May 20, 1924. 1,494,765

E. L. BARRETT

TUMBLER LOCK

Filed Nov. 10, 1921

Fig. 1

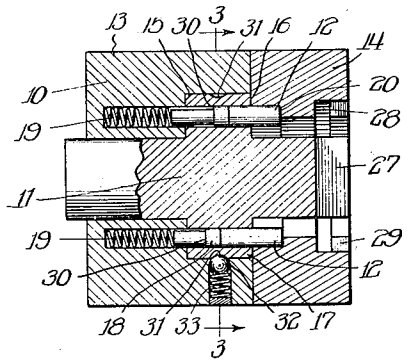


Fig. 2

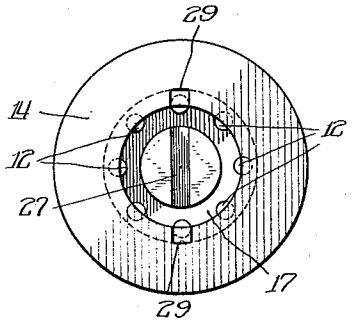


Fig. 3

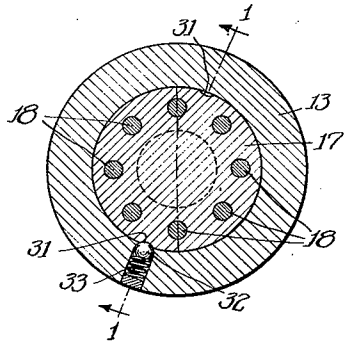


Fig. 5

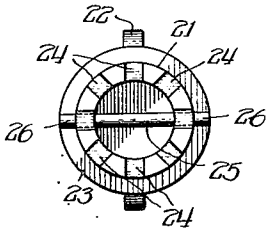
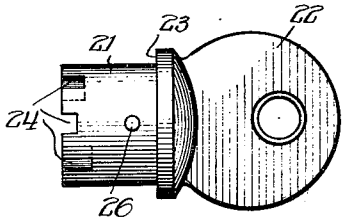


Fig. 4



Witness:
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attys.

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UNITED STATES PATENT OFFICE.

EDWARD L. BARRETT, OF OAK PARK, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO RICHARD M. DECKER COMPANY, OF CHICAGO, ILLINOIS, A COPARTNERSHIP CONSISTING OF RICHARD M. DECKER, FRANK B. HARRIMAN, M. H. DECKER, S. P. HARRIMAN, AND L. M. HARRIMAN.

TUMBLER LOCK.

Application filed November 10, 1921. Serial No. 514,221.

To all whom it may concern:

Be it known that I, EDWARD L. BARRETT, a citizen of the United States, residing at 244 Iowa St., Oak Park, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Tumbler Locks, of which the following is a specification.

The present invention relates to tumbler locks.

An object of the present invention is to provide a lock which is very difficult to pick.

A further object is to provide a lock which will baffle any thief who attempts to pick same by any of the methods ordinarily employed for this purpose, but which will not be more difficult of operation than is an ordinary lock by a person having the proper key.

Further objects will appear as the description proceeds.

Referring to the drawings,

Figure 1 is a sectional view taken along the line 1—1 of Figure 3.

Figure 2 is a view looking toward the end of the lock shown in Figure 1.

Figure 3 is a sectional view taken along the line 3—3 of Figure 1.

Figures 4 and 5 are views of a key to be used in connection with the lock illustrated in Figures 1, 2 and 3.

Referring first to Figures 1, 2 and 3, the lock is made up of three essential elements, to wit: a barrel 10, a plug 11 and tumblers 12—12. As indicated in Figure 1, the barrel 10 comprises two cylindrical members 13 and 14 which may be securely held together by any preferred means. The cylindrical members 13 and 14 provide two abutting surfaces indicated by the numerals 15 and 16 which should preferably be normal to the axis of plug 11 and which receive, between them, the collar 17 of the plug 11. The plug 11 is intended to have movement of rotation relative to the barrel 10, the annular collar 17 riding between the surfaces 15 and 16. The tumblers 12, which are mounted in parallel relation with one another and with the axis of plug 11, control the movement between said plug and the barrel 10. For this purpose the shoulder 16 and cylindrical member 13 of the barrel 10 are provided with aligned holes for receiving said tumblers 12—12.

Each of the tumblers 12—12 comprises two plungers 17 and 18 placed in axial alignment. The abutting ends of said plungers 17 and 18 should be normal to the axis of said plungers, whereby said abutting ends may be moved into the plane of the surface 15. The plungers 18—18 are urged toward the right, as viewed in Figure 1, by means of springs 19—19, into positions wherein said plungers 18—18 stop relative movement between the plug 11 and barrel 10. The right hand ends of plungers 17—17 abut against the overhanging portion 20 of the cylindrical member 14.

The cylindrical member 14 and plug 11 provide between them an annular space for the reception of a key for operating the tumblers 12—12. A suitable key for this purpose is illustrated in Figures 4 and 5. Said key has a cylindrical portion 21 and a grip portion 22. The cylindrical portion 21 is provided with a shoulder 23 which may bear against the front face of the lock. The cylindrical portion 21 is provided with serrations providing seats 24 adapted to engage the outer ends of the tumblers 12—12. The tumblers 12—12 and the key will be so designed that when said key is in its home position the seats 24 will move the tumblers 12—12 inwardly to a position substantially in the plane of surface 15, or what is practically the same thing, into the plane of the rear side of shoulder 17. The cylindrical portion 21 is provided with a cross pin 25 having projecting ends 26—26. Said cross pin 25 is adapted to lie within a slot 27 in the outer end of the plug 11, while the projecting ends 26—26 are adapted to ride in the undercut groove 28 within the cylindrical member 14 of the barrel 10. Slots 29—29 provide access for the projecting ends 26—26 to said undercut slot 28. Turning force applied to the key is transmitted to the plug through cross pin 25. By reason of the two slots 29—29, the key may be removed at the end of each half turn, i. e., when the plug is in either locking or unlocking position. If preferred, the tumblers on one side of a diametrical plane may be symmetrical with those on the other side of said

plane whereby no distinction need be made as to which projecting end 26 will be entered through either slot 29.

In order to render more difficult the picking of the lock, the plungers 18—18 are given a novel conformation, said plungers being undercut to provide abrupt shoulders 30—30. It is common practice for thieves, when attempting to pick a lock of the tumbler type, to exert a turning force on the plug and, while holding said plug under such pressure, to manipulate the tumblers. If the tumblers permit any degree of play between the plug and the barrel the thief will be enabled to successively move each tumbler to unlocking position, said tumblers being held in unlocking position by reason of the fact that they will then engage an abutting part of the barrel. According to the present invention, however, if turning force is applied to the plug 27 and while said turning force is being exerted an attempt is made to manipulate the tumblers, the shoulders 30 will engage with the surface 15 of the cylindrical member 13 of the barrel 10, preventing further movement of the plunger 18 toward the left. A thief attempting to pick a lock by any such procedure would, therefore, be baffled.

In order to hold the plug 11 in its proper position relative to the barrel 10 so that the coinciding holes between the plug and the barrel will be held in alignment, the present invention contemplates the use of a check for accomplishing this purpose. The shoulder 17 of the plug 10 is provided with oppositely placed cupped recesses 31—31 which are adapted to receive part of the surface of the ball or other check 32 which is pressed inwardly by means of the spring 33. Check 32 and recesses 31—31 will be so located that the plug 11 will be releasably held in either locked or unlocked position. The check 32 will offer no great obstacle to the turning of the plug 11 when a turning force is applied thereto, as by means of the key 22. However, said check will prevent the plug from accidentally turning from vibration or other similar causes.

The lock as disclosed herein is doubly safeguarded against thieves by reason of the construction involving the arrangement of the tumblers in axial parallelism with one another. According to the construction of the present invention, each of the coinciding holes in the plug and barrel may be drilled in one operation, whereby to reduce the amount of tolerance which must be permitted in other types of lock. By reason of the construction illustrated, the engaging surfaces of the tumblers and the holes within which they lie may be in such close contact that they will prevent any play between the plug and barrel.

The lock illustrated and described is subject to many modifications. The material of the various members may be chosen such as to prevent rust or other corrosion, or to prevent drilling into the lock. Moreover, the arrangement of the tumblers may be varied without departing from the invention. It is intended in this patent to cover all modifications that fall within the scope of the invention as defined by the appended claims.

I claim:

1. A tumbler lock having an annular barrel, a rotatable plug therein, tumblers arranged in parallel relation with one another and with the axis of said plug for controlling relative movement of said plug and barrel, said plug and barrel having an engaging surface lying substantially in a plane normal to the axes of said tumblers, said tumblers having means for limiting movement thereof in case said tumblers are manipulated while turning force is being applied to said plug and a spring pressed check for releasably holding said plug and barrel against relative movement.

2. A tumbler lock having an annular barrel, a rotatable plug therein, tumblers arranged in parallel relation with the axis of said plug for controlling relative movement of said plug and barrel, said tumblers having means for limiting movement thereof in case said tumblers are manipulated while a turning force is being applied to said plug and a spring pressed check for releasably holding said plug and barrel against accidental relative movement.

3. A tumbler lock having a plurality of tumblers arranged parallel with one another, a barrel, a rotatable plug having its axis parallel with said tumblers, said barrel and plug providing between them an annular space communicating with said tumblers, said barrel having a portion overlying all but an edge portion of the end of each of said tumblers, and a spring-pressed detent for preventing accidental turning of said plug within said barrel.

4. A tumbler lock having an annular barrel and a rotatable plug therein, tumblers arranged in parallel relation with one another for controlling relative movement of said plug and barrel, said tumblers being provided with means for preventing movement thereof in case said tumblers are manipulated while a turning force is being applied to said plug, and a spring-pressed check for holding said plug and barrel against accidental relative movement.

5. A tumbler lock having a plurality of tumblers arranged parallel with one another, a barrel, a plug rotatable within said barrel, a tumbler lock having an annular barrel and a rotatable plug therein, tumblers arranged in parallel relation with one another for controlling relative movement of said plug and

barrel, said plug and barrel having an engaging surface lying substantially in a plane normal to the axes of said tumblers, said plug and barrel providing between them an annular space communicating with said tumblers, said barrel having a portion overlying all but an edge portion of the end of each of said tumblers, and a spring-pressed check for releasably holding said plug and barrel against accidental relative movement.

Signed at Chicago, Illinois, this 4th day of November, 1921.

EDWARD L. BARRETT.