(19) DANMARK

(10) DK/EP 2340893 T3

(12) Oversættelse af europæisk patentskrift

Patent- og Varemærkestyrelsen

(51) Int.Cl.: *B 05 C 17/01 (2006.01)*

(45) Oversættelsen bekendtgjort den: **2016-02-29**

(80) Dato for Den Europæiske Patentmyndigheds bekendtgørelse om meddelelse af patentet: **2015-12-23**

(86) Europæisk ansøgning nr.: **10158199.9**

(86) Europæisk indleveringsdag: **2010-03-29**

(87) Den europæiske ansøgnings publiceringsdag: **2011-07-06**

(30) Prioritet: **2009-12-29 TW 098145412**

(84) Designerede stater: **AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR**

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(54) Benævnelse: **Silikonepistol**

(56) Fremdragne publikationer:
US-A- 2 240 046
US-A- 3 229 865
US-A1- 2007 102 457
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JP-A- 2000 033 305

DESCRIPTION

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates to a silicone gun that is formed at a compact size and operable flexibly and can be carried and stored easily.

2. Description of the Prior Art

[0002] A conventional silicone gun, such as one disclosed at the Taiwan utility model publication number M311486 published on May 11, 2007 entitled "Silicone gun thrust buffer structure" shown in FIG. 1 or FIG. 2 of the present application generally comprises a support portion, a thrust portion and a depressing portion. The support portion includes a front frame to hold a silicone canister. The thrust portion is located at one side of the front frame and has a rear frame holding a thruster and a spring, and a thrust rod with one end run into the front frame to fasten to a thrust disc and other end run through the rear frame, thruster and spring and is extended outside the thrust portion. A handle is formed below the rear frame to incorporate with a trigger to release and drive the thrust rod to compress and eject silicone.

[0003] In the aforesaid structure, the thrust rod 22 fastened to the thrust disc 221 has a rear end extended outside the rear end of the depressing portion 40 for a considerable length that takes a lot of space. When to replace the silicone canister the whole thrust rod has to be moved to the rear side of the depressing portion 40, and the entire gun barrel is formed at a length almost twice the length of the silicone canister. Such a structure occupies a great deal of space and is difficult or even impossible to use at a small work site. This is the first disadvantage.

[0004] Moreover, the lengthy space taken by the silicone gun makes carrying and storing difficult. This is the second disadvantage.

[0005] All this shows that there are still rooms for improvement.

[0006] Document US 2,240,046 discloses a liquid gun including a flexible actuating tape which is passed over a roller and is connected to a piston for dispensing plastic or viscous materials. The tape comprises openings into/from which a pawl can be engaged/disengaged in order to move the piston in a forward direction.

[0007] JP 2000 033305 A discloses a silicone gun comprising a silicone canister holder, a butt which is fastened to a rear end of the silicone canister holder and has a handle extended therefrom, a silicone compression means which includes a thrust member at a front side and a retaining member at a rear side that are run through by a push member located in the butt that has a front end extended to the silicone canister holder to fasten to a thrust disc, and a trigger which is hinged on the handle and depressible to release and drive the push member to compress silicone, wherein the butt includes a guide wheel at a rear upper end, the push member being flexible and running through the retaining member to wind on the guide wheel and run through an upper side of the silicone canister holder such that the push member does not extended outside the butt at a great length to facilitate utilization at work sites, wherein the push member is elongate and formed in an upward concave cross section.

SUMMARY OF THE INVENTION

[0008] The primary object of the present invention is to provide a silicon gun that is structured without occupying a lengthy space to facilitate flexible operation at a small work site to improve usability.

[0009] Another object of the invention is to provide a silicone gun that is structured at a shorter length to reduce the size to facilitate storing and carrying and improve use versatility.

[0010] The present invention provides a silicone gun according to claim 1. Preferred embodiments of the invention are described

in the dependent claims.

[0011] To achieve the foregoing objects the invention includes a butt consisting of two half shells, a leaning portion extended forwards from a lower side and a handle bending downwards therefrom. The butt has a front wall coupled with a silicone canister holder to hold a silicone canister, and a front guide plate, a middle guide plate and a rear guide plate located inside and spaced from each other, and a guide wheel behind the rear guide plate at an upper end. The butt also has a guide trough above the guide wheel to mate a silicone compression means with a flexible push plate formed in a upward concave cross section
⌣
to run through the three spaced guide plates. The two front guide plates are held by an upper holding plate and a lower holding plate that run through an arched slot formed on each guide plate and an arched opening formed at an upper section of a thrust member located at the front side. The middle guide plate and rear guide plate are interposed by a retaining member which has a hole formed at an upper section to be run through and coupled therewith. A drawing saddle is provided behind the guide wheel and winding through the upper side of the silicone canister holder. The drawing saddle has two guides flutes at the bottom side slidably coupled on two guide ridges formed on the silicone canister holder. A trigger is provided with an upper section hinged inside the upper section of the handle and an upper end hinged on a front end of a drawing plate at the lower side of the front and middle guide plates. The drawing plate has an inner end butting the lower end of the retaining member. The thrust member has a lower end inserted into a drawing slot formed at the rear section of the drawing plate and engaged to form chain motion therewith.

[0012] The foregoing, as well as additional objects, features and advantages of the invention will be more readily apparent from the following detailed description, which proceeds with reference to the accompanying drawings and an embodiment.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013]

FIG. 1 is an exploded view of the invention.

FIG. 2 is a sectional view of the invention with the trigger opened.

FIG. 3 is a perspective view of the invention in a semi-assembly condition.

FIG. 4 is a perspective view of the invention.

FIG. 5 is a schematic view of the invention in a silicone squeezing out condition.

FIG. 6 is a plane view of the invention showing the push member in a retracted and release condition after drawn rearwards.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0014] Referring to FIGS. 1 and 2, the present invention aims to provide a silicone gun which comprises a butt 10 holding a silicone compression means 20, a trigger 30 and a silicone canister holder 40.

[0015] The butt 10 includes two semicircular half shells 11 that are coupled together to hold a thrust member 24 and a retaining member 26 that are interposed by three guide plates 13 between them. Each of the guide plates 13 has an arched slot 14 run through by a push member 21. There is a guide wheel 15 hinged on an upper end of the shell 11 behind the rear guide plate 13 to direct the push member 21. The butt also has a guide trough 16 on an upper side opposing the guide wheel 15 and run through by the push member 21. The coupled two shells 11 have a leaning portion 111 extended forwards from a lower side, then bent and extended downwards to form a handle 112, and jutting fastening struts 113 opposing each other to be fastened by screws 114.

[0016] The silicone compression means 20 includes the push member 21 which is flexible and forms a concave cross section
⌣
to run through an arched slot 131 of each guide plate 13. The push member 21 has a front end extended to the front end of the silicone canister holder 40 and fastened to a thrust disc 211. The two guide plates 13 at the front side are interposed by an upper holding plate 22 and a lower holding plate 23 that are formed respectively in a concave cross section
⌣

to clamp the push member 21 and run through a second arched slot 14 formed on the front and rear guide plates 13 and a similar arched opening 241 formed at an upper section of the thrust member 24 in front of the middle guide plate 13. The upper and lower holding plates 22 and 24 have respectively a jutting retraction stopper 221 and 231 extended from the upper and lower surfaces thereof. The guide plate 13 at the front side is pushed by a return spring 25 on the rear side to press the thrust member 24 rearwards. The push member 21 runs through an arched opening 261 formed on an upper section of the retaining member 26 between the two guide plates 13 at the rear side. The retaining member 26 has a lower section leaning on a holder 141 formed at the lower end of the rear guide plate 13. The middle guide plate 13 has a rear side pushed by a spring 27 to butt the retaining member 26 inclining rearwards at the upper section thereof. The arched opening 261 is formed at a biased angle to retain the push member 21 from loosening and retraction after having moved forwards. The push member 21 has a rear section winding on the guide wheel 15 at the rear end of the butt 10 to extend through the upper side of the silicone canister holder 40 to fasten to a drawing saddle 28 which has two indented guide flutes 281 formed at the bottom.

[0017] The trigger 30 has an upper section hinged in the interior of the upper section of the handle 112 and an upper end hinged through a pin 32 on a front end of a drawing saddle 31 below the leaning portion 111. The drawing plate 31 has a rear inner end butting the lower end of the retaining member 26 and a drawing slot 311 formed on the rear section thereof insertable by the lower end of the push member 21 and engageable and movable therewith.

[0018] The silicone canister holder 40 includes a curved wall to couple with a C-shaped front frame 41 at the front end with openings formed thereon opposing each other, and a rear end coupled with a circular frame 42 with a fastening hole 421 fastened to the front wall of the butt 10. The curved wall has a holding trough 43 formed on the upper side with holding ridges 431 extended from two sides to wedge in the two guide flutes 281 at the bottom of the drawing saddle 28.

[0019] Referring to FIG. 3, for assembly, the push member 21 has a distal end run through the silicone canister holder 40 to fasten to the drawing saddle 28 on the upper side thereof. The drawing saddle 28 can slide on the two holding ridges 431 through the guide flutes 281; then the two shells 11 can be fastened together through the screws 114 to form a silicone gun as shown in FIG. 4 to load a silicone canister 50 in the silicone canister holder so that silicone can be squeezed out when in use.

[0020] Refer to FIG. 5 for the invention in a use condition to squeeze out silicone. First, depress the trigger 30 hinged on the handle 112 and also move the drawing plate 31 forwards at the same time, the drawing slot 311 moves the thrust member 24 forwards in a tilted manner as shown in the enlarged view in the drawing. The arched opening 241 at the upper section of the tilted thrust member 24 has a biased angle to press the upper and lower holding plates 22 and 23 to clamp the push member 21 and move the push member 21 forwards as indicated by an arrow in the drawing; meanwhile, the spring 27 on the holder 141 between the two rear guide plates 13 pushes the retaining member 26 to tilt rewards with the arched opening 261 pressing the push member 21 through another biased angle thereof to prevent it from loosening or retracting.

[0021] Referring to FIG. 2, after the squeezing operation is finished, release the trigger 30, the return spring 25 pushes the thrust member 24 rewards, the arched opening 241 butts the upper and lower holding plates 33 and 23 from moving rearwards on the retraction stoppers 221 and 231; then the trigger 30 can be depressed again to repeat silicone squeezing operation as desired. When the thrust disc 211 at the front end of the push member 21 is moved to the foremost position, i.e. the silicone has been fully squeezed and depleted, move the trigger 30 outwards to drive the drawing plate 31 rearwards to push the lower end of the tilted retaining member 26 to an upright position, then the arched opening 261 at the upper section can release retaining of the push member 21, and the push member 21 can be moved rewards through the drawing saddle 28 to a release condition as shown in FIG. 6, then the silicone canister can be replaced easily.

[0022] FIG. 2 shows that in the invention the concave push member 21 is clamped by the upper and lower holding plates 22 and 23 and driven to move forwards to squeeze the silicone at a desired pressure, and winds on the guide wheel 15 located at the rear end of the butt 10 and above the silicone canister 40, hence the rear end of the butt 10 is shorter without occupying too much space. As a result, it can be used flexibly at a smaller work site and space, and also is easy to carry and store. It provides a significant improvement over the conventional techniques.

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- TW311486M [0002]
- US2240046A [0006]
- JP2000033305A [0007]

Krav

1. Silikonepistol, der omfatter en silikonekanisterholder (40), en kolbe (10), som er fastgjort til en bagerste ende af silikonekanisterholderen (40) og har et herfra udragende greb (112), et silikonekomprimeringsmiddel (20), som ved en forside har et trykelement (24) og ved en bagside et holdeelement (26), som et stødelement (21), der er placeret i kolben (10), er ført igennem, og som har en forende, der strækker sig hen til silikonekanisterholderen (40) og tjener til at fastgøre en trykskive (211), og en aftrækker (30), der er hængslet på grebet (112), og som kan trykkes ned for at udløse og drive stødelementet (21) for at komprimere silikone,
hvori kolben (10) ved en øvre bagende har et føringshjul (15), og stødelementet (21) er fleksibelt og er ført gennem holdeelementet (26) for at blive vundet op på føringshjulet (15) og ført videre langs en øvre side på silikonekanisterholderen (40) på en sådan måde, at stødelementet (21) ikke rager ud af kolben (10) med en stor længde for derved at lette brugen på byggepladser, og hvori stødelementet (21) er langstrakt og udformet med et opadvendende konkavt tværsnit,
kendetegnet ved, at
trykelementet (24) og holdeelementet (26) hver er udformet med en bueformet åbning (241, 261) til gennemføring af stødelementet (21), der også passerer mellem en øvre holdeplade (22) og nedre holdeplade (23), der hver er udformet med et opadvendende konkavt tværsnit for at kunne fastklemme stødelementet (21),
hvori den øvre og nedre holdeplade (22, 23) hver har et returstop (221, 231), der rager ud fra henholdsvis en øvre overflade og en nedre overflade ved en side, hvor trykelementet (24) og holdeelementet (26) er placeret, til at stoppe stødelementet (21), når det er løsnet fra trykelementet (24), og til at trække den øvre og nedre

holdeplade (22, 23) tilbage til deres oprindelige positioner; mellem en forreste styreplade (13) og trykelementet (24) er der indskudt en returfjeder (25), holdeelementet (26) har en nedre sektion, der hælder mod en holder (141) ved en nedre ende af en bageste styreplade (13), en bagside af styrepladens (13) midte som påstødes af en fjeder (27) således, at en øvre del af holdeelementets (26) vippes bagud, holdeelementets (26) bueformede åbning (261) står i en forspændt vinkel for at hindre, at stødelementet (21) løsnes eller trækkes tilbage efter at være ført fremefter.

2. Silikonepistol ifølge krav 1, hvori kolben (10) inkluderer to halvcirkelformede halvskaller (11), som er fastgjort til hinanden for at holde tre styreplader (13) mellem trykelementet (24) og holdeelementet (26); hver styreplade (13) har en bueformet åbning (131), som er udformet på en øvre sektion, og som gennemløbes af stødelementet (21), de øvre og nedre holdeplader (22, 23) løber igennem de to bagerste styrepladers (13) bueformede åbninger (131) og trykelementets (24) bueformede åbning (241), og de to skaller (11) har oven over føringshjulet (15) en styrerende (16), langs hvilken stødelementet (21) løber.

3. Silikonepistol ifølge krav 1, hvori kolben (10) inkluderer to halvcirkulære halvskaller (11), som er fastgjorte til hinanden for at danne en hældende part (111), der rager ud fra deres underside, og som er bukket og strækkende sig for at danne grebet (112), aftrækkeren (30) har en øvre sektion, som indvendigt er hængslet på en øvre del af grebet (112), og en øverste ende, der er hængslet på den ene ende af en trækplade (31), som er anbragt på den hældende part (111), og som har en anden ende, der støder mod en nedre ende af holdeelementet (26), trækpladen (31) har en trækspalte (311) på en nedre ende, hvor trykelementet (24) kan sættes ned for at bevæges med.

4. Silikonepistol ifølge krav 2, hvori kolben (10) inkluderer to halvcirkulære halvskaller (11), som er fastgjorte til hinanden for at danne en hældende part (111), der rager ud fra deres underside, og som er bukket og strækkende sig for at danne grebet (112), aftrækkeren (30) har en øvre sektion, som er hængslet på en øvre del af grebet (112), og en øverste ende, der er hængslet på den ene ende af en trækplade (31), som er anbragt på den hældende part (111), og som har en anden ende, der støder mod en nedre ende af holdeelementet (26), trækpladen(31) har en trækspalte (311) på en nedre ende, hvor trykelementet (24) kan sættes ned for at bevæges med.

5. Silikonepistol ifølge krav 1, hvori silikonekanisterholderen (40) inkluderer en cirkulær væg med en forende, der er koblet sammen med en C-formet frontramme (42) for at danne et legeme indeholdende modstående åbninger, og en bagende, der er fastgjort til en cirkulær ramme (42), som er koblet sammen med kolben (10), og en øverste ende, der er udformet med en holderende (43), som er koblet sammen med kolbens (10) styrerende (16), holderenden (43) har ved dens to sider to udragende styreribber (431) til at kile ind og forskydes på to styreriller (281), som er udformede i bunden af en trækslæde (28), der er placeret ved en yderende af stødelementet (21).

6. Silikonepistol ifølge krav 2, hvori silikonekanisterholderen (40) inkluderer en cirkulær væg med en forende, der er koblet sammen med en C-formet frontramme (42) for at danne et legeme indeholdende modstående åbninger, og en bagende, der er fastgjort til en cirkulær ramme (42), som er koblet sammen med kolben (10), og en øverste ende, der er udformet med en holderende (43), som er koblet sammen med kolbens (10)

styrerende (16), holderenden (43) har ved dens to sider to udragende styreribber (431) til at kile ind og forskydes på to styreriller (281), som er udformede i bunden af en trækslæde (28), der er placeret ved en yderende af stødelementet (21).

7. Silikonepistol ifølge krav 3, hvori silikonekanisterholderen (40) inkluderer en cirkulær væg med en forende, der er koblet sammen indeholdende en C-formet frontramme (42) for at danne et legeme med modstående åbninger, og en bagende, der er fastgjort til en cirkulær ramme (42), som er koblet sammen med kolben (10), og en øverste ende, der er udformet med en holderende (43), som er koblet sammen med kolbens (10) styrerende (16), holderenden (43) har ved dens to sider to udragende styreribber (431) til at kile ind og i forskydes på to styreriller (281), som er udformede i bunden af en trækslæde (28), der er placeret ved en yderende af stødelementet (21).

8. Silikonepistol ifølge krav 4, hvori silikonekanisterholderen (40) inkluderer en cirkulær væg med en forende, der er koblet sammen med en C-formet frontramme (42) for at danne et legeme indeholdende modstående åbninger, og en bagende, der er fastgjort til en cirkulær ramme (42), som er koblet sammen med kolben (10), og en øverste ende, der er udformet med en holderende (43), som er koblet sammen med kolbens (10) styrerende (16), holderenden (43) har ved dens to sider to udragende styreribber (431) til at kile ind i og forskydes på to styreriller (281), som er udformede i bunden af en trækslæde (28), der er placeret ved en yderende af stødelementet (21).

DRAWINGS

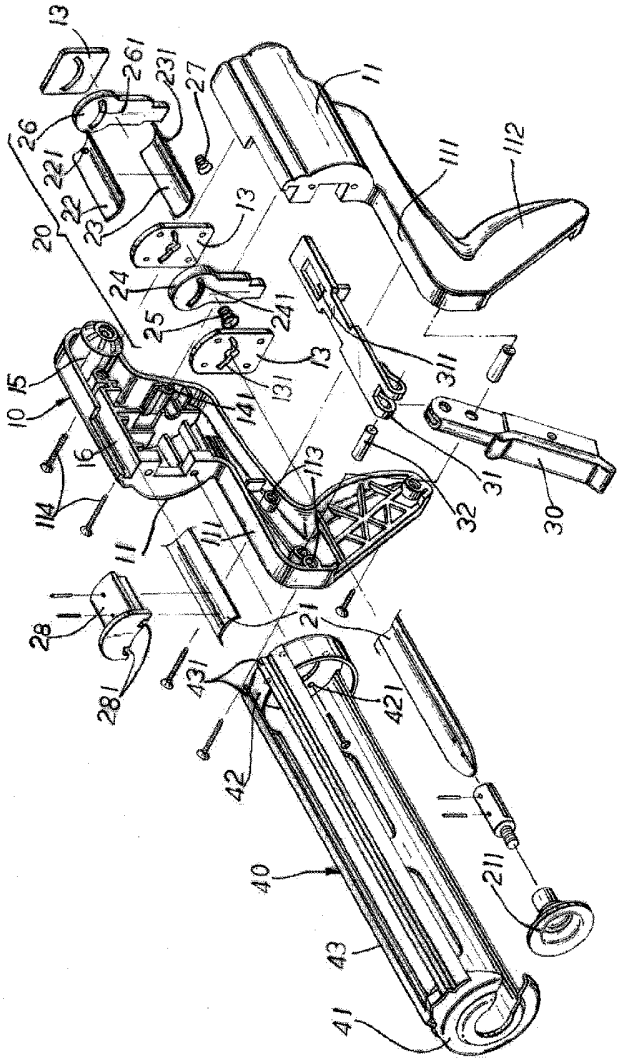


FIG.1

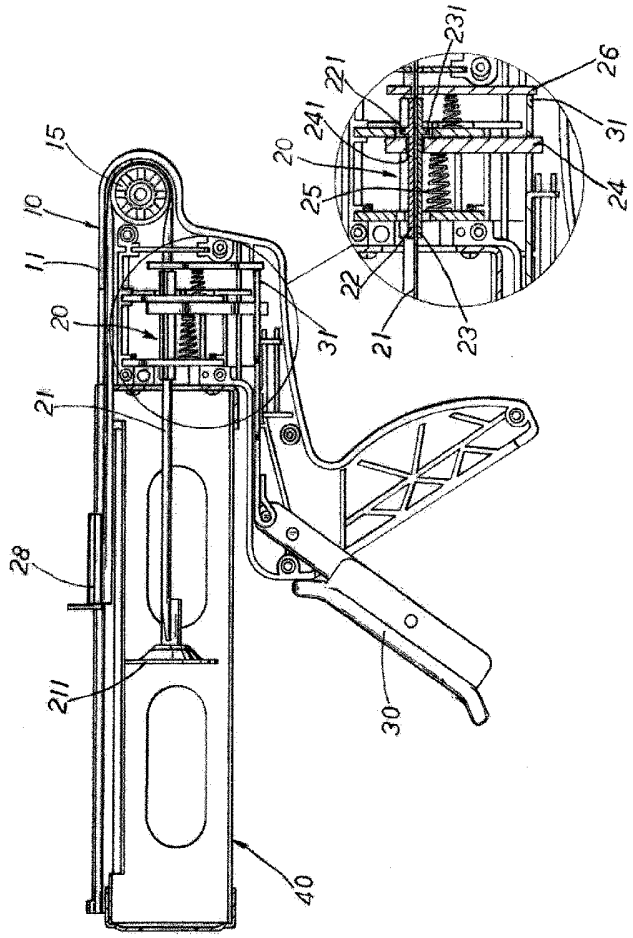


FIG.2

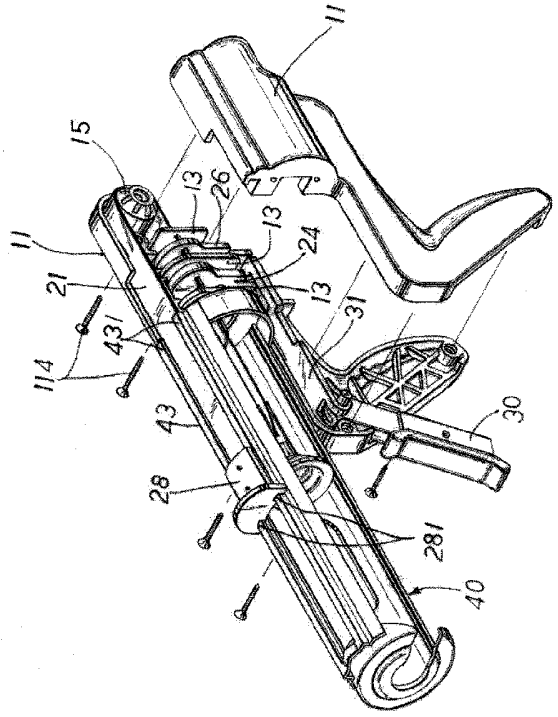


FIG.3

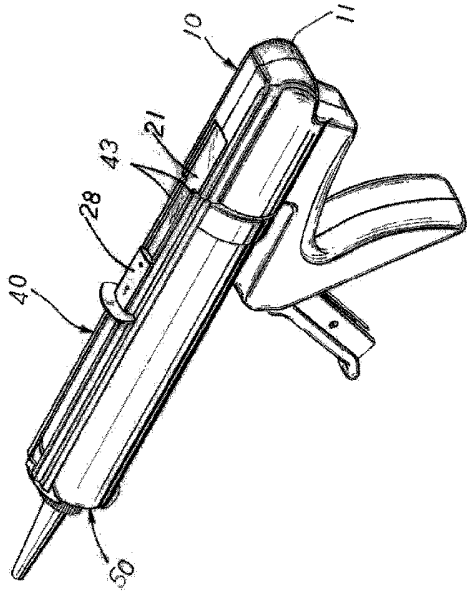


FIG.4

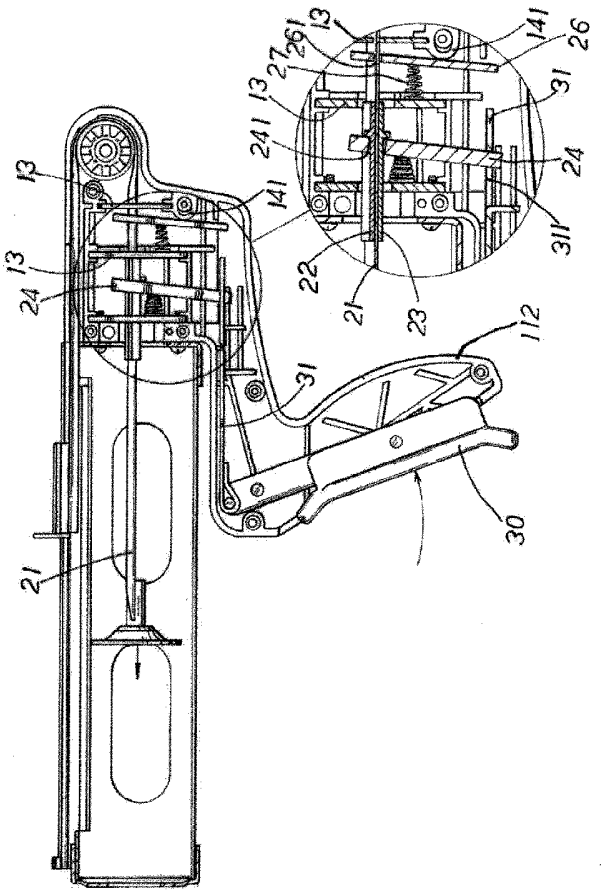


FIG.5

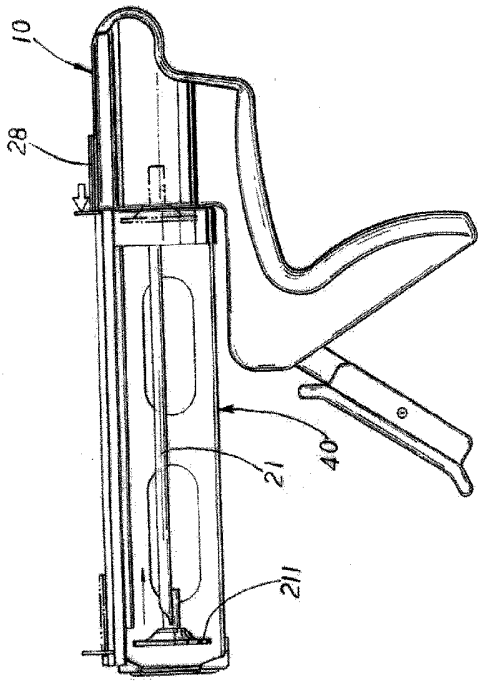


FIG.6