

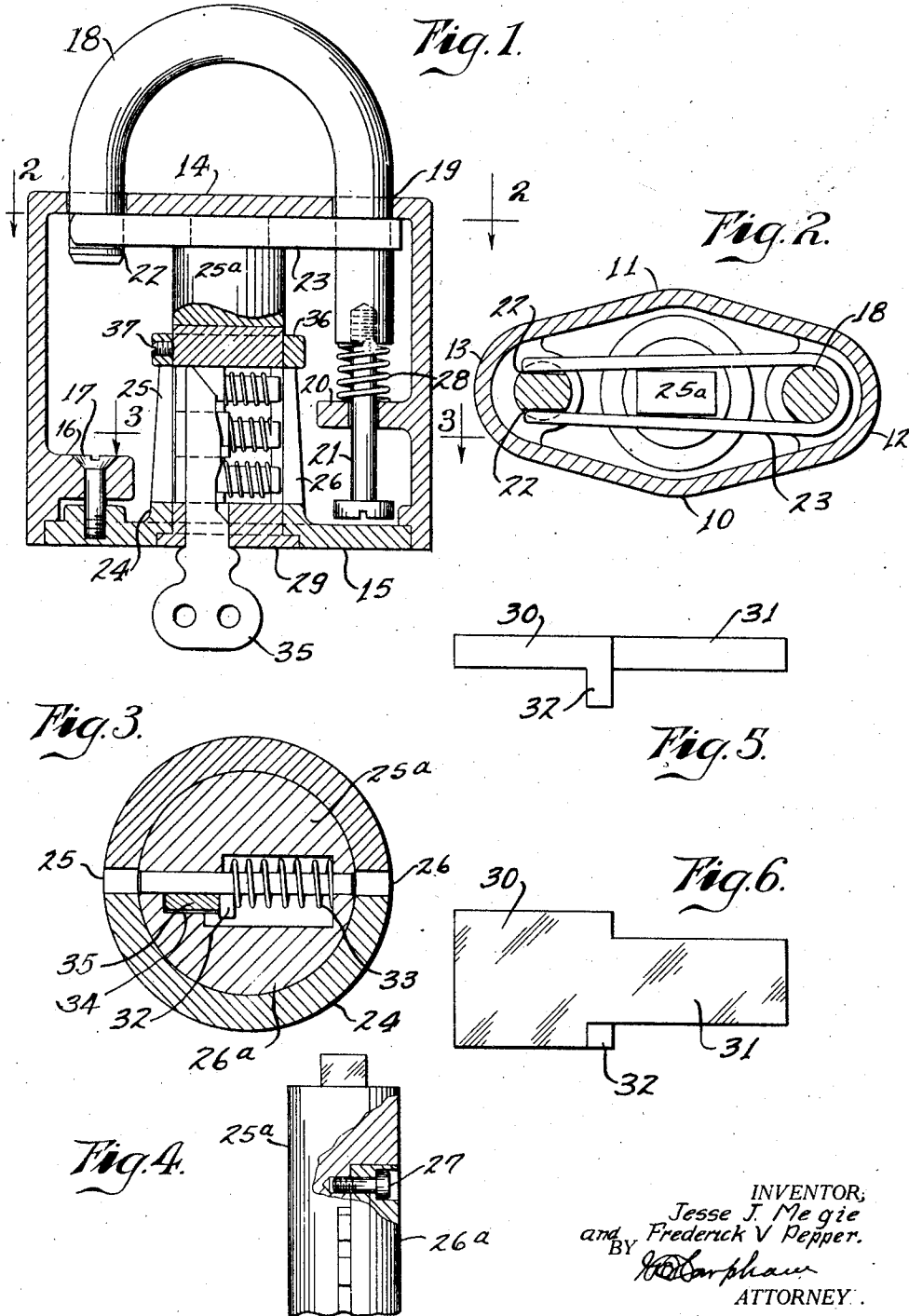
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LOCK

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UNITED STATES PATENT OFFICE.

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LOCK.

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In the drawings forming a part of this application we have illustrated our invention as a shackle lock but do not desire to be confined solely to that class of locks as the essence of our invention may be applied to door locks and other locks. Fig. 1 is a side elevation partly in section of a shackle lock embodying our invention. Fig. 2 is a cross section on the line 2-2 of Fig. 1. Fig. 3 is an enlarged cross section on the line 3-3 of Fig. 1. Figs. 4, 5 and 6 are enlarged details of certain of the parts.

Referring to the drawings, the case or shell consists of the side walls 10 and 11 and end walls 12 and 13 and pierced top wall 14 all formed integral, and removable pierced bottom wall 15. End wall 13 has a lug 16 through which a screw 17 is passed which screws into a threaded hole in wall 15 and holds wall 15 positioned in the shell. This screw is inaccessible when the lock is in locked position as shown in Fig. 1. Shackle 18 has its longer limb 1 passing through aperture 19 in the top wall. Passing through lug 20, which is integral with end wall 12, is a headed bolt 21 which screws into the end of the longer leg of the shackle and holds the longer leg from coming out through the top wall. The shorter leg joins onto the longer leg in the usual manner being formed integral therewith and when the shackle is in its locked position projects through the top wall 14 as shown in Fig. 1 and has two grooves 22 in the sides thereof, which grooves are entered by the ends of the U-shaped spring 23 that passes around the longer leg of the shackle. The bottom wall is provided with an inwardly projecting annular lug 24 which has slots 25 and 26 that extend almost its entire length and are on the central line of the shell. Projecting through lug 24 and extending to the top wall is the tumbler which is split and chambered for a portion of its length as best shown in Figs. 1, 3 and 4.

For distinction the main part of the tumbler is numbered 25^a and will be called the body. The other part 26^a which will be called the cover is connected to the body by screw 27. The tumbler has an outwardly extending ledge or head 29 that is received in a chambered recess in the bottom wall. The inner end of body 25^a is reduced in size where it passes between the members of spring 23 and is rectangular in shape as best

shown in Fig. 2, thereby when positioned holding spring 23 in place adjacent to the top wall. Surrounding body 25^a is a ring 36 which rests upon the inner ends of lug 24 when the tumbler is positioned in the bottom wall and is securely held thereon by screw 37, thereby holding the tumbler in the bottom wall. Mounted within the chambered portion of the tumbler are the tumbler fingers of which there are any desired number. We have shown three as we consider that a desirable number. These fingers are formed preferably by being stamped from sheet metal with a broad body 30 and a narrower or spring holding portion 31 for distinction called an arm. Projecting at right angles to the body is a key lug 32. These fingers are of a length just equal to the thickness of the tumbler and when mounted therein when the lock is locked the bodies are projected into slot 25 and held therein by springs 33 which are coiled around arms 31.

That portion of the chamber in the tumbler which is in the cover is wider than the portion in the body and is not so deep in the part adjacent to slot 25, thereby forming a stop against which lug 32 rests when the lock is locked being held thereby springs 33.

At this time lugs 32 project across key slot 34 in the tumbler and are engaged by the key 35 when it is inserted in the lock. When the key is pushed into the lock it causes the ends of the fingers to register with the outer edges of the tumbler when the same can be turned with the key thereby forcing the ends of spring 23 out of grooves 22 at which time spring 28 coiled around bolt 21 of the shackle forces the shorter end of the shackle out of the case and the lock is unlocked.

It will be seen from Fig. 2 that the end of body 25^a that projects between the members of spring 23 is in shape a parallelogram which is longer than the width and that it can be turned only so that its length will be at an angle to the members of the spring, whereby as soon as pressure on the key is released spring 23 returns the tumbler to its normal position and the key can be removed from the tumbler. By this construction a key of an exact shape for the tumbler fingers must be used.

If the various sections of the key are too narrow, bodies 30 will not be forced out of slot 25. If too wide the ends of 31 will be forced into slot 26. In either case the lock

could not be unlocked. It is, therefore, necessary with our construction that a perfect key must be used to unlock the lock. It will also be seen that the tumbler must be returned to its normal position before the key can be withdrawn from the lock. The tumbler can be used in a door lock by having a pinion on the body which would engage with a rack on the locking bolt, a portion of the case corresponding to the bottom plate of our present lock.

Having described our invention we claim:

1. A shackle lock having imperforate side and end walls and a pierced top wall and a removable bottom wall, having a slotted annular projecting lug, means within the walls to secure the bottom wall detachably to the other walls, said securing means being accessible only through the top wall; a shackle mounted in said case for rotary and longitudinal movement, said shackle being composed of a longer and a shorter leg, said shorter leg having notches in the sides thereof; a U shaped spring within and adjacent to the top wall, the free ends of which engage in the notches of the shorter leg of the shackle when the lock is locked; a tumbler projecting within said walls, said tumbler having a circular outline except the inner end which terminates in a parallelogram which lies between the members of the spring, said tumbler having a chamber therein provided with oppositely disposed openings through the end walls of the chamber, and a key opening in the bottom thereof; and spring operated fingers in said tumbler, said fingers being adapted to have the ends held projecting into the groove in the lug of the bottom wall when the lock is locked, said fingers having lugs adapted to be en-

gaged by a key to retract the ends from the groove in the lug of the bottom wall.

2. In a lock having a case, a rotating tumbler having a chamber therein opening through the side walls and bottom wall thereof, said chamber in part and said opening in the bottom wall forming a key way; tumbler fingers each having a body and an arm, and a lug projecting at right angles to the surface of the body; a spring on each of said arms, in combination with a detachable bottom portion of the casing having a slotted annular lug in which said tumbler is mounted; and means to hold said tumbler revolvably mounted therein.

3. In a lock of the character described, a casing having imperforate side and end walls, a perforated top and a removable perforated bottom wall, said bottom wall having an annular slotted lug projecting into the casing; a revolvable tumbler mounted in said casing, said tumbler having a chamber therein with openings in the side walls and end wall; a shackle mounted for sliding movement of both legs in said casing and for rotary movement of the longer leg, the shorter leg having notches therein; a spring mounted in said casing adapted to engage in the notches of the shackle and to be released from said notches by the movement of the tumbler; and fingers in said tumbler adapted to hold the tumbler from movement without the insertion therein of the proper key for said lock.

In witness that we claim the foregoing we have hereunto subscribed our names this 14th day of January, 1925.

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