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(54) **SMOKING DEVICE, MATCHING SMOKE DISCHARGE DEVICE, AND SPECIALIZED LIGHTER FOR SMOKING DEVICE**

(57) A smoking device (1), a matching smoke discharge device (31), and a specialized lighter (8) for the smoking device (1). Regarding the smoking device (1), when wanting to smoke, a user presses hard or lightly on a button member, then a cigarette (14) automatically advances, and a heat source heats or lights the cigarette (14); and after the button member (3) is released, all combustibles of the cigarette (14) in the smoking device (1) are automatically extinguished. The smoking device (1) can also be matched with a smoke discharge device (31) containing an expansion portion (32), wherein the expansion portion (32) generates contraction pressure after expansion, the contraction pressure enables the smoke to be slowly and thoroughly filtered in a filtering device and then slowly squeezed out. The specialized lighter (8) for the smoking device (1) can protect children, such that it is almost impossible for the lighter (8) to be lighted independently, and same must be loaded into the smoking device (1) in order to be lighted.

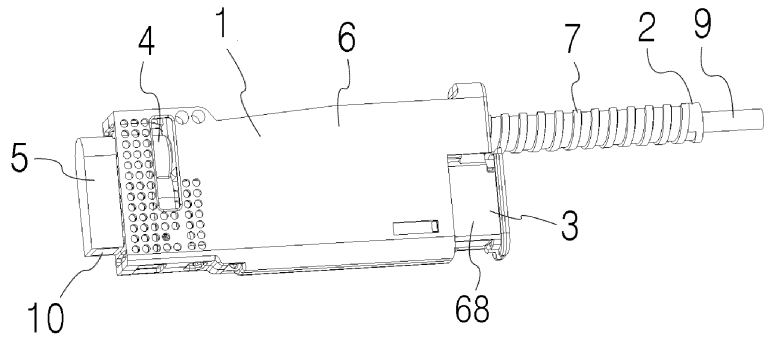

Figure 1

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to a smoking device, and to a tool for purifying smoke, as well as a lighter.

BACKGROUND OF THE INVENTION

[0002] The problem of second-hand smoke has never been solved in the entire history of tobacco, although e-cigarettes claim to be able to quit smoking, claiming that there is no second-hand smoke, but the discerning person can understand that e-cigarettes are not for the purpose of quitting smoking, although the aerosol (second-hand smoke) of e-cigarettes has less smell, but the severity of its harm still needs a lot of research. The most important thing is that the taste of e-cigarettes is very sweet, which is the favorite flavor of children and teenagers, and the addiction of chemically synthesized nicotine salts in e-cigarettes is too strong, which not only does not protect children or teenagers, but even leads to a large number of children and adolescents in the world to consume e-cigarettes, and the lack of child protection devices is a major problem for e-cigarettes. Nowadays, there are many simple ways to remove second-hand smoke with air purifiers, which are either too large in size or incomplete in purification, and it is difficult to achieve always-on, on-the-go, and efficient filtration at the same time.

[0003] Another issue worth exploring is the methods of quitting smoking.

[0004] All smokers who smoke traditional cigarettes are accustomed to lighting one cigarette at a time and then smoking them all. Many beginner smokers actually smoke one or two puffs is enough, but the cigarette has not burned out, so they can only force themselves to continue to smoke until it is finished, which is an important reason for smokers to become more and more addicted, but asked a lot of smokers, they all think that they should smoke a cigarette every time, and if a cigarette is not enough, they can only smoke another whole cigarette, and unconsciously the addiction is getting bigger and bigger, no one thinks it is strange, and no one raises objections.

[0005] Instead of quitting smoking when the addiction is high, it is better to make the process of addiction very slow, for example, let smokers of the same age smoke half less cigarettes per day than other smokers, which may be another way to quit smoking or less smoking. If you can change the smoking behavior from one whole cigarette at a time to one puff or a few puffs at a time, so that the smokers can choose by themselves, this will greatly slow down the process of smoking addiction. In addition, a large amount of tobacco is burned in the smoking interval during the smoking process, which is both wasteful and environmentally unfriendly.

[0006] In addition, all the child safety lighters in the world now can only protect children under the age of 5, but every year, many children over the age of five still cause fires, injuries and even deaths because of playing with lighters. We must not only protect children under the age of 5, but also properly protect children over the age of 5. It is best to be able to make it difficult for even young and strong adults to light the lighter, and to provide protection for all ages from 0 to 100 years old, and it is best for this lighter to have to be put into a specific tool to ignite, and the flame is completely shrouded in a safe shell to burn, which makes it a truly safe lighter.

[0007] One of the largest tobacco companies in the world today, Philip Morris Incorporated, its U.S. patent US6349728 discloses a smoking tool can extinguish the cigarette with every puff of smoke, but the big problem that this patent cannot achieve is that the cigarette is very soft, and this patent imagines the cigarette as a hard, elastic solid cylinder, allowing a gear or hook to push the cigarette forward, which is simply impossible! Cigarette will slip and stagnate in place, because the cigarette is soft, and the elasticity is very poor, and more serious, the cigarette paper will be punctured, which is a bigger problem, because once the cigarette paper punctures the whole cigarette will be scrapped and the smoke can not be inhaled. So, we cannot simply treat cigarettes as ordinary cylindrical shapes, let alone talk about them on paper. In addition, this patent, like all previous similar patents, treats cigarette ash and combustibles simply by using a cone to squeeze the ash and combustibles in the direction of the cigarette butt, and the cone is passively squeezed up by the cigarette, resulting in this method not being able to completely remove the ash and combustibles as imagined in the patent, but only pressing the ash on the cigarette to the direction of the cigarette butt more tightly, and these ash will prevent the cigarette from being fully lit next time, so the cigarette will enter a vicious circle: the ash is pressed more tightly, the cigarette will be more difficult to ignite, and the combustion residue will be more, the tighter, the more difficult the cigarette will be to light .....

[0008] In addition to the US patent US6349728 mentioned above, US patent US4066088 also discloses a smoking tool, which fixes a cigarette inside the tool and then uses an elastic igniter to continuously press and light the cigarette in the direction of the cigarette. But the problem is the same. The method of removing cigarette ash and combustibles in this patent is simply to continuously squeeze the cigarette ash towards the cigarette end, which will only make it increasingly difficult to ignite the cigarette.

[0009] U.S. Patent US5472001 discloses a smoking tool, in which a cigarette remains in a burning state after being lit, and the user's nose and mouth are sealed inside the smoking device. Throughout the entire smoking process, the user holds the smoking tool tightly against the user's face, and all smoke is extracted and purified through an exhaust fan. When the user does not want to smoke, the cigarette can be manually extinguished.

Leaving aside the painful process of smoking, it is impossible for a small device with a built-in exhaust fan to quickly and efficiently purify the large amount of second-hand smoke produced by smoking.

[0010] Chinese patent CN201220742159 discloses a smoking tool, which is similar to US patent US5529078. Cigarettes remain in a burning state after being lit, and all smoke is extracted and purified through an exhaust fan. After smoking, the cigarette can be naturally extinguished by closing the intake hole. This patent can only be considered as an air purifier equipped with a cigarette lighter and ashtray, and the large amount of second-hand smoke generated by smoking cannot be efficiently purified by a small device with a built-in exhaust fan.

[0011] Chinese patent CN201510807903 discloses a system for handling second-hand smoke, in which the cigarette remains in a burning state after being ignited, and then the user exhales all the smoke into a collection bottle. This patent is puzzling: firstly, the volume of gas exhaled by a smoker after each puff is about 250ml, and the volume of gas exhaled after smoking a cigarette is about 5000ml. It is impossible to find such a large collection bottle for every cigarette smoked; Secondly, how to deal with the large amount of second-hand smoke released during the combustion process of cigarettes themselves.

[0012] The biggest pain point of smoking is second hand smoke. Second hand smoke affects the health of your family and people around you. How to solve the problem of second-hand smoke with the smallest tool has always been the biggest difficulty. How to solve all the problems above is the most difficult of the difficulties. Therefore, providing a smoking device that can be easily used in the hands of consumers, allowing users to freely choose the duration of smoking at any time, greatly shrinking the addiction time of smokers, and achieving safe release and extinguishment (all combustibles are extinguished), truly eliminating second-hand smoke with small handheld tool, and providing a lighter that can protect children aged 5 and above ------ this has been an urgent issue worldwide for a century and an urgent problem that needs to be solved.

DESCRIPTION OF THE INVENTION

[0013] In response to the shortcomings of existing technology, the present invention provides a smoking device. When a user wants to smoke, he presses or lightly touches a switch button, and the heat source ignites or heats the cigarette. The user smokes, and after releasing the switch button, the mechanism inside the smoking device will extinguish the cigarette, all combustibles will be extinguished, truly achieving the safest way to release and extinguish, smoking behavior becomes extremely safe, and there is no longer any concern about fire prevention. The smoking device can also be equipped with a smoke filter device containing an expansion part. The smoker can exhale smoke into the smoke filter device, and the smoke can remain in the expansion part, after expansion, the expansion part will generate contraction pressure, which will cause the smoke to be slowly and thoroughly filtered in the filtering part before being slowly squeezed out. The area adjacent to the lighter button on the lighter is equipped with a protrusion, which is higher than the position that the top of the lighter button should reach when the lighter is ignited. This can protect children and make it almost impossible to ignite the lighter alone. It must be installed in the smoking device to ignite.

[0014] In addition, the heating temperature of the heat source of the smoking device can be either higher or lower than the ignition point of the cigarette.

[0015] The following is a process for using the smoking device and the smoke filter device ------

[0016] Pressing switch button, cigarette moves forward a certain distance inside the smoking device. A heat source (such as a lighter) ignites the cigarette, and user holds the smoking end on the clamping part to smoke, after the user releases the switch button, the heat source stop working or go out, and the mechanism inside the smoking device extinguishes the cigarette, all combustibles are extinguished, and the cigarette stops releasing smoke. The smoker exhales smoke into the smoke filter device, and the smoke can remain in the expansion part, after expansion, the expansion part will generate contraction pressure, which slowly and thoroughly filter and discharge the smoke in the filtering part.

[0017] The above process truly achieves the elimination of second-hand smoke with minimal handheld devices and maximum efficiency. With current technology, slow filtration and release of smoke is the most feasible handheld solution for eliminating second-hand smoke.

[0018] In this invention, all cigarettes include both regular cigarettes and heat not burn cigarettes.

[0019] In this invention, all lighters include all types of lighters.

[0020] Compared with existing technology, the present invention has the following beneficial effects:

1. A truly feasible second-hand smoke solution has been achived using a small handheld device, ensuring that the entire smoking process does not leak smoke. Not only does it protect family members, but it also protects people around us, especially children and teenagers.
2. Users do not have to force themselves to smoke a whole cigarette every time, but are free to choose how many puffs and when to smoke. When they want to smoke, they press the switch button, once release the switch button everything goes out. This reduces the amount of cigarettes used by smokers, reduces their dependence on cigarettes, and slows down their dependence on cigarettes, it is more practical and feasible than repeated smoking cessation and relapse.
3. Due to the fact that the smoking device immedi-

ately extinguishes the cigarette when the switch button is released, and the cigarette butt will be extinguished whenever the cigarette butt is taken out, the smoker and the smoker's neighbor no longer have to worry about any safety issues such as fire.
4. Save cigarettes. Because after lighting a cigarette, even without smoking, the cigarette itself burns at a speed of approximately 7mm per minute in a windless state. Therefore, in a windless state, the cigarette will completely burn out in just 6 minutes and 50 seconds after being lit. If there is wind, it will burn faster. Smokers can only smoke an average of about 15 puffs per cigarette during their normal smoking process, as a considerable portion of the cigarette is wasted and burned up. After using this smoking device, an average of nearly 30 puffs can be smoked per cigarette because there is no self burning. US Patent US6349728 and US Patent US5472001 both continuously squeezes the cigarette ash towards the cigarette butt, making it impossible for new tobacco leaves to be fully lit during the next smoking. Therefore, each cigarette lighter must light a cigarette of 5mm or even longer length to have sufficient smoke volume, resulting in an average of only about 9 puffs per complete cigarette.
5. The lighter that comes with this smoking device not only provides excellent protection for children, but also for adults.
6. This smoking device is easy to operate and conducive to promotion. In fact, most smokers do not want to cause trouble to the surrounding people, nor do they want their families and children to be harmed by second-hand smoke. However, they must be provided with a truly feasible, safe, simple, and reliable product solution.

[0021] The present invention is further described in detail below in conjunction with the accompanying drawings.

DESCRIPTION OF THE DRAWINGS

[0022]

Figure 1 is an illustration of the overall appearance of the smoking device in Example 1;
Figure 2 is an illustration of the appearance of the smoking device after case is cut open in the embodiment 1;
Figure 3 is an illustration of the of the disassembly of the smoking device in Example 1;
Figure 4 is an illustration of the disassembly of the smoking device in Example 1;
Figure 5 is an illustration of the clamping part, tube part, and outer part in Example 1, wherein the outer part is disassembled into six small parts;
Figure 6 is an illustration of the clamping part, tube part, and outer part in Example 1, wherein the outer part is disassembled into six small parts, and the tube part can be seen to have female thread after being cut open;
Figure 7 is an illustration of the appearance of the smoking device in Example 1 after the case is cut open, showing the situation when the switch button is pressed;
Figure 8 is an illustration of the appearance of the smoking device in Example 1 after the case is hidden, showing the situation when the switch button is pressed;
Figure 9 is an illustration of the appearance of the smoking device in Example 1 after the case is cut open, showing the situation where the switch button is released and reset;
Figures 10 and 11 are illustrations of the overall appearance of Example 2, showing the combination of a smoking device and a smoke filter device;
Figure 12 is an illustration of the overall appearance of Example 2, which shows separate smoking device and smoke filter device;
Figure 13 is an illustration of the overall appearance of Example 2, which shows the situation of the expansion part of the smoke filter device after expansion;
Figure 14 is an illustration of the overall appearance of Example 3, which shows the combination of smoking device and smoke filter device;
Figure 15 is an illustration of the overall appearance of Example 4, which shows the combination of smoking device and smoke filter device;
Figure 16 is an illustration of the overall appearance of Example 4, which shows the situation of the expansion part of the smoke filter device after expansion;
Figure 17 is an illustration of the overall appearance of the smoking device in Example 5;
Figure 18 is an illustration of the appearance of the smoking device in Example 5 after the case is cut open;
Figure 19 is an illustration of the appearance of the smoking device in Example 5 after the case is hidden;
Figure 20 is an illustration of the disassembly of the smoking device in Example 5 after cutting open the case and concealing the cleaning part, keeping part, power-assisting spring, and cover part for flame hole;
Figure 21 is an illustration of the overall appearance of the smoking device in Example 6;
Figure 22 is an illustration of the appearance of the smoking device in Example 6 after the case is cut open;
Figure 23 is an illustration of the appearance of the smoking device in Example 6 after the case is hidden, part of the tube part is cut open, can be seen that the tube part has female thread;
Figure 24 is an illustration of the overall appearance

of the smoking device in Example 7;
Figure 25 is an illustration of the appearance of the smoking device in Example 7 after the case is cut open;
Figure 26 is an illustration of the appearance of the smoking device in Example 7 after removing the case, laser, reset spring, putter, battery, and circuit board, and the cleaning part is cut open;
Figure 27 is an illustration of the overall appearance of the smoking device in Example 8;
Figure 28 is an illustration of the appearance of the smoking device after cutting open the case in Example 8;
Figure 29 is an illustration of the appearance of the smoking device in Example 8 after cutting open the case and concealing the putter;
Figure 30 is an illustration of the overall appearance of the smoking device in Example 9;
Figure 31 is an illustration of the appearance of the smoking device in Example 9 after the case is cut open;
Figure 32 is an illustration of the appearance of the smoking device in Example 10 after the case is cut open;
Figure 33 is an illustration of the appearance of the smoking device after cutting open the case in Example 11;
Figure 34 is an illustration of the overall appearance of the smoking device in Example 12;
Figure 35 is an illustration of the appearance of the smoking device after cutting open the case in Example 12;
Figure 36 is an illustration of the appearance of the smoking device after removing the case, lighter, and lid in Example 12;
Figure 37 is an illustration of the appearance after disassembling the keeping part, cleaning part, transmission rod, and reset spring in Figure 36;
Figure 38 is an illustration of the appearance from another perspective of Figure 37;
Figure 39 is an illustration of the appearance of the smoking device in Example 12 after the case is cut open, showing that the lighter is pressed to the ignition state;
Figure 40 is an illustration of the appearance of the smoking device after removing the case and the lighter in Example 12, which shows the positional relationship of various parts in the ignition state;
Figure 41 is an illustration of the appearance of the smoking device after cutting open the case in Example 12, which shows the positional relationship between various parts after resetting from the ignition state;
Figure 42 is an illustration of the appearance of the lighter in Example 12;
Figure 43 is an external appearance of another lighter that can be used for Example 12, it can be seen that the switch button is not the lighter's housing, but forms a detachable part on the lighter: second housing, and the lighter includes a second housing;
Figure 44 is an illustration of the appearance after disassembling the switch button of the lighter in Figure 43;
Figure 45 is an illustration of the appearance of the smoking device after cutting open the case in Example 13;
Figure 46 is an illustration of the appearance of the smoking device in Example 13 after the case is cut open, showing that the lighter is pressed to the ignition state;
Figure 47 is an illustration of the appearance of the lighter in Example 13;
Figure 48 is an illustration of the appearance of the smoking device after cutting open the case in Example 14;
Figure 49 is an illustration of the appearance of the lighter in Example 14;
Figure 50 is an illustration of the appearance of the smoking device in Example 15 after the case is cut open;
Figure 51 is an illustration of the appearance of the lighter in Example 15;
Figure 52 is an illustration of the appearance of the smoking device after cutting open the case in Example 16;
Figure 53 is an illustration of the appearance of the lighter in Example 16;
Figure 54 is an illustration of the appearance of the smoking device after cutting open the case in Example 17;
Figure 55 is an illustration of the appearance of the lighter in Example 17;
Figure 56 is used to illustrate the appearance of another lighter in Example 17, where the protrusion on the lighter is as high as the lighter button;
Figure 57 is an illustration of the appearance of the smoking device after cutting open the case in Example 18;
Figure 58 is an illustration of the clamping part, adjusting part, and cigarette in Example 18 after being cut open;
Figure 59 is an illustration of the appearance of the clamping part, adjusting part, and cigarette after disassembly in Example 18;
Figure 60 is an illustration of the appearance of the smoking device after cutting open the case in Example 19;
Figure 61 is an illustration of the appearance of the smoking device in Example 19 after the case is cut open, showing that the lighter is pressed to the ignition state;
Figure 62 is an illustration of the appearance of the smoking device in Example 19 after the case is cut open, showing that the lighter is pressed to the ignition state;
Figure 63 is an illustration of the appearance of the

lighter in Example 19;

Figure 64 shows the appearance of adding a cone to the lighter button of the lighter in Example 12, as mentioned in Example 19;

Figure 65 is an illustration of the appearance of another clamping part in Example 1, where the thread on the clamping part is very thick and short;

Figure 66 is an illustration of the appearance of another clamping part in Example 1, where the thread on the clamping part is very thick and short, looks like a circular shape;

Figure 67 is an illustration of appearance of another type of tube part in Example 1, where the female thread of the tube part is very thick and long;

Figure 68 is an illustration of the appearance of another type of tube part in Example 1, where the female thread of the tube part is very thick and short, looks like a circular shape;

Figure 69 is an illustration of the appearance of the lighter in Example 20;

Figure 70 is an illustration of the appearance of the lighter in Example 20, which shows that the protrusion after rotation remains higher than the position that the top of the lighter button should reach when the lighter is ignited;

Figure 71 is an illustration of the appearance of the smoking device in Example 20 after the case is cut open;

Figure 72 is an illustration of the appearance of the case of the smoking device in Example 20.

SPECIFIC EMBODIMENTS

Example 1

[0023] The smoking device 1 shown in Figure 1, after cutting open its case 6 (as shown in Figure 2), can be seen to include: the case 6 containing cigarette chamber 22, clamping part 2 containing male thread 7 and capable of clamping cigarette 14, lighter 8 containing switch button 3 (the lighter 8 is placed parallel to the clamping part 2. The switch button 3 forms a detachable part on the lighter 8: second housing 68, the lighter 8 contains the second housing 68), cleaning part 4 that can clean cigarette ash or cigarette combustibles, keeping part 5 that can collect cigarette ash, tube part 11 with bump 13 on the surface, outer part 12 containing cam slot 24, reset spring 16 that can push the outer part 12 to reset, and power-assisting spring 18 that can help the cleaning part 4 to reset. Figures 3 and 4 show exploded views of all components. The clamping part 2 is sleeved in the tube part 11, the tube part 11 is sleeved in the outer part 12. As can be seen in Figures 5 and 6, the male thread 7 on the clamping part 2 and female thread 30 of the tube part 11 match (Figure 6 shows the tube part 11 after being cut open, which shows the female thread 30 of the tube part). The outer part 12 composes six small parts (four rods 29, first portion of outer part 27, and second portion of outer part 28). The bump 13 on the tube part 11 is located in the cam slot 24 of the outer part 12. When no external force is applied, cover part for flame hole 17 with torsion spring structure covers flame hole 26 of the lighter 8, and the cleaning part 4 covers the end face of the cigarette 14. The male thread 7 on the clamping part 2 can be very thin, as shown in Figure 5; It can also be very thick, as shown in Figures 65 and 66. The length of the male thread 7 can be very long, as shown in Figure 5; It can also be very short, as shown in Figure 65; It can also be very short and look like circular shape, as shown in Figure 66. The female thread 30 of the tube part 11 can be very thin, as shown in Figure 6; It can also be very thick, as shown in Figures 67 and 68. The length of the female thread 30 can be very long, as shown in Figure 67; It can also be very short, as shown in Figure 6; It can also be very short and look like circular shape, as shown in Figure 68.

[0024] As shown in Figure 7, when pressing the switch button 3 on the lighter 8 to the left direction in the figure, the lighter 8 moves to the left accordingly. Lighter button 19 is pressed by resisting part 20 on the case 6, and the lighter 8 pushes open the cover part for flame hole 17, the lighter 8 ignites; Openning part 21 on the switch button 3 that can control the opening and closing of the cleaning part 4 will squeeze the cleaning part 4 when moves to the left, the cleaning part 4 will open to both sides and no longer cover the end face of the cigarette 14. When the cleaning part 4 opens, it will squeeze the power-assisting springs 18 on both sides; Pusher part 15 on the switch button 3 pushes the outer part 12 to move to the left, and the outer part 12 squeezes the reset spring 16. The cam slot 24 on the outer part 12 pushes the bump 13 on the tube part 11 to rotate, and the tube part 11 starts to rotate as a whole. Due to the matching of the female thread 30 on the tube part 11 and the male thread 7 on the clamping part 2, and the friction between cigarette chamber end 23 and the cigarette 14, the clamping part 2 and the cigarette 14 will not follow the rotation, but will start to move to the left relative to the case 6; The portion of the cigarette 14 that exposes the cigarette chamber end 23 is ignited by the lighter 8, and the user can hold smoking end 9 on the clamping part 2 to smoke (the smoking end 9 is located on the other side of clamping end 25). Figure 8 hides the case 6, so that the relative positions of all parts at this state can be seen more clearly.

[0025] As shown in Figure 9, after releasing the switch button 3, the reset force of the lighter button 19 pushes the lighter 8 and the switch button 3 on the lighter 8 to the right to reset, and the cover part for flame hole 17 covers the flame hole 26 of the lighter 8. Therefore, the lighter 8 will be 100% extinguished; Due to the fact that the cleaning part 4 is made of elastic material, together with the elasticity of the power-assisting spring 18, when the cleaning part 4 is reset, the cigarette combustibles or ash can be cut off from the side of the cigarette 14. As can be seen from Figures 3 and 4, one side of the cleaning part 4 covers the end face of the cigarette 14, while the other side is open, and the cleaning part 4 just aligns with

the keeping part 5, so the ash and cigarette combustibles fall into the keeping part 5, which forms a closed space with the cleaning part 4, The combustibles of the cigarette will extinguish in a closed space; The reset spring 16 pushes the outer part 12 to translate and reset, and the cam slot 24 on the outer part 12 pushes the bump 13 to continue rotating, causing the tube part 11 to rotate as a whole, at this time, the rotation angle of the tube part 11 is smaller than when the switch button 3 is pressed, so the distance of the clamping part 2 moving to the left is also smaller than when the switch button 3 is pressed, and the distance of the cigarette 14 moving to the left is also very small. A complete operation also comes to an end. User can open lid 10 of the keeping part 5 and pour out cigarette ash, etc. When replacing the cigarette 14, simply unscrew out the clamping part 2.

Example 2

[0026] Figures 10 and 11 respectively show the appearance of the present example from two perspectives. From Figure 12, it can be seen that the present example consists of two parts: the smoking device 1 and smoke filter device 31. The smoke filter device 31 includes expansion part 32, body 37, exhaling port 36, and filtering part. The expansion part 32 includes tension spring 33, volume change part 34, and upper cover part 35.

[0027] After the user smokes with the smoking device 1, the smoke is exhaled from the exhaling port 36 into the smoke filter device 31, and the smoke enters the expansion part 32, due to the one-way valve in the smoke filter device 31, even if the user no longer holds the exhaling port 36, the smoke will not leak from the exhaling port 36. The volume change part 34 in the expansion part 32 begins to expand, the upper cover part 35 is lifted, and the tension spring 33 is also extended (as shown in Figure 13). The resetting force of the tension spring 33 will pull the upper cover part 35 to reset, and the upper cover part 35 will compress the volume change part 34 to make it shrink. The smoke will be filtered very slowly in the filter material of the smoke filter device 31, and finally be discharged from exhaust hole 39. Since the smoke filtration process is very slow, the filtration is very adequate.

[0028] In addition, as shown in Figure 12, the smoking device 31 contains magnet 38. The smoking device 1 and the smoke filter device 31 can be used together through magnetism or can be disassembled for use. It must be pointed out the magnet 38 is not necessary. The smoking device 1 and the smoke filter device 31 can be combined together through other methods (such as tight fitting) or not used together.

[0029] The simultaneous use of the smoking device 1 and the smoke filter device 31 can completely solve the problem of second-hand smoke.

Example 3

[0030] As shown in Figure 14, the difference between the present example and Example 2 is that there is no the tension spring 33 in the present example, and the gravity of the upper cover part 35 replaces the reset tension force of the tension spring 33.

Example 4

[0031] As shown in Figures 15 and 16, the difference between the present example and Example 2 is that the expansion part 32 of the present example is a balloon.

Example 5

[0032] The appearance of the present example is shown in Figure 17. After cutting open the case 6 (as shown in Figure 18), it can be seen that the main differences between it and Example 1 are:

1) The clamping part 2 does not have thread, but contains transmission teeth 40 (ratchet), one way teeth 41, and friction teeth 42. The present example does not include the tube part 11, the outer part 12, or the reset spring 16.
2) The smoking device 1 contains one way part 47.
3) The case 6 contains window 43.
4) The switch button 3 does not have the pusher part 15, but contains transmission claw 48 (pawl).

[0033] Figure 19 shows an illustration after concealing the case 6, and Figure 20 is an exploded view after cutting open the case 6 and concealing the cleaning part 4, the keeping part 5, the power-assisting spring 18, and the cover part for flame hole 17. These two figures more clearly show the structure of the present example.

[0034] According to the direction shown in Figure 18, when pressing the switch button 3 to the left direction, the transmission claw 48 (pawl) on the switch button 3 is deformed due to the compression of pressing part 62 on the case 6 when moving to the left. The transmission claw 48 (pawl) will mesh with the transmission teeth 40 (ratchet) on the clamping part 2 to drive the clamping part 2 to move to the left. The lighter 8 lights the cigarette 14, and the user can hold the smoking end 9 to smoke. When the user releases the switch button 3, the lighter 8 goes out, the lighter 8 and the switch button 3 on the lighter 8 reset. The transmission claw 48 (pawl) will not drive the transmission teeth 40 (ratchet) to reset together during the reset process, and the transmission claw 48 (pawl) will no longer be pressed by the pressing part 62 during the reset process, resulting in elastic reset, in addition, one way claw 45 on the one way part 47 holds against the one way teeth 41 on the clamping part 2, further confirming that the transmission claw 48 (pawl) will not drive the transmission teeth 40 (pawl) to reset together. Therefore, every time the switch button 3 is pressed, the clamping part 2 will move a certain distance to the left. Friction claw 46 on the one way part 47 and the friction teeth 42 on the clamping part 2 mesh with each other to increase the

friction force between them, preventing the clamping part 2 from accidentally moving to the left. When it is necessary to remove the clamping part 2 to replace the cigarette 14, fingers can press releasing switch 44 on the one way part 47 through the window 43 on the case 6. The one way claw 45 will be lifted due to the lever effect and no longer press against the one way tooth 41 on the clamping part 2, so the clamping part 2 can be removed.

[0035] The other principles are the same as in Example 1.

Example 6

[0036] Figures 21, 22, and 23 are illustrations of the present example, wherein Figure 21 shows the overall appearance of the smoking device 1 in the present example, Figure 22 shows the appearance of the smoking device 1 after cutting open the case 6 in the present example, and Figure 23 shows the appearance of the smoking device 1 after hiding the case 6 in the present example. The tube part 11 is cut open, and it can be seen that the tube part 11 has female thread 30.

[0037] The main differences between the present example and Example 1 are:

1) The present example includes battery 54, motor 51, and circuit board 55. The motor 51 is combined with first gear 52, and there are two cylindrical openning parts 21 on the first gear 52. The present example does not include the main parts of the lighter 8 (but includes the switch button 3), the outer part 12, the reset spring 16, or the cover part for flame hole 17.
2) The tube part 11 in the present example contains second gear 53 and does not contain the bump 13.
3) The switch button 3 cannot be moved to the left after being pressed, and it contains fingerprint part 49. If the fingerprint is verified to be correct, the fingerprint part 49 will switch on the smoking device 1. Heating part 50 located at the cigarette chamber end 23 will start heating the cigarette 14 (the heating temperature can be higher or lower than the ignition point of the cigarette 14). The motor 51 will drive the first gear 52 to rotate 90 degrees, The openning part 21 on the first gear 52 will push open the cleaning part 4 after rotation, causing the cleaning part 4 to open to both sides. The second gear 53 is driven by the first gear 52 to rotate, and the tube part 11 also starts to rotate as a whole. Due to the matching of the female thread 30 on the tube part 11 and the male thread 7 on the clamping part 2, the clamping part 2 moves to the left relative to the case 6 (according to the direction shown in Figure 22), at this time, the user can hold the smoking end 9 to smoke. When the user no longer presses the switch button 3, the heating part 50 no longer heats, and the motor 51 will drive the first gear 52 to continue rotating by 90 degrees, the second gear 53 is driven by the first gear 52 to rotate, and the tube part 11 also starts to rotate as a whole, the clamping part 2 moves left relative to the case 6, the openning part 21 on the first gear 52 no longer pushes the cleaning part 4 open after rotation, the cleaning part 4 resets and cuts off the cigarette ash and cigarette combustibles.

[0038] The other principles are the same as in Example 1.

Example 7

[0039] Figures 24, 25, and 26 are illustrations of the present example, wherein Figure 24 shows the overall appearance of the smoking device 1 in the present example, Figure 25 shows the appearance of the smoking device 1 after cutting open the case 6 in the present example, and Figure 26 shows the appearance of the smoking device 1 in the present example after concealing the case 6, laser 56, the reset spring 16, putter 57, the battery 54, and the circuit board 55, and cutting open the cleaning part 4.

[0040] The main differences between the present example and Example 6 are:

1) The present example does not include the keeping part 5, the tube part 11, or the fingerprint part 49.
2) In the present example, the cleaning part 4 is not only closed on one side near the cigarette 14 during standby, but also on the other side, this means, during standby, the cleaning part 4 contains small chamber 61, in which cigarette combustibles will be quickly extinguished, and all the ash will be discharged when the cleaning part 4 is opened next time (when the small chamber 61 is opened).
3) The case 6 does not contain the heating part 50, and there is the laser 56 aimed at the cigarette 14, which can ignite the cigarette 14.
4) The operating principle of the smoking device 1 in the present example is as follows: lightly touch and press the switch button 3, the motor 51 drives the first gear 52 to rotate clockwise (as shown in the direction in Figure 25), the first gear 52 drives the second gear 53 to rotate counterclockwise, the second gear 53 drives cam 58 to rotate, and the cam 58 causes the putter 57 to translate to the left (as shown in the direction in Figure 25), and the openning part 21 on the putter 57 opens the cleaning part 4; The second gear 53 drives the transmission claw 48 to rotate, and the transmission claw 48 cooperates with the transmission teeth 40 on the clamping part 2 to push the clamping part 2 to move to the left (as shown in the direction in Figure 25), the cigarette 14 also moves to the left at the same time, and the laser 56 lights the cigarette 14, the user can hold the smoking end 9 to smoke. When the user no longer presses the switch button 3, the laser 56 stops working, and the motor 51 drives the first gear 52 to continue rotating clockwise (according to the direction shown in Figure 25).

The first gear 52 then drives the second gear 53 to rotate counterclockwise, and the second gear 53 drives the transmission claw 48 to rotate, the transmission claw 48 cooperates with the transmission teeth 40 on the clamping part 2 to drive the clamping part 2 to move left (according to the direction shown in Figure 25); The second gear 53 drives the cam 58 to rotate, the cam 58 no longer pushes the putter 57 to the left, while the reset spring 16 pushes the putter 57 translate to the right and reset (according to the direction shown in Figure 25), the cleaning part 4 resets and closes, cutting off the ash and cigarette combustibles and sealing them in the cleaning part 4.

[0041] The other principles are the same as in Example 6.

Example 8

[0042] Figures 27, 28, and 29 are illustrations of the present example. Figure 27 shows the overall appearance of the smoking device 1 in the present example. Figure 28 shows the appearance of the smoking device 1 after cutting open the case 6 in the present example. Figure 29 shows the appearance of the smoking device 1 after cutting open the case 6 and concealing the putter 57 in the present example.

[0043] The main differences between the present example and Example 5 are:

1) The present example does not include the main part of the lighter 8 (but includes the switch button 3) or the cover part for flame hole 17.
2) The present example includes the battery 54, the motor 51, the putter 57, the circuit board 55, and the heating part 50.
3) The openning part 21 and the transmission claw 48 (pawl) in the present example are both located on the putter 57, but not on the switch button 3.
4) The operating principle of the smoking device 1 in the present example is as follows: lightly touch and press the switch button 3, the motor 51 rotates 180 degrees, and the motor 51 drives cylinder 59 to rotate 180 degrees, the cylinder 59 deviates from the axis of the motor 51, and the cylinder 59 moves in groove 60 of the putter 57 and pushes the putter 57 to translate to the left (according to the direction shown in Figure 28), the openning part 21 on the putter 57 opens the cleaning part 4, the heating part 50 starts to heat the cigarette 14 (the heating temperature can be higher than the ignition point of the cigarette 14 or lower than the ignition point of the cigarette 14); The transmission claw 48 (pawl) on the putter 57 is deformed due to the compression of the pressing part 62 on the case 6 when it is moved to the left, the transmission claw 48 (pawl) will mesh with the transmission teeth 40 (pawl) on the clamping part 2, driving the clamping part 2 to move to the left. When the user releases the switch button 3, the heating part 50 stops heating, the motor 51 rotates 180 degrees, and the motor 51 drives the cylinder 59 to also rotate 180 degrees, the cylinder 59 moves in the groove 60 on the putter 57 and pushes the putter 57 to move to the right (according to the direction shown in Figure 28), the putter 57 resets, and the cleaning part 4 resets and cuts off the cigarette combustibles and ash.

[0044] The other principles are the same as in Example 5.

Example 9

[0045] Figures 30 and 31 are illustrations of the present example, wherein Figure 30 is the overall appearance of the smoking device 1 in Example 9, and Figure 31 is the appearance of the smoking device 1 in Example 9 after cutting open the case 6.

[0046] The main differences between the present example and Example 1 are:

1) The present example does not include the main part of the lighter 8 (but includes the switch button 3) or the cover part for flame hole 17.
2) The present example includes the battery 54, the circuit board 55, and the heating part 50.
3) When the switch button 3 is pressed in the present example, the heating part 50(not the lighter 8) heats the cigarette 14. The heating part 50 can heat the cigarette 14 at a temperature higher than or lower than the ignition point of the cigarette 14.

[0047] The other principles are the same as in Example 1.

Example 10

[0048] Figure 32 is the appearance of the smoking device in Example 10 after the case is opened.

[0049] The main differences between the present example and Example 9 are:

1) The present example does not include the cleaning part 4, the power-assisting spring 18, or the keeping part 5, and the switch button 3 does not include the openning part 21.
2) The temperature at which the heating part 50 heats the cigarette 14 must be lower than the ignition point of the cigarette 14.

Example 11

[0050] Figure 33 is the appearance of the smoking device after cutting open the case in Example 11.

[0051] The main differences between the present example and Example 5 are:

1) The present example does not include the main part of the lighter 8 (but includes the switch button 3) or the cover part for flame hole 17.
2) The present example includes the battery 54, the circuit board 55, and the heating part 50.
3) When the switch button 3 is pressed in the present example, the heating part 50(not the lighter 8) heats the cigarette 14. The heating part 50 can heat the cigarette 14 at a temperature higher than or lower than the ignition point of the cigarette 14.

[0052] The other principles are the same as in Example 5.

Example 12

[0053] Figure 34 is the appearance of the smoking device 1 in Example 12 after cutting open the case 6, and Figure 35 is the appearance after cutting open the case 6. It differs from Example 1 in that the switch button 3 on the lighter 8 is first housing 64 on the lighter 8; The openning part 21 is located on the keeping part 5 instead of the switch button 3, and the cleaning part 4 is surrounded by the keeping part 5; The reset spring 16 is not against the outer part 12, but against the keeping part 5; The two ends of four transmission rods 63 are respectively held against the keeping part 5 and the outer part 12, under the joint action of the four transmission rods 63 and the reset spring 16, the keeping part 5 and the outer part 12 can move synchronously. Figures 36, 37 and 38 (Figure 36 is the appearance of the smoking device 1 after concealing the case 6, the lighter 8, and the lid 10; Figure 37 is the appearance after disassembling the keeping part 5, the cleaning part 4, the transmission rods 63 and the reset spring 16 in Figure 36; Figure 38 shows the appearance of another perspective in Figure 37) more clearly showing the relationship between the keeping part 5, the cleaning part 4, the outer part 12, the transmission rods 63, and the reset spring 16.

[0054] When the lighter 8 is pressed to ignite, the lighter 8 translates to the left (as shown in the direction in Figure 35), and the pusher part 15 on the lighter 8 also moves to the left and pushes the outer part 12 to move to the left. The outer part 12 pushes the four transmission rods 63 to move to the left, and the transmission rods 63 push the keeping part 5 to move to the left. The openning part 21 on the keeping part 5 opens the cleaning part 4 (as shown in Figure 39 and Figure 40, Figure 39 is the appearance of the smoking device 1 after cutting open the case 6); Figure 40 is the appearance of the smoking device 1 after concealing the case 6 and the lighter 8. The principle of leftward movement of the cigarette 14 and the process of lighting the cigarette 14 are the same as in Example 1. As shown in Figure 41, if the user releases the lighter 8 after smoking, the lighter 8 will reset, the reset spring 16 will push the keeping part 5, the transmission rods 63, and the outer part 12 to the right, and the openning part 21 will no longer open the cleaning part 4, the cleaning part 4 will be elastically restored (the cleaning part 4 is preferably made of elastic metal) and cut off the ash and cigarette combustibles. The ash and cigarette combustibles will fall into the keeping part 5 and go out. The user can open the lid 10 and pour out the ash. The smoking device 1 in this example does not include the cover part for flame hole 17.

[0055] In the present example, the lighter 8 can be either as shown in Figure 42, where the switch button 3 is the first housing 64 on the lighter 8, or as shown in Figures 43 and 44, where the switch button 3 forms a detachable part on the lighter 8: the second housing 68, the lighter 8 includes the second housing 68.

Example 13

[0056] As shown in Figure 45, the main differences between the present example and Example 12 is that the flame hole of the lighter 8 in the present example is located on the side of the lighter 8, and the orientation in the figure is that the flame hole 26 faces the side of the cigarette 14, in standby state, the flame hole 26 is covered inside the smoking device 1, which is very safe. As shown in Figure 46, when the lighter 8 is in the ignition state, the flame hole 26 is not covered and the cigarette 14 can be lit. Figure 47 shows the appearance of the lighter 8.

Example 14

[0057] As shown in Figures 48 and 49, the main difference between the present example and Example 13 is that the lighter button 19 and the flame hole 26 on the lighter 8 in the present example are located on the same side of the lighter 8, and there is covering section 65 on the lighter 8 that covers the top of the lighter button 19, this makes it difficult for the lighter 8 to be ignited by children or adults after being removed from the smoking device 1, only after the lighter 8 is put into the smoking device 1, the lighter 8 is pressed, and the resisting part 20 on the smoking device 1 can press the lighter button 19 on the lighter 8, and the lighter 8 can be ignited. This type of the lighter 8 greatly increases the protection for children and even adults. The lighter 8 in the present example can be either open flame lighter or windproof lighter.

Example 15

[0058] As shown in Figures 50 and 51, the main difference between the present example and Example 14 is that there is protrusion 66 on the lighter 8 adjacent to the lighter button 19, which is higher than the position that the top of lighter button 19 should reach when the lighter 8 is ignited, this further increases the difficulty of igniting the lighter 8 after removing the lighter 8 from the smoking device 1, further enhancing the safety of the lighter 8 and better protecting children and adults, because when pressing the lighter button 19 with your finger, your finger

will be pressed against the protrusion 66, and your finger will not be able to press the lighter button 19 to the position it should reach when igniting.

[0059] The lighter 8 in the present example can be either open flame lighter or windproof lighter.

Example 16

[0060] As shown in Figures 52 and 53, the main difference between the present example and Example 12 is that the lighter 8 has the covering section 65 that covers the top of the lighter button 19. This makes it difficult for the lighter 8 to be ignited by children or adults after being removed from the smoking device 1, greatly increasing the protection for children and even adults.

Example 17

[0061] As shown in Figures 54 and 55, the main difference between the present example and Example 12 is that there is the protrusion 66 on the lighter 8 adjacent to the lighter button 19, which is higher than the position that the top of the lighter button 19 should reach when the lighter 8 is ignited, this makes it difficult for the lighter 8 to be ignited by children or adults after being removed from the smoking device 1. The lighter 8 shown in Figure 56 further increases the protrusion 66 to be level with the lighter button 19, making it almost impossible for children or adults to light a separate lighter 8 with their bare hands, the lighter 8 must be placed in the smoking device 1 to ignite, further increasing protection for children and even adults.

Example 18

[0062] As shown in Figure 57, the main difference between the present example and Example 12 is that the present example does not include the main part of the lighter 8 (but includes the switch button 3), the present example includes the battery 54 and the circuit board 55. The heating part 50 heats the cigarette 14, and the heating temperature can be higher than or lower than the ignition point of the cigarette 14.

[0063] The clamping part 2 of t the present example is equipped with adjusting part 67, as shown in Figures 58 and 59 (Figure 58 is illustration of the clamping part 2, the adjusting part 67, and the cigarette 14 after being disassembled; Figure 59 is an exterior appearance of the clamping part 2, the adjusting part 67, and the cigarette 14 after being disassembled), when the user smokes, the smoke will pass through the adjusting part 67, which can play a role in tar filtration or flavor regulation. The adjusting part 67 can be used in all examples of the present invention.

Example 19

[0064] As shown in Figure 60, the main difference between the present example and Example 12 is that the present example does not include the cleaning part 4, the lighter 8 in the present example has a different style, and the lighter button 19 has the cone 69 at the top (as shown in Figure 63).

[0065] When the cigarette 14 in the present example is heated by the lighter 8 (as shown in Figures 61 and 62), the cigarette 14 is ignited, after the user finishes smoking, the user releases the switch button 3 and the keeping part 5 covers the end of the cigarette 14, and the cigarette 14 immediately goes out, the ash in the keeping part 5 quickly goes out automatically, as the user repeatedly uses it, the cigarette 14 is also continuously pushed to the left (according to the direction shown in Figure 62), and the newly generated ash will continuously push the old and extinguished cigarette ash to the left (according to the direction shown in Figure 62).

[0066] In addition, the lighter button 19 of the lighter 8 in the present example has the cone 69 at the top, such lighter 8 can not be lit by children, because children's fingers are very delicate, fingers pressed on the cone 69 will be a little pain, children can not withstand this tiny pain, but adults can tolerate such a slight pain. The cone 69 is not particularly sharp and will not harm children, but can play a good warning role and protection. The cone 69 can also be added to the lighter 8 in Example 12 to protect children (as in Figure 64).

Example 20

[0067] As shown in Figure 71, the main differences between the present example and Example 19 are:

1) The present example does not include the tube part 11, and there is no the cam slot 24 on the outer part 12, therefore, when using the smoking device 1 in the present example, there is no part that will automatically drive the clamping part 2 to generate displacement relative to the case. On the case 6, cylinder for thread 72 that matches the male thread 7 on the clamping part 2 inserts into the male thread 7 on the clamping part 2 (as shown in Figure 72), therefore, each time the smoking device 1 is used, it is necessary to manually rotate the clamping part 2 to generate displacement relative to the case 6, so that the cigarette 14 will move to the left (according to the direction shown in Figure 71).

2) The lighter button 19 of the lighter 8 in the present example does not have the cone 69, but the lighter 8 in the present example can also protect children. As shown in Figure 69, there is the protrusion 66 on the lighter 8 that is adjacent to the lighter button 19, the protrusion 66 is a movable part that can rotate (as shown in Figure 70), and after rotation, it is still higher than the position that the top of the lighter button 19 should reach when the lighter 8 is ignited, and still adjacent to the periphery of the lighter button 19, this makes it difficult for the lighter 8 to be ignited by

children or adults after being removed from the smoking device 1.

3) In the present example, there is friction part 70 that can generate friction with the clamping part 2 to prevent the clamping part 2 from rotating and slipping in same place.

4) In the present example, cap 71 is included to cover the keeping part 5 to prevent excessive oxygen from entering the keeping part 5, and the cigarette 14 can be extinguished more quickly.

[0068] Although the present invention is disclosed using preferred exemplary embodiments above, the scope of the present invention is not limited to these examples. Any person of ordinary skills in the art, without departing from the spirit of the present invention, should be allowed some room for modifications, i.e., any equivalent improvements based on the present invention should be covered within the scope of the present invention.

Claims

1. A smoking device, comprising case, switch button, and clamping part on which one side can hold cigarette and the other side is smoking end, wherein, the clamping part configured to generate displacement relative to the case.

2. The smoking device of claim 1, wherein, the clamping part comprises thread.

3. The smoking device of claim 1, wherein, the clamping part contains transmission teeth

4. The smoking device of claim 1, wherein, lighter is built-in to the smoking device, and the lighter comprises the switch button

5. The smoking device of claim 4, wherein, the lighter is parallel to the clamping part.

6. The smoking device of claim 1, 2, 4 or 5, wherein, the clamping part is sleeved in tube part containing female thread.

7. The smoking device of claim 6, wherein, the tube part is sleeved in outer part containing cam slot.

8. The smoking device of claim 7, wherein, there is bump on the tube part located in the cam slot.

9. The smoking device of claim 7, wherein, the switch button comprises pusher part that configured to push the outer part to move.

10. The smoking device of claim 1, 2, 3, 4 or 5, wherein an adjusting part is built-in to the clamping part.

11. A smoke filter device matched with smoking device of claim 1, 2, 3, 4, 5, 6, 7, 8, 9 or 10, wherein, the smoke filter device comprises expansion part with variable volume.

12. The smoke filter device matched with smoking device of claim 11, wherein, when the volume of the expansion part of the smoke filter device becomes larger, the expansion part generates contraction pressure.

13. A lighter dedicated to the smoking device of claim 1, 2, 3, 4, 5, 6, 7, 8, 9 or 10, wherein, the lighter is provided with protrusion adjacent to lighter button, and the protrusion is higher than the top of the lighter button when the lighter is ignited.

14. The lighter dedicated to the smoking device of claim 13, wherein, the protrusion is movable component.

15. The lighter dedicated to the smoking device of claim 13, wherein, the lighter comprises pusher part that configured to push the outer part to move.

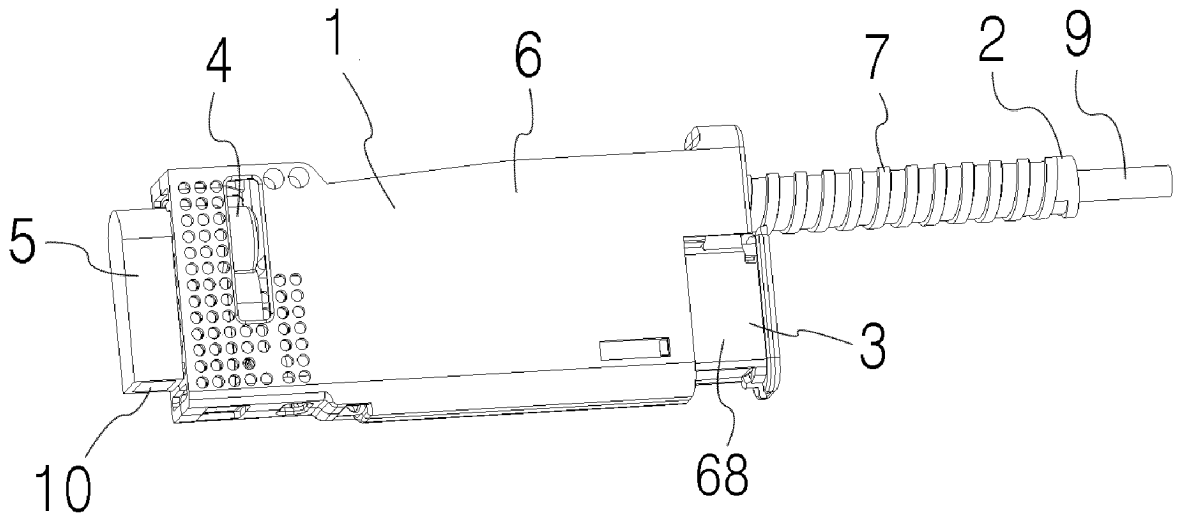


Figure 1

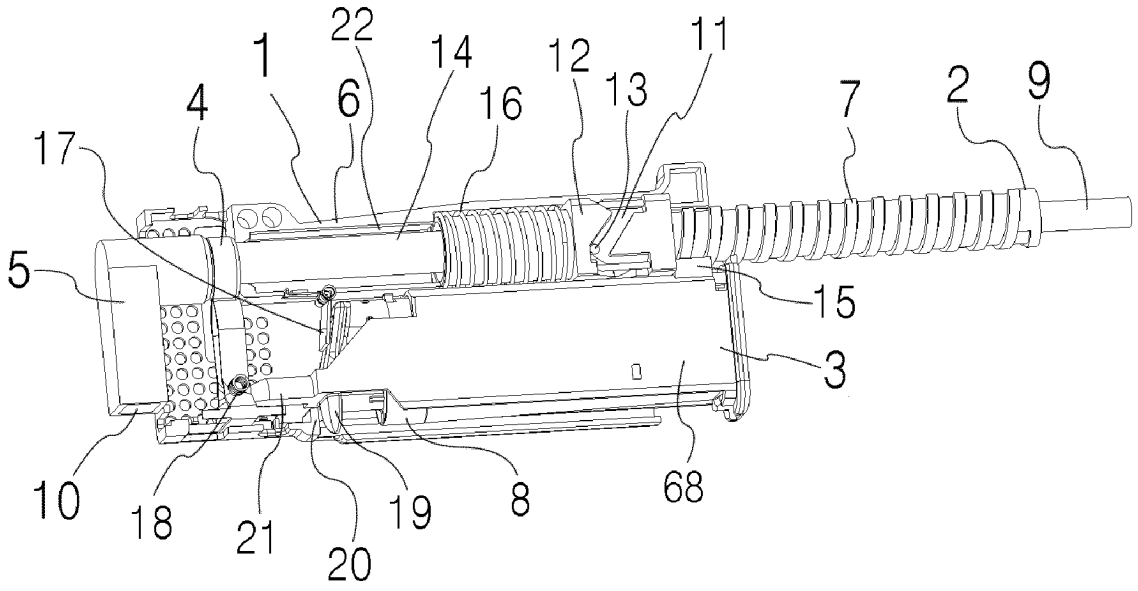


Figure 2

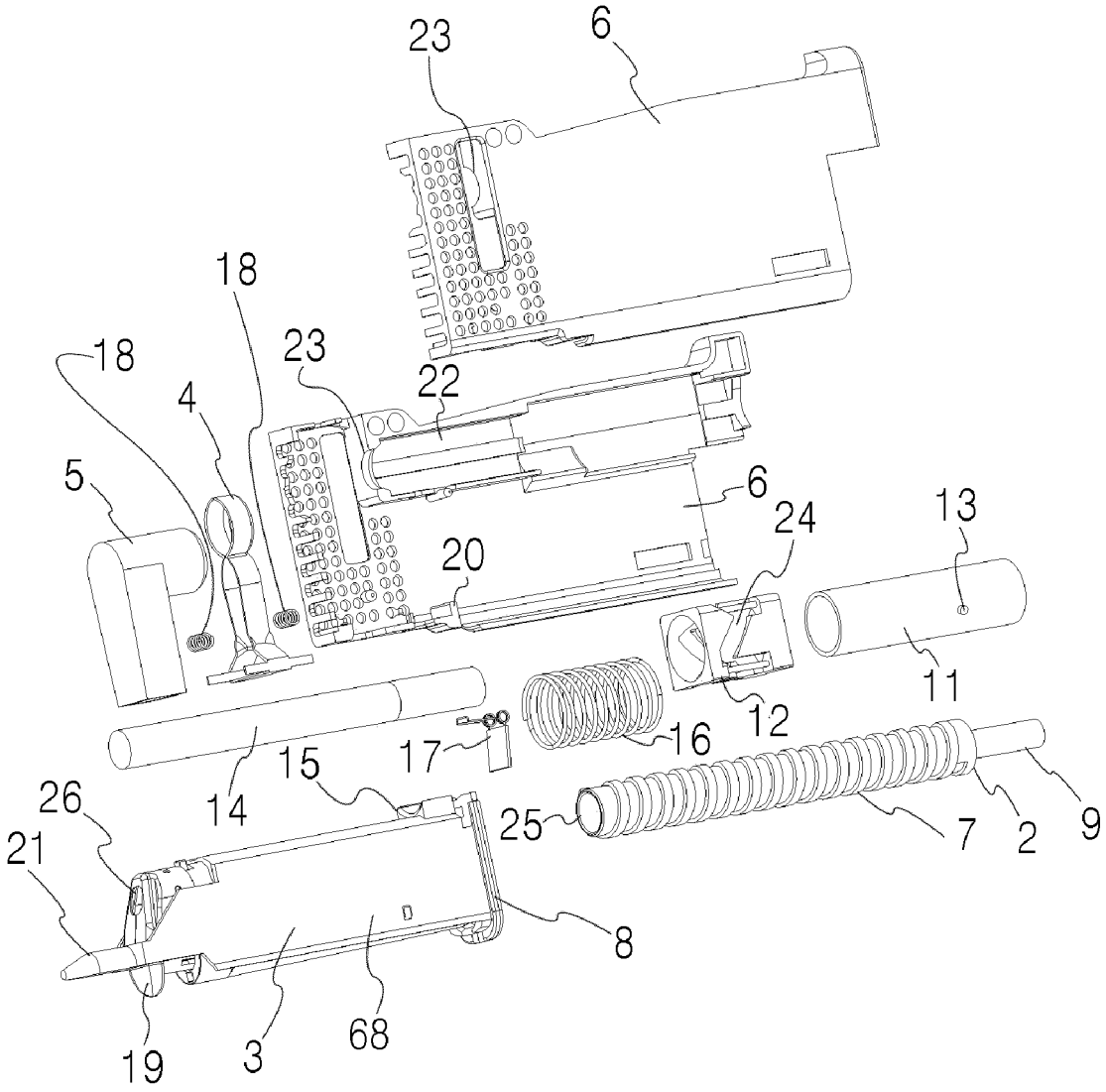


Figure 3

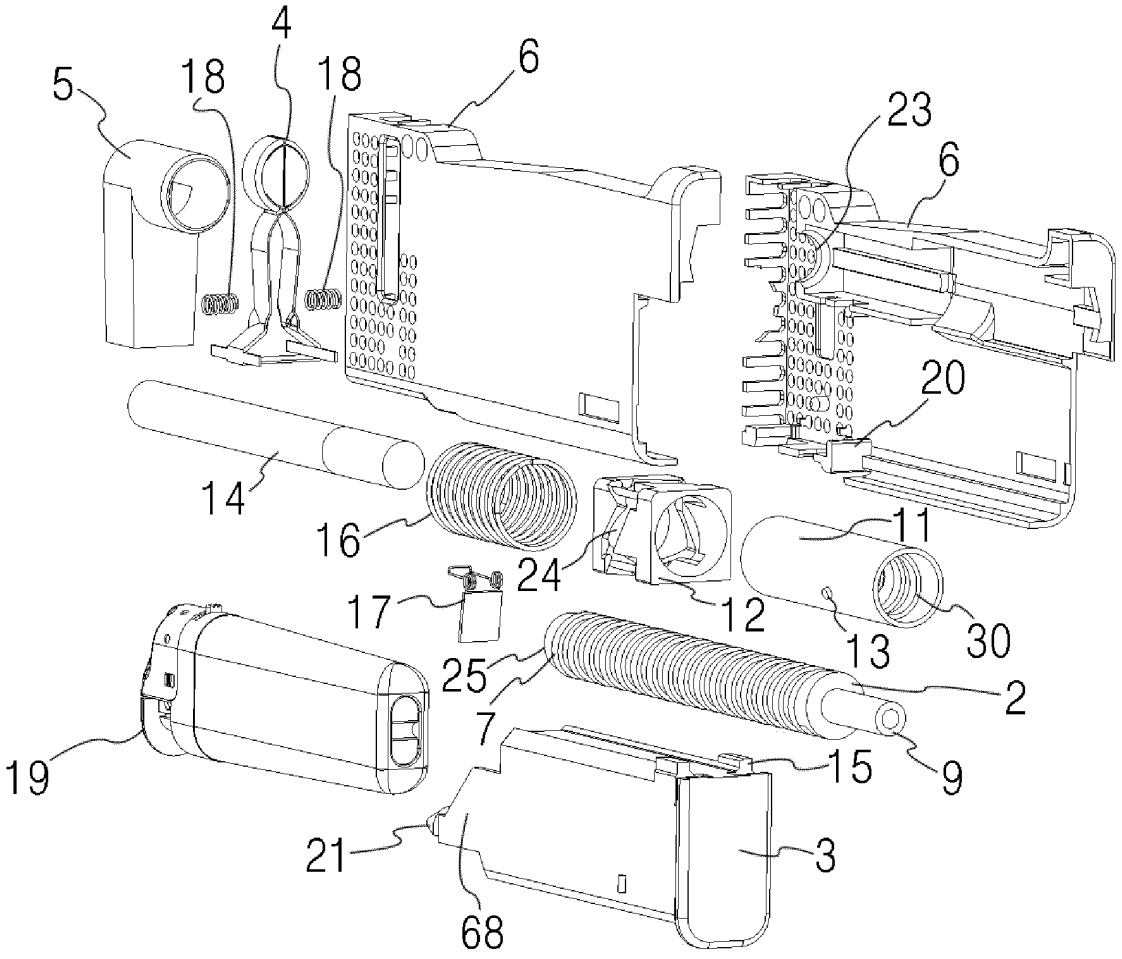


Figure 4

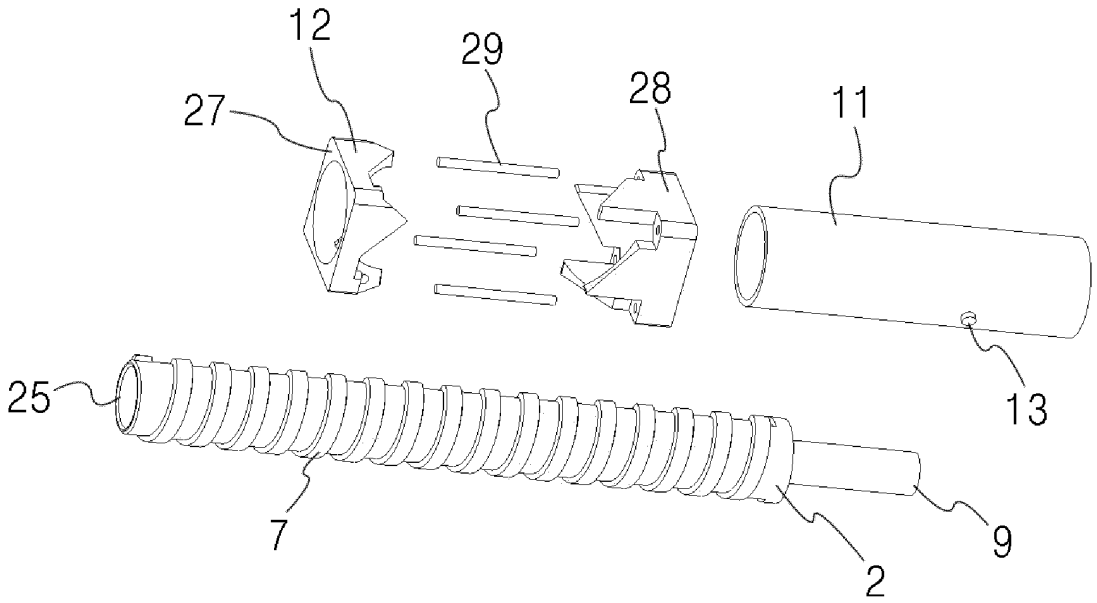


Figure 5

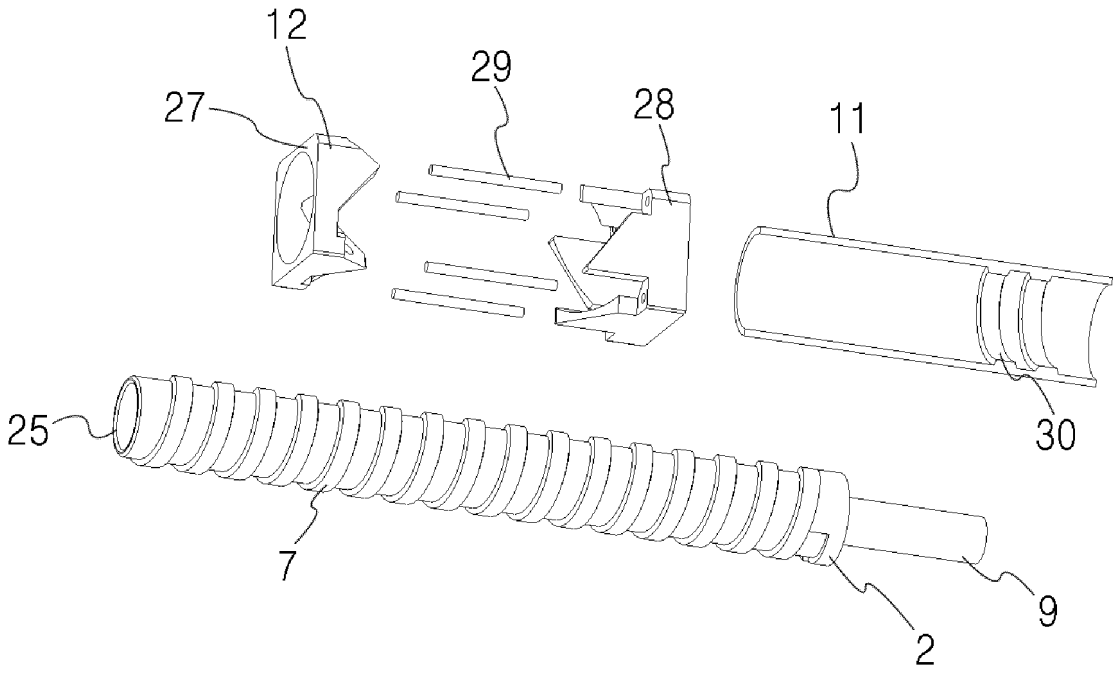


Figure 6

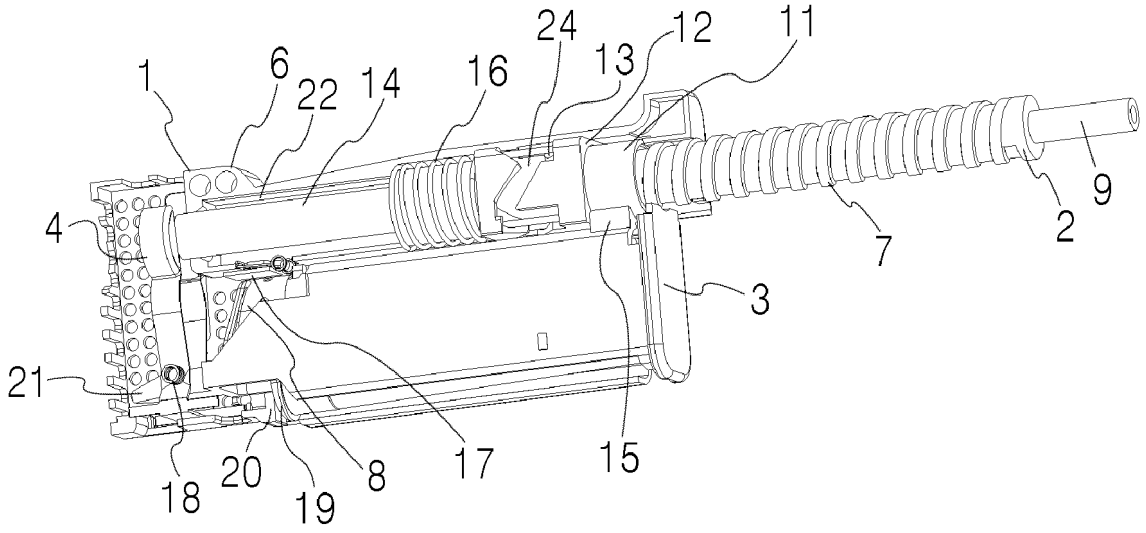


Figure 7

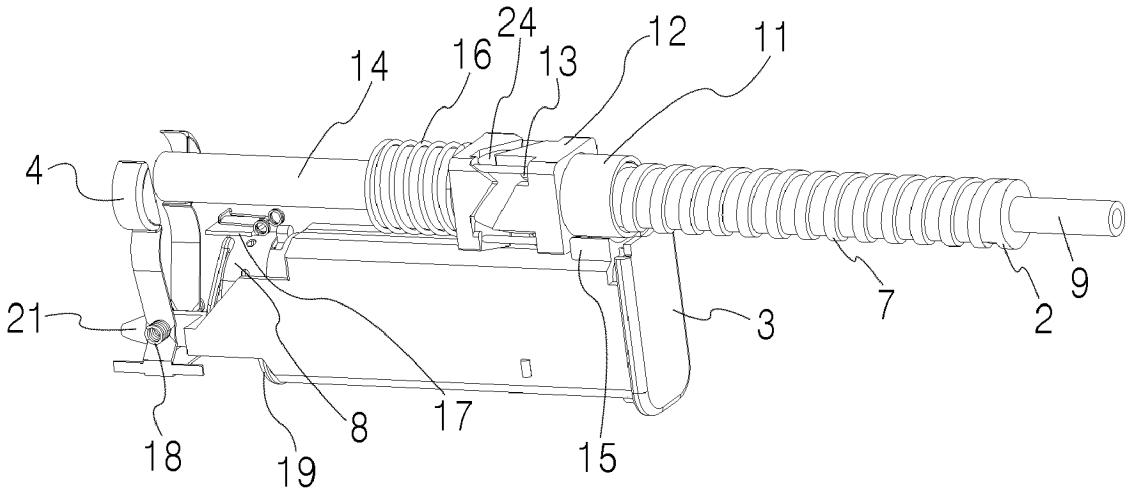


Figure 8

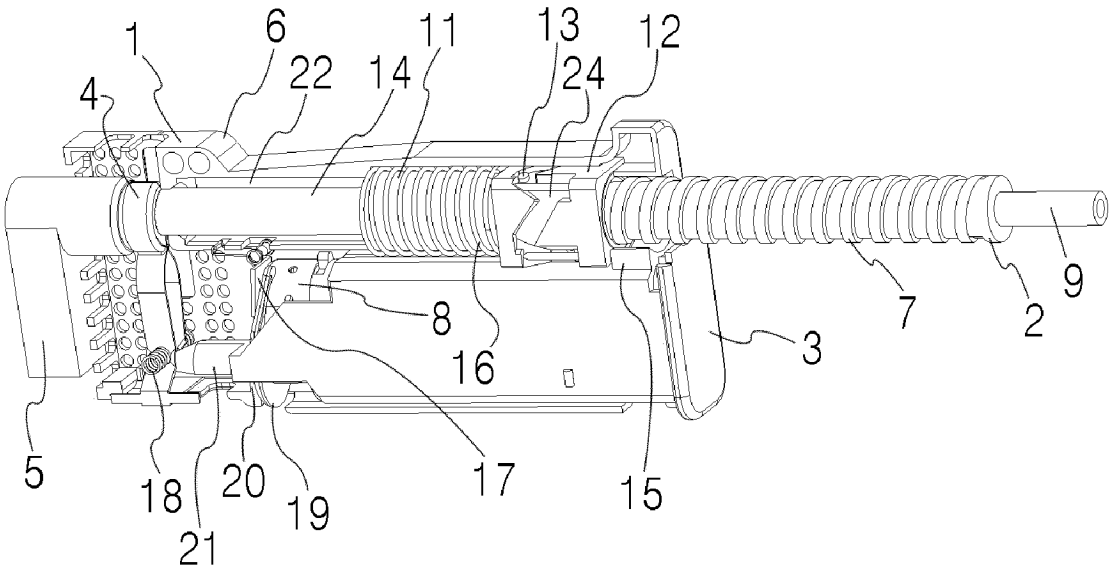


Figure 9

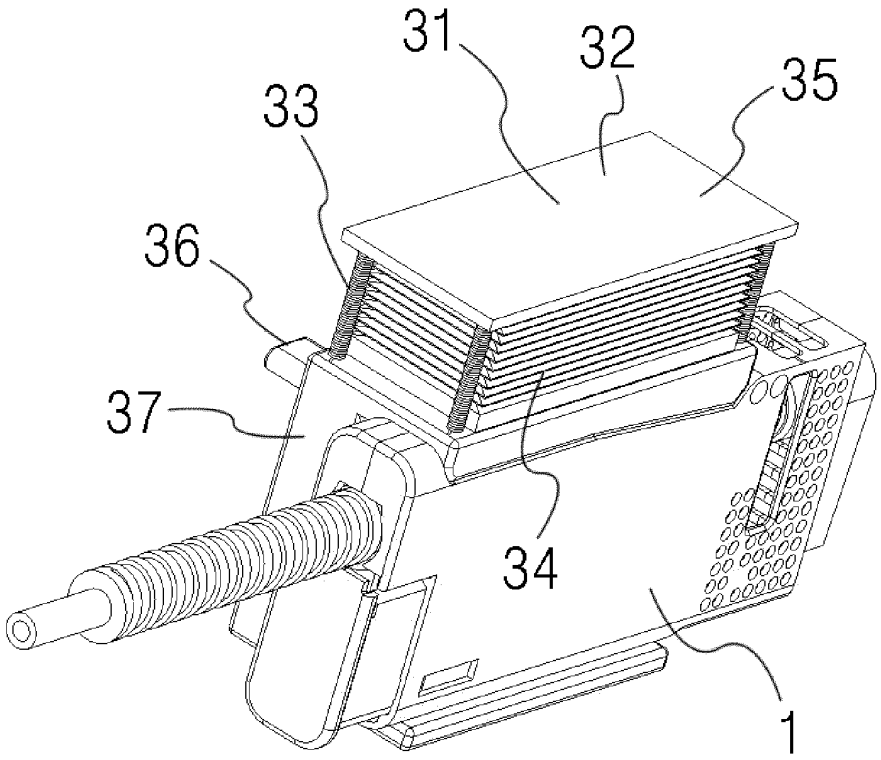


Figure 10

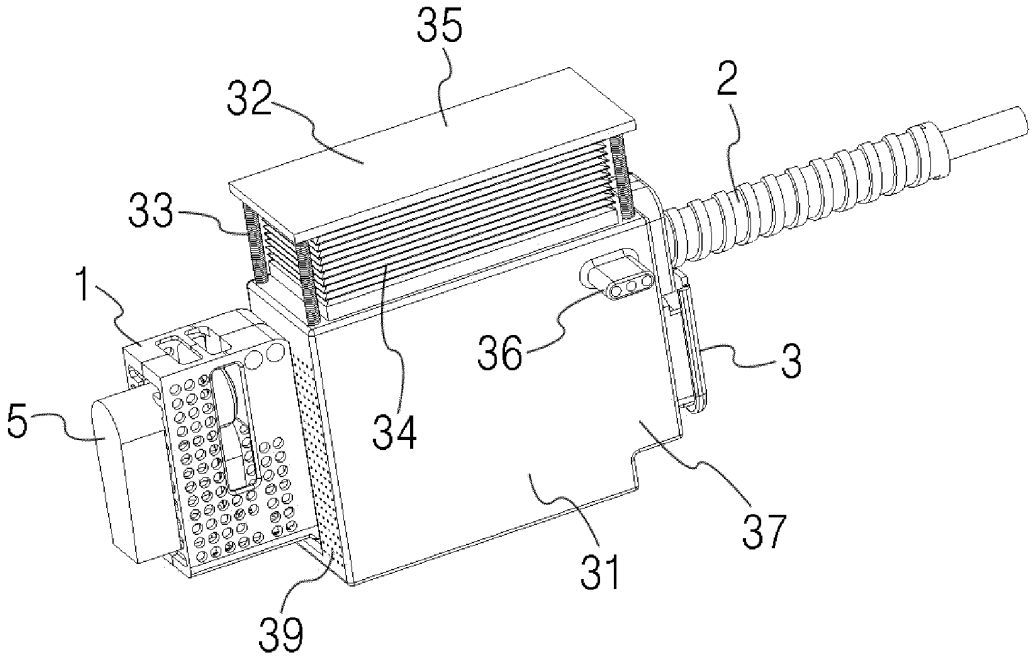


Figure 11

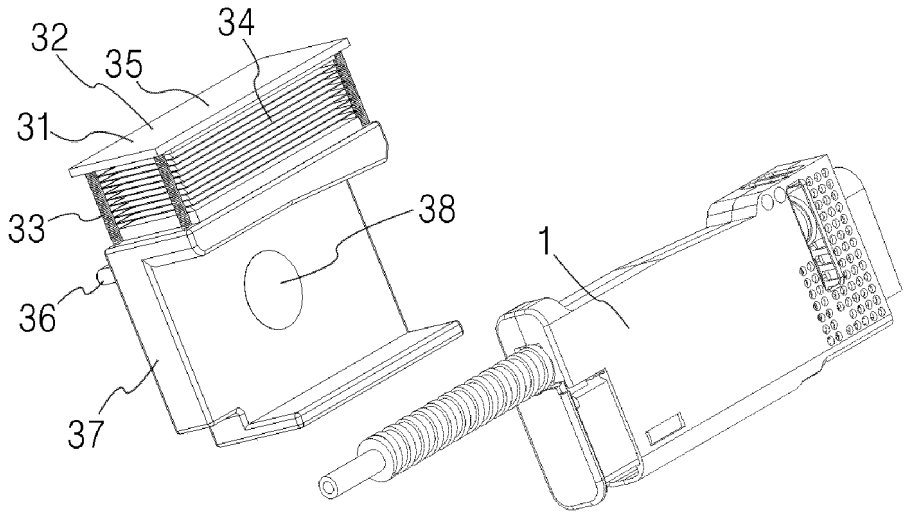


Figure 12

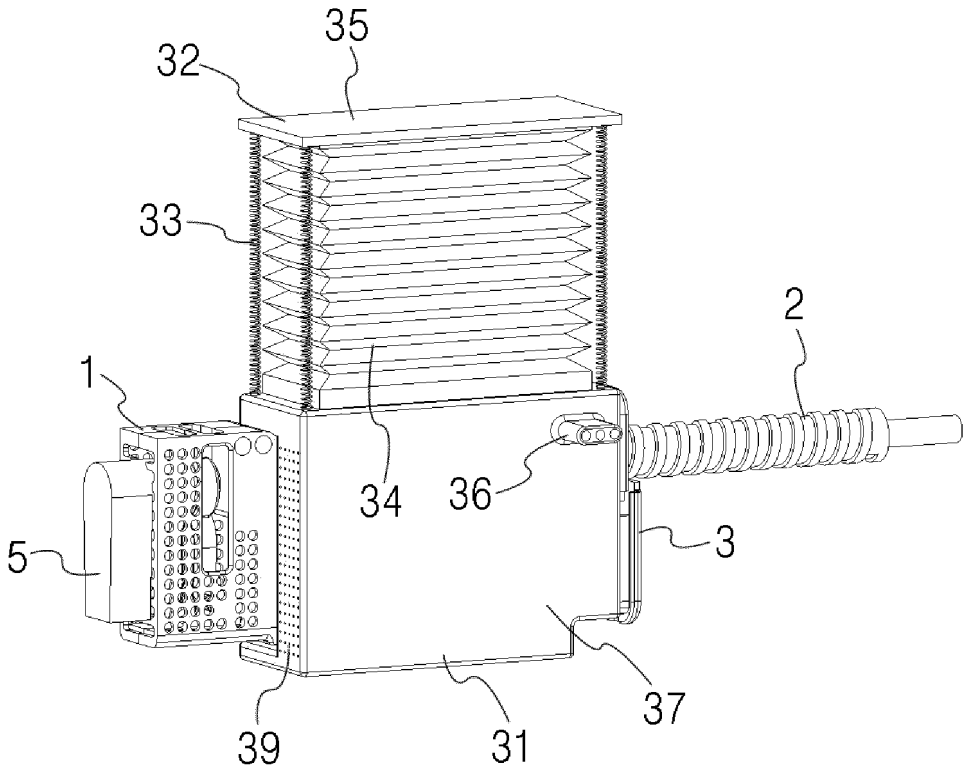


Figure 13

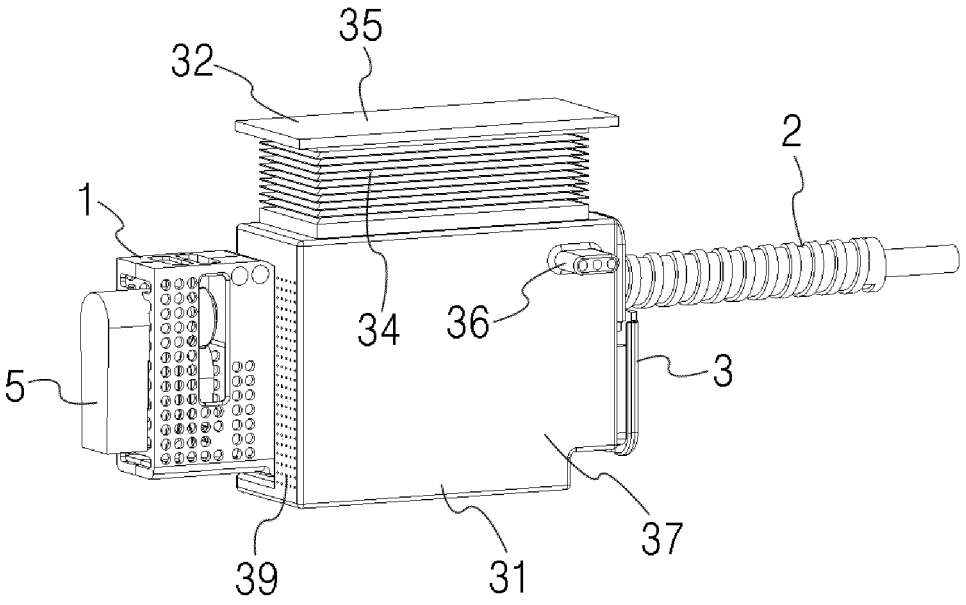


Figure 14

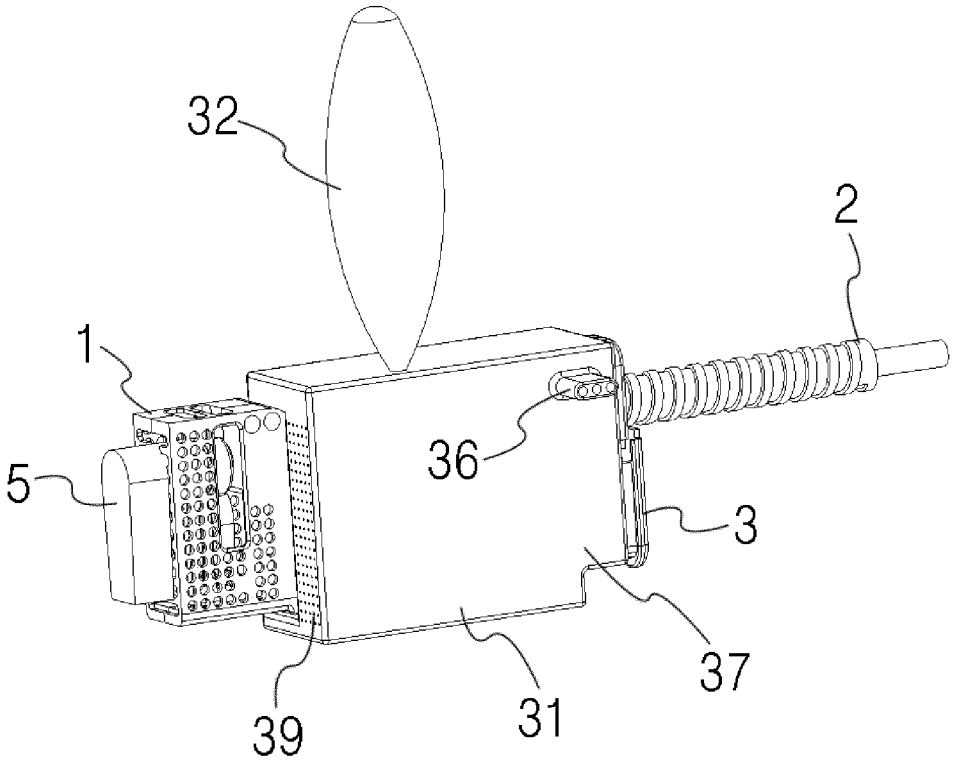


Figure 15

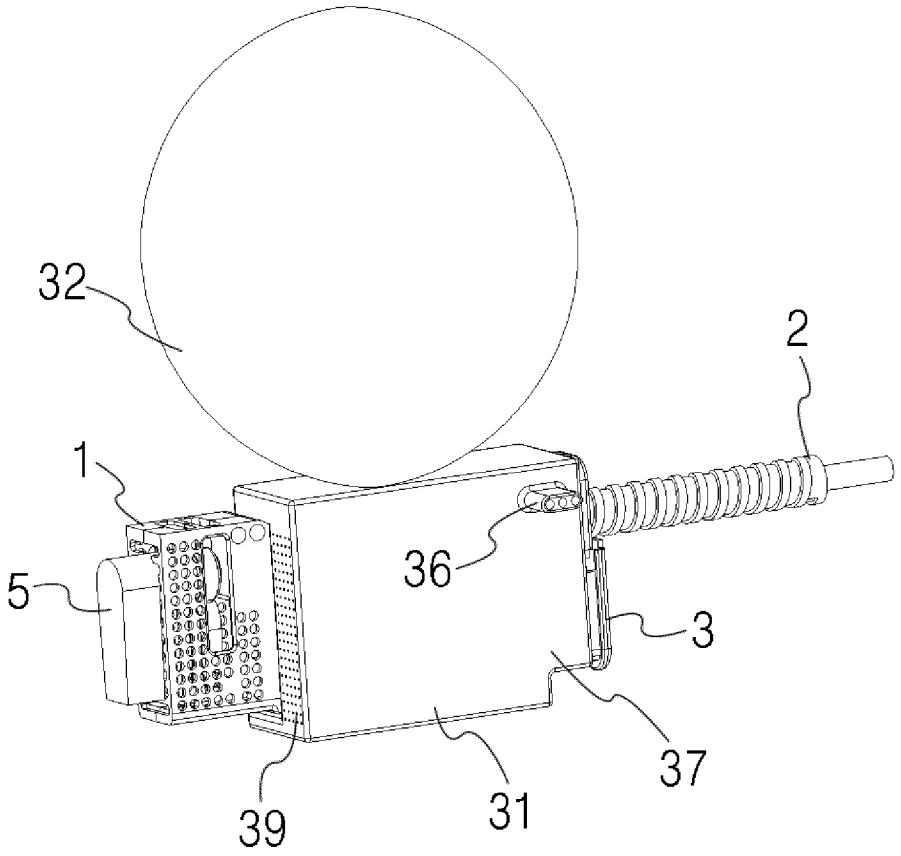


Figure 16

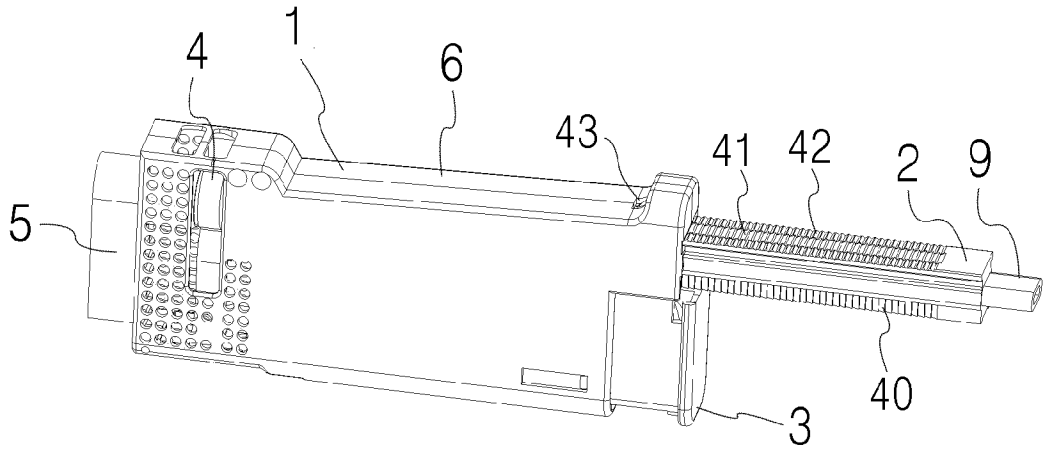


Figure 17

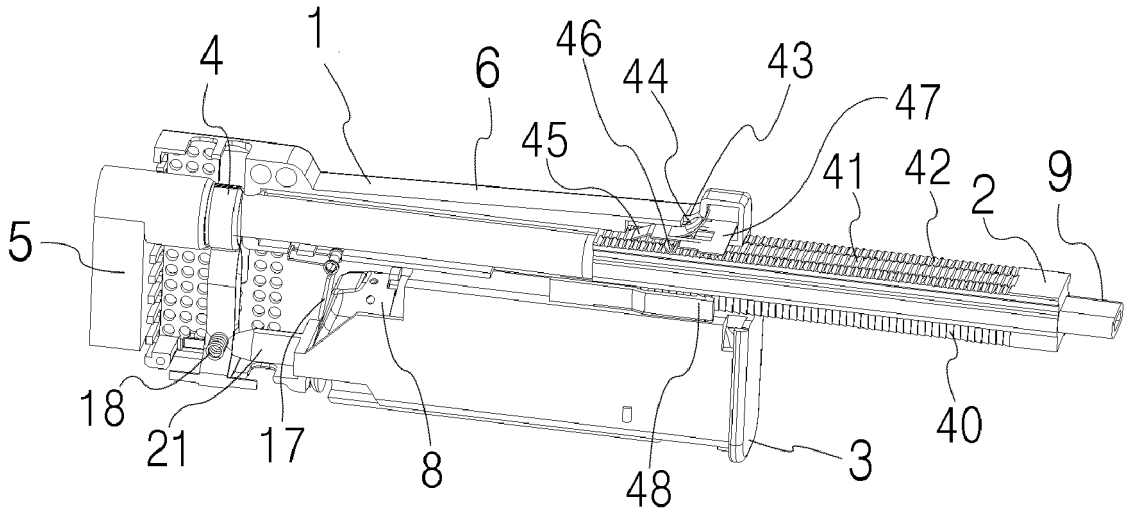


Figure 18

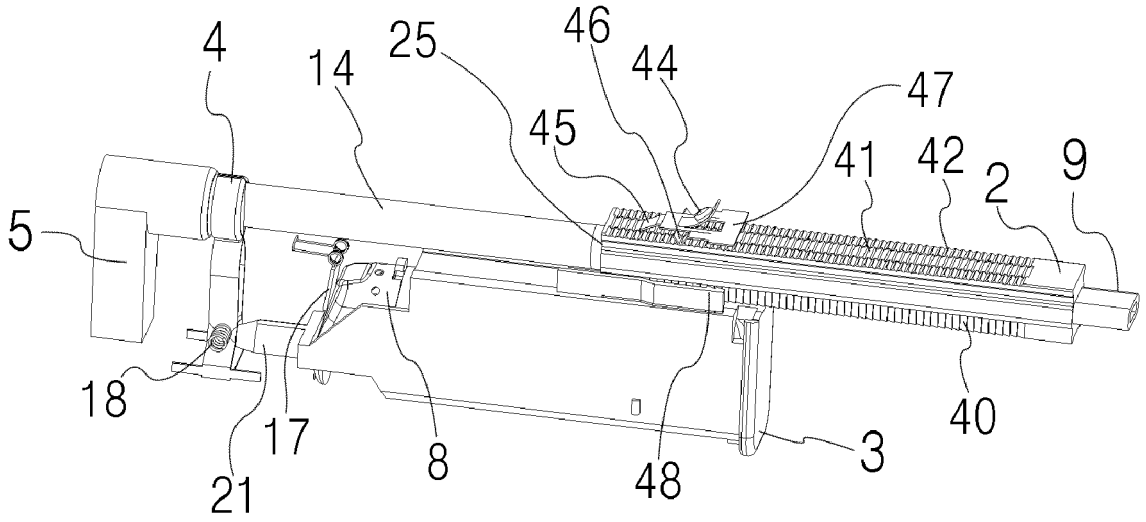


Figure 19

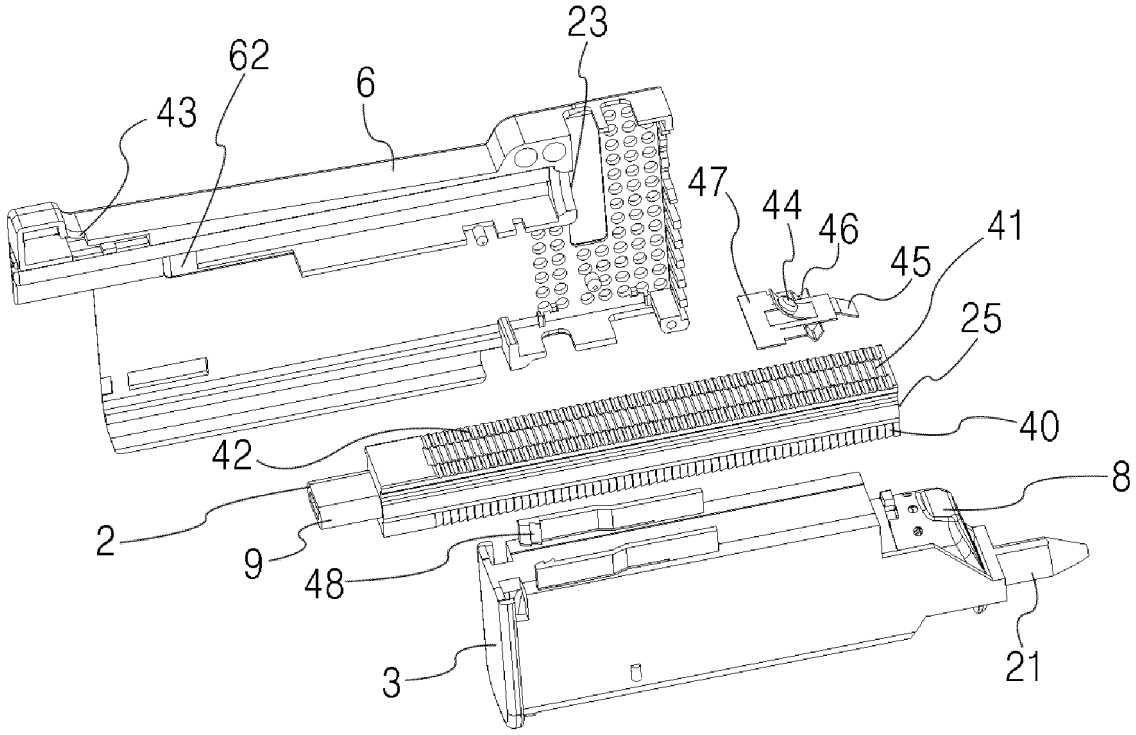


Figure 20

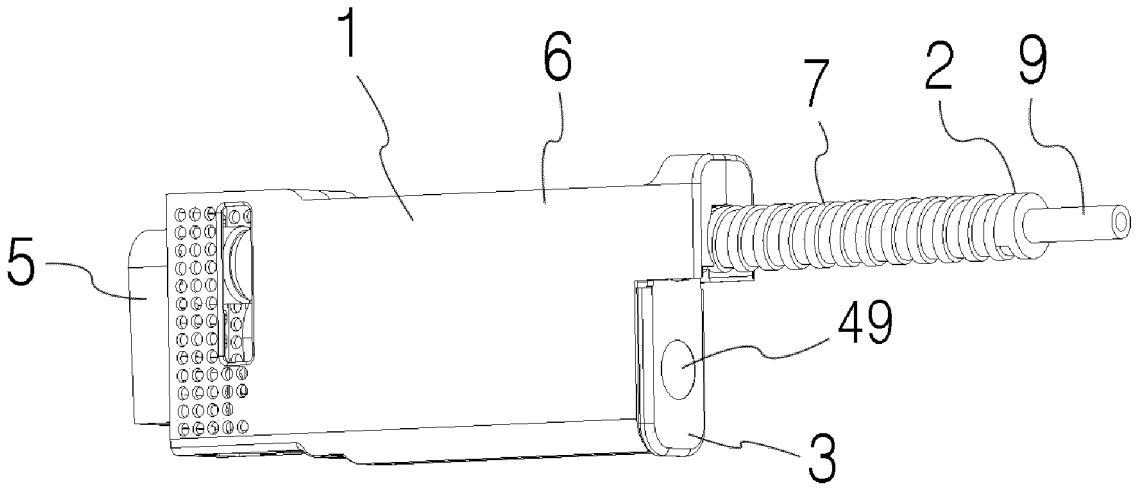


Figure 21

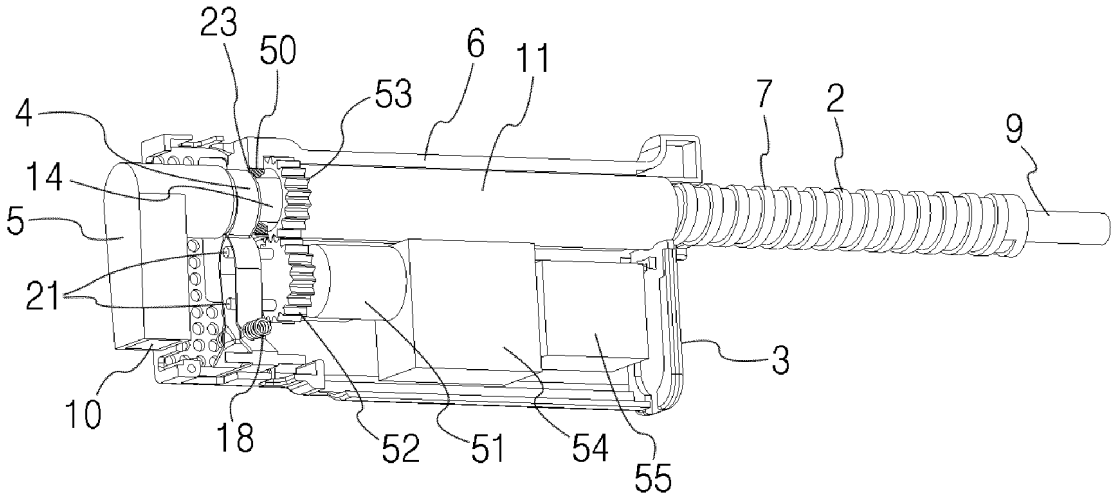
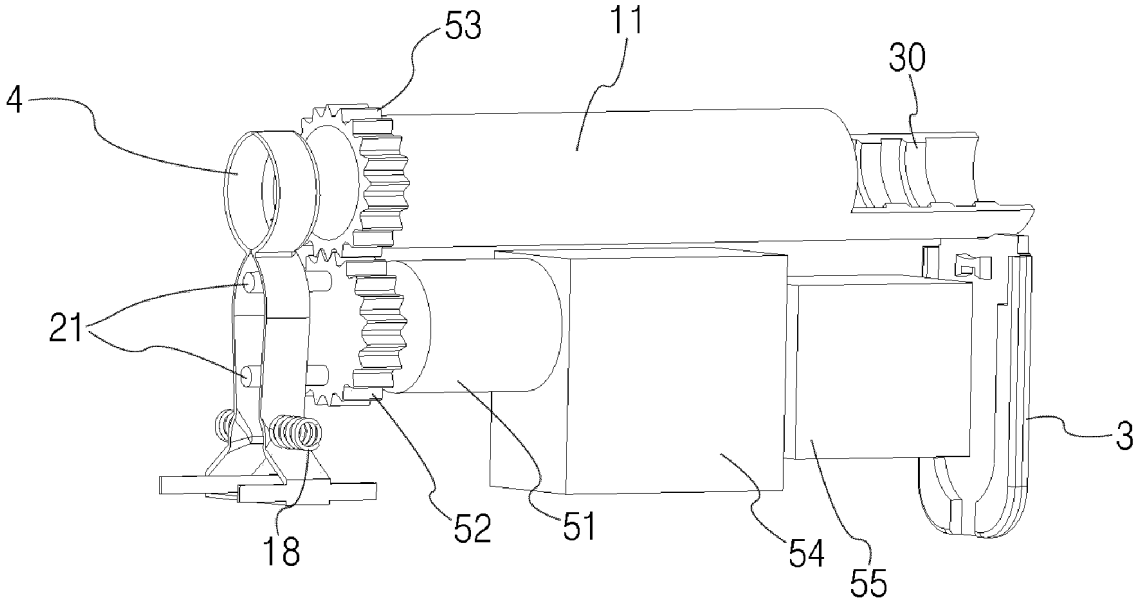


Figure 22



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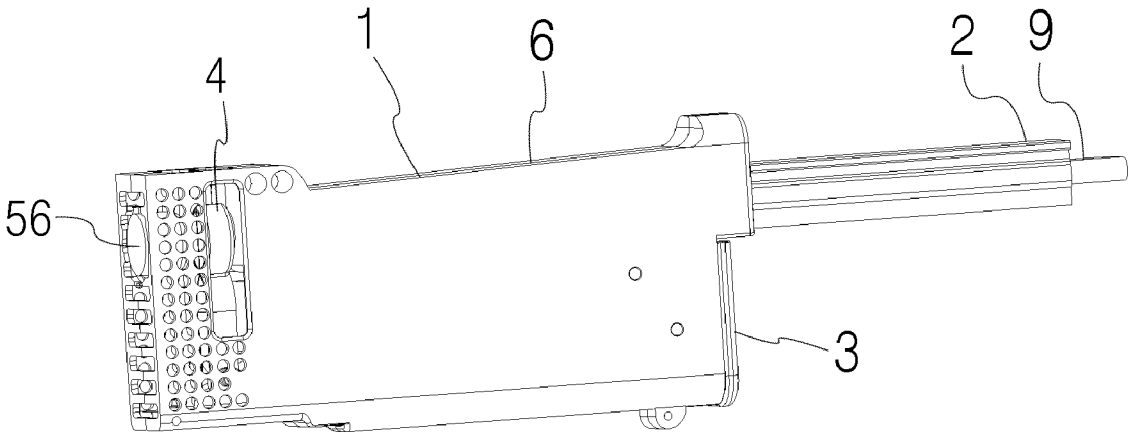

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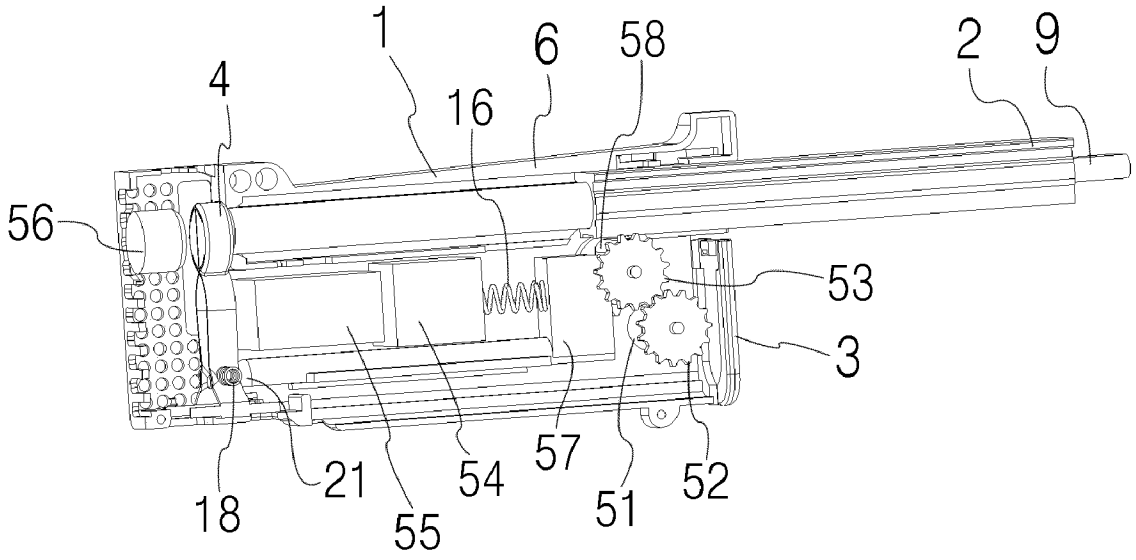

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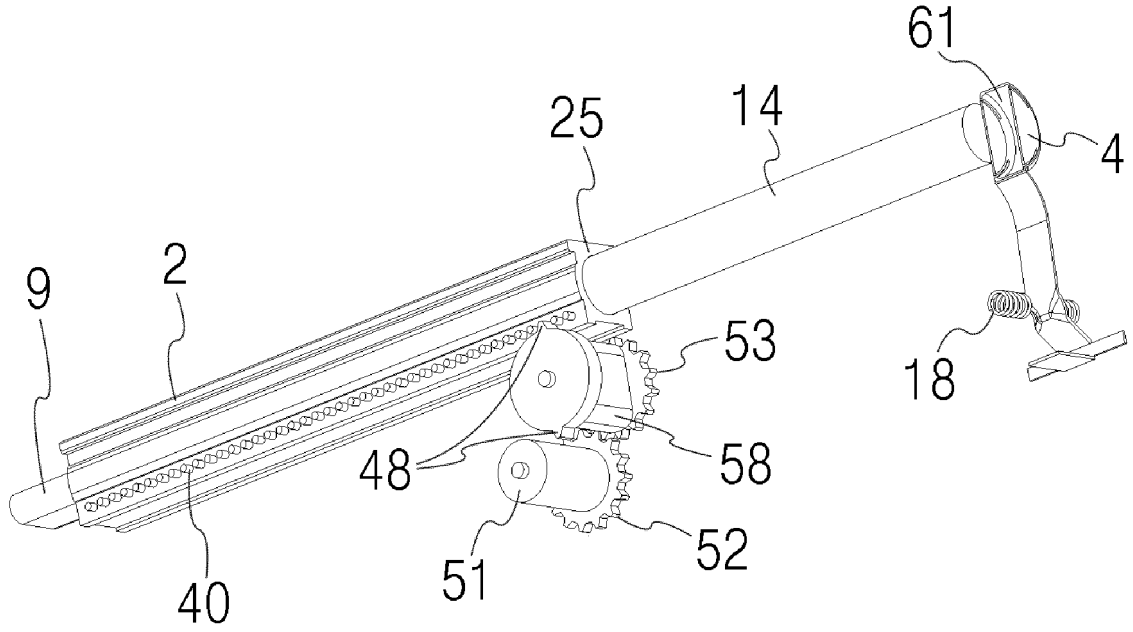

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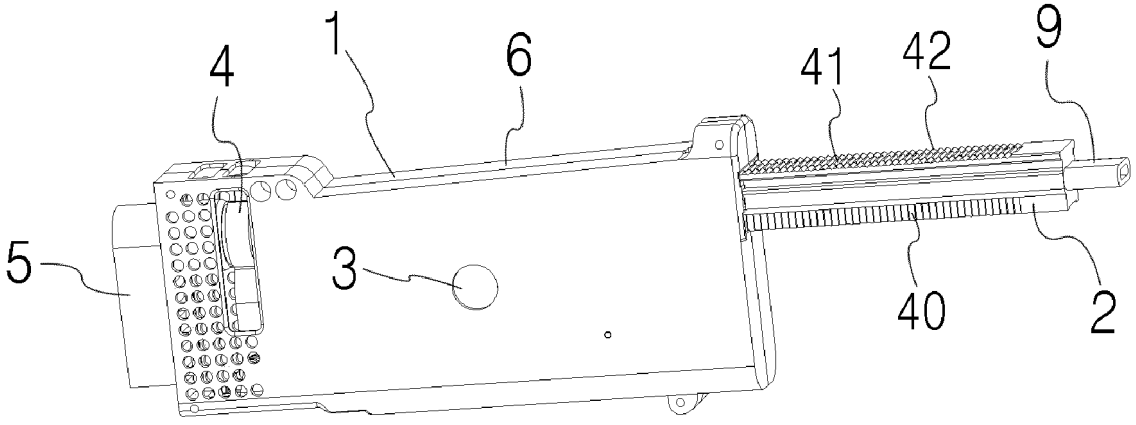

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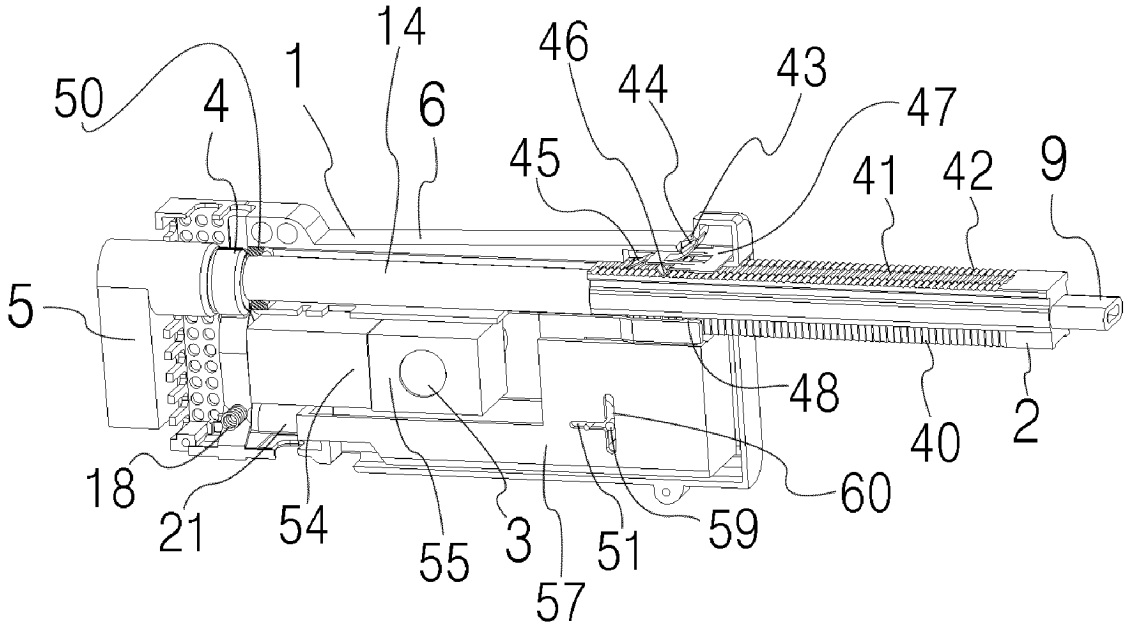

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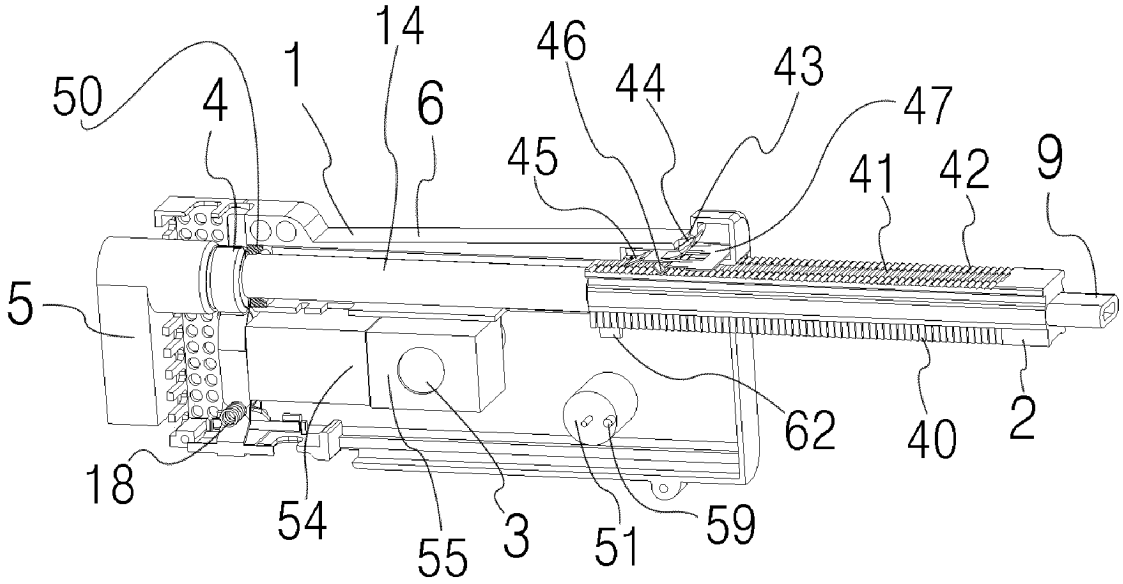

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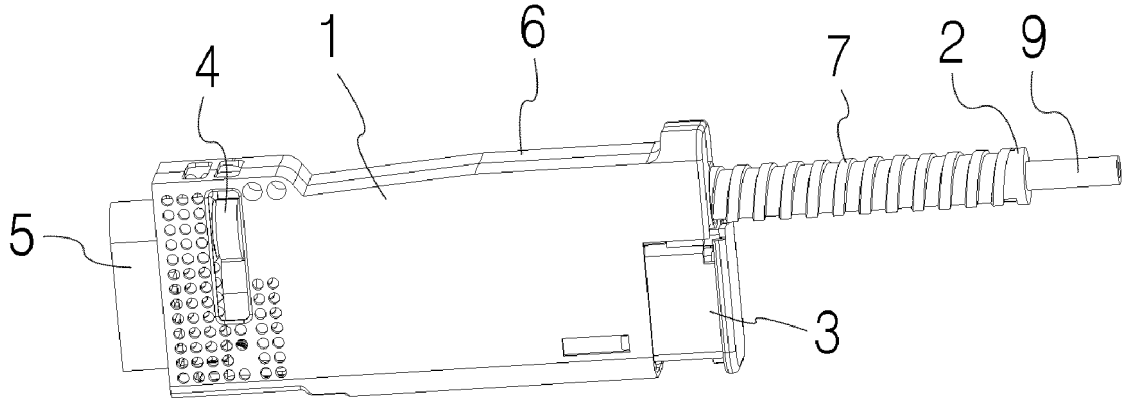

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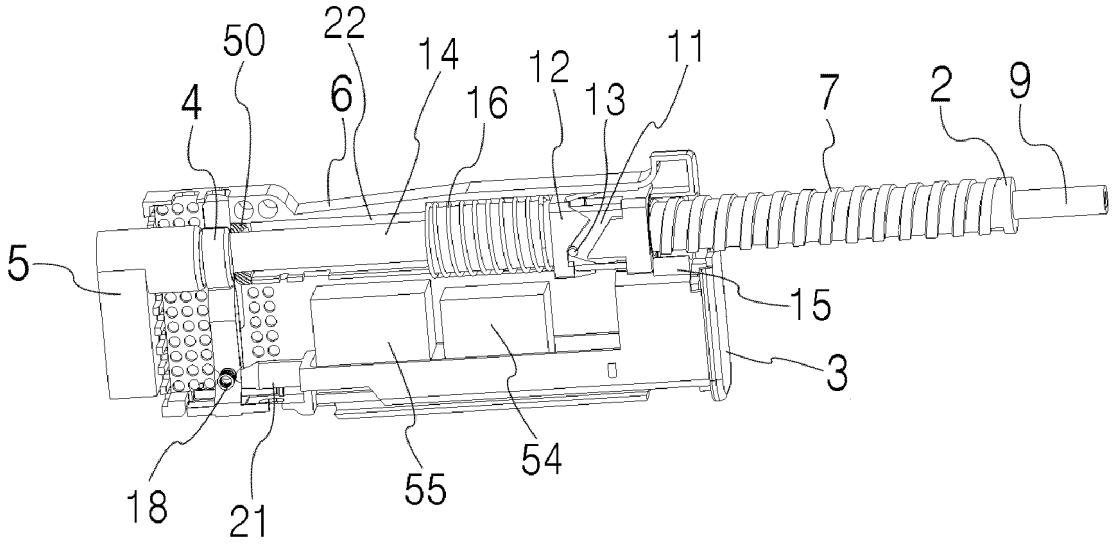

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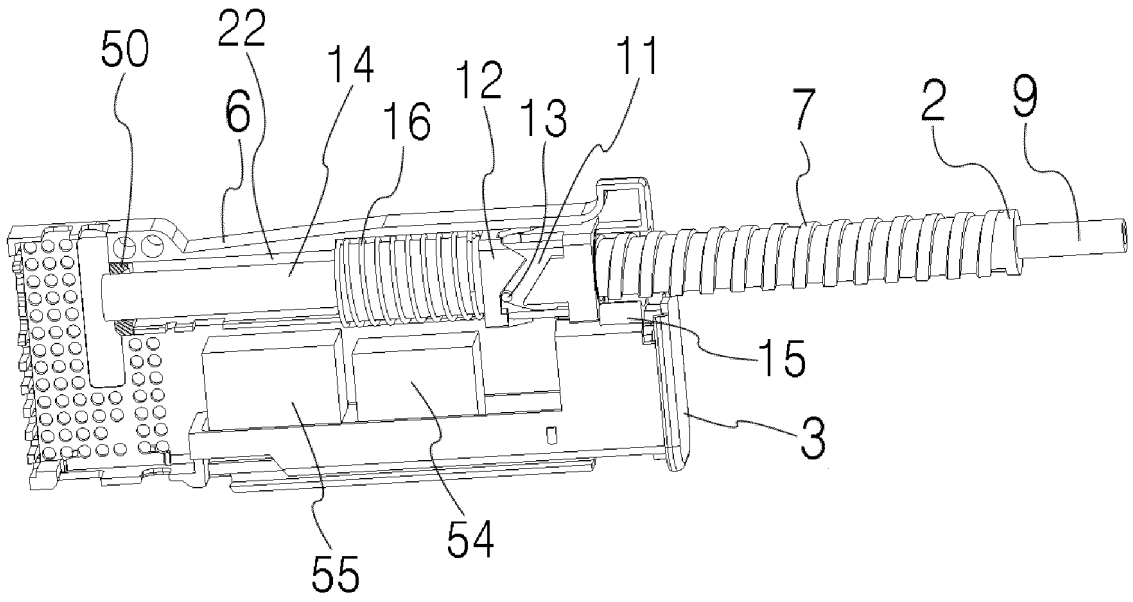

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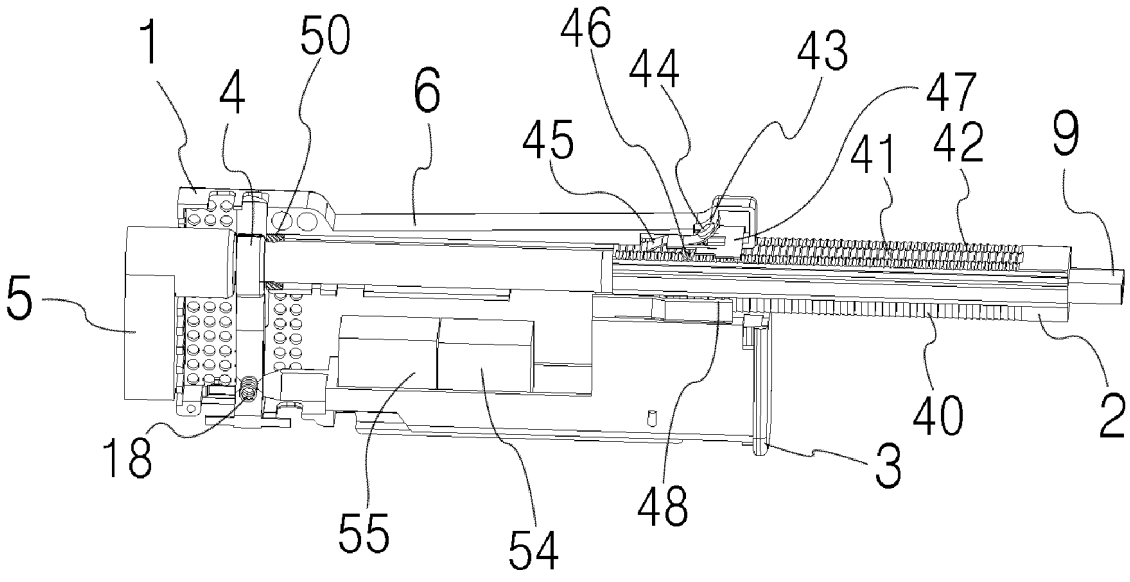

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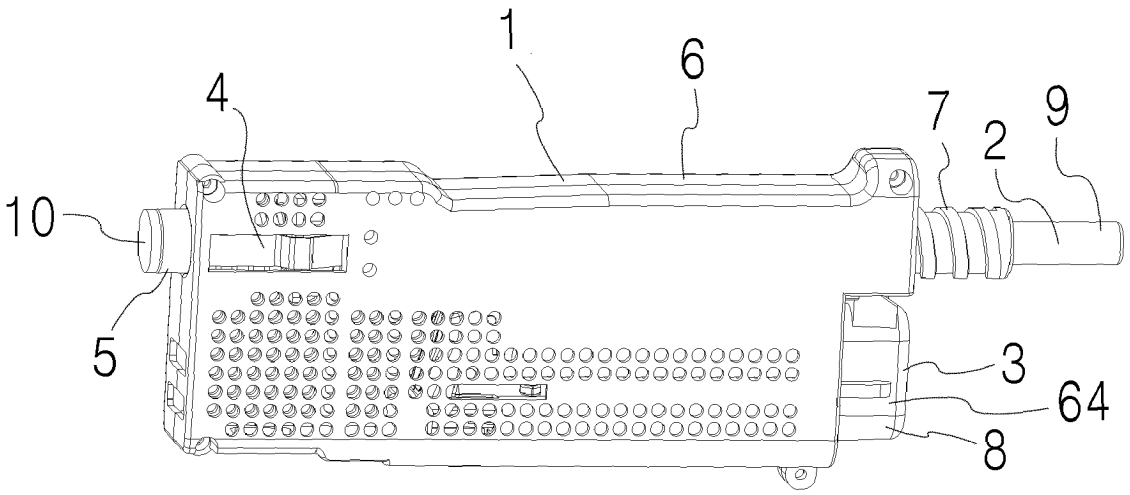

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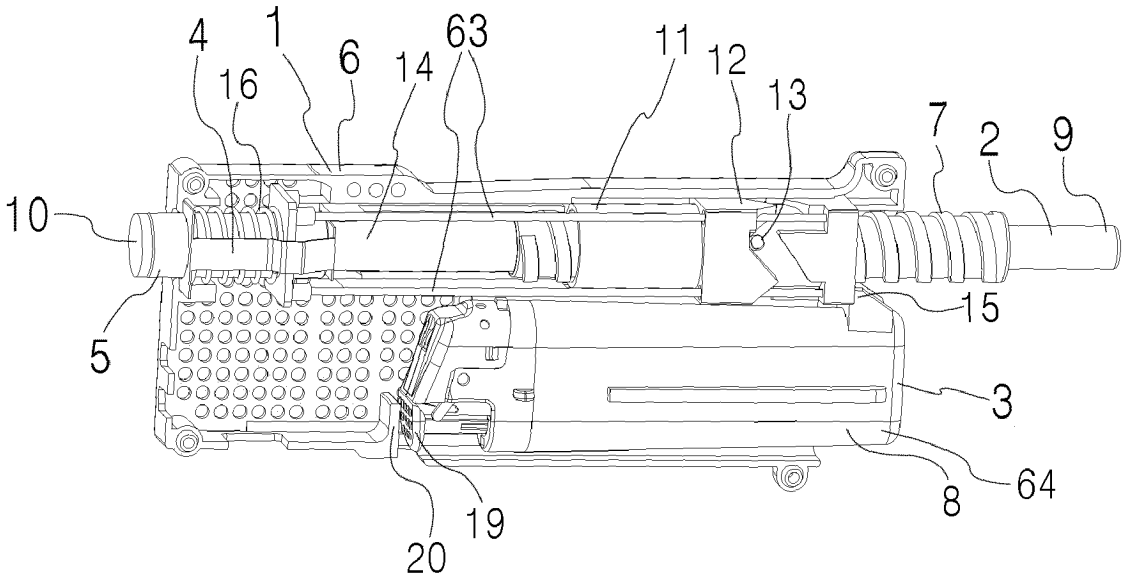

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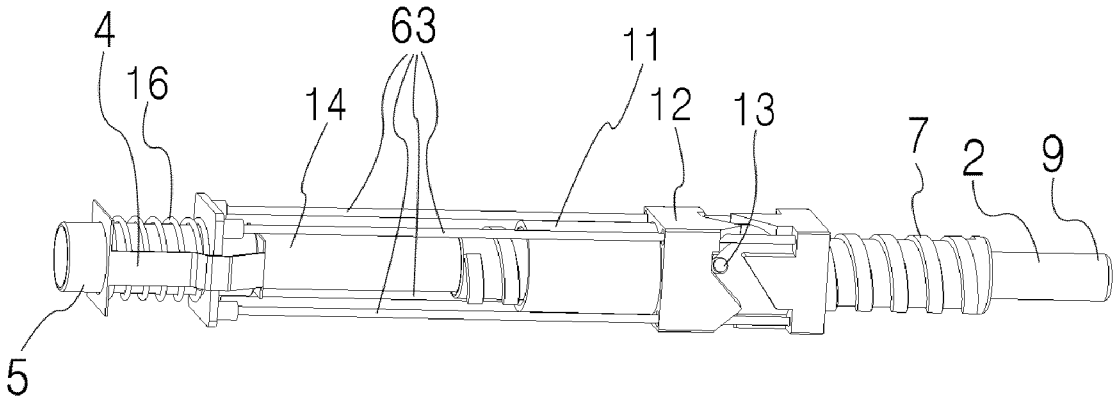

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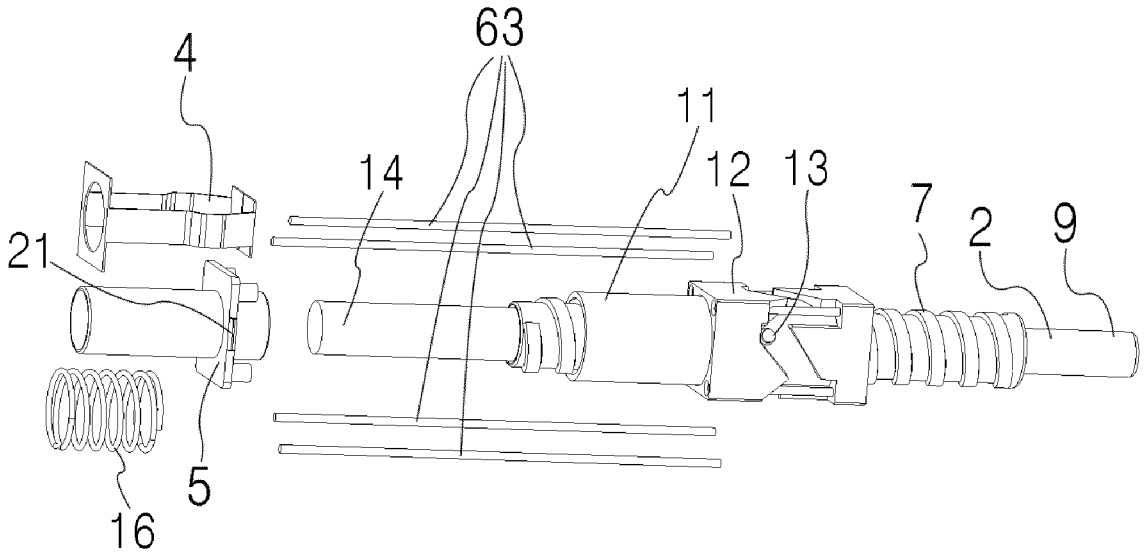

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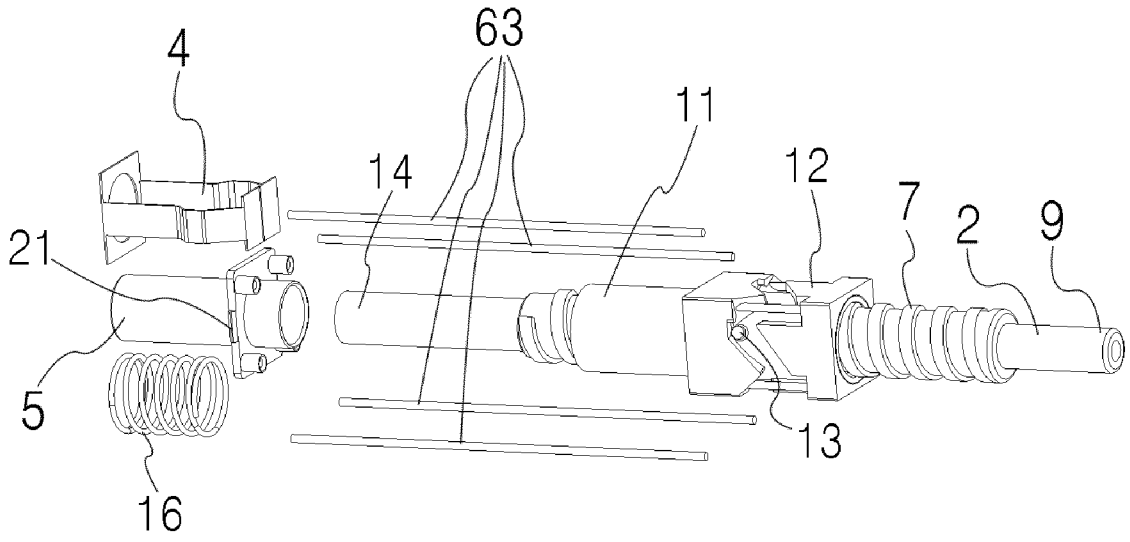

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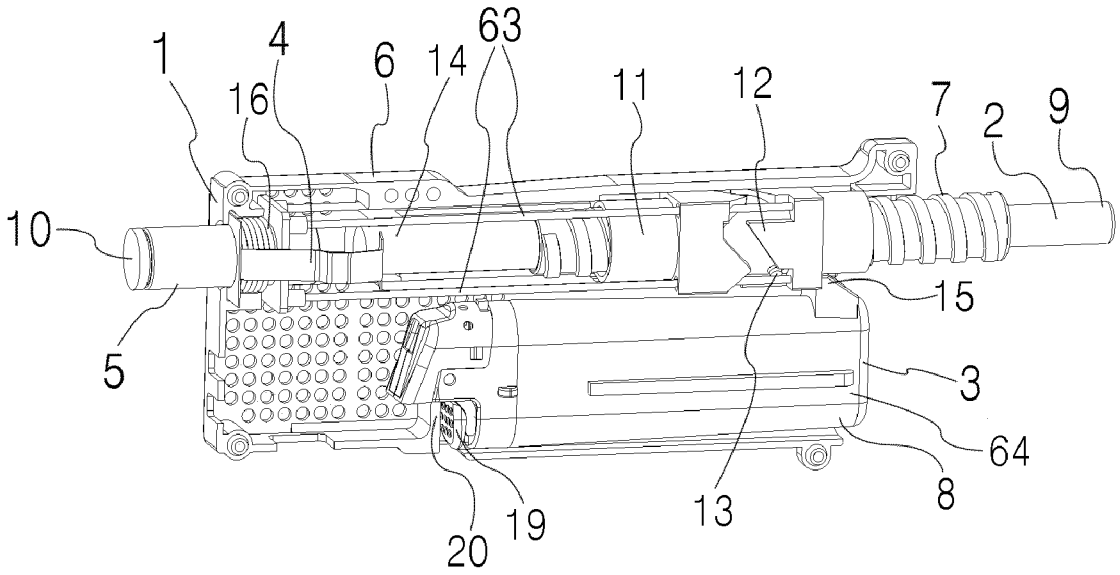

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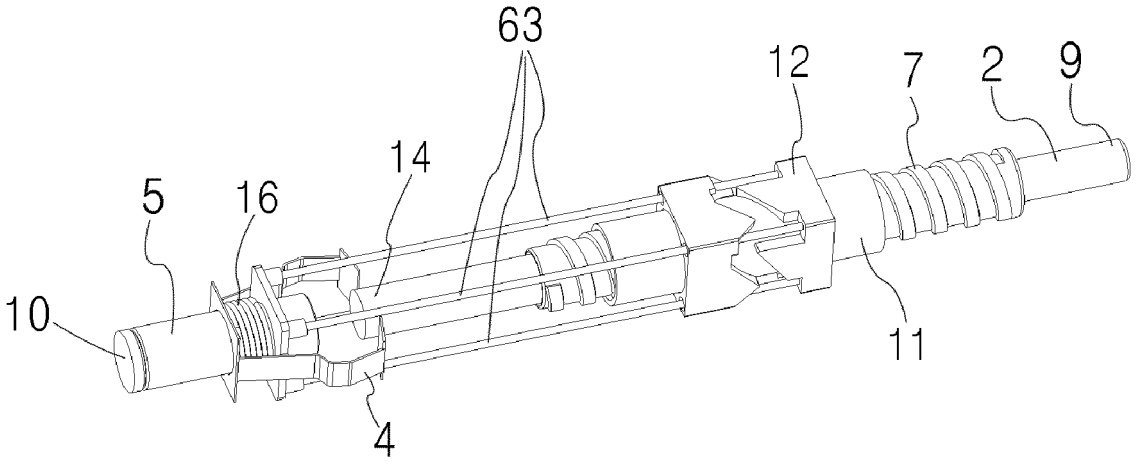

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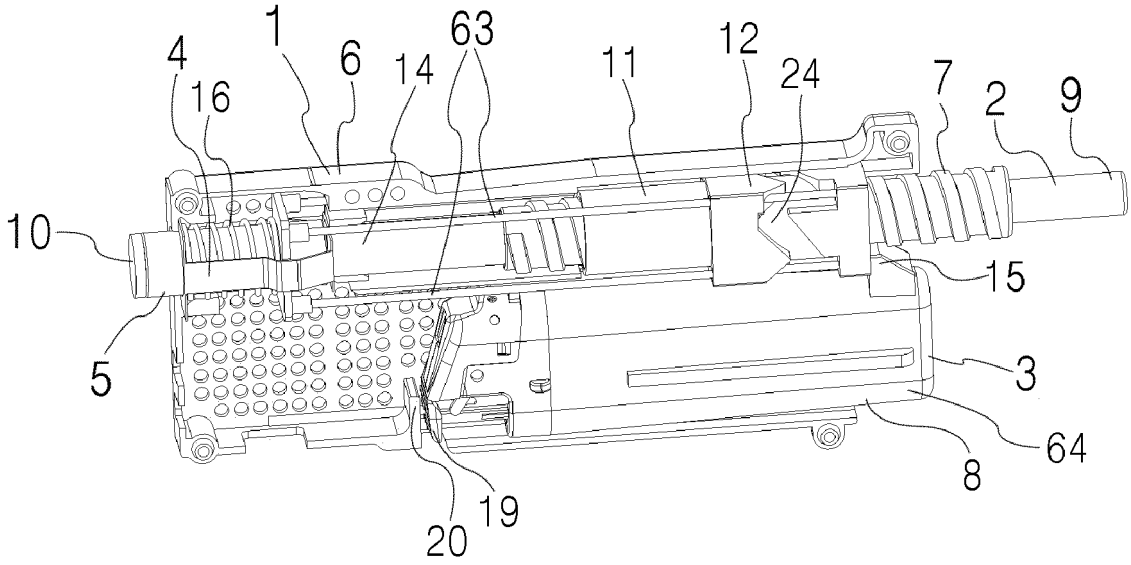

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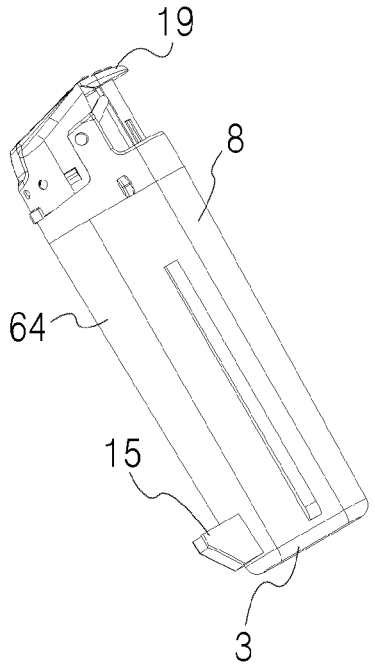

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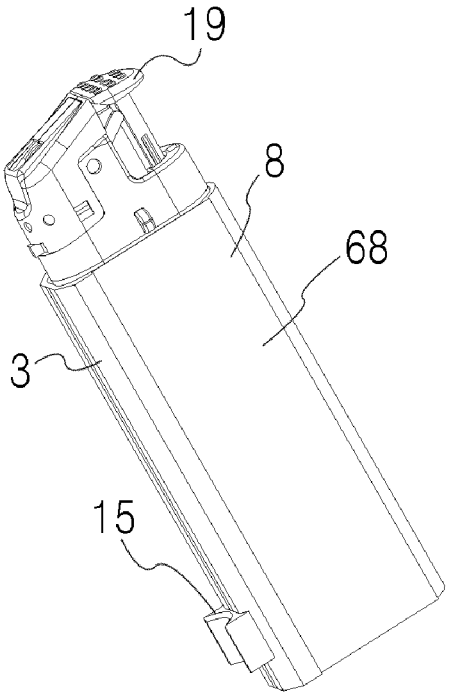

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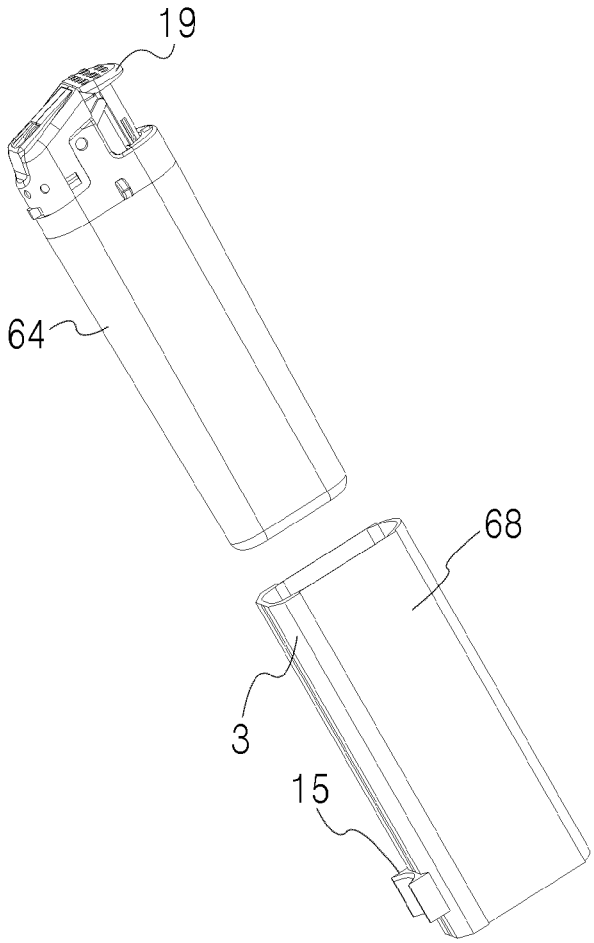

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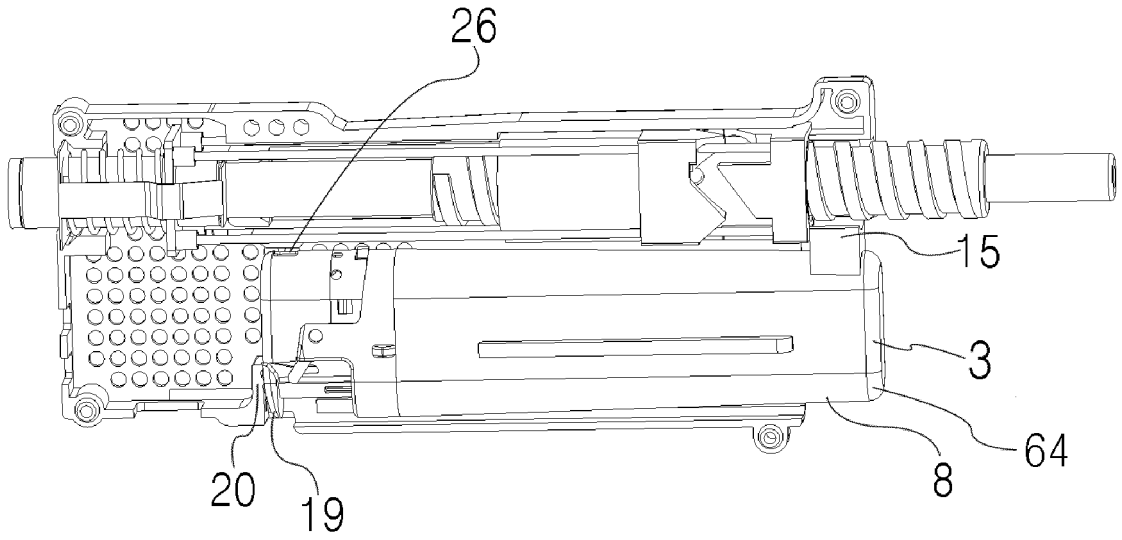

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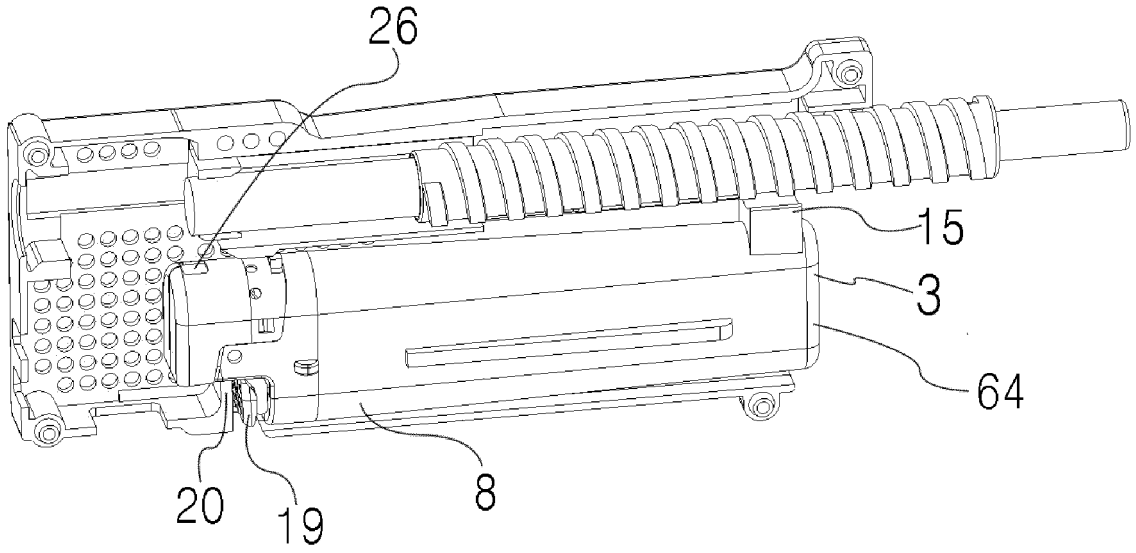

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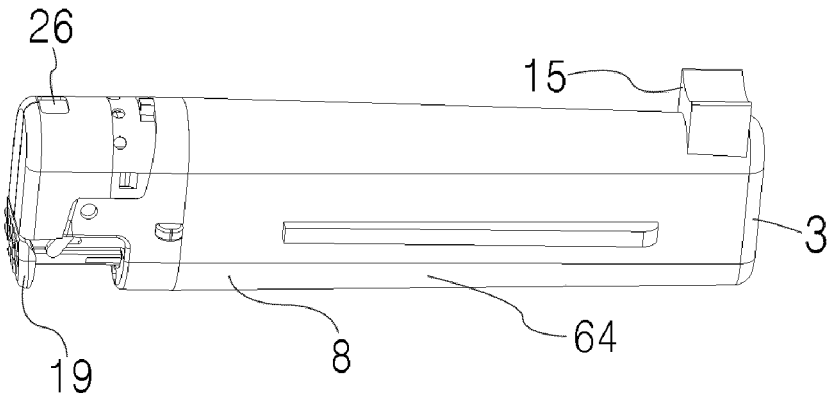

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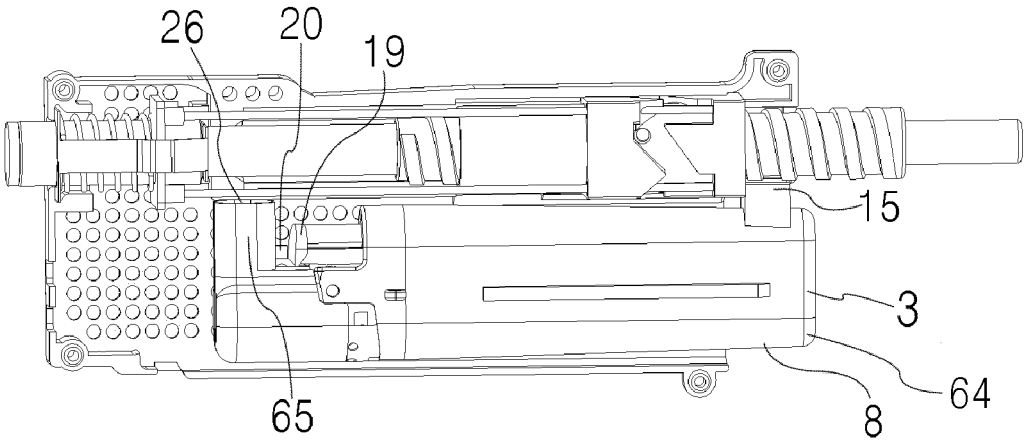

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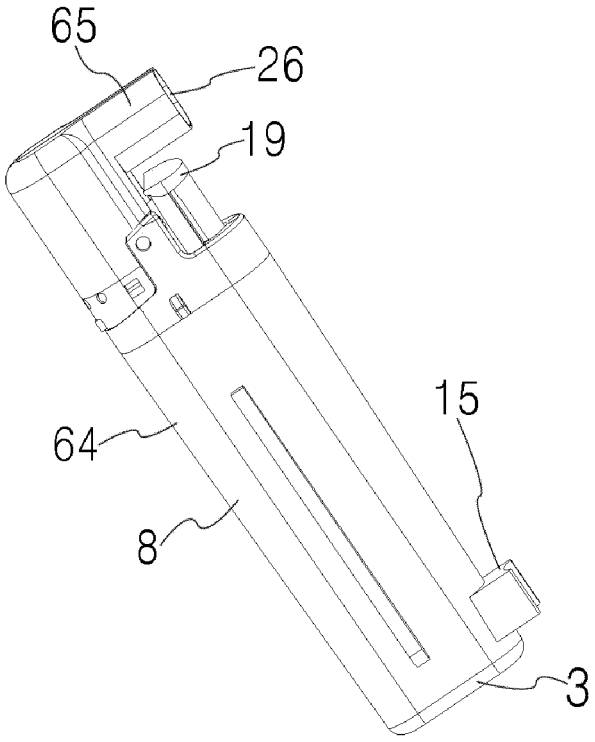

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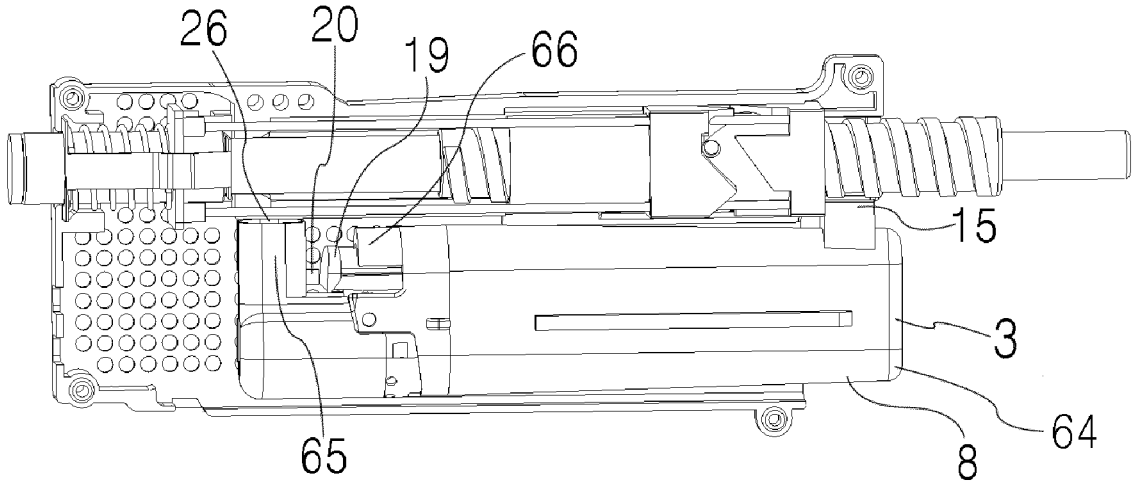

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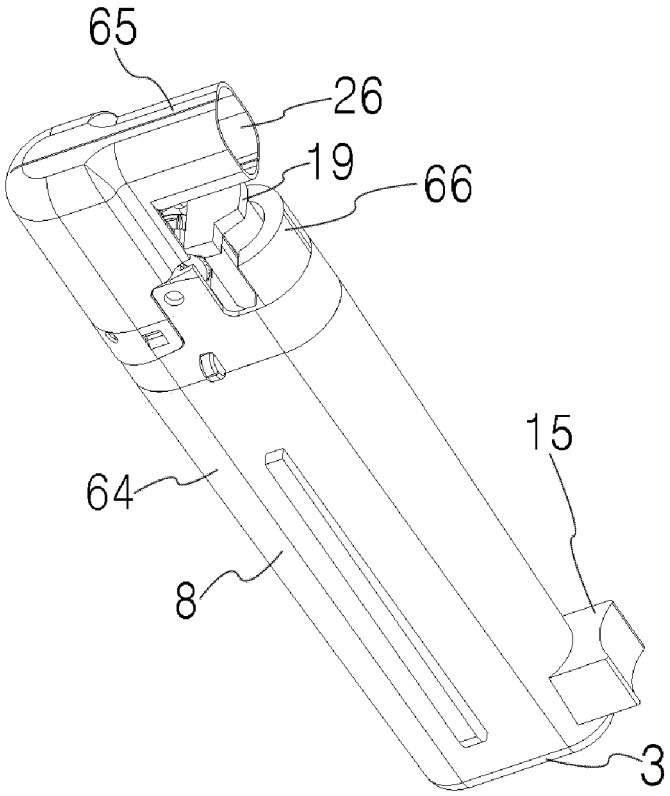

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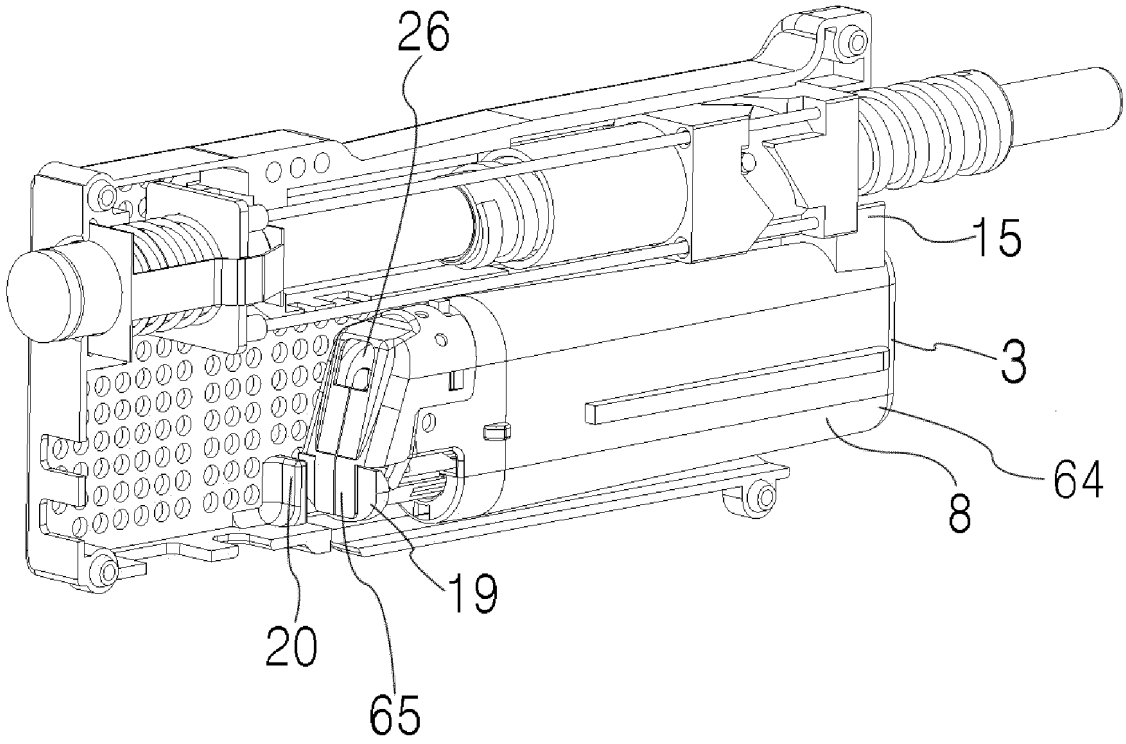

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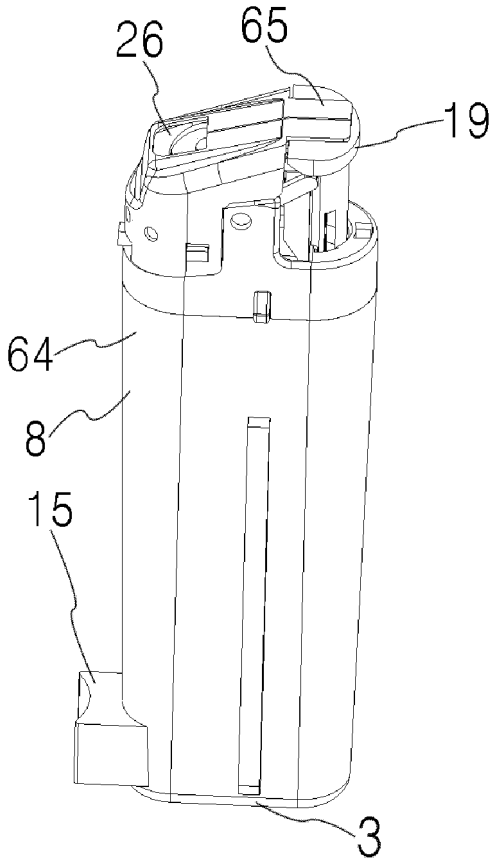

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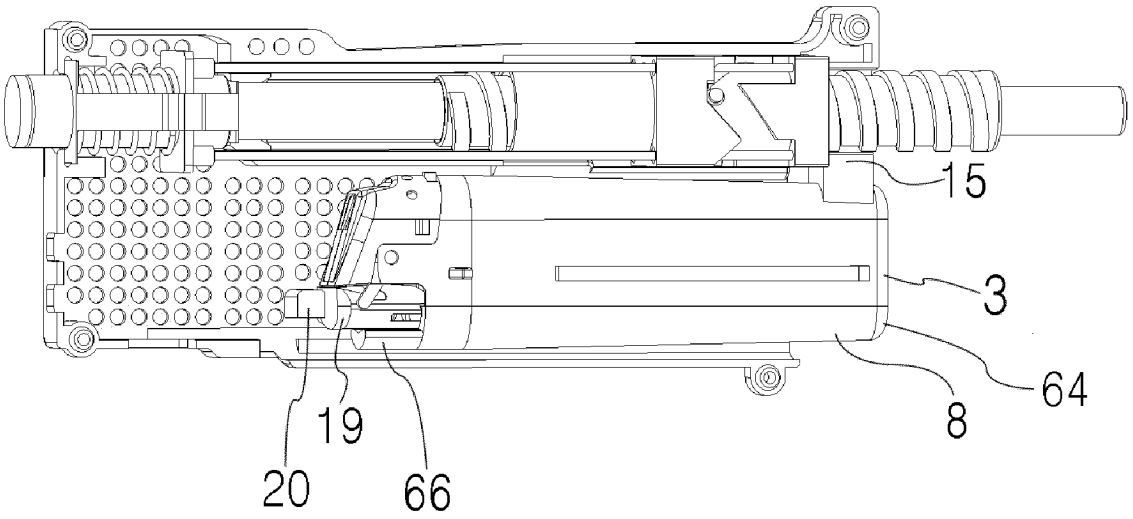

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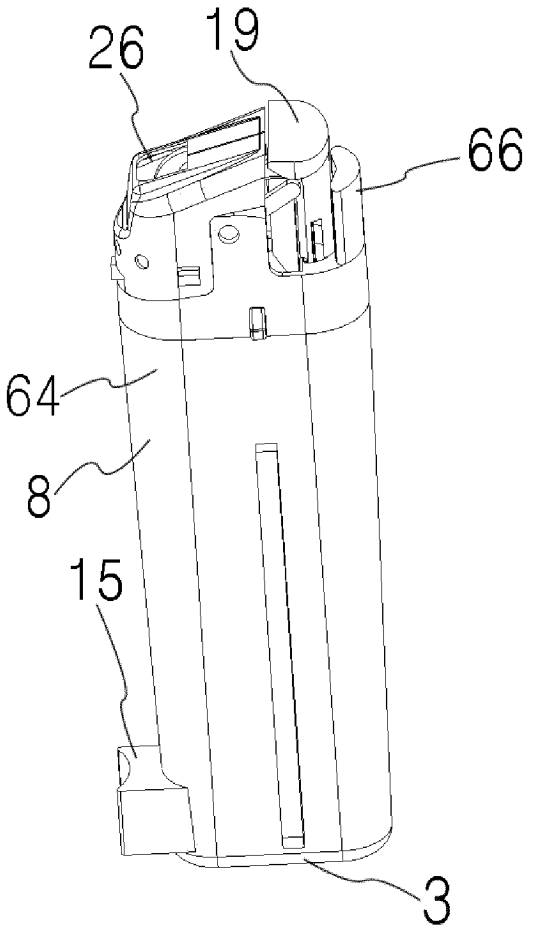

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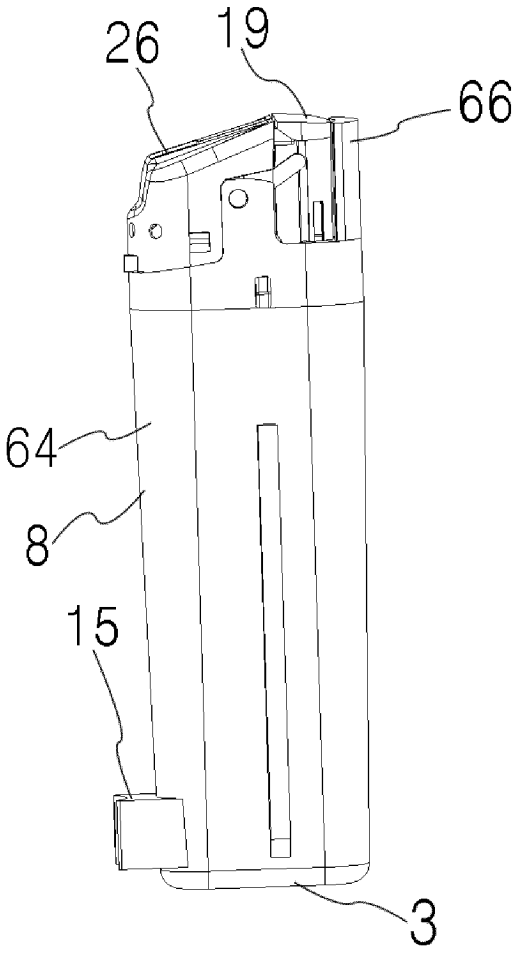

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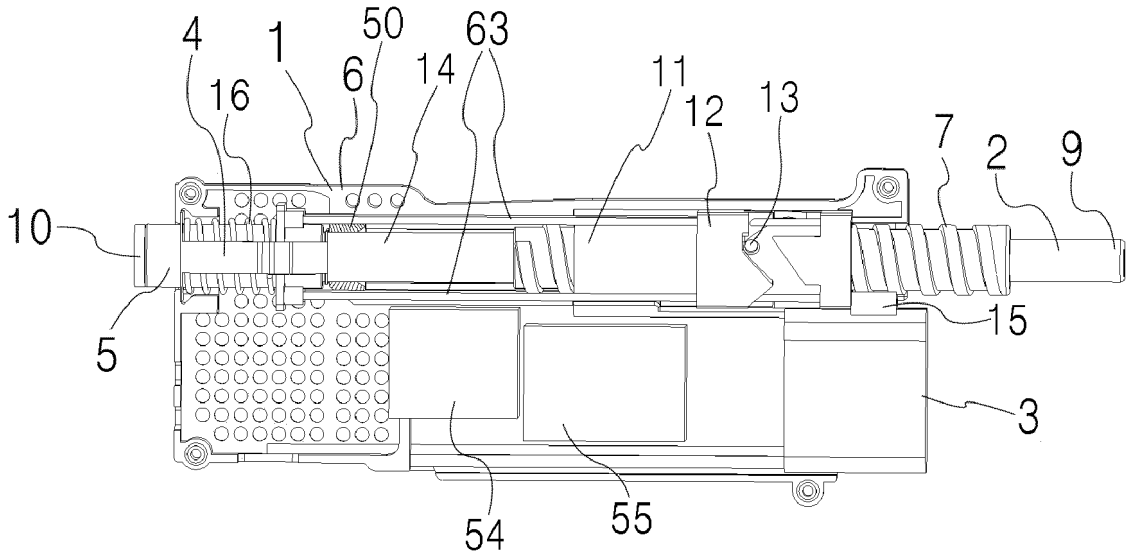

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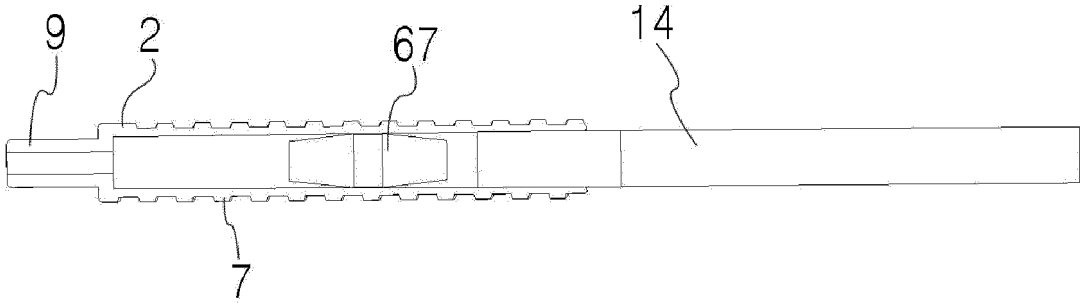

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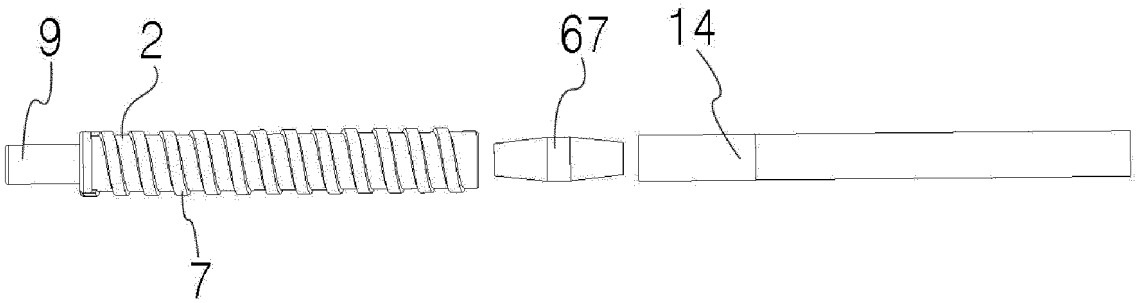

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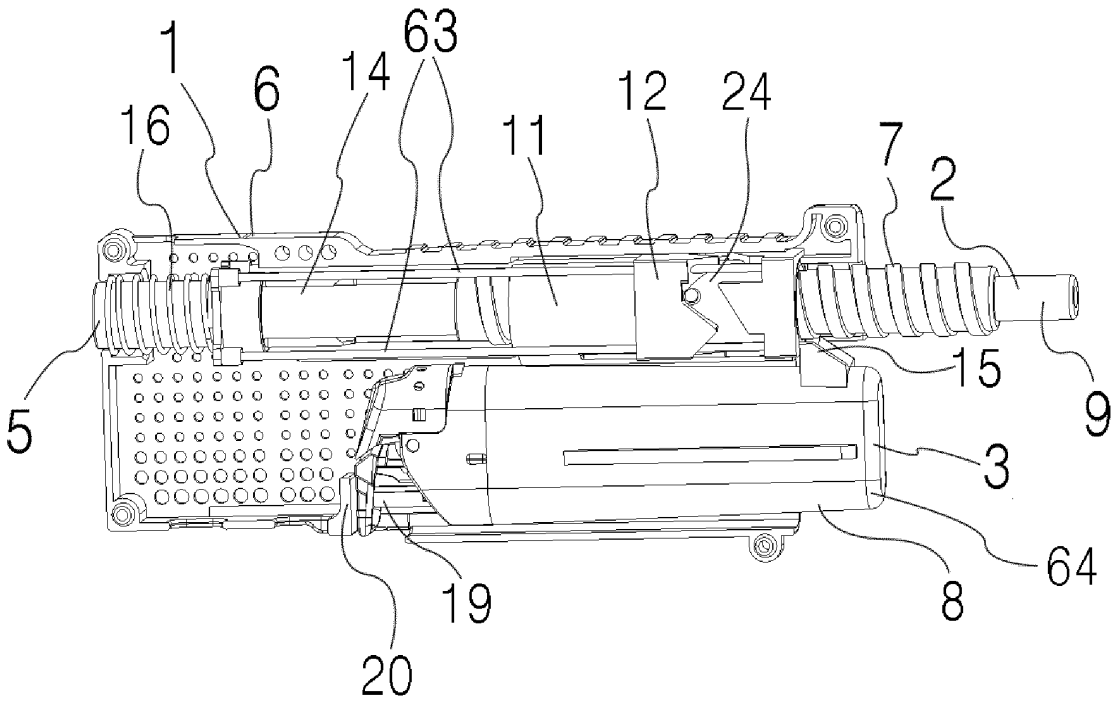

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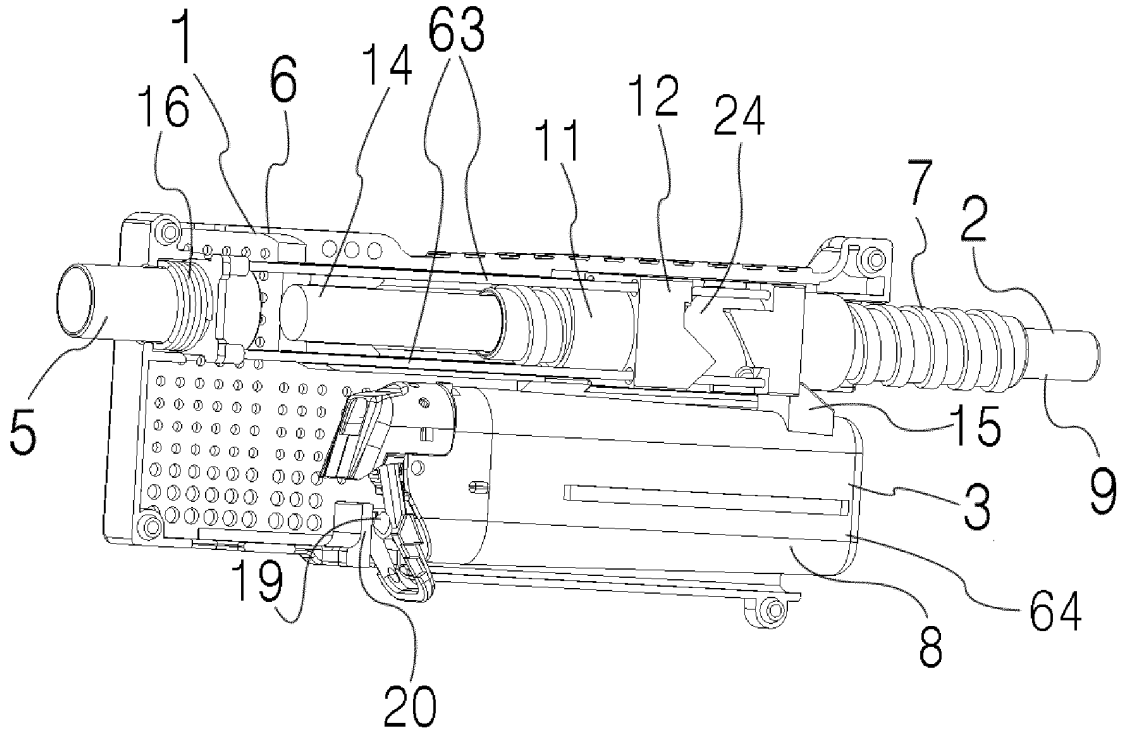

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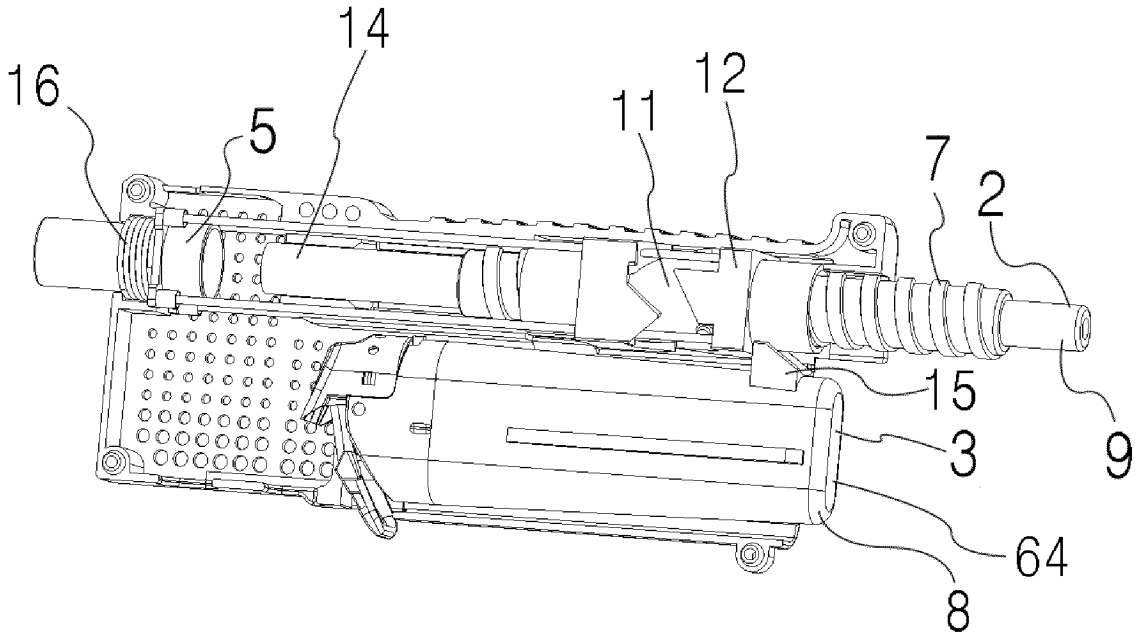

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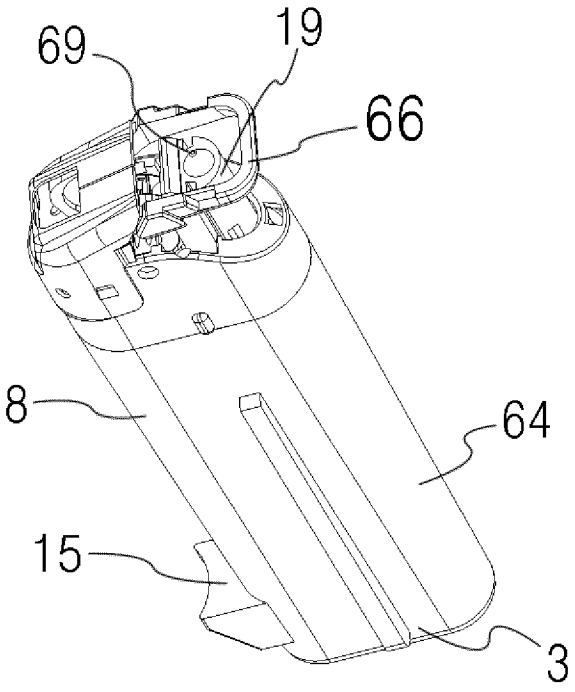

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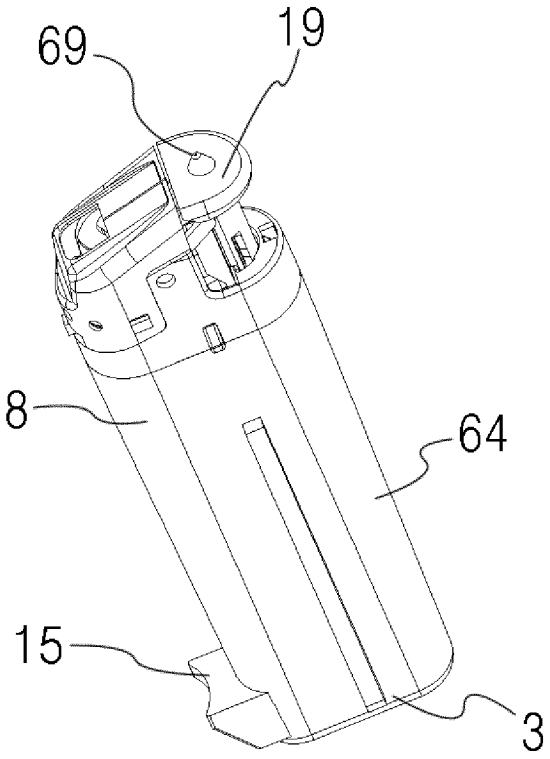

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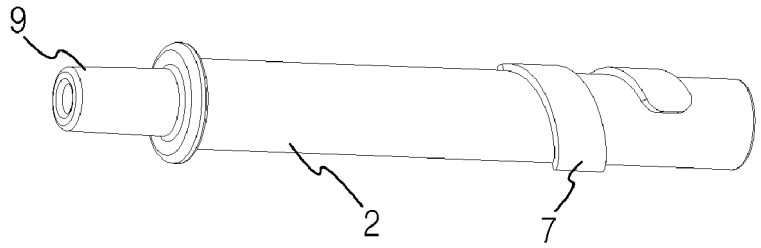

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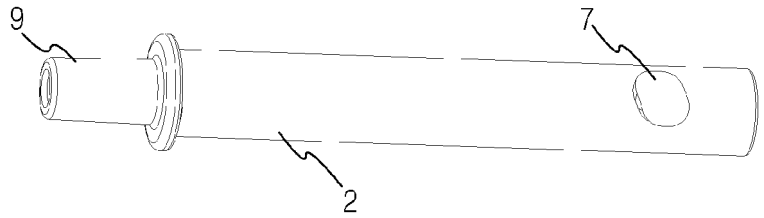

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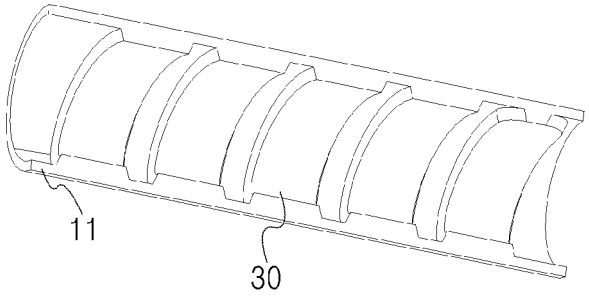

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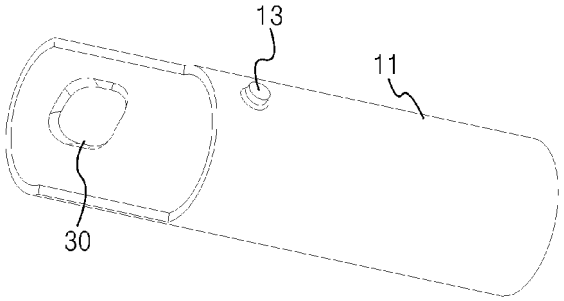

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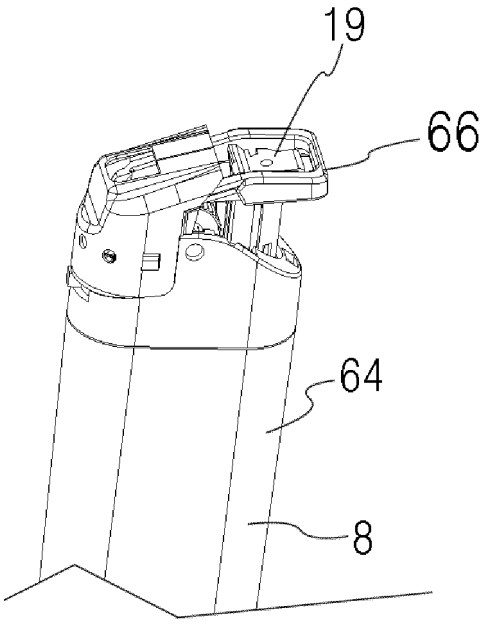

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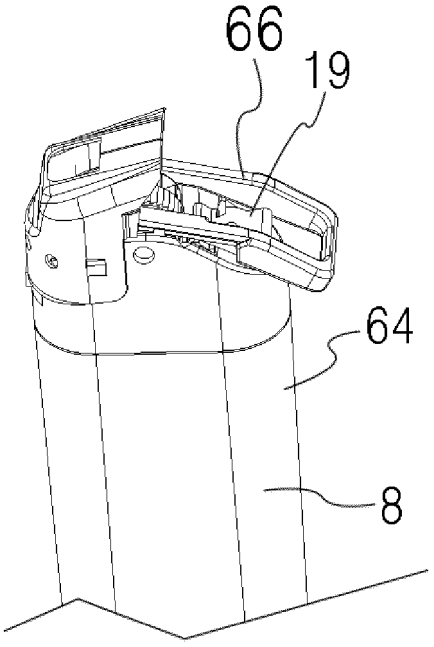

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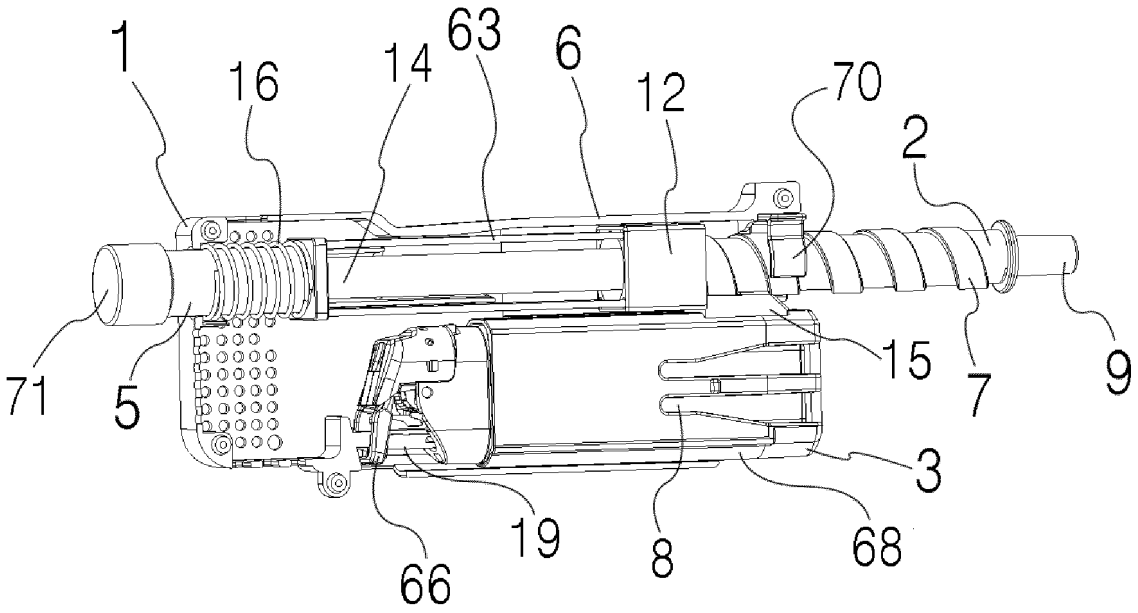

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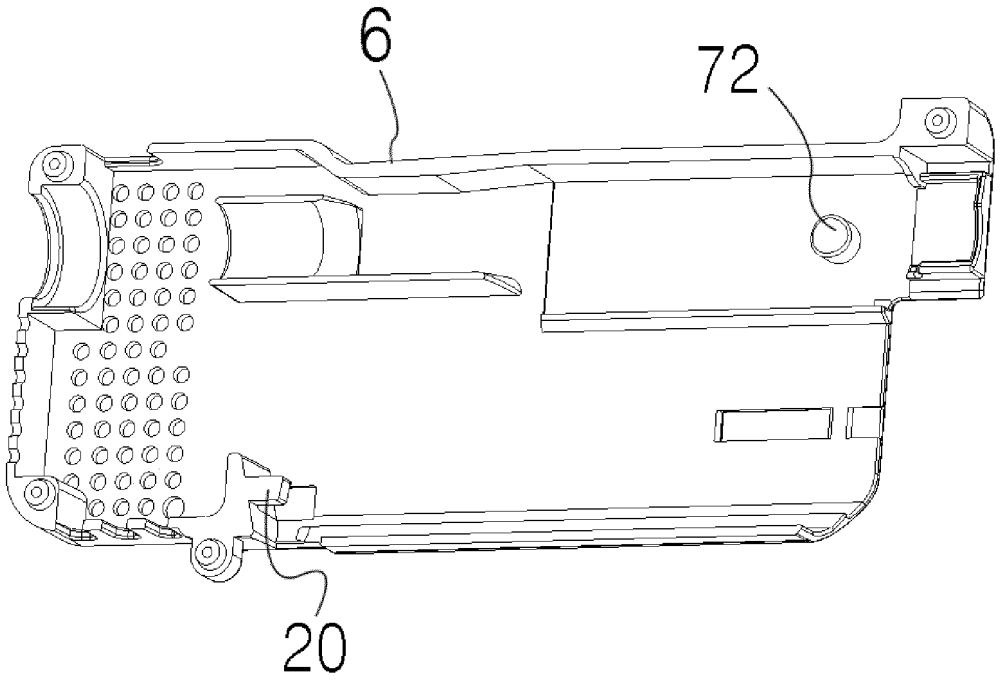

Figure 72

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2022/124745

A. CLASSIFICATION OF SUBJECT MATTER

A24F 40/40(2020.01)i; A24F 13/06(2006.01)i; A24F 29/00(2006.01)i; A24F 40/49(2020.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A24F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNTXT, CNABS, WPI, WPABS: 香烟, 吸烟, 打火, 点火, 螺纹, 齿, 推动, 移动, 滑动, 凸, 槽, 吐烟, 二手烟, 过滤, 净化, 膨胀, 收缩, 弹性, 体积, 容积, 安全, 保护, 儿童, cigarette, smoke, lighter, screw, fire, purify, second 1w hand, health, safety, lock

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 216220185 U (CHEN LONG) 08 April 2022 (2022-04-08) claims 1-20	1-15
X	CN 211451006 U (DONGGUAN LEWEI ENERGY SAVING SCIENE & TECHNOLOGY CO., LTD.) 08 September 2020 (2020-09-08) description, paragraphs [0025]-[0036], and figures 1 and 2	1-10
X	CN 105266203 A (LIU XIANZHONG) 27 January 2016 (2016-01-27) description, paragraphs [0038]-[0039], and figure 1	11, 12
X	CN 2727579 Y (YANG OUTONG) 21 September 2005 (2005-09-21) description, pages 2 and 3, and figure 1	13-15
A	CN 107927907 A (SHANDONG JIAXING ENVIRONMENTAL PROTECTION TECHNOLOGY CO., LTD.) 20 April 2018 (2018-04-20) entire document	1-15
A	CN 204232280 U (SHANGHAI LYUXIN ELECTRONIC TECHNOLOGY CO., LTD. et al.) 01 April 2015 (2015-04-01) entire document	1-15
A	WO 0182725 A1 (PHILIP MORRIS PRODUCTS INC.) 08 November 2001 (2001-11-08) entire document	1-15

☑ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

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"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
25 November 2022	**15 December 2022**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088, China** Facsimile No. **(86-10)62019451**	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2022/124745

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 105768226 A (SHENZHEN RUIGU TECHNOLOGY CO., LTD.) 20 July 2016 (2016-07-20) entire document	1-15
A	US 6234784 B1 (YOSHINAGA TECHNICA CORP.) 22 May 2001 (2001-05-22) entire document	1-15

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2022/124745

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 216220185 U	08 April 2022	None	
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