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(54) **A LATCH ASSEMBLY**

VERRIEGELUNGSANORDNUNG

ENSEMBLE DE VERROUILLAGE

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Description

Technical Field of the Invention

[0001] The present invention relates to a latch assembly and to more specifically a quarter turn latch which provides safety and silent operation.

Background of the Invention

[0002] There exist a variety of latches, in particular quarter-turn latches, for the purpose of locking. In general, turn locks are operated by a key or tool. All offer ease of operation and are ideal for applications where regular access is required.

[0003] In the prior art, clips and segments are used for easy mounting of the latch assembly, however, said pieces does not provide desired degree of sealing above IP65. It is desired that such latches has to be specified as weather resistant according to specify standard values i.e. IP65 standard. In the prior art, segments and/or clips are used for better mounting to bring pieces together, however, which may not fulfill the requirement of the water-resistant according to IP65 standard. Instead of a segment or clips, a nut can be used, however, using the nut may lead to a mounting with an assembly tool such as screwdriver. Further, in such cases, when demounting is needed, demounting of said nut can be difficult which result to be applied extra power from a user.

[0004] A prior art publication in the technical field of the present invention may be referred to as US4671547 (A) among others, the document disclosing a latch for securely releasably clamping closures such as access panels and doors of industrial cabinets, electrical equipment enclosures and the like in closed positions. The documents further discloses that a nut is threaded onto the threaded region of the body and is tightened into engagement with the rear face of the closure plate to hold the latch in place on the closure plate.

[0005] A prior art publication in the technical field of the present invention may be referred to as FR2828227 A1 among others, the document disclosing a lock having a body that can be fitted through a hole in sheet metal and receive a barrel that turns a cam when a key is inserted. It is fixed in place by a ring of a synthetic and elastically deformable material with a projecting rib on its inner surface that engages with a shoulder on the lock body.

[0006] Another prior art publication in the technical field of the present invention may be referred to as EP1707717 (A2) among others, the document disclosing a lock having housing inserted into an opening of a radial extension having a stop ring that is arranged against and protruding from a cabinet portion. The stop ring is connected to an interior lateral housing section so as to be axially adjustable against bias by a spring and relative to projections on the housing.

Objects of the Invention

[0007] Primary object of the present invention is to overcome the abovementioned shortcomings of the prior art.

[0008] Another object of the present invention is to provide a latch assembly which provides an easy installation.

[0009] Another object of the present invention is to provide a latch assembly which is attached without need of a tool.

[0010] Another object of the present invention is to provide a latch assembly has weather resistant level according to IP65 standard.

[0011] Another object of the present invention is to provide a latch assembly which reduces the number of individual components and reduces the mounting effort for the latch. Another object of the present invention is to provide a latch assembly which compensates for possible varying panel thicknesses and/or tolerances.

Summary of the Invention

[0012] The present invention proposes a latch assembly, comprising a housing having a body portion; an actuator rotatably mounted in said housing, having an upper portion and having a range of rotation; and a locking tongue mounted to said actuator. said latch assembly further comprises a mounting member having an at least one tooth which protrudes from a hollow body of the mounting member facing to the housing; at least one protrusion formed on an inner surface of the mounting member wherein said at least one protrusion is guided on at least one guiding channel formed on the outer periphery of the body portion for attaching said mounting member to the housing.

[0013] According to the invention, said guiding channel is provided with first groove and a second groove formed at the ends of the guiding channel.

[0014] In a possible embodiment, said at least one protrusion is raised ball-shaped integral part of the mounting member.

[0015] In a possible embodiment, said protrusion is fitted to the second groove of the housing when said mounting member is attached to the housing.

[0016] In a possible embodiment, said locking tongue is attached to the actuator by means of a fastening member.

[0017] In a possible embodiment, wherein the fastening member is a screw, bolt, dowel, or pin.

[0018] In a possible embodiment, said locking tongue comprises an opposite extension and a longitudinal extension in order to form two longitudinal extensions in opposite directions.

[0019] In a possible embodiment, said opposite extension and the longitudinal extension is connected with an intermediate extension which extends substantially parallel to a longitudinal axis of the latch assembly.

[0020] According to the invention, said guiding channel

extends helically at least a portion on the outer periphery of the housing.

[0021] In a possible embodiment, said protrusion is shaped and dimensioned according to the guiding channel.

[0022] In a possible embodiment, said mounting member is configured for being supported against a door, panel or cabinet due to an established bias with at least one tooth.

Brief Description of the Figures

[0023] The figures, whose brief explanations are herewith provided, are solely intended for providing a better understanding of the present invention and are as such not intended to define the scope of protection or the context in which said scope is to be interpreted in the absence of the description.

Figure 1 shows an exploded perspective of the latch assembly according to the present invention.

Figure 2 shows an upper view of the latch assembly according to the present invention.

Figure 3 shows a side view of the latch assembly according to the present invention.

Figure 4 shows a perspective view of the locking piece and the housing of the latch assembly according to the present invention.

Reference numbers:

[0024] Referring now to the figures outlined above, the present invention proposes a latch assembly. The following numerals are assigned to different parts demonstrated in the drawings:

- 10. Latch assembly
- 20. Actuator
- 21. Multi-sided projection
- 22. Main body
- 23. Lower portion
- 30. Housing
- 32. Body portion
- 37. Upper face
- 38a. First groove
- 38b. Second groove
- 39. Guiding channel
- 40. Mounting member
- 41. Tooth
- 43. Protrusion
- 44. Hollow body
- 45. Inner surface

- 50. Locking tongue
- 51. Guiding hole
- 52. Opposite extension
- 53. Intermediate extension
- 54. Longitudinal extension
- 60. Fastening member
- X. longitudinal axis of the latch assembly

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Detailed Description of the Invention

[0025] The exemplary embodiment shown in FIGS. 1-3 illustrates a latch assembly (10), in particular relates to a rotation latch assembly that may be assembled as either a quarter-turn latch or a half-turn latch, and as either a clockwise latch or a counter-clockwise latch.

[0026] Said latch assembly (10) mainly comprises: a housing (30) having a body portion (32); an actuator (20) rotatably mounted in said housing (30), having an upper portion (21) and having a range of rotation; and a locking tongue (50) mounted to said actuator (20). Said latch assembly (10) further comprises a mounting member (40) having at least one tooth (41) which protrudes from a hollow body (44) of the mounting member (40) facing to the housing (30); at least one protrusion (43) formed on an inner surface (45) of the mounting member (40), and wherein said at least one protrusion (43) is guided on at least one guiding channel (39) formed on the outer periphery of the body portion (32) for attaching said mounting member (40) to the housing (30). Said housing is provided with at least one guiding channel (39) to allow the housing to be secured by means of the mounting member (44) in a door leaf, cabinet or the like.

[0027] Referring to the FIG. 1, the housing (30) has a body portion (32) which is substantially cylindrically shaped. Said body portion (32) of the housing (30) is arranged to receive at least a portion of the actuator (20) and an outer face (37) of which is in a form of a frusto-conical. Said housing (30) has at least two grooves which are in communication with a guiding channel (39) wherein a ball-shaped protrusion (43) is guided for engaging a mounting member to the housing (30). Said guiding channel (39) extends helically at least a portion on the outer periphery of the housing (30).

[0028] The actuator (20) arranged in the housing (30) so as to be pivotable. The end of the actuator (20) that can be introduced into the housing (30) has a cylindrical main body (22) and a lower portion (23) which is configured as a square end, on which a locking tongue (50) can be mounted in a fitting manner. Subsequently, the locking tongue (50) can be fixedly attached to the actuator (20) by means of the fastening member (60).

[0029] According to the invention, said at least one guiding channel (39) extends helically on the outer periphery of the body portion (32) with provided a first groove (38a) and a second groove (38b) at the ends of the said guiding channel (39). Said first and second

grooves (38a, 38b) formed of as a depressed integral part of the body portion (32) from the same material as the housing (30) itself. Likewise, at least one protrusion (43) of the mounting member (40) is a raised integral part of the mounting member (40). Further, said protrusion (43) is shaped and dimensioned according to the guiding channel (39) such that a cross section of the protrusion (43) may be a square, rectangular or other polygonal shape. Referring to the FIG. 1, said latch assembly (10) mainly comprises the housing (30), the actuator (20), the mounting member (40) and the locking tongue (50). The actuator (20) is rotatably held at least in part within the housing and is configured such that it may rotate between a first and a second position. The locking tongue (50) is fixed to the actuator (20) at one end and thus rotates in relation with the actuator (20).

[0030] Said locking tongue (50) is preferably a metal part folded in order to form two longitudinal extensions in opposite directions and in two plans. Referring to the FIG. 1 and 2, said locking tongue (50) mainly comprises an opposite extension (52), an intermediate extension (53) and a longitudinal extension (54). Said opposite-side oriented extensions are connected by the slightly inclined intermediate extension (53) which extends substantially parallel to a longitudinal axis (X) of the latch assembly (10). Further, said longitudinal extension (2) is provided with a guiding hole (51) in which a fastening member (60) passes through. The locking tongue (50) is attached to the actuator (20) by means of a fastening member (60) which can be a screw, bolt, dowel, or pin.

[0031] With regard to a reliable fixing of the latch assembly (10) in a place, firstly the housing (30) is inserted into the cabinet, panel or the like and then the mounting member is fitted with the first groove (38a) leading to the second groove (38b) via the guiding channel (39). At least one sign is formed on the latch assembly (10) to direct the user how to mount and demount the latch. After placing the mounting member into the channel, it is preferably rotated 90 degrees to the right (clockwise) and the protrusion is guided to the corresponding second hole (38a) such that the attachment of the mounting member is completed. For disassembly of the latch assembly (10), firstly the mounting member (40) is rotated 90 degrees to the left (counter-clockwise) by the user.

[0032] With respect to limiting the rotation of the locking tongue (50), relative to the housing, said tongue locking (50) or the actuator (20) can be provided with a radially extending projection that engages in a slot that fixes the angle of rotation of the actuator (20) relative to the housing (30). Said actuator (20), on its front, left end, has a multi-sided projection (21) for the application of a corresponding key or wrench. The latch assembly (10) is actuated by means of a key of wrench that is applied to the multi-sided projection (21) of the actuator (20).

[0033] By means of attachment of said mounting member (40) to the housing (30), an easy installation, protection against water and protection against vibration is guaranteed independent from the latch function. Thanks

to the mounting member (40) with more than one flexible tooth, preferably four teeth, it is provided that the latch is securely hold in its place. In a possible embodiment, said mounting member (40) has four tooth which are equally placed on around the hollow body (44). Said tooth (41) has a cross-section substantially in the form of "L". Further, said tooth (41) are oriented to protrude facing to the upper face (37) of the housing (30). When the protrusion (43) is brought to engage with the second groove (38), said at least one tooth (40) apply pressure against the cabinet or the panel to hold said latch assembly firmly therein. Further, in that case, only way to remove the mounting member (40) from its place is by rotating it appropriately.

Claims

1. A latch assembly (10), comprising:

a housing (30) having a body portion (32);
an actuator (20) rotatably mounted in said housing (30), having a range of rotation; and
a locking tongue (50) mounted to said actuator (20), wherein said latch assembly (10) further comprises
a rotatably attachable mounting member (40) having an at least one tooth (41) which protrudes from a hollow body (44) of the mounting member (40); and
at least one protrusion (43) formed on an inner surface (45) of the hollow body (44) **wherein** said at least one protrusion (43) is configured to guide on at least one guiding channel (39) formed on the outer periphery of the body portion (32) for attaching said mounting member (40) to the housing (30) **wherein** said guiding channel is provided helically on at least a portion on the outer periphery of the housing (30), **characterized in that** said guiding channel (39) is provided with a first groove (38a) and a second groove (38b) formed at the ends of the guiding channel (39).

2. The latch assembly according to the Claim 1, wherein said at least one protrusion (43) is raised integral part of the mounting member (40), said protrusion (43) is formed as a ball-shaped.

3. The latch assembly (10) according to the Claim 2, wherein said protrusion (43) is fitted to the second groove (38b) of the housing (30) when said mounting member (40) is attached to the housing (30).

4. The latch assembly (10) according to any of the preceding claims, wherein said locking tongue (50) is attached to the actuator (20) by means of a fastening member (60).

5. The latch assembly (10) according to the Claim 4, wherein said fastening member (60) is a screw, bolt, dowel, or pin.
6. The latch assembly (10) according to any of the preceding claims, wherein said locking tongue (50) comprises an opposite extension (52) and a longitudinal extension (54) in order to form two longitudinal extensions in opposite directions.
7. The latch assembly (10) according to the Claim 6, wherein said opposite extension (52) and the longitudinal extension (54) is connected with an intermediate extension (53) which extends substantially parallel to a longitudinal axis (X) of the latch assembly (10).
8. The latch assembly (10) according to any of the preceding claims, wherein said protrusion (43) is shaped and dimensioned according to the guiding channel (39).
9. The latch assembly (10) according to any of the preceding claims, wherein said mounting member (40) is configured for being supported against a door, panel or cabinet due to an established bias with at least one tooth (41).
10. The latch assembly (10) according to any of the preceding claims, wherein the actuator (20) has a multi-sided projection (21) for actuation by means of a key or wrench.

Patentansprüche

1. Verriegelungsanordnung (10), aufweisend:

ein Gehäuse (30) mit einem Körperabschnitt (32);
 einen Aktuator (20), der drehbar im Gehäuse (30) befestigt ist und einen Drehbereich aufweist; und
 eine Schließzunge (50), die am Aktuator (20) befestigt ist, wobei die Verriegelungsanordnung (10) ferner aufweist:

ein drehbar anbringbares Befestigungselement (40) mit mindestens einem Zahn (41), der aus einem Hohlkörper (44) des Befestigungselements (40) hervorsticht; und
 mindestens einen Vorsprung (43), der auf einer Innenfläche (45) des Hohlkörpers (44) gebildet ist, wobei der mindestens eine Vorsprung (43) ausgebildet ist, um auf mindestens einem Leitkanal (39), der auf dem Außenumfang des Körperabschnitts (32) zum Anbringen des Befestigungselements (40)

am Gehäuse (30) gebildet ist, zu leiten, wobei der Leitkanal spiralförmig auf mindestens einem Abschnitt auf dem Außenumfang des Gehäuses (30) angeordnet ist, **dadurch gekennzeichnet, dass** der Leitkanal (39) über eine erste Rille (38a) und eine zweite Rille (38b) verfügt, die an den Enden des Leitkanals (39) gebildet sind.

2. Verriegelungsanordnung nach Anspruch 1, wobei der mindestens eine Vorsprung (43) ein erhöhter integraler Bestandteil des Befestigungselements (40) ist, und wobei der Vorsprung (43) kugelförmig ausgebildet ist.
3. Verriegelungsanordnung (10) nach Anspruch 2, wobei der Vorsprung (43) in die zweite Rille (38b) des Gehäuses (30) eingepasst ist, wenn das Befestigungselement (40) am Gehäuse (30) angebracht ist.
4. Verriegelungsanordnung (10) nach einem der vorangegangenen Ansprüche, wobei die Schließzunge (50) mittels eines Befestigungsbauteils (60) am Aktuator (20) angebracht ist.
5. Verriegelungsanordnung (10) nach Anspruch 4, wobei das Befestigungsbauteil (60) eine Schraube, ein Bolzen, ein Dübel oder ein Stift ist.
6. Verriegelungsanordnung (10) nach einem der vorangegangenen Ansprüche, wobei die Schließzunge (50) eine entgegengesetzte Ausdehnung (52) und eine Längsausdehnung (54) aufweist, um zwei Längsausdehnungen in entgegengesetzten Richtungen zu bilden.
7. Verriegelungsanordnung (10) nach Anspruch 6, wobei die entgegengesetzte Ausdehnung (52) und die Längsausdehnung (54) mit einer Zwischenausdehnung (53), die sich im Wesentlichen parallel zu einer Längsachse (X) der Verriegelungsanordnung (10) ausdehnt, verbunden sind.
8. Verriegelungsanordnung (10) nach einem der vorangegangenen Ansprüche, wobei der Vorsprung (43) gemäß dem Leitkanal (39) geformt und bemessen ist.
9. Verriegelungsanordnung (10) nach einem der vorangegangenen Ansprüche, wobei das Befestigungselement (40) ausgebildet ist, um aufgrund einer festgelegten Vorspannung mit mindestens einem Zahn (41) gegen eine Tür, ein Paneel oder einen Schrank gestützt zu werden.
10. Verriegelungsanordnung (10) nach einem der vorangegangenen Ansprüche, wobei der Aktuator (20) einen mehrseitigen Fortsatz (21) zur Betätigung mit-

tels eines Schlüssels oder Schraubenschlüssels aufweist.

Revendications

1. Ensemble de verrouillage (10), comprenant :

un boîtier (30) ayant une partie corps (32) ;
un actionneur (20) monté de manière rotative dans ledit boîtier (30), ayant une plage de rotation ; et
une languette de verrouillage (50) montée sur ledit actionneur (20), ledit ensemble de verrouillage (10) comprenant en outre
un élément de montage (40) pouvant être fixé de manière rotative, ayant au moins une dent (41) qui fait saillie à partir d'un corps creux (44) de l'élément de montage (40) ; et
au moins une saillie (43) formée sur une surface interne (45) du corps creux (44), ladite au moins une saillie (43) étant configurée pour réaliser un guidage sur au moins un canal de guidage (39) formé sur la périphérie externe de la partie corps (32) pour fixer ledit élément de montage (40) au boîtier (30), ledit canal de guidage étant prévu en hélice sur au moins une partie sur la périphérie externe du boîtier (30), **caractérisé par le fait que** ledit canal de guidage (39) comporte une première rainure (38a) et une seconde rainure (38b) formées aux extrémités du canal de guidage (39).

2. Ensemble de verrouillage selon la revendication 1, dans lequel ladite au moins une saillie (43) est une partie solidaire surélevée de l'élément de montage (40), ladite saillie (43) se présentant sous la forme d'une bille.

3. Ensemble de verrouillage selon la revendication 2, dans lequel ladite saillie (43) est adaptée dans la seconde rainure (38b) du boîtier (30) lorsque ledit élément de montage (40) est fixé au boîtier (30).

4. Ensemble de verrouillage (10) selon l'une quelconque des revendications précédentes, dans lequel ladite languette de verrouillage (50) est fixée à l'actionneur (20) au moyen d'un élément de fixation (60).

5. Ensemble de verrouillage (10) selon la revendication 4, dans lequel ledit élément de fixation (60) est une vis, un boulon, un goujon ou une cheville.

6. Ensemble de verrouillage (10) selon l'une quelconque des revendications précédentes, dans lequel ladite languette de verrouillage (50) comprend une extension opposée (52) et une extension longitudinale (54) afin de former deux extensions longitudinales

dans des directions opposées.

7. Ensemble de verrouillage (10) selon la revendication 6, dans lequel ladite extension opposée (52) et l'extension longitudinale (54) sont reliées avec une extension intermédiaire (53) qui s'étend sensiblement parallèlement à un axe longitudinal (X) de l'ensemble de verrouillage (10).

8. Ensemble de verrouillage (10) selon l'une quelconque des revendications précédentes, dans lequel ladite saillie (43) est formée et dimensionnée en fonction du canal de guidage (39).

9. Ensemble de verrouillage (10) selon l'une quelconque des revendications précédentes, dans lequel ledit élément de montage (40) est configuré pour être supporté contre une porte, un panneau ou une armoire en raison d'une sollicitation établie avec au moins une dent (41).

10. Ensemble de verrouillage (10) selon l'une quelconque des revendications précédentes, dans lequel l'actionneur (20) a une projection à multiples côtés (21) pour un actionnement au moyen d'une clé.

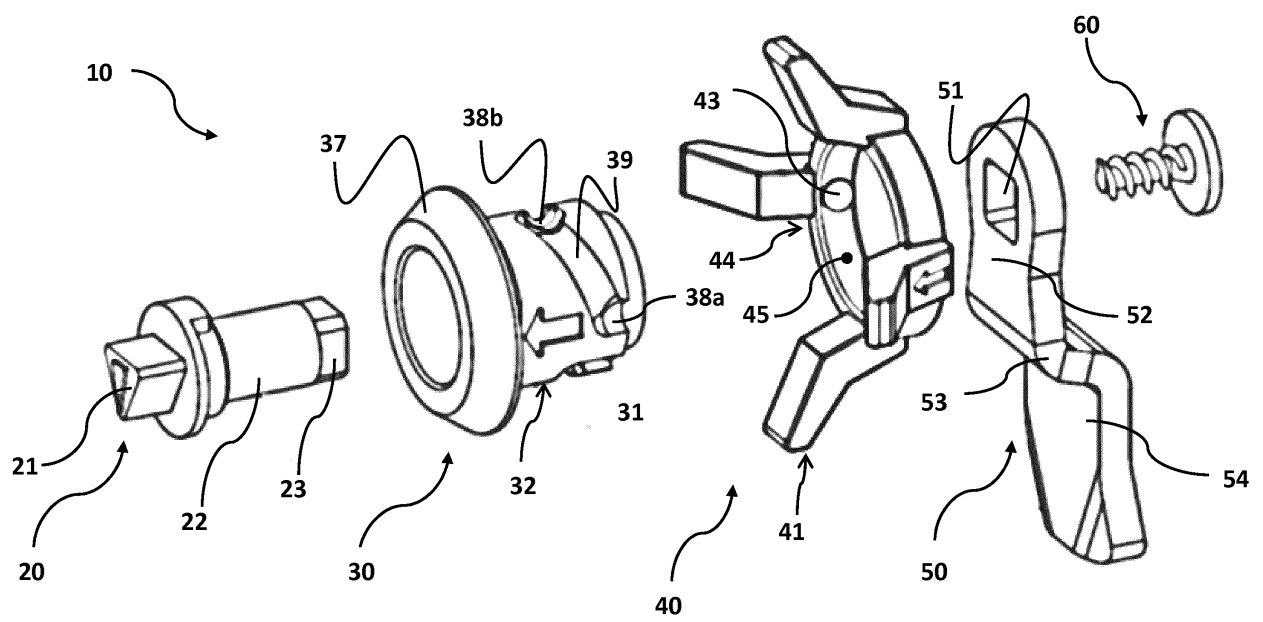
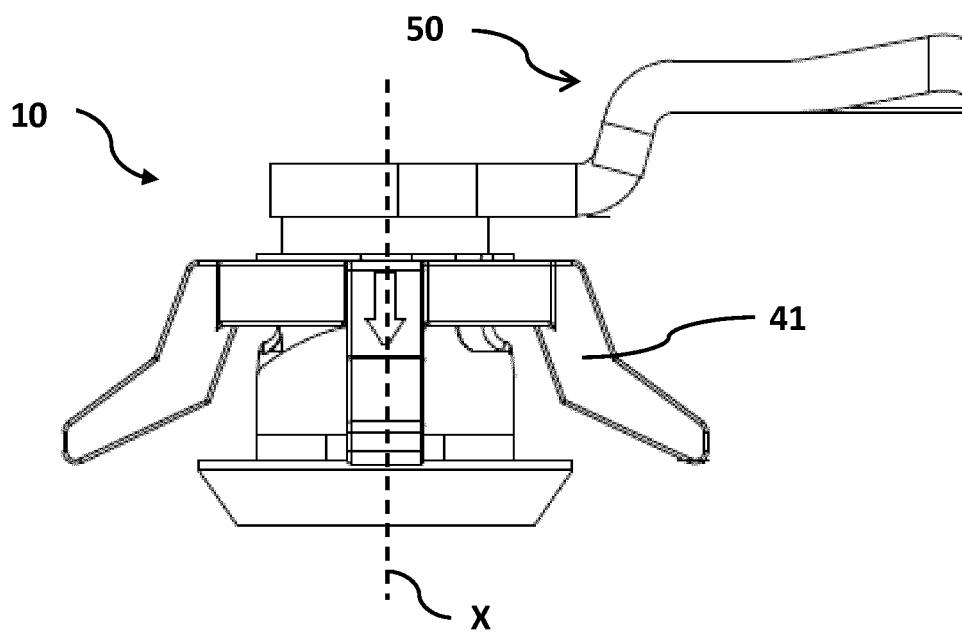
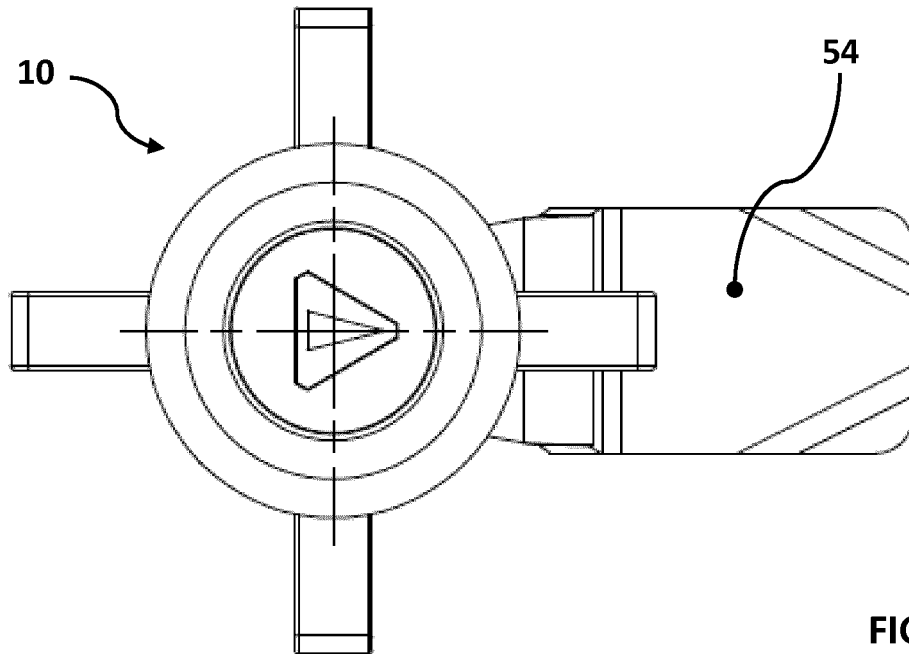


FIG. 1



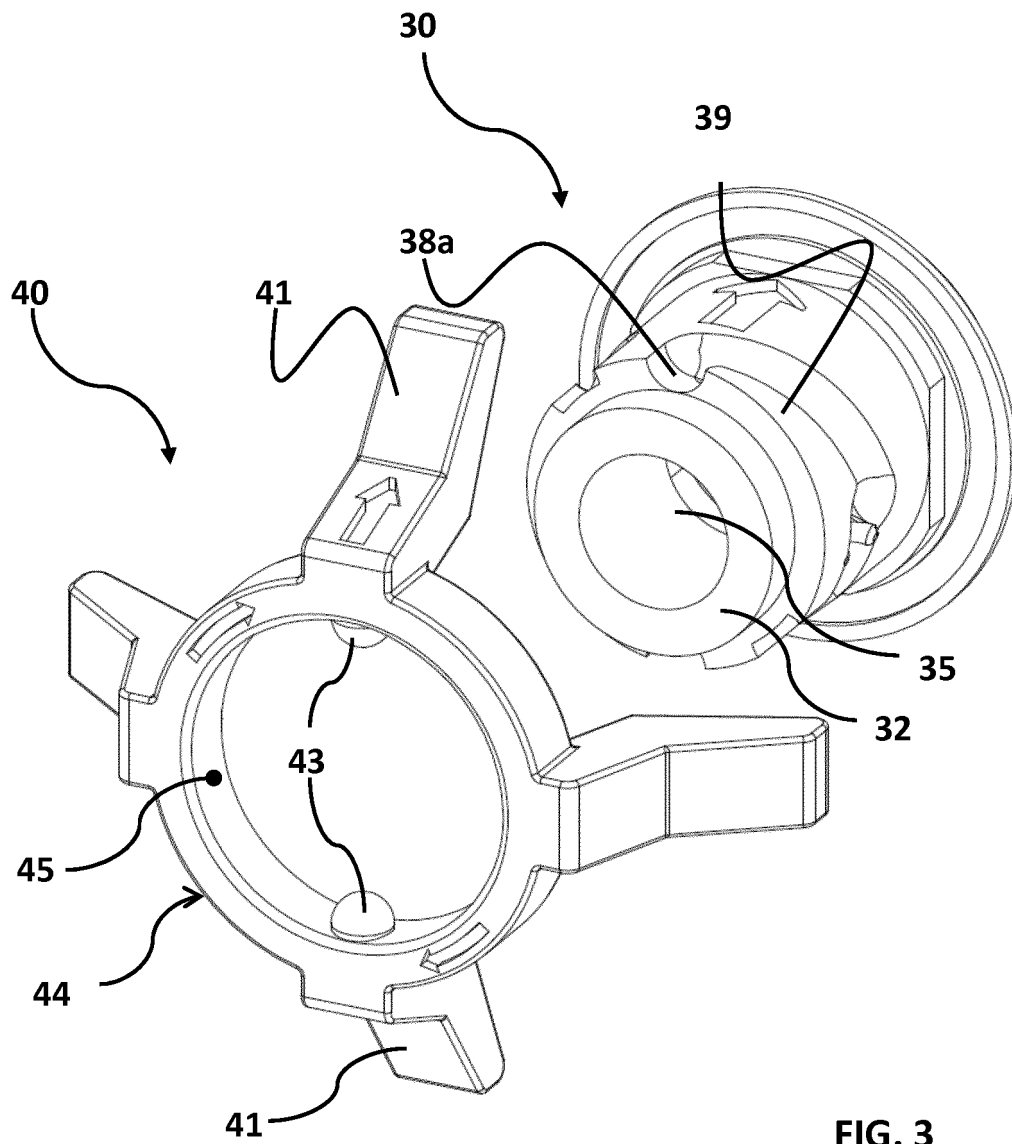


FIG. 3

REFERENCES CITED IN THE DESCRIPTION

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