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(54) **HANDLES**

GRIFFE

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(73) Proprietor: **Heywood Williams Components Limited**
Elland, Yorkshire HX5 9HT (GB)

(72) Inventor: **PEARSON, Paul Robert**
Daventry, Northamptonshire NN11 5RB (GB)

(74) Representative: **Appleyard Lees IP LLP**
15 Clare Road
Halifax HX1 2HY (GB)

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Description

[0001] The invention relates to handles, for example to handles for windows and doors.

[0002] Such handles commonly comprise a handle portion rotatable on a base portion. In use, the base portion is attached to a window or door and the handle portion is provided with a spindle which passes through the base portion and into an operating mechanism so that rotation of the handle with respect to the base portion operates the mechanism and opens or closes the window or door.

[0003] One typical form of handle is manufactured by forming the handle with a projecting boss that is passed through a hole in the base portion and is then deformed by a spin-riveting procedure to secure the handle portion and base portion together while still permitting rotation of the handle portion with respect to the base portion. The spindle is then inserted into the boss in a subsequent step

[0004] Another type of handle uses a handle body that is made of plastics material with a metal spindle, a neck section of which can pass through an opening in a base portion. A body section of the spindle is too wide to pass through the opening in the base portion. The neck section of the spindle protruding through the opening in the body is secured in a socket of the handle by a friction fit. Disadvantages arise with this arrangement, because the engagement of the spindle in the plastic socket can degrade over time due to heavy use. The handle can then work loose from the spindle and cause the handle to malfunction.

[0005] DE 20 2007 008827 U1 discloses a handle according to the preamble of claim 1. US 4,607,973 discloses a door handle comprising plastic moulded around a core.

[0006] According to the present invention there is provided an apparatus and method as set forth in the appended claims. Other features of the invention will be apparent from the dependent claims, and the description which follows.

[0007] According to an aspect of the invention there is provided a handle comprising a handle portion, a base portion and a spindle, the handle portion being rotatable with respect to the base portion but being held in position against the base portion by trapping the base portion between a projecting part of the spindle and the handle portion,

wherein the spindle is engaged with the handle portion in an interference fit,

wherein the handle portion comprises a body section made of plastics material and an inset section made of a different material, and

wherein the spindle engages with the inset section of the handle portion.

[0008] The body section is an overmould body section, preferably engaged with the inset section by means of an overmoulding process. The body section may be an injection moulded body section. The body section may be injection moulded around the inset section.

[0009] The inset section may be made of metal, preferably zinc, preferably die cast zinc. The inset section may be aluminium, which may be die cast aluminium. The inset section may be magnesium, which may be die cast magnesium. The inset section may be steel.

[0010] The handle portion preferably comprises mainly plastics material.

[0011] A preferred material for the handle portion, in particular the body section, is acrylonitrile butadiene styrene (ABS). An alternative material for the body section may be polyamide (PA). An alternative material for the body section may be polyoxymethylene (POM).

[0012] The ABS may be electroplated.

[0013] The spindle is preferably of metal.

[0014] A preferred material for the spindle is mild steel.

[0015] The base portion may be provided with a cover cap, for example to conceal one or more fixing holes.

[0016] The cover cap may also be of ABS and may be electroplated.

The inset section may have a projecting boss that projects out of the body section. The inset section preferably incorporates a spindle-receiving opening. The spindle-receiving opening may be located in the boss. The spindle-receiving opening may extend along a longitudinal axis of the inset section. The spindle-receiving opening may have a longitudinal axis parallel to a longitudinal axis of the boss. The longitudinal axis of the spindle-receiving opening may be coaxial with the longitudinal axis of the boss.

[0017] The base portion may include a handle portion receiving opening, which opening may be adapted to receive the boss of the inset section.

[0018] The inset section may include a contact portion, which may be adjacent to the boss. The contact portion of the inset section may be located within the body section of the of the handle portion. The contact portion may include at least one lateral projection, which may assist in engagement of the contact portion with the body section of the handle portion.

[0019] The spindle-receiving opening in the inset section may extend from the boss to the contact portion. The spindle-receiving opening may taper in the contact portion, preferably tapering to a narrowest part in a direction extending away from the boss.

[0020] The spindle may have at least one flattened section extending along at least a part of a length of the spindle. The at least one flattened section may co-operate with a corresponding flattened section of the spindle-receiving opening to reduce the risk of the handle portion rotating with respect of the spindle portion.

[0021] According to another aspect of the invention there is provided a method of manufacturing a handle comprising a handle portion, a base portion and a spindle, the handle portion being rotatable with respect to the base portion but being held in position against the base portion by trapping the base portion between a projecting part of the spindle and the handle portion, wherein the

handle portion comprises a body section made of plastics material and an inset section made of a different material, the method comprising moulding the body section over the inset section and passing the spindle through an opening in the base portion and engaging the spindle in an opening of the inset section of the handle portion in an interference fit.

[0022] By way of example, a specific embodiment of the invention will now be described, with reference to the accompanying drawings, in which:

Figure 1 is an exploded side view of an embodiment of a handle according to the invention;

Figure 2 is a cross-sectional side view of the handle;

Figure 3 is an exploded perspective view of the handle;

[0023] The principle components of the handle shown in the Figures 1 to 3 are a handle portion 10, a base portion 11 and a spindle 12. In use the handle portion 10 has to be rotatably mounted on the base portion 11 with the spindle 12 projecting from the handle portion 10, through the base portion 11, and into a window or door such that rotation of the handle portion 10, with respect to the base portion 11, causes rotation of the spindle 12 within the window or door, thus operating a mechanism of the window or door.

[0024] This embodiment of the invention is principally concerned with the way in which the components 10, 11 and 12 are assembled and fastened together.

[0025] The handle does however include a latch assembly 13, a locking barrel 14 and a cover cap 15.

[0026] When the handle is in use, the locking barrel 14 can be operated to lock the handle portion 10 in position with respect to the base portion 11, thus locking the window or door.

[0027] The components 11, 13 and 15 may be moulded from plastics material. Spindle 12 and locking barrel 14 are made of metal.

[0028] The handle 10 is made of two components: a body section 10a and a spindle retainer 10b. The body section 10a is made of plastics material, such as ABS that is overmoulded onto the spindle retainer 10b. The plastics material may also be polyamide (PA) or polyoxymethylene (POM).The process of overmoulding is technically difficult to achieve, because the body section 10a must be injection moulded in the presence of the spindle retainer 10b.

[0029] The spindle retainer 10b has a projecting circular cross-section boss 16a which projects from the body section 10a. In addition the spindle retainer 10b has projections 16b that are used to ensure good retention of the spindle retainer 10b in the body section 10a. The boss 16a projects from the body section 10a and through holes in the latch assembly 13 and the base portion 11. The location of the boss 16a within the hole in the base portion 11 guides the handle portion for rotation with respect to the base portion 11.

[0030] The spindle retainer 10b is hollow with a bore sized to receive the spindle 12 in the boss 16 in an interference fit.

[0031] The metal spindle 12 is manufactured from a length of square cross-section metal which is turned down to provide a cylindrical portion 17 that is sized to engage in the bore of the spindle retainer 10b by an interference fit. The cylindrical portion 17 retains four flat side sections corresponding to the flat sides of the square cross-section of the spindle 12. The orientation of the flats on the cylindrical portion 17 must match the orientation of the correspondingly shaped bore of the spindle reatiner10b. In addition the orientation of the square cross section of the metal spindle 12 must match the orientation of a corresponding square opening of the window or door mechanism to which the handle is fitted. The turning down of the portion 17 provides a square cross-section shoulder 19.

[0032] The handle is provided with a washer 22 which has an inner diameter slightly larger than the portion 17 of the spindle 12 such that the washer can slide over the portion 17 of the spindle 12 until the washer comes to rest against the square cross-section shoulder 19.

[0033] The washer 22 has an outer diameter which is too large for the washer to pass right through the hole 20 in the base portion 11 but can fit within the larger diameter portion of the hole provided by the shoulder 21.

[0034] The main components are very simply secured together by passing the spindle 12 through the washer 22, through the base portion 20, through the hole in the latch sub-assembly 13, and into the boss 16a. The size of the portion 17 is selected to be an interference fit within the boss 16a.

[0035] To facilitate the forcing of the portion 17 into the socket in the boss 16a, the portion 17 may be provided with a slight taper angle, for example from 0.5° to 0.75°.

[0036] In other words, the portion 17 of the spindle 12 is forced into the boss 16a and cannot subsequently be withdrawn therefrom. The portion 17 is securely gripped within the boss 16a and it is the grip provided by this interference fit which retains the components together, while still permitting the handle portion 10 to rotate with respect to the base portion 11, unless it is locked in position by operation of the locking barrel 14.

[0037] The way in which the locking barrel 14 and latch sub-assembly 13 fit within the handle 10 is shown in the cross-sectional view of Figure 2 but will not be described in detail, since these components are conventional.

[0038] The base portion 11 has holes 23 therein for mounting the base portion on a window or door. In use, one of the fixing holes 23 is concealed by the handle 10, as shown in Figure 2, and to make the assembly aesthetic, the other hole 23 is covered by clipping on a cover cap 23a.

[0039] The body section 10a of handle portion 10 and base portion 11 may be made of any suitable plastics

material, polycarbonate (PC) or ABS being preferred, alternatively PA or POM can be used. ABS has the advantage that it can be electroplated.

[0040] The base portion 11 may be made of similar material, or may be a zinc die casting.

[0041] The spindle 12 is preferably made from mild steel.

[0042] The cover caps 15 and 23a may also be of PC or ABS.

[0043] The latch assembly 13 may be of ABS or PA or POM.

[0044] The locking barrel 14 may be of any suitable metal.

The advantageous combination of a handle body section made of plastics material and an inset section thereof made of metal allows for a lower manufacturing cost to be obtained with the cheaper plastics material body section, whilst also allowing the longevity of a metal/metal interface between the spindle and inset section. Thus the high wear area of the handle is made of metal and the body section is made of plastics material. The advantageous use of an overmoulded handle body section on the inset section allows the benefits to be fully realised.

Claims

1. A handle comprises a handle portion (10), a base portion (11) and a spindle (12), the handle portion (10) being rotatable with respect to the base portion (11),
wherein the handle portion (10) comprises a body section (10a) made of plastics material and an inset section (10b) made of a different material,
wherein the spindle (12) engages with the inset section (10b) of the handle portion (10),
characterised in that the handle portion (10) is held in position against the base portion (11) by trapping the base portion (11) between a projecting part of the spindle (12) and the handle portion (10),
wherein the spindle (12) is engaged with the handle portion (10) in an interference fit, and
in which the body section (10a) is an overmoulded body section.

2. The handle of claim 1, in which the body section (10a) is an injection moulded body section.

3. The handle of any preceding claim, in which the inset section (10b) is formed of metal.

4. The handle of any preceding claim, in which the handle portion (10) comprises mainly plastics material.

5. The handle of claim 4, in which the body section (10a) is formed from plastics material.

6. The handle of any preceding claim, in which the inset section (10b) has a projecting boss (16a) that projects out of the body section (10a).

7. The handle of any preceding claim, in which the inset section (10b) incorporates a spindle-receiving opening.

8. The handle of claim 7, in which the spindle-receiving opening extends along a longitudinal axis of the inset section (10b).

9. The handle of claim 7 or claim 8, in which the spindle-receiving opening has a longitudinal axis parallel to a longitudinal axis of the boss (16a).

10. The handle of any preceding claim, in which the base portion (11) includes a handle portion receiving opening adapted to receive the boss (16a) of the inset section (10b).

11. The handle of any preceding claim, in which the spindle-receiving opening in the inset section (10b) extends from the boss (16a) to a contact portion of the inset section (10b).

12. The handle of claim 11, in which the spindle-receiving opening tapers in the contact portion.

13. A method of manufacturing a handle comprising a handle portion (10), a base portion (11) and a spindle (12), the handle portion (10) being rotatable with respect to the base portion (11), wherein the handle portion (10) comprises a body section (10a) made of plastics material and an inset section (10b) made of a different material
characterised by the handle portion (10) being held in position against the base portion (11) by trapping the base portion (11) between a projecting part of the spindle (12) and the handle portion (10), , and by the method comprising moulding the body section (10a) over the inset section (10b) and passing the spindle (12) through an opening in the base portion (11) and engaging the spindle (12) in an opening of the inset section (10b) of the handle portion (10) in an interference fit.

Patentansprüche

1. Griff, umfassend einen Griffteil (10), einen Basisteil (11) und eine Spindel (12), wobei der Griffteil (10) bezüglich des Basisteils (11) drehbar ist,
wobei der Griffteil (10) einen Körperabschnitt (10a), der aus einem Kunststoffmaterial hergestellt ist, und einen Einsatzabschnitt (10b), der aus einem anderen Material hergestellt ist, umfasst,
wobei die Spindel (12) den Einsatzabschnitt (10b) des Griffteils (10) in Eingriff nimmt,

dadurch gekennzeichnet, dass der Griffteil (10) durch Einschließen des Basisteils (11) zwischen einem vorragenden Teil der Spindel (12) und dem Griffteil (10) gegen den Basisteil (11) in Position gehalten wird,
wobei die Spindel (12) mit dem Griffteil (10) in einer Presspassung in Eingriff gehalten wird, und
wobei der Körperabschnitt (10a) ein überspritzter Körperabschnitt ist.

2. Griff nach Anspruch 1, wobei der Körperabschnitt (10a) ein spritzgegossener Körperabschnitt ist.

3. Griff nach einem vorhergehenden Anspruch, wobei der Einsatzabschnitt (10b) aus Metall gebildet ist.

4. Griff nach einem vorhergehenden Anspruch, wobei der Griffteil (10) hauptsächlich ein Kunststoffmaterial umfasst.

5. Griff nach Anspruch 4, wobei der Körperabschnitt (10a) aus einem Kunststoffmaterial gebildet ist.

6. Griff nach einem vorhergehenden Anspruch, wobei der Einsatzabschnitt (10b) einen vorragenden Ansatz (16a) aufweist, der aus dem Körperabschnitt (10a) vorragt.

7. Griff nach einem vorhergehenden Anspruch, wobei der Einsatzabschnitt (10b) eine Spindelaufnahmeöffnung enthält.

8. Griff nach Anspruch 7, wobei die Spindelaufnahmeöffnung entlang einer Längsachse des Einsatzabschnitts (10b) verläuft.

9. Griff nach Anspruch 7 oder Anspruch 8, wobei die Spindelaufnahmeöffnung eine Längsachse aufweist, die parallel zu einer Längsachse des Ansatzes (16a) verläuft.

10. Griff nach einem vorhergehenden Anspruch, wobei der Basisteil (11) eine Griffabschnittaufnahmeöffnung enthält, die zur Aufnahme des Ansatzes (16a) des Einsatzabschnitts (10b) ausgeführt ist.

11. Griff nach einem vorhergehenden Anspruch, wobei die Spindelaufnahmeöffnung in dem Einsatzabschnitt (10b) von dem Ansatz (16a) zu einem Kontaktteil des Einsatzabschnitts (10b) verläuft.

12. Griff nach Anspruch 11, wobei sich die Spindelaufnahmeöffnung in dem Kontaktteil verjüngt.

13. Verfahren zur Herstellung eines Griffs, der einen Griffteil (10), einen Basisteil (11) und eine Spindel (12) umfasst, wobei der Griffteil (10) bezüglich des Basisteils (11) drehbar ist, wobei der Griffteil (10) einen Körperabschnitt (10a), der aus einem Kunststoffmaterial hergestellt ist, und einen Einsatzabschnitt (10b), der aus einem anderen Material hergestellt ist, umfasst,
dadurch gekennzeichnet, dass der Griffteil (10) durch Einschließen des Basisteils (11) zwischen einem vorragenden Teil der Spindel (12) und dem Griffteil (10) gegen den Basisteil (11) in Position gehalten wird und dass das Verfahren Überspritzen des Einsatzabschnitts (10b) mit dem Körperabschnitt (10a) und Hindurchführen der Spindel (12) durch eine Öffnung in dem Basisteil (11) und Ineingriffbringen der Spindel (12) in einer Öffnung des Einsatzabschnitts (10b) des Griffteils (10) in einer Presspassung umfasst.

Revendications

1. Poignée comprenant une partie poignée (10), une partie base (11) et une broche (12), la partie poignée (10) étant apte à tourner par rapport à la partie base (11),
la partie poignée (10) comprenant une section formant corps (10a) composée de matière plastique et une section encastrée (10b) composée d'un matériau différent,
la broche (12) venant en prise avec la section encastrée (10b) de la partie poignée (10),
caractérisée en ce que la partie poignée (10) est maintenue en place contre la partie base (11) en piégeant la partie base (11) entre une partie saillante de la broche (12) et la partie poignée (10),
la broche (12) étant mise en prise avec la partie poignée (10) avec ajustement serré, et
dans laquelle la section formant corps (10a) est une section formant corps surmoulée.

2. Poignée selon la revendication 1, dans laquelle la section formant corps (10a) est une section formant corps moulée par injection.

3. Poignée selon l'une quelconque des revendications précédentes, dans laquelle la section encastrée (10b) est constituée de métal.

4. Poignée selon l'une quelconque des revendications précédentes, dans laquelle la partie poignée (10) comprend principalement de la matière plastique.

5. Poignée selon la revendication 4, dans laquelle la section formant corps (10a) est constituée de matière plastique.

6. Poignée selon l'une quelconque des revendications précédentes, dans laquelle la section encastrée (10b) comporte une protubérance saillante (16a) qui fait saillie hors de la section formant corps (10a) .

7. Poignée selon l'une quelconque des revendications précédentes, dans laquelle la section encastrée (10b) comprend une ouverture de réception de broche.

8. Poignée selon la revendication 7, dans laquelle l'ouverture de réception de broche s'étend le long d'un axe longitudinal de la section encastrée (10b) .

9. Poignée selon la revendication 7 ou la revendication 8, dans laquelle l'ouverture de réception de broche présente un axe longitudinal parallèle à un axe longitudinal de la protubérance (16a) .

10. Poignée selon l'une quelconque des revendications précédentes, dans laquelle la partie base (11) comprend une ouverture de réception de partie poignée conçue pour recevoir la protubérance (16a) de la section encastrée (10b).

11. Poignée selon l'une quelconque des revendications précédentes, dans laquelle l'ouverture de réception de broche dans la section encastrée (10b) s'étend de la protubérance (16a) à une partie de contact de la section encastrée (10b).

12. Poignée selon la revendication 11, dans laquelle l'ouverture de réception de broche présente une section transversale décroissante dans la partie de contact.

13. Procédé de fabrication d'une poignée comprenant une partie poignée (10), une partie base (11) et une broche (12), la partie poignée (10) étant apte à tourner par rapport à la partie base (11), la partie poignée (10) comprenant une section formant corps (10a) composée de matière plastique et une section encastrée (10b) composée d'un matériau différent, **caractérisé en ce que** la partie poignée (10) est maintenue en place contre la partie base (11) en piégeant la partie base (11) entre une partie saillante de la broche (12) et la partie poignée (10), et **en ce que** le procédé comprend le moulage de la section formant corps (10a) sur la section encastrée (10b) et l'insertion de la broche (12) à travers une ouverture dans la partie base (11) et la mise en prise de la broche (12) dans une ouverture de la section encastrée (10b) de la partie poignée (10) avec ajustement serré.

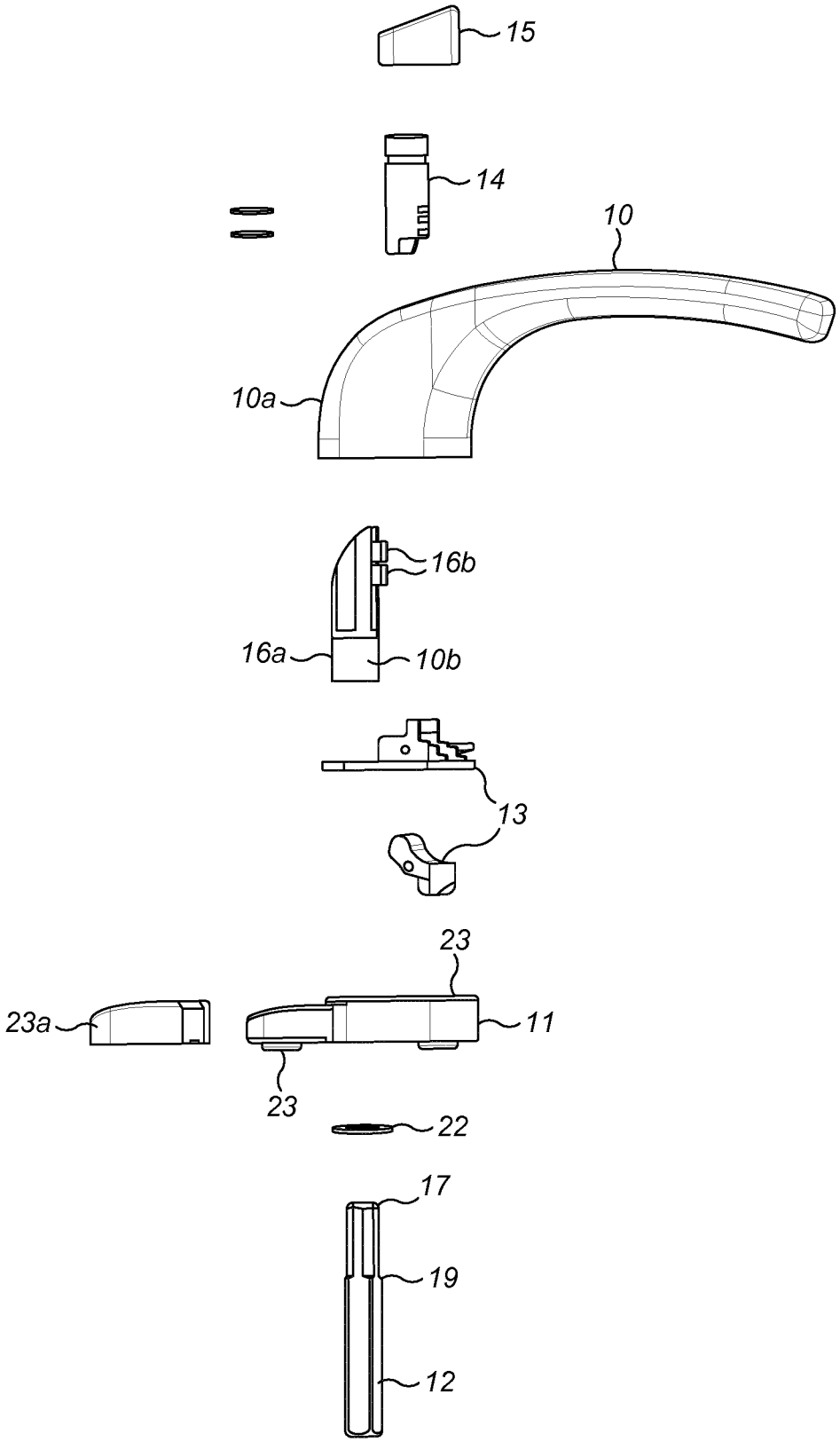

FIG. 1

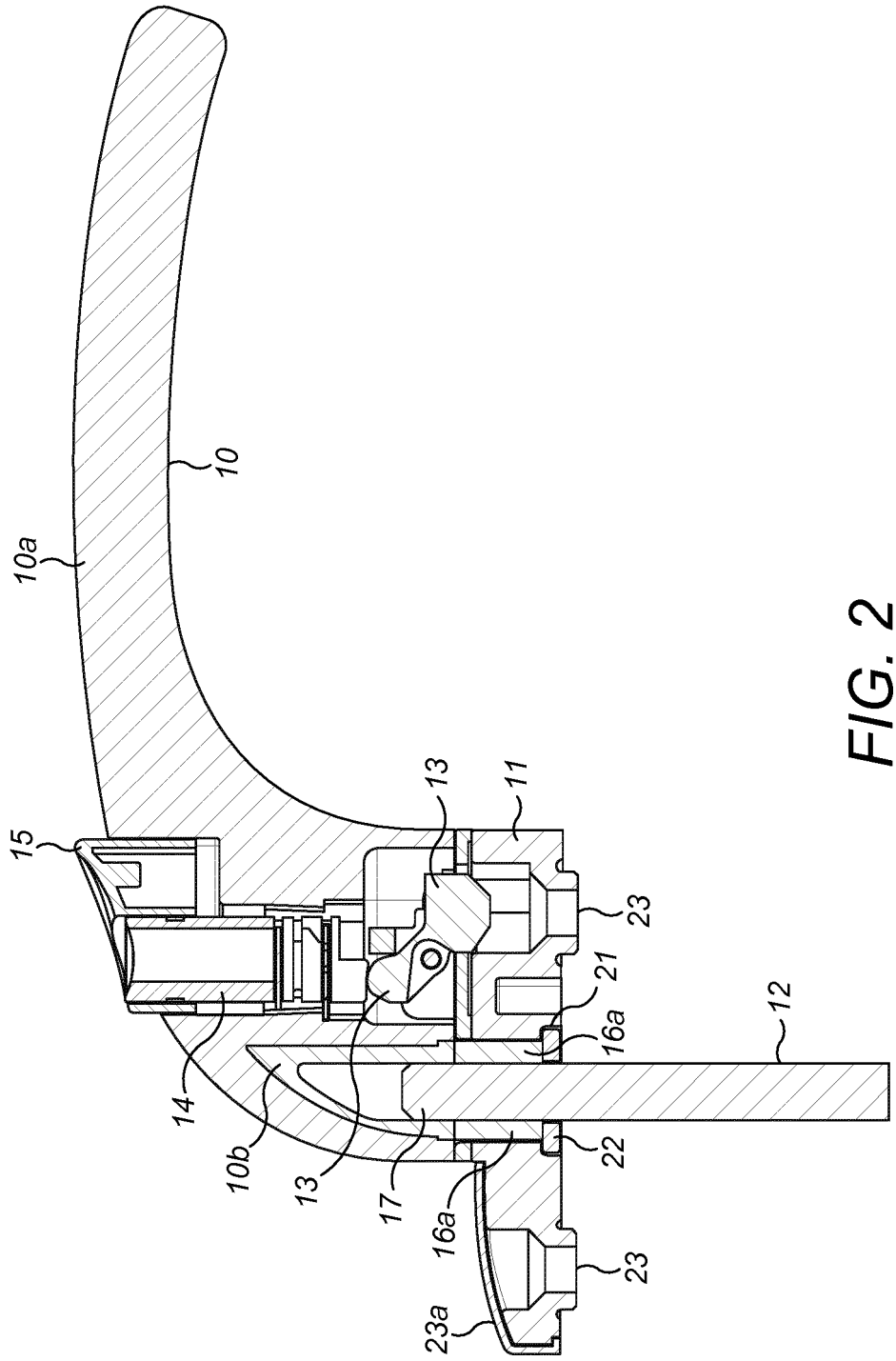

FIG. 2

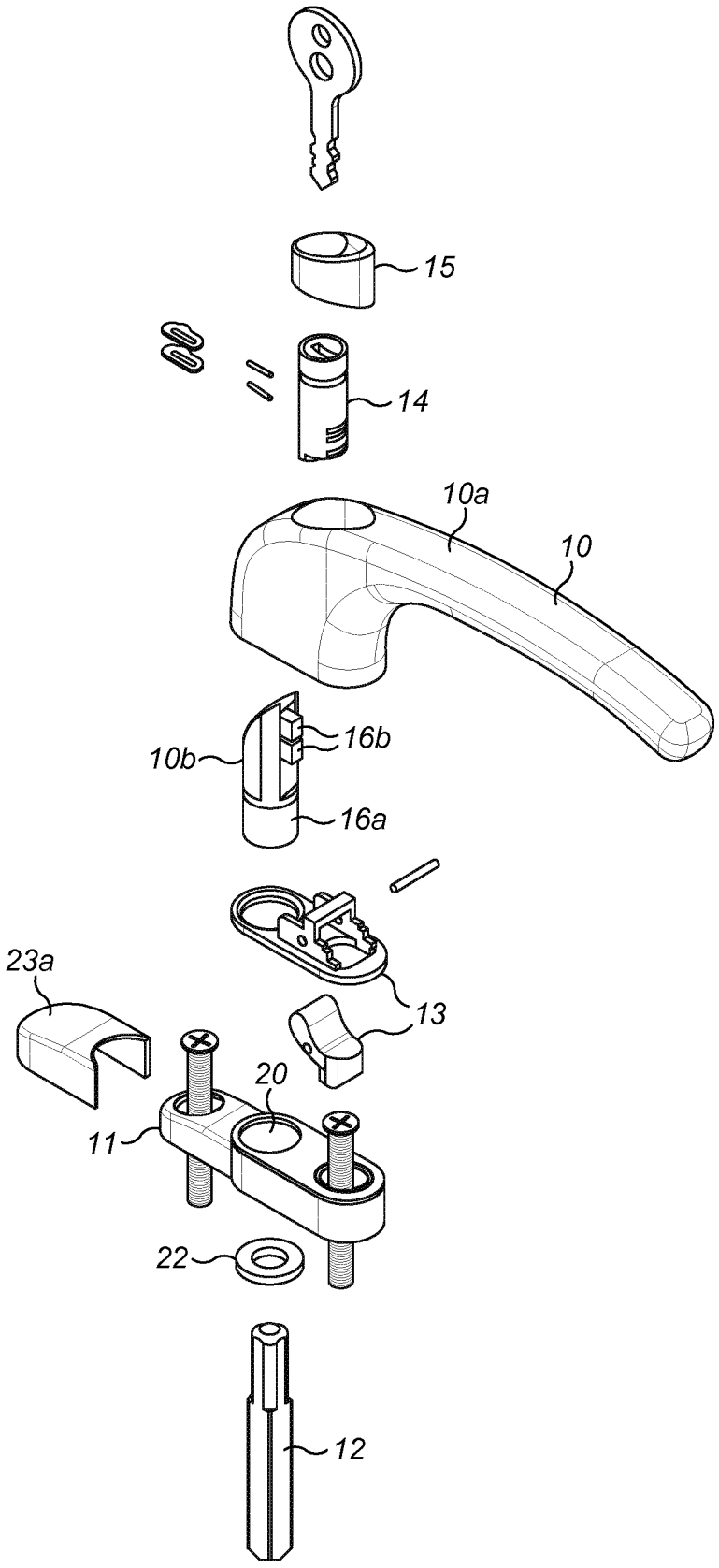

FIG. 3

REFERENCES CITED IN THE DESCRIPTION

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