at the key-hole end of the casing, whereby insertion of the shackle at this end of the casing will be prevented, said guard means comprising two pivoted members, each having a projection preventing insertion of the shackle at the key-hole end of the casing, the inner portions of said projections presenting beveled surfaces to be engaged by the shackle when inserted from the opposite end of the casing. 10

In testimony whereof, I have signed this specification.

FREDERIC K. HEYER.