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D. J. FOOTE ET AL

3,050,977

PERMANENT DIAL MARKER FOR PERMUTATION LOCKS

Filed June 22, 1961

Fig. 1.

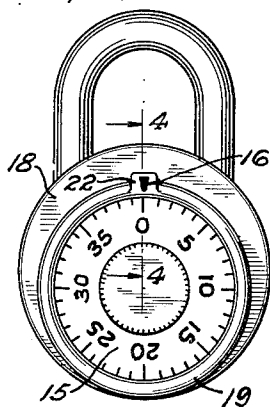


Fig. 2.

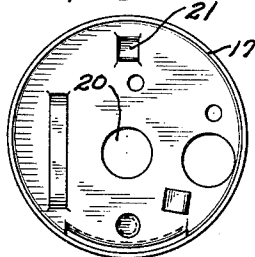


Fig. 3.

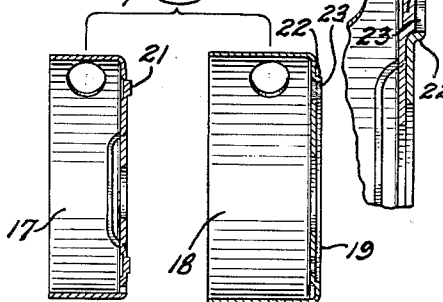


Fig. 4.

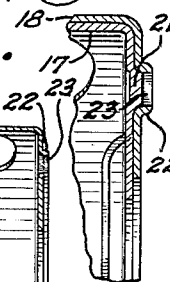


Fig. 5.

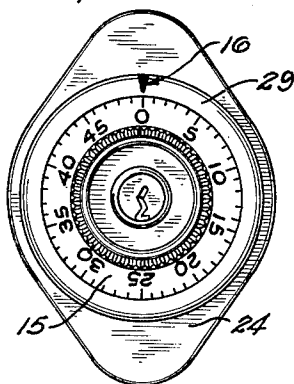


Fig. 6.

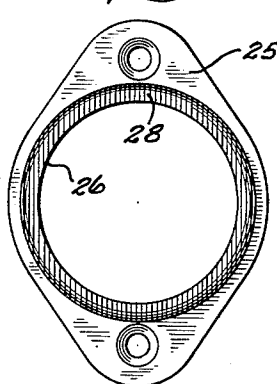


Fig. 7.

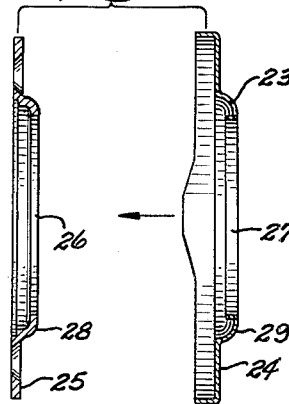


Fig. 9.

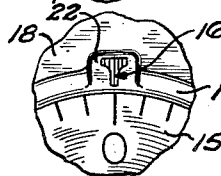


Fig. 10.

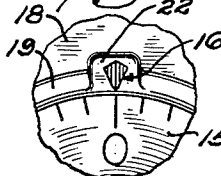


Fig. 8.

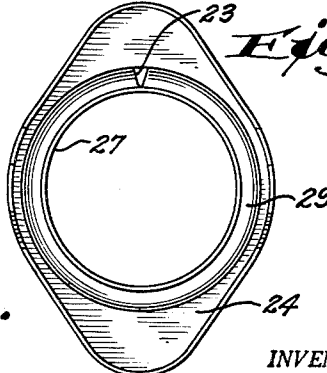


Fig. 11.

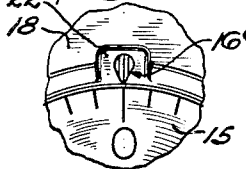
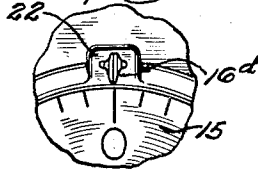


Fig. 12.



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PERMANENT DIAL MARKER FOR PERMUTATION LOCKS

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5 Claims. (Cl. 70—332)

This invention relates to improvements in permanent dial markers for permutation locks, and relates more particularly to a permutation lock having a permanent dial indicator or marker which may bear a contrasting color or marking for ready visibility, providing a sharp, distinctive and readily apparent indicator which cannot be removed by wear, or obliteration during the life of the lock.

In the manufacture of permutation locks, whether the padlock bodies or cases or the escutcheon plates thereof be of steel, stainless steel, brass or die-cast, forged or extruded materials, it is the present practice now to provide a small line or score in the metal or material of the rim immediately above the dial, which line or score may be depressed or raised and is usually painted to serve as the dial position indicator or marker. To open a conventional padlock the user must turn the dial to the right two or more full turns and stop at a designated first number when it lines up with the dial marker, following which he turns the dial and knob left one full turn past the first number and stops at the second designated or assigned number, and finally turns the dial to the right stopping at the third assigned number of the combination. Hence, in dialing the correct combination the marker or indicator must be used as a guide to effect the opening of the padlock or locker door. It is evident, therefore, that the marker or indicator is very important in determining the starting and stopping points in dialing all combinations for the locks.

Regardless of the type of metal used in the padlock case or in the locker lock escutcheon plate, the depressed line or scoring or raised portion serving as the indicator or marker is often painted and sometimes filled in with enamel of a red color to be noticeable, distinguishable, or in contrast to the color of the dial. It is, of course, highly desirable to have this marker, whether depressed, unpainted or colored, last for the life of the padlock or locker lock, but this has been difficult to attain with conventional indicators for permutation locks. If the marker has been painted, the paint chips or is rubbed or worn off through daily use and wear. If the marker is of the depressed and painted type, it will readily fill with dirt or foreign matter making it difficult to see or distinguish the marker.

Heretofore, the industry has been unable to provide, in a permutation lock, a suitable permanent marker or indicator. If a padlock or escutcheon plate were made of steel, stainless steel, brass or other similar metal with a depressed line marker filled in with enamel or the like, the latter, being foreign to the material of the case or escutcheon plate, would not readily adhere or cling to the metal thereof, and would wear or rub off relatively soon. If the depressed area or line for the indicator were left unpainted, it would not be sufficiently noticeable, and dirt would accumulate to make the marker dull and hard to see. In other instances, if the lock or plate were made of die-cast, forged or extruded metals, they were then of one-piece cases without any inner case or double wall, and such die-cast or other materials also would lack properties permitting paint or enamel to cling or adhere thereto for a sufficiently long period of time to render such markers permanent in character.

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Padlocks or permutation locker locks of the type under consideration are widely used for protection in schools, hospitals, country clubs, industrial plants, bowling alleys, American Legion posts, public and private buildings, etc., where they are subject to rough daily use, "wear and tear," and in the use of these locks, they are often subjected to unusual abuse by tamperers who may strike blows on such locks with various metal or wooden objects, and if unsuccessful in opening them, then proceed to take sharp instruments to scratch off, chip, mar, or rub off the paint in the dial marker and on the dial itself, or deface the line or scoring of the depressed marker, if it is unpainted, rendering the marker difficult to see, with the result that thereafter it is difficult for the legitimate user to accurately dial the correct combination.

Furthermore, in these locker locks having a master key-controlled feature, the dial marker is highly important when it is desired to change the combination, as it serves as the starting point and guide in dialing and following the instructions to effect a combination change.

With the foregoing in mind it is, therefore, a general object of the present invention to provide a permutation padlock or locker lock having a dial marker so constructed that it is of a permanent and lasting nature relative to the life of the padlock, being characterized by a contrasting color or marking which is sharp and easily visible, and which cannot be removed by wear, chipping, or scratching, said indicator serving as the starting or stopping point in relation to dialing operations to open the lock, or relative to which, in a locker lock, the combinations are changed.

A more specific object of the invention is to provide, in a permutation lock, a dial marker or indicator wherein the pointed shape or design thereof is cut out of pierced into the metal of the outer case (of a padlock) or the escutcheon plate (of a locker lock), whereby a contrasting space or area of the inner case below the cut out or pierced opening is provided, the surface of which may be painted, dyed, plated, hatched, lined or otherwise scored, which marked surface, below the outer face of the lock, is easily visible through the hole, when the combination is dialed, affording a dial marker permanently cut into the very metal of the lock itself, but protected against obliteration.

A further, more specific object of the invention is to provide, in a permutation lock, a pierced or specially shaped opening in the metal of a one-piece padlock case or escutcheon plate of a locker lock, which opening will be permanent and serve as the dial marker as the combination of the lock is dialed.

A further object of the invention is to provide, in a permutation lock, a colored, plated, or lined area immediately below a specially shaped cut-out or pierced hole in the outer case or plate, the opening and registering marked inner surface combining to form a permanent dial marker or indicator for a user in dialing the lock combination.

A further specific object of the invention is to provide a padlock dial indicator wherein a lower colored, plated, or lined area is well protected by a cut-out or pierced hole in the outer case, and will not wear, chip, scratch and rub off or become discolored, the lower colored or marked surface being on another part of the lock which is usually of a different type of material than the outer case or plate having the cut-out or pierced hole therein, providing a contrast which will accentuate the dial marker.

A further object of the invention is to provide, in a permutation lock, a permanent dial marker formed by a hole in the case or escutcheon plate of the lock, said hole and its backing surface having a broader surface and wider shape than a mere line, which prevents easy accumulation of dust or dirt, which broader shape serves

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to make the indicator or marker always clear and noticeable.

A further object of the invention is to provide, in a permutation padlock or locker lock, a specially formed and protected, readily visible dial indicator which does not complicate the ordinary and usual manufacture and assembly of the locks, nor add to the cost thereof, but which dial marker is efficient, permanent, effective, and serviceable for the same life as the locks.

A further object of the invention is to provide a novel type of permanent dial marker or indicator for permutation locks, which is distinctive in shape as compared with a mere line, and which enhances the performance, use, and ease in dialing of the lock, and which is well adapted for the purposes described.

With the above and other objects in view, the invention consists of the improved permanent dial marker for permutation locks, and its parts and combinations as set forth in the claims, and all equivalents thereof.

In the accompanying drawings, in which the same reference characters indicate the same parts in all of the views:

FIG. 1 is a front view of a permutation padlock equipped with the improved permanent dial marker;

FIG. 2 is an inner face view of the inner case of a permutation padlock showing a raised area bearing a demarcation for dial position indicating purposes;

FIG. 3 is an exploded view in vertical section of the inner and outer permutation padlock cases showing the manner in which the demarked protrusion on the face of the inner case registers with an outwardly offset opening in the outer case;

FIG. 4 is an enlarged fragmentary detail sectional view taken approximately along the line 4—4 of FIG. 1;

FIG. 5 is a front view of the permutation lock adapted for lockers or the like and including an escutcheon plate and dialing knob assembly formed with cooperating means to provide a permanent dial marker;

FIG. 6 is a front view of the inner dial retaining plate of the locker lock of FIG. 5 showing a circular rim portion having cooperating demarcations thereon;

FIG. 7 is an exploded view, in vertical section, of the inner dial retaining plate of FIG. 6 and the cooperating escutcheon plate of the lock of FIG. 5 showing the raised cut-out portion in the escutcheon plate through which a portion of the demarked rim of the inner dial is visible for dial marker purposes;

FIG. 8 is an inner face view of the escutcheon plate of the form of lock shown in FIG. 5 illustrating one shape the dial marker opening therein may take;

FIGS. 9—12, inclusive, are slightly enlarged fragmentary front views of a permutation lock illustrating alternative forms of the dial marker opening in the outer case of the lock.

To open a permutation lock, whether it be a permutation padlock as illustrated in FIG. 1 or a locker lock as shown in FIG. 5, it is customary to turn the dial 15 two or more full turns to the right and to stop at the first designated number of the combination when the graduation thereof aligns with the dial marker, generally indicated by the numeral 16. Then the operator turns the dial 15 one full turn beyond the first number and stops at the second assigned number of the combination whose graduation should be brought into alignment with the dial marker 16. The dial is finally turned to the right to the third assigned number of the combination, whereupon the shackle of the padlock of FIG. 1 is released, or the internal permutation mechanism of the locker lock of FIG. 5 releases a latching bolt (not shown). The present invention is concerned with the provision in a permutation lock, regardless of its type, of a permanent dial marker which will, regardless of wear, weathering, etc., provide a sharp distinctive and readily apparent dial marker or indicator. The permanent dial marker of the present invention can take a variety of forms, as will appear hereinafter.

With reference to the permutation padlock illustrated in

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FIGS. 1—4, inclusive, it should be understood that the padlock includes an inner case 17 of cupped formation and a cup-shaped outer case 18. The latter has a circular opening in its front face surrounded by an outwardly struck bead or rim 19 to rotatably mount the dial 15, the latter having an axial shaft (not shown) which extends through an opening 20 therefor in the front wall of the inner case 17 and which connects with and operates the permutation mechanism (not shown) within the lock body. The inner and outer case members 17 and 18 are formed of any suitable metal. During the production of the inner case 17 an area on the front wall thereof adjacent the upper periphery of the inner case is bumped or formed with an outwardly projecting protrusion or boss 21 and the outer surface of the latter preferably bears a suitable type of demarcation which may be a permanent or durable type of coloring or plating or the surface may be lined, cross-hatched, etched, or otherwise rendered distinctive or eye-catching in appearance.

The upper portion of the bead 19 of the outer case 18 is provided with a corresponding boss or bumped-out area 22 into which the demarked boss 21 of the inner case 17 is adapted to project when the inner case is nested within the outer case in the assembled condition of the lock, as shown in FIG. 4. Additionally, the outer surface of the boss 22 in the outer case has an opening 23 cut therein which may take a variety of shapes, as illustrated in FIGS. 1, 5, 8, 9, 10, 11 and 12.

It will thus be seen that in the assembled condition of the permutation padlock the dial marker or indicator 16, with which the assigned numbers of the dial 15 are to be brought into registration, comprises the specially shaped opening 23 in the outer case below which is seated and in registration therewith, the demarked inner case boss 21, the visible surface of the latter being recessed inwardly from the outer face of the outer case in the nature of a well and is thus protected against tampering and possible obliteration through wear, exposure, etc.

The adaption of the invention to permutation locks for lockers and the like is illustrated in FIGS. 5—8, inclusive. The construction of this type of lock is covered in the copending Foote and Berkowitz application, Serial No. 21,306, now Patent No. 3,023,602, and the same includes as escutcheon plate 24 and a dial retaining plate 25. In assembled condition the latter is adapted to telescope into the escutcheon plate 24 and the large registering openings 26 and 27 in the escutcheon and dial retaining plates 24 and 25, respectively, accommodate the dial 15 whose peripheral portion is rotatably engaged by the outwardly struck bead or rim 28 surrounding the opening 26 in the dial retaining plate.

It should also be observed that the outer face of the escutcheon plate, surrounding its dial opening 27, is provided with a bead 29 to accommodate the bead 28 of the dial retaining plate. The upper portion of the escutcheon plate bead 29 is formed with a cut-out, opening or slot 23 which can take the shape of any of the openings 23 heretofore referred to, the various shapes of indicators or markers being generally designated 16, 16a, 16b, 16c and 16d in FIGS. 1, 5, 9, 10, 11 and 12 respectively.

When the dial retaining plate 25 of FIGS. 6 and 7 is nested into the escutcheon plate 24 the dial retaining plate rim 28 will have an area which will be inset inwardly, but readily visible through, the opening or cut 23 in the rim 24 of the escutcheon plate. To render said visible area, which is in registration with the opening 23, especially apparent and distinctive, it may be painted, dyed, marked, etched, plated, or treated otherwise in a local area on the bead 28 in registration with the opening 23, or it may be more convenient to color, mark or otherwise distinctively form the entire outer surface of the dial retaining plate bead 28, as shown in FIG. 6.

It will thus be seen that in the permutation lock provided with the improved permanent dial marker, the distinctive representation, marking, coloring or the like

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is applied to a portion of an inner surface of the lock which is visible through a distinctively shaped slot or aperture in an outwardly offset portion of the outer surface of the lock so that the shaped aperture or cut, together with the distinctively delineated surface area inwardly thereof, set into a well, so to speak, will provide a permanent dial marker or indicator. The protected and inaccessible dial marker will, therefore, remain visible and distinctive throughout the life of the lock itself. Not only is the dial marker characterized by the set-in distinctively indicated area, but it is further characterized by the shape and outline of the cut or aperture in the outer face of the lock. The principle of applying a specially shaped cut-out or marker with a surface area therebehind, regardless of whether the surface is colored, marked, etched or lined, may be applied to one-piece lock cases made of die cast, forged or extruded metals as well as to the specific forms of locks here illustrated.

The improved permanent dial marker for permutation locks while simple and inexpensive gives a distinctive appearance to the lock in addition to providing an enduring marker or indicator. The permutation lock dial marker is furthermore novel, practical, and well adapted for the purposes described.

What is claimed as the invention is:

1. In a permutation lock having a case with an externally accessible graduated dial rotatably mounted in an outer wall thereof, said outer wall of the case having an aperture therein beyond a peripheral portion of the dial, and a surface within the case outwardly of a peripheral portion of the dial and off-set inwardly from the outer wall of the case and registering with said aperture to form a well-like indicator outwardly of the periphery of the dial relative to which selected graduations on the dial may be brought into registration.

2. In a permutation lock having a case with an externally accessible graduated dial rotatably mounted in an outer wall thereof, said outer wall of the case having a distinctively shaped aperture therein outwardly of a peripheral portion of the dial, and a protuberance within the case outwardly of the periphery of the dial and inwardly off-set from but registering with the aperture in the outer wall of the case to form therewith a well-like indicator radially outwardly of the periphery of the dial relative to which selected graduations on the dial may be brought into registration.

3. In a permutation lock having a case with an externally accessible graduated dial rotatably mounted in an outer wall thereof, said outer wall of the case having

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a slot radially outwardly of a peripheral portion of the dial, and a surface within the case radially outwardly of the periphery of the dial being off-set inwardly from the outer wall of the case and registering with said slot and bearing a distinctive demarcation to form with the slot a well-like indicator beyond the periphery of the dial and relative to which selected graduations on the dial may be brought into registration.

4. In a permutation lock having a case with a relatively large opening in an outer wall thereof with a graduated dial set thereinto and rotatably mounted relative to the outer wall of the case, said outer wall of the case having therein a distinctively shaped narrow opening adjacent radially outwardly of a peripheral portion of the dial, and a protuberance within the case beyond the periphery of the dial and inwardly off-set from but registering with the narrow opening in the outer wall of the case with the visible surface of said protuberance having an appearance contrasting with that of the outer wall of the case thereadjacent, said narrow opening and protuberance surface forming a dial indicator radially outwardly of the dial periphery and relative to which selected graduations on the dial may be brought into registration.

5. In a permutation lock, an outer case having a relatively large opening in its outer wall surrounded by a bead, a graduated dial set into said opening with the periphery of the dial being rotatably engaged by said bead with all of the dial graduations exposed, a portion of said bead radially outwardly of the dial periphery having a distinctively shaped narrow opening therein, an inner element nested within the outer case and having a surface protuberance extending into the bead in registration with the narrow opening in the latter, the entire protuberance being disposed radially outwardly of the dial periphery, a surface portion of said protuberance being set in relative to the outer wall of the outer case and having a distinctive demarcation, said narrow opening and protuberance surface forming a dial indicator relative to which selected graduations on the dial may be brought into longitudinally aligned registration and which is protected against obliteration.

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