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GB 2411348 A EP 1882798 A
US 5067758 A US 20050156441 A

(58) Field of Search:
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(54) Title of the Invention: **Hardware system having interchangeable handles**
Abstract Title: **A sprung handle system with and independently removable handle**

(57) A sprung handle system for a door or window comprising an adaptor 112 for connecting a first assembly comprising a handle 101, to a second assembly comprising a return spring and a driver 130, wherein the handle can be independently removed from the adaptor when the system is assembled in a closure. The arrangement may also comprise an inner rose 120 and an outer rose 115, at least one of which can be removed, and a spindle 150. The first part of the adapter may be received within a socket in the handle and the second part of the adapter may comprise a socket for receiving the spindle, return spring and driver. The adapter may be able to be fitted to at least two different styles of handles. Alternatively, the handle may be integrally connected to the spindle. Also claimed are methods of changing the handle of the system. The system allows the handle to be replaced if damaged or interchanged with handles of different appearance, without complete disassembly.

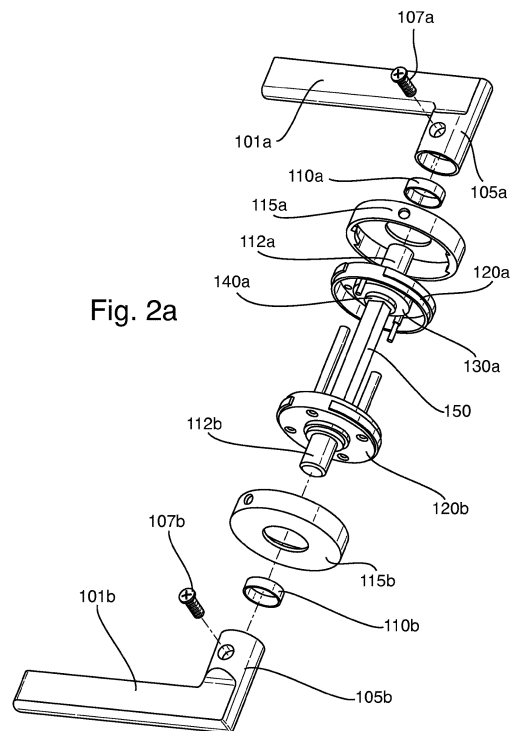


Fig. 1a

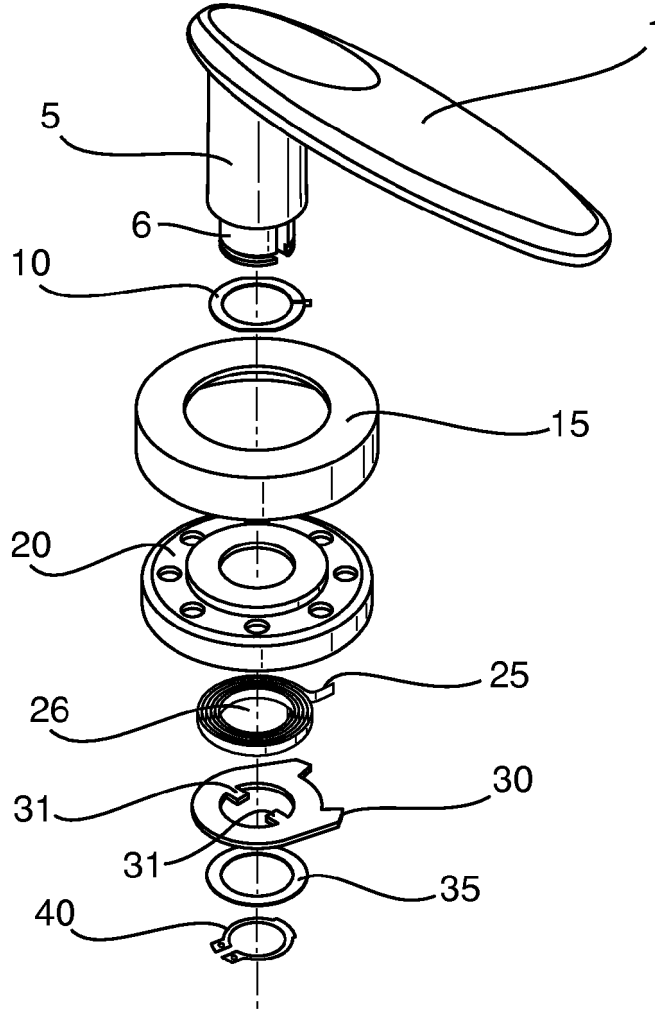


Fig. 1b

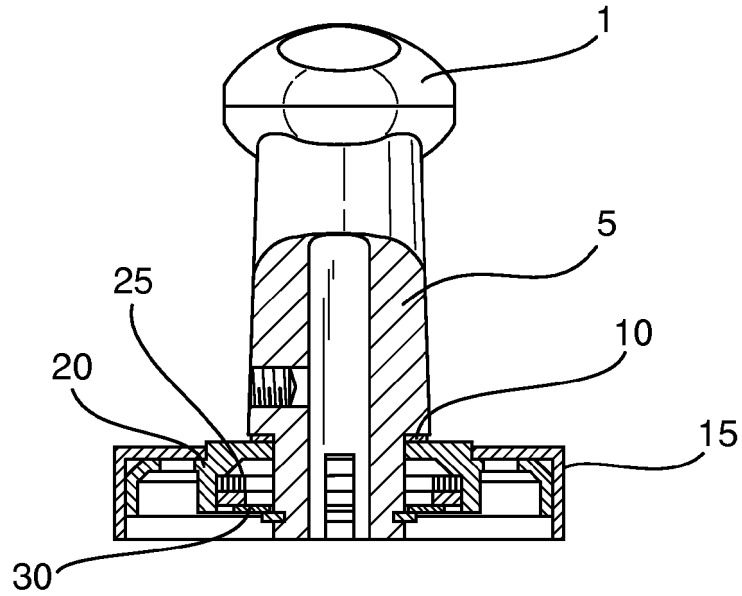


Fig. 1c

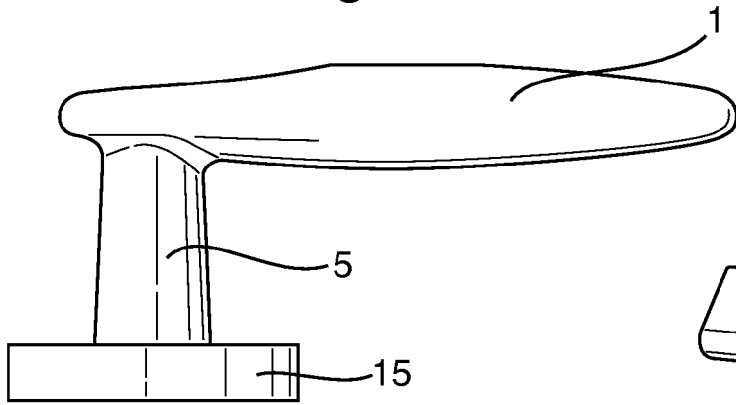
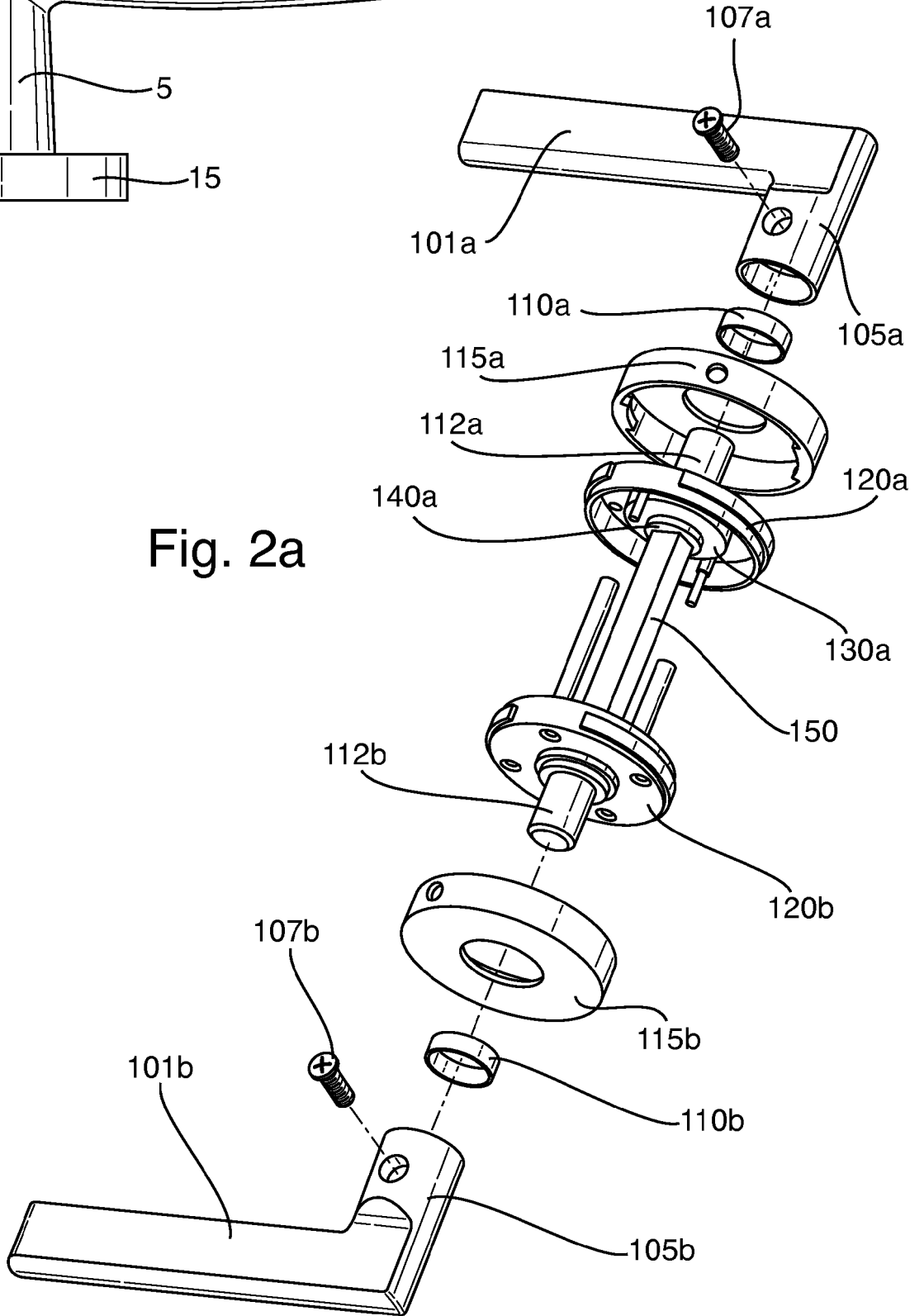


Fig. 2a



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Fig. 2b

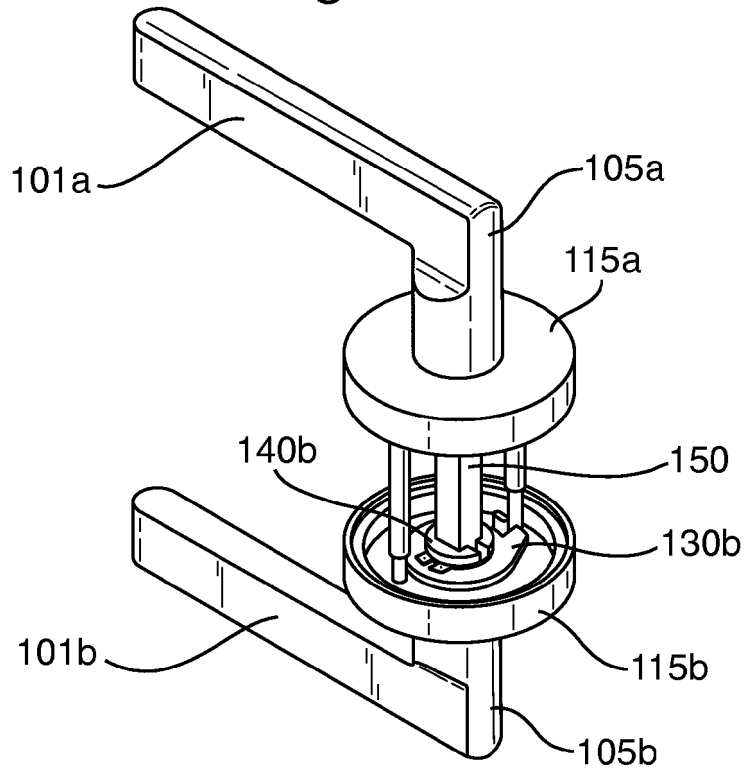


Fig. 2c

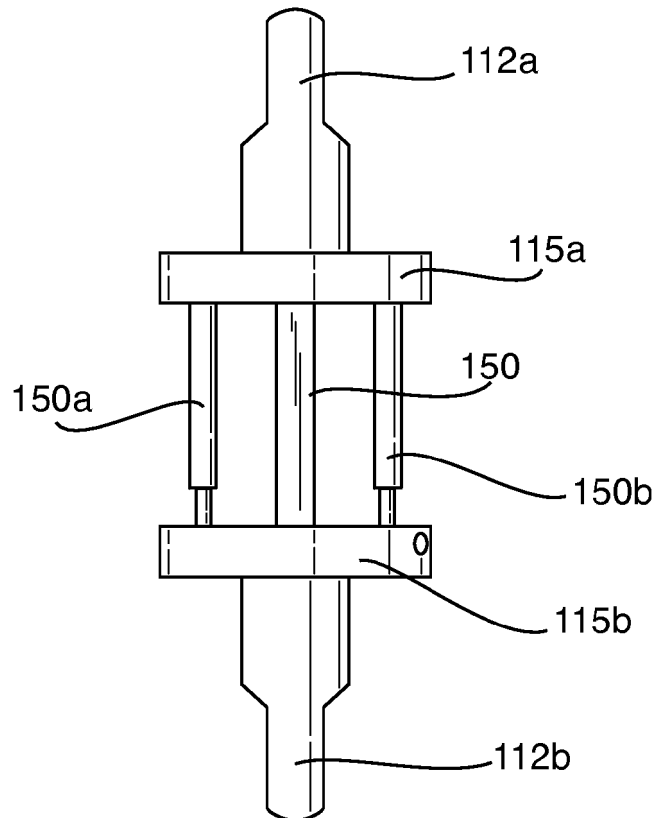


Fig. 3a

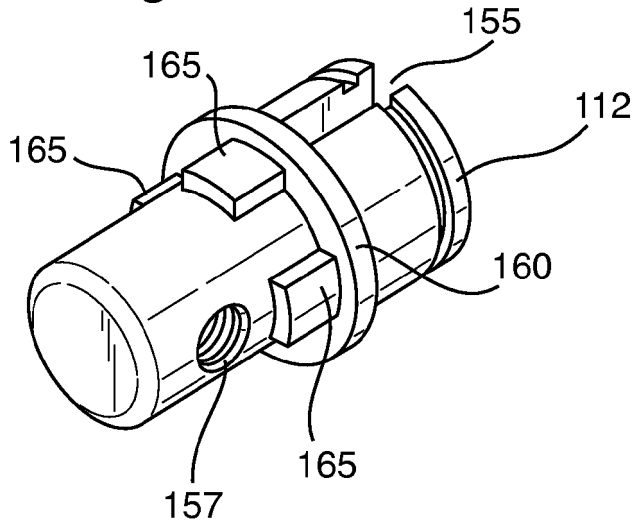


Fig. 3b

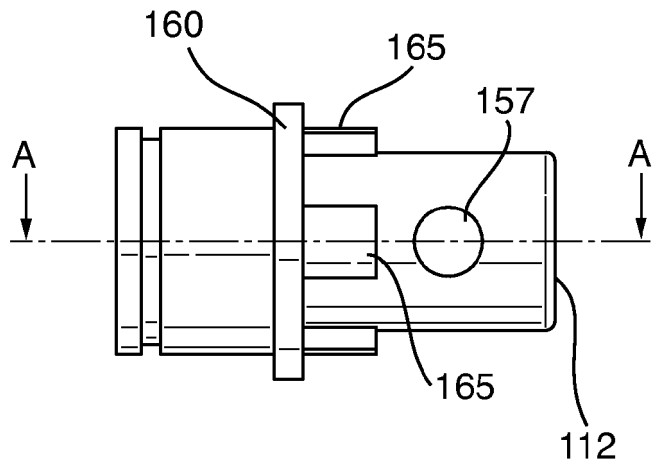


Fig. 3c

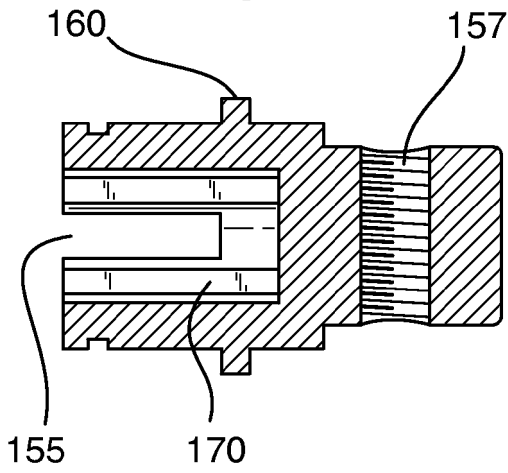


Fig. 3d

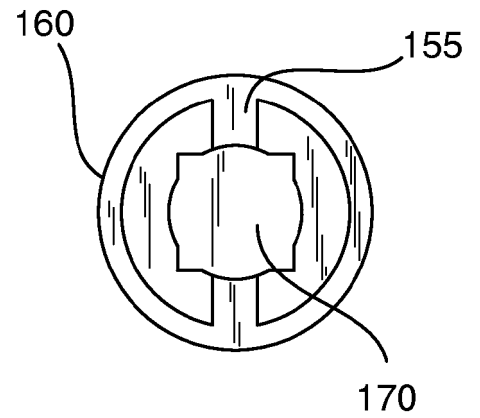
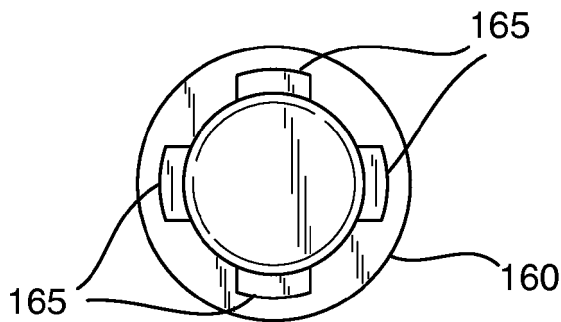


Fig. 3e



HARDWARE SYSTEM HAVING INTERCHANGEABLE HANDLES

FIELD OF INVENTION

[0001] The present invention relates to the field of hardware for closures such as doors or windows, particularly sprung lever furniture.

[0002] In one particular aspect the present invention is suitable for use for sprung lever handles for doors or windows.

[0003] It will be convenient to hereinafter describe the invention in relation to specific types of doors, however it should be appreciated that the present invention is not limited to that use only and can be used with a wide range of closures including doors, windows and gates whether located interior or exterior to a building. It may also be used in a wide range of non-building related applications such as cabinet making and furniture making.

BACKGROUND ART

[0004] It is to be appreciated that any discussion of documents, devices, acts or knowledge in this specification is included to explain the context of the present invention. Further, the discussion throughout this specification comes about due to realisations by the inventor and/or the identification of certain related art problems by the inventor. Moreover, any discussion of material such as documents, devices, acts or knowledge in this specification is included to explain the context of the invention in terms of the inventor's knowledge and experience and, accordingly, any such discussion should not be taken as an admission that any of the material forms part of the prior art base or the common general knowledge in the relevant art in Australia, or elsewhere, on or before the priority date of the disclosure and claims herein.

[0005] 'Door hardware' (also known as 'door furniture') is a term typically used to refer to any of the items that are attached to a door to enhance its functionality or appearance. Door hardware includes items such as hinges, handles, closers, locks and fasteners. In order to assure the most usable hardware, designers must carefully consider not only

appearance but also the size, shape, and feel of each element of door hardware and how easy it is to use.

[0006] Doors generally have at least one handle, usually operating a latch. A typical 'handle system' or 'handle set' is composed of the exterior elements, consisting of a handle (which may be in the form of a knob or lever), handle shank, and rose, and the interior package including a spindle and a latch in a latch housing. The handle is the part grasped by a user's hand. The shank projects from the handle and has a socket to receive the spindle. Adjacent the end of the handle shank is a 'rose' - an ornamental, typically annular fitting that surrounds the end of the shank at the point where it meets the door and receives the spindle. The spindle is a metal shaft that rotates in the latch housing to cause the latch to engage and disengage.

[0007] The latch mechanism is used so the door can be secured in the closed position. The main body of the latch is attached to the closing edge of the door and rotation of the handle operates the interior package. As the handle is moved the spindle rotates and a spring biased tongue of the latch engages or disengages with a plate that is attached to the door jamb or door frame.

[0008] Handles which can be turned to operate a latch are either 'sprung' or 'un-sprung'. In sprung furniture the handle shank is attached to the inner rose and an associated spring located on the spindle smoothly and positively returns the handle to a resting position. In un-sprung furniture the handle is directly attached to the spindle and there is no spring associated with the spindle. Un-sprung furniture instead relies on a spring within the latch to return the handle to the latched position. One of the disadvantages of un-sprung furniture is that using the same spring to operate both the handle and the latch causes the spring to rapidly weaken and the handle to droop.

[0009] However, one of the disadvantages of sprung handle systems is that the handle shank is fitted to the socket in the rose and the fitting is unique to each handle system. Furthermore the rose is located over the end of the handle shank fits in a manner that prevents changing of the handle once the handle system is fitted to a door.

SUMMARY OF INVENTION

[0010] An object of the present invention is to provide a sprung handle system that permits interchanging of handles.

[0011] A further object of the present invention is to provide a handle system that permits changing of handles when the handle system is in situ in a closure.

[0012] A further object of the present invention is to alleviate at least one disadvantage associated with the related art.

[0013] It is an object of the embodiments described herein to overcome or alleviate at least one of the above noted drawbacks of related art systems or to at least provide a useful alternative to related art systems.

[0014] In a first aspect of embodiments described herein there is provided a sprung handle system for a closure, the system comprising:

- an adaptor for connecting a first assembly comprising a handle, to a second assembly comprising a return spring and a driver;

wherein the handle can be independently removed from the adaptor when the sprung handle system is assembled in a closure.

[0015] In a second aspect of embodiments described herein there is provided a sprung handle system for a closure, the handle system comprising:

- a handle,
- a spindle for operating a latch in response to rotation of the handle, and associated with a return spring and driver for returning the handle to an at-rest position,
- a rose,

- an adaptor for connecting the handle with the spindle, return spring and driver, part of the adaptor being located within the rose and part of the adaptor being located within the handle

wherein the handle can be independently removed from the adaptor when the sprung handle system is assembled in a closure.

[0016] The sprung handle system of the present invention thus allows the handle to be removed from the adaptor and replaced with any other handle. By contrast, it is only possible to change the handle in sprung handle systems of the prior art by disassembling and removing the handle system from the door.

[0017] The sprung handle system of the present invention thus allows a manufacturer to make a module comprising the roses and components therebetween (the 'rose mechanism'), that can be fitted to many different styles of handles. For example the adaptor may be of a design which can be universally fitted to numerous handles and door components. This allows better control of inventory as it is not necessary to have an entire system packaged and sold with every handle – the handles can be sold separately.

[0018] In addition to interchangeability of the handle, the outer rose may also be interchangeable. Thus, the size, material of construction and appearance of the outer rose or its function (eg passage or privacy) may be changed. Thus, the present invention provides a sprung handle system in which all handles and roses may be modular and can be fitted to the same inner rose or rose mechanism. By contrast, sprung handle sets of the prior art have not had this interchangeability or, it has been difficult to change the outer rose – typically the girth of the handle being too large to allow removal of the rose.

[0019] In another aspect of embodiments described herein there is provided an adaptor suitable for the sprung handle system of the present invention the adaptor comprising;

- a first part for connection to a handle,

- a second part for connection to a spindle, a return spring and a driver,

wherein the handle can be independently removed from the adaptor.

[0020] In an alternative arrangement the adaptor is integral with the handle. In another alternative arrangement the adaptor is integral with the spindle.

[0021] Typically the first part of the adaptor is received within a socket in the handle shank. The first part of the adaptor and the socket may be held in contact by any convenient securing means such as a screw, clip or snap fitting. In order too permit operation of the securing means the adaptor will preferably project from the rose.

[0022] Typically the second part of the adaptor comprises a socket for receiving an end of spindle bearing the return spring and driver. The socket may include a slot or any other suitably shaped recess or projection for engaging the return spring and driver. The second part of the adaptor is typically located within a socket formed by the outer rose and inner rose.

[0023] In another aspect of embodiments described herein there is provided a method of changing the handle of a sprung handle system of the present invention including the steps of releasing a securing means, detaching a first handle from the adaptor, attaching a second handle to the adaptor and re-engaging the securing means.

[0024] In addition it may also be possible to remove or reposition the outer rose from the inner rose, permitting easier and neater fitting. Furthermore, the outer rose may be replaced or interchanged.

[0025] Other aspects and preferred forms are disclosed in the specification and/or defined in the appended claims, forming a part of the description of the invention.

[0026] In essence, embodiments of the present invention stem from the realization that locating an adaptor at the end of the shaft and having it project outside the rose would permit independent attachment of the handle.

[0027] Advantages provided by the present invention comprise the following:

- handle interchangeability,
- outer rose interchangeability,
- ability to retro-fit new handles to suit desired decor or replace a damaged or broken handle,
- reduced inventory,
- improved economy,
- can be used on all door thicknesses (eg from 32mm to 50mm).
- the outer rose can be fitted to the inner rose mechanism and can be removed so that installation of the inner rose mechanism is easier and more precisely fitted to the door,
- knob handles can be fitted to the inner rose mechanism to provide sprung knobs which the installer can fit easily and precisely,
- knob handles and levers handles can be interchanged on the same inner rose mechanism,
- different size outer roses (eg from 55 mm to 63 mm) can be fitted to a given inner rose mechanism,
- different types of outer roses (eg passage or privacy outer roses can be fitted to a given inner rose mechanism.

[0028] Further scope of applicability of embodiments of the present invention will become apparent from the detailed description given hereinafter. However, it should be understood that the detailed description and specific examples, while indicating preferred

embodiments of the invention, are given by way of illustration only, since various changes and modifications within the spirit and scope of the disclosure herein will become apparent to those skilled in the art from this detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

[0029] Further disclosure, objects, advantages and aspects of preferred and other embodiments of the present application may be better understood by those skilled in the relevant art by reference to the following description of embodiments taken in conjunction with the accompanying drawings, which are given by way of illustration only, and thus are not limitative of the disclosure herein, and in which:

- Figure 1 illustrates a lever handle system of the prior art (without a latch) in an exploded view (Figure 1a), cross-sectional view of the assembled system (Figure 1b) and side view of the assembled system (Figure 1c);
- Figure 2 illustrates a lever handle system according to the present invention in an exploded view (Figure 2a), perspective view of the assembled system (Figure 2b); and side view of the assembled system (Figure 2c); and
- Figure 3 illustrates an adaptor according to the present invention in perspective view (Figure 3a), side view (Figure 3b), cross-sectional view (Figure 3c) along A-A of Figure 3b and end views (Figure 3d and Figure 3e).

List of Parts

Prior art		Present invention	
1	handle	101	handle
		101b	handle
5	handle shank	105	handle shank
6	slot in shank		
		107	screw for shank
10	external washer	110	Internal Drive Gear washer
		112	adaptor
15	outer rose	115	outer rose
20	inner rose	120	inner rose
25	handle spring	125	handle spring
26	spring tang	126	spring tang
30	driver	130	driver
31	projection on driver	131	projection on driver
35	internal washer	135	internal washer
40	cir-clip	140	cir-clip
		150	spindle
		155	adaptor slot
		157	threaded hole
		160	adaptor flange
		165	adaptor projections
		170	adaptor socket for receiving spindle

DETAILED DESCRIPTION

[0030] Figure 1 depicts sprung door furniture of the prior art comprising a handle system. Figure 1a shows the handle system in an exploded view. In this embodiment the handle system is composed of a handle 1, handle shank 5, external washer 10, outer

rose 15, inner rose 20, spring 25, driver 30, internal washer 35 and cir-clip 40. (The interior package including a spindle, latch and latch housing is not shown in this illustration.) The end of the handle shank 5 includes a slot 6 which receives the tang 26 on the end of the spring 25 and the projection 31 on the driver 30. The driver 30 and spring 25 operate to return the handle to the at-rest position.

[0031] Figure 1b depicts the assembled handle system in cross section. The cross sectional view clearly shows how one end of the spindle fits into the socket within the handle shank 5. The cir-clip 40 plus the interconnection between the slot 6 in the handle shank 5 and the tang 26 of the spring 25 and projection 31 of the driver 30 prevents removal of the handle 1 from the inner rose 20. As shown in Figure 1c, the outer rose 15 is visible on the exterior of the door, providing a neat finish.

[0032] Figure 2 depicts a sprung handle set according to the present invention. Figure 2a shows the handle system in an exploded view. In this embodiment the handle system is composed of a handle 101, handle shank 105, internal gear drive washer 110 (welded into the SS handle, cast into Brass, Zinc or Aluminium handles), outer rose 115, inner rose 120, spring 125, gasket 130, internal washer 135 and cir-clip 140. The interior package includes a spindle 150 and a latch (not shown). Either end of the spindle 150 is located in the socket in the inner roses 120a, 120b and four long screws (only two of which are shown) secure the two inner roses 120a, 120b at a distance corresponding approximately to the width of the door to which the system is to be fitted. In contrast to the handle system of the prior art, this embodiment of the present invention includes an adaptor 112 at either end of the spindle 150. The adaptor 112 fits within the socket of the handle shank 5, secured by a screw 107, and within the socket formed by the outer rose 115 and inner rose 120. Thus the handle 1 and handle shank 5 are no longer connected with the interior workings of the door by interlinking with the spring tang 126, projection 31 on the driver 30 and the cir-clip 40. Instead, the handle 101 can be readily removed from the system by undoing the screw 107 and replaced by another handle without disrupting the rest of the handle system.

[0033] Figure 3 shows a preferred configuration of the adaptor 112. The perspective view of Figure 3a shows the adaptor socket 170 for receiving the end of the spindle, and the slot 155 which receives the tang 126 on the end of the spring 125 plus the projection

131 on the driver 130 so that the driver 130 and spring 125 can return the handle to the at-rest position. Also visible is the threaded hole 157 for receiving a screw 107 to secure the handle shank 105 to the adaptor 112. The adaptor includes a flange 160 that in use is located at the end of the shank 105. On one side of the flange 160 are projections 165 which in use are received in correspondingly shaped recesses in the socket at end of the shank 105. The part of the adaptor 112 on the other side of the flange 160 is located within the socket formed by the inner rose 115 and the outer rose 120.

[0034] While this invention has been described in connection with specific embodiments thereof, it will be understood that it is capable of further modification(s). This application is intended to cover any variations uses or adaptations of the invention following in general, the principles of the invention and including such departures from the present disclosure as come within known or customary practice within the art to which the invention pertains and as may be applied to the essential features hereinbefore set forth.

[0035] As the present invention may be embodied in several forms without departing from the spirit of the essential characteristics of the invention, it should be understood that the above described embodiments are not to limit the present invention unless otherwise specified, but rather should be construed broadly within the spirit and scope of the invention as defined in the appended claims. The described embodiments are to be considered in all respects as illustrative only and not restrictive.

[0036] Various modifications and equivalent arrangements are intended to be included within the spirit and scope of the invention and appended claims. Therefore, the specific embodiments are to be understood to be illustrative of the many ways in which the principles of the present invention may be practiced. In the following claims, means-plus-function clauses are intended to cover structures as performing the defined function and not only structural equivalents, but also equivalent structures.

[0037] “Comprises/comprising” and “includes/including” when used in this specification is taken to specify the presence of stated features, integers, steps or components but does not preclude the presence or addition of one or more other features, integers, steps, components or groups thereof. Thus, unless the context clearly

requires otherwise, throughout the description and the claims, the words 'comprise', 'comprising', 'includes', 'including' and the like are to be construed in an inclusive sense as opposed to an exclusive or exhaustive sense; that is to say, in the sense of "including, but not limited to".

CLAIMS

1. A sprung handle system for a closure, the system comprising:

- an adaptor for connecting a first assembly comprising a handle, to a second assembly comprising a return spring and a driver,

wherein the handle can be independently removed from the adaptor when the sprung handle system is assembled in a closure.

2. A sprung handle system according to claim 1 which further includes an inner rose and an outer rose.

3. A sprung handle system for a closure according to claim 1 wherein the system includes a rose that can be removed when the sprung handle system is assembled in a closure.

4. A sprung handle system for a closure, the handle system comprising:

- a handle,
- a spindle for operating a latch in response to rotation of the handle, and associated with a return spring and driver for returning the handle to an at-rest position,
- a rose,
- an adaptor for connecting the handle with the spindle, return spring and driver, part of the adaptor being located within the rose and part of the adaptor being located within the handle

wherein the handle can be independently removed from the adaptor when the sprung handle system is assembled in a closure.

5. An adaptor suitable for the sprung handle system of claim 1 the adaptor comprising:

- a first part for connection to a handle, and
- a second part for connection to a spindle, a return spring and a driver,

wherein the handle can be independently removed from the adaptor.

6. An adaptor according to claim 5 wherein the first part of the adaptor is received within a socket in the handle.

7. An adaptor according to claim 5 wherein the second part of the adaptor comprises a socket for receiving an end of the spindle, the return spring and the driver.

8. An adaptor according to claim 5 that can be fitted to at least two different styles of handles.

9. An adaptor according to claim 5 wherein the handle is integrally connected to the spindle.

10. A method of changing the handle of the sprung handle system of claim 1 including the steps of (i) releasing a securing means, (ii) detaching a first handle from the adaptor, (iii) attaching a second handle to the adaptor and (iv) re-engaging the securing means.

11. A method of changing the handle of the sprung handle system of claim 2 including the steps of (i) releasing a securing means, (ii) detaching a first handle from the adaptor, (iii) removing a first outer rose from the inner rose, (iv) attaching a second outer rose to the inner rose, and (iii) attaching the first handle, or a second handle to the adaptor and (iv) re-engaging the securing means.

12. A sprung handle system constructed and arranged substantially as hereinbefore described or with reference to any of figures 2a to 3e of the accompanying drawings.

13. An adaptor for a sprung handle system constructed and arranged substantially as hereinbefore described or with reference to any of figures 3a to 3e of the accompanying drawings.

14. A method of changing the handle of a sprung handle system substantially as hereinbefore described or with reference to any of figures 2a to 3e of the accompanying drawings.



Application No: GB1308423.1

Examiner: Mr Thomas Hodson

Claims searched: 1-8 and 10-14

Date of search: 9 December 2013

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1-5, 7, 8, 10 and 11	EP1882798 A (ALMAR) See abstract and figures; note adapter 5, handle 4, driver 32 (see translated paragraph 30), outer rose 6, inner rose 5, spindle 2, socket 46, securing means 7.
X	1, 3-8, 10 and 11	US2005/156441 A (EZ TREND) see figures 4 and 5; note adapter 4, return spring 61 also part of driver 6, handle 3, rose 2, spindle 7, securing means 5, 20. See paragraph 30 for removable handle.
X	1-8, 10 and 11	GB2411348 A (NEWELL) see figure 1; note adapter 6, return spring 10, handle 2, inner rose 18, outer rose 20, spindle 4, sockets 24, 40, securing means 26. See lines 21-23 of page 1 for removable handle.
X	1, 3-8, 10 and 11	US5067758 A (TONG LUNG) see figure 2; note adapter 8, return spring 3 which together with rotary plate 4 forms a driver, handle 1, rose 2, sockets 15, 83, securing means 9. See lines 11-14 of column 2 for removable handle. See lines 21-24 for returnable handle.

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^X :

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Worldwide search of patent documents classified in the following areas of the IPC

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The following online and other databases have been used in the preparation of this search report

EPODOC, WPI



Intellectual
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International Classification:

Subclass	Subgroup	Valid From
E05B	0003/06	01/01/2006