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(54) LIQUID IMPERMEABLE SWITCHING DEVICE

FLÜSSIGKEITSUNDURCHLÄSSIGE SCHALTEREINRICHTUNG

DISPOSITIF DE COMMUTATION IMPERMÉABLE AUX LIQUIDES

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Description

FIELD OF THE INVENTION

[0001] The product of the present invention relates to a liquid impermeable switch chain/harness with cable which is developed to prevent leakage of liquid into the trigger mechanism in the inner structure of the gas valves.

BACKGROUND OF THE INVENTION

[0002] The utility model application numbered TR2015/05131 and titled "Innovation in ignition switches" relates to innovation in ignition switches which are mounted on the gas valve in gas furnaces and which provide automatic ignition when the gas is turned on.

[0003] The said application relates to an ignition switch that allows ignition to be achieved when the gas is turned on.

[0004] When cleaning the ignition switch having top fitting structure, which is mounted on the gas valve of the gas-fired ovens; contact of the soapsuds, oil and similar waste and undesired liquids leaking through the openings at the sides of the body and the working edges of the trigger causes the switch to fail.

[0005] The ignition switch in the prior art has a spring system in the upper body which goes out of the body through an opening, and this causes oils, soapsuds, etc. to enter into the switch and contact the ignition, and results in short circuit causing the switch to fail. Another switch is known from WO2016/039703 A1.

DEFINITION OF THE INVENTION

[0006] The present invention relates to a liquid impermeable switch chain/harness with cable developed to eliminate the above mentioned disadvantages and bring new advantages to the concerned technical field.

[0007] The product of the invention is to change the contact structure of the gas valves used in stoves, hobs, cookers and ovens. The inner part of the existing contact structures is quite unprotected, and when liquid leaks into the contact, oxidation occurs upon contact of the copper switch with liquid. Technical innovations have been made as described below to prevent this oxidation.

[0008] The objective of the present invention is to ensure that the liquid-impermeable switch chain/harness with cable of the gas valve provides sealing to the area where the switch is located to prevent corrosion of the switch due to liquid contact.

[0009] Another objective of the invention is to design the trigger and the lower trigger in the form of a telescopic system to prevent passage of liquid through the upper body.

[0010] A further objective of the invention is to prevent the liquid flow that might come from the upper body to flow down through the right and left parts of the trigger and reach the switch.

[0011] Another objective of the invention is to remove the lower body connection lug slots provided on the upper body from inside of the upper body and to place them on the outer side, and thus to protect the switch from the liquid flow passing through the lug slots provided on the upper body.

[0012] A further objective of the invention is to prevent the flow of liquid through the cable channels by moving the cable channels located on the first switch terminal to the lowest possible part.

[0013] Another objective of the invention is to ensure sealing by forming a self-seal structure upon passing the cable through the slot by narrowing the width of the cable channels on the first switch terminal and using silicone material.

Figures

[0014] The embodiments of the present invention, briefly summarized above and discussed in greater detail below, can be understood by reference to the exemplary embodiments of the invention described in the accompanying drawings. However, it should be noted that the accompanying drawings only illustrate typical embodiments of the present invention and that therefore they shall not be considered to limit the scope of the invention since the invention allows other equally effective applications. The scope of the invention is determined as defined in claim 1. Preferred embodiments have been defined in the dependent claims.

Figure 1 shows front, left side and perspective views of the lower body.

Figure 2 shows front, left side and perspective views of the lower body to which the switch terminal is mounted.

Figure 3 shows front, left side and perspective views of the trigger lower mechanism.

Figure 4 shows front, left side and perspective views of the trigger.

Figure 5 shows front, left side and perspective views of the plastic ring.

Figure 6 shows front, left side and perspective views of the upper body.

Figure 7 shows front, left side and perspective views of the upper body.

Figure 8 shows a section line of the liquid impermeable switch chain/harness with cable.

Figure 9 shows a C-C section perspective view of the

liquid impermeable switch chain/harness with cable.

Figure 10 shows a C-C section left side view of the liquid impermeable switch chain/harness with cable.

Figure 11 shows a C-C section and perspective view of the liquid impermeable switch chain/harness with cable. when the mounted trigger is in depressed position.

Figure 12 shows a C-C section and perspective view of the liquid impermeable switch chain/harness with cable when the mounted trigger is in released position.

Figure 13 shows side view of the liquid impermeable switch chain/harness with cable in mounted state.

Figure 14 shows perspective view of the liquid impermeable switch chain/harness with cable in mounted state.

Figure 15 shows side and perspective view of the liquid impermeable switch chain/harness with cable in mounted state.

Figure 16 is a view of the switch in the state of the art.

[0015] In order to facilitate understanding, identical reference numbers are used where possible, to identify identical components common in the figures. The figures are not drawn to scale and can be simplified for clarity. It is considered that the components and features of an embodiment may be usefully incorporated into other embodiments without need for further explanation.

Description of the Details in the Figures

DETAILED DESCRIPTION OF THE INVENTION

[0016] In this detailed description, preferred alternative embodiments of the inventive liquid impermeable switch chain/harness with cable are described only for better understanding of the subject and in such a manner that it will not produce any limiting effect.

10- Second switch spring
20- Switch
30- Trigger lower mechanism
31- Switch housing
32- Shaft spline
33- Upper trigger engagement channel
40- First switch spring
50- Switch terminal
51. Cable channel
52- First switch terminal
60- Lower body
61- Lower body lug
62- Lower body cable channel
63- First switch spring housing
70- Trigger
71- Crescent trigger
72- Trigger lug
73- Trigger stepped neck
74- Lower trigger engagement housing
80 - Upper body
81- Cable channel
82- Valve lock
83- Upper body neck
84- Trigger channel
85- Lower body lug slot
86- Trigger clearance
90- Plastic ring
100- Valve mounted view
701- Trigger in the state of the art
801- Body in the state of the art
A- Trigger mechanism body connection detail
B- Body surface in the state of the art
C- Trigger body mounting in the state of the art

[0017] The second switch spring (10) is a support piece which is disposed on the switch (20) to support up and down movement of the trigger (70).

[0018] The switch (20) is the part that completes the ignition system and performs the ignition. The trigger lower mechanism (30) is a piece, which includes a shaft spline (32), switch housing (31), and upper trigger engagement channel (33), and complements the trigger (70) mechanism.

[0019] The first switch spring (40) is a complementary part of the ignition mechanism and it supports up and down movement of the trigger (70).

[0020] The contact terminal (50) is a part; which includes electricity connection thereon; connects the trigger (70) mechanism with the first switch spring (40), trigger lower mechanism (30), switch (20) and the second switch spring (10); and complements the ignition system.

[0021] The cable channel (51) is a structure which is located on the switch terminal (50) and allows the cables to pass through it and be squeezed to prevent liquid flow into the mechanism.

[0022] Large switch terminal (52)

[0023] The lower body (60) is the structure that carries the system thereon.

[0024] The lower body lug (61) is an outward protrusion which is located on the lower part of the lower body side surfaces and which enables to mount and lock the lower body (60) on the upper body (80).

[0025] The lower body cable channel (62) is the clearance provided for the cable connection of electricity to the switch terminal (50).

[0026] The first switch spring housing (63) is a channel which is located in the inner part of the lower body (60) and into which the first switch spring (40) is disposed. The trigger (70) is a part which actuates the ignition mechanism from outside and can move up and down to enable all

the ignition members inside to interact with each other and to be deactivated. When it is connected with the trigger lower mechanism, it becomes a part which prevents leakage of liquid to the inner part of the liquid impermeable switch chain/harness with cable and which, at the same time, can clean the food residues that may accumulate at the right and left of the trigger by means of the lugs provided on the right and left surfaces thereof. The crescent trigger (71) is in the form of a crescent around the gas valve shaft and it is not mounted to the gas valve shaft.

[0027] The trigger lug (72) is the part which fits into the channel on the upper body (80) and which both cleans the food residues and limits operation of the trigger in a certain range. The crescent trigger (71) is the part which limits downward movement of the plastic ring (90) and which provides movement to the trigger when it reaches the limit.

[0028] Trigger stepped neck (73),

[0029] The lower trigger engagement housing (74) is the part which, upon being connected with the upper trigger engagement channel (33), prevents leakage of liquid into the body from the top. This integrated structure passes the liquid flow coming from the top part around itself to prevent it from reaching the switch (20), switch terminal (50) and second and first switch springs (10, 40).

[0030] The upper body (80) is the piece which protects the structure in itself and forms the outer part of the structure upon being connected with the lower body (60).

[0031] The cable channel (81) is a cavity-shaped structure which is located on the side surfaces of the upper body (80), allows the passage of the cables and has the maximum height to prevent liquid passage into the structure through the said parts.

[0032] The valve lock (82) is a part of the upper body (80), and it is the piece that enables the liquid impermeable switch chain/harness with cable to be mounted to the valve shaft.

[0033] The upper body neck (83) is the part through which the gas valve shaft passes.

[0034] The trigger channel (84) is a channel through which the trigger (70) passes and which extends downward from the upper body

[0035] Lower body lug slot (85) is a structure; to which the lower body lug (61) is inserted and which connects the lower and upper bodes to each other; and which is designed in the form of a protrusion on the side surface of the upper body (80) and does not have any opening in the rear part thereof that enables access to the inner structure.

[0036] The plastic ring (90) is used to limit the movement of the gas valve shaft.

[0037] As seen in FIG. 15, in another embodiment (100) of the invention, when a downward movement is provided to the gas valve shaft, the trigger (70) moves downwards pushing the small switch spring (10) downwards by means of the shaft spline (32) and upon contacting the switch (20), provides the necessary ignition for the system.

[0038] In another embodiment of the invention, when the force acting on the trigger (70) is released, the first switch spring (40) pushes back the force accumulated thereon whereby enabling the trigger (70) to be lifted from the switch (20) and thus the ignition stops.

[0039] As seen in Figure 15, the plastic ring (90) is mounted to the gas valve shaft and the crescent trigger (71) provided on the trigger (70) is not mounted to the gas valve shaft and surrounds the gas valve shaft in the form of a crescent. The trigger (70) receives its downward movement from the plastic ring (90).

[0040] In the state of the art shown with detail C in Figure 16, the surrounding of the trigger (70) is open and the liquids flowing from the upper part directly contact the switch. In the product of the present invention, the lower trigger engagement housing (74) at the lower part of the trigger (70) passes through the trigger clearance (86) of the trigger lower mechanism (30) located on the upper body (80) and fits over the shaft spline (32) and thus the liquids coming from the upper body (80) are prevented from reaching the switch (20). The liquids, which are prevented from reaching the switch, move around the lower body engagement housing (74) and flow downwards.

[0041] The lug channels and the cable channels located on the side walls of the body in the state of the art shown with detail B in Figure 16, allow passage of the liquids into the switch. This problem is addressed in the present invention by positioning the lower body engagement housing (85) at the outside of the lower body (60) such that a gap is not formed on the inner surface, and thus contact of the liquid with the switch (20) is prevented.

[0042] In another embodiment of the invention, the cable channel (81) located on the side surfaces of the upper body (80) is lowered, and additionally, the lower body cable channel (62) in the lower body (60) is raised so that entry of liquid through this part into the liquid impermeable switch chain/harness with cable is prevented.

[0043] In a further embodiment of the invention, the cable channel (51) located on the switch terminal is narrowed down; and by producing this product from a soft material, a natural o-ring system is formed by fitting the cable into the cable channel (51), and thus an extra barrier which prevents liquid flow into the structure is formed.

[0044] In another embodiment of the invention, the lower trigger engagement housing (74) located at the lower part of the trigger (70) cleans the food residues accumulated on the sides of the upper body (80) by moving within the channel provided on the upper body.

[0045] In one embodiment of the present invention, the switch terminal (50) produced in compliance with the channels in the lower body (60) is placed into the lower body (60). Then, the first switch spring (40) is inserted into the inner part of the switch terminal (50) and into the first switch spring housing (63) located on the lower body (60). The lower portion of the switch housing (31) of the trigger

lower mechanism (30) is disposed such that it is placed over the first switch spring (40). The switch (20) is placed in the upper part of the switch housing (31) of the trigger lower mechanism (30). On the upper part of the switch (20), the second switch spring (10) is mounted on which the upper body (80) is mounted. The lower body lug (61) is attached to the lower body lug slot (85), which is located on the upper body (80) and which is useful for locking the lower body (60), and hence the mechanism is locked and fixed. After passing through the trigger clearance (86) on the upper body (80), the trigger channel (84) on the trigger (70) is engaged to the shaft spline (32) and thus entire assembly of the system is completed and it is made ready for being mounted to the gas valve. In addition to the invention, there is provided one plastic ring (90) attached to the gas valve shaft and this plastic ring (90) is used to provide movement to the trigger (70) upon receiving the downward movement of the gas valve shaft with the crescent trigger (71).

[0046] The plastic ring (90) mounted to the gas valve shaft rotates with a movement equivalent to the right and left movement of the gas valve shaft to turn on the gas. Regardless of the direction and amount of this rotation angle, the plastic ring (90) provides an uninterrupted contact on the downward movement of the crescent trigger (71) and gas valve shaft.

[0047] In another embodiment of the invention, it is ensured that the water flows from the outside of the trigger engagement housing upon preventing entry of the water into the switch by means of a trigger engagement housing which is fitted over the part of the switch shaft that protrudes from the body; which switch shaft enables switching by its downward movement and is supported by two springs.

Claims

1. A liquid impermeable switch chain/harness with cable, **comprising;**

- a lower body (60) which comprises at least one cable channel (62),
- a first switch spring housing (63) which is a channel located in the inner part of the lower body (60),
- a switch terminal (50), produced in compliance with the cable channel (62) in the lower body (60), which is placed into the lower body (60),
- a first switch spring (40) which is inserted into the inner part of the switch terminal (50) and into the first switch spring housing (63) located on the lower body (60),
- an upper body (80) which forms the outer part of the structure upon being connected with the lower body (60),
- a trigger lower mechanism (30) which is a piece, including a shaft spline (32) and a switch housing (31),
- wherein the lower portion of the switch housing (31) of the trigger lower mechanism (30) is disposed such that it is placed over the first switch spring (40);
- wherein a switch (20) is placed in the upper part of the switch housing (31) of the trigger lower mechanism (30);
- a lower body lug (61) located on the lower body (60) is mounted to a lower body lug slot (85), which is located on the upper body (80) and useful for locking the lower body (60), and thus the mechanism is locked and fixed; after passing through a trigger clearance (86) on the upper body (80), a trigger channel (84) on the trigger (70) is configured to engaged to the shaft spline (32),

characterized by

- a second switch spring (10) which is mounted on the upper part of the switch (20) and on which the upper body (80) is mounted.

2. Liquid impermeable switch chain/harness with cable according to Claim 1, comprising at least one plastic ring (90) which is attached to a gas valve shaft, and wherein this plastic ring (90) transmits the downward movement of the gas valve shaft to a crescent trigger (71), and upon receiving the movement, gives downward movement to the trigger (70).

3. Liquid impermeable switch chain/harness with cable according to Claim 1, wherein a lower trigger engagement housing (74) located at the lower part of the trigger (70) cleans the food residues accumulated on the sides of the upper body (80) by moving within the trigger clearance (86) provided on the upper body (80).

4. Liquid impermeable switch chain/harness with cable according to Claim 1, **characterized in that** the cable channel (51) located on the switch terminal (50) is narrowed down; and by producing this product from a soft material, a natural o-ring system is formed by fitting the cable into the cable channel (51), and thus an extra barrier which prevents liquid flow into the structure is formed.

5. Liquid impermeable switch chain/harness with cable according to Claim 1, **characterized in that** the cable channel (81) located on the side surfaces of the upper body (80) is downsized, and additionally, the lower body cable channel (62) in the lower body (60) is raised so that entry of liquid through this part into the liquid impermeable switch chain/harness with cable is prevented.

6. Liquid impermeable switch chain/harness with cable according to Claim 1, **characterized in that** the

lower body engagement housing (85) is positioned outside of the lower body (60) in order to prevent contact of the liquid with the switch (20) and so that a gap is not formed on the inner surface.

7. Liquid impermeable switch chain/harness with cable according to Claim 1, **characterized in that** the lower trigger engagement housing (74) at the lower part of the trigger (70) passes through the trigger clearance (86) of the trigger lower mechanism (30) located on the upper body (80) and is connected to the shaft spline (32) in order to prevent the liquids coming from the upper body (80) from reaching the switch (20).

8. Liquid impermeable switch chain/harness with cable according to claim 2-7, **characterized in that** the crescent trigger (71) provided on the trigger (70) is not mounted to the gas valve shaft and surrounds the gas valve shaft in the form of a crescent, and can receive downward movement from the plastic ring (90) which can turn to right and left in all angles.

9. Liquid impermeable switch chain/harness with cable according to claims 2-8, **characterized in that,** when a downward movement is provided to the gas valve shaft, the trigger (70) moves downwards and with this movement pushes the second switch spring (10) downwards by means of the shaft spline (32) and contacts the switch (20) thereby providing the necessary ignition.

10. Liquid impermeable switch chain/harness with cable according to any one of the preceding claims, **characterized in that,** when the force acting on the trigger (70) is released, the first switch spring (40) pushes back the force accumulated thereon thereby enabling the trigger (70) to be lifted from the switch (20) and thus the ignition is deactivated.

11. **Liquid** impermeable switch chain/harness with cable according to claims 2-10, **characterized in that** the plastic ring (90) mounted to the gas valve shaft rotates with a movement equivalent to the right and left movement of the gas valve shaft to turn on the gas, and, regardless of the direction and amount of this rotation angle, the plastic ring (90) provides an uninterrupted contact on the downward movement of the crescent trigger (71) and the gas valve shaft.

12. Liquid impermeable switch chain/harness with cable according to claim 3-11, **characterized in that** it is ensured that the water is prevented from entering into the switch and flows from the outside of the trigger engagement housing (74) by means of the trigger engagement housing which is fitted over the part of the switch shaft that protrudes from the body; which switch shaft enables switching by its downward movement and is supported by two springs (10, 40).

Patentansprüche

1. Eine flüssigkeitsundurchlässige Schalterkette/Ein flüssigkeitsundurchlässiger Kabelbaum mit Kabel, **umfassend:**

- einen Unterkörper (60), der mindestens einen Kabelkanal (62) umfasst,
- ein erstes Schalterfedergehäuse (63), das ein im inneren Teil des Unterkörpers (60) vorgesehener Kanal ist,
- eine dem Kabelkanal (62) entsprechend im Unterkörper (60) hergestellte Schalterklemme (50), die in den Unterkörper (60) eingesetzt wird,
- eine erste Schalterfeder (40), die in den inneren Teil der Schalterklemme (50) und in das erste, am Unterkörper (60) vorgesehene Schalterfedergehäuse (63) eingesetzt ist,
- einen Oberkörper (80), der den äußeren Teil des Aufbaus bildet, wenn er mit dem Unterkörper (60) verbunden wird,
- einen Abzug-Absenkmechanismus (30), der ein eine Wellenverzahnung (32) und ein Schaltergehäuse (31) umfassender Teil ist,
- wobei der untere Teil des Schaltergehäuses (31) des Abzug-Absenkmechanismus (30) derart angeordnet wird, dass er sich über der ersten Schalterfeder (40) befindet;
- wobei ein Schalter (20) im oberen Teil des Schaltergehäuses (31) des Abzug-Absenksmechanismus (30) angeordnet ist;
- eine am Unterkörper (60) angeordnete Unterkörpernase (61) ist in einem am Oberkörper (80) vorgesehenen Unterkörpernaseschlitz (85) angebracht ist, der zum Verriegeln des Unterkörpers (60) dient, wodurch der Mechanismus nach Durchlaufen einer Abzugsöffnung (86) am Oberkörper (80) verriegelt und fixiert wird, wobei ein Abzugskanal (84) am Abzug (70) dazu eingerichtet ist, mit der Wellenverzahnung (32) in Eingriff zu gelangen,

gekennzeichnet durch,

- eine zweite Schalterfeder (10), die am oberen Teil des Schalters (20) angebracht und auf der der Oberkörper (80) montiert ist.

2. Flüssigkeitsundurchlässige Schalterkette/Flüssigkeitsundurchlässiger Kabelbaum mit Kabel nach Anspruch 1, umfassend einen Kunststoffring (90), der an einer Gasventilwelle befestigt ist, und wobei dieser Kunststoffring (90) die Abwärtsbewegung der Gasventilwelle auf einen sichelförmigen Abzug (71) überträgt und bei Empfang der Bewegung den Abzug (70) abwärts bewegt.

3. Flüssigkeitsundurchlässige Schalterkette/Flüssigkeitsundurchlässiger Kabelbaum mit Kabel nach Anspruch 1, wobei ein unteres, am unteren Teil des Abzugs (70) angeordnetes Abzugseingriffsgehäuse (74) die an den Rändern des Oberkörpers (80) angesammelten Lebensmittelrückstände durch Bewegung innerhalb des am Oberkörper (80) vorgesehenen Abzugsspiels (86) säubert.

4. Flüssigkeitsundurchlässige Schalterkette/Flüssigkeitsundurchlässiger Kabelbaum mit Kabel nach Anspruch 1, **dadurch gekennzeichnet, dass** der an der Schalterklemme (50) vorgesehene Kabelkanal (51) verengt ist; und dass durch Herstellung dieses Produkts aus einem weichen Material ein natürliches O-Ring-System gebildet wird, indem das Kabel in den Kabelkanal (51) eingepasst wird, und somit eine zusätzliche Barriere gebildet wird, die verhindert, dass Flüssigkeit in den Aufbau einfließt.

5. Flüssigkeitsundurchlässige Schalterkette/Flüssigkeitsundurchlässiger Kabelbaum mit Kabel nach Anspruch 1, **dadurch gekennzeichnet, dass** der an den Seitenflächen des Oberkörpers (80) befindliche Kabelkanal (81) verkleinert ist und dass zusätzlich der Unterkörper-Kabelkanal (62) im Unterkörper (60) derart erhöht ist, dass das Eindringen von Flüssigkeit durch diesen Teil in die flüssigkeitsundurchlässige Schalterkette/den flüssigkeitsundurchlässigen Kabelbaum mit Kabel verhindert wird.

6. Flüssigkeitsundurchlässige Schalterkette/Flüssigkeitsundurchlässiger Kabelbaum mit Kabel nach Anspruch 1, **dadurch gekennzeichnet, dass** das Unterkörper-Eingriffsgehäuse (85) außerhalb des Unterkörpers (60) positioniert ist, um den Kontakt der Flüssigkeit mit dem Schalter (20) zu verhindern und derart, dass kein Spalt auf der inneren Oberfläche gebildet wird.

7. Flüssigkeitsundurchlässige Schalterkette/Flüssigkeitsundurchlässiger Kabelbaum mit Kabel nach Anspruch 1, **dadurch gekennzeichnet, dass** das untere Abzugseingriffsgehäuse (74) am unteren Teil des Abzugs (70) durch die Abzugsöffnung (86) des sich auf dem Oberkörper (80) befindlichen unteren Abzugsmechanismus (30) hindurchgeht und mit der Wellenverzahnung (32) verbunden ist, um zu verhindern, dass die vom Oberkörper (80) austretenden Flüssigkeiten an den Schalter (20) gelangen.

8. Flüssigkeitsundurchlässige Schalterkette/Flüssigkeitsundurchlässiger Kabelbaum mit Kabel nach einem der Ansprüche 2 bis 7, **dadurch gekennzeichnet, dass** der am Abzug (70) vorgesehene sichelförmige Abzug (71) nicht an der Gasventilwelle angebracht ist und die Gasventilwelle sichelförmig umgibt und von dem in allen Winkeln nach rechts und links drehbaren Kunststoffring (90) eine Abwärtsbewegung erhalten kann.

9. Flüssigkeitsundurchlässige Schalterkette/Flüssigkeitsundurchlässiger Kabelbaum mit Kabel nach einem der Ansprüche 2 bis 8, **dadurch gekennzeichnet, dass** sich der Abzug (70) nach unten bewegt, wenn eine Abwärtsbewegung auf die Gasventilwelle ausgeübt wird, und durch diese Bewegung die zweite Schalterfeder (10) mittels der Wellenverzahnung (32) nach unten drückt und den Schalter (20) kontaktiert, wodurch die erforderliche Zündung erfolgt.

10. Flüssigkeitsundurchlässige Schalterkette/Flüssigkeitsundurchlässiger Kabelbaum mit Kabel nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** beim Lösen der auf den Abzug (70) wirkenden Kraft die erste Schalterfeder (40) die auf ihr aufgebaute Kraft zurückdrückt, wodurch ermöglicht wird, dass der Abzug (70) vom Schalter (20) abgehoben werden kann und somit die Zündung deaktiviert wird.

11. Flüssigkeitsundurchlässige Schalterkette/Flüssigkeitsundurchlässige Kabelbaum mit Kabel nach einem der Ansprüche 2 bis 10, **dadurch gekennzeichnet, dass** der an der Gasventilwelle angebrachte Kunststoffring (90) sich mit einer der Rechts- und Linksbewegung der Gasventilwelle entsprechenden Bewegung dreht, um das Gas einzuschalten, und dass der Kunststoffring (90) unabhängig von der Richtung und der Größe dieses Drehwinkels einen ununterbrochenen Kontakt bei der Abwärtsbewegung des sichelförmigen Abzugs (71) und der Gasventilwelle sichert.

12. Flüssigkeitsundurchlässige Schalterkette/Flüssigkeitsundurchlässige Kabelbaum mit Kabel nach einem der Ansprüche 3 bis 11, **dadurch gekennzeichnet, dass** es sichergestellt ist, dass das Wasser daran gehindert wird, in den Schalter einzudringen und von der Außenseite des Abzug-Eingriffsgehäuses (74) durch das Abzug-Eingriffsgehäuse fließt, welches über jenem Teil der Schalterwelle angebracht ist, der aus dem Körper herausragt; wobei die Schalterwelle den Schaltvorgang durch ihre Abwärtsbewegung ermöglicht und von zwei Federn (10, 40) getragen wird.

Revendications

1. Une chaîne de commutateur/harnais avec câble imperméable aux liquides, **comprenant** :

   - un corps inférieur (60) comprenant au moins un canal de câble (62),
   - un premier logement de ressort de commuta-

teur (63), qui est un canal situé dans la partie interne du corps inférieur (60),
- un terminal de commutateur (50), fabriqué en conformité avec le canal de câble (62) du corps inférieur (60) et placé dans ce dernier (60),
- un premier ressort de commutateur (40) inséré dans la partie interne du terminal de commutateur (50) et dans le premier logement de ressort de commutateur (63) situé sur le corps inférieur (60),
- un corps supérieur (80) qui forme la partie externe de la structure lorsqu'il est assemblé avec le corps inférieur (60),
- un mécanisme inférieur de gâchette (30), qui est une pièce comprenant une cannelure d'arbre (32) et un logement de commutateur (31),
- la partie inférieure du logement de commutateur (31) du mécanisme inférieur de gâchette (30) étant disposée de manière à être placée au-dessus du premier ressort de commutateur (40),
- un commutateur (20) étant placé dans la partie supérieure du logement de commutateur (31) du mécanisme inférieur de gâchette (30),
- un ergot du corps inférieur (61), situé sur le corps inférieur (60), est monté dans une fente d'ergot (85) située sur le corps supérieur (80) et destinée à verrouiller le corps inférieur (60), assurant ainsi le verrouillage et la fixation du mécanisme; après avoir traversé un passage de gâchette (86) sur le corps supérieur (80), un canal de gâchette (84) sur la gâchette (70) est conçu pour s'engager dans la cannelure d'arbre (32).

caractérisé en ce que

- un second ressort de commutateur (10), monté sur la partie supérieure du commutateur (20) et sur lequel le corps supérieur (80) est fixé.

2. Chaîne de commutateur/harnais avec câble imperméable aux liquides selon la revendication 1, comprenant au moins un anneau en plastique (90) fixé à un arbre de vanne à gaz, cet anneau en plastique (90) transmettant le mouvement descendant de l'arbre de vanne à gaz à une gâchette en croissant (71) qui, en recevant le mouvement, entraîne le déplacement vers le bas de la gâchette (70).

3. Chaîne de commutateur/harnais avec câble imperméable aux liquides selon la revendication 1, dans laquelle un logement d'engagement inférieur de gâchette (74), situé dans la partie inférieure de la gâchette (70), élimine les résidus alimentaires accumulés sur les côtés du corps supérieur (80) en se déplaçant dans le passage de gâchette (86) prévu sur le corps supérieur (80).

4. Chaîne de commutateur/harnais avec câble imperméable aux liquides selon la revendication 1, **caractérisée en ce que** le canal de câble (51) situé sur le terminal de commutateur (50) est rétréci ; et, en fabriquant ce produit à partir d'un matériau souple, un système de joint torique naturel est formé par l'insertion du câble dans le canal de câble (51), créant ainsi une barrière supplémentaire empêchant l'infiltration de liquides dans la structure.

5. Chaîne de commutateur/harnais avec câble imperméable aux liquides selon la revendication 1, **caractérisée en ce que** le canal de câble (81) situé sur les surfaces latérales du corps supérieur (80) est réduit, et en outre, **en ce que** le canal de câble inférieur (62) dans le corps inférieur (60) est surélevé afin d'empêcher l'infiltration de liquides par cette partie dans la chaîne de commutateur/harnais avec câble imperméable aux liquides.

6. Chaîne de commutateur/harnais avec câble imperméable aux liquides selon la revendication 1, **caractérisée en ce que** le logement d'engagement du corps inférieur (85) est positionné à l'extérieur du corps inférieur (60) afin d'empêcher le contact du liquide avec le commutateur (20) et d'éviter la formation d'un espace sur la surface intérieure.

7. Chaîne de commutateur/harnais avec câble imperméable aux liquides selon la revendication 1, **caractérisée en ce que** le logement d'engagement inférieur de la gâchette (74) situé dans la partie inférieure de la gâchette (70) traverse le passage de gâchette (86) du mécanisme inférieur de gâchette (30) situé sur le corps supérieur (80) et est connecté à la cannelure d'arbre (32) afin d'empêcher les liquides provenant du corps supérieur (80) d'atteindre le commutateur (20).

8. Chaîne de commutateur/harnais avec câble imperméable aux liquides selon les revendications 2 à 7, **caractérisée en ce que** la gâchette en croissant (71) prévue sur la gâchette (70) n'est pas montée sur l'arbre de vanne à gaz, mais entoure celui-ci sous forme de croissant, et peut recevoir un mouvement descendant de l'anneau en plastique (90), lequel peut pivoter vers la droite et la gauche sous tous les angles.

9. Chaîne de commutateur/harnais avec câble imperméable aux liquides selon les revendications 2 à 8, **caractérisée en ce que,** lorsqu'un mouvement descendant est appliqué à l'arbre de vanne à gaz, la gâchette (70) se déplace vers le bas et, par ce mouvement, pousse le second ressort de commutateur (10) vers le bas au moyen de la cannelure d'arbre (32), entrant ainsi en contact avec le commutateur (20) et permettant ainsi l'allumage requis.

10. Chaîne de commutateur/harnais avec câble imper-

méable aux liquides selon l'une quelconque des revendications précédentes, **caractérisée en ce que,** lorsque la force agissant sur la gâchette (70) est relâchée, le premier ressort de commutateur (40) repousse la force accumulée, permettant ainsi à la gâchette (70) de se soulever du commutateur (20) et désactivant ainsi l'allumage.

11. Chaîne de commutateur/harnais avec câble imperméable aux liquides selon les revendications 2 à 10, **caractérisée en ce que** l'anneau en plastique (90) monté sur l'arbre de vanne à gaz tourne avec un mouvement équivalent au mouvement de droite et de gauche de l'arbre de vanne à gaz pour l'ouverture du gaz et, indépendamment de la direction et de l'amplitude de cet angle de rotation, l'anneau en plastique (90) assure un contact ininterrompu avec le mouvement descendant de la gâchette en croissant (71) et de l'arbre de vanne à gaz.

12. Chaîne de commutateur/harnais avec câble imperméable aux liquides selon les revendications 3 à 11, **caractérisée en ce que** l'infiltration d'eau dans le commutateur est empêchée et que l'eau s'écoule à l'extérieur du logement d'engagement de la gâchette (74), grâce à ce dernier, lequel est ajusté sur la partie de l'arbre du commutateur dépassant du corps ; cet arbre de commutateur assurant la commutation par son mouvement descendant et étant soutenu par deux ressorts (10, 40).

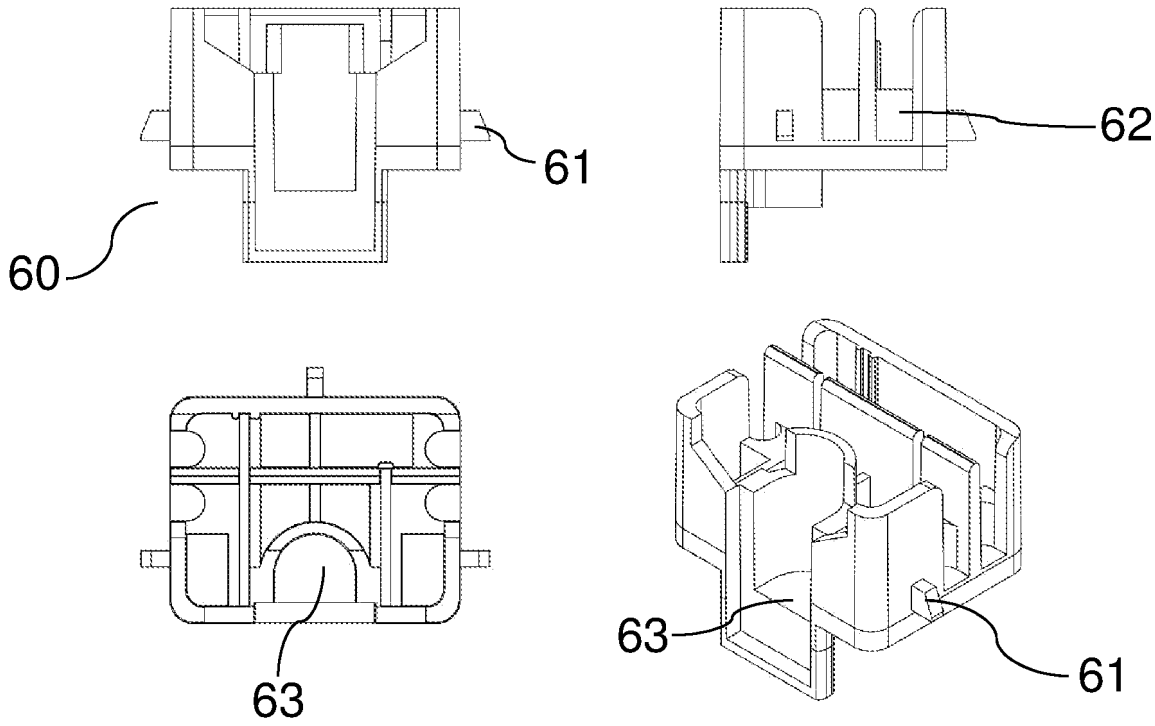


Figure 1

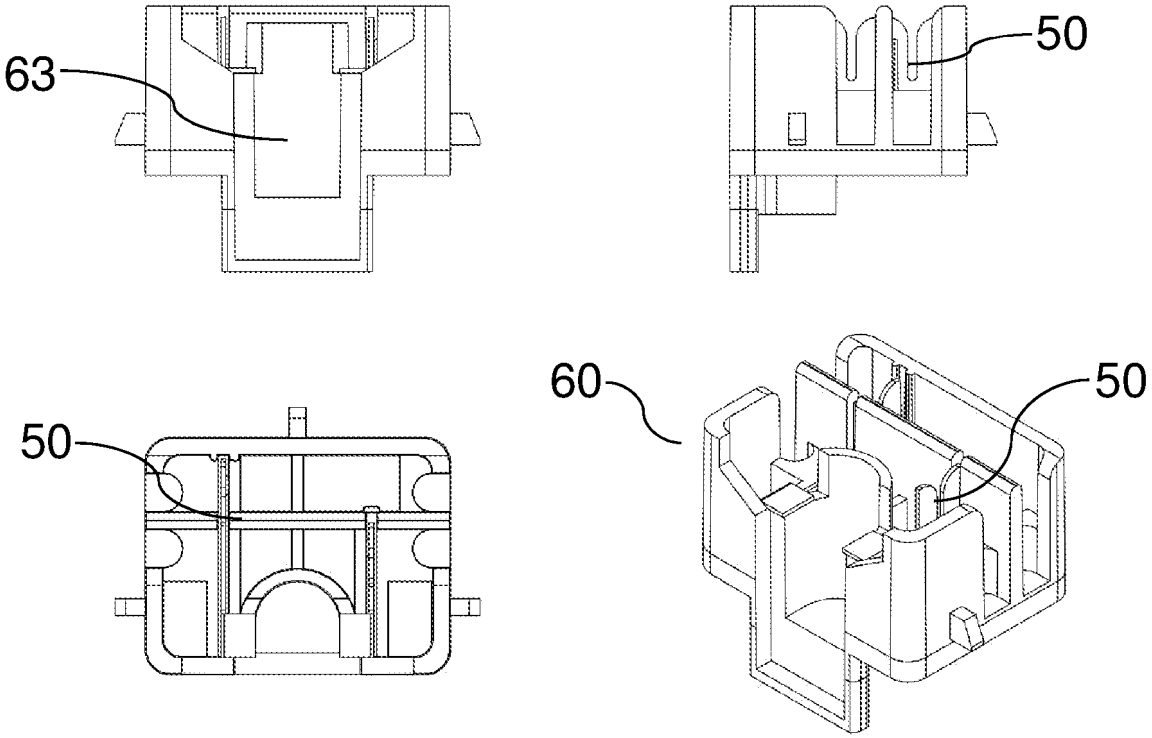
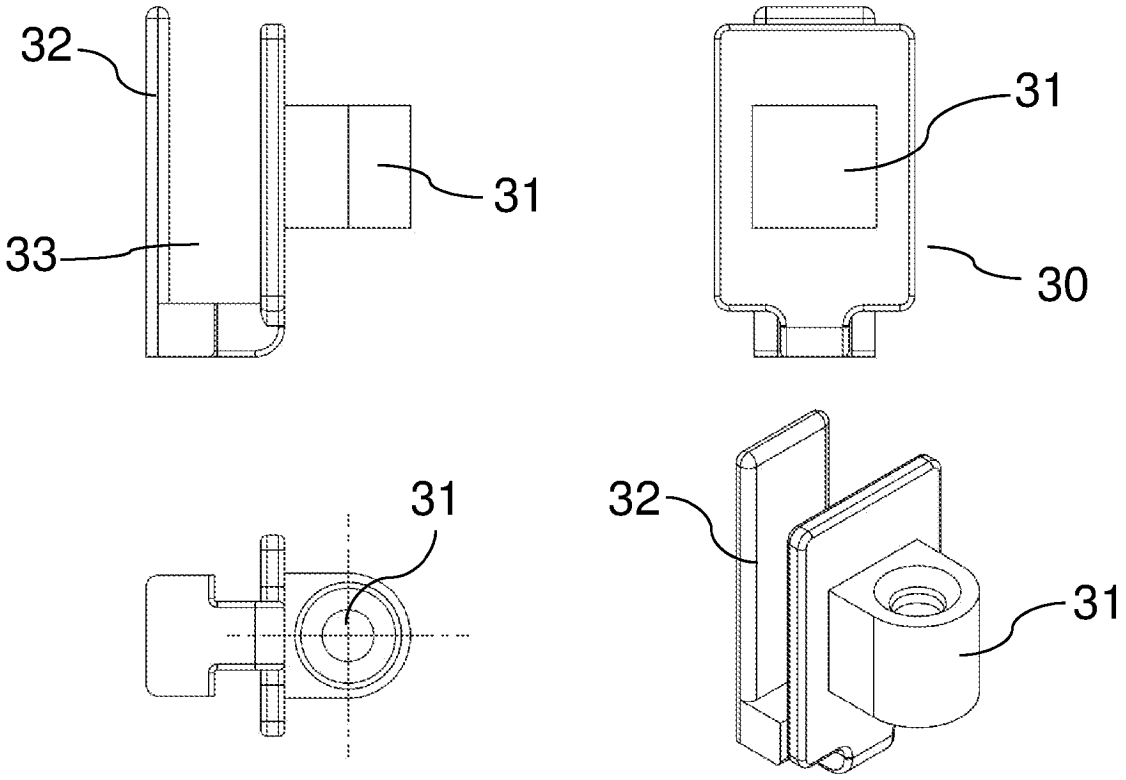


Figure 2



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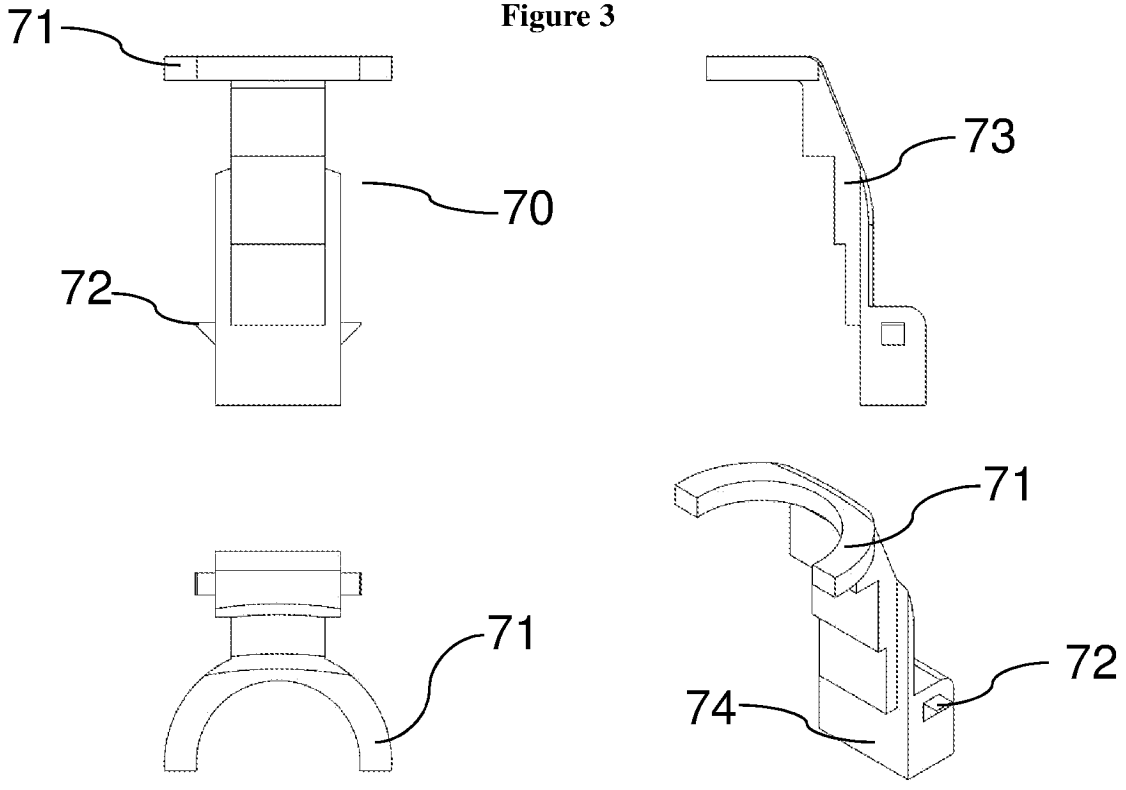

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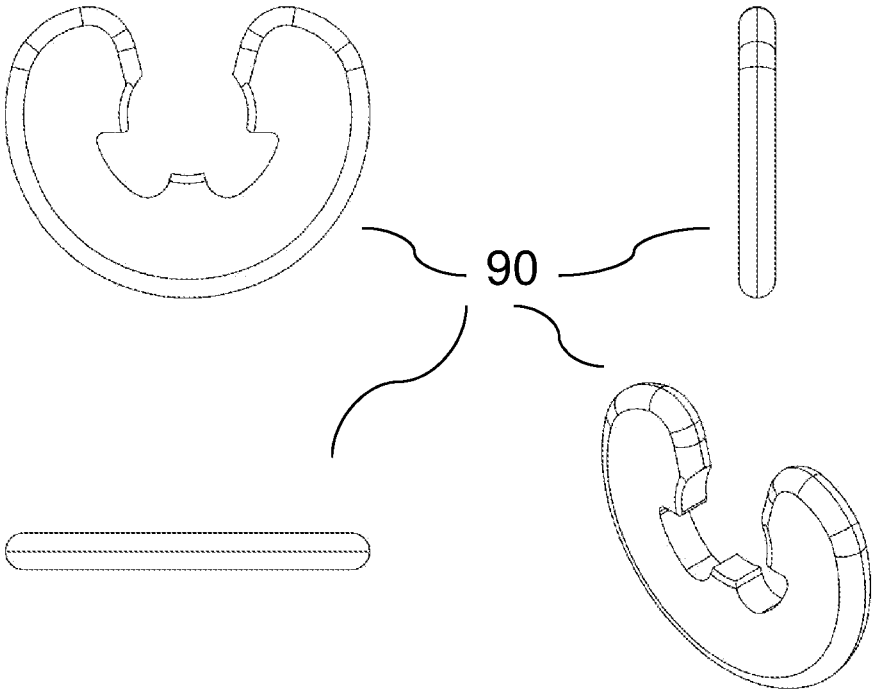

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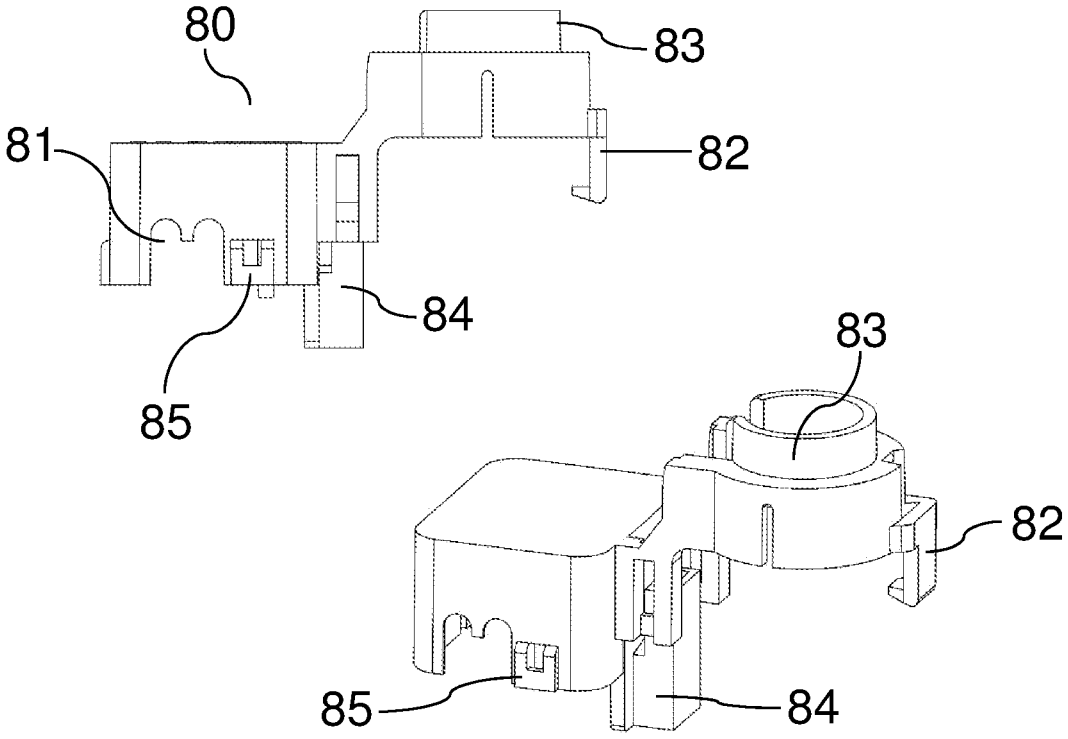

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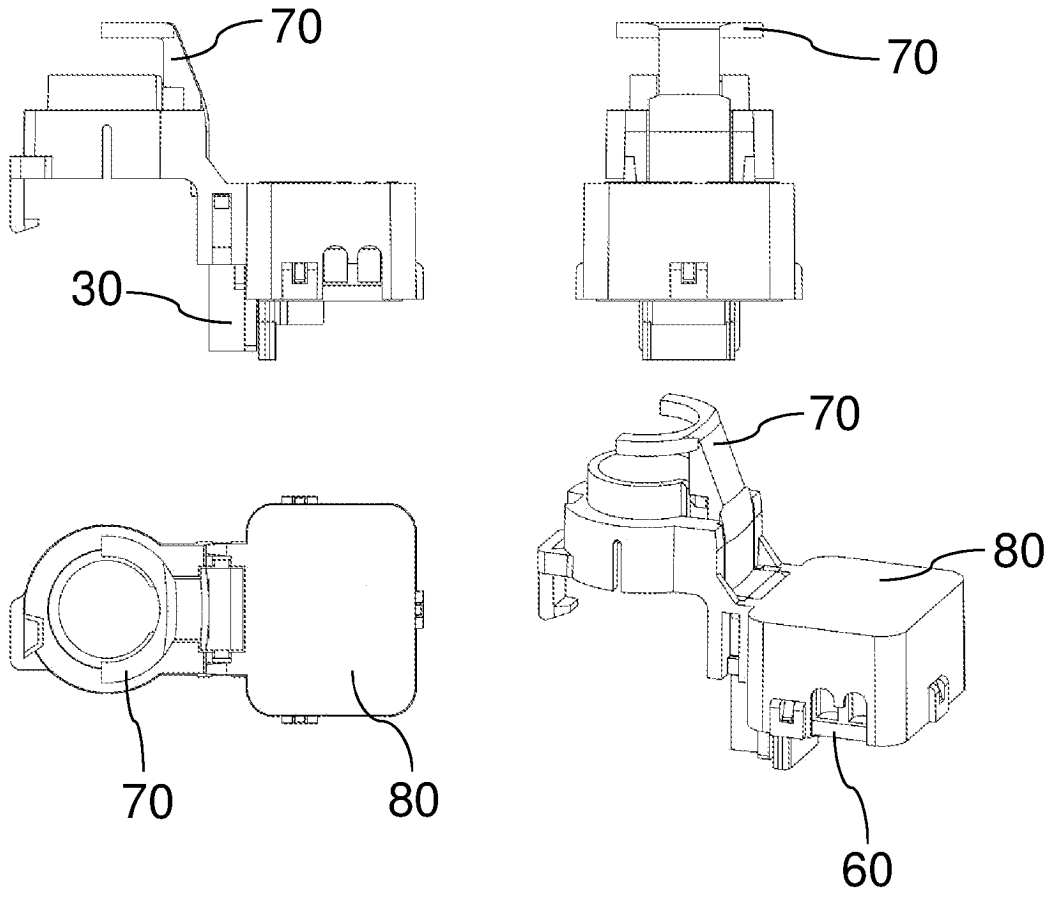

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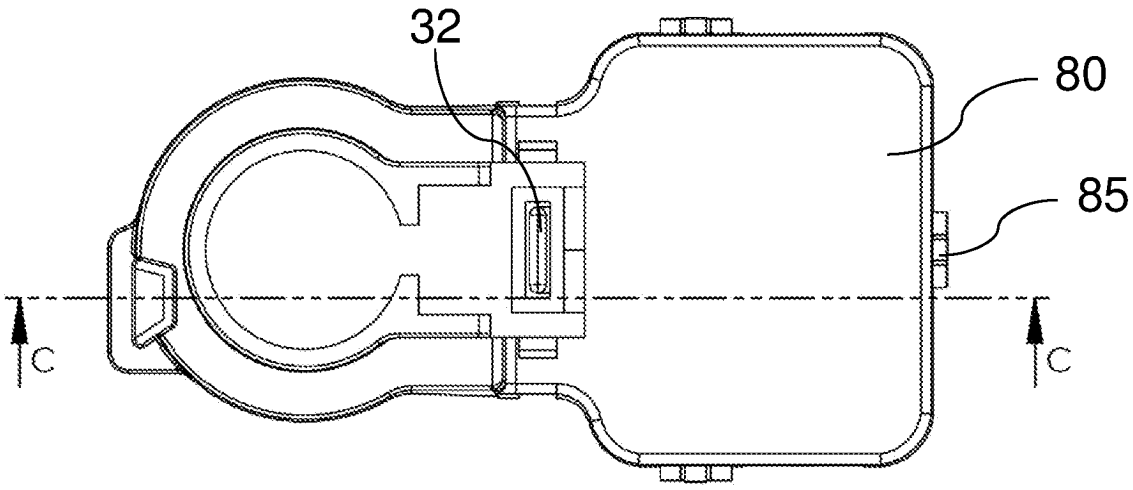

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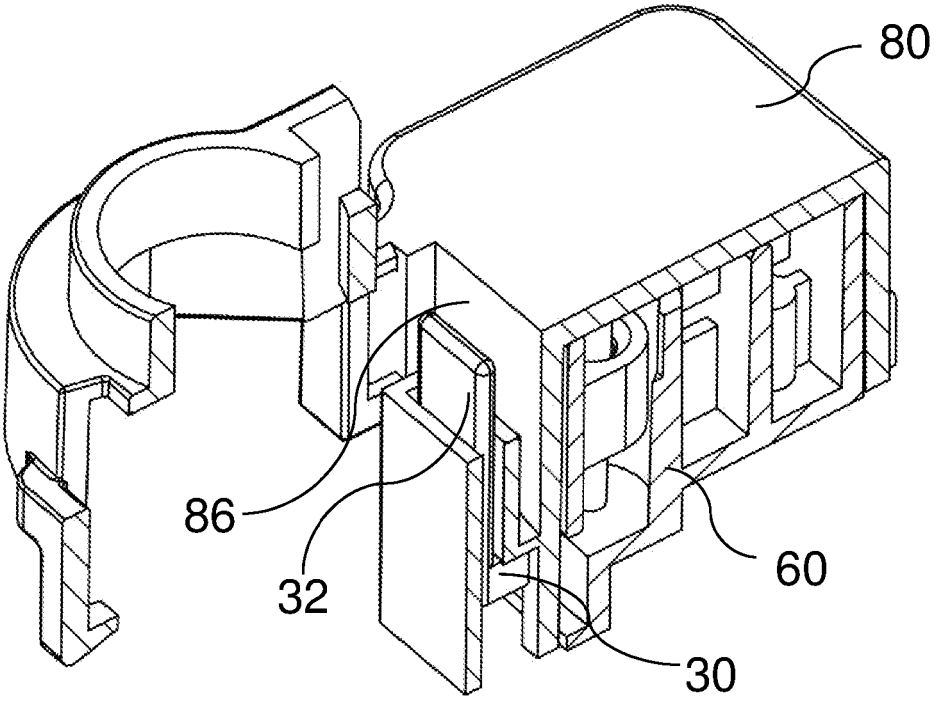
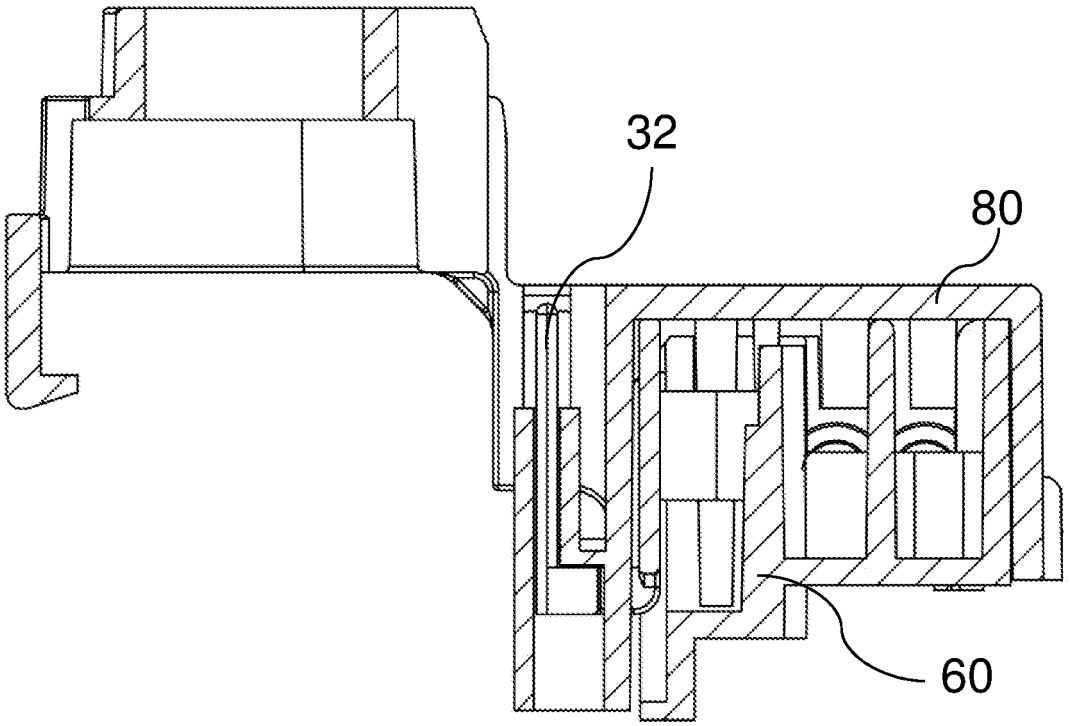


Figure 9



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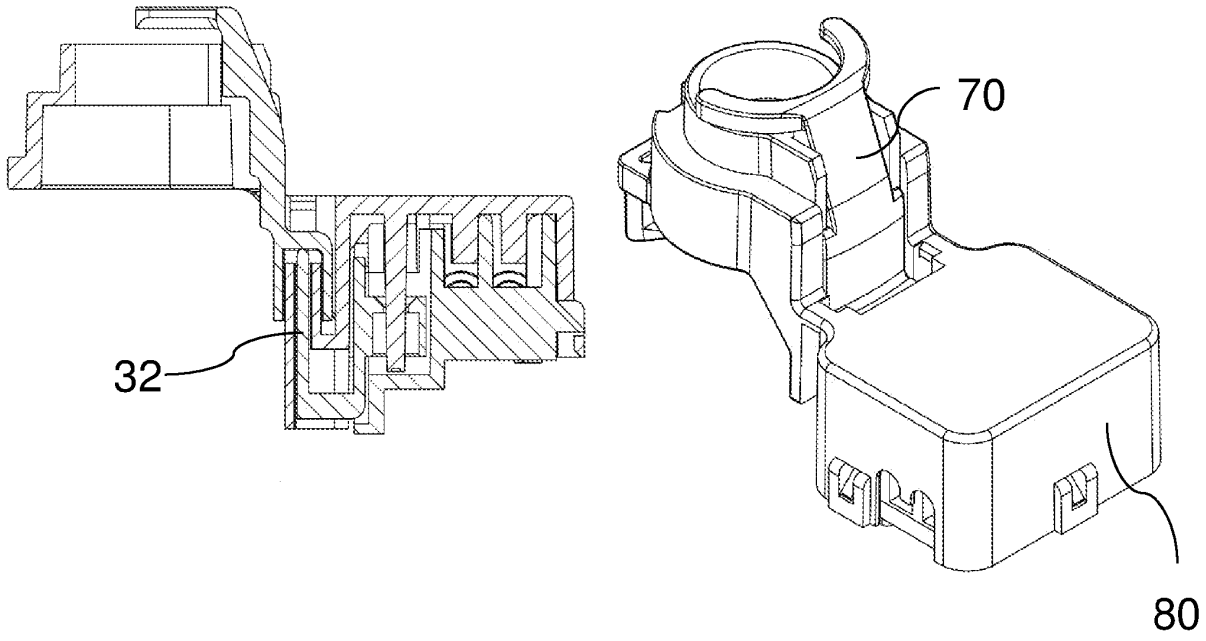


Figure 11

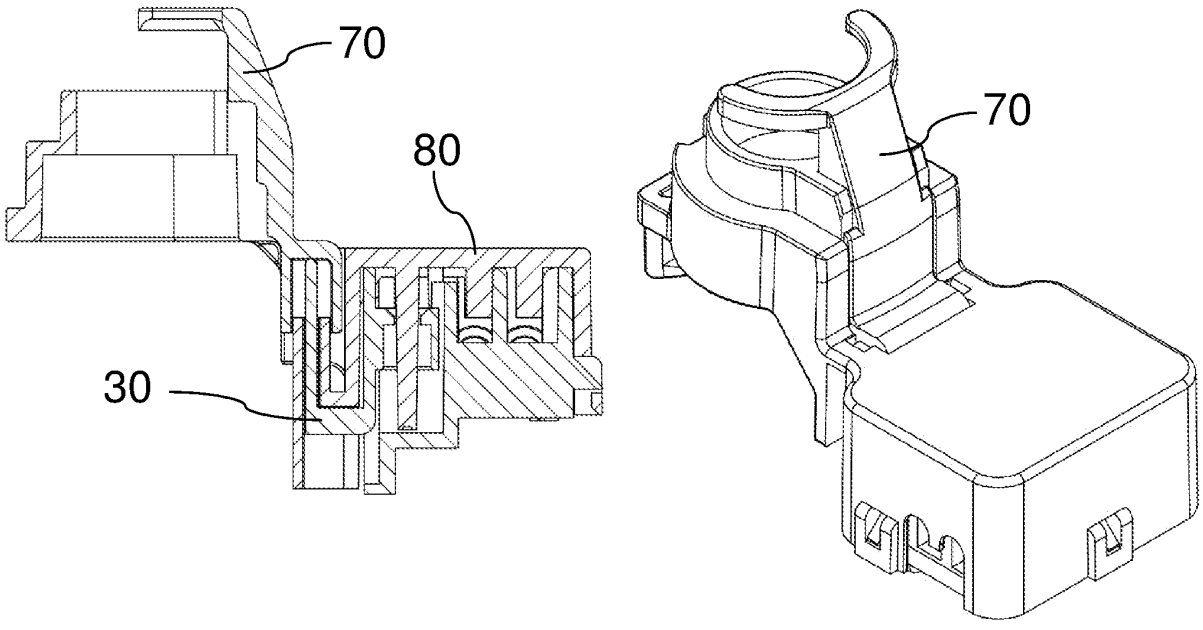
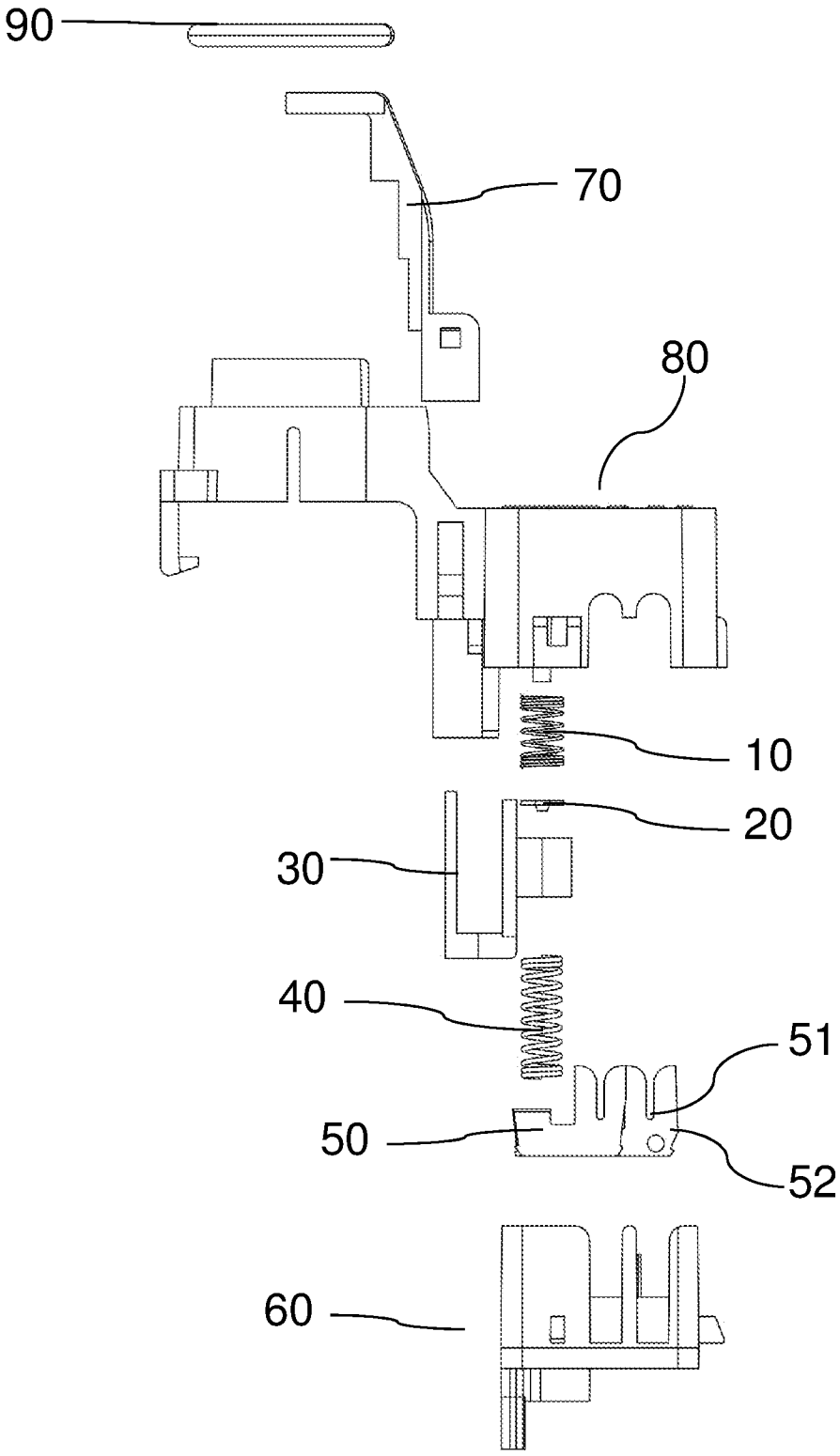


Figure 12



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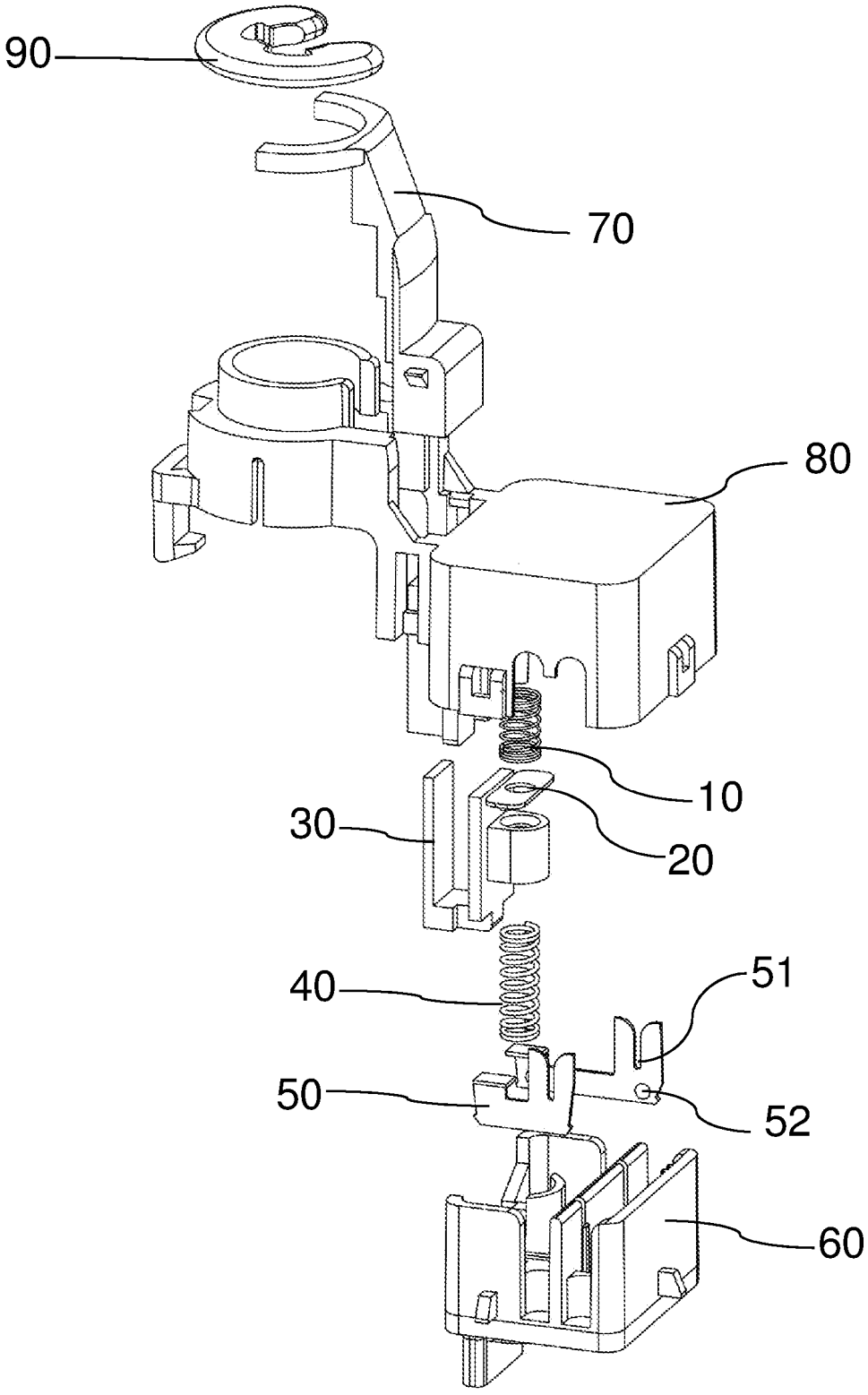

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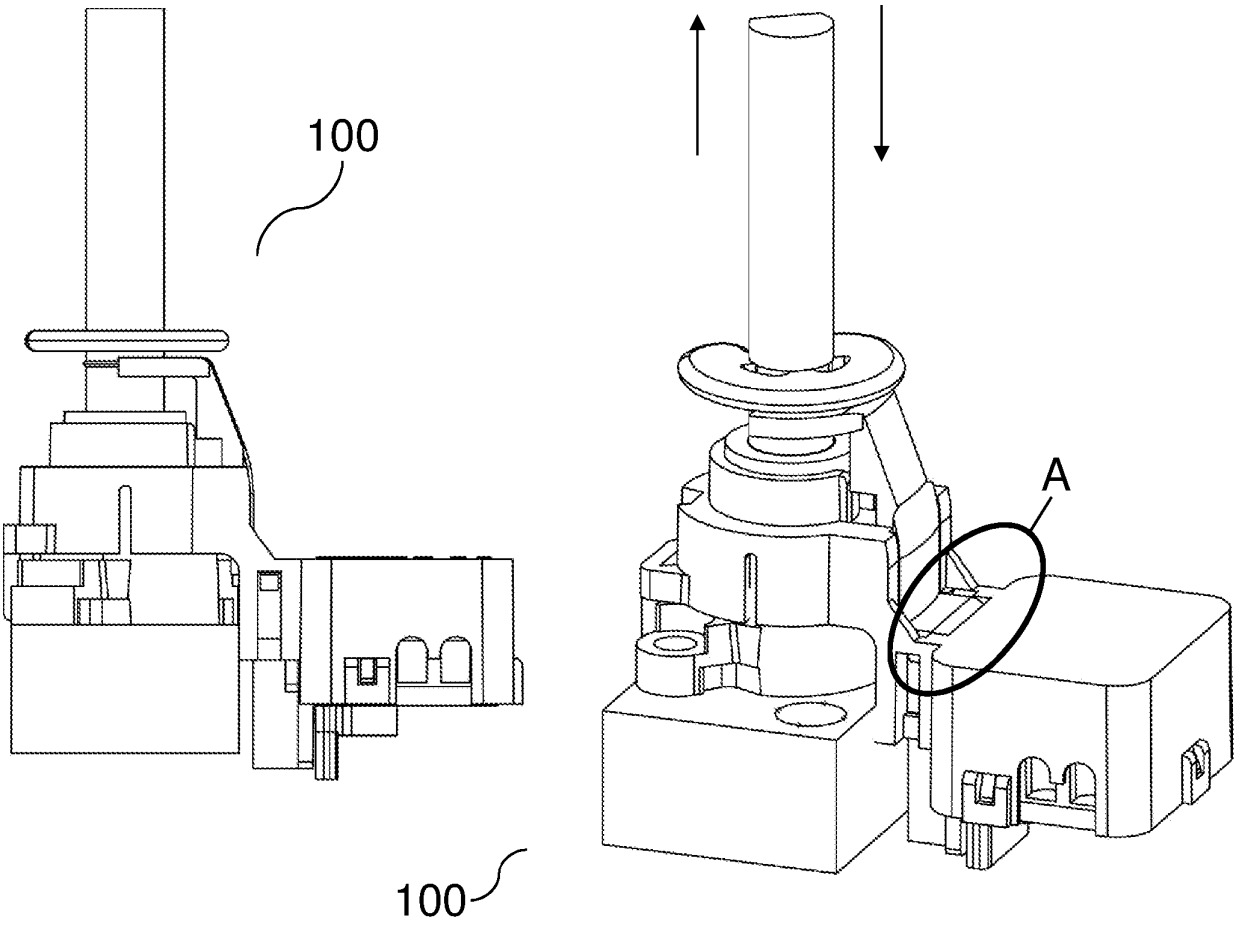

Figure 15

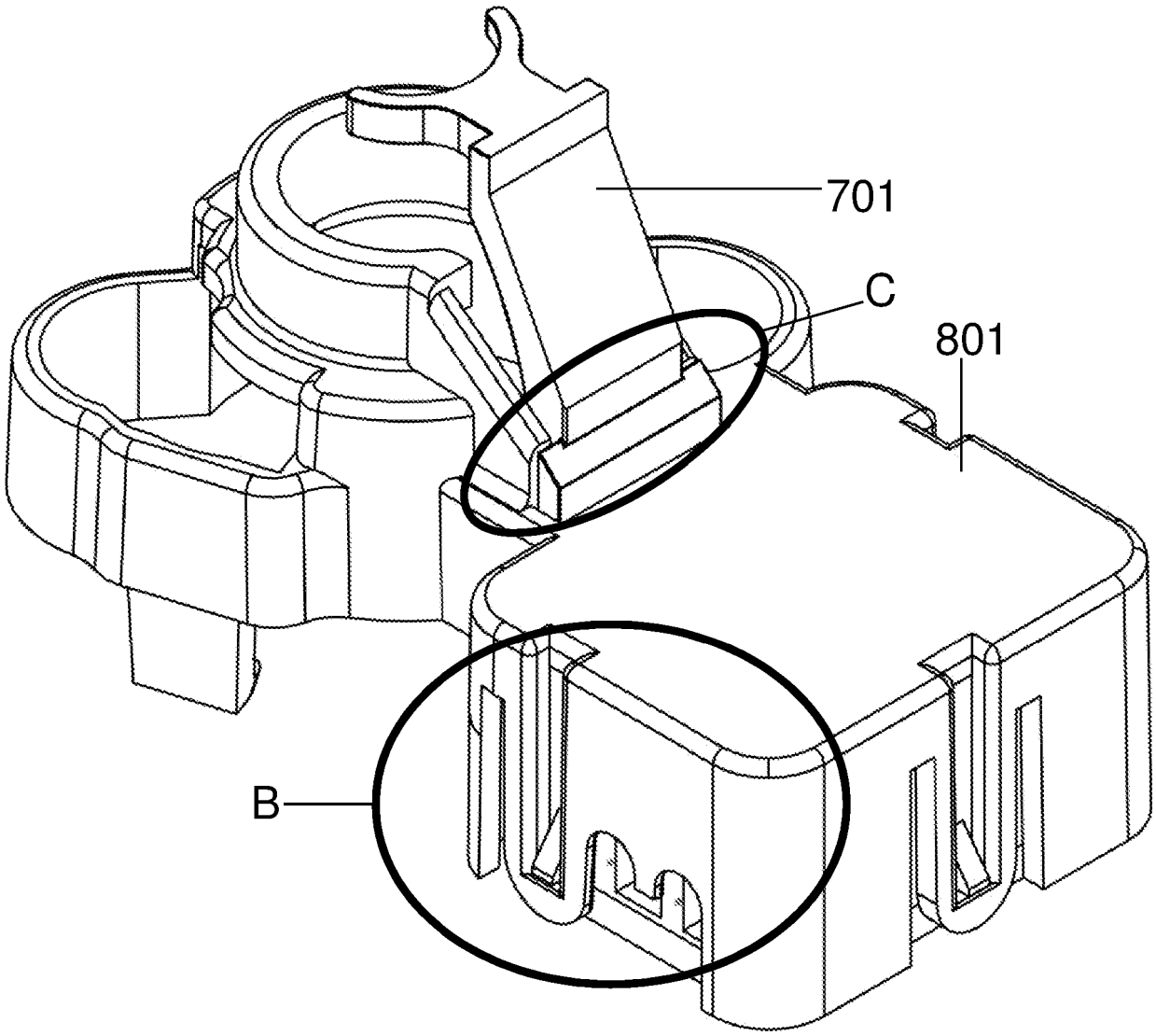

Figure 16

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- TR 201505131 **[0002]**
- WO 2016039703 A1 **[0005]**