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(54) **A COLLAR FOR USE WITH A DISPENSING GUN**

(57) The present invention relates to a collar for use with a dispensing gun comprising: a body with an egress aperture provided at a first end and an opening for receiving a flexible container at a second opposed end; wherein the egress aperture has a first connection means for receiving a nozzle and the opening has a second con-

nection means comprising a plurality of receptor slots for receiving lugs on an external surface of a connecting member, or a plurality of lugs on an external surface of the collar for engaging with receptor slots on the connecting member to form a bayonet connection.

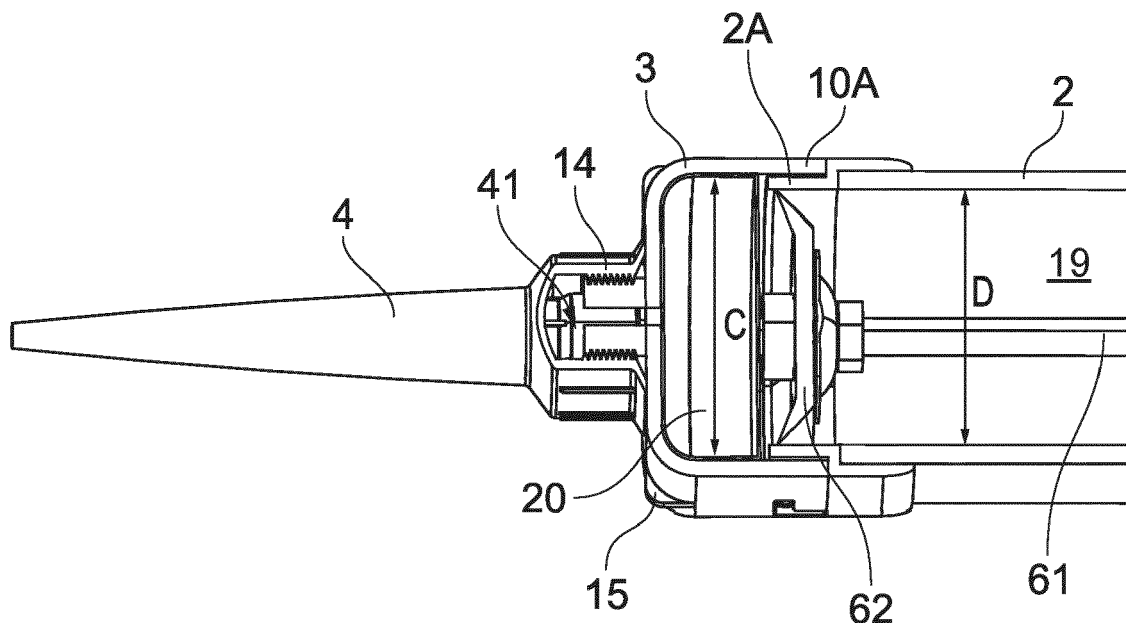


FIG. 1A

Description

Field of the Invention

[0001] The present invention relates to a collar for use with a dispensing gun, in particular a for dispensing gun used with flexible containers of a viscous fluid such as a sealant.

Background

[0002] In many societies there are increasing numbers of people using sealants in an increasing population, as well as increasing standards of premises upkeep.

[0003] However there is a growing recognition of environmental factors for single use product, which is common for man sealants, in particular disposable sealant containers which are often not suitable for recycling.

[0004] There is also often a requirement to apply sealant in locations with restricted space, however re-usable guns for sealant containers are typically bulky and unwieldy which can be problematic in restricted spaces such as around sinks or in bathroom environments.

Prior Art

[0005] GB2374070(ARMISHAW) discloses a dispenser suitable for dispensing sealant, comprises a body in which material to be dispensed is located, dispensing means operable to urge the material through an outlet in the body, a unitary end cap removably attached to the body and a nozzle removably attachable to the end cap.

[0006] DE202018107157U1 (DINOL) discloses a screw sleeve for a cartridge having a cylindrical cartridge connecting portion with an internal bayonet thread for connection to a cylindrical screw sleeve connecting portion with an external bayonet thread of a cartridge in order to connect the screw sleeve to the cartridge by means of a bayonet closure, as well as a cylindrical mixer holding section with a central mixer holding opening in order to hold a mixer on the cartridge, characterized by a stiffening measure and/or a pressing device in order to increase the pressing pressure generated by the bayonet lock with which the mixer is pressed against the cartridge.

[0007] EP 1 611 962 (STAHL) discloses a receiving body for a spray gun system comprises a fixing support for fixing a nozzle to which a guiding cone is connected, wherein the cone progresses into a radially extending support edge and a system consisting of a spray gun with the receiving body arranged between a nozzle and a bag. The support edge may be formed as a peripheral flange and/or have a thread for fixing the nozzle.

[0008] US2022/0274758A1 (BODENMULLER et. al.) discloses a foil cartridge with a film bag and a sold head part.

[0009] US2019/0299245A1 (COE) discloses a storage container for a cylindrical tube of viscous material including a body dimensioned to receive a cylindrical tube and

a nozzle.

[0010] US2017/0327299A1 (BUCK) discloses an assembly for pressing pastry or a fluid substance from a film bag with a cylindrical receptacle and a closing cap.

[0011] US6223941B1 (NEALEY) discloses an apparatus to dispense material from a soft packet with a barrel and a cap.

[0012] GB2374070A (ARMISHAW) discloses a dispense for sealant with a dispensing means to urge material through an outlet on a body with an end cap that receives a nozzle.

Summary of the Invention

[0013] According to a first aspect of the present invention there is provided a collar for use with a dispensing gun comprising: a body with an egress aperture provided at a first end and an opening for receiving a flexible container at a second opposed end; wherein the egress aperture has a first connection means for receiving a nozzle and the opening has a second connection means comprising a plurality of receptor slots for receiving lugs on an external surface of a connecting member to form a bayonet connection.

[0014] According to a second aspect of the present invention there is provided a collar for use with a dispensing gun comprising: a body with an egress aperture provided at a first end and an opening for receiving a flexible container at a second opposed end; wherein the egress aperture has a first connection means for receiving a nozzle and the opening has a second connection means comprising a plurality of lugs on an external surface for receiving receptor slots on a connecting member to form a bayonet connection.

[0015] In this way the collar can be repeatedly reused as part of a dispensing gun assembly wherein an end of flexible container is received to the opening of the collar, contents of the container exit through the egress aperture under urging until the flexible container is spent and compressed into a parcel that fits within the depth of the collar.

[0016] Once the container is spent and the remaining parcel is retained in the collar, the collar can be removed whilst still containing the parcel, the parcel can be removed and a new container can be added and the collar reconnected and reused. Advantageously this minimises waste as only the skin surrounding the contents of the container is disposed of whilst the collar and other parts of the dispensing gun can be reused.

[0017] It may be envisaged that the collar is therefore suited to dispensing extrudable contents such as viscous fluids contained in flexible containers. The flexible containers are typically collapsible, flexible, cylindrical sausage-shaped containers, commonly known in the art, such as foil pack that is received and contained by the cavity defined by the collar and connecting member. Preferably the connecting member is a rigid cylinder.

[0018] The body is substantially cylindrical with an egress aperture which provides a channel along which

contents exit the collar. The egress aperture is at a first end of the collar which is an end from which the content is dispense and applied.

[0019] The egress aperture has a first connection means for receiving a nozzle so that a nozzle can be easily added and removed as required. This allows for a nozzle to be easily changed at any time and also allows for the nozzle to be removed cleaned and reused.

[0020] The opening for receiving a flexible container is provided at the second opposed end of the cylindrical body. The opening is shaped and dimensioned to receive an end of a flexible container. The opening has a second connection means comprising: a plurality of receptor slots for receiving lugs on an external surface of a connecting member to form a bayonet connection, or a plurality of lugs on an external surface of the opening for receiving receptor slots on the connecting member to form a bayonet connection. In this way the collar can be quickly and reliably connected to the connecting member by the bayonet connection to provide a cavity into which a flexible container is received and dispensed from. This arrangement means that the dispensing gun can be easily refilled.

[0021] Advantageously as the lugs are provided on an external surface of the connecting member or the opening of the collar the engagement with the receptor slots is external to the container which helps to ensure that contents of the flexible container are not liable to interfere with or compromise the connection or be snagged by the lugs.

[0022] Preferably the collar has receptor slots and fits externally about the connecting member which has corresponding lugs so that the internal profile of the connecting member is a continuous smooth surface of a first diameter and the collar has a wider second diameter. Advantageously this enables the flexible container to not become caught between the joint and instead acts to encourage the flexible container to expand into wider diameter space at the collar so that the sealing material can be smoothly extruded and it is efficiently extruded until fully spent.

[0023] In some embodiments the distal end of the cylinder may taper towards the collar to present a substantially smooth continuous surface rather than a stepped surface. It is appreciated that the distal end of the cylinder may taper to minimum thickness that provides sufficient robustness for repeated connection and disconnection of the collar.

[0024] It is appreciated that the collar and connecting member can be provided in a reverse configuration in some embodiments in which the collar with external lugs is received into the connecting member that has corresponding receptor slots. In this embodiment the connecting member may also be shaped to provide a smooth internal profile of a first diameter and the collar may be shaped to have a wider second diameter.

[0025] Additionally the proximal end of the collar may taper towards the connecting member to present a sub-

stantially smooth continuous surface rather than a stepped surface. It is appreciated that the proximal end of the collar may taper to minimum thickness that provides sufficient robustness for repeated connection and disconnection of the collar.

[0026] Additionally the use of bayonet connection enables the overlapping portion to be thinner than the thickness required for a screw thread connection that provides the same strength and durability. Advantageously this provides the option for the external circumference where the collar and connecting member join to be less than traditional assemblies which have a screw threaded cap that receives the nozzle and has a much wider circumference. Therefore the present invention is more suitable for use in space restricted areas, such as behind taps or under window sills because the collar region has a smaller circumference.

[0027] In a preferred embodiment the first connection means on the egress aperture is a screw thread. Ideally the screw thread is provided on an external face of the egress aperture for engagement with an internal screw thread on the nozzle. In this way industry standard nozzles (universal nozzle connections commonly provided with single use sealants) can be fitted to the collar, rather than bespoke nozzles being required.

[0028] In a preferred embodiment the collar has a shoulder that is a region of the body at the first end that tapers towards the egress aperture. This shaping assists with urging contents from the flexible container towards and through the egress aperture.

[0029] Typically the shoulder is formed by shaping of the wall of the collar. In some embodiments tapering that forms the shoulder may be provided by an internal thickening of the wall of the collar so that the external profile is different to the internal profile.

[0030] In preferred embodiments the collar has at least one radially projecting fin to provide a grip for a user's hand when attaching and removing the collar from the connecting member using the bayonet connection. Ideally a plurality of regularly spaced fins are provided around the circumference of the collar.

[0031] The depth of the body is dimensioned to accommodate a spent flexible container. Typically at least part of the body that has a constant diameter must be the depth of a spent container so that it can be fully contained in the collar. Therefore in an embodiment that has a shoulder, the shoulder depth is not considered as part of the depth for storing the spent container as the diameter is not constant.

[0032] In a preferred embodiment part of the collar that receives the spent container and that has a constant diameter is at least 20mm long and no greater than 30mm long. A preferred embodiment a region of the collar with a constant diameter has a depth of 25mm. In this way the spent container is compacted into the collar by the urging means, the collar can be removed and the spent foil container removed.

[0033] Furthermore the depth of the collar also helps

to ensure that any leakage from the flexible container is retained in the collar and does not spread to the cylinder (connecting member, which could also make separation of the bayonet connection problematic.

[0034] The collar connects to the connecting member by a bayonet fitting. Preferably each receptor slot is L-shaped extending from an edge of the opening. Different embodiments of the collar may have different lengths of receptor slot.

[0035] In another embodiment each receptor slot is L-shaped extending from an edge (distal end) of the connecting member.

[0036] Preferably each receptor slot extends at least 8mm inwards from the edge of the opening or connecting member.

[0037] In some embodiments each receptor slot extends at least 10mm inwards from the edge of the opening or connecting member.

[0038] In yet further embodiments each receptor slot extends at least 12mm inwards from the edge of the opening or connecting member.

[0039] The longer receptor slots may be required to provide improved strength when using more heavy duty sealants, that can have a thicker consistency, which places more pressure onto the bayonet connection when the sealants is being squeezed through the nozzle compared to lower viscosity contents such as sanitary silicones. Preferably the larger 12mm receptor slots may be used for thicker consistency sealants that also typically use larger threaded universal nozzles and the 8mm receptor slots may be used for a thinner consistency sealant for example when using the smaller 'sanitary' type threaded universal nozzles.

[0040] In preferred embodiments the bayonet fitting may contain a detent mechanism to provide a sensation to confirm connection, such as audible click or haptic feedback. For example this may be achieved by a ball detent provided as part of the receptor slot/lug connection.

[0041] In use the collar and a connecting member are assembled to provide a cavity in which a flexible container is received and the assembly is for use as part of a dispensing gun.

[0042] A typical dispensing gun has a cradle for holding the collar and connecting member that receives the flexible container. The dispensing gun also has an urging means to force fluid from the flexible container through the egress aperture as the flexible container is compressed by part of the urging means. Preferably the urging means is a plunger activated by a trigger handle.

[0043] It is appreciated that the plunger may be shaped and dimensioned to cup an end of the flexible container and guide contents towards the collar.

[0044] In a preferred embodiment the trigger handle operates by means of a ratchet to enable incremental controlled release of fluid from the flexible container.

[0045] In some embodiments a distal end of the connecting member (cylinder) has a connection means that

is associated with the dispensing gun to assist with seating the cylinder on the dispensing gun. In a preferred embodiment an end of the cylinder has a screw thread for connecting to an end cap on the dispensing gun. Preferably the cylinder has an external screw thread and the end cap has an internal screw thread.

[0046] A preferred embodiment of the invention will now be described by way of example only and with reference to the Figures in which:

Brief Description of Figures

[0047]

Figure 1A shows a cross section of a first embodiment of the collar connected to a nozzle and a cylinder;

Figure 1B shows a second cross section of the arrangement shown in Figure 1A;

Figures 2A, 2B and 2C show different exploded views of a nozzle, collar and part of a cylinder;

Figures 3A, 3B, 3C, 3D, 3E and 3F show examples of different collars with different receptor slot configurations, different collar depths and different size egress apertures;

Figure 4 shows an isometric view of a first embodiment of a dispensing gun with a collar and cylinder mounted therein;

Figure 5 shows a reverse isometric view of the embodiment o shown in Figure 4;

Figure 6 shows an exploded isometric view of the embodiment shown in Figure 4;

Figure 7 shows a reverse exploded isometric view of the embodiment shown in Figure 4;

Figure 8 shows an isometric view of a second embodiment of a dispensing gun with a collar and cylinder mounted thereon;

Figure 9 shows a reverse isometric view of the embodiment shown in Figure 8;

Figure 10 shows an exploded isometric view of the embodiment shown in Figure 8;

Figure 11 shows a reverse exploded isometric view of the embodiment shown in Figure 8; and

Figure 12 shows a sectional view of the first pictured embodiment of the device as shown in Figure 4.

Detailed Description of Figures

[0048] With reference to the figures are shown different embodiments a collar 3. In figures 4 to 11 the collar is shown connected to a cylinder 2 (connecting member) and arranged in a dispensing gun 99.

[0049] In figures 1 and 2 there is shown a collar 3, a cylinder 2 and a nozzle 4. The collar 3 is a form of end cap that is received over a distal end 2A of the cylinder 2. The distal end 2A of the cylinder 2 and a proximal end 10A of the opening 10 overlap so that the proximal end of the opening 10A is external to the distal end 2A of the cylinder 2.

[0050] The receptor slots 12 and lugs 13 are arranged in this overlapping region, wherein the lugs 13 project from an external face of the distal end 2A of the cylinder 2.

[0051] The collar 3 has a body 3A with an egress aperture 41 provided at a first end A and an opening 10 for receiving a flexible container (not shown) at a second opposed end B.

[0052] The egress aperture 41 has a first connection means 14 for receiving a nozzle 4. The connection means 14 is an external screw thread.

[0053] The opening 10 has a second connection means comprising a plurality of receptor slots 12 for receiving lugs 13 on an external surface of the connecting member 2 to form a bayonet connection (12, 13).

[0054] The collar 3 and cylinder 2 join together to form a cavity 19 in which a flexible container is received.

[0055] In figures 1A and 1B the collar 3 is shown with a first diameter C and the cylinder 2 has a second diameter D. Diameter C is the diameter of the collar 3 is wider than the diameter D of the cylinder 2. The spent container becomes compressed in the collar 3 that has the slightly wider diameter C.

[0056] The flexible container is compressed in the cavity 19 by a plunger 62 to urge contents from the egress aperture 41 through the nozzle 4 so that contents are dispensed and the spent flexible container ends in the volume 20 defined by the collar 3.

[0057] The collar 3 is shaped and dimensioned to accommodate a spent flexible container.

[0058] In figures 2A, 2B, 2C the connecting member 2 is a short cylinder that in use would be bonded at manufacture to a tube to provide the required cavity 19 for the flexible container. When referring to Figures 1A and 1B the point at which the parts are bonded is shown by reference 30.

[0059] In figures 1 and 4 to 11 the connecting member 2 is shown as a complete cylindrical part that is dimensioned to receive the flexible container. The cylinder 2 has a thickened band 11 at the distal end 2A which includes the lugs 13. The band 11 provides the required strength and robustness for repeated connection and disconnection to a collar 3.

[0060] Figures 3A to 3F show different collars. Figures 3A, 3C and 3E have a first egress aperture diameter and Figures 3B, 3D and 3F have a second egress aperture

diameter. The diameter may be varied for different content and/or different applications.

[0061] In Figures 3A and 3B the collar 3 has two L-shaped receptor slots 12 arranged opposite to one another. The length of the receptor slots 12 is 8mm. The depth of the collar 3 that has a constant diameter for receiving the spent container is 30mm.

[0062] In Figures 3C and 3D the collar 3 has two L-shaped receptor slots 12 arranged opposite to one another. The length of the receptor slots 12 is 12mm. The depth of the collar 3 that has a constant diameter for receiving the spent container is 30mm.

[0063] In Figures 3E and 3F the collar 3 has four L-shaped receptor slots 12 arranged as opposed pairs. The length of the receptor slots 12 is 10mm. The depth of the collar 3 that has a constant diameter for receiving the spent container is 20mm.

[0064] The collars 3 shown in Figure 3C, 3D, 3E and 3F all have a shoulder 35 that slopes (tapers in diameter) towards the egress aperture 14 to guide contents. The shoulder 35 in Figures 3C and 3D is sloped to a lesser degree than the shoulder 35 in Figures 3E and 3F.

[0065] All the collars shown in Figures 3A to 3F include fins 15.

[0066] Figures 4 to 11 show different embodiments of a collar 3 and cylinder 2 arranged in a dispensing gun 99. Like parts have like references.

[0067] The cylinder 2 has a longitudinal axis X-X and a plunger 62 driven by an urging means 1 acts to compress the flexible container within the cavity 19 to end up in the void 20 of the collar 3, so that content are forced from the container out via the egress aperture and connected nozzle 4.

[0068] The flexible container compresses along axis X from a first elongate filled configuration to a second short spent configuration.

[0069] The egress aperture 14 that is connected to the nozzle 4 provides a fluid communication pathway from the container to the area of application of the content being dispensed.

[0070] In particular reference to the embodiment shown in Figures 4 to 11 the cylinder 2 is rigid. In preferred embodiments the cylinder may be formed from a strong durable material, examples may include aluminium or a translucent or transparent synthetic plastic such as acrylonitrile butadiene styrene (ABS) or similar.

[0071] The collar 3, cylinder 2, and nozzle 4 assembly is shown connected to an urging means 1 which together form a dispensing gun 99. The urging means 1 which is a pumping mechanism known commonly in the art is used to urge content from the container.

[0072] The urging means 1 has an end cap 16 into which a proximal end 2B of the cylinder 2 is received and connected. In the pictured embodiment, connection is by screw thread (see Figure 10).

[0073] The dispensing gun 99 has a pumping handle formed by a base arm 6 and a lever action pumping arm 5. Movement (pumping) of the pumping arm 5 about a

pin 5A drives a rod 61 connected to a plunger 62. The rod 61 passes through a hole in the end cap and is driven by pumping the pumping arm 5 against the base arm 6.

[0074] The urging means 1 has a moveable plunger 62 which begins at the proximal end of the cylinder to a distal end 2A that is adjacent to the collar 3. The plunger is driven along the longitudinal axis X of the cylinder 2 by the rod 61 towards the collar 3.

[0075] In the first filled configuration the plunger 62 is near the end cap 16, and in the second spent configuration the plunger 62 is near the collar 3.

[0076] The preferred flexible container for use this the dispensing gun 99 is a foil pack as is known in the art of sealants, such as used for silicone or bathroom sealants.

[0077] The rod 61 and thereby the plunger 62 is urged by a spring 8 (see figures 7 and 9). The rod 61 and plunger 62 can be released by pressing the catch 7 (see figure 9) and pulling the hooked bar end 9 away from the collar 3, in a manner known in the art.

[0078] In the pictured embodiments of the dispensing gun 99 shown in Figures 4, 5 8 and 9 the cylinder 2 is connected to the end cap 16. The cylinder is typically loaded by inserting a container into the cavity 19, opening the end of the container and connecting the collar 2 by the bayonet connection means 12, 13.

[0079] The pictured bayonet connection 12, 13 has lugs 13 extending from the external surface of the cylinder 2, and L shaped slots 12 in the sidewall of the collar 3.

[0080] In the pictured embodiments the distal end of the cylinder 2A which includes the lugs 13 has a thickened annular band 11, against which the collar at least partially overlaps to form the bayonet connection.

[0081] In Figure 12 the distal end 2A of the cylinder 2 taper towards the collar 3 to present a substantially smooth continuous inner surface rather than a stepped surface. This allows a container (not shown) to easily be compressed and forced into the cavity 20 of the collar.

[0082] The annular band 11 further provides rigidity and maintains the shape of the cylinder end 2A to ensure that when force is applied to the container within the cylinder, or if the cylinder is dropped or knocked that this will not compromise the connection and potentially lead to leakage.

[0083] The pictured collars have fins 15 for a user to grip to help with connection and removal of the collar 3 from the cylinder 2.

[0084] Each pictured collar 3 has four radially projecting fins 15 that project outwards so as to provide a means of providing purchase for use in rotating the collar and disconnecting from the cylinder 2, particularly after use.

[0085] The fins 15 are provided on the external surface of a domed first end A of the collar 3.

[0086] The collar 3 may be envisaged to be formed in aluminium in some embodiments or a synthetic plastic such as ABS.

[0087] The nozzle 4 is envisaged to be a consumable, formed in synthetic plastic. Ideally the nozzle 4 has a

thumbscrew turn cuff 4A of enlarged diameter to aid connection and removal of the nozzle from the first connecting means.

[0088] With reference to figures 8 to 11 the embodiment the egress aperture 41 has a smaller diameter than that shown in the embodiment shown in figures 4 to 7.

[0089] The invention has been described by way of examples only and it will be appreciated that variation may be made to the above-mentioned embodiments without departing from the scope of protection as defined by the claims.

Claims

1. A collar for use with a dispensing gun comprising: a body with an egress aperture provided at a first end and an opening for receiving a flexible container at a second opposed end; wherein the egress aperture has a first connection means for receiving a nozzle and the opening has a second connection means comprising a plurality of receptor slots for receiving lugs on an external surface of a connecting member to form a bayonet connection.
2. A collar for use with a dispensing gun comprising: a body with an egress aperture provided at a first end and an opening for receiving a flexible container at a second opposed end; wherein the egress aperture has a first connection means for receiving a nozzle and the opening has a second connection means comprising a plurality of lugs on an external surface for receiving receptor slots on a connecting member to form a bayonet connection.
3. A collar according to claim 1 or claim 2 wherein the first connection means is a screw thread.
4. A collar according to claim 2 wherein the screw thread is provided on an external face of the egress aperture for engagement with an internal screw thread on the nozzle.
5. A collar according to any preceding claim including a shoulder that tapers towards the egress aperture to guide contents from the flexible container towards and through the egress aperture.
6. A collar according to any preceding claim including at least one radially projecting fin to provide a grip for a user.
7. A collar according to any preceding claim wherein depth of a region of the collar that has a constant diameter is at least 20mm to accommodate a spent flexible container.
8. A collar according to any preceding claim wherein

the internal diameter of collar is greater than the internal diameter of the connecting member.

9. A collar according to claim 1 wherein each receptor slot is L-shaped and extends from an edge of the opening. 5
10. A collar according to claim 9 wherein each receptor slot extends at least 8mm inwards from the edge of the opening. 10
11. A collar according to any preceding claim wherein the bayonet connection includes a detent mechanism. 15
12. A collar according to claim 11 wherein the detent mechanism includes a ball detent.
13. A connecting member and a collar according to any of claims 1 to 12 wherein a distal end of the connecting member tapers towards the collar to provide a substantially smooth inner face that is presented to the flexible container where the connecting member and collar join. 20
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14. A dispensing gun including the collar according to any of claim 1 to 13 and a connecting member in the form of a cylinder that receives a flexible container and an urging means to force contents from the flexible container through the egress aperture as the flexible container is compressed by part of the urging means. 30
15. A dispensing gun according to claim 14 wherein the urging means is a plunger activated by a trigger handle. 35

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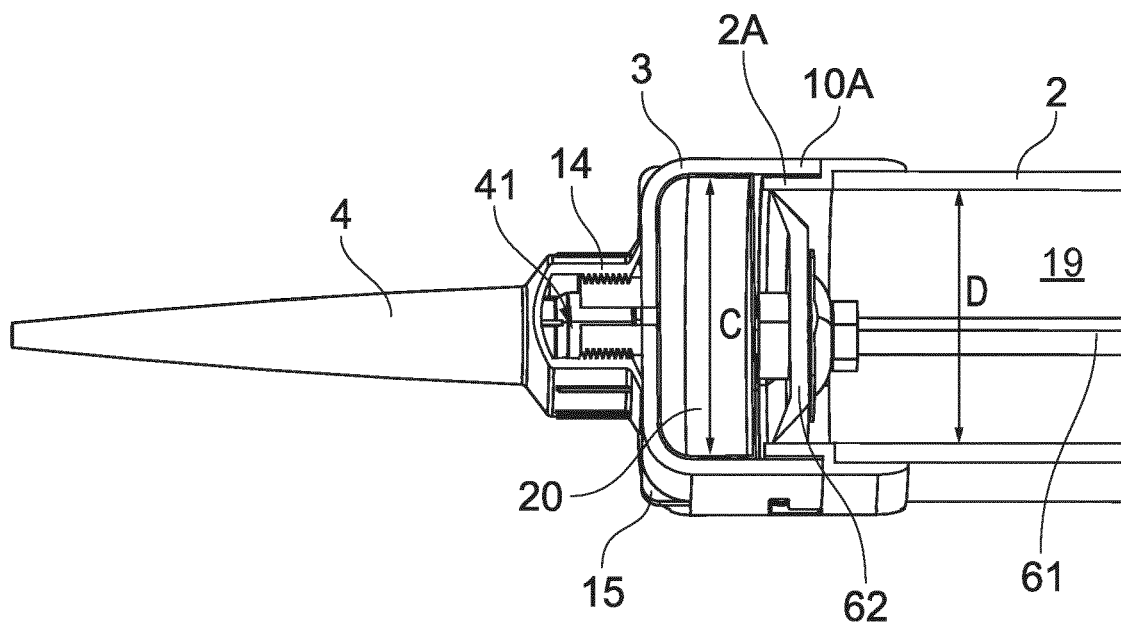


FIG. 1A

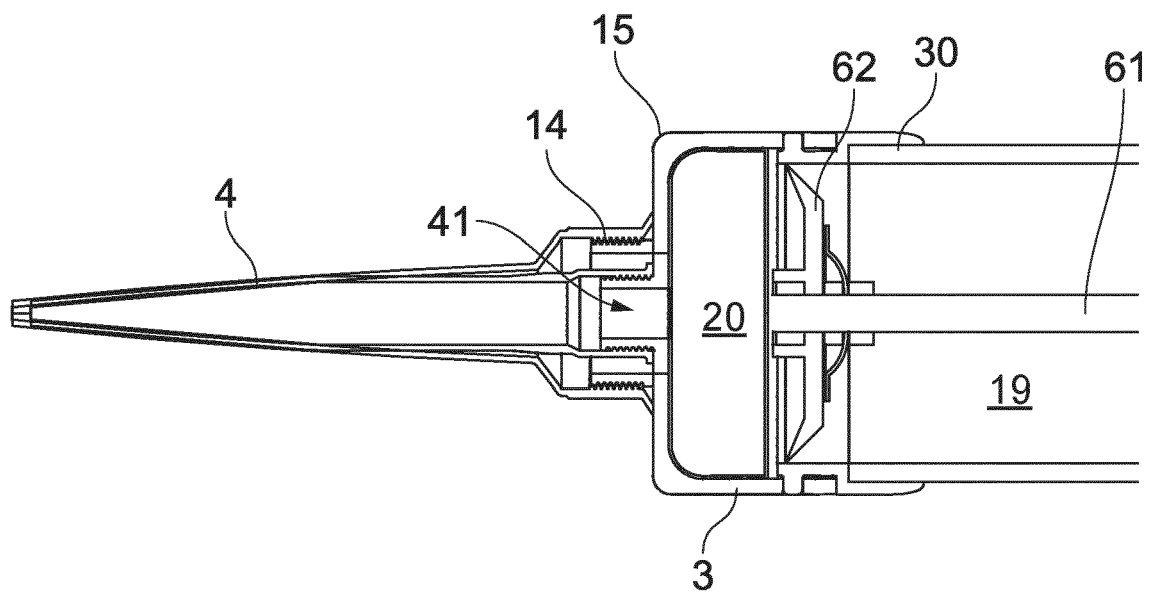


FIG. 1B

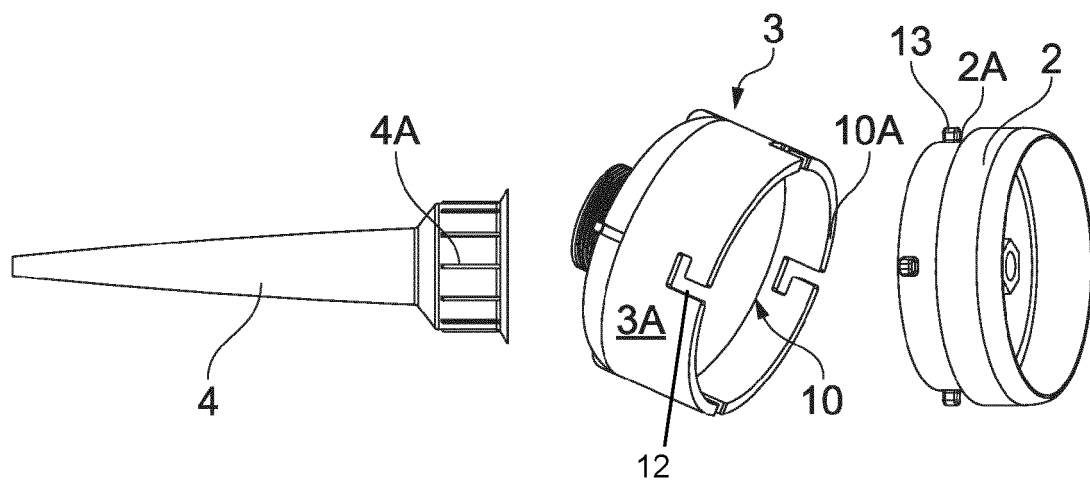


FIG. 2A

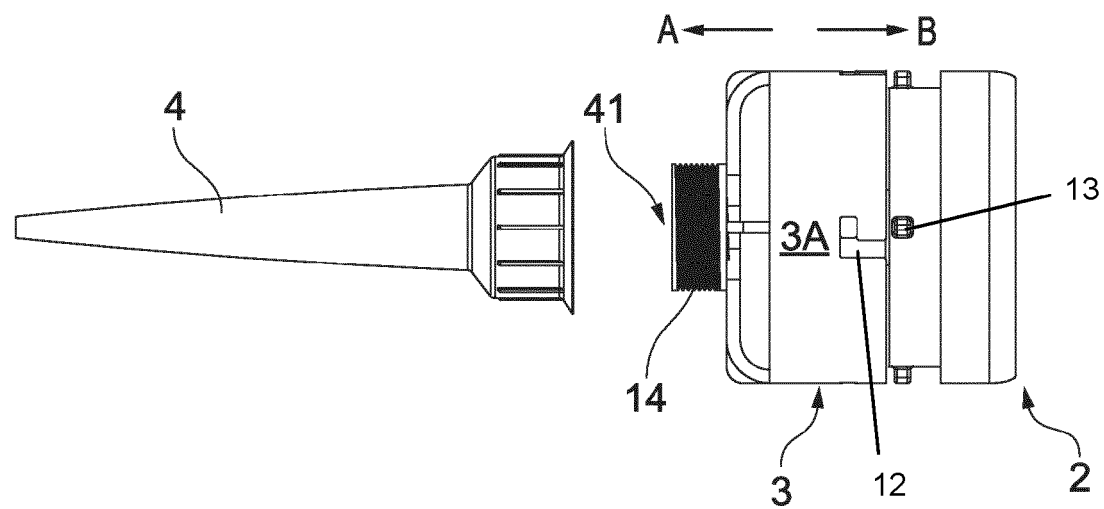


FIG. 2B

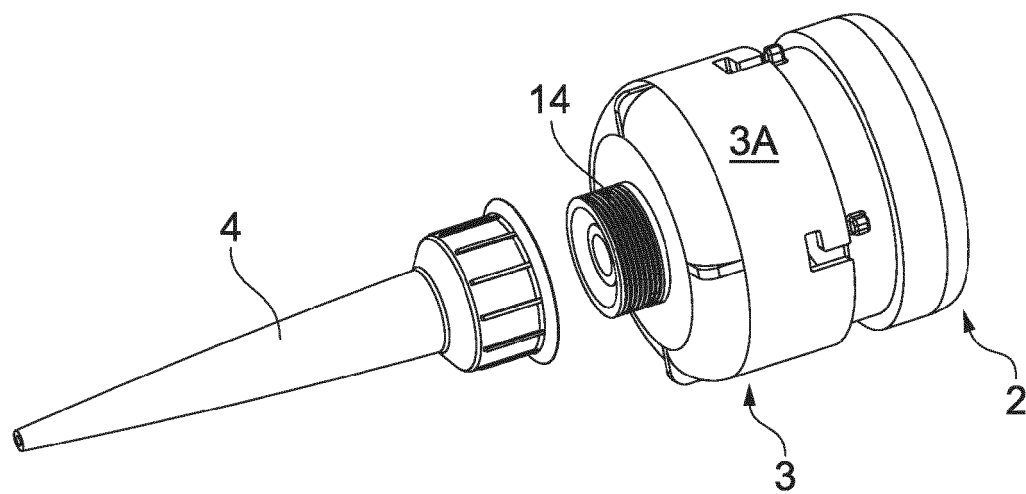
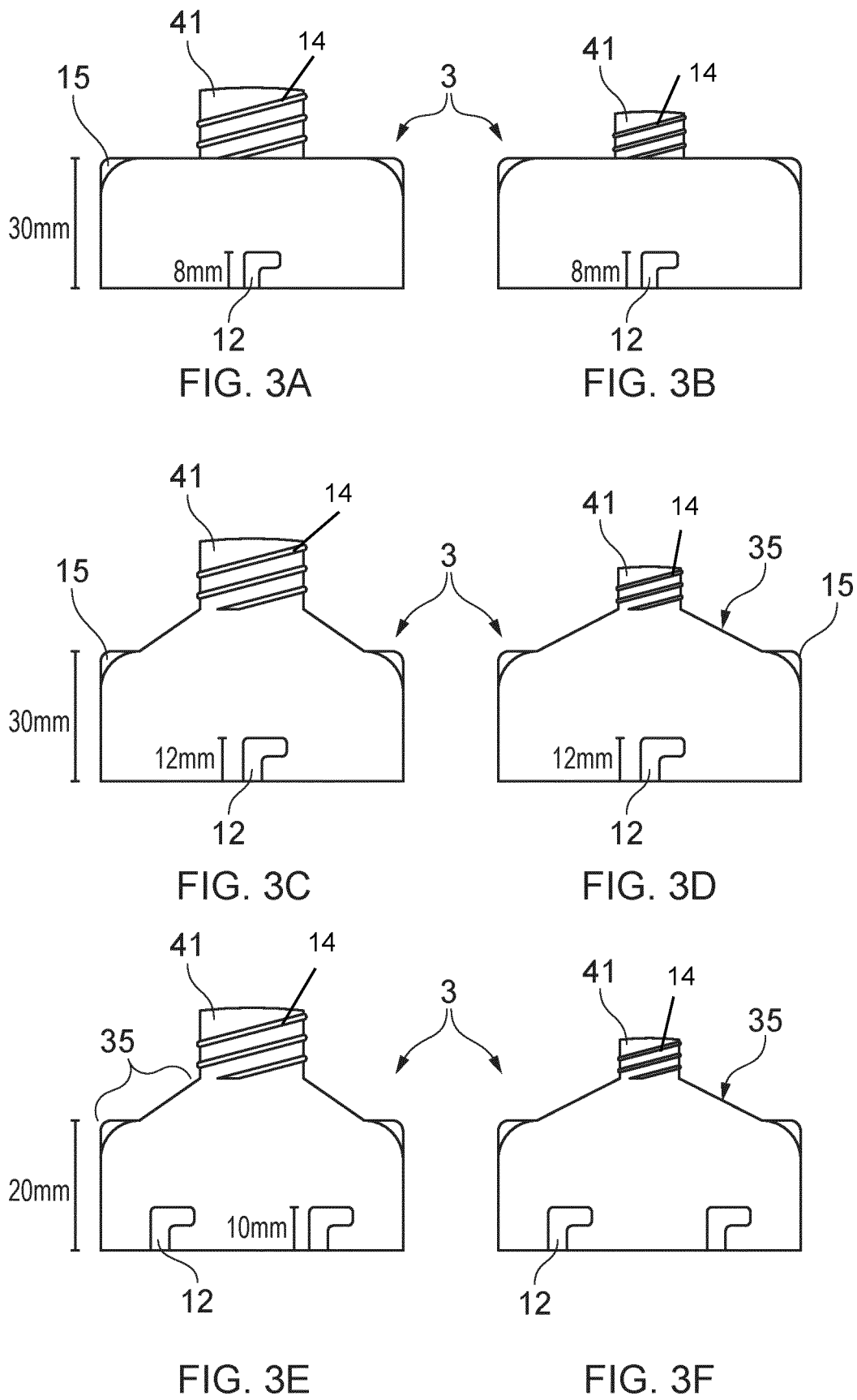


FIG. 2C



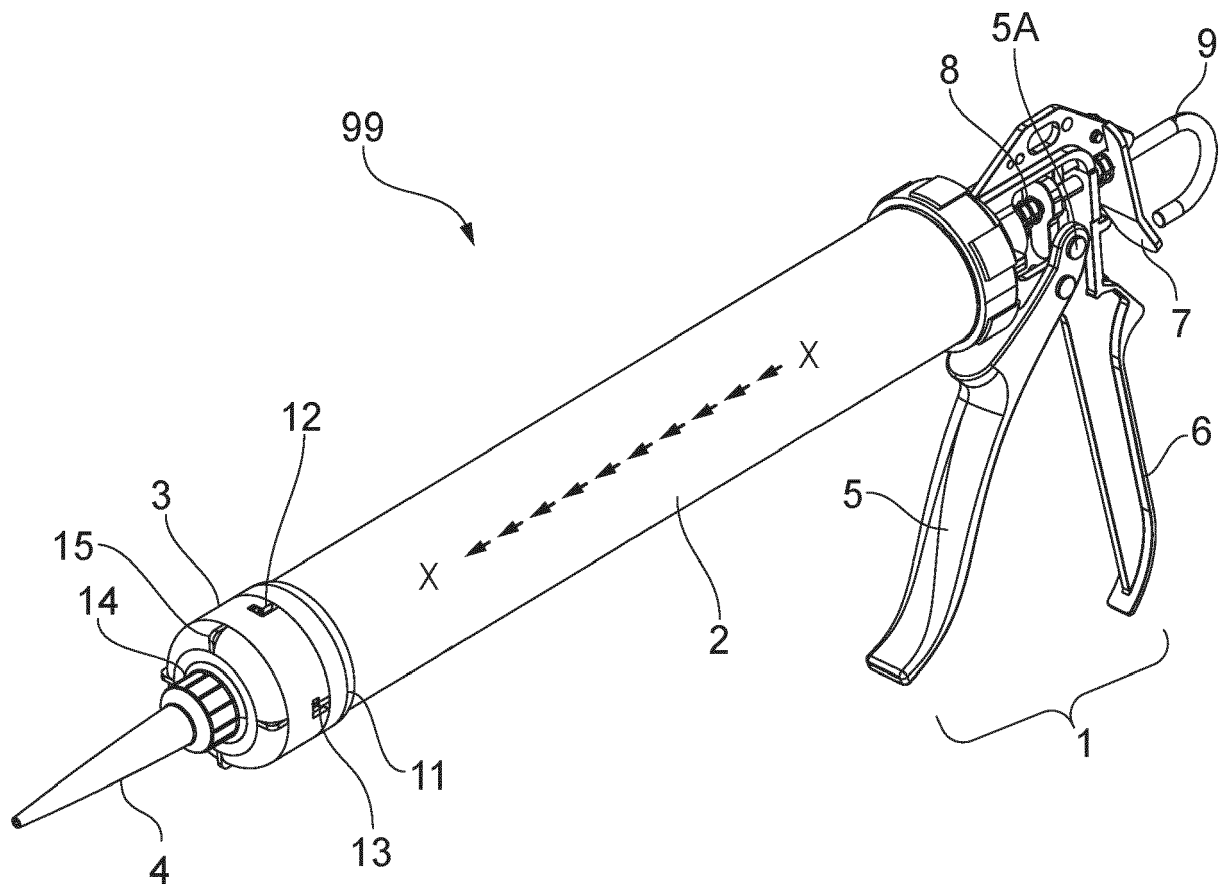


FIG. 4

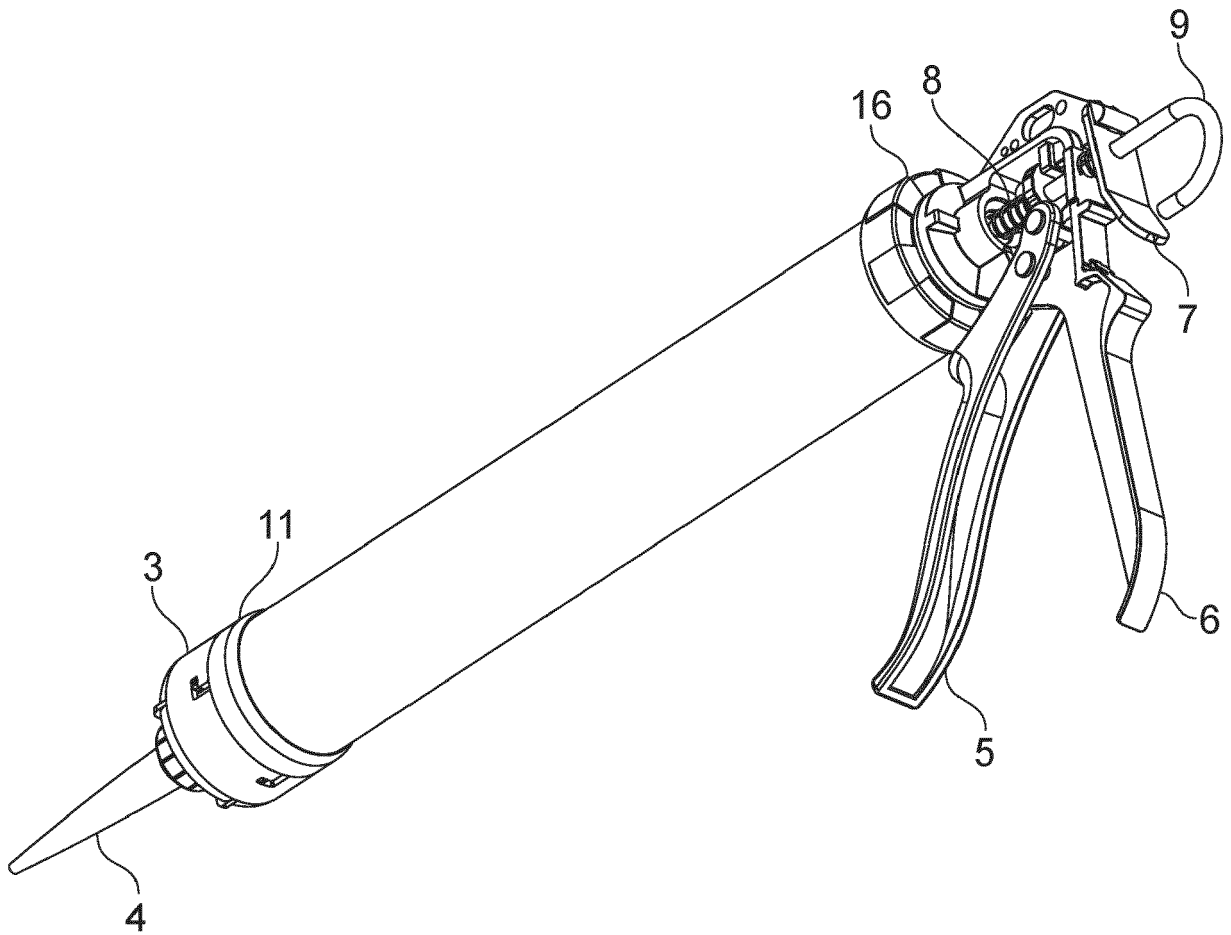


FIG. 5

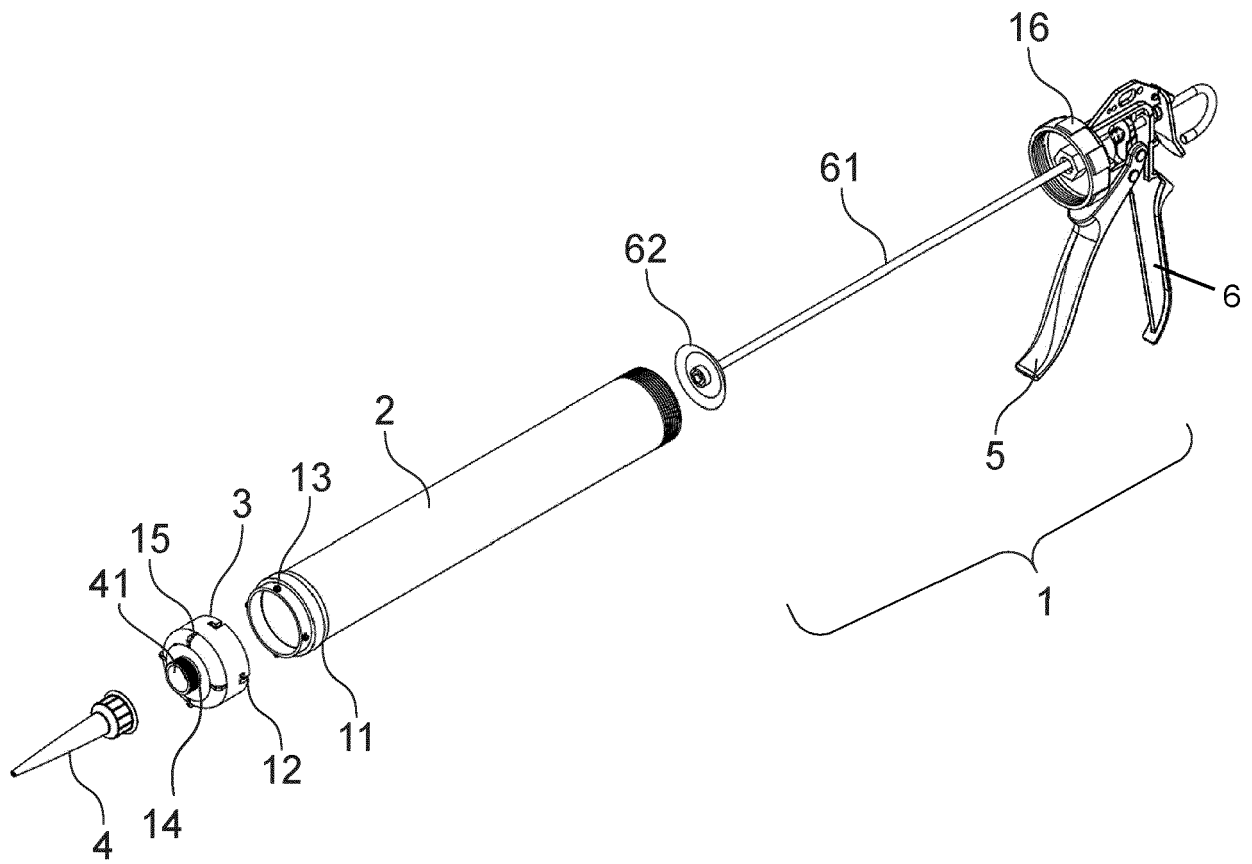


FIG. 6

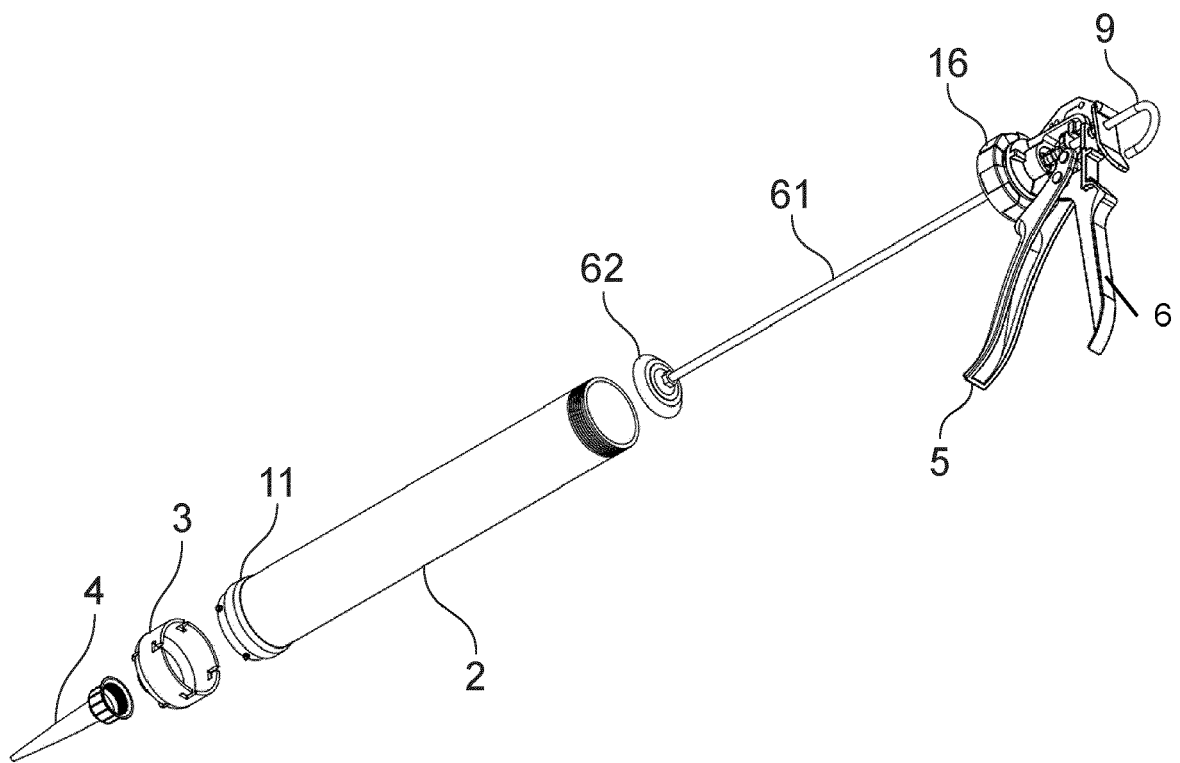


FIG. 7

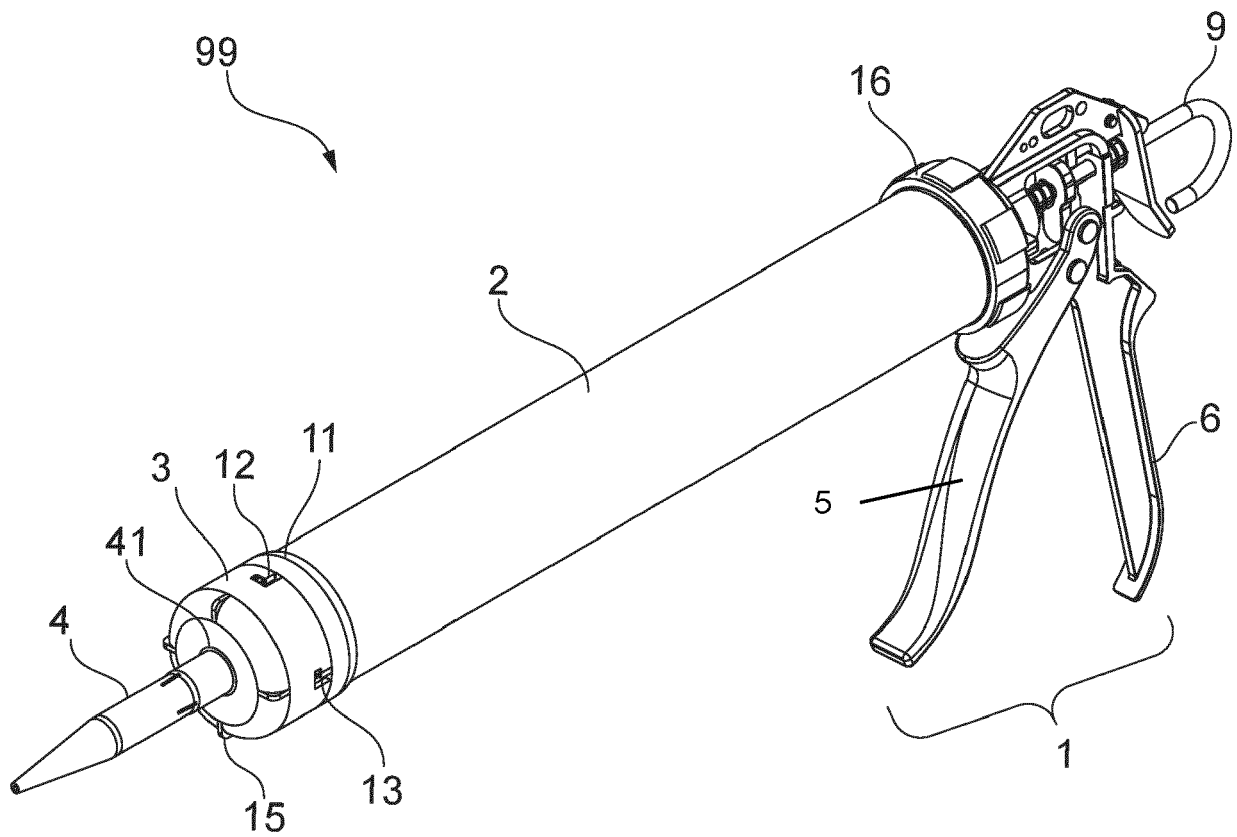


FIG. 8

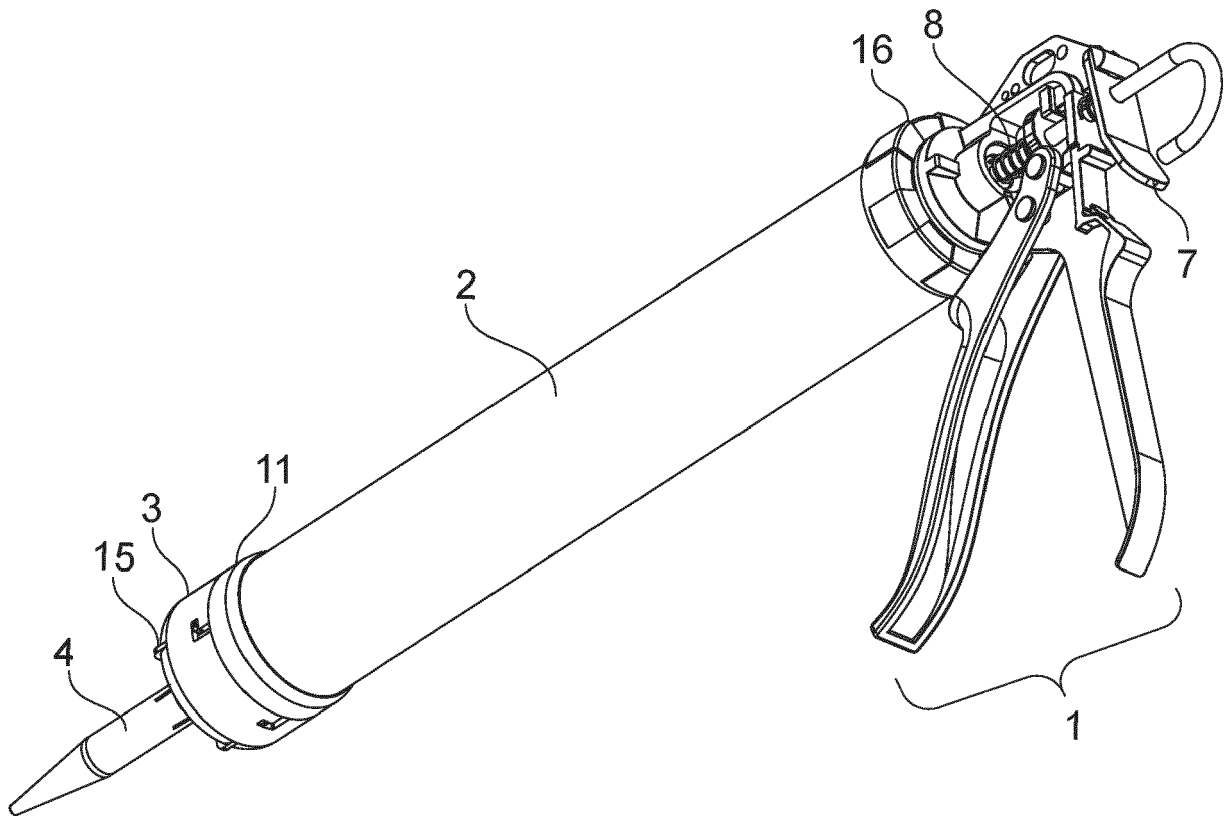


FIG. 9

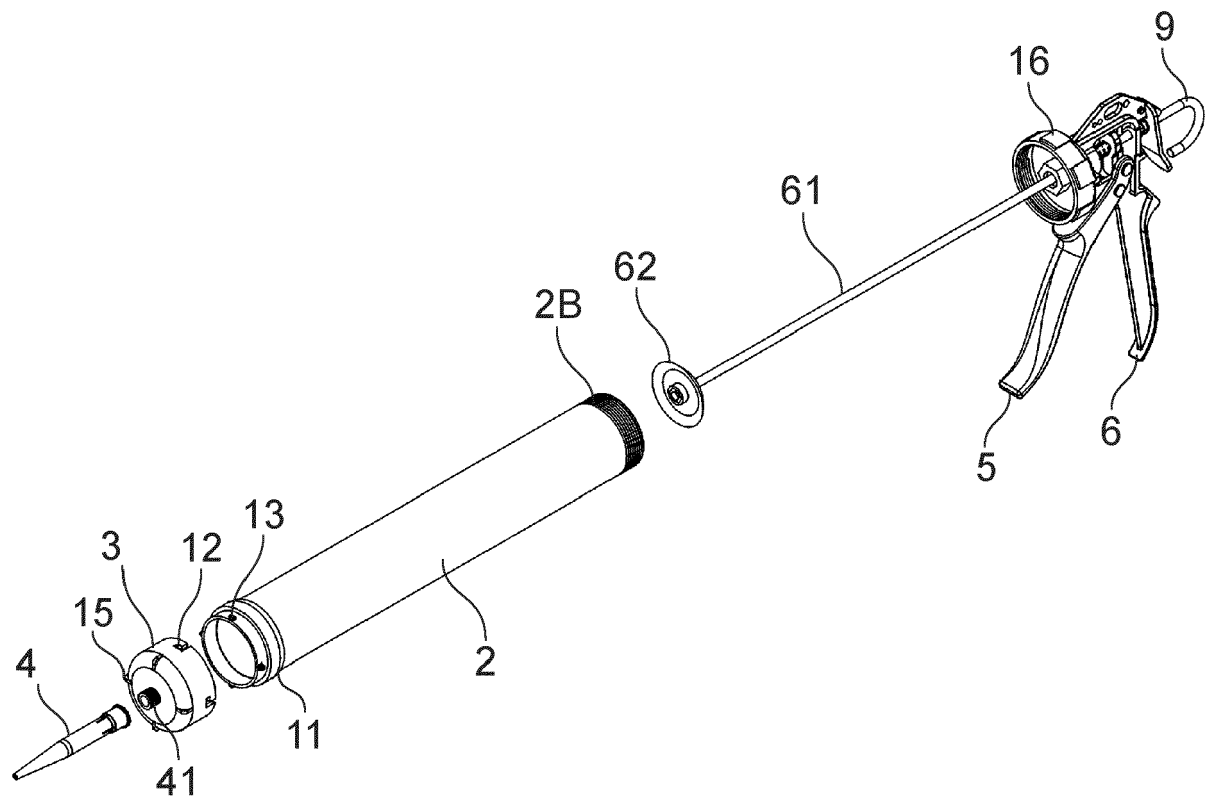


FIG. 10

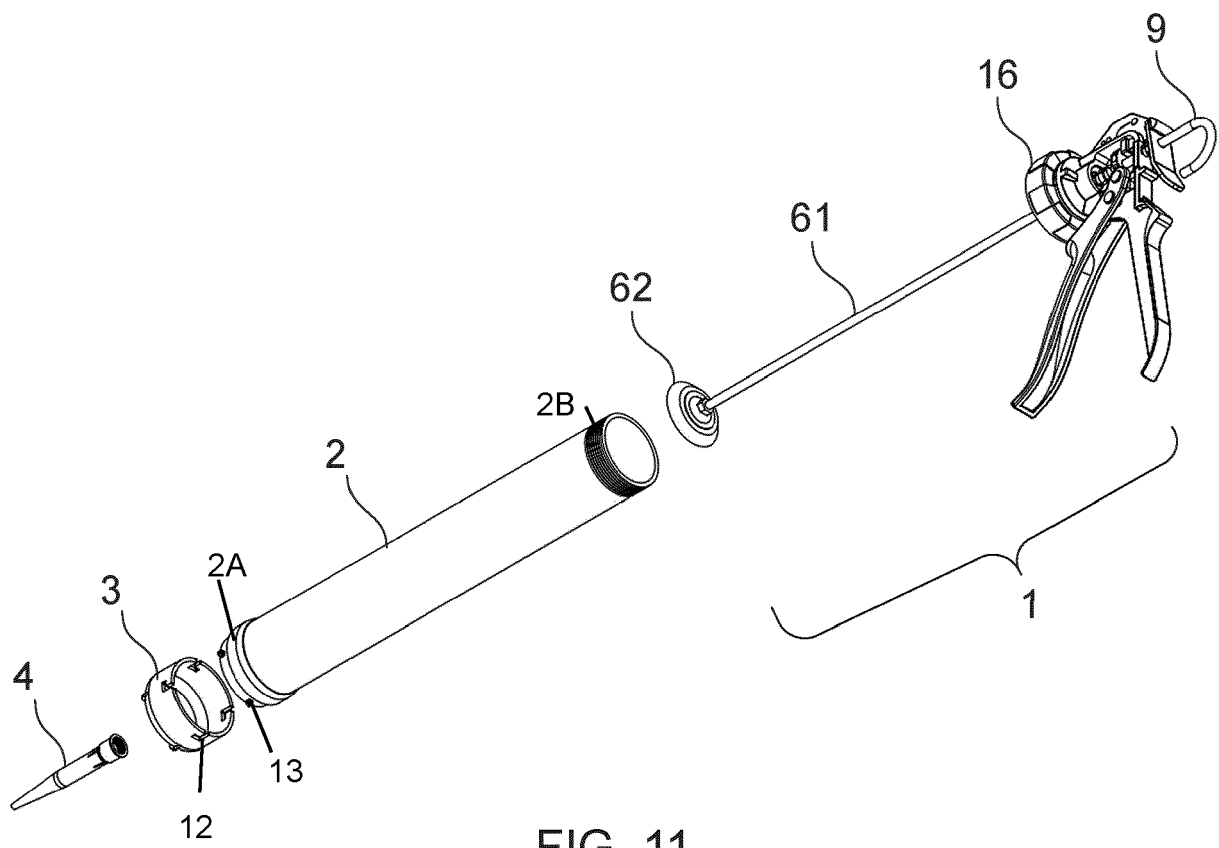


FIG. 11

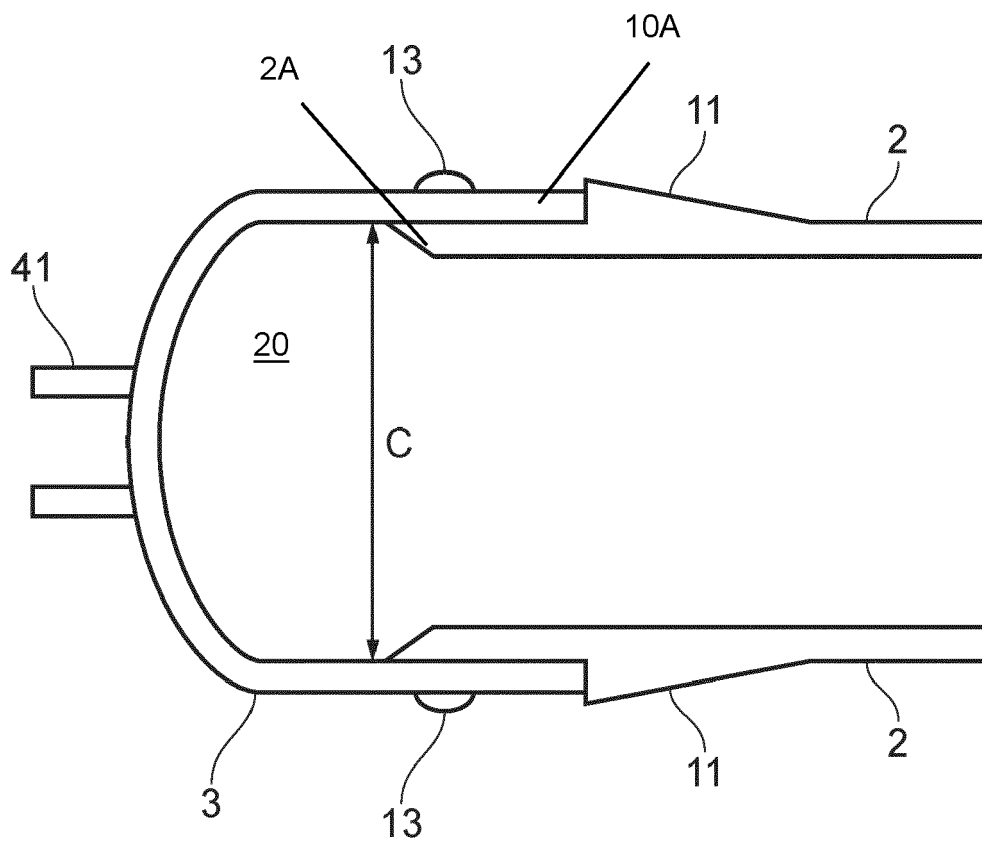


FIG. 12



EUROPEAN SEARCH REPORT

Application Number

EP 24 15 3267

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EPO FORM 1503 03:82 (P04C01)

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2022/266291 A1 (BODENMÜLLER TOBIAS [CH] ET AL) 25 August 2022 (2022-08-25) * figures 1-6 *	1,3,5, 7-12,14, 15	INV. B05C17/005
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