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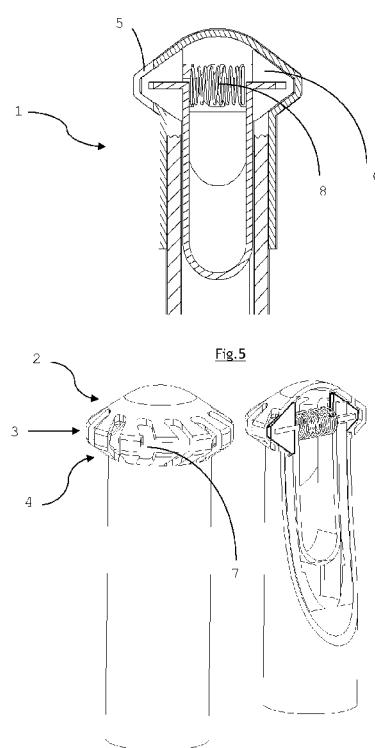
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[Suite sur la page suivante]

(54) Title : CLIPPERS FOR NOSE AND EAR HAIRS

(54) Titre : TONDEUSE DE POILS DE NEZ ET D'OREILLES



(57) **Abstract** : The present invention relates to motorized clippers for hairs growing in the nose and ear cavities, comprising a shaving head with a moving blade (5) and a stationary blade (6), the stationary blade having slots (7) for penetration of the hairs on the front face (2) and on the side face (3) viewed in the direction of introduction of the shaving head into the cavity to be clipped, and said stationary blade also comprising slots for the penetration of hairs on the rear face (4) allowing cutting also of the hairs during withdrawal of the shaving head from the cavity to be clipped.

(57) **Abrégé** : La présente invention se rapporte à une tondeuse motorisée pour les poils poussant dans les cavités du nez et des oreilles comportant une tête de rasage avec une lame mobile 5 et une lame stationnaire 6, la lame stationnaire étant équipée de fentes 7 pour la pénétration des poils sur la face avant 2 et sur la face latérale 3 vu dans le sens d'introduction de la tête de rasage dans la cavité à tondre, et ladite lame stationnaire comporte également des fentes pour la pénétration des poils sur sa face arrière 4 permettant de couper également les poils lors du retrait de la tête de rasage de la cavité à tondre.



LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

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NOSE AND EAR HAIR CLIPPER

Goals of the invention

[001] This invention relates to a hair nose and ear clipper (NEC) or "tondeuse pour poils de nez et d'oreilles" (TNO) in French.

State of the art

[002] The nose and ear hair clippers (NEC) are now well known to users facing the problems of hair growing in the nostrils and the hollow of the ear starting in the middle years.

[003] Different solutions have been proposed to address this problem with one of the first dates back in 1933 when US 1,973,631 patent presents a solution based on a double superimposed cone with slots and adapted on a pair of scissors. The hair to be cut penetrates into the slot in the two cones and the shear action cuts them.

[004] Although the NEC have experienced many changes since that time, the basic mechanism remained the same.

[005] Document US 2,987,818 (1959) presents a cylindrical and wire form accessory adaptable on a razor. This accessory allows to easily penetrate the nasal and ear cavities.

[006] Document US 3,731,379 (1973) and FR 2 430 829 (1978) present a cutting device exclusively adapted to a NEC function and driven by an electric motor in a stationary head that has the shape of a revolving solid, specially adapted to be introduced in the nasal cavities.

[007] Document US 4,958,432 (1990) discloses a NEC with different types of stationary heads and a plurality of blades arranged as rings.

[008] Other improvements have also been proposed in US 6,272,752 B1 (2001) with special blades or in US 6,067,714

(2000), which features a self-cleaning system by aspiration of water by making the NEC head turn under water.

[0009] The improvements of recent years are disclosed in EP 1 747 858 B1 (2006) that offers a particular positioning of the blade on the rotating head and in EP 1 749 622 (2006) which offers a flow path specific to flushing water through the NEC shaving head.

[0010] More recently still, EP 2 298 511 B1 (2010) discloses a routing of rinsing liquid around the blades, EP 2 301 728 A1 (2010) discloses a specific arrangement of the blades, US 2011/0010941 A1 discloses a translational movement in the axis of the NEC with blades and either side of a rod in an extension of a handle.

[0011] Despite improvements in recent years, all the NEC of the state of the art, outside side blade clippers, usually have a cutting mobile device turning within a stationary rounded cylinder shaped head which can primarily cut hair on the front in the direction of penetration of the cavities where the hairs are located. This type of NEC virtually cuts nothing in the exit direction of the cavities because a penetration of the hair into the slots of the stationary head is provided on the front mainly, and to a lesser extent on the side faces.

Summary of the invention

[0012] At least one embodiment of the invention aims to provide a NEC that offers cutting the hairs by the front face of the shaving head during the penetration direction as well as by its back side during the withdrawal direction from the nasal and ear cavities, by offering a special stationary head geometry equipped with slots to open the round part not only in front and/or side of the cylinder that we call the front and side faces in the penetration direction of the shaving head but also on its rear section.

[0012a] The object of the invention is to at least substantially address the above described problem or provide an alternative to the above described clippers.

[0013] This invention discloses a motorized hair clipper for hair growing in the nose and ear cavities comprising a shaving head with a moving blade and a stationary blade, the stationary blade being equipped with slots for the penetration of the hair on the face and on the side face, seen in the shaving head introduction direction in the cavity to be shaved, characterized in that said stationary blade also has slots for the penetration of the hairs on its back to also cut hair during the withdrawal of the shaving head out of the cavity to be shaved.

[0014] The preferred invention operating modes include at least one, or any appropriate combination of the following characteristics:

- The stationary head has an overall shape of truncated dual cone;
- The head has a unique spring pushing the blades against the front and back faces of said head;
- The stationary blade has an opening in the center of its front face;
- The stationary blade has an opening in the center of its front face and the drive cylinder has an opening on its side face;
- The stationary blade hair penetration slots make a cutting angle with the radial direction and with respect to the said shaving head rotation axis.
- The stationary blade hair penetration slots extend uninterrupted between the front and the back faces through the side.

Brief description of the figures

[0014a] Preferred embodiments of the present invention will now be described, by way of examples only, with reference to the accompanying drawings:

[0015] Figure 1 schematically shows the NEC usability according to the state of the art. The absence of hair penetration slots on the back of the stationary head only allows cutting the hairs growing in the shaving head penetration direction in the nasal orifice in this case. With the slots only in the front, the shaving head can capture no hair by withdrawing from the nasal orifice, which reduces its effectiveness. This mode of use therefore favors cutting against the grain which is ineffective if the hair is inclined towards the inside of the cavity.

[0016] Figure 2 shows schematically the usability of a NEC according to the invention. The additional presence of hair penetration slots on the back side of the clipper head allows cutting hair in the nasal orifice penetration direction as well as in the withdrawal direction. The shaving head can also capture the hairs by withdrawing from the nasal orifice, by straightening the hairs that go up into the cavity, which increases its effectiveness.

[0017] Figures 3 and 4 represent the possible uses of the NEC according to the invention for the ears and the nose. The NEC according to the invention shaves in the penetration direction as well as in the withdrawal hole direction.

3a

[0018] Figure 5 shows a cross section of a NEC head operating mode according to the invention.

[0019] Figure 6 represents a view in three dimensions with a partial section showing the layout of the elements inside the head and the penetration slots both on the front, side and rear sides of the head in the penetration direction. In this operation method, the head generally takes a form of a truncated dual cone.

[0020] Figure 7 shows an exploded view of the invention NEC head operating mode with its constituent elements. The spring pushes the blades against the front and rear faces of the stationary blade.

[0021] Figure 8 shows front and plan views of the NEC stationary blade according to the invention.

[0022] Figure 9 shows a 3D overview of a NEC operating mode according to this invention with its handle which incorporates a motor and a rechargeable battery or a battery. The handle can take different forms, and its form is only limited by practical gripping considerations.

[0023] Figure 10 represents an open-ended set of NEC shaving heads according to this invention. All these heads have the feature where the stationary blade not only has front and side penetration slots on the parts but also on the back of the head in the penetration direction into the hole to be shaved.

[0024] Figure 11 shows another operating mode according to the invention with an opening in the center of the stationary blade facilitating rinsing with water.

[0025] Figure 12 has the same operating mode as that of Figure 11, but with an additional opening on the mobile knife drive cylinder allowing the passage of the rinsing water.

List of reference symbols

1. NEC shaving head
2. NEC head front face (front part of the head)
3. NEC head side face
4. NEC head rear face
5. Stationary blade
6. Mobile blade
7. Hair penetration slots
8. Spring
9. Handle

10. Drive cylinder
11. Mobile blade support device
12. Opening on the stationary blade
13. Opening on the drive cylinder

Detailed description of the invention

[0026] The origin of this invention lies in the observation that state of the art nose and ear clippers (NEC) shave the nose and ear hairs in the direction of the penetration of the shaving head in the ports concerned. This is simply due to the lack of slots for the penetration of the hair in the stationary blade on all sides of the head. On the state of the art NEC heads, the penetration slots are generally located on the front side, i.e. the front face of the head in the direction of the penetration into the cavity to be shaved, the slots usually overflow a bit on the side faces as shown in figure 1.

[0027] To increase the shaving efficiency, this invention offers a NEC with a shaving head with slots for the penetration of the hair on the set of faces of the stationary blade, so also on the back side which allows to considerably increase the shaving efficiency and to limit the number of back and forth movements for the same result.

[0028] Figure 10 represents an open-ended set of NEC shaving heads according to the main characteristics of this invention. The presence of slots for the penetration of the hair on a large part of the front, side and rear also increases the accessibility of the rinse water to the moving blade to clean the head.

[0029] Preferably, the mobile blades 5 hair penetration slots 7 extends uninterrupted between the front 2 and rear 4 faces passing through the side face 3. The slots are therefore not interrupted by a potential gap between the face 2, side 3 and back 4 slots allowing them to function as a comb which is the desired effect.

[0030] To further improve head cleaning ease, we can provide an opening 12 on the stationary blade 5 central part dome and even associate it with an additional opening on the drive cylinder 13 to ensure a water flow through the device when rinsing.

[0031] The mobile blades 6 are pushed by a single spring 8 against the inner wall of the stationary blade 5, when it has a dual cone shape. The state of the art stationary blades usually need two springs, one spring to push in the direction of the rotation axis direction, and another for the thrust in the direction perpendicular to the rotation axis.

[0032] To avoid that the mobile blades enter the slots for the stationary blade 5 hair penetration, they make a cutting angle with the radial direction of the shaving head; to improve the cut, they also form an angle with said shaving head rotation axis.

[0033] The device according to the invention can be equipped with one or several luminescent electrodes to illuminate the holes to be shaved.

CLAIMS

1. Motorized clipper for hair growing in a nose and/or ear cavity with a shaving head with a moving blade and a stationary blade, the stationary blade being equipped with slots for the penetration of the hairs on a front face and on a side, both the front face and the side being defined by a shaver head introduction direction into the cavity to be shaved, wherein said stationary blade also includes slots for the penetration of the hairs on a rear side, allowing cutting of hair during withdrawal of the shaving head from the cavity to be shaved.
2. The clipper, according to claim 1, wherein the stationary head has overall a truncated dual cone shape.
3. The clipper according to any of the preceding claims, wherein said head includes a single spring pushing the moving blade against the front and rear faces of said head.
4. The clipper, according to any of the preceding claims, wherein the stationary blade comprises an opening in the center of the front face.
5. The clipper according to any of the preceding claims, wherein the stationary blade comprises an opening in the center of the front face and that the driving cylinder has an opening on the side.
6. The clipper according to any of the preceding claims, wherein the slots for the penetration of hair in the stationary blade form a cutting angle with a radial direction of the rotary trimmer and also with respect to a shaving head rotation axis.
7. The clipper according to any of the preceding claims wherein the slots for penetration of hair in the stationary blade extend uninterrupted between the front and rear faces through the side face.

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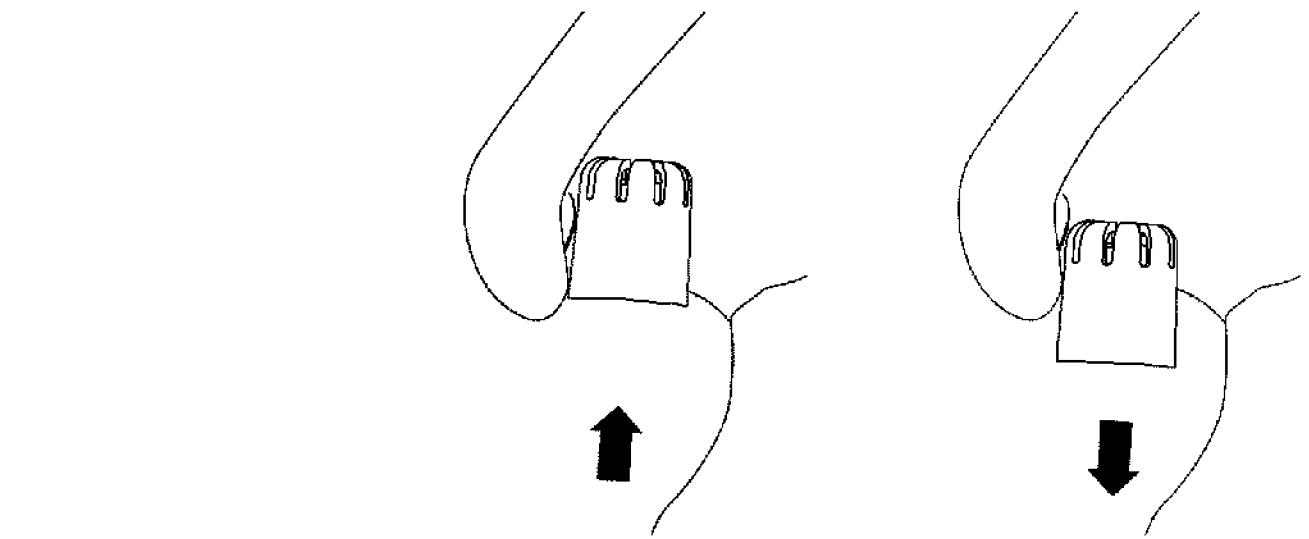


Fig.1

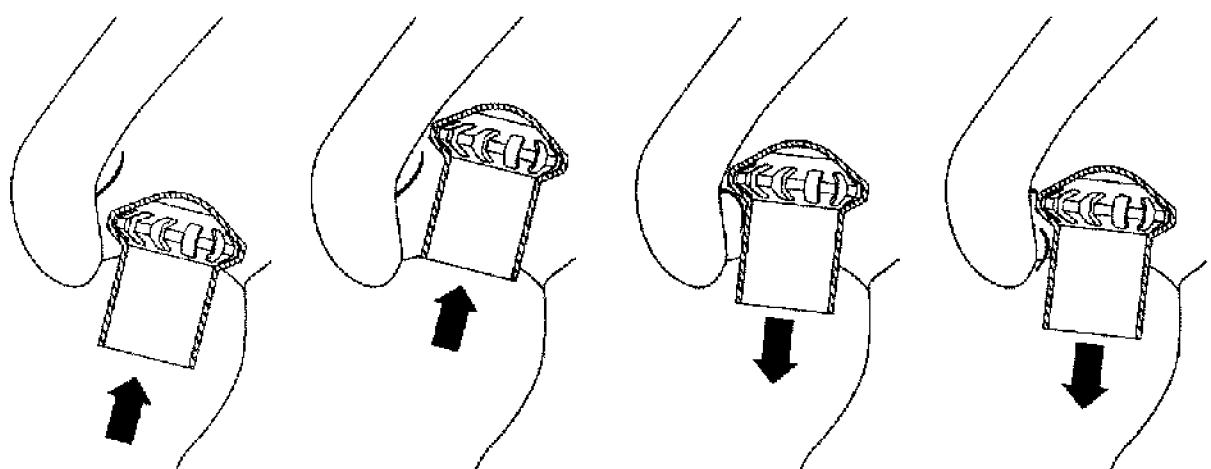


Fig.2

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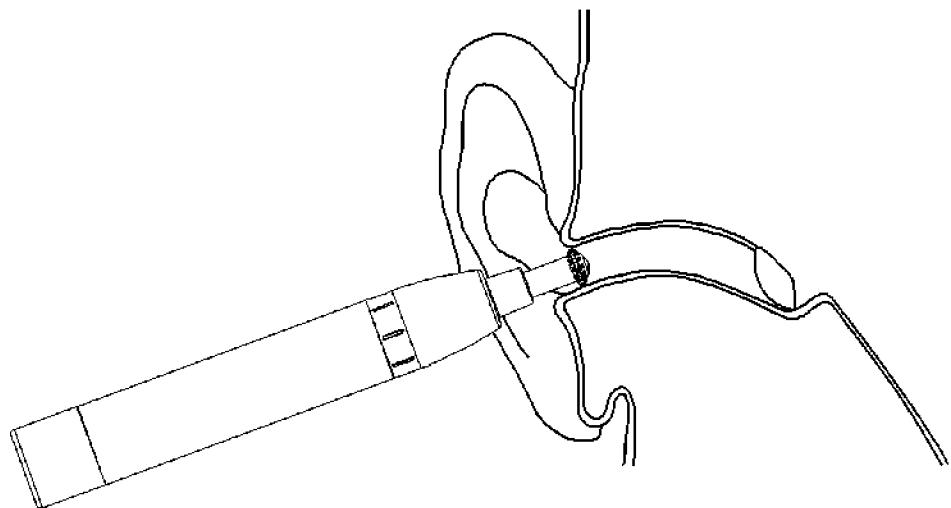


Fig.3

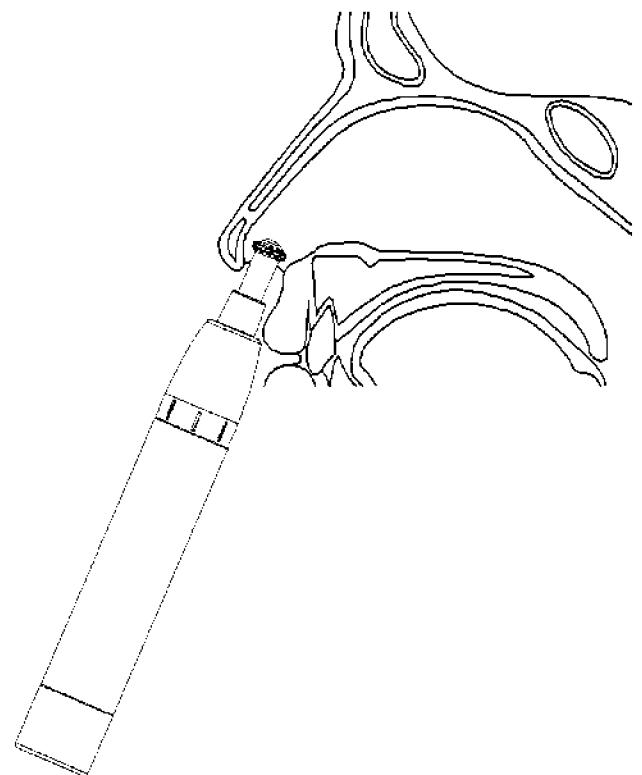


Fig.4

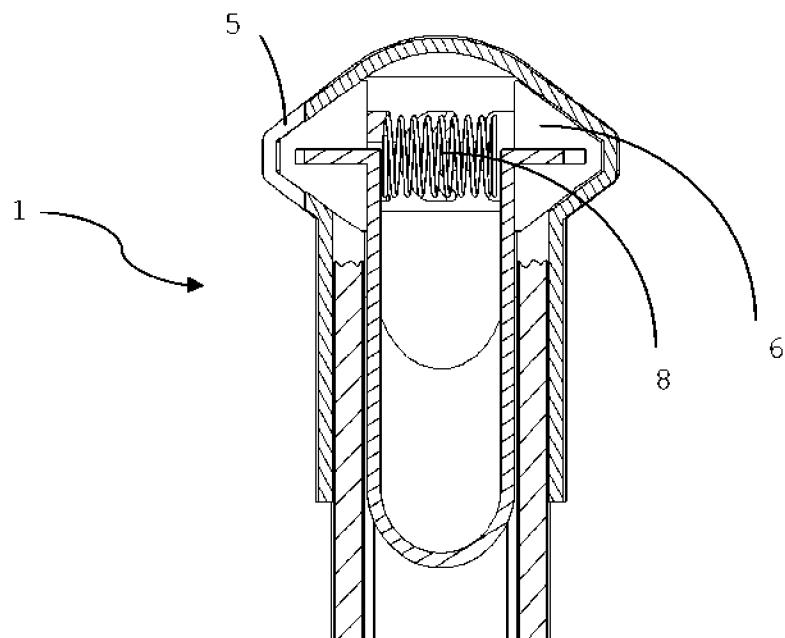


Fig.5

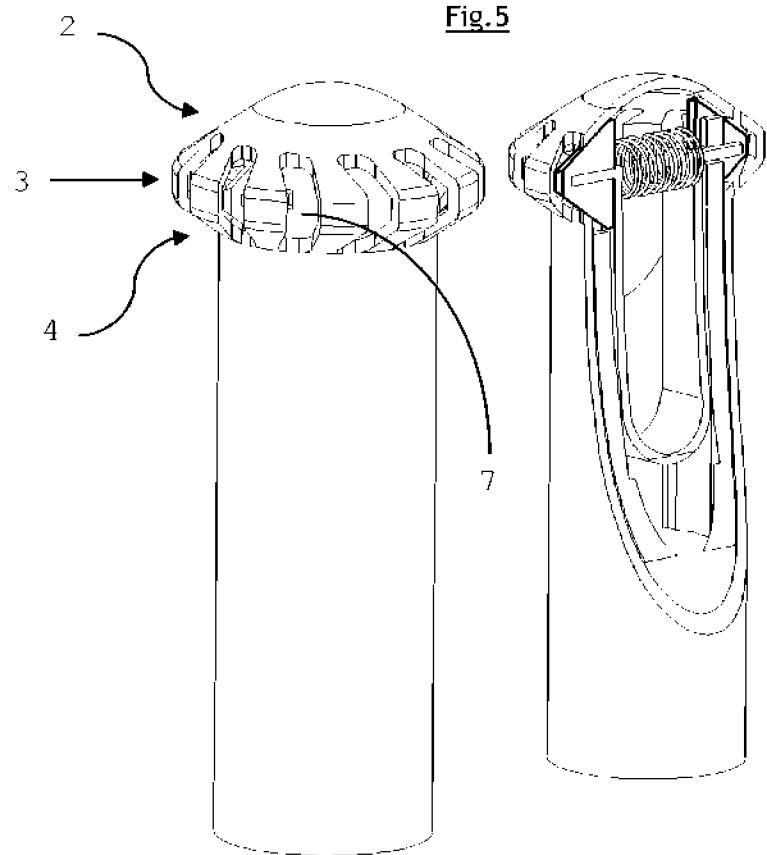


Fig.6

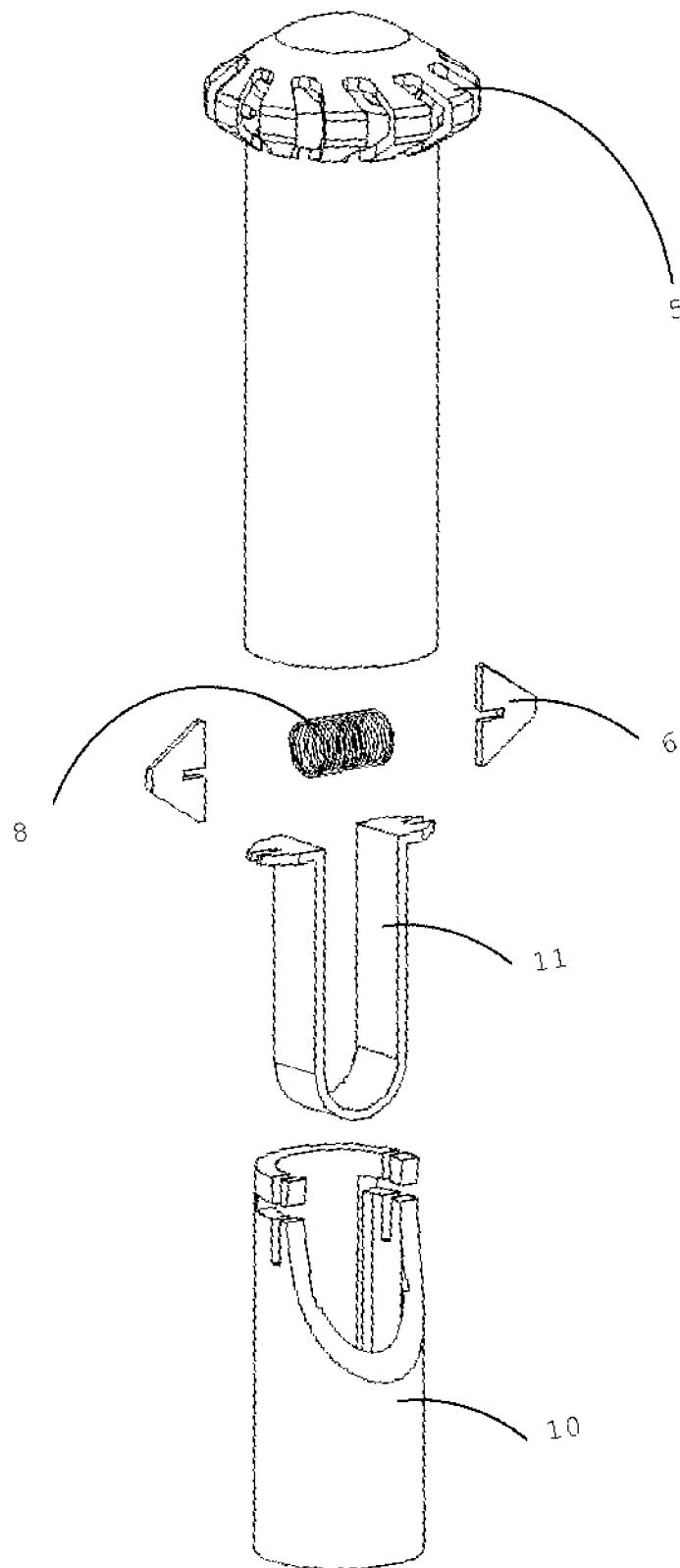


Fig. 7

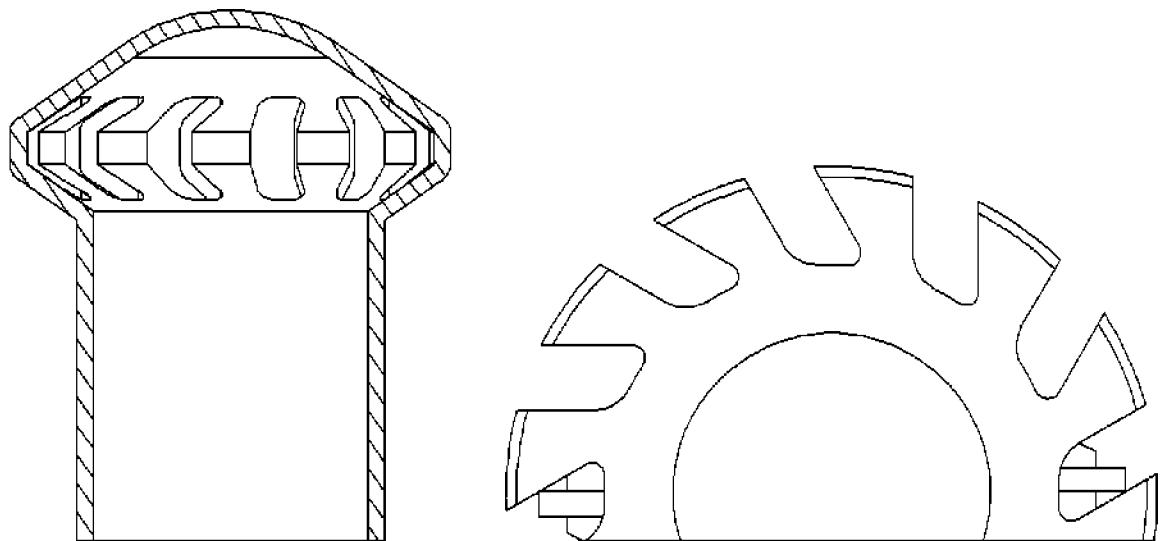


Fig.8

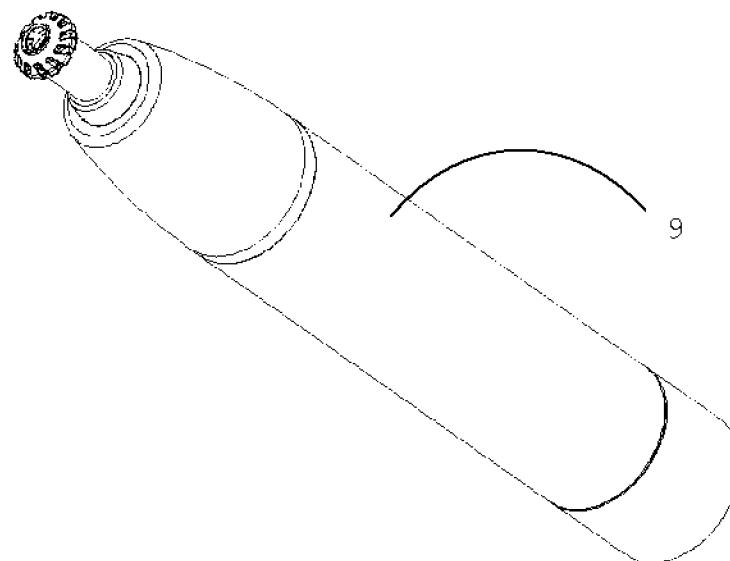


Fig.9

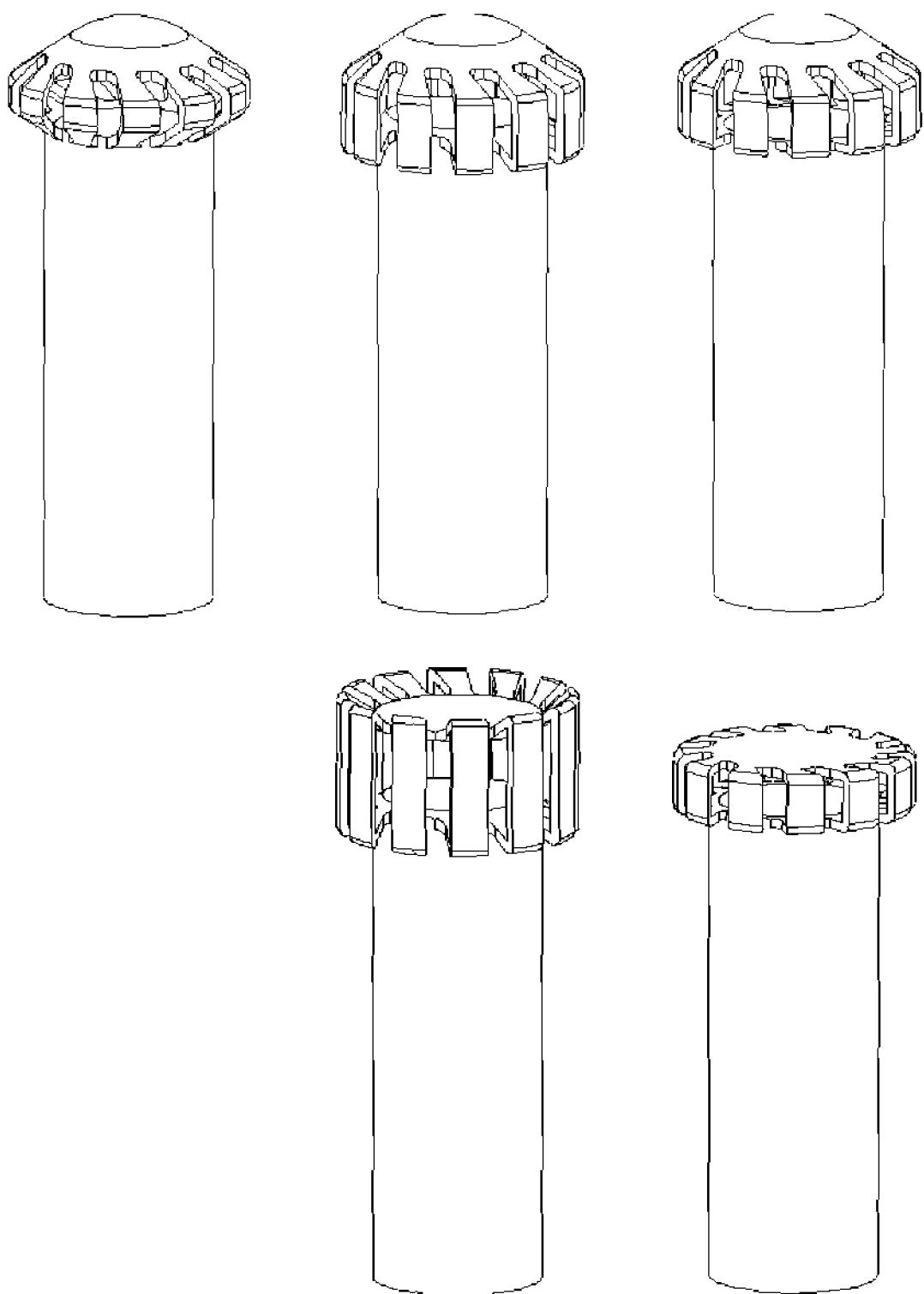


Fig.10

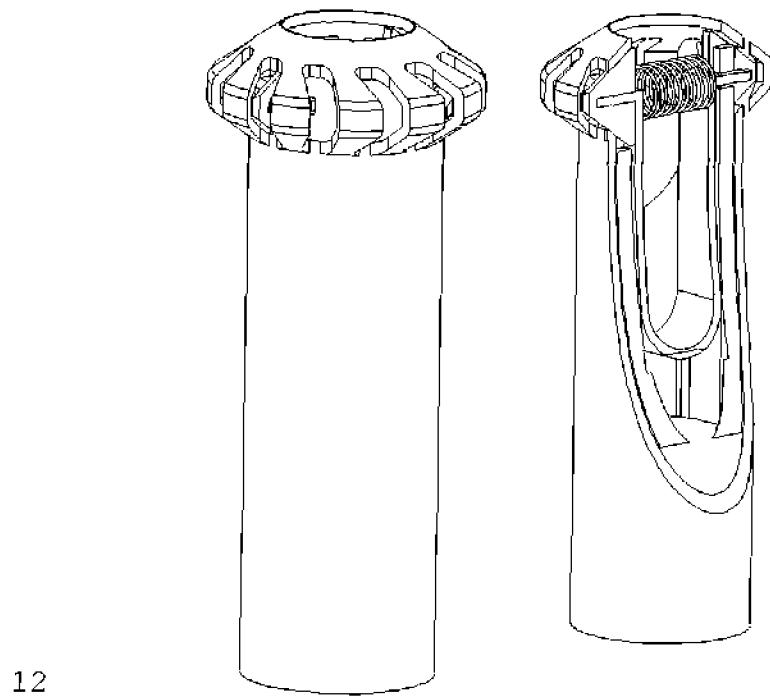


Fig.11

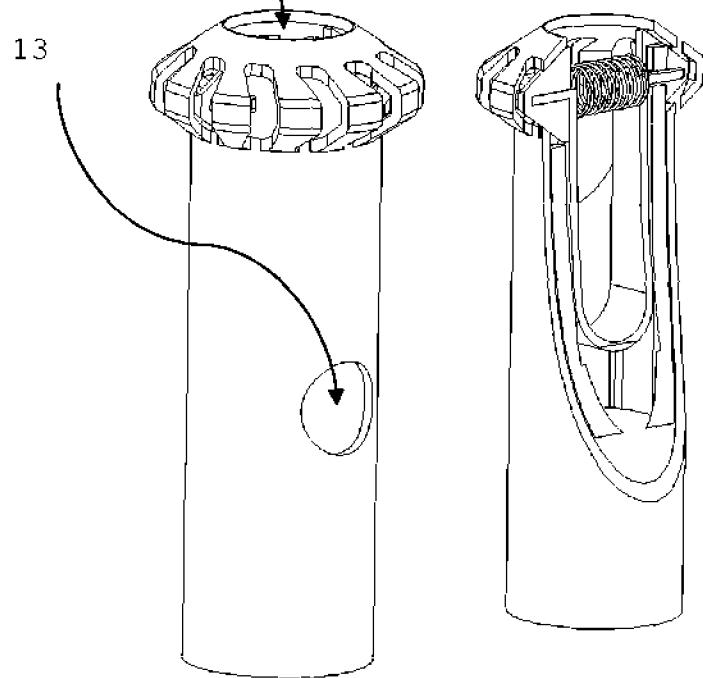


Fig.12