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Suzuki

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(54) **CARTRIDGE-TYPE CONTENT EXTRUSION CONTAINER WITH SCREW LOCKING MEMBER**

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(72) Inventor: **Takumi Suzuki**, Kawaguchi (JP)

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A45D 34/00 (2006.01)

(52) **U.S. Cl.**
CPC ***A45D 34/04*** (2013.01); *A45D 34/042* (2013.01); *A45D 2034/005* (2013.01); *A45D 2200/1072* (2013.01)

(58) **Field of Classification Search**
CPC A45D 34/04; A45D 2200/1072; A45D 2034/005; A45D 40/02; A45D 40/06; A45D 34/00; A45D 34/042
USPC 401/268, 270, 271, 275, 282
See application file for complete search history.

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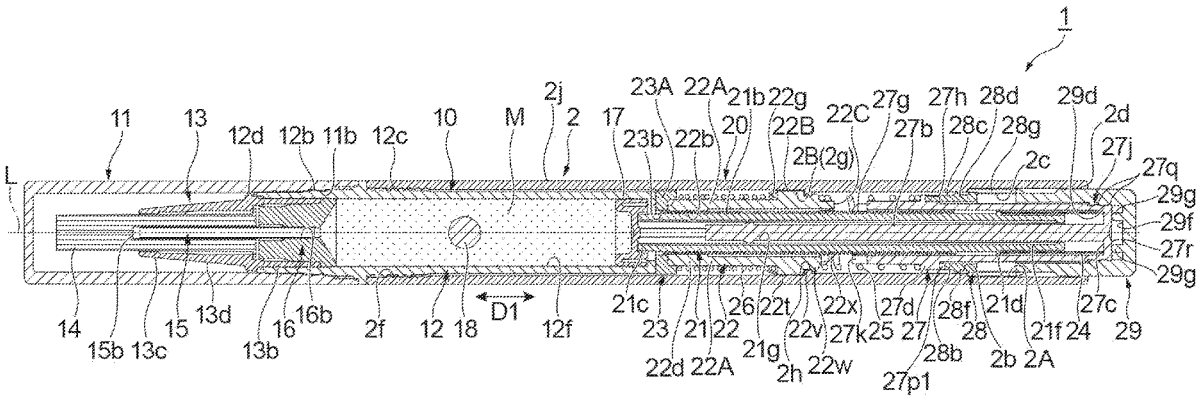
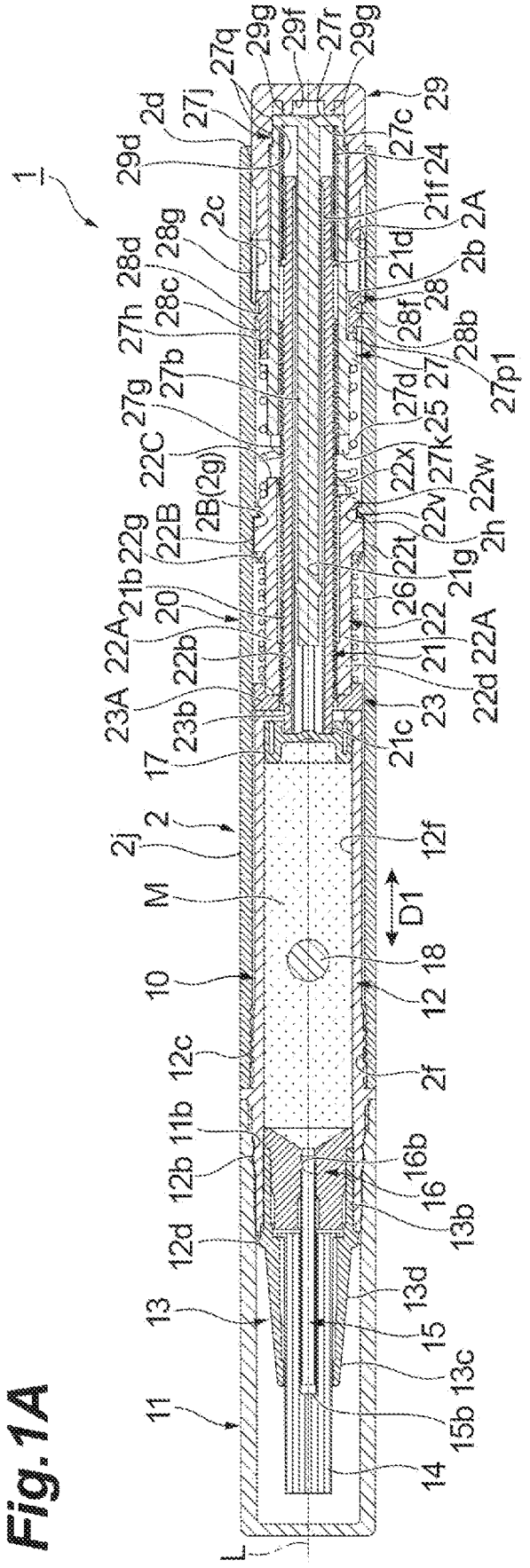
(57) **ABSTRACT**

A cartridge-type content extrusion container includes a cartridge containing a material and forming an opening, a main body tube to removably accommodate the cartridge, a screw tube inside the main body tube, a moving body that is screwed into the screw tube to move in an axial direction of the main body tube via a rotation of the moving body relative to the screw tube, so as to urge the material toward the opening of the cartridge, and a screw locking member. The screw tube has an elastic portion that is accommodated in the screw locking member. The screw locking member is movable away from the screw tube when the cartridge is removed from the main body tube to cause the elastic portion to expand in the radial direction so as to release a screw coupling between the screw tube and the moving body.

9 Claims, 13 Drawing Sheets

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27d
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27h
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27p1
27q
27r
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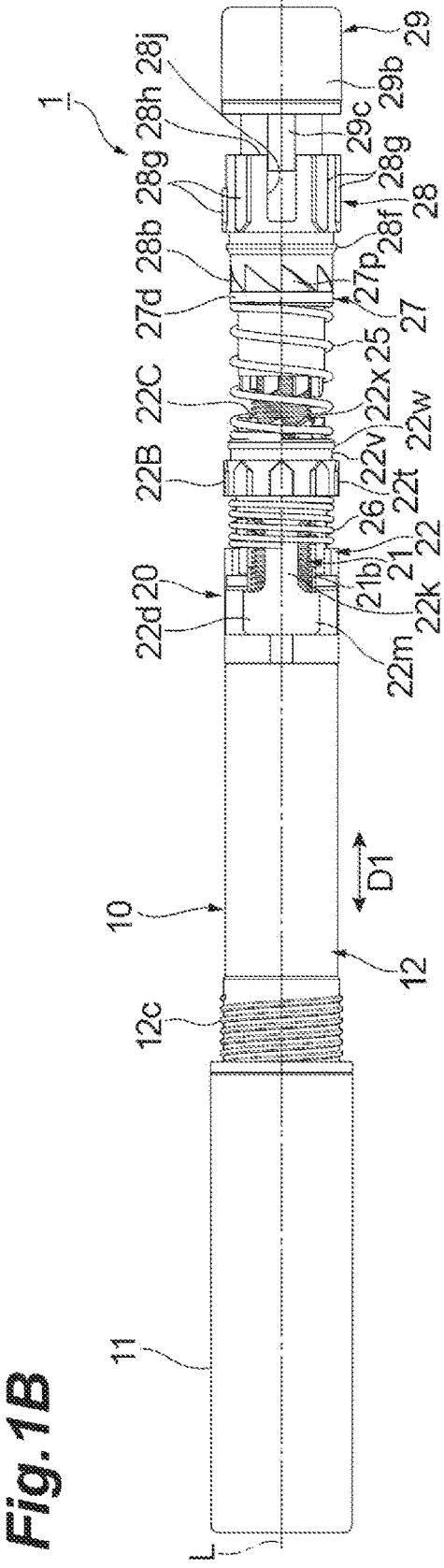
29d
29f
29g
D1
L
M

Fig.1A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25
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28b
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28g
28h
28j
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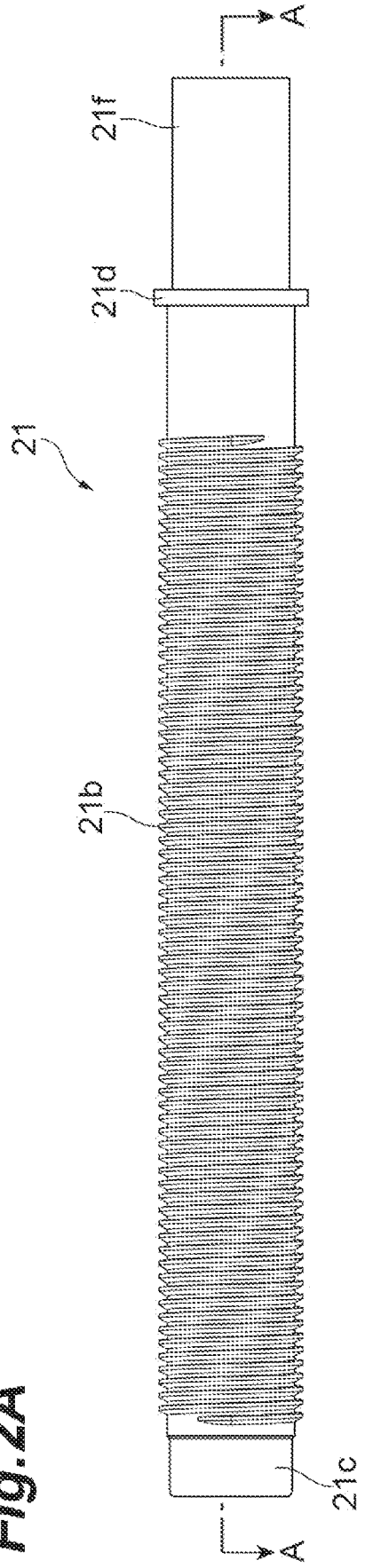
29b
29c
D1
L

Fig.1B



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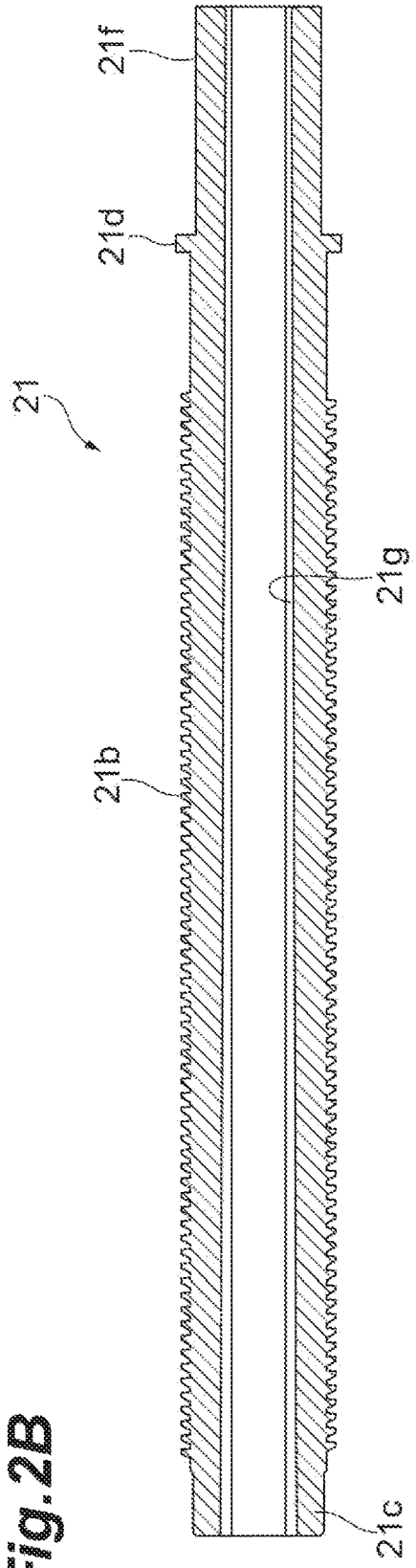
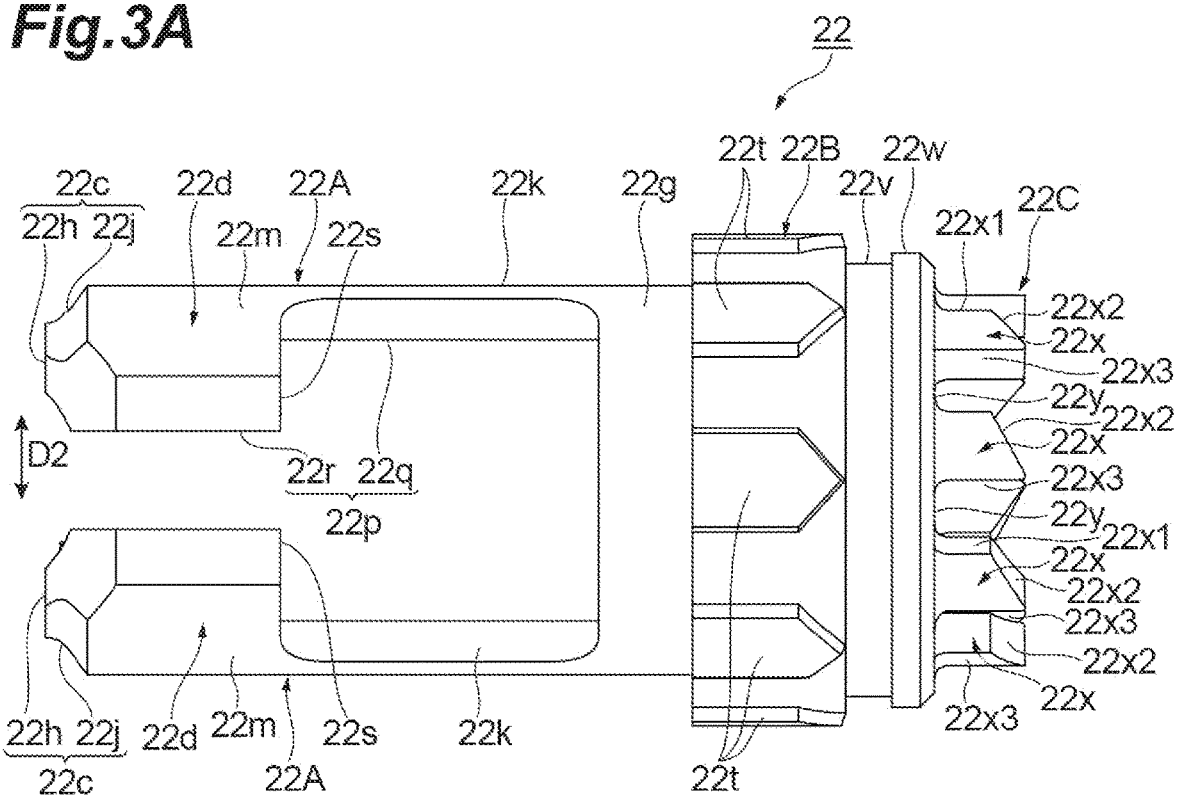


Fig.2B

Fig.3A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22C
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22x2
22x
22x3
22y
D2
22r
22q
22p
22h
22j
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22k
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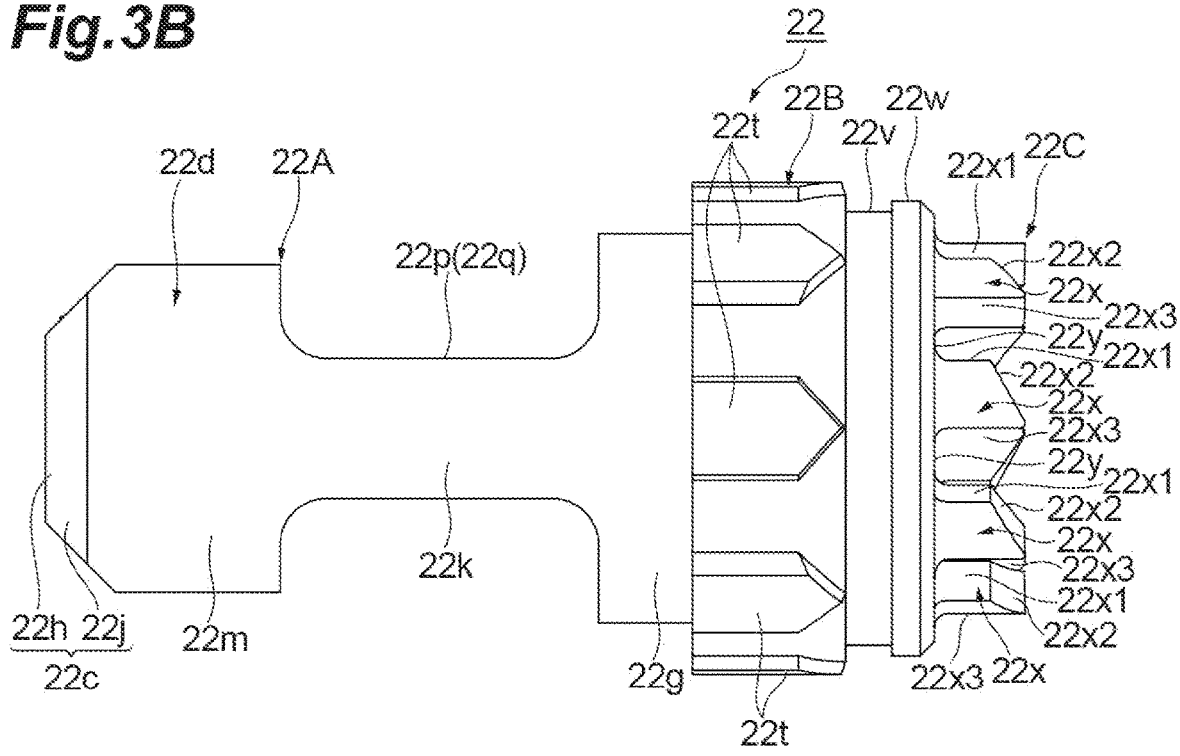
22x3
22x

Fig.3B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22d
22A
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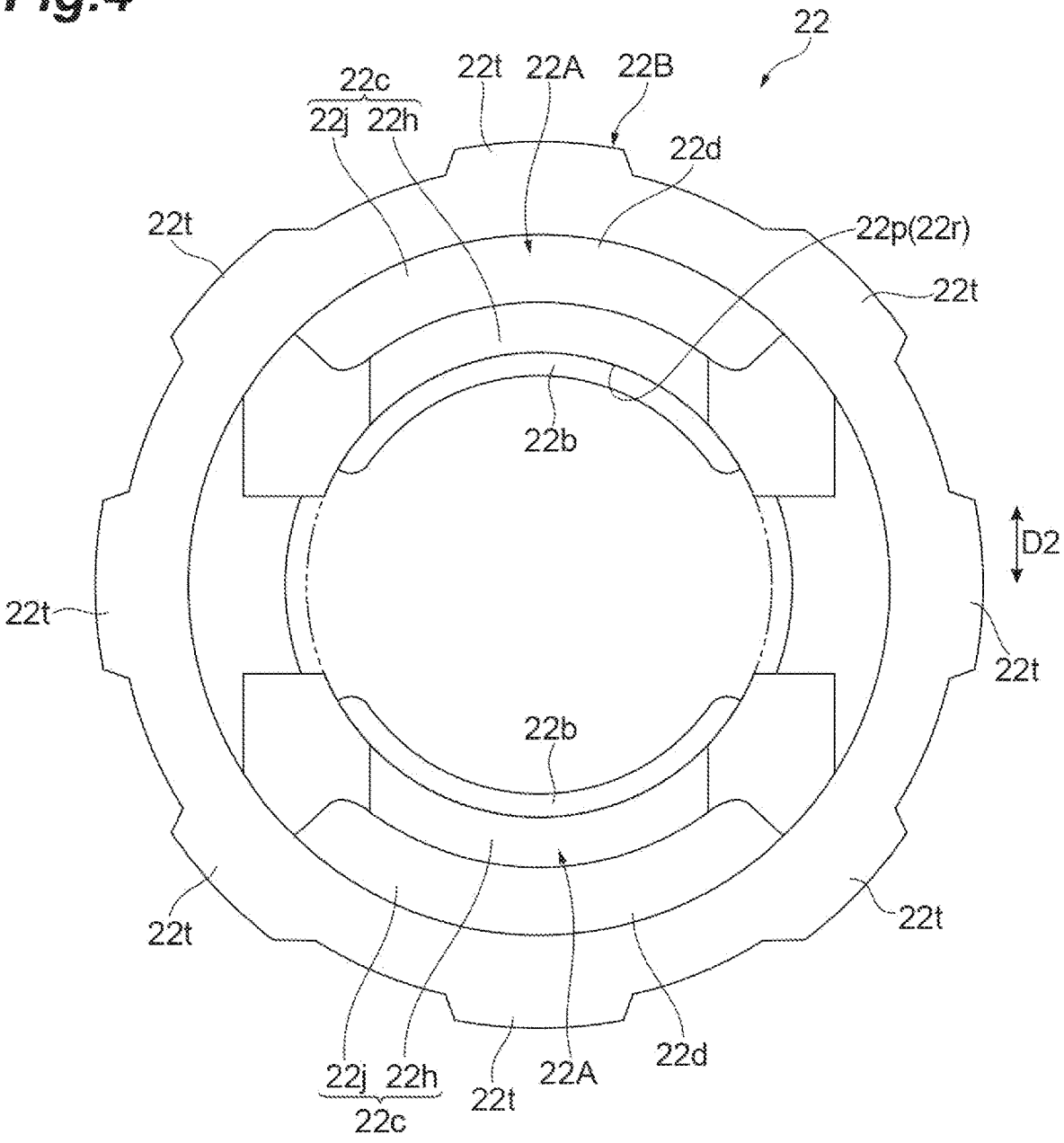
22m
22c
22g
22t
22x3
22x

Fig.4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22j 22h
22c
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22A
22d

Fig.5A

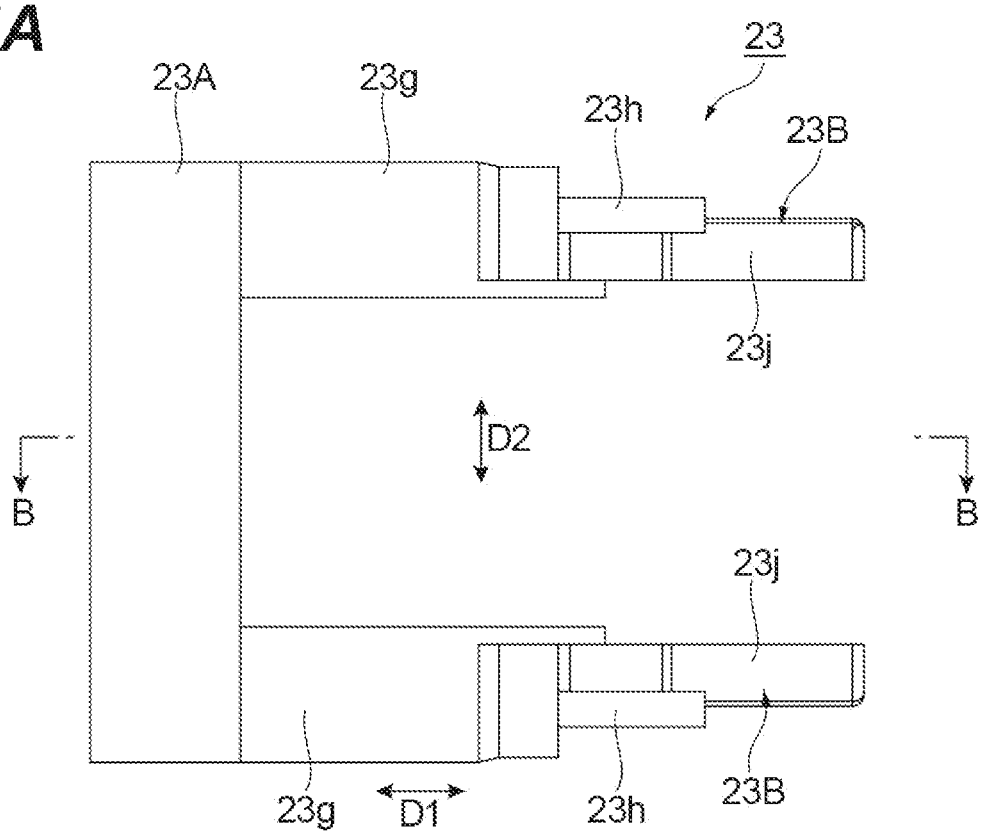
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Fig.5B

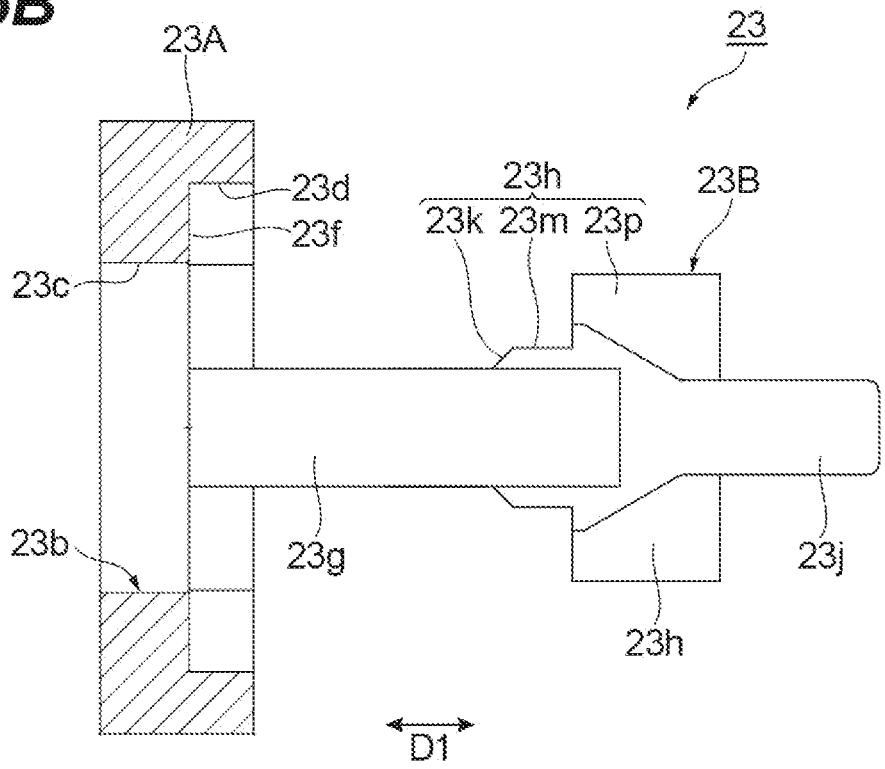
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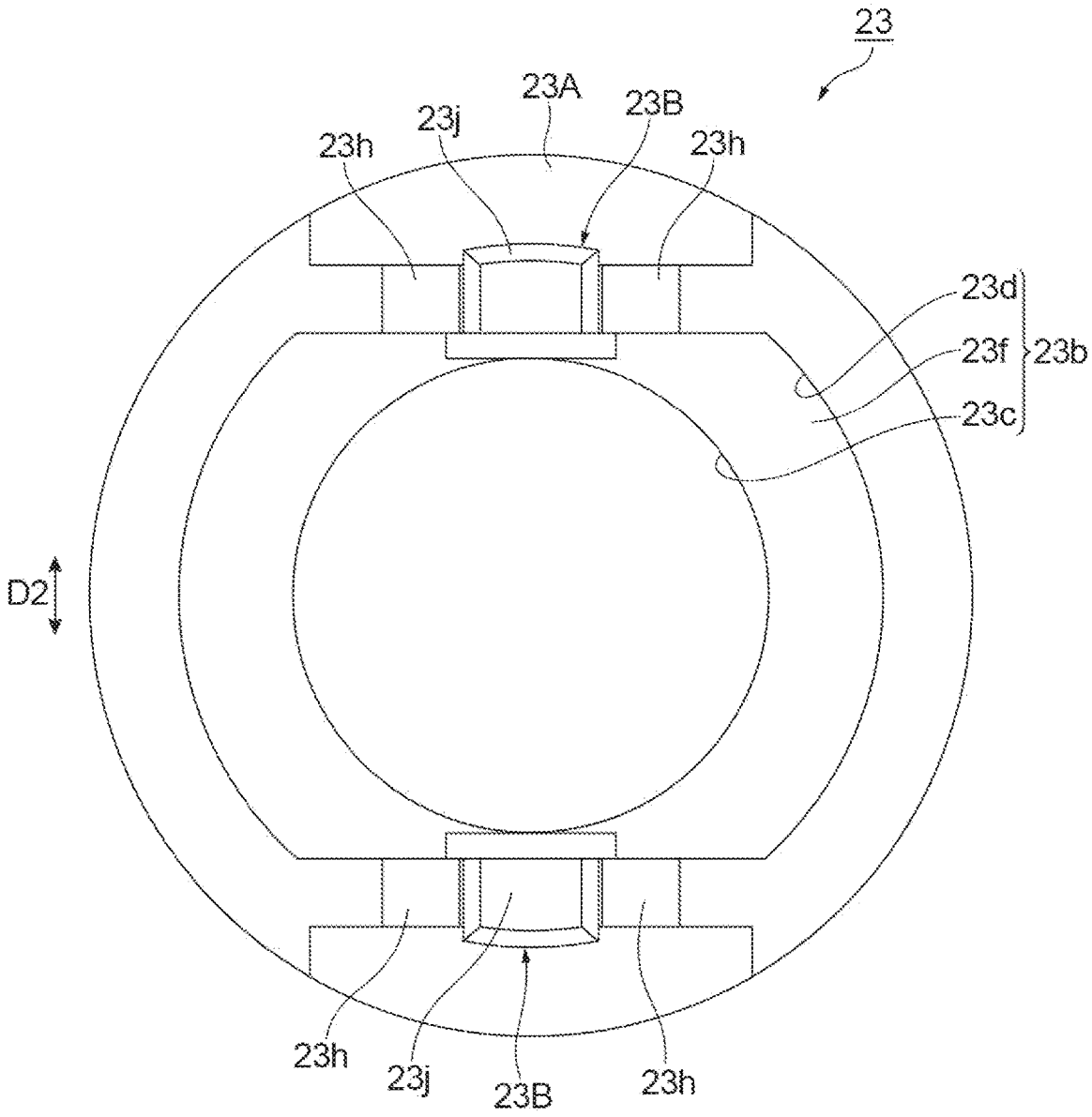
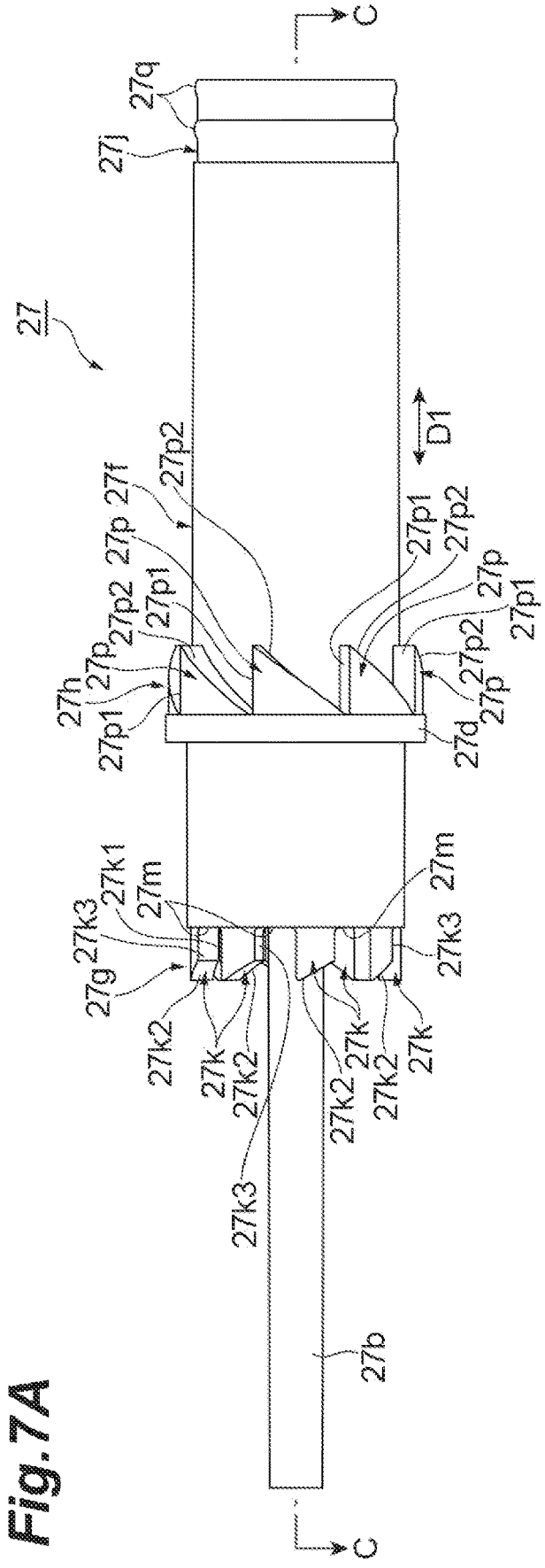
Fig.6

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27k2
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27b
C

Fig.7A

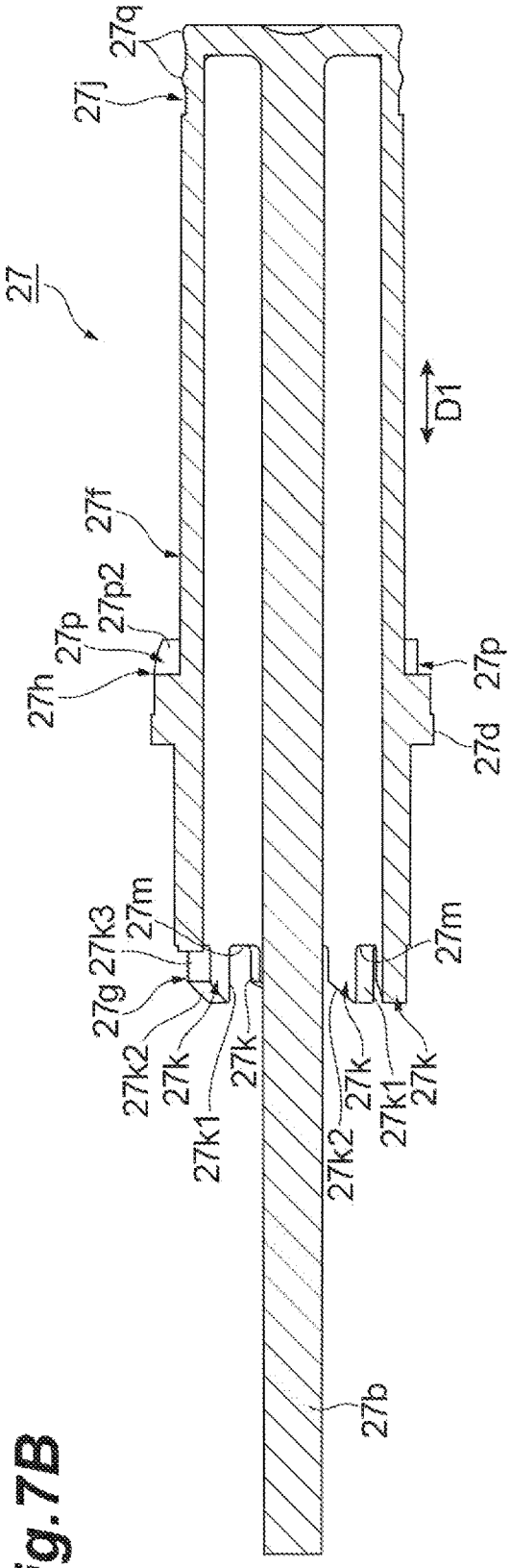
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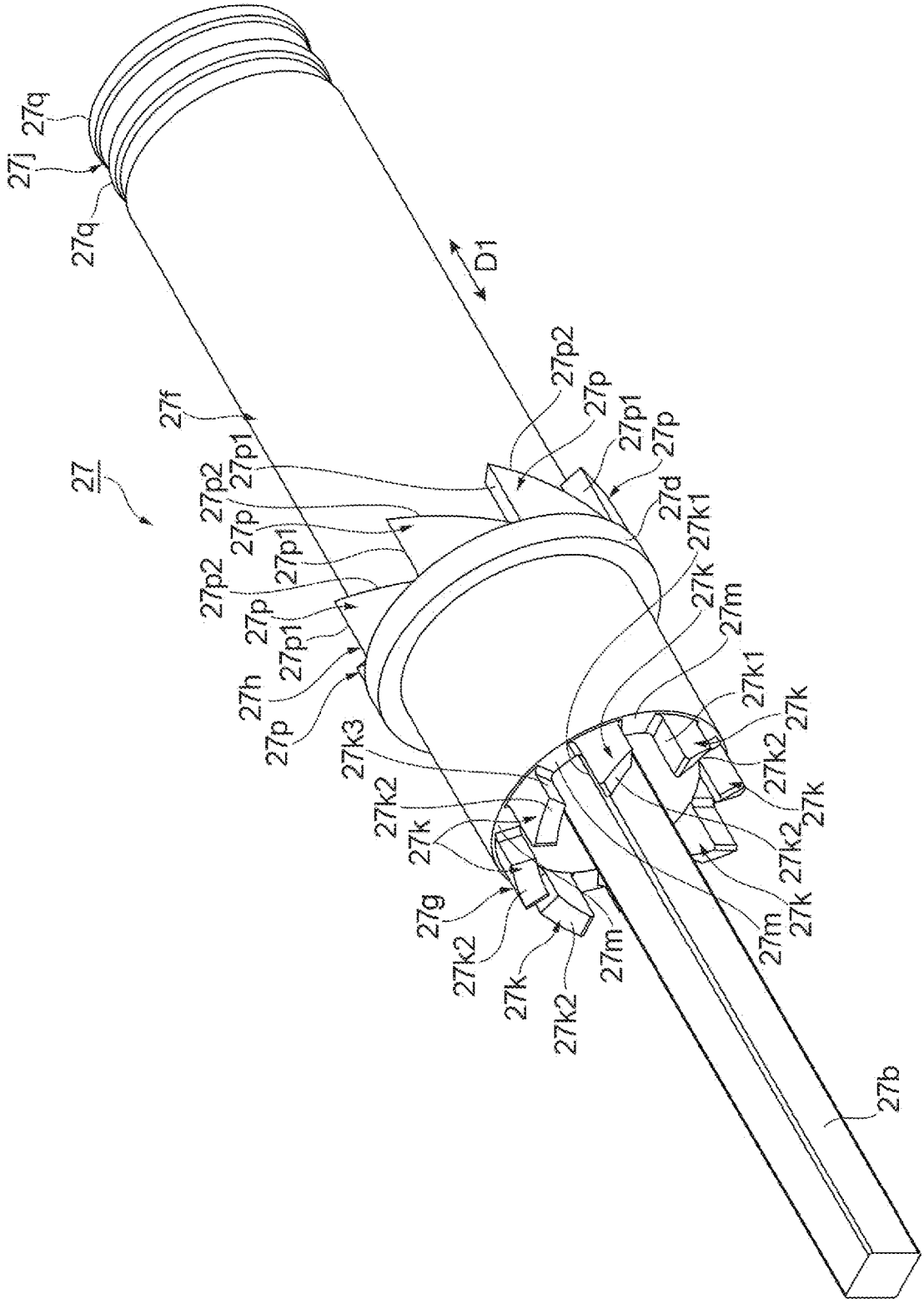
Fig.7B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27m
27k
27k2
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27k
27k2
27g
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27k
27k2
27m
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27p
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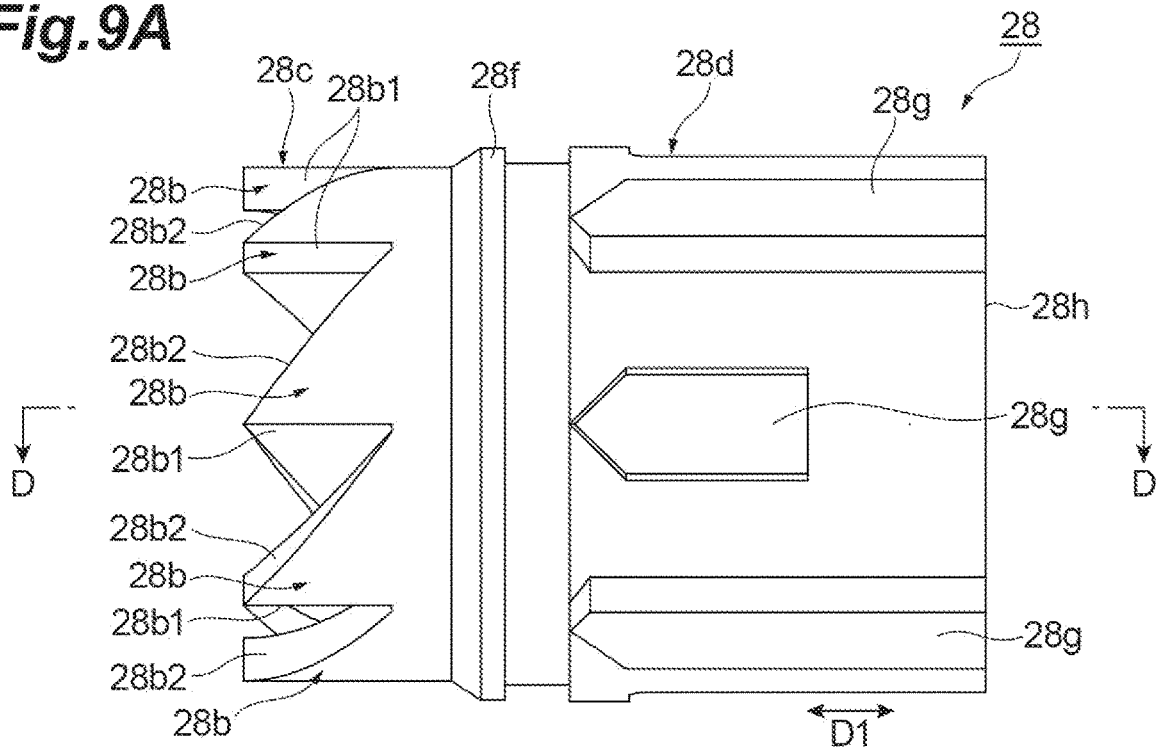
Fig.8

Fig.9A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28g
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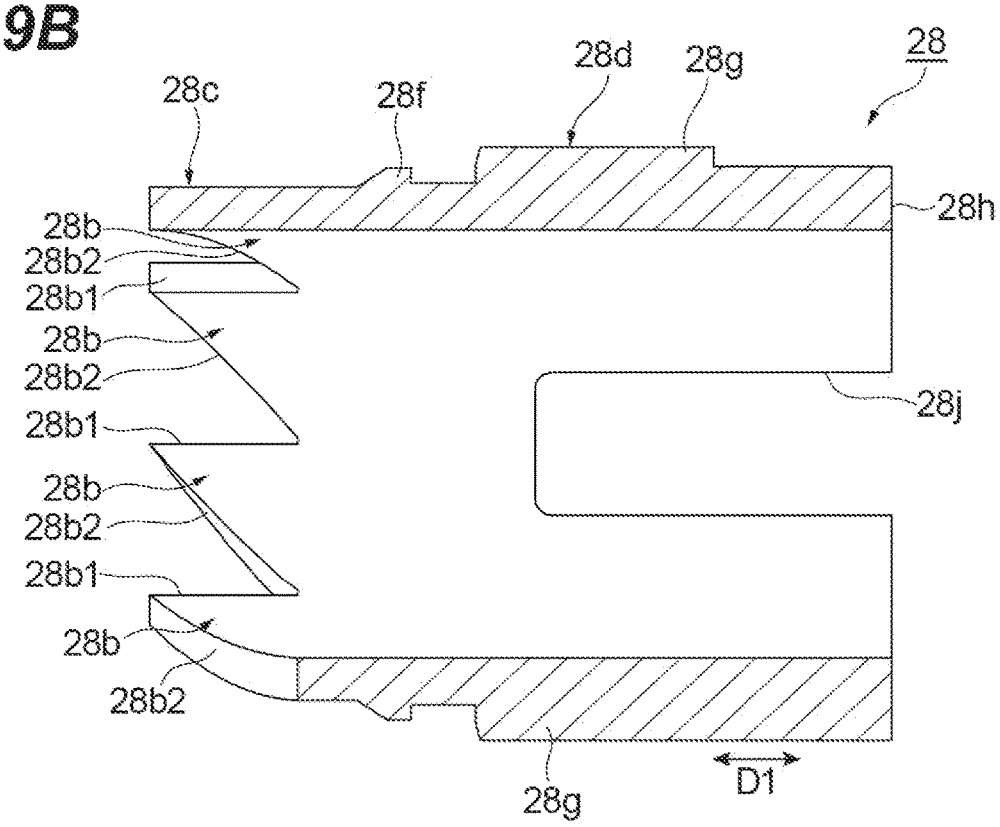
28b
D1

Fig.9B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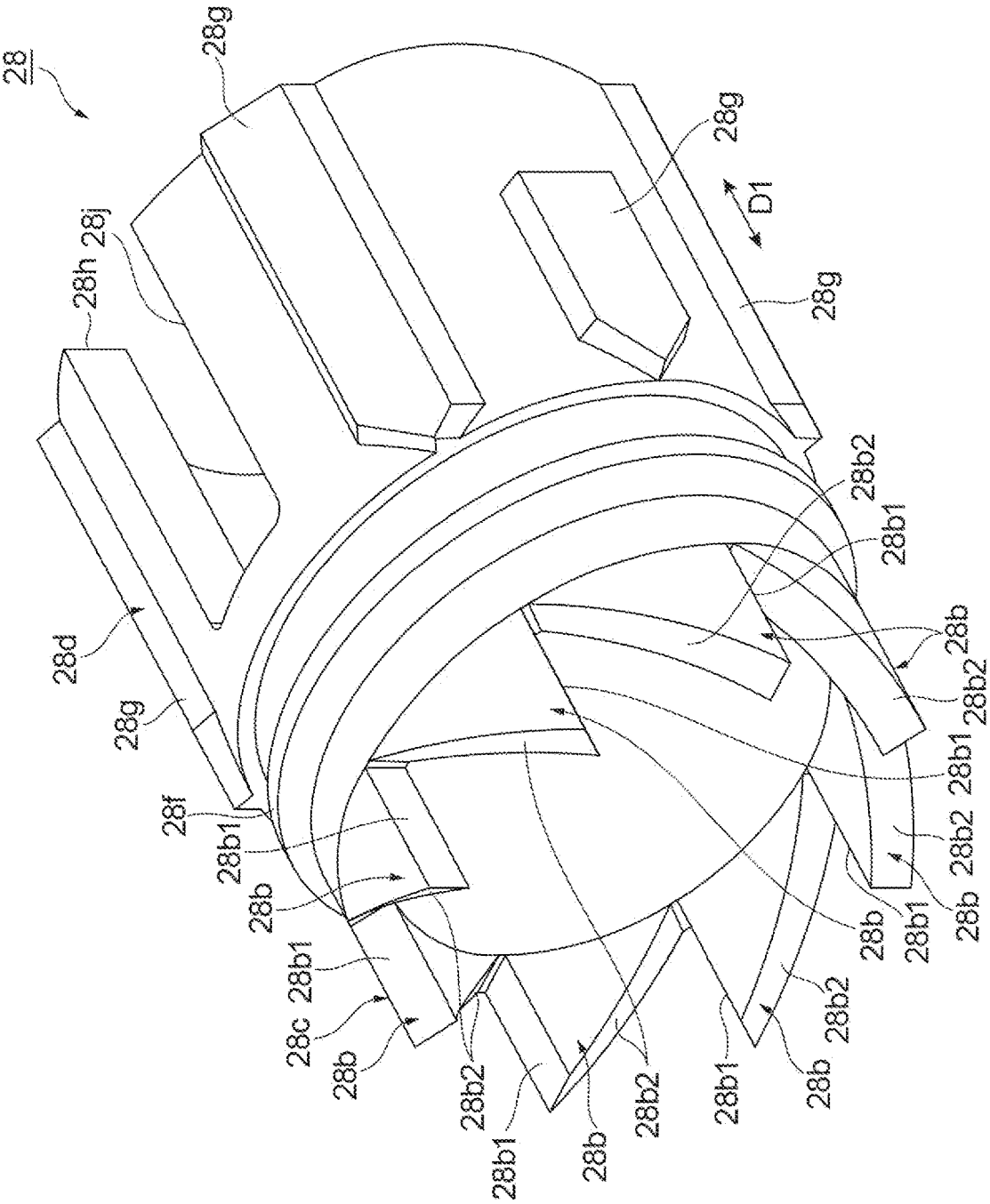
28g
D1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28b

Fig.10

Fig.11A

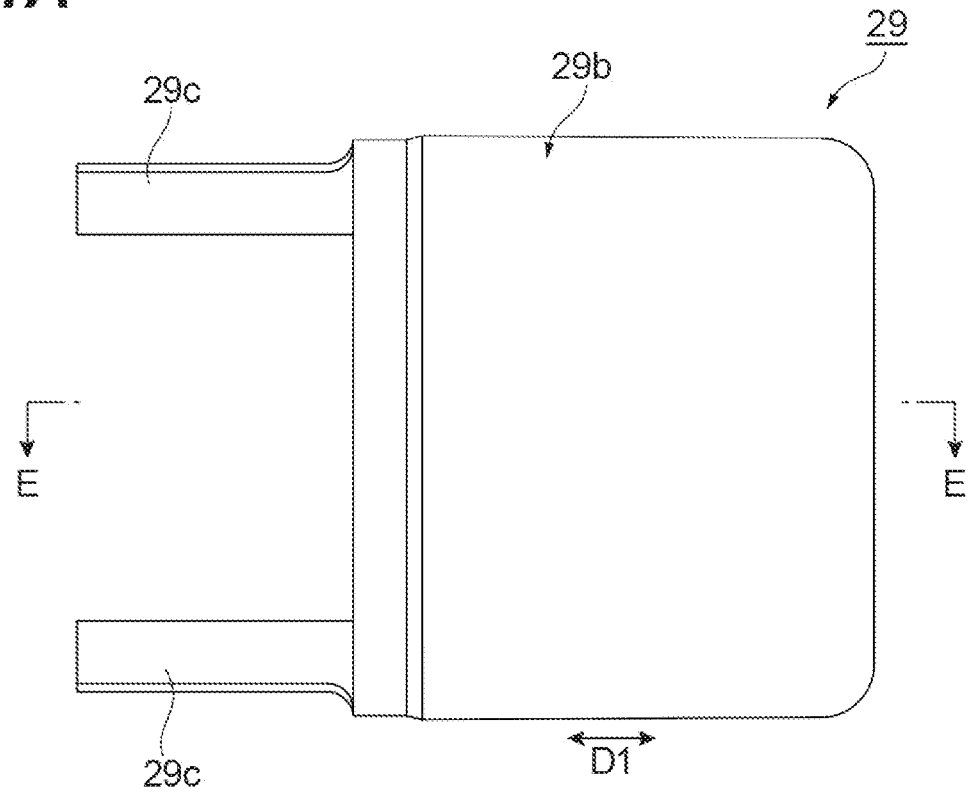
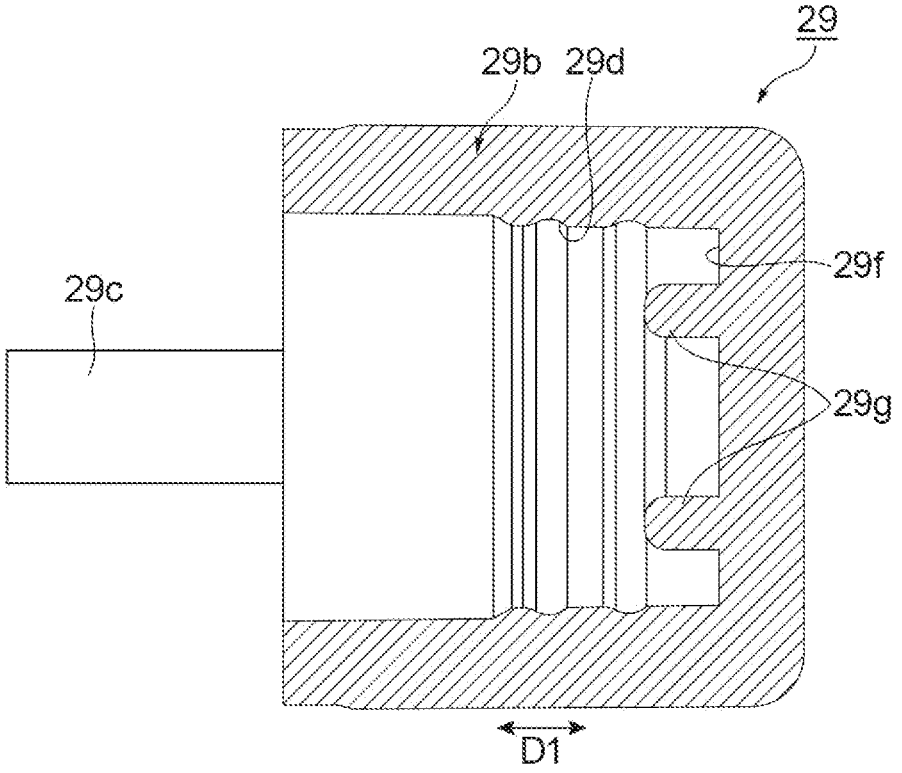


Fig.11B



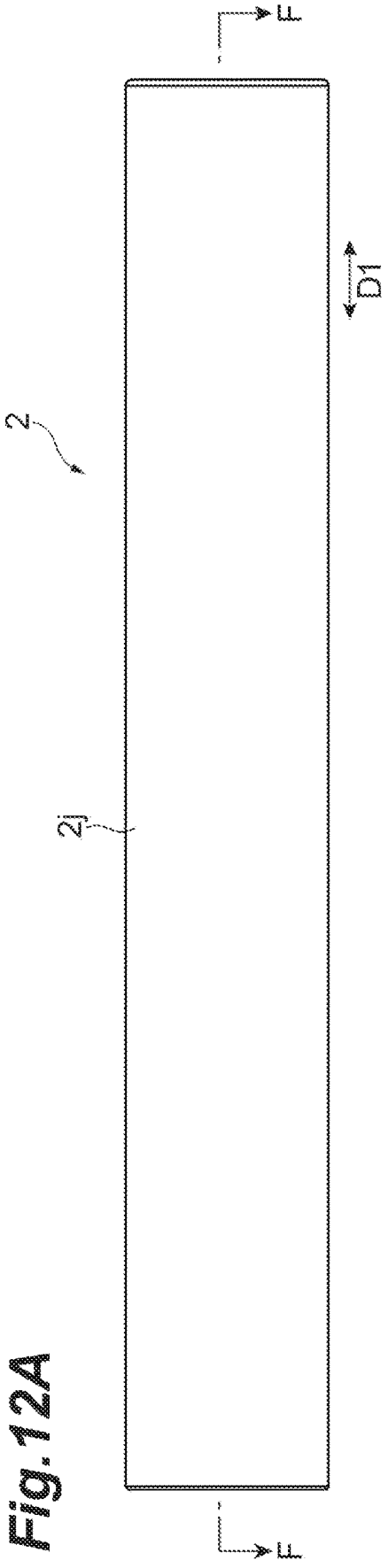


Fig.12A

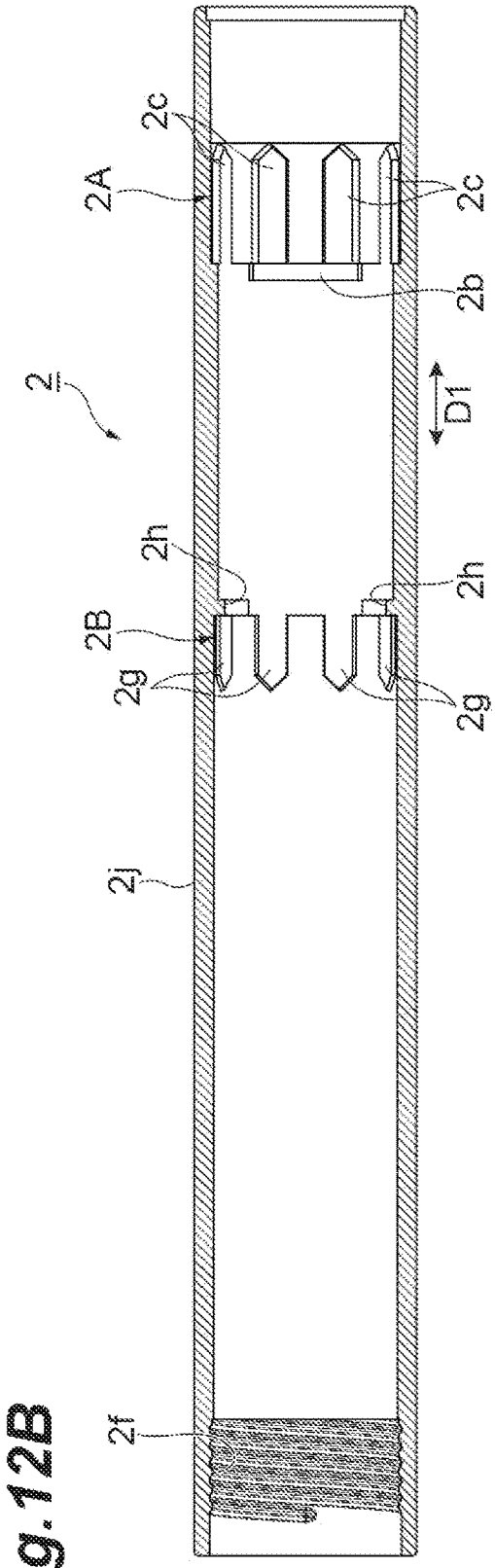
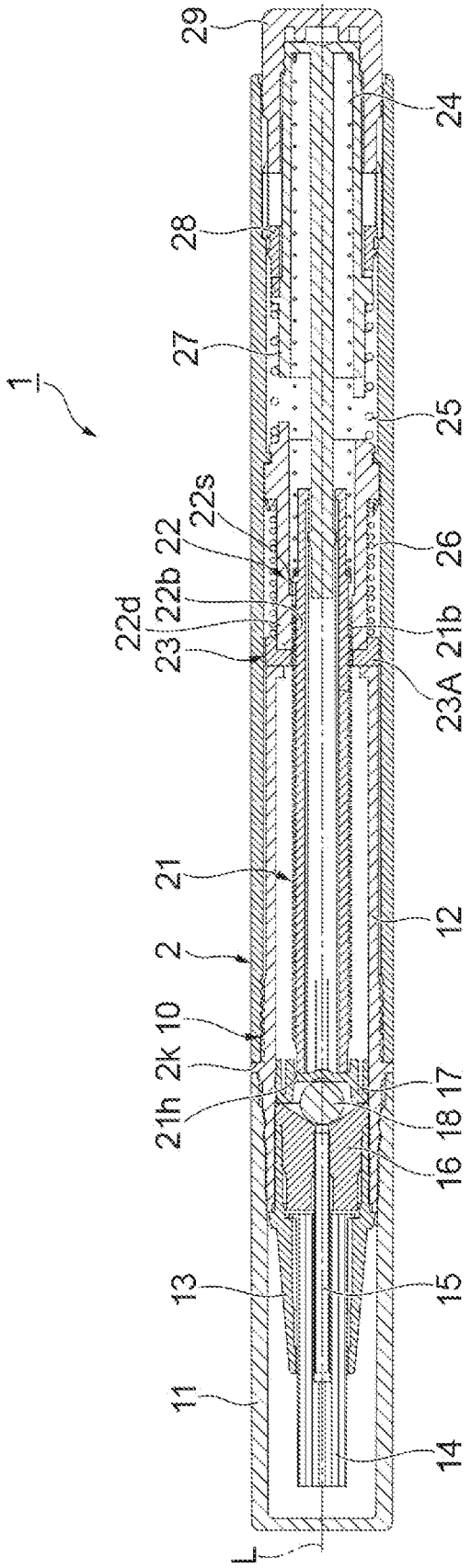


Fig.12B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23
23A
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12
2
10
2k
17
21h
18
16
13
15
11
14
L

Fig.13

CARTRIDGE-TYPE CONTENT EXTRUSION CONTAINER WITH SCREW LOCKING MEMBER

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of priority from Japanese Patent Application No. 2021-205166, filed Dec. 17, 2021, the entire contents of which are incorporated herein by reference.

BACKGROUND

Japanese Unexamined Patent Publication No. 2015-181862 discloses a cartridge-type content extrusion container including a cartridge accommodating a liquid cosmetic material, a main body tube to which the cartridge is attached, and an operation tube attached to a rear end of the main body tube so as to be relatively rotatable.

Inside the main body tube, a moving body having a male screw on an outer circumference, a female screw member having a female screw screwed with the male screw, and a screw release member releasing screwing between the male screw and the female screw are provided. The screw release member releases the screwing between the male screw and the female screw when the cartridge is removed from the main body tube, and the screw release member forces the screwing of the female screw with the male screw when the cartridge is attached to the main body tube.

When the main body tube or cartridge and the operation tube are relatively rotated by the user, the moving body moves forward. The cartridge has a cartridge tube in which an accommodation chamber for accommodating the liquid cosmetic material is formed inside, a coating body constituting a distal end of the cartridge, and a piston provided on the side opposite to the coating body in the accommodation chamber. The moving body abuts on the piston, and the moving body pushes the piston forward by the relative rotation operation described above, so that the liquid cosmetic material is extruded.

In the cartridge-type content extrusion container described above, the moving body advances and the liquid cosmetic material are extruded by the relative rotation operation of the main body tube or the cartridge and the operation tube. This type of cartridge-type content extrusion container requires operation with both hands. Specifically, it is necessary to hold the main body tube or the cartridge with one hand and hold the operation tube with the other hand to rotate the operation tube relative to each other.

SUMMARY

A cartridge-type content extrusion container according to the present disclosure is provided with: a cartridge unit containing a content (e.g., a material); a main body tube on which the cartridge unit is detachably attached; a screw tube provided inside the main body tube, having an elastic portion elastically deformed in a radial direction of the main body tube, and having a female screw (or female screw thread) formed on an inner surface of the elastic portion; a moving body having a male screw (or male screw thread) screwed into the female screw on an outer circumference and advancing by a screwing function of the female screw and the male screw to extrude the content; a screw adjusting member (or screw locking member) advancing when the cartridge unit is removed from the main body tube and expanding the elastic portion of the screw tube in the radial direction to release the screwing between the female screw and the male screw; a rotating member rotating synchronously with the moving body behind the screw tube and moving along the axial direction in which an axial line of the main body tube extends; a knock member (or knock actuator) provided on a rear side of the rotating member and that may be pressed on to extrude the content; and a plurality of first teeth provided in front of the rotating member inside the main body tube and aligned along a circumferential direction of the main body tube. The rotating member has a plurality of second teeth that are aligned along the circumferential direction and engaged with the first teeth. When the knock member is pressed, the rotating member advances to allow the second teeth to be engaged with the first teeth, and the rotating member and the moving body rotate with respect to the screw tube, so that the screwing function works to allow the moving body to advance.

This cartridge-type content extrusion container includes a cartridge unit accommodating the content and a main body tube to which the cartridge unit is attached, and the cartridge unit is removably attached to (e.g., attachable to and detachable from) the main body tube. Therefore, after the content are used up, it is preferable that the cartridge unit is removed from the main body tube and only the cartridge unit is discarded, so that the number of discarded components can be reduced. The cartridge-type content extrusion container has a screw tube having an elastic portion elastically deformed in the radial direction, a moving body having a male screw screwed into a female screw of the screw tube and advancing to extrude the content inside the cartridge unit, a rotating member rotating synchronously with the moving body, and a knock member that is pressable.

The rotating member has second teeth that are engaged with first teeth provided inside the main body tube. When the knock member is pressed, by allowing the rotating member to advance, the second teeth are engaged with the first teeth, and by allowing the rotating member and the moving body to rotate with respect to the screw tube, the moving body advances. Therefore, the rotating member and the moving body rotate with respect to the screw tube by the pressing operation of the knock member, and the moving body can advance to extrude the content with this rotation, so that the usability of the cartridge-type content extrusion container can be improved. That is, since the content can be extruded by holding the cartridge-type content extrusion container with one hand and pressing the knock member with one hand, so that the cartridge-type content extrusion container having high usability can be obtained. As described above, in this cartridge-type content extrusion container, the content can be extruded by knocking, so that the usability can be further improved.

The cartridge-type content extrusion container may have a first spring (or forward spring) that biases the moving body forward. In this case, when the cartridge unit is removed from the main body tube, the moving body can be moved forward by the first spring.

The cartridge-type content extrusion container may be provided between the screw tube and the rotating member and may have a second spring (or rearward spring) that moves the rotating member and the knock member backward when the pressing on the knock member is released. In this case, when the pressing on the knock member is released, the rotating member and the knock member can be moved backward by the second spring.

The cartridge-type content extrusion container may include a ratchet member provided between the rotating

member and the knock member and having a plurality of third teeth aligned along the circumferential direction. The rotating member may have a plurality of fourth teeth that are aligned along the circumferential direction and engaged with the third teeth. When the pressing on the knock member is released, the rotating member moves backward to allow the fourth teeth to be engaged with the third teeth, and the rotating member and the moving body rotate with respect to the ratchet member, so that the screwing function may work to allow the moving body to advance. In this case, the moving body can be advanced to extrude the content not only when the knock member is pressed but also when the pressing on the knock member is released. Therefore, the usability of the cartridge-type content extrusion container can be further improved.

The cartridge-type content extrusion container may include a third spring (or release spring) that is provided between the screw adjusting member and the screw tube and advances the screw adjusting member when the cartridge unit is removed from the main body tube. In this case, when the cartridge unit is removed from the main body tube, by advancing the screw adjusting member by the third spring, the elastic portion can be expanded in the radial direction to easily release the screwing between the female screw and the male screw.

When the cartridge unit is attached to the main body tube, the screw adjusting member may be pushed by the cartridge unit to move backward and may narrow the elastic portion of the screw tube in the radial direction to screw the female screw into the male screw. In this case, since the screw adjusting member moves backward to screw the female screw into the male screw when the cartridge unit is attached, the screwing of the female screw with the male screw can be easily performed.

The cartridge unit may have an accommodation chamber accommodating the content and a piston provided in the accommodation chamber. The moving body may extrude the content through the piston. In this case, when the content is a liquid content, a leakage of the liquid content can be suppressed by the piston. Then, the liquid content can be extruded through the piston.

According to the present disclosure, usability can be further improved.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1**A is a cross-sectional view illustrating a cartridge-type content extrusion container according to an example, including a main body tube.

FIG. **1**B is a side view illustrating a state in which the main body tube of the cartridge-type content extrusion container according to the example is removed.

FIG. **2**A is a side view illustrating a moving body of the cartridge-type content extrusion container of FIG. **1**A.

FIG. **2**B is a cross-sectional view taken along a line A-A of FIG. **2**A.

FIG. **3**A is a side view illustrating a screw tube of the cartridge-type content extrusion container of FIG. **1**A.

FIG. **3**B is a side view of the screw tube viewed from a direction different from that of FIG. **3**A.

FIG. **4** is a front view illustrating the screw tube of FIG. **3**A.

FIG. **5**A is a side view illustrating a screw adjusting member of the cartridge-type content extrusion container of FIG. **1**A.

FIG. **5**B is a cross-sectional view taken along line B-B of FIG. **5**A.

FIG. **6** is a rear view of the screw adjusting member of FIG. **5**A as viewed from a rear.

FIG. **7**A is a side view illustrating a rotating member of the cartridge-type content extrusion container of FIG. **1**A.

FIG. **7**B is a cross-sectional view taken along a line C-C of FIG. **7**A.

FIG. **8** is a perspective view illustrating the rotating member of FIG. **7**A.

FIG. **9**A is a side view illustrating a ratchet member of the cartridge-type content extrusion container of FIG. **1**A.

FIG. **9**B is a cross-sectional view taken along a line D-D of FIG. **9**A.

FIG. **10** is a perspective view illustrating the ratchet member of FIG. **9**A.

FIG. **11**A is a side view illustrating a knock member of the cartridge-type content extrusion container of FIG. **1**A.

FIG. **11**B is a cross-sectional view taken along a line E-E of FIG. **11**A.

FIG. **12**A is a side view illustrating the main body tube of the cartridge-type content extrusion container of FIG. **1**A.

FIG. **12**B is a cross-sectional view taken along line F-F of FIG. **12**A.

FIG. **13** is a cross-sectional view of a cartridge-type content extrusion container illustrating a state in which a content of the cartridge-type content extrusion container of FIG. **1**A is used up.

DETAILED DESCRIPTION

In the following description, with reference to the drawings, the same reference numbers are assigned to the same components or to similar components having the same function, and overlapping description is omitted.

FIG. **1**A is a cross-sectional view of a cartridge-type content extrusion container **1** according to an example. FIG. **1**B is a side view illustrating a state in which a main body tube **2** of the cartridge-type content extrusion container **1** is removed. As illustrated in FIGS. **1**A and **1**B, the cartridge-type content extrusion container **1** is a container that extrudes a content (e.g., a material) M contained inside by a knock operation of a user. The content M is, for example, a liquid content.

As an example, the content M is a liquid cosmetic material. In this case, the content M is an eyeliner or a lip liner. The cartridge-type content extrusion container **1** is a container used when the content M is coated to a to-be coated portion such as skin. The cartridge-type content extrusion container **1** exhibits a round bar shape (stick shape).

The cartridge-type content extrusion container **1** extends along an axial direction D**1** in which an axial line L of the cartridge-type content extrusion container **1** extends. The cartridge-type content extrusion container **1** includes a cartridge unit (e.g., a cartridge) **10** containing the content M and a knock mechanism unit **20** for extruding the content M contained in the cartridge unit **10**.

The cartridge unit **10** is removably attached (e.g., attachable to and detachable from) the knock mechanism unit **20**. The cartridge unit **10** can be removed from the knock mechanism unit **20**, for example, after the content M has been used up. Further, a new cartridge unit **10** can be attached to the knock mechanism unit **20**. In the present disclosure, as viewed from the knock mechanism unit **20**, the direction in which the cartridge unit **10** is provided and the direction in which the content M is urged to be extruded are described as "front", "front side", or "forward", and the

direction in which the knock mechanism unit **20** is provided as viewed from the cartridge unit **10** is described as "rear", "rear side", or "backward".

First, the cartridge unit **10** will be described. The cartridge unit **10** has a cap **11**, a cartridge tube **12** to which the cap **11** is attached, a sleeve **13** attached to a front side of the cartridge tube **12**, and a coating body **14** provided inside the sleeve **13** and protruding forward from the sleeve **13**. Further, the cartridge unit **10** has a pipe material **15** inserted into the coating body **14** and a pipe holder **16** that holds the pipe material **15** on the rear side of the pipe material **15**.

The cap **11** exhibits a bottomed cylinder shape. The cap **11** may be made of polypropylene (PP), for example. The cap **11** has an annular convex portion **11***b* on the inner surface, and the cartridge tube **12** has a convex portion **12***b* on the outer surface with which the annular convex portion **11***b* is engaged in the axial direction D**1**. The cartridge tube **12** protrudes backward from the cap **11** in a state where the convex portion **12***b* is engaged with the annular convex portion **11***b* of the cap **11** in the axial direction D**1**.

The cartridge tube **12** may be made of PP, for example. The cartridge tube **12** defines an accommodation chamber **12***f* in which the content M is accommodated. The cartridge unit **10** has a piston **17** located on the rear side of the accommodation chamber **12***f*. The piston **17** may be formed of an elastic body. The space in front of the piston **17** inside the cartridge tube **12** is set as the accommodation chamber **12***f*. The piston **17** is for extruding the content M and is slidable in the accommodation chamber **12***f*.

The cartridge tube **12** has a male screw portion **12***c*. The cartridge unit **10** is attached to the knock mechanism unit **20** by screwing the male screw portion **12***c* into the main body tube **2**. It is noted that the structure of attaching the cartridge unit **10** to the knock mechanism unit **20** is not limited to the above-mentioned screwing. For example, instead of the above-mentioned screwing, there may be a structure in which a protrusion may be provided on the inner surface of each of the cartridge unit **10** and the knock mechanism unit **20**, and the protrusion of the cartridge unit **10** may be engaged with the protrusion of the knock mechanism unit **20**.

The sleeve **13** may be made of PP, for example. The sleeve **13** has an insertion portion **13***b* inserted into an opening **12***d* located at the front end of the cartridge tube **12** and a distal end portion **13***c* located on a front side of the insertion portion **13***b*. The insertion portion **13***b* exhibits a tubular shape, and the pipe holder **16** is inserted inside the insertion portion **13***b*. The distal end portion **13***c* is a portion exposed to the outside when the cartridge-type content extrusion container **1** is used. The distal end portion **13***c* has a tapered surface **13***d* that is inclined so as to decrease in diameter toward the front side.

The coating body **14** may be made of polybutylene terephthalate (PBT), for example. The coating body **14** is, for example, a writing brush. The coating body **14** is attached to the sleeve **13** in a state of surrounding the front portion of the pipe material **15**. The coating body **14** is bundled inside the sleeve **13**, and the front portion of the coating body **14** protrudes forward from the sleeve **13**. The content M is supplied to the coating body **14** from the accommodation chamber **12***f* through the pipe material **15**.

The pipe material **15** may be made of steel use stainless (SUS), for example. The pipe material **15** extends in the axial direction D**1** inside the coating body **14** and inside the pipe holder **16**. The pipe material **15** has an opening **15***b* located on the front side, and the opening **15***b* is an opening for supplying the content M extruded by the piston **17** to the coating body **14**.

The pipe holder **16** may be made of PP, for example. The pipe holder **16** is engaged with the cartridge tube **12** in the axial direction D**1** inside the cartridge tube **12**. The pipe holder **16** has a through-hole **16***b* penetrating the pipe holder **16** in the axial direction D**1**, and the pipe material **15** is inserted into the through-hole **16***b*. The through-hole **16***b* communicates with the accommodation chamber **12***f*, and the content M of the accommodation chamber **12***f* is supplied to the coating body **14** through the pipe material **15** inserted into the through-hole **16***b*.

The cartridge unit **10** has, for example, an agitator **18** that stirs the content M. The agitator **18** together with the content M is accommodated in the accommodation chamber **12***f* of the cartridge tube **12**. The agitator **18** is may be made of SUS, for example. The agitator **18** exhibits a spherical shape. When the cartridge-type content extrusion container **1** is moved by the user, the agitator **18** moves in the accommodation chamber **12***f* to stir the content M.

Next, the knock mechanism unit **20** will be described. The knock mechanism unit **20** includes, for example, the main body tube **2**, a moving body **21**, a screw tube **22**, a screw adjusting member (or screw locking member) **23**, a first spring (or forward spring) **24**, a second spring (or rearward spring) **25**, a third spring (or release spring) **26**, a rotating member **27**, a ratchet member **28**, and a knock member (or knock actuator) **29**.

FIG. **2**A is a side view illustrating the moving body **21**. FIG. **2**B is a cross-sectional view taken along a line A-A of FIG. **2**A. As illustrated in FIGS. **1**A, **1**B, **2**A, and **2**B, the moving body **21** exhibits a tubular shape. The moving body **21** may be made of PBT or polyacetal (POM), for example. The moving body **21** is coupled with the piston **17** to push the piston **17** forward, so as to extrude the content M. The moving body **21** has a male screw (or male screw thread) **21***b* formed on the outer periphery, a pressing portion **21***c* pushing the piston **17** in front of the male screw **21***b*, a flange portion **21***d* located behind the male screw **21***b*, and a tubular portion **21***f* extending backward from the flange portion **21***d*.

The male screw **21***b* extends along the axial direction D**1** in the region including the center of the axial direction D**1** of the moving body **21**. The pressing portion **21***c* is located in front of the male screw **21***b* and presses the piston **17** from the rear as the moving body **21** advances. The flange portion **21***d* has an enlarged diameter behind the male screw **21***b*. The first spring **24** abuts on the surface of the flange portion **21***d* facing the rear side. The tubular portion **21***f* is a portion that is inserted into the inside of the first spring **24**.

The moving body **21** is inserted inside the screw tube **22**, the screw adjusting member **23**, the first spring **24**, the second spring **25**, the third spring **26**, and the rotating member **27**. Further, the moving body **21** has a tubular hole **21***g* into which a bar-shaped portion **27***b* of the rotating member **27** is inserted, and the tubular hole **21***g* penetrates the moving body **21** in the axial direction D**1**. The cross-sectional shape when the tubular hole **21***g* is cut in a plane perpendicular to the axial direction D**1** is a non-circular shape (a square shape as an example).

FIG. **3**A is a side view illustrating the screw tube **22**. FIG. **3**B is a side view illustrating the screw tube **22** as viewed from a direction different from that of FIG. **3**A. FIG. **4** is a front view of the screw tube **22** when the screw tube **22** is viewed from the front. As illustrated in FIGS. **1**A, **1**B, **3**A, **3**B, and **4**, the screw tube **22** has an arm portion **22**A on which a female screw (or female screw thread) **22***b* screwed

with the male screw **21***b* of the moving body **21** is formed, a first engaging portion **22**B engaged with the main body tube **2** on the rear side of the arm portion **22**A, and a second engaging portion **22**C engaged with the rotating member **27** behind the first engaging portion **22**B. The female screw thread **22***b* and the male screw thread **21***b* form a screw coupling to operatively engage the moving body **21** with the screw tube **22**.

The screw tube **22** may be made of PBT, for example. The screw tube **22** has, for example, a pair of the arm portions **22**A aligned along a radial direction D**2** of the screw tube **22**. The arm portion **22**A has the female screw **22***b* formed on the inner peripheral surface of the arm portion **22**A facing inward in the radial direction D**2**, an abutting portion **22***c* on which the screw adjusting member **23** abuts, an elastic portion **22***d* elastically deformed along the radial direction D**2** and a base portion **22***g* interposed between the elastic portion **22***d* and the first engaging portion **22**B.

The abutting portion **22***c* has a front end face **22***h* constituting the front end of the screw tube **22** and an inclined surface **22***j* extending on the outer side and the rear side in the radial direction D**2** from the front end face **22***h*. The inclined surface **22***j* is, for example, a curved surface that curves on the outer side and the rear side in the radial direction D**2**. When the screw adjusting member **23** moves backward with the attaching of the cartridge unit **10** to the main body tube **2**, a portion of the screw adjusting member **23** rides over the inclined surface **22***j* to be located outside the elastic portion **22***d* in the radial direction D**2**.

The elastic portion **22***d* has a narrow portion **22***k* extending forward from the base portion **22***g* and a wide portion **22***m* extending in the circumferential direction of the screw tube **22** from the front end of the narrow portion **22***k*. The wide portion **22***m* is provided between the abutting portion **22***c* and the narrow portion **22***k*. A concave portion **22***p* into which a portion of the screw adjusting member **23** is inserted is formed between the pair of elastic portions **22***d* aligned along the radial direction D**2**.

The concave portion **22***p* includes a first concave portion **22***q* located between a pair of the narrow portions **22***k* aligned along the radial direction D**2** and a second concave portion **22***r* located between a pair of the wide portions **22***m* aligned along the radial direction D**2**. The length of the first concave portion **22***q* in the circumferential direction of the screw tube **22** is greater than the length of the second concave portion **22***r* in the circumferential direction of the screw tube **22**.

In a state where the cartridge unit **10** is attached to the main body tube **2**, a portion of the screw adjusting member **23** is inserted into the concave portion **22***p*. An abutting portion **22***s* on which a portion of the screw adjusting member **23** abuts is formed between the first concave portion **22***q* and the second concave portion **22***r*. When the cartridge unit **10** is removed from the main body tube **2**, the screw adjusting member **23** advances, and the advancing screw adjusting member **23** abuts on the abutting portion **22***s*, so that the elastic portion **22***d* (wide portion **22***m*) is expanded in the radial direction D**2**.

The first engaging portion **22**B has a plurality of convex portions **22***t* formed so as to be aligned along the circumferential direction on the outer peripheral surface of the screw tube **22**, an annular concave portion **22***v* located behind the convex portion **22***t*, and an annular convex portion **22***w* located behind the annular concave portion **22***v*. The convex portion **22***t* is engaged with the inner surface of the main body tube **2** in the rotational direction, and the annular concave portion **22***v* and the annular convex portion **22***w* are engaged with the inner surface of the main body tube **2** in the axial direction D**1**. Therefore, the screw tube **22** is engaged with the main body tube **2** so as to be movable in the rotational direction and immovable in the axial direction.

The second engaging portion **22**C has a plurality of first teeth **22***x* aligned along the circumferential direction of the screw tube **22** and concave portions **22***y* located between respective pairs of the first teeth **22***x* that are adjacent to each other along the circumferential direction. As an example, the second engaging portion **22**C has eight first teeth **22***x* and eight concave portions **22***y*. The first teeth **22***x* are provided so as to rotate the rotating member **27** with respect to the screw tube **22**.

Each of first teeth **22***x* has a first surface **22***x***1** extending in the axial direction D**1**, an inclined surface **22***x***2** extending backward from the rear end of the first surface **22***x***1** and on one side of the screw tube **22** in the circumferential direction, and a second surface **22***x***3** extending forward from the rear end of the inclined surface **22***x***2**. The length of the second surface **22***x***3** in the axial direction D**1** is greater than the length of the first surface **22***x***1** in the axial direction D**1**.

FIG. **5**A is a side view illustrating the screw adjusting member **23**. FIG. **5**B is a cross-sectional view taken along a line B-B of FIG. **5**A. FIG. **6** is a rear view of the screw adjusting member **23** as viewed from the rear. As illustrated in FIGS. **1**A, **1**B, **5**A, **5**B, and **6**, the screw adjusting member **23** has an annular portion **23**A facing the front side and an arm portion **23**B extending backward from the annular portion **23**A. The screw adjusting member **23** adjusts the screwing of the female screw **22***b* of the screw tube **22** with the male screw **21***b* of the moving body **21**. The screw adjusting member **23** may be made of PBT, for example.

The annular portion **23**A is a portion which rides on the screw tube **22** to reduce the diameter of the screw tube **22** and screws the female screw **22***b* with the male screw **21***b* when the screw adjusting member **23** moves backward. For example, the annular portion **23**A accommodates the elastic portion **22***d* of the screw tube **22** to limit the deformation of the elastic portion **22***d* in the radial direction. The annular portion **23**A has a through-hole **23***b* penetrating in the axial direction D**1**. The through-hole **23***b* is defined by a first inner peripheral surface **23***c*, a second inner peripheral surface **23***d* having an inner diameter greater than that of the first inner peripheral surface **23***c*, and a rear surface **23***f* extending along the radial direction of the annular portion **23**A from a front end of the second inner peripheral surface **23***d* to the rear end of the first inner peripheral surface **23***c*. The second inner peripheral surface **23***d* is located behind the first inner peripheral surface **23***c*.

The screw adjusting member **23** has a pair of the arm portions **23**B aligned along the radial direction D**2**. The arm portion **23**B moves along the axial direction D**1** in a state of being inserted into the concave portion **22***p* (refer to FIG. **3**A) of the screw tube **22**. The arm portion **23**B is a portion that expands the diameter of the elastic portion **22***d* when the screw adjusting member **23** advances to release the screwing of the female screw **22***b* with the male screw **21***b*.

The arm portion **23**B has a base portion **23***g* extending backward from the annular portion **23**A, a projecting portion **23***h* projecting on both sides in the circumferential direction of the annular portion **23**A, at the rear end of the base portion **23***g*, and an extending portion **23***j* extending backward from the projecting portion **23***h*. The projecting portion **23***h* has an inclined surface **23***k* that is inclined so as to spread in the circumferential direction of the annular portion **23**A from the base portion **23***g*, an extending portion **23***m* extending

backward from the inclined surface **23***k*, and a blade portion **23***p* protruding in the circumferential direction of the annular portion **23**A behind the extending portion **23***m*.

As illustrated in FIG. **1**A, the first spring **24** is accommodated inside the rotating member **27**. The first spring **24** is arranged between a bottom surface **27***c* of the rotating member **27** exhibiting a bottomed tubular shape and a flange portion **21***d* of the moving body **21** and is expandable and contractible in the axial direction D**1**. The first spring **24** biases the moving body **21** forward inside the rotating member **27**.

The second spring **25** is arranged between the annular convex portion **22***w* of the screw tube **22** and a flange portion **27***d* of the rotating member **27** and is expandable and contractible in the axial direction D**1**. The second spring **25** biases the rotating member **27** backward with respect to the screw tube **22**. The third spring **26** is arranged between the annular portion **23**A of the screw adjusting member **23** and the convex portion **22***t* of the screw tube **22** and is expandable and contractible in the axial direction D**1**. The third spring **26** biases the screw adjusting member **23** forward with respect to the screw tube **22**. Each of the first spring **24**, the second spring **25**, and the third spring **26** may be made of SUS, for example.

FIG. **7**A is a side view illustrating the rotating member **27**. FIG. **7**B is a cross-sectional view taken along a line C-C of FIG. **7**A. FIG. **8** is a perspective view illustrating the rotating member **27**. As illustrated in FIGS. **1**A, **1**B, **7**A, **7**B, and **8**, the rotating member **27** exhibits a bottomed cylindrical shape. The rotating member **27** has a bar-shaped portion **27***b* that protrudes forward in the rotating member **27** and a tubular portion **27***f* that includes the bottom surface **27***c*. The rotating member **27** may be made of PBT or POM, for example.

The cross-sectional shape when the bar-shaped portion **27***b* is cut in a cross section perpendicular to the axial direction D**1** is a non-circular shape (square shape as an example). The bar-shaped portion **27***b* is engaged with the tubular hole **21***g* of the moving body **21** in the rotational direction. As a result, the moving body **21** is rotatable synchronously with the rotating member **27**.

The tubular portion **27***f* has a first engaging portion **27***g* engaged with the screw tube **22**, a second engaging portion **27***h* engaged with the ratchet member **28**, and a third engaging portion **27***j* engaged with the knock member **29**. The first engaging portion **27***g*, the second engaging portion **27***h*, and the third engaging portion **27***j* are aligned in this order along the axial direction D**1**.

The first engaging portion **27***g* is located at the front end of the tubular portion **27***f*. The first engaging portion **27***g* has a plurality of second teeth **27***k* aligned along the circumferential direction of the rotating member **27** and concave portions **27***m* located between respective pairs of the second teeth **27***k* that are adjacent to each other along the circumferential direction. As an example, the first engaging portion **27***g* has eight second teeth **27***k* and eight concave portions **27***m*. The second teeth **27***k* are provided so as to rotate the rotating member **27** with respect to the screw tube **22**.

Each of the second teeth **27***k* has a third surface **27***k***1** extending in the axial direction D**1**, an inclined surface **27***k***2** extending backward from the front end of the third surface **27***k***1** and extending to one side of the rotating member **27** in the circumferential direction, and a fourth surface **27***k***3** extending from the rear end of the inclined surface **27***k***2** backward. A length of the fourth surface **27***k***3** in the axial direction D**1** is less than a length of the third surface **27***k***1** in the axial direction D**1**.

For example, the inclination angle of the inclined surface **27***k***2** with respect to the axial direction D**1** is the same as the inclination angle of the inclined surface **22***x***2** (refer to FIGS. **3**A and **3**B) with respect to the axial direction D**1**. The rotating member **27** is movable in the axial direction D**1** with respect to the screw tube **22**. When the rotating member **27** advances, each of the second teeth **27***k* is engaged with a corresponding one of the first teeth **22***x*, the inclined surface **27***k***2** abuts on the inclined surface **22***x***2**, and the rotating member **27** rotates at a certain angle (**450** as an example) with respect to the screw tube **22** with this abutting. Accordingly, the second teeth **27***k* are engaged with the first teeth **22***x* to convert an axial movement of the rotating member **27** into a rotational movement of the rotating member **27**. Since the moving body **21** is rotatable synchronously with the rotating member **27** relative to the screw tube **22** as described above, the rotational movement of the rotating member **27** causes the moving body **21** to rotate relative to the screw tube **22**.

The second engaging portion **27***h* is located on the rear side of the flange portion **27***d*. The second engaging portion **27***h* has a plurality of fourth teeth **27***p* engaged with third teeth **28***b* of the ratchet member **28** described later. As an example, the second engaging portion **27***h* has eight fourth teeth **27***p*. Each of the fourth teeth **27***p* has a fifth surface **27***p***1** extending in the axial direction D**1** and an inclined surface **27***p***2** extending forward from the rear end of the fifth surface **27***p***1** and one side of the rotating member **27** in the circumferential direction.

For example, the length of the fourth tooth **27***p* of the rotating member **27** in the circumferential direction is twice the length of the second tooth **27***k* of the rotating member **27** in the circumferential direction. Further, the position of the front end (the root side end) of the inclined surface **27***p***2** on the fourth tooth **27***p* coincides with the position of the front end of the fifth surface **27***p***1** on the other adjacent second teeth **27***k*. That is, the fourth tooth **27***p* is continuously formed along the circumferential direction of the rotating member **27**.

The third engaging portion **27***j* is located at the rear end of the rotating member **27**. The third engaging portion **27***j* has a plurality of annular concave portions **27***q* aligned along the axial direction D**1**. The annular concave portion **27***q* is engaged with the inner surface of the knock member **29** in the axial direction D**1**. As a result, the rotating member **27** is engaged with the knock member **29** in the axial direction D**1** and is rotatably engaged with the knock member **29**.

FIG. **9**A is a side view illustrating the ratchet member **28**. FIG. **9**B is a cross-sectional view taken along line D-D of FIG. **9**A. FIG. **10** is a perspective view illustrating the ratchet member **28**. As illustrated in FIGS. **1**A, **1**B, **9**A, **9**B, and **10**, the ratchet member **28** exhibits a stepped cylindrical shape. The ratchet member **28** may be made of PBT or POM, for example.

The ratchet member **28** has a first engaging portion **28***c* with which the rotating member **27** is engaged and a second engaging portion **28***d* engaged with the main body tube **2**. The first engaging portion **28***c* is located at the front end of the ratchet member **28**. The first engaging portion **28***c* has the plurality of third teeth **28***b* with which the fourth teeth **27***p* of the rotating member **27** are engaged. As an example, the first engaging portion **28***c* has eight third teeth **28***b*. Each of the third teeth **28***b* has a sixth surface **28***b***1** extending in the axial direction D**1** and an inclined surface **28***b***2** extend-

ing backward from the front end of the sixth surface **28***b***1** and one side of the ratchet member **28** in the circumferential direction.

For example, a length of the third tooth **28***b* of the ratchet member **28** in the circumferential direction is the same as a length of the fourth tooth **27***p* of the rotating member **27** in the circumferential direction. The third teeth **28***b* are provided to rotate the rotating member **27** with respect to the ratchet member **28**. An inclination angle of the inclined surface **28***b***2** with respect to the axial direction D**1** is the same as an inclination angle of the inclined surface **27***p***2** with respect to the axial direction D**1**.

The rotating member **27** is movable in the axial direction D**1** with respect to the ratchet member **28**. When the rotating member **27** moves backward, each of the fourth teeth **27***p* is engaged with a corresponding one of the third teeth **28***b*, and the inclined surface **27***p***2** abuts on the inclined surface **28***b***2**, so that the rotating member **27** rotates at a certain angle with respect to the ratchet member **28** with this abutting.

The second engaging portion **28***d* is located behind the first engaging portion **28***c*. The second engaging portion **28***d* has an annular convex portion **28***f* and a plurality of convex portions **28***g* located behind the annular convex portion **28***f* and aligned along the circumferential direction of the ratchet member **28**. The annular convex portion **28***f* abuts on a convex portion **2***b* formed on the inner surface of the main body tube **2** from the front to function as a stopper for the ratchet member **28** from the main body tube **2**.

The convex portion **28***g* is engaged with a convex portion **2***c* formed on the inner surface of the main body tube **2** in the rotational direction. As a result, the ratchet member **28** is engaged with the main body tube **2** so as to be movable in the axial direction and immovable in the rotational direction (rotatable synchronously). The ratchet member **28** has a concave portion **28***j* extending forward from a rear end face **28***h*. The concave portion **28***j* is a portion into which a portion of the knock member **29** is inserted.

FIG. **11**A is a side view illustrating the knock member **29**. FIG. **11**B is a cross-sectional view taken along a line E-E of FIG. **11**A. As illustrated in FIGS. **1**A, **1**B, **11**A, and **11**B, the knock member **29** exhibits a bottomed tubular shape (as an example, a bottomed cylindrical shape). The knock member **29** is a portion that protrudes backward from a rear end face **2***d* of the main body tube **2** and is pressed forward by the user.

The knock member **29** has a tubular portion **29***b* having a bottomed tubular shape and a protruding portion **29***c* protruding from the tubular portion **29***b* in the axial direction D**1**. The tubular portion **29***b* has an annular concave-convex portion **29***d* formed on the inner peripheral surface and a plurality of convex portions **29***g* protruding from a bottom surface **29***f* of the tubular portion **29***b*. The convex portion **29***g* is a portion where a rear end face **27***r* of the rotating member **27** comes into contact. The annular concave-convex portion **29***d* is engaged with the annular concave portion **27***q* of the rotating member **27** in the axial direction D**1**. As a result, the knock member **29** is engaged with the rotating member **27** in the axial direction D**1** and moves along the axial direction D**1** together with the rotating member **27**.

The knock member **29** has a pair of the protruding portions **29***c* aligned along the radial direction D**2**. The protruding portion **29***c* is a portion that is inserted into the concave portion **28***j* of the ratchet member **28**. As the protruding portion **29***c* is inserted into the concave portion **28***j*, the protruding portion **29***c* is engaged with the concave portion **28***j* in the rotational direction. As a result, the knock member **29** is engaged with the ratchet member **28** so as to be movable in the axial direction and immovable in the rotational direction.

FIG. **12**A is a side view illustrating the main body tube **2**. FIG. **12**B is a cross-sectional view taken along a line F-F of FIG. **12**A. As illustrated in FIGS. **1**A, **12**A, and **12**B, the main body tube **2** has a smooth outer peripheral surface **2***j*. That is, the outer peripheral surface **2***j* has a smooth shape having no unevenness.

On the inner surface of the main body tube **2**, there are a first engaging portion **2**A with which the ratchet member **28** is engaged, a second engaging portion **2**B with which the screw tube **22** is engaged, and a female screw portion **2***f* to which the cartridge unit **10** is attached. The first engaging portion **2**A, the second engaging portion **2**B, and the female screw portion **2***f* are aligned in this order from the rear to the front.

The first engaging portion **2**A has the convex portion **2***b* on which the annular convex portion **28***f* of the ratchet member **28** abuts from the front and a plurality of the convex portions **2***c* aligned along the circumferential direction of the main body tube **2** at the rear portion of the convex portion **2***b*. The convex portion **2***b* extends in the circumferential direction of the main body tube **2**, and the convex portion **2***c* extends in the axial direction D**1**. The second engaging portion **2**B has a plurality of convex portions **2***g* with which the convex portions **22***t* of the screw tube **22** are engaged in the rotational direction and a convex portion **2***h* with which the annular concave portion **22***v* and an annular convex portion **22***w* of the screw tube **22** are engaged in the axial direction D**1**.

The convex portion **2***g* extends in the axial direction D**1**, and the convex portion **2***h* extends in the circumferential direction of the main body tube **2** at the rear end of the convex portion **2***g*. The female screw portion **2***f* is formed on a front side portion of the main body tube **2**. By screwing of the male screw portion **12***c* of the cartridge tube **12** into the female screw portion **2***f*, the cartridge unit **10** (cartridge tube **12**) is attached to the main body tube **2**.

The procedure for extruding the content M in the cartridge-type content extrusion container **1** configured as described above and the procedure for using the cartridge-type content extrusion container **1** will be described. First, the cap **11** is removed from the cartridge-type content extrusion container **1** to expose the cartridge tube **12**, the sleeve **13**, and the coating body **14**.

When the knock member **29** is pressed forward, the rotating member **27** advances against the biasing force of the second spring **25**, and each of the second teeth **27***k* of the rotating member **27** abuts on a corresponding one of the first teeth **22***x* of the screw tube **22**. At this time, as illustrated in FIGS. **1**A, **3**A, and **7**A, the inclined surface **27***k***2** of the second tooth **27***k* abuts on the inclined surface **22***x***2** of the first tooth **22***x*, and the rotating member **27** rotates in one direction (for example, in the clockwise direction when viewed from the rear) with respect to the screw tube **22**. At this time, the second tooth **27***k* is inserted into the concave portion **22***y*, and the third surface **27***k***1** abuts on the second surface **22***x***3**, so that a clicking sound of "click" is generated. When the rotating member **27** rotates in one direction with respect to the screw tube **22**, the moving body **21** together with the rotating member **27** rotates in one direction.

In addition, when the pressure applied on the knock member **29** is released, the rotating member **27** moves backward due to the biasing force of the second spring **25**, and each of the fourth teeth **27***p* of the rotating member **27** abuts on a corresponding one of the third teeth **28***b* of the

ratchet member **28**. At this time, as illustrated in FIGS. **1**A, **1**B, **7**A, and **9**A, the inclined surface **27***p***2** of the fourth tooth **27***p* abuts on the inclined surface **28***b***2** of the third tooth **28***b*, the rotating member **27** rotates in one direction with respect to the ratchet member **28**. When the rotating member **27** rotates in one direction with respect to the ratchet member **28**, the moving body **21** together with the rotating member **27** rotates in one direction.

As described above, when the knock member **29** is pressed, the rotating member **27** rotates in one direction with respect to the screw tube **22**, and when the pressing on the knock member **29** is released, the rotating member **27** rotates in one direction with respect to the ratchet member **28**. As an example, the rotating member **27** is rotated by 45° by pressing and releasing of pressing of the knock member **29** once.

When the moving body **21** rotates in one direction in this manner, the moving body **21** advances with respect to the screw tube **22** by the screwing function of the female screw **22***b* and the male screw **21***b*. As the moving body **21** advances, the piston **17** advances in the accommodation chamber **12***f* of the cartridge tube **12**, and the content M is supplied to the coating body **14** for use by this advance. In the cartridge-type content extrusion container **1**, the moving body **21** can be advanced both when the knock member **29** is pressed and when the pressing on the knock member **29** is released.

FIG. **13** is a cross-sectional view of the cartridge-type content extrusion container **1** in which the content M is used up. As illustrated in FIG. **13**, the piston **17** comes into contact with the pipe holder **16** in a state where the moving body **21** advances and the content M is used up. In the cartridge-type content extrusion container **1**, the cartridge unit **10** in which the content M has been used up can be removed from the main body tube **2**, and the new cartridge unit **10** can be attached to the main body tube **2**. Hereinafter, the movement of each component when the cartridge unit **10** is removed from the main body tube **2** and the movement of each component when the new cartridge unit **10** is attached to the main body tube **2** will be described.

First, when the cartridge unit **10** is removed from the main body tube **2**, the cartridge tube **12** is removed from the main body tube **2** by rotating the cartridge unit **10** with respect to the main body tube **2**. At this time, the screw adjusting member **23** advances with respect to the screw tube **22** due to the biasing force of the third spring **26**.

As illustrated in FIGS. **3**A, **5**B, and **13**, when the screw adjusting member **23** advances with respect to the screw tube **22**, the annular portion **23**A riding on the screw tube **22** advances, and the projecting portion **23***h* of the arm portion **23**B abuts on the abutting portion **22***s* of the elastic portion **22***d*. The elastic portion **22***d* is expanded outward in the radial direction D**2** by the abutting of the projecting portion **23***h* on the abutting portion **22***s*, and thus, the screwing of the female screw **22***b* with the male screw **21***b* is released. When the screwing of the female screw with the male screw **21***b* is released, the moving body **21** moves forward due to the biasing force of the first spring **24**. At this time, a front end **21***h* of the moving body **21** is in a state of protruding forward from a front end **2***k* of the main body tube **2**.

Next, the movement of the components when the new cartridge unit **10** is attached to the main body tube **2** will be described. As illustrated in FIGS. **1**A, **1**B, **3**A, **3**B, and **5**B, the piston **17** of the cartridge unit **10** is allowed to hit the front end **21***h* of the moving body **21**, the cartridge tube **12** is inserted into the main body tube **2**, and the moving body **21** is pushed backward to screw the male screw portion **12***c* into the female screw portion **2***f*.

At this time, the moving body **21** moves backward against the biasing force of the first spring **24**. Further, the screw adjusting member **23** is pushed by the cartridge tube **12** and moves backward, and the annular portion **23**A abuts on the abutting portion **22***c* of the screw tube **22**. At this time, the annular portion **23**A rides over the inclined surface **22***j* backward and rides on the elastic portion **22***d*.

In this manner, the annular portion **23**A moves backward and rides on the elastic portion **22***d*, so that the elastic portion **22***d* is pressed inside the radial direction D**2**, and the female screw **22***b* is screwed into the male screw **21***b*. By removing the cap **11** and pressing (knocking) the knock member **29** in this state, as described above, the moving body **21** and the piston **17** move forward and the content M is supplied to the coating body **14**, so that the cartridge-type content extrusion container **1** is supplied for using.

Next, the function and effect obtained from the example cartridge-type content extrusion container **1** will be further described. The cartridge-type content extrusion container **1** has the cartridge unit **10** accommodating the content M and the main body tube **2** to which the cartridge unit **10** is attached, and the cartridge unit **10** is removably attached (e.g., attachable to and detachable from) the main body tube **2**. Therefore, after the content M is used up, it is preferable that the cartridge unit **10** is removed from the main body tube **2** and only the cartridge unit **10** is discarded, so that the number of discarded components can be reduced.

The cartridge-type content extrusion container **1** includes the screw tube **22** having an elastic portion **22***d* elastically deformed in the radial direction D**2**, a moving body **21** having a male screw **21***b* screwed into a female screw **22***b* of the screw tube **22** and advancing to extrude the content M inside the cartridge unit **10**, a rotating member **27** rotating synchronously with the moving body **21**, and a knock member **29** that is pressable. The rotating member **27** has second teeth **27***k* that are engaged with the first teeth **22***x* provided inside the main body tube **2**. When the knock member **29** is pressed, the rotating member **27** advances and the second teeth **27***k* are engaged with the first teeth **22***x*, the rotating member **27** and the moving body **21** rotate with respect to the screw tube **22**, so that the moving body **21** advances.

Therefore, since the rotating member **27** and the moving body **21** can be rotated with respect to the screw tube **22** by the pressing operation of the knock member **29** and the moving body **21** can be advanced along with the rotation to extrude the content M, the usability of the cartridge-type content extrusion container **1** can be improved. That is, since the content M can be extruded by holding the cartridge-type content extrusion container **1** with one hand and pressing the knock member **29** with one hand, the cartridge-type content extrusion container **1** with high usability can be obtained. As described above, in the cartridge-type content extrusion container **1**, since the content M can be extruded by knocking, the usability can be further improved.

The example cartridge-type content extrusion container **1** has the first spring **24** that biases the moving body **21** forward. Therefore, when the cartridge unit **10** is removed from the main body tube **2**, the moving body **21** can be moved forward by the first spring **24**.

The example cartridge-type content extrusion container **1** has a second spring **25** which is provided between the screw tube **22** and the rotating member **27** and, when the pressing on the knock member **29** is released, moves the rotating member **27** and the knock member **29** backward. Therefore,

when the pressing on the knock member **29** is released, the rotating member **27** and the knock member **29** can be moved backward by the second spring **25**.

The example cartridge-type content extrusion container **1** has the ratchet member **28** provided between the rotating member **27** and the knock member **29** and having the plurality of third teeth **28***b* aligned along the circumferential direction. The rotating member **27** has the fourth teeth **27***p* that are aligned along the circumferential direction and engaged with the third teeth **28***b*. When the pressing on the knock member **29** is released, the rotating member **27** moves backward to allow the fourth teeth **27***p* to be engaged with the third teeth **28***b*, and the rotating member **27** and the moving body **21** rotate with respect to the ratchet member **28**, so that the screwing function between the male screw **21***b* and the female screw **22***b* works to allow the moving body **21** to advance. Therefore, not only when the knock member **29** is pressed but also when the pressing on the knock member **29** is released, the moving body **21** can be advanced, so that the content M can be extruded. Accordingly, the usability of the cartridge-type content extrusion container **1** can be further improved.

The example cartridge-type content extrusion container **1** has a third spring **26** which is provided between the screw adjusting member **23** and the screw tube **22** and, when the cartridge unit **10** is removed from the main body tube **2**, advances the screw adjusting member **23**. Therefore, when the cartridge unit **10** is removed from the main body tube **2**, by advancing the screw adjusting member **23** by the third spring **26**, the elastic portion **22***d* can be expanded in the radial direction D**2** to easily release the screwing between the female screw **22***b* and the male screw **21***b*.

When the example cartridge unit **10** is attached to the main body tube **2**, the screw adjusting member **23** is pushed by the cartridge unit **10** to move backward, and the elastic portion **22***d* of the screw tube **22** is narrowed in the radial direction D**2** to screw the female screw **22***b* into the male screw **21***b*. Therefore, when the cartridge unit **10** is attached, since the screw adjusting member **23** moves backward to screw the female screw **22***b* into the male screw **21***b*, the screwing of the female screw **22***b* into the male screw **21***b* can be easily performed.

The example cartridge unit **10** has the accommodation chamber **12***f* accommodating the content M and the piston **17** provided in the accommodation chamber **12***f*. The moving body **21** extrudes the content M through the piston **17**. Therefore, when the content M is a liquid content, the piston **17** can suppress the leakage of the liquid content. Then, the liquid content can be extruded through the piston **17**.

It is to be understood that not all aspects, advantages and features described herein may necessarily be achieved by, or included in, any one particular example. Indeed, having described and illustrated various examples herein, it should be apparent that other examples may be modified in arrangement and detail is omitted. That is, the configuration, shape, size, material, and arrangement mode of each component constituting the cartridge-type content extrusion container can be appropriately changed within the scope of the above-described spirit.

For example, in the description above, an example in which the screw tube **22** has the first teeth **22***x* has been described. However, the first teeth may be provided at a position other than the screw tube **22**. That is, the first teeth may be separate from the screw tube **22**. For example, a plurality of the first teeth may be formed on the inner surface of the main body tube **2** along the circumferential direction of the main body tube **2**. In this manner, the type and location of the components provided with the first teeth can be changed as appropriate.

Additionally, in the examples described above, the knock mechanism unit **20** having the first spring **24**, the second spring **25**, and the third spring **26** has been described. However, the cartridge-type content extrusion container may have the knock mechanism unit that does not have at least one of the first spring **24**, the second spring **25**, and the third spring **26**. Instead of the first spring **24**, the moving body **21** may be manually advanced when the female screw **22***b* is screw-released from the male screw **21***b*. Further, instead of the third spring **26** that biases the screw adjusting member **23** forward, another component may advance the screw adjusting member **23** forward, and for example, the cartridge tube **12** has a mechanism moving the screw adjusting member **23** forward.

Also, in the examples described above, the knock mechanism unit **20** including the ratchet member **28** having the third teeth **28***b* has been described. However, instead of the ratchet member **28**, a tubular member having no teeth may be provided. Further, in the examples described above, the cartridge-type content extrusion container **1** on which the cartridge unit **10** accommodating the content M, which is a liquid cosmetic material, is attached has been described. However, the content may be other than a liquid cosmetic material. For example, the content may be a liquid drawing material such as ink. Further, the content may be other than a liquid content, and the content may be a bar-shaped cosmetic material or a bar-shaped drawing material. In this case, a configuration can be provided in which the piston **17** can be omitted in the cartridge unit, and the moving body **21** can directly push the content M. In this manner, the type of content can be changed as appropriate.

What is claimed is:

1. A cartridge-type content extrusion container comprising:

a cartridge containing a material and forming an opening;

a main body tube to removably accommodate the cartridge;

a screw tube provided inside the main body tube, having an elastic portion that is elastically deformable in a radial direction of the main body tube;

a moving body that is screwed into the screw tube to move in an axial direction of the main body tube via a rotation of the moving body relative to the screw tube, to urge the material toward the opening of the cartridge;

a plurality of first teeth that are synchronously rotatable with the screw tube and arranged along a circumferential direction of the main body tube;

a rotating member that is synchronously rotatable with the moving body, wherein the rotating member has a plurality of second teeth that are engaged with the first teeth to convert an axial movement of the rotating member into a rotational movement of the moving body relative to the screw tube;

a pressable knock actuator to move the rotating member in the axial direction so as to urge the moving body to extrude the material out from the cartridge via the rotational movement of the moving body; and

a screw locking member to accommodate the elastic portion of the screw tube, wherein the screw locking member is movable away from the screw tube when the cartridge is removed from the main body tube to cause the elastic portion to expand in the radial direction so as to release a screw coupling between the screw tube and the moving body.

2. The cartridge-type content extrusion container according to claim 1, further comprising a forward spring to bias the moving body toward the opening of the cartridge in the axial direction.

3. The cartridge-type content extrusion container according to claim 1, further comprising a rearward spring provided between the screw tube and the rotating member to bias the rotating member and the knock actuator away from the moving body in response to a release of pressure applied on the knock actuator.

4. The cartridge-type content extrusion container according to claim 1, further comprising a ratchet member provided between the rotating member and the knock actuator and having a plurality of third teeth aligned along the circumferential direction,

wherein the rotating member has a plurality of fourth teeth that are aligned along the circumferential direction and engaged with the third teeth, to cause a rotation of the rotating member and of the moving body with respect to the ratchet member, in response to a release of pressure applied on the knock actuator, to further move the moving body toward the opening of the cartridge.

5. The cartridge-type content extrusion container according to claim 1, further comprising a release spring provided between the screw locking member and the screw tube to urge the screw locking member away from the screw tube when the cartridge is removed from the main body tube.

6. The cartridge-type content extrusion container according to claim 1, wherein the cartridge is configured to, when the cartridge is attached to the main body tube, urge the screw locking member to accommodate the elastic portion of the screw tube and limit the deformation of the elastic portion in the radial direction, to lock the screw coupling of the moving body with the screw tube.

7. The cartridge-type content extrusion container according to claim 1,

wherein the cartridge has an accommodation chamber accommodating the material and a piston provided in the accommodation chamber, and

wherein the moving body is coupled to the piston to extrude the material from the cartridge via a movement of the piston.

8. The cartridge-type content extrusion container according claim 1,

wherein the elastic portion of the screw tube has an inner surface that forms a female screw, and

wherein the moving body has an outer surface forming a male screw to engage with the female screw of the elastic portion.

9. The cartridge-type content extrusion container according claim 1, wherein the plurality of first teeth are formed on the screw tube.

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