

[54] DOOR HANDLE

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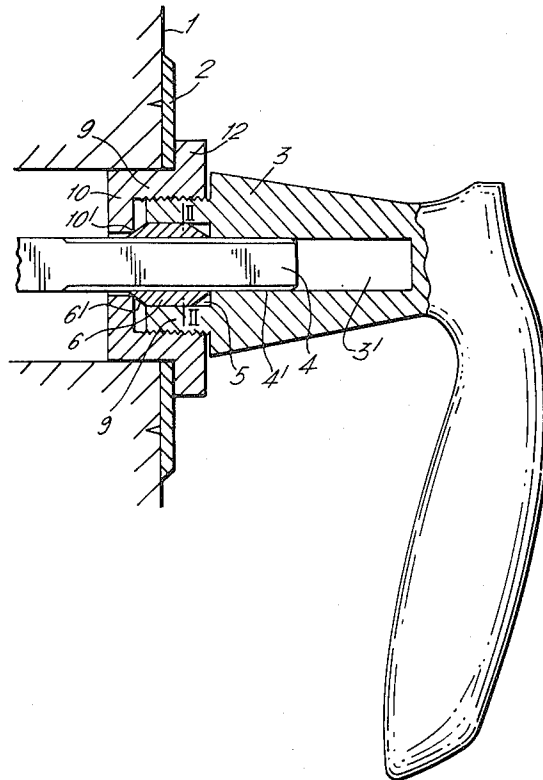
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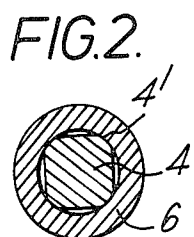
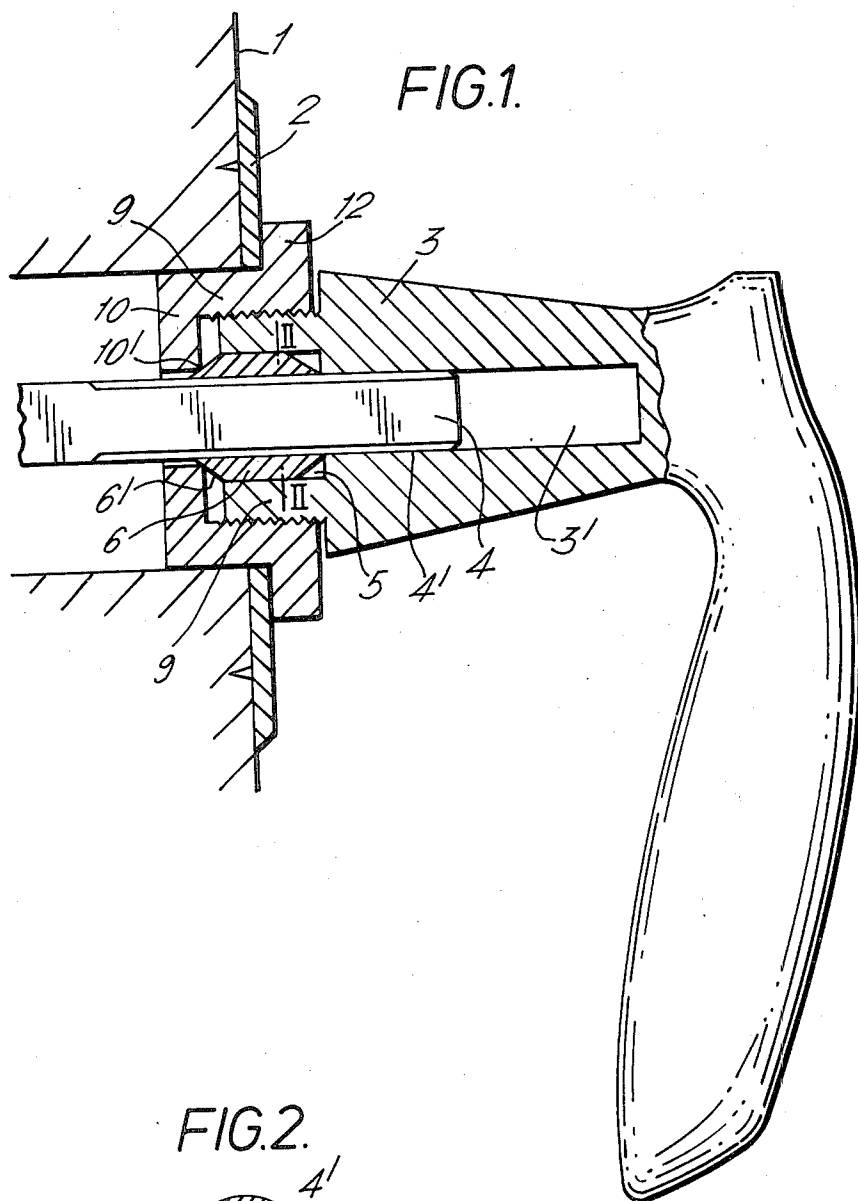
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ABSTRACT

A door handle of the kind comprising a square bolt extending through the lock and the door has a sleeve-like inner section of the handle stem fastened on a protruding end of the bolt. The inner end of the sleeve-like section is exteriorly threaded for screw-threaded engagement with a locking sleeve. The locking sleeve has an inwardly directed flange at its inner end and an outer head suitable for engagement with a tool for turning of the locking sleeve. The sleeve-like inner section of the stem has an enlarged section at its inner end, in which is located an annular element having a sloped or chamfered end surface for cooperation with the flange of the locking sleeve such that the inner edge of the flange will be forced against the sloping end surface of the annular element to clamp the element into locking engagement with the square bolt when the locking sleeve is tightened on the inner end of the sleeve-like section of the stem. The annular element preferably is in the form of a cylindrical member having both end surfaces chamfered or sloped.

3 Claims, 2 Drawing Figures





DOOR HANDLE

The present invention concerns a door handle of the kind comprising a square bolt extending through the lock and the door, onto the protruding end or ends of which is fastened a sleeve-like inner part of the stem of the door handle and wherein the inner end of said sleeve is threaded on the outside for cooperation with a locking sleeve in engagement with the sleeve part, the inner end of the locking sleeve having an inwardly directed flange and an outer end having a head suitable for cooperation with a tool for turning the locking sleeve.

Such door handles are simple and practical in use because the door handle can be locked in any desirable position on the square bolt by the use of simple means. By loosening the locking sleeve, moving the door handle to the desired position on the bolt and thereafter tightening the locking sleeve, one obtains a simple readjustment of the door handles. This known type of door handles is described in more detail in Norwegian Pat. No. 96.789 where a spring washer of special configuration is placed between said inwardly pointing flange on the locking sleeve and the inner end of the stem of the door handle. This spring washer has such a form that it serves as a locking means when the locking sleeve is tightened, sharp teeth in an opening of the spring washer engaging the square bolt. This arrangement has the disadvantage that these special spring washers, which must be especially made for this purpose and therefore become relatively expensive, have a tendency to break. The locking action is thereby more or less ruined. The engagement between the teeth of the locking washer and the square bolt also takes place over a very small area which means that the teeth are subjected to large forces which may damage the teeth so that the locking action is ruined.

The present invention is a further development of the device described in the above mentioned patent and has the purpose of eliminating the disadvantages of the earlier construction.

In accordance with the invention, it is suggested that the known spring washer be replaced by a stronger, cheaper, simpler and much more reliable locking element.

More particularly, it is suggested that the sleeve-like inner part of the stem of the door handle in its inner end is formed with an enlarged section into which is placed an element of preferably annular form, said element having an outer frustoconical surface for cooperation with the flange of the locking sleeve, said cooperation being such that by tightening of the locking sleeve, the inner surface of the flange will press against the frustoconical surface of the element and press the element into locking friction engagement against the square bolt.

In accordance with a preferred embodiment of the invention, the outer sections of the square bolt have rounded edges and the locking element consists of a circular cylindrical piece of tubing which in both ends has frustoconical edges.

For better understanding of the invention, it will be described more closely in the following with reference to the embodiment shown merely as an example in schematic form in the accompanying drawings.

FIG. 1 is a somewhat enlarged axial section through the inner part of a door handle fastened by means of the locking element in accordance with the invention.

FIG. 2 shows a section along the line II-II in FIG. 1.

Reference numeral 1 indicates the part of the door surrounding the door lock including the door handle. A plate 2 can be arranged in the usual way. The stem of the door handle is shaped like a sleeve at its inner end 3 and surrounds the square bolt 4. The inner end of the sleeve part 3 has external threads in engagement with a locking sleeve 9 which at its inner end has an inwardly pointing flange 10 and at the outer end a head 12 shaped like a nut or the like for cooperation with a suitable tool for turning the locking sleeve 9 in relation to the door handle.

The sleeve part 3 of the stem of the door handle has a central inner bore 3' formed with an enlargement 5 at its inner end. This enlarged part 5 contains an annular element 6 preferably made of resilient steel. The annular element 6 has frustoconical ends surfaces 6' at both ends. The reason for chamfering both end surfaces is practical only, since this will make it impossible to install the annular element 6 incorrectly in the enlarged part 5. It is only the inner free end surface 6' that serves a purpose in this device. The outer chamfered end surface will only butt against the end surface of the enlarged section.

The chamfer 6' of the annular element 6 will cooperate with the flange 10 of the locking sleeve since the inner edge of the flange 10' will butt against the chamfer 6'. When the locking sleeve 9 is tightened on the sleeve part 3 by means of the nut head 12, the locking element 6 is forced into contact with the square bolt 4. Thereby a secure locking friction engagement between these parts is obtained for clamping of the door handle to the square bolt 4.

This square bolt 4 is preferably formed with rounded edges as shown on FIG. 2. Thereby the locking ring 6 will have a relatively broad contact area 4' on the square bolt when it is forced against the square bolt.

It will be understood that the shown and described embodiment of the invention only is meant to illustrate the type of means principally used to obtain a desired locking of the door handle to the bolt. Other clamping elements than the described annular sleeve can be used without departing from the spirit of the invention. Likewise, both the ring and the enlarged section of the bore in the stem of the door handle can be given various modified forms. The ring will normally have little metal thickness in order to be resilient. The drawing shows the ring as being relatively thick, but this is done only to give a clear picture of the various parts of the device. The ring can also be furnished with cuts or slits to give greater resilience. The main thing is that the preferably annular locking element has a transverse cross section which, in cooperation with the flange of the locking sleeve and the end surface of said enlarged section, accomplishes a clamping action on the square bolt sufficient to give the desired friction engagement. An element of any form giving this action will therefore be within the framework of the invention.

I claim:

1. In a door handle of the kind comprising a square bolt extending through the lock and the door and on at least one of whose protruding ends is fastened a sleeve-like inner section of the stem of the door handle, and wherein the inner end of said sleeve-like section is threaded on the outside for engagement with a locking sleeve screwed onto said inner section, the inner section of the locking sleeve having an inwardly directed

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flange and the outer section having a head suitable for engagement with a tool for turning of the locking sleeve, the improvement wherein the bore of the sleeve-like inner section in its inner end has an enlarged section in which is located an annular element whose inner end surface is chamfered for cooperation with said flange of the locking sleeve such that the inner edge of the flange will be forced against the sloping end surface of the annular element and clamp the element

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into locking friction engagement with the square bolt when the locking sleeve is tightened on the inner end of said sleeve-like section.

2. A device in accordance with claim 1 wherein the end section of the square bolt has rounded edges.

3. A device as claimed in claim 1 wherein said annular element comprises a circular cylindrical piece of pipe which at both ends has sloping end surfaces.

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