Aug. 28, 1951 H. SPIEGLER 2,565,531

PICK-PROOF PIN TUMBLER LOCK

Filed June 18, 1948

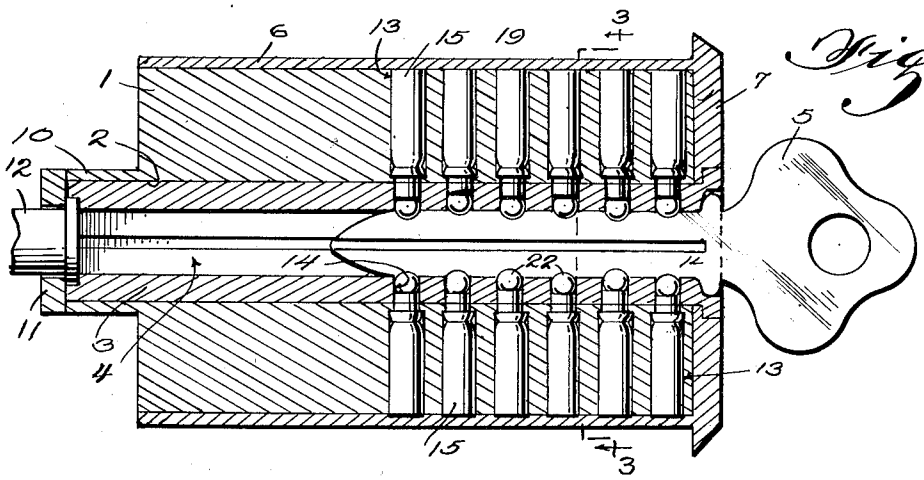


Fig. 1

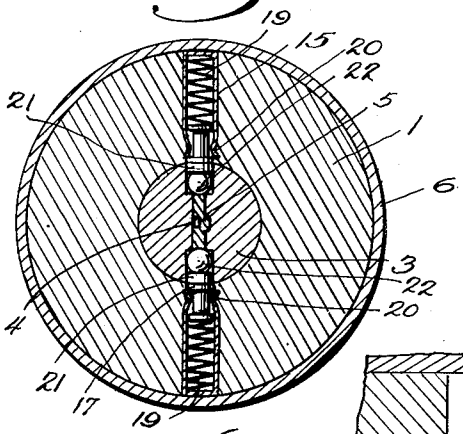


Fig. 3

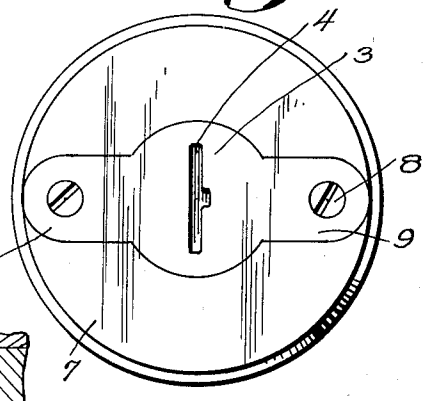


Fig. 2

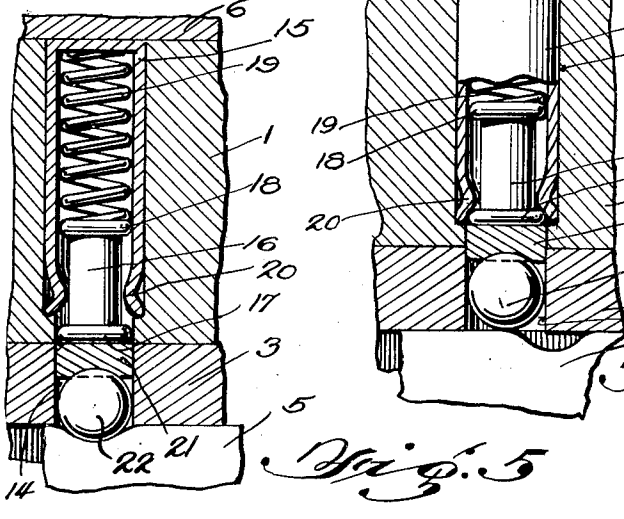


Fig. 5

Fig. 4

INVENTOR,
Howard Spiegler
BY
W. J. Eccleston,
ATTORNEY

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PICKPROOF PIN TUMBLER LOCK

Howard Spiegler, Akron, Ohio

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1 Claim. (Cl. 70—364)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

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The invention described herein, if patented may be manufactured and used by or for the Government for governmental purposes without the payment to me of any royalty thereon.

This invention relates to locks of the type comprising inner and outer cylinders, the inner cylinder being normally secured against rotation relative to the outer cylinder by one or more series of plungers or locking pins, and provided with a keyway adapted to receive a key provided with one or more series of wards for actuating the pin tumblers the varying amounts necessary to release the inner cylinder.

It is an object of the present invention to provide a lock of the above type which is so designed as to render the same highly resistant to picking.

It is another object of the invention to provide a lock of this type in which the pairs of springs and plungers are jointly encased in individual sleeves or containers to prevent liability of loss of these elements when the lock is being dismantled for repair or the like, as well as to render the lock less liable to picking and to increase its durability.

Other objects and advantages of the invention will be apparent from the following description when taken in connection with the accompanying drawings, in which:

Figure 1 is a longitudinal sectional view through the improved lock, with the key inserted;

Figure 2 is an end view of the lock with the key removed;

Figure 3 is a transverse sectional view taken on the line 3—3 of Figure 1;

Figure 4 is an enlarged fragmentary detail view of one of the containers for the spring-pressed plunger, and related parts and,

Figure 5 is an enlarged fragmentary sectional view similar to Figure 4 showing the position of the parts with the key in position for operating the lock.

The main body of the lock comprises an outer barrel 1 provided with a centrally arranged cylindrical bore 2 in which is rotatably mounted an inner barrel 3 provided with a keyway 4 the latter adapted to receive a key 5. The outer barrel 1 may be inclosed in a conventional shell or casing 6 closed by a circular face plate 7 provided with a central opening in which the outer end of the inner barrel 3 is situated and locked as by means of screws 8 passing through apertures in wings 9 formed on the outer end of the inner barrel. The rear end of the barrel 1 is reduced in its external diameter as indicated by the numeral 10 and this end of the lock is closed by a

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plate 11 provided with a central aperture through which extends the bolt operating means 12 which, of course, is secured to the rear end of the inner barrel 3.

The barrel 1 is provided with two diametrically opposed series of radial openings 13 which when the lock is in its operative position are in alignment with two similar series of openings 14 in the inner barrel 3. These openings 13 are provided for the purpose of receiving cylindrical containers 15 in each of which is mounted a plunger 16 provided with circumferential ribs 17 and 18 on its inner and outer ends respectively. The plunger 16 is biased outwardly of its container 15, that is, toward the inner barrel 3, by means of a coil spring 19 and the open end of the container through which the plunger 16 protrudes is provided with an inwardly directed bead 20 which serves to prevent the complete ejection of the plunger from its container when the container is separated from the outer barrel for repair or any other reasons.

The openings 14 in the inner barrel 3 receive pin tumblers 21 of various lengths in accordance with the construction of the particular lock. These pin tumblers 21 are each provided with a rounded seat for cooperation with a ball 22 which, in turn, cooperates with its groove in the key 5. The pin tumblers 21, as mentioned above, are of varying lengths so as to provide a combination lock but the outer end of each is out of alignment with the outer periphery of the inner barrel 3 so that the plungers 16 extend into the several openings 14 varying extents.

When the key is withdrawn from the lock the spring-pressed plungers 16 force the pin tumblers 21 and their cooperating balls 22 to their innermost position relative to the longitudinal axis of the lock as a whole and thus the several plungers 16 extend into their cooperating openings 14 in the inner barrels 3 and thus prevent its rotation. The two series of notches in the opposite edges of the key 5 are of such depths that when the key is fully inserted in the keyway 4 of the inner barrel the balls 22 and pin tumblers 21 will be so disposed that the inner ends of the plungers 16 will be moved out of their respective openings 14 and into alignment with the outer surface of the inner barrel 3, thereby releasing this barrel and permitting it to be rotated through the medium of the key 5 so as to rotate the operating shaft 12 to unlock the door or other closure on which the lock is mounted.

In this construction it will be noted that the plungers 16 and their operating springs 19 are

encased in individual containers 15, thereby forming individual units which may be readily handled in repairing a lock or in originally assembling them since the annular rib 18 on each plunger 16 prevents it being separated from its container. This construction not only aids in assembling and disassembling the locks but it is also effective in prolonging the life of the lock due to the reduction of wear and tear on these several elements. Moreover, the encasing of the plungers and springs as shown plus the arrangement of these units in double series reduces the possibility of picking the lock to an absolute minimum.

I claim:

In a cylinder lock having two concentrically arranged barrels provided with radial openings adapted to register with each other and a ball and pin tumbler positioned in a radial opening of the inner barrel, of a container having a closed outer end and an open inner end, an inwardly-directed bead surrounding the open end of the container, a plunger extending into said container, said plunger having a bead cooperating with the inwardly-directed bead surrounding the

open end of the container to prevent ejection of the plunger from the container, a compression spring in the container having one end bearing against the closed end of the container and its other end bearing against an end of the plunger, said container and spring biased plunger being positioned in a radial opening of the outer barrel whereby said plunger and tumbler are in engagement when said radial openings are in registration.

HOWARD SPIEGLER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
469,950	Shaw	Mar. 1, 1892
649,255	Noack	May 8, 1900
782,080	Stephens	Feb. 7, 1905
2,022,070	Williams et al.	Nov. 26, 1935
2,031,155	FitzGerald	Feb. 18, 1936
2,147,061	Rice	Feb. 14, 1939