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(54) WINDING DEVICE FOR CIGARETTE FILTER SHEETS, AND KIT COMPRISING SAID DEVICE

(57) The present invention concerns a winding device for cigarette filters sheets, comprising:
- a main body (5) comprising a winding chamber (35) having a longitudinal development along an axis X, within which a fork-shaped winding member (10) is rolling movable;
- the winding chamber (35) comprising a first longitudinal ejection opening (31) through which said fork (20) comes out at least partially and goes in by sliding along the axis X, and vice versa, defining a winding position and an ejection position of a standard cigarette filter sheet;
- a first notch (40) passing through the main radial body and parallel to that axis X;
- a second notch (50) in the main body arranged in the winding chamber parallel to and facing said first notch (40), .

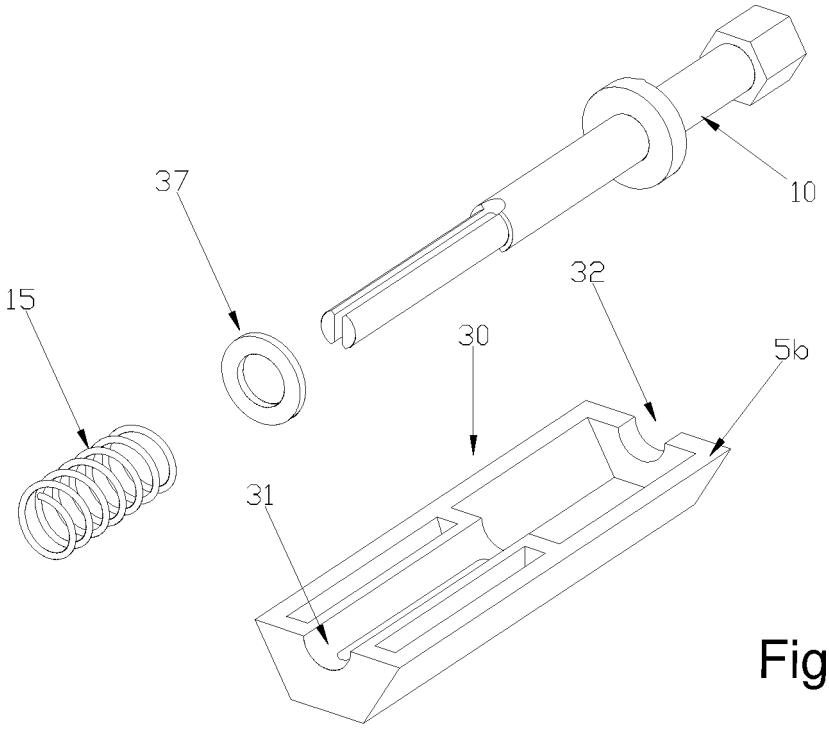

Fig. 2

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Description

[0001] The present invention concerns a winding device for cigarette filters sheets. The present invention is particularly suitable for handling known, standard-sized filter paper sheets to make them ready for use. Application of the invention to other formats of cigarette filter paper is not excluded.

[0002] Said sheets have, for example, a length of 60mm ±25%, and a width of 25mm ±25%.

PRIOR ART

[0003] In the industry, it is particularly popular for smokers to make their own cigarettes.

[0004] The construction of this object has several indispensable aspects, including:

- the possibility of choosing and customising the components, especially the quality of the tobacco,
- it is a ritual that itself implies pleasure,
- it is a socialising exercise.

[0005] The construction of cigarettes, however, is a complex operation that includes the preparation of a filter, usually obtained by wrapping sheets of special paper, the arrangement of the tobacco and filter on a retaining sheet, and finally the sealing.

[0006] If the filter is not correctly wrapped, the subsequent sealing of the cigarette is not smooth and may even fail or generate a discarded cigarette.

[0007] This can happen despite the use of the well-known filter paper sheets, which are sold in specially sized standard formats.

[0008] In fact, filter paper sheets are small in size and are not easily handled to give them the necessary cylinder shape.

[0009] The purpose of the present invention is to solve some of the problems of the prior art.

[0010] A further general purpose of the present invention is to make the construction of a cigarette easier and to reduce failures.

[0011] Another further purpose of the present invention is to make it easy to wrap filter paper sheets to insert into self-made cigarettes.

[0012] Another further purpose of the present invention is to provide a device that is easy and inexpensive to manufacture.

GENERAL INTRODUCTION

[0013] According to its first general aspect, the present invention concerns a winding device for cigarette filter sheets, comprising:

- a main body (5) comprising a winding chamber (35) having a longitudinal development along an axis X;
- a winding member (10) comprising at least one fork-shaped end (20) with the prongs parallel to said axis X, movable within the winding chamber in rotation with respect to said axis X;
- the winding chamber (35) comprising a first ejection opening (31) facing in the longitudinal direction through which said fork-shaped end (20) comes out at least partially and goes in by sliding along the axis X, and vice versa, defining a winding position and an ejection position of a standard cigarette filter sheet;
- a first notch (40) in the main body radial and parallel to this axis X arranged to connect said winding chamber with the outside;
- a second notch (50) in the main body arranged in the winding chamber in a position parallel to and facing said first notch (40), where the two notches are diametrically opposed to said fork-shaped end when in the winding position.

[0014] Advantageously, the first notch acts as a feed notch for a cigarette filter sheet, while the second notch receives the edge of that sheet after it has passed between the prongs. When the prongs are put into rotation, they are able to grip the sheet and effectively pull it into rotation thanks to the retaining notch, which creates a sort of S-bend of the edge and "catches" it underneath the wrapping sheet.

[0015] In this way, even small filter sheets, which are difficult to handle, can be conveniently wrapped correctly and always exactly reproducible.

[0016] According to some preferred implementation forms, the winding member comprises a manual gripping portion (22) graspable from the outside of the main body (5) and shaped to allow a user to manually put said member into rotation and sliding, wherein the device comprises rotational alignment means (45, 46) of the fork-shaped end (20) relative to the first and second notches (40, 50). This advantageously facilitates insertion of the sheet to be wound and correct positioning for subsequent winding.

[0017] Preferably, the alignment means (45, 46) comprise a reference element (45) placed on the winding member (10), e.g. on a radial collar, to rotate integrally with it with respect to a corresponding reference element (46) fixed on the main body, e.g. on a radial wall, and towards which it is maintained in thrust by means of recall means (15), acting for example in the axial direction.

[0018] According to some preferred implementation forms, the device comprises recall means (15) in the direction of the axis X arranged to recall the winding member (10) from an ejection position in which the fork-shaped end (20) is at least partially outside the main body (5), to a winding position in which it is at least mostly inside.

[0019] Preferably, the recall means comprise elastic means (15), for example a coil spring, axially interposed between at least one radial protrusion (24) of the winding member (10) and a corresponding stop wall of the main

body, preferably with the interposition of at least one washer (37) advantageously favouring reciprocal rotation.

[0020] Preferably, the recall means towards the winding position coincide at least partially with the recall means of the rotating alignment means.

[0021] A device according to any of the previous claims, characterised by the fact that the winding member (10) comprises a manual gripping portion (22) graspable from the outside of the main body (5) and arranged at the opposite end with respect to the fork-shaped end (29), wherein said gripping portion is projecting from the main body (5) in the direction of the axis X.

[0022] Preferably said prongs (21) are defined by a notch (19) in a cylindrical portion (20) of said winding organ, and said winding chamber (35) is preferably cylindrical. Preferably, the longitudinal edges of the notch are flared.

[0023] According to some preferred design details, these first and second notches have a length in the axial direction of between 10 and 40 mm. In this way they are advantageously able to receive cigarette filter paper of the most common types.

[0024] Preferably, the total axial length of the device in a winding position is less than or equal to 100 mm. This facilitates its transport and association with the best-selling tobacco pouches and filter paper sheets.

[0025] According to one of its second general aspect, the present invention concerns a kit comprising a plurality of cigarette filter paper sheets, preferably of standard size, lying flat, and at least one device (1) according to the present invention with the first notch (40), a passage (19) between the prongs (21) of the fork-shaped end (20) and the second notch (50) configured to receive one another when aligned with each other.

DETAILED DESCRIPTION

[0026] Further features and advantages of the present invention will best be seen from the following detailed description of preferred implementation forms of the invention, made with reference to the attached drawings and given by way of indication and not limitation. In said drawings:

- figure 1 shows a winding device for cigarette filter sheet according to the present invention;
- figure 2 shows the device of figure 1 in an exploded view;
- figure 3 is a section according to the longitudinal plane III of figure 1 in a winding configuration;
- figure 4 is like figure 3, but in an ejection configuration;
- figure 5 is a top view of the winding and ejection device of figure 1 (in figure 3 and 4 it is seen from the side);
- figure 6 is a section along the transverse plane VI of figure 1;
- figure 7 shows the device of figure 1 with one filter paper sheet to be wound in the inserted position and another already wound in the ejected position.

[0027] With reference to the figures, a winding device for cigarette filter sheets is illustrated with reference number 1.

[0028] Device 1 comprises:

- a main body 5,
- a winding member 10 movable within the main body in rotation and sliding with respect to a winding and extraction axis X;
- recall means 15 arranged to recall in sliding the winding member 10 towards a basic position along the axis X.

[0029] The axis X defines for the purposes of the present invention the longitudinal and axial directions, and the transverse and radial directions.

[0030] As better shown in figure 5, the winding member 10 has a longitudinal development direction along the axis X, and in said direction comprises:

- a fork-shaped end 20;
- a gripping element 22, preferably arranged at the opposite end with respect to the fork-shaped end 20;
- a setback portion 24, preferably arranged between said two ends, comprising at least one radially projecting portion.

[0031] The following characteristics taken individually, or their combinations, are preferred:

- the winding member 10 is pivot-shaped;
- the fork-shaped end 20 is cylindrical with a longitudinal notch 19 arranged to define the prongs 21 of the fork, said notch preferably comprising respective countersinks 18 of the longitudinal edges;
- the gripping element 22 has the form of a gripping head, for example with a prismatic cross-section, more preferably hexagonal;
- the setback portion 24 has the form of a radial collar, preferably cylindrical, preferably projecting from two adjacent cylindrical portions 24a and 24b.

[0032] The main body 5 has a through cavity 30 along the axis X in which the rotating and sliding winding member 10 is placed.

[0033] For the purpose of an easy and economic practical implementation, the main body 5 can be made in at least two parts 5a and 5b which are modular to each other, between which the winding member 10 is interposed.

[0034] The pass-through cavity 30 comprises two opposing end openings 31 and 32 along the axis X, wherein one serves as an ejection opening 31 of the wound sheets, as will be clarified later, and is preferably circular

in cross-section, while the other serves as a pass-through opening 32 of the winding member to place the gripping element 22 at the opposite end of the fork 20, and to keep it outside the main body along the axis X.

[0035] According to some possible variants, the gripping element is located in the direction of the axis X at an intermediate position of the main body 5, in which case it is also possible that the cavity 30 is blind at the longitudinal end opposite to the ejection cavity 31.

[0036] In general, the cavity 30 comprises at least one winding chamber 35, containing the fork-shaped end 20, and a sliding control chamber 36, containing the setback portion 24.

[0037] The control chamber 36 is bounded, in the direction of the axis X, by a pair of opposing stop walls such as to keep the setback portion 24 movable between them, wherein between at least one of them and said setback portion are interposed said recall means 15. The recall means 15 are preferably arranged at least on the side of the setback portion proximal to the winding chamber 35.

[0038] Recall means 15 include elastic means, for example a coil spring.

[0039] Preferably a washer 37 free to rotate about the axis X is interposed between said coil spring and the intermediate setback portion.

[0040] The winding chamber 35 is in communication with the outside, not only by means of the expulsion opening 31 facing in the axial direction, but also by means of a feed notch 40, facing in the radial direction. The latter is parallel to the axis X and of such dimensions as to allow the passage of at least one sheet 80 of filter paper of the main standard types on the market, in a stretched configuration (figure 7). For example, the feed notch 40 has a length in the direction of the axis X greater than or equal to 25mm. Preferable dimensions are between 10 and 40mm.

[0041] Notches 19 and 50 in turn have respective lengths in the direction of the axis X greater than or equal to 25 mm. Preferable dimensions are between 10 and 40 mm.

[0042] The device 1 also comprises rotational alignment means between the fork-shaped end 20 and the feed notch 40. In this manner, the sheet 20 when passing the feed notch 40 penetrates directly between the prongs 21 of the fork-shaped end 20.

[0043] Such alignment means for example comprise a reference element 45 placed on the winding member 10 cooperating with a corresponding reference element 46 of the main body, they are for example protrusions and/or cavities arranged on axial faces of the setback portion 24 and of the corresponding stop wall of the control chamber 36 which is facing. Preferably, the protrusions are in the form of radial ribs.

[0044] As will be noted, the winding chamber 35 is wider in the radial direction than the fork-shaped end it contains, so that a cavity 38 is defined around the perimeter of said end 20 to accommodate at least one wound sheet.

[0045] The winding chamber 35 is preferably cylindrical and contains a cylindrical fork-shaped end 20.

[0046] The winding chamber 35 also includes a retaining notch 50 facing parallel to the feed opening 40 and arranged diametrically opposite to it.

[0047] The retaining notch 50 is of a size such to at least partially receive the edge of sheet 80 after it has passed between the prongs 21 to oppose its rotation at the beginning.

[0048] As shown in figure 3, the device 1 has a loading position in which the fork-shaped end 20 is at least partially retracted into the winding chamber 35 due to the effect of the recall means 25, and with the notch 19 between the prongs 21 aligned with the feed opening 40 due to the effect of the alignment means 45/46.

[0049] In use, in this position, the filter paper sheet 80 is inserted into the opening 40 according to the radial arrow shown in figure 7.

[0050] The sheet 80 is inserted until it passes through the notch 19 of the fork-shaped end 20 and into the retaining notch 50.

[0051] At this point, a user can rotate the winding member 10 about the axis X in the direction he prefers.

[0052] The partial opposing action exerted by the retaining cavity 50 allows the fork-shaped end 20 to effectively grip the sheet and wind it up. In fact, when the sheet is dragged in rotation, its edge exits the retaining cavity 50, but is surmounted by a first portion of the wrapped sheet, ensuring the grip around the winding member 10.

[0053] As shown in figure 7, the result of this grip in the wrapped sheet is an S-shaped fold nearby this edge.

[0054] When the sheet 60 is completely wound up, it is possible to extract it by exerting a thrust on the gripping portion 22 in opposition to the thrust of the recalling means 15. In this way the fork-shaped end 20 at least partially exits the ejection opening 31, dragging the sheet 80 with it, according to the axial arrow of figure 7. This second position of the winding device 10 is best seen in figure 4.

[0055] The sheet 80 thus extracted is wound to form a cylinder.

[0056] Advantageously, it is possible to provide a kit comprising a plurality of ready-to-use standard size cigarette filter paper sheets, stretched out, and at least one device 1 according to the present invention with a feed notch 40, a fork-shaped end notch 19 and a retaining notch 50 configured to receive one another when aligned with each other.

GENERAL MEANING OF TERMS

[0057] In understanding the purpose of the present invention, the term "comprising" and its derivatives, as used herein, are intended as open-ended terms specifying the presence of the declared characteristics, elements, components, groups, integers and/or phases, but not excluding the presence of other undeclared characteristics, elements, components, groups, integers and/or

phases. The above also applies to words with similar meanings such as the terms "including", "having" and their derivatives. In addition, the terms "part", "section", "portion", "member" or "element" when used in the singular may have the dual meaning of a single part or a plurality of parts. As used herein to describe the form(s) of implementation mentioned above, the following directional terms "forward", "backward", "above", "below", "vertical", "horizontal", "underneath" and "transverse", as well as any other similar directional terms refer to the form of implementation described in the operative position. Finally, grade terms such as "substantially", "about" and "approximately" as used herein mean a reasonable amount of deviation of the modified term such that the end result is not significantly changed.

[0058] While only selected implementation forms have been chosen to illustrate the present invention, from this description it will be clear to those expert in the field that various modifications and variations may be made without departing from the purpose of the invention as defined in the attached claims. For example, the size, shape, position or orientation of the various components may be modified as needed and/or desired. Components shown directly connected or in contact with each other may have intermediate structures interposed between them. The functions of one element can be performed by two and vice versa. The structures and functions of one form of implementation can be adopted in another one. It is not necessary that all advantages are present in a particular form of implementation at the same time. Each characteristic that is original compared to the prior art, alone or in combination with other characteristics, should also be considered a separate description of further inventions by the applicant, including structural and/or functional concepts incorporated by those characteristics. Therefore, the previous descriptions of implementation forms according to the present invention are provided for illustrative purposes only and not for the purpose of limiting the invention as defined by the attached claims and their equivalents.

Claims

1. Winding device for cigarette filter sheets, comprising:

   - a main body (5) comprising a winding chamber (35) having a longitudinal development along an axis X;
   - a winding member (10) comprising at least one fork-shaped end (20) with the prongs parallel to said axis X , movable within the winding chamber in rotation with respect to said axis X;
   - the winding chamber (35) comprising a first ejection opening (31) facing in the longitudinal direction through which said fork-shaped end (20) comes out at least partially and goes in by sliding along the axis X, and vice versa, defining a winding position and an ejection position of a standard cigarette filter sheet;
   - a first notch (40) in the main body radial and parallel to this axis X arranged to connect said winding chamber with the outside;
   - a second notch (50) in the main body arranged in the winding chamber in a position parallel to and facing said first notch (40), where the two notches are diametrically opposed to said fork-shaped end when in the winding position.

2. Device according to claim 1, **characterised by** the fact that the winding member comprises a manual gripping portion (22) graspable from the outside of the main body (5) and shaped to allow a user to manually put said member into rotation and sliding, wherein the device comprises rotational alignment means (45, 46) of the fork-shaped end (20) with respect to the first and second notches (40, 50).

3. Device according to claim 2, **characterised by** the fact that the alignment means (45, 46) comprise a reference element (45) placed on the winding member (10) to rotate solidly with it with respect to a corresponding reference element (46) solidly placed on the main body and towards which it is maintained in thrust by means of recall means (15).

4. Device according to any of the previous claims, **characterised by** the fact that it comprises recall means (15) in the direction of the axis X arranged to recall the winding member (10) from an ejection position in which the fork-shaped end (20) is at least partially outside the main body (5), to a winding position in which it is at least mostly inside.

5. Device according to claim 4, **characterised by** the fact that said recall means comprise elastic means (15) axially interposed between at least one radial protrusion (24) of the winding member (10) and a corresponding stop wall of the main body, preferably with the interposition of at least one washer (37).

6. A device according to any of the previous claims, **characterised by** the fact that the winding member (10) comprises a manual gripping portion (22) graspable from the outside of the main body (5) and arranged at the opposite end with respect to the fork-shaped end (29), wherein said gripping portion is projecting from the main body (5) in the direction of the axis X.

7. Device according to any of the previous claims, **characterised by** the fact that said prongs (21) are defined by a notch (19) in a cylindrical portion (20) of said winding member, and said winding chamber (35) is preferably cylindrical.

8. Device according to any of the previous claims, **characterised by** the fact that said first and second notches have a length in the axial direction between 10 and 40 mm.

9. Device according to claim 8, **characterised by** the fact that the total axial length of the device in a winding position is less than or equal to 100 mm.

10. Kit comprising at least one device (1) according to any of the previous claims and at least one of the following:

- a plurality of sheets of cigarette filter paper, preferably of standard size, lying, wherein the first notch (40), a passage (19) between the prongs (21) of the fork-shaped end (20) and the second notch (50), when aligned with each other, are configured to receive one of said sheets;
- at least one packet of tobacco;
- at least one lighter, wherein the lighter is in one of the following formats:

  • integral with the device (1)
  • separated from the device (1).

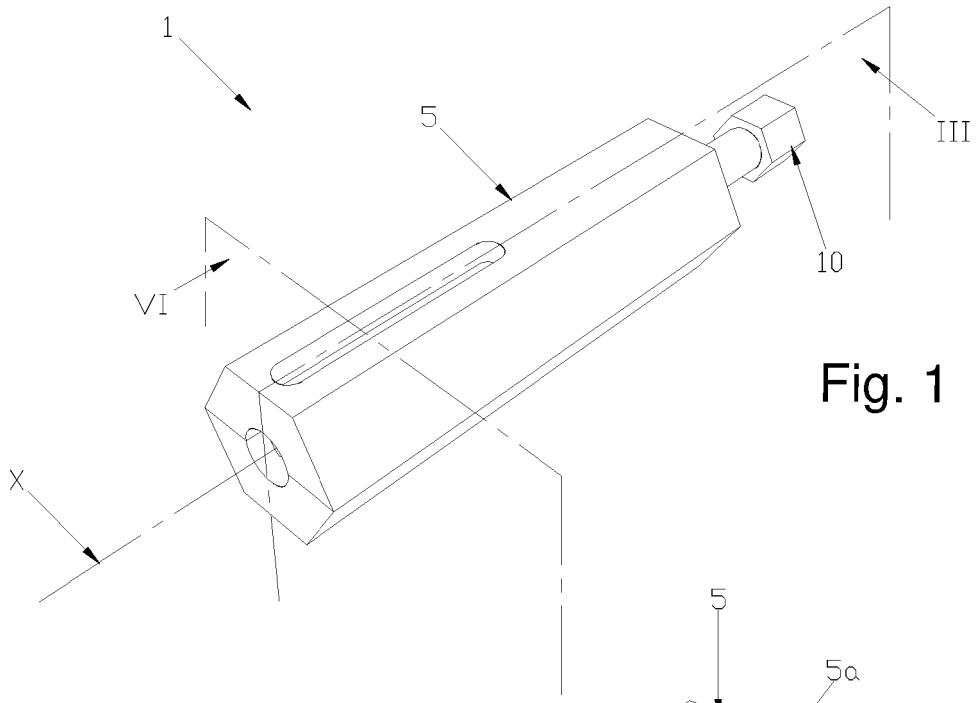

Fig. 1

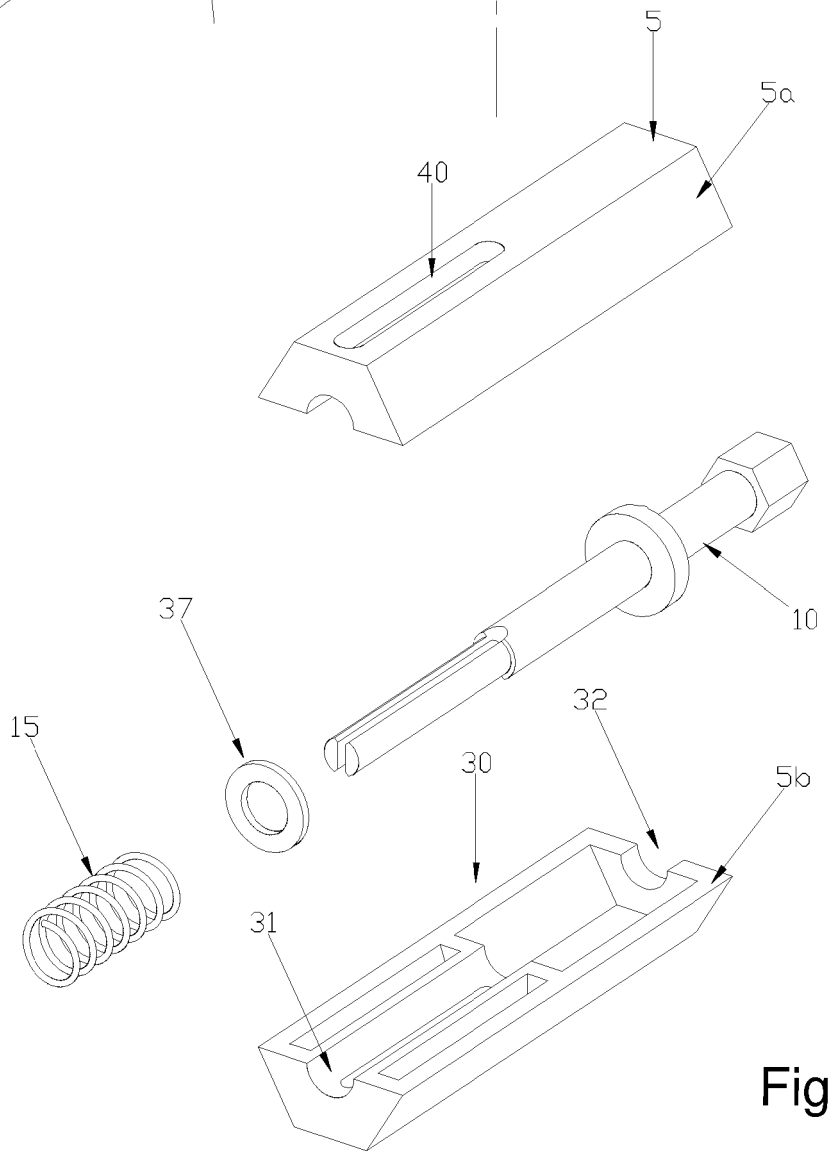

Fig. 2

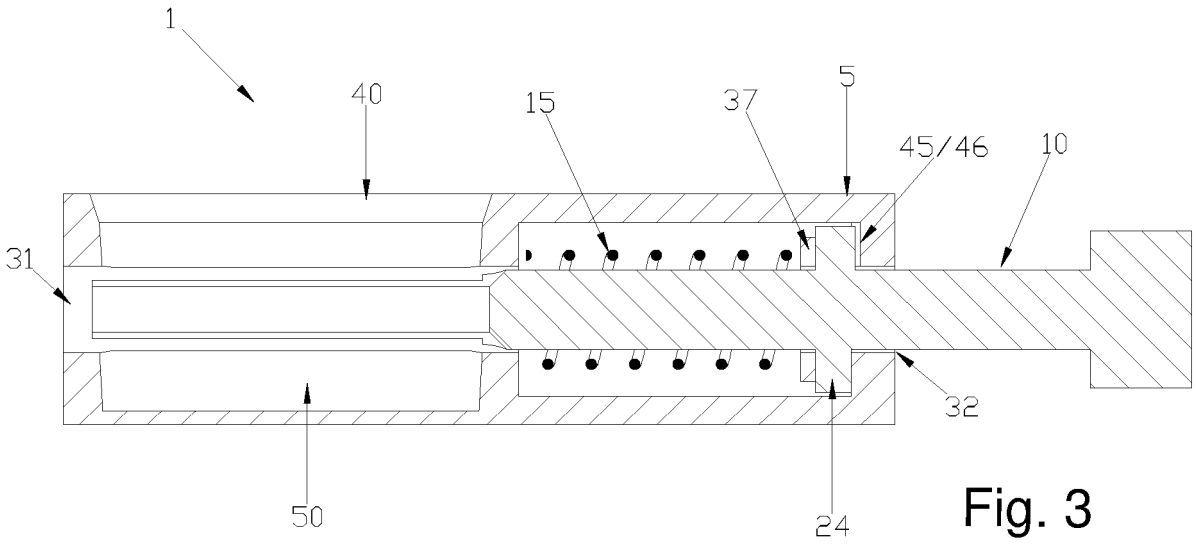

Fig. 3

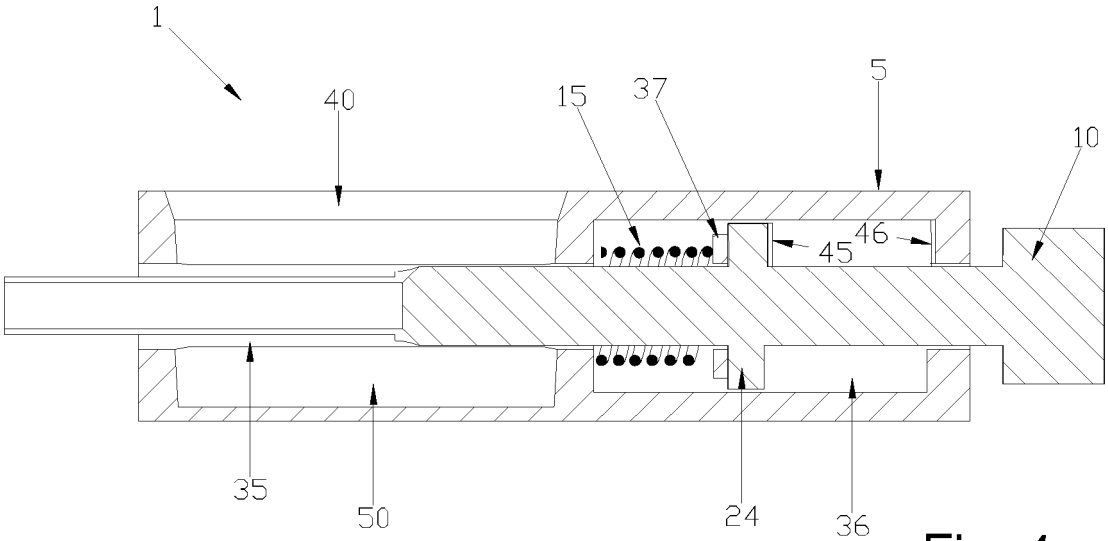

Fig. 4

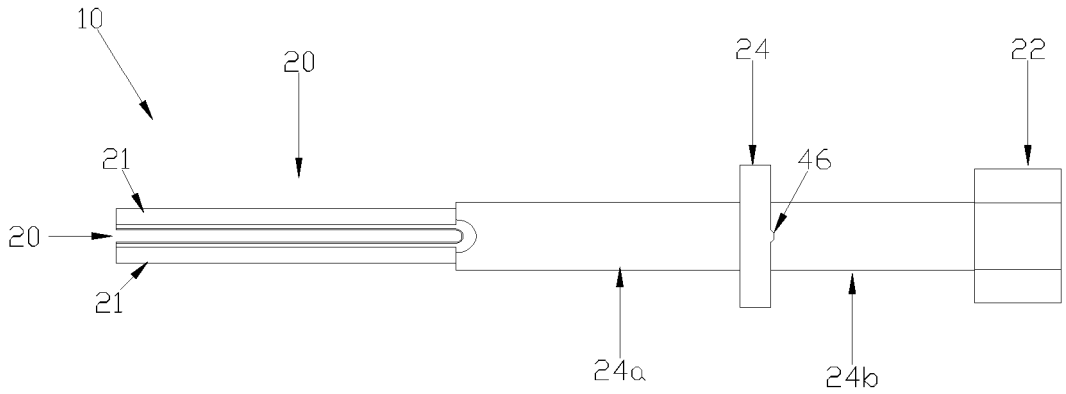

Fig. 5

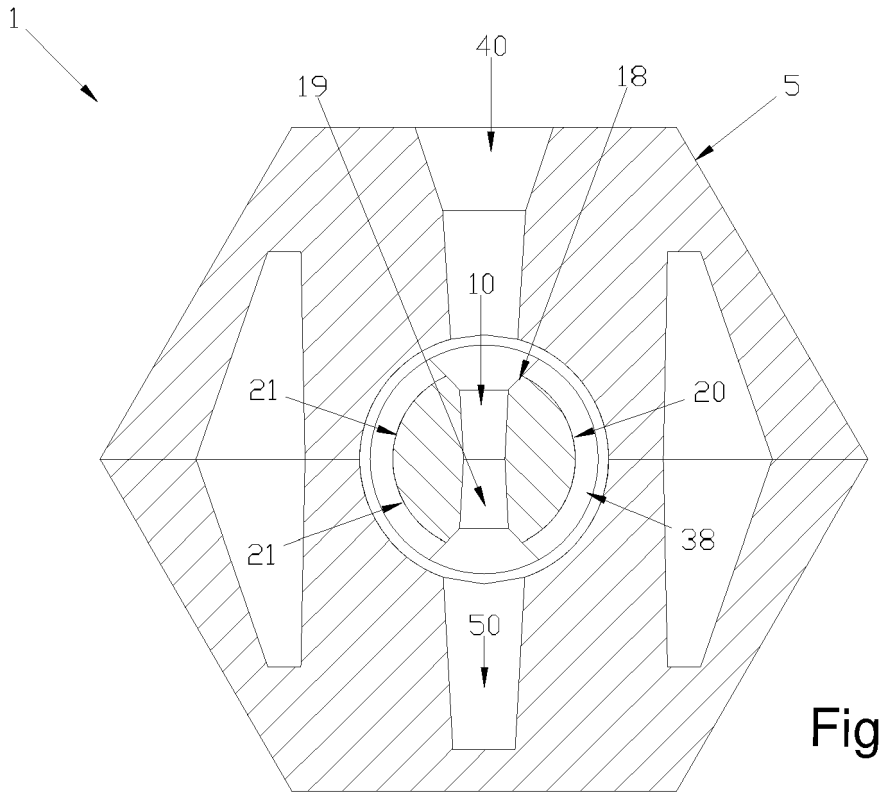

Fig. 6

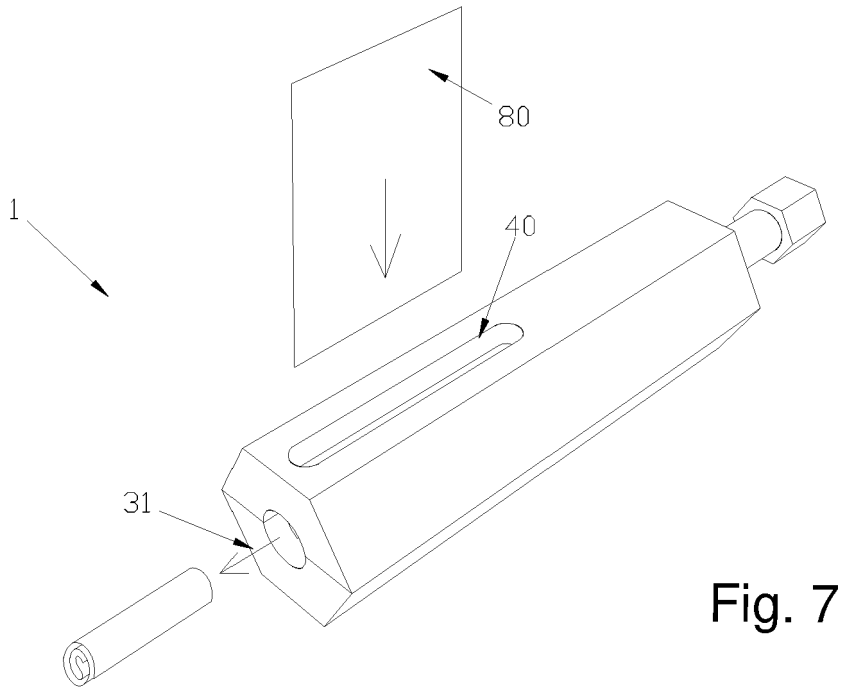

Fig. 7

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EUROPEAN SEARCH REPORT

Application Number
EP 24 17 5353

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	FR 386 590 A (GOTTFRIED LEBRECHT TILLMANNS [DE]) 17 June 1908 (1908-06-17) * the whole document *	1-10	INV. A24C5/40 A24D3/02
A	US 9 943 102 B1 (BOHL SR TRENT ALAN [US]) 17 April 2018 (2018-04-17) * the whole document *	1-10	
A	US 2014/274631 A1 (BARKLEY RICHARD DOUGLAS [CA]) 18 September 2014 (2014-09-18) * paragraphs [0012], [0040]; figures 1-11 *	1-10	
			TECHNICAL FIELDS SEARCHED (IPC)
			A24C A24D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	13 September 2024	Cabrele, Silvio

CATEGORY OF CITED DOCUMENTS

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR 386590 A	17-06-1908	NONE	
US 9943102 B1	17-04-2018	NONE	
US 2014274631 A1	18-09-2014	CA 2809814 A1	18-09-2014
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