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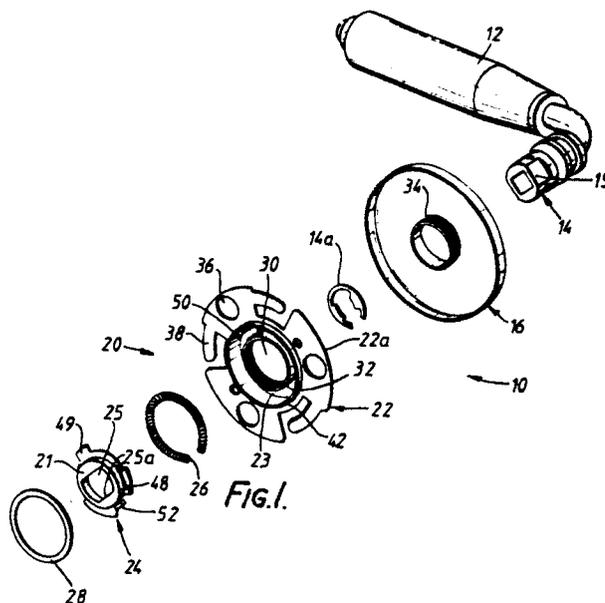
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Door handle mounting.

A door handle mounting includes an integral fixing plate (22) with provision (36, 38) for location or securement of the mounting on a door. The plate defines an arcuate recess (23) about a central aperture (30) to receive a door handle shaft. A disc (24) is rotatably seated on the fixing plate (22) and is engageable with the shaft. An elongate spring (26) is housed in the recess (23) so as to be resiliently compressible by the disc (24) when the latter rotates with the handle shaft from a rest position. A locking ring (28) may be held by the fixing plate (22) to retain the disc (24) in situ as it rotates. The fixing plate (22) may include an internal journal bearing surface (46) for the rim (48a, 49a) the disc (24) and an annular shoulder (44) adjacent the bearing surface for seating the disc.



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"DOOR HANDLE MOUNTING"

This invention is concerned with the installation of door furniture and has particular application to the mounting of lever door handles.

Applicant's prior U.S. patent 4,037,865 discloses a concealed door handle mounting in which the escutcheon plate is threadedly fastened to a rear fixing plate after the latter has been secured to the door. The fixing plate may have apertures for screws or other fasteners, and/or circumferentially extending tongues for engagement with an aperture in the door.

Applicant's prior U.S. patent 4,142,748 discloses a more complex concealed door handle mounting for knob-type handles with a privacy lockset, in which a semi-toroidal compression spring is retained within a two-part housing and biases the knob-type handle to its rest or closed position.

It is an object of the invention to achieve a door handle mounting for simple lever handles which includes spring return for the handle but permits retention of the advantageous concealed mounting features of the prior patents.

The invention accordingly provides a door handle mounting comprising:

an integral fixing plate including means for location or securement of the mounting on a door, and defining an arcuate recess about a central aperture to receive a door handle shaft;

a disc member rotatably seated on said fixing plate and engageable with said handle shaft for rotation therewith;

elongate spring means housed in said recess so as to be resiliently compressible by said disc member when the latter rotates with the handle shaft from a rest position; and

a locking ring held by said fixing plate to retain the disc member in situ as it rotates.

Advantageously, the mounting further comprises a lever handle and a shaft associated with the handle, which shaft projects through the central aperture of the fixing plate and engages said disc member.

The invention also provides a door handle mounting comprising:

a fixing plate having means for location or securement of the mounting on a door, and defining an arcuate recess about a central aperture to receive a door handle shaft;

means on said fixing plate defining an internal

bearing surface and an annular shoulder adjacent said bearing surface;

a disc member rotatably seated on said shoulder with its rim on said bearing surface, and having means for engagement with said handle shaft;

respective stop surfaces on said plate and said disc member, both disposed transversely in said recess; and

elongate spring means housed in said recess with its respective ends in engagement with said stop surfaces, whereby, on rotation of the disc member in one direction from a rest position, said spring means is resiliently compressed or tensioned, thereby facilitating return of the disc member to said rest position; and

means defining said rest position of the disc member.

The recess and shoulder are preferably annular. The shoulder advantageously extends about the rim of the recess.

The disc member advantageously includes means providing a mounting for an escutcheon plate; such means may comprise, for example, a central internally threaded socket complementary to an externally threaded boss on the escutcheon plate.

Preferably, said spring means is under compression in said recess when the disc member is in said rest position, and is further resiliently compressed when the disc member rotates from said rest position

The means defining the rest position of the disc member may comprise opposed transverse abutments on the fixing plate and the disc member. Further opposed transverse abutments on these elements advantageously define a limit position for rotation of the disc member in said one direction.

The respective stop surfaces may be provided by an upstanding land in the recess and by an outstanding lug on the disc member.

The invention will be further described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is an exploded perspective view of an assembly of a lever handle and associated escutcheon plate with a handle mounting in accordance with the invention;

Figure 2 is an axial cross-section of the principal portion of the assembly;

Figure 3 is an enlargement of a small portion of Figure 2;

Figure 4 is a cross-section on the line 4-4 in Figure 2;

Figure 5 is a view similar to Figure 4 but showing the assembly in the door open condition; and

Figure 6 provides front and side elevations of the disc.

The illustrated assembly 10 includes a lever handle 12 with an integral shaft 14, an escutcheon plate 16 and a door handle mounting 20. The principal components of mounting 20 are a fixing plate 22 which, inter alia, defines an annular recess 23, a toroidal compression spring 26 retained in recess 23, a disc 24 in rotatable seated engagement with plate 22, and a locking ring 28 for retaining disc 24 on plate 22. Disc 24 has a boss 21 and a central opening 25 with two flat sides 25a and this opening serves as a socket to receive the complementary shaped end 15 of shaft 14 whereby handle 12 is irrotationally coupled to disc 24. The handle is held in place by a circlip 14a on shaft 14.

Fixing plate 22 has a central circular opening 30 bounded by an internally threaded flange 32 which is threadingly engageable with an externally threaded boss 34 on escutcheon plate 16. Fixing plate 22 is also provided towards its outer rim with suitable mounting apertures such as 36 for receipt of screws or other fasteners for securing the plate to a door. In addition, there are three circumferentially extending tongues 38 spaced radially inwardly from the outer rim 22a of the plate. The free ends of these tongues are displaced rearwardly out of the plane of the plate, i.e. in the direction away from the escutcheon plate, for fitting snugly into an aperture in the door to accurately locate the assembly.

Internal flange 32 and an outer cylindrical portion 40 of plate 22 co-operate to define the aforementioned annular recess 23, which opens to the rear of the plate. About the outer edge of this recess there is a shallow annular skirt 42 which is disposed so that there is defined a narrow annular shoulder 44 (Figure 3) at the rim of the recess in a plane normal to the axis of the assembly. Shoulder 44 is in turn surrounded by an inwardly raised annular journal bearing surface 46. Disc 24 has a radially projecting flange 48 of almost semicircular extent at its periphery and, co-planar with and symmetrically opposite flange 48, a tab 49 with an outer rim 49a (Figure 6) on a common circle with the rim 48a of flange 48. Flange 48 and tab 49 are dimensioned to rotatably seat the disc on shoulder 44 in firm sliding journal engagement with bearing surface 46. Flange 48 extends between radial edges defining respective transverse abutments 47a, 47b for a purpose to be described, and tab 49 similarly extends between radial edges defining respective transverse abutments 45a, 45b.

Annular recess 23 is interrupted, firstly, by an L-section land 50 on fixing plate 22 and, secondly, by an axially projecting lug 52 on disc 24. Land 50 also interrupts bearing surface 46. Land 50 and lug 52 define respective pairs of stop surfaces 50a, 52a and 50b, 52b between one of which pairs compression spring 26 is mounted. The assembly is such that in the normal horizontal condition of handle 12, disc 24, which it will be remembered rotates with the handle shaft, is in its rest position: abutment 47a opposes and contacts the outer part of stop surface 50a to define a rest position for the disc at which handle 12 is horizontal. Spring 26 is under compression in recess 23 between stop surfaces 50b, 52a on land 50 and lug 52: the spring has been compressed or loaded during assembly by rotating disc 24 until flange 48 drops onto shoulder 44 behind land 50. When the handle is turned downwardly to open the door, disc 24 is rotated from the rest position and spring 26 is resiliently compressed by lug 52; as soon as the handle is released the spring rotates the disc back until abutment 47a engages land stop surface 50a, thereby bringing handle 12 back to its horizontal position. A limit position for rotation of disc 24 is defined by engagement of abutment 45a with stop surface 50b.

As already foreshadowed, the assembly of plate 22, disc 24 and spring 26 is maintained by annular locking ring 28. Ring 28 is dimensioned to fit firmly within skirt 42 on a secondary shoulder 43 (Figure 3) in light engagement with land 50 and the back of disc 24 about its boss 21. The ring is itself locked in place on assembly by rolling the outer edge of skirt 42 behind the ring, as seen at 42a in Figure 3.

It will be appreciated that the illustrated mounting comprising fixing plate 22, disc 24, spring 26 and locking ring 28 affords a highly compact and effective arrangement for incorporating a spring return for the lever handle while retaining previously known but advantageous features of the concealed fixing, for example the engagement between the escutcheon plate and the fixing plate and the hidden screw apertures and tongues on the fixing plate.

It will also be noted that by mounting spring 26 between the other stop surfaces 50a, 52b of land 50 and lug 52, and locating disc 24 with flange 48 on the other side of stop 50, the mounting can be readily converted between a left handle and a right handle.

It will of course be understood that the present invention has been described above purely by way of example, and modifications of detail can be made within the scope of the invention.

Claims

1. A door handle mounting comprising:

an integral fixing plate including means for location or securement of the mounting on a door, and defining an arcuate recess about a central aperture to receive a door handle shaft;

a disc member rotatably seated on said fixing plate and engageable with said handle shaft for rotation therewith;

elongate spring means housed in said recess so as to be resiliently compressible by said disc member when the latter rotates with the handle shaft from a rest position; and

a locking ring held by said fixing plate to retain the disc member in situ as it rotates.

2. A door handle mounting according to claim 1 further comprising a lever handle and a shaft associated with the handle, which shaft projects through the central aperture of the fixing plate and engages said disc member.

3. A door handle mounting according to claim 1 wherein said fixing plate includes an internal journal bearing surface for the rim of the disc member and an annular shoulder adjacent said bearing surface for seating the disc member.

4. A door handle mounting according to claim 3 wherein said fixing plate defines a further annular shoulder, to seat said locking ring, outwardly of said bearing surface.

5. A door handle mounting according to claim 1 wherein, when said disc member is in said rest position, said spring means is under compression in said recess between respective transverse stop surfaces on the disc member and in said recess.

6. A door handle mounting according to claim 5 wherein said respective stop surfaces are provided by an outstanding land in said recess and by an outstanding lug on the disc member.

7. A door handle mounting according to claim 1 wherein said disc member further includes means providing a mounting for an escutcheon plate which is hidden from external view by the escutcheon plate.

8. A door handle mounting comprising:

a fixing plate having means for location or securement of the mounting on a door, and defining an arcuate recess about a central aperture to receive a door handle shaft;

means on said fixing plate defining an internal bearing surface and an annular shoulder adjacent said bearing surface;

a disc member rotatably seated on said shoulder with its rim on said bearing surface, and having means for engagement with said handle shaft;

respective stop surfaces on said plate and said disc member, both disposed transversely in said recess;

and

elongate spring means housed in said recess with its respective ends in engagement with said stop surfaces, whereby, on rotation of the disc member in one direction from a rest position, said spring means is resiliently compressed or tensioned, thereby facilitating return of the disc member to said rest position; and

means defining said rest position of the disc member.

9. A door handle mounting according to claim 8 further comprising a lever handle and a shaft associated with the handle, which shaft projects through the central aperture of the fixing plate and engages said disc member.

10. A door handle mounting according to claim 8 wherein said spring means is under compression in said recess when the disc member is in said rest position, and is further resiliently compressed when the disc member rotates from said rest position.

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