

PRIVACY ADAPTOR FOR DOOR FURNITURE

Field of the Invention

This invention relates generally to door furniture and is concerned
5 particular with providing a releasible snib mechanism which may be incorporated
into a door latch assembly or provided as a privacy adaptor for incorporation in
door latch assembly. In a particular though not exclusive aspect, the invention
concerned with locking systems adapted for retro-fitting to existing door furniture.

10

Background Art

United States patent 4142748, assigned to the present applicant, disclosed
privacy lock arrangement for door latch assemblies which allows an internal door
latch to be snibbed on a first side to lock the latch against entry from the other side
but to be automatically released by simple rotation of the handle at the first side.
15 Privacy Lock arrangements in general ensure privacy for the occupant of a room
against unexpected entry and are widely used on bathroom, toilet and bedroom
doors. The particular arrangement of US patent 4142748 includes a pair of rotary
members which interengage with one another so that they can rotate independently
through a limited angle of rotation only. A pivoted snib member has a first end
20 engageable with one of the rotary members to positively lock it against rotation
a second dog which engages the other rotary member in such a way that the relative
rotation of the rotary members is effective to move the snib member out of
engagement with the locked rotary member.

The arrangement of US patent 4142748 has the attraction that it may
25 provided as an adaptor assembly between a backing plate and an escutcheon and
therefore does not require modification of the handle, but is also a relatively
complex mechanism to manufacture.

Earlier privacy lock arrangements are to be found, for example, in US patent
3471190, and in British patents 861002 and 1159161.

30

A variation of the arrangement of US patent 4142748 is disclosed in the
present applicant's co-pending Australian patent application 19655/92. In that case
the engagement between the releasing rotary member and the snib is by way of

lateral pin on the snib which projects parallel to the main spindle axis and is received in a V-shaped cut-out in a head portion of the rotary member.

Disclosure of the Invention

It is an objection of the present invention to provide a releasible snib mechanism for a door latch assembly which may be employed as an improved privacy lock arrangement.

The invention accordingly provides a releasible snib mechanism for a door latch assembly which includes a body, and a first rotary member disposed in the body and adapted to be engaged by and rotated with a door latch spindle. A snib member is mounted on the body for movement between a snibbing position in which the first rotary member is snibbed against rotation and a freeing position in which the first rotary member is free to rotate with the door latch spindle. A second rotary member is disposed in the body adjacent the first rotary member and is adapted to be engaged by and rotated by a shaft means. This second rotary member is arranged upon initial rotation of the shaft means to move the snib member from its snibbing position to its freeing position and upon continued rotation of the shaft means to provide rotation to the first rotary member. The first and second rotary members include respective first and second formations which are disposed mutually adjacent when the rotary members are at a predetermined relative position, for cooperating with a complementary snib formation on the snib member. The first formation and snib formation affect the aforementioned snibbing of the first rotary member and the second formation is effective as camming means during said initial rotation to act on the snib formation to move the snib member to its freeing

position.

Brief Description of the Drawings

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

Figure 1 is a partially sectioned, somewhat diagrammatic axial view of a door latch assembly in situ, having a privacy adaptor which incorporates a releasible snib mechanism according to an embodiment of the invention;

Figure 2 is an exploded perspective view of the door latch assembly shown in Figure 1;

Figure 3 is a similar view from a different angle;

Figure 4 is a rear elevational view of the privacy adaptor with a back plate removed, showing the mechanism in the snibbing position;

Figures 5 and 6 are fragmentary views corresponding to part of Figure 4 but depicted the movement of the mechanism to the release position;

Figure 7 is a fragmentary elevational view corresponding to Figure 4 but showing the discs and snibs removed from the adaptor to reveal the coil spring in situ;

Figure 8 is a front elevation of one of the discs; and

Figures 9 and 10 are front and side elevational views of the sub-assembly of the discs and main spindle.

Detailed Description of Preferred Embodiments

The illustrated door latch assembly includes a pair of knob handles 5,6. Handle 5, which in situ would normally be disposed at the outside of the door, is fitted with a shaft 10a having a square-section bore by which it is mounted on a

square-section spindle 8. Spindle 8 passes through and is operatively coupled to a latch mechanism 3 of conventional form. Handle 6 is disposed at the inside of the door and is fitted with a hollow shaft 10 similar to shaft 10a. Spindle 8 and shaft 10 are coaxial and are coupled within a snib mechanism 20 comprising an embodiment of the invention. The necessary standard door cavity 16 is covered at each side of the door by respective backing plates 18,19 and by escutcheon plates 22,23. The escutcheon plates have externally threaded bosses 90 by which they are threadably engaged with matching threaded sockets 92 on the respective backing plates. The backing plates are assembled together in the usual manner by a pair of posts 9 which extend through latch mechanism 3 and are threadably attached (eg by screws 9a) to the respective backing plates.

Snib mechanism 20 is provided within a privacy adaptor 21 which is substituted for a conventional backing plate such as backing plate 18 on the outside of the door. Privacy adaptor 21 includes a self-contained housing for mechanism 20 comprising backing plate 19 and a rear cover plate 19a. Cover plate 19a fits within the rim 19b of plate 19 and is fastened thereto by small screws 23a or other suitable fasteners such as rivets.

The principal components of mechanism 20 are a first rotary member or disc 30 irrotationally engaged with latch spindle 8, a superposed second rotary member or disc 32 similarly coupled, by virtue of complementary flats 32a, 10a, to the free end of shaft 10, a pivotally mounted snib 34 including a manually engageable head 52
5 projecting through a peripheral recess 35 in the rim 19b of backing plate 19, and a coil spring 36 captive under disc 32. Discs 30, 32 are coaxial with spindle 8 and shaft 10. Backing plate 19 is a cast component provided internally with an annular depression 38 to seat coil spring 36, defined between an inner ring 37 and a part annular inner rim 39 which together provide a co-planar seat for disc 32.

10 Disc 30 has a boss 31 which seats in a central aperture 31a in cover plate 19a, thereby locating the disc. This boss has a central square section bore 31b which receives spindle 8. Spindle 8 has a head 8a which is disposed in a counterbore of disc 30 and engages disc 30 so that it cannot pass through bore 31b. The other end of spindle 8 is an open end for engaging a handle or other mechanism on the other
15 side of the door in a manner allowing for variation of a door width.

Discs 30, 32 are interengaged by a simple lost motion mechanism 40 comprising a pair of diametrically opposite peripheral lugs 41 on disc 30 and complementary limited arcuate notches 42 in the rim of disc 32. Notches 42 are peripherally longer than the lugs 41 they seat, whereby rotation of handle 6 will
20 effect an initial rotation of disc 32 which is not transmitted to disc 30 and spindle 8, and a subsequent continued rotation which is so transmitted.

Discs 30, 32 are biased to a predetermined relative position, in which lugs 41 are angularly centered in notches 42, by means of coil spring 36. Spring 36 has three coils and terminal radial lugs 37a, 37b which, in situ, angularly overlap and engage
25 either side of a small integral land 46 projecting into depression 38 from its outer periphery (Figure 7). A tab 47 at the rim 32 of disc 32 and a radially outwardly adjacent tab 48 at the rim of disc 30 project parallel to the spindle/shaft axis, in the predetermined equilibrium position, into depression 38 in the space 44 radially inwardly of land 46 between terminal spring lugs 37a, 37b. It will be appreciated
30 from Figure 7 that rotation of either of discs 30, 32 from the equilibrium position will be opposed by compression of the coil spring, as the respective tab 47, 48 engages and moves a spring lug. This single coil spring therefore acts to return either of

handles 5 and 6 and the spindle 8 to the equilibrium position. As will be seen, this is important for the proper functioning of the privacy lock mechanism. The coil spring engagement also overcomes the potential problem that the return springs of many latch configurations do not reliably return the spindle to the normal position.

5 for a variety of practical reasons.

The limits of rotation of discs 30,32 are set by engagement of spring lugs 37a,37b against radial shoulders 75 in depression 38.

Snib 34 includes a main flat body 50 with boss 50a by which it is journaled at one end in an aperture 51 in backing plate 19 so as to project generally
10 circumferentially with respect to the axis of discs 30,32. Snib 34 is pivotable in aperture 51 about an axis parallel to the common axis of spindle 8, shaft 10 and discs 30,32. The snib further includes a leg 53 terminating in head 52 which projects radially out through recess 35 to provide a finger engaging portion. Radially inwardly contiguous with leg 53 at the free end of body 50 is a locking lug 54 which
15 is of generally rectangular configuration and has side surfaces contiguous with those of body 50 and leg 53. The snib is movable between an inner snibbing position (Figure 4) in which lug 54 engages a rectangular notch 56 on the periphery of disc 30 and thereby snibs disc 30 against rotation, and a freeing position (Figure 6) in which the lug is clear of notch 56 so that the disc, and spindle 8, are free to rotate.

20 Setting of snib 34 in either of these positions is facilitated by a U-shaped indexing spring 58 which has outturned terminal legs 59,60 (Figure 4). These legs tightly seat in respective V-shaped notches 62,63 on the rim of backing plate 19 and in snib 34. The arrangement is such that the minimum separation of the legs of this spring occurs when the snib is approximately mid-way between the snibbing and
25 freeing positions, whereby the spring biases the snib toward whichever of the positions it is approaching.

When it is engaged in notch 56, locking lug 54 is also received in a further notch 66 on disc 32. Notches 56,66 lie in register at the relative equilibrium position of discs 30,32 determined by spring 36, but notch 66 differs from notch 56 in that it
30 has inclined edges 68 at each side rather than radial edges as in the case of notch 56. These edges 68 are effective as a camming means during the aforesaid initial rotation of disc 32 to act on locking lug 54 to move snib 34 to its freeing position,

as illustrated in Figure 5.

It will be seen that the arrangement is symmetrical in that rotation of handle 6 and therefore disc 32 in either direction will release snib 34. It will also be seen that snib lug 54 is of a thickness about equal to the combined thicknesses of the two
5 discs.

By setting snib 34 manually to its snibbing position (Figure 4) by pushing in head 52, disc 30, and accordingly outside handle 5, are locked against rotation. However, the snib 34 is automatically released from the inside of the door in that initial rotation of handle 6 will release the snib (Figures 5, 6) to allow the handle to
10 then rotate disc 30 and spindle 8 on continuing rotation of the handle.

The assembly also provides a means for emergency release of the snib from the outside. A square-section shaft 80 engages a complementary bore in snib boss 51a and extends across door cavity 16. This shaft has an upturned leg within backing plate 18 at the outside of the door. This leg can be engaged, by a suitable tool
15 through an aperture (not visible) in the rim of plate 18, and rotated to in turn rotate snib 34 to the freeing position.

It has already been pointed out that coil spring 36 acts to return either of discs 30,32 to an equilibrium position on rotation by the knob in either direction. The spring thus also serves to ensure that notches 56,66 are in register to receive
20 locking lug 54 when it is desired to set snib 34 in the privacy lock or snibbing position. Coil spring 36 thus performs multiple functions. The spring in this form is a substantial improvement on the typical arcuately mounted helical compression spring used in prior privacy lock arrangements such as that of US patent 4142748. The helical compression spring was found to be noisy in situ and entailed a rapid
25 increase in the opposing return force as the handle was turned. The coil spring is believed to be much less noisy and, by having plural coils, the return force only increases slowly with advancing rotation of the knob.

It will be understood that the mechanism 20, enclosed as a self-contained unit within plates 19,19a, is depicted as an adaptor for inclusion and mounting in either
30 new latch kits or for retro-fitting to existing latch installations. It will be further appreciated that the illustrated arrangement provides a fully universal simple and durable privacy mechanism adaptable to a full range of latch fittings and locations

on doors. There are fewer components than in prior arrangements and those components are of simpler construction by virtue of the common engagement of the snib locking lug with the respective peripheral notches of the two discs. The design is suitable for pre-drilled as well as flush panel doors, does not require a self-aligning
5 latch and is suitable for both left- and right-hand mounting as well as for both knob and lever handle sets.



CLAIMS:

1. A releasible snib mechanism for a door latch assembly, comprising:
a body;
5 a first rotary member disposed in said body and adapted to be engaged by and rotated with a door latch spindle;
a snib member mounted on the body for movement between a snibbing position in which said first rotary member is snibbed against rotation and a freeing position in which said first rotary member is free to rotate with the door latch
10 spindle;
a second rotary member disposed in said body adjacent the first rotary member and adapted to be engaged by and rotated by a shaft means, said second rotary member being arranged upon initial rotation of said shaft means to move said snib member from said snibbing position to said freeing position and upon continued
15 rotation of said shaft means to provide rotation to said first rotary member; and
wherein said first and second rotary members include respective first and second formations which are disposed mutually adjacent when said rotary members are at a predetermined relative rotational position, for cooperating with a complementary snib formation on the snib member, the first formation and snib
20 formation effecting said snibbing of the first rotary member and said second formation being effective as camming means during said initial rotation to act on said snib formation to move said snib member to said freeing position.
2. A releasible snib mechanism according to claim 1, wherein said first and
25 second rotary members comprise respective disc members.
3. A releasible snib mechanism according to claim 1 or 2 wherein said first and second formations are at the peripheries of the respective disc members.
- 30 4. A releasible snib mechanism according to claim 3, wherein said first and second formations include respective notches at the peripheries of said disc members, the second formation further including one or more faces of the respective



notch which provide said camming means.

5. A releasible snib mechanism according to claim 3, wherein said snib formation includes a lug on said snib member which is received by both of said notches in said snibbing position.

6. A releasible snib mechanism according to any preceding claim further including means to bias said rotary members to said predetermined relative rotational position.

10

7. A releasible snib mechanism according to claim 6, wherein said biasing means comprises a coil spring which is disposed within said body and is compressible by respective projection means on the rotary members.

15

8. A releasible snib mechanism according to claim 7, wherein said coil spring has a plurality of coils whereby to minimise the variation of spring force applied to the rotary members as they rotate.

20

9. A releasible snib mechanism according to any preceding claim, wherein said snib member is rotatably mounted on said body and includes an exposed finger engaging portion for effecting movement of the snib member at least from said freeing position to said snibbing position.

25

10. A releasible snib mechanism according to any preceding claim, further comprising an indexing spring means to bias said snib member to said snibbing position and to said freeing position.

30

11. A releasible snib mechanism according to any preceding claim, wherein said rotary members are interengaged by lost motion means comprising projection means on one of the rotary members and recess means in the other rotary member, whereby during said initial rotation of the second rotary member, the rotation is not transmitted to the first rotary member, whereas said continued rotation is so



transmitted.

12. A releasible snib mechanism according to any preceding claim, further comprising a door latch shaft irrotationally coupled to said first rotary member and including a means at one end to engage the first rotary member to limit movement of the door latch spindle through the aperture in the first rotary member in one direction, and a means at the other end of the spindle for engaging a handle or other mechanism on the other side of the door in a manner allowing for variation of a door width.

13. A releasible snib mechanism according to any preceding claim, further comprising emergency release means operable from another side of the door to move said snib member from the snibbing position to the freeing position.

14. A releasible snib mechanism according to any preceding claim, wherein the axis of rotation of the snib member is substantially parallel to the axis of rotation of the latch spindle.

15. A releasible snib mechanism for a door latch assembly, substantially as herein described and as illustrated in the accompanying drawings.