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(54) Power cord clamp holders with a support formed by a tube or stem, featuring very easy assembly

(57) The present invention relates to a power cord clamp for lamp holders with a support formed by a tube or stem, featuring very easy assembly, the power cord clamp comprising a body (1) having at least one elongated region (2) which can be inserted in the end of the tube or stem which is connected to the lamp holder, this region (2) being crossed longitudinally by a passage (3) for the electric power supply cord of the lamp holder. The body (1) has, in its region crossed by the passage for the cord, at least one portion (7a) which can flex towards or away from the longitudinal axis of the passage (3). This flexible portion (7a) has, on its side directed towards the passage (3), power cord clamping means which can engage the cord as a consequence of the flexing of the portion (7a) towards the axis of the passage (3) caused by the engagement of the outer surface of the flexible portion (7a) against the inner surface of the tube or stem when the elongated region (2) is inserted in the tube or stem during the assembly of the lamp holder.

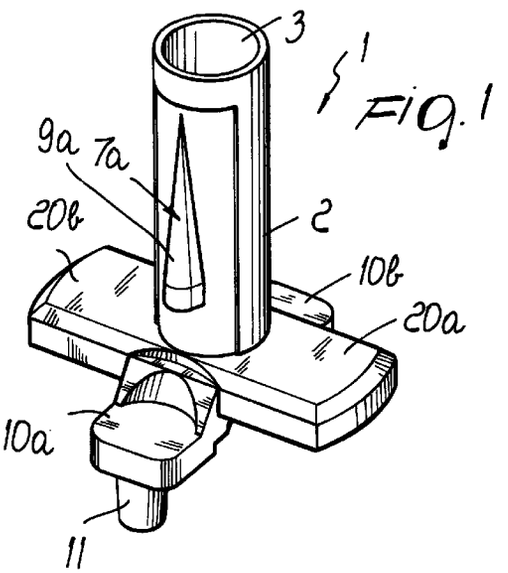

Fig. 1

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Description

The present invention relates to a power cord clamp for lamp holders with a support formed by a tube or stem, featuring very easy assembly.

Conventional lamp holders with a support formed by a tube or stem are generally constituted by a body made of electrically insulating material, wherein there is provided a seat for the lamp and wherein the electrical connection terminals for the electric power supply cord of the lamp holder are arranged. The support of these lamp holders is provided by means of an externally threaded tube which is connected, by using its external thread, to a threaded hole formed in the lamp holder, generally in the portion of the lamp holder known as dome and located opposite with respect to the region wherein the lamp seat is formed.

The electric power cord enters the lamp holder through the supporting tube or stem, which can be metallic or made of synthetic material.

These lamp holders use power cord clamps, i.e., devices having the purpose of avoiding the sliding of the power cord with respect to the lamp holder, in order to prevent any traction stresses on the cord from being transmitted to the electrical terminals, causing the separation of the power cord and therefore constituting a potential source of accidents.

Power cord clamps currently used for these lamp holders are generally substantially disk-shaped and are meant to be accommodated completely inside the lamp holder. The disk-like body of these power cord clamps is centrally provided with a passage for the power cord which is delimited by two opposite wings which allow the cord to pass only in one direction, jamming against the lateral surface of the power cord when a force is applied to said cord in the opposite direction, stopping it.

Power cord clamps currently used in lamp holders with a support constituted by a tube or stem entail the drawback that the clamping of the power cord which they achieve is not always entirely satisfactory.

These power cord clamps also have a considerable bulk inside the dome of the lamp holder and often require the production of special lamp holders.

Another drawback which can be observed in the use of these power cord clamps resides in the difficulties in assembly which are encountered in correctly accommodating the power cord clamp inside the lamp holder dome.

Moreover, these lamp holders, if they use a supporting tube or stem made of metallic material, entail the drawback of requiring the use of an insulating bushing to be fitted on the end of the tube inside the lamp holder, in order to prevent damage to the power cord as a consequence of movements of said cord with respect to the tube which might cause the electrical connection of the tube to the electrical power supply wires of the lamp holder.

A principal aim of the present invention is to obviate the above-described drawbacks by providing a power cord clamp for lamp holders with a support formed by a tube or stem which is highly reliable as regards the locking of the power cord.

Within the scope of this aim, an object of the present invention is to provide a power cord clamp which can be very simply and rapidly assembled to the lamp holder.

Another object of the present invention is to provide a power cord clamp which avoids the need to use insulating bushings even in the case of lamp holders having a metal tube.

A further object of the present invention is to provide a power cord clamp having a reduced bulk and competitive production costs.

This aim, these objects, and others which will become apparent hereinafter are achieved by a power cord clamp for lamp holders with a support formed by a tube or stem, featuring very easy assembly, characterized in that it comprises a body having at least one elongated region which can be inserted in the end of the tube or stem which is connected to the lamp holder, said region being crossed longitudinally by a passage for the electric power supply cord of the lamp holder, said body having, in the region crossed by said passage, at least one portion which can flex towards or away from the longitudinal axis of said passage, said flexible portion being provided, on its side directed towards said passage, with power cord clamping means which can engage the cord as a consequence of the flexing of said portion towards the axis of said passage caused by the engagement of the outer surface of the flexible portion against the inner surface of the tube or stem when said elongated region is inserted in said tube or stem.

Further characteristics and advantages of the present invention will become apparent from the description of two preferred but not exclusive embodiments of the power cord clamp according to the invention, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a perspective view of the power cord clamp according to the invention in a first embodiment;

figure 2 is a perspective view of the power cord clamp of figure 1, taken from another angle;

figure 3 is an axial sectional view of the power cord clamp of figures 1 and 2;

figures 4 and 5 are views of the installation of the power cord clamp of figures 1 and 2 in a lamp holder;

figure 6 is a perspective view of the power cord clamp according to the invention in a second embodiment;

figure 7 is a partially sectional front elevation view of the power cord clamp of figure 6;

figure 8 is a sectional view of figure 7, taken along the plane VIII-VIII;

figure 9 is a top plan view of the power cord clamp in its second embodiment.

With reference to the above figures, the power cord clamp according to the invention, in its two embodiments, comprises a body, generally designated by the reference numerals 1, 101, which is preferably made of molded synthetic material and has an elongated and preferably substantially cylindrical region 2, 102 which is crossed coaxially by a passage 3, 103 for the electric power cord 4 of a lamp holder, generally designated by the reference numeral 5, of the type with a support provided by a tube 6 or stem.

The region 2, 102 has at least one lateral portion, preferably two lateral portions 7a and 7b, 107a and 107b, which are formed in two diametrically opposite regions of the skirt of the region 2, 102 and can flex towards or away from the axis of the passage 3, 103.

Each one of the portions 7a and 7b, 107a and 107b is provided, on its face directed towards the passage 3, 103, with cord clamping means which can engage the cable 4 as a consequence of the flexing of the corresponding portion 7a, 7b, 107a, 107b towards the axis of the passage 3, 103.

The cord clamping means comprise at least one tooth 8a, 8b, 108a, 108b, which protrudes from the face of the corresponding portion 7a, 7b, 107a, 107b directed towards the longitudinal axis of the passage 3, 103. In the first embodiment, shown in figures 1 to 5, the tooth 8a of the portion 7a faces the tooth 8b of the portion 7b.

In the second embodiment, shown in figures 6 to 9, instead of a single tooth there are provided a plurality of teeth 108a, 108b, which are spaced parallel to the axis of the passage 103 on the face of the portions 107a and 107b which is directed towards the axis of the passage 103. The teeth 108a of the portion 107a are also staggered, again parallel to the axis of the passage 3, with respect to the teeth 108b of the portion 107b.

With particular reference to the first embodiment, illustrated in figures 1 to 5, the portions 7a, 7b have, on their outward face, at least one raised portion 9a, 9b which can engage the inner surface of the tube 6 when the region 2 is inserted in the tube 6 to cause the flexing of the portions 7a, 7b towards the axis of the passage 3 and therefore cause the engagement of the teeth 8a, 8b with the cord 4.

The raised portions 9a, 9b protrude so as to form a conical surface the apex whereof is directed towards the end of the body 1 which is meant to be inserted in the tube 6, so that the flexing of the portions 7a and 7b towards the axis of the passage 3 is gradual during the insertion of the region 2 in the tube 6.

Advantageously, the flexible portions 7a, 7b have a thickness gradually increasing starting from their end which is directed towards the end of said body 1 meant to be inserted in the tube 6. In practice, the region 2 has a substantially cylindrical shape, except for the raised portions 9a and 9b, and has no lateral openings, so as to ensure an excellent insulation degree of the cord 4 inserted through the passage 3. The flexibility of the portions 7a, 7b is enhanced through a reduction in the thickness of the walls of the body 1 that delimit the passage 3 proximate to the portions 7a, 7b.

With particular reference to the second embodiment, illustrated in figures 6 to 9, the flexible portions 107a, 107b are constituted by wings, preferably formed monolithically with the body 101, which are located at lateral openings 109a, 109b formed in two diametrically opposite regions in the region 102 of the body 101 of the power cord clamp.

Both the wings 107a, 107b and the openings 109a, 109b are elongated in a direction which is parallel to the extension of the passage 103.

Said wings 107a, 107b are connected, by means of one of their longitudinal ends, to one of the sides that longitudinally delimit the corresponding opening 109a and 109b.

Conveniently, the wings 107a, 107b have a thickness gradually increasing from their end connected to the body 101 of the power cord clamp towards their free end.

If no forces act on the wings 107a, 107b, said wings protrude from the lateral surface of the region 102 of the power cord clamp, so that the insertion of the region 102 in the tube 6 causes the flexing of the wings 107a, 107b towards the axis of the passage 103.

The outside diameter of the region 2, 102, except for the portions 7a, 7b, 107a, 107b, is such as to allow an insertion of the region 2, 102 with a slight play inside the tube 6.

The body 1, 101 has, at the axial end of the region 2, 102 which lies opposite to the end that can be inserted in the tube 6, two resting tabs 10a and 10b, 110a and 110b, protruding laterally on opposite sides at right angles to the axis of the passage 3, 103.

The tabs 10a and 10b, 110a and 110b are also provided, on their side lying opposite with respect to the region 2, 102, with feet 11, 111 which can be engaged inside the lamp holder 5.

Conveniently, if particular insulation is required for the electric power cord 4 of the lamp holder, the body 1, 101 of the power cord clamp can have, at the axial end of the region 2, 102 which is opposite with respect to the end that can be inserted in the tube 6, two protective wings 20a and 20b, not shown in figures 6 to 9 for the sake of simplicity, which protrude between the resting tabs 10a and 10b, 110a and 110b, also preferably along opposite directions which are substantially perpendicular to the axis of the region 2, 102. Said wings 20a and 20b, the shape whereof can vary according to requirements, have the purpose of further increasing the safety of the electrical insulation of the power cord 4 from any metallic part inside the dome of the lamp holder, allowing to classify the lamp holder in a higher insulation class.

The lamp holder 5 is preferably constituted by a dome 12 provided at its top, in a per se known manner, with a threaded hole 13 meant to couple to the tube 6.

The dome 12 also has a pair of flexible wings 14a and 14b which can engage in a snap-together fashion

locators 15a and 15b formed correspondingly in the lamp holder body 16.

The seat 17 for the lamp is formed in the lamp holder body 16, which also accommodates the terminals for electrical connection to the cord 4, which are not illustrated for the sake of simplicity.

Seats 18 are formed in the lamp holder body 16, in the region thereof facing the tube 6, and are meant to couple to the feet 11, 111 of the resting tabs 10a and 10b, 110a and 110b of the body 1, 101 of the power cord clamp.

The lamp holder is assembled to the power cord clamp according to the invention as follows.

First of all, the electric power supply cord 4 is inserted through the tube 6 and through the passage 3, 103 formed in the power cord clamp according to the invention, and the electrical conductors are connected to the terminals located inside the lamp holder body.

After connecting the electrical conductors, the power cord clamp according to the invention is slid along the power cord 4 and moved against the body 16 of the lamp holder until its feet 11, 111 engage in the seats 18 specifically provided in the lamp holder body.

Assembly is completed by sliding the dome 12 of the lamp holder, together with the tube 6, along the cord 4 until the wings 14a and 14b engage, in a snap-together fashion, the locators 15a and 15b.

It should be noted that this final operation also achieves the insertion of the region 2, 102 of the power cord clamp according to the invention inside the tube 6. As a consequence of the insertion of the region 2, 102 inside the tube 6, the portions 7a and 7b, 107a and 107b engage the inner surface of the tube 6, flexing towards the axis of the passage 3, 103 and therefore engaging the cord 4 and blocking it.

It should be noted that the locking of the power cord 4 by means of the power cord clamp according to the invention is achieved automatically when the dome 12 is assembled to the body 16 of the lamp holder 5.

In practice it has been observed that the power cord clamp according to the invention fully achieves the intended aim and objects, since it significantly simplifies the operations for the assembly of the lamp holder and ensures considerable strength of the clamping of the electric cord.

Another advantage of the power cord clamp according to the invention is that it avoids contact of the power cord with the end of the tube which is connected to the dome of the lamp holder, assuredly eliminating any possibility of damage to the power cord, even if the tube is made of metallic material, without requiring the use of electrically insulating bushings.

The power cord clamp thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the same inventive concept; all the details may also be replaced with other technically equivalent elements.

In practice, the materials employed, as well as the dimensions, may be any according to requirements and to the state of the art.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A power cord clamp for lamp holders with a support formed by a tube or stem, featuring very easy assembly, characterized in that it comprises a body having at least one elongated region which can be inserted in the end of the tube or stem which is connected to the lamp holder, said region being crossed longitudinally by a passage for the electric power supply cord of the lamp holder, said body having, in the region crossed by said passage, at least one portion which can flex towards or away from the longitudinal axis of said passage, said flexible portion being provided, on its side directed towards said passage, with power cord clamping means which can engage the cord as a consequence of the flexing of said portion towards the axis of said passage caused by the engagement of the outer surface of the flexible portion against the inner surface of the tube or stem when said elongated region is inserted in said tube or stem.

2. A power cord clamp according to claim 1, characterized in that said body is made of molded synthetic material and in that said elongated region has a substantially cylindrical shape and is crossed coaxially by said passage.

3. A power cord clamp according to claims 1 and 2, characterized in that said at least one flexible portion comprises two flexible portions arranged in two diametrically opposite regions of the skirt of said substantially cylindrical region.

4. A power cord clamp according to one or more of the preceding claims, characterized in that said cord clamping means comprise at least one tooth which protrudes from the face of said flexible portions which is directed towards said passage.

5. A power cord clamp according to one or more of the preceding claims, characterized in that said flexible portions have, on their outward face, at least one raised portion which can engage the inner surface of the tube upon insertion of said body in said tube to produce the flexing of said flexible portions towards the axis of said tube.

6. A power cord clamp according to one or more of the preceding claims, characterized in that said raised

portion protrudes along a conical surface the apex whereof is directed towards the end of said body which can be inserted in said tube to produce the gradual flexing of said flexible portions upon insertion of said substantially cylindrical region in said tube.

7. A power cord clamp according to one or more of the preceding claims, characterized in that said substantially cylindrical region has no lateral openings, the flexibility of said portions being increased by a reduction in the thickness of said body in the region crossed by said passage proximate to said flexible portions.

8. A power cord clamp according to one or more of the preceding claims, characterized in that said flexible portions have a thickness which increases gradually starting from their end which is directed towards the end of said body to be inserted in said tube.

9. A power cord clamp according to one or more of the preceding claims, characterized in that said cord clamping means comprise a plurality of teeth which protrude from the face of said flexible portions which is directed towards said passage and are spaced from each other in a direction which is parallel to the axis of said passage.

10. A power cord clamp according to one or more of the preceding claims, characterized in that the teeth of one flexible portion are staggered with respect to the teeth of the diametrically opposite flexible portion in a direction which is parallel to the axis of said passage.

11. A power cord clamp according to one or more of the preceding claims, characterized in that said flexible portions are constituted by wings which can flex towards or away from the axis of said passage and are located at openings formed on the lateral surface of said substantially cylindrical region.

12. A power cord clamp according to one or more of the preceding claims, characterized in that said openings and said flexible wings are elongated in a direction which is parallel to the axis of said passage, and in that said flexible wings are connected, by means of one of their longitudinal ends, to one of the sides that longitudinally delimit the respective opening.

13. A power cord clamp according to one or more of the preceding claims, characterized in that when no forces act on said flexible wings, said wings protrude from the lateral surface of said substantially cylindrical region.

14. A power cord clamp according to one or more of the preceding claims, characterized in that said body has, at the axial end of said substantially cylindrical region which is opposite with respect to the axial end that can be inserted in said tube, two resting tabs provided with feet which can engage the inside of the lamp holder.

15. A power cord clamp according to one or more of the preceding claims, characterized in that said resting tabs protrude laterally, on opposite sides, in a direction which is substantially perpendicular to the axis of said passage.

16. A power cord clamp according to one or more of the preceding claims, characterized in that said body has, at the axial end of said region lying opposite to the axial end that can be inserted in said tube, two protective wings in order to increase the electrical insulation of the electric power supply cord inside the lamp holder.

17. A power cord clamp according to one or more of the preceding claims, characterized in that said protective wings lie between said resting tabs.

18. A lamp holder with a support formed by a tube or stem, characterized in that it comprises a power cord clamp according to one or more of the preceding claims which is at least partially inserted in the end of the tube or stem which is connected to the lamp holder.

19. A lamp holder according to claim 18, characterized in that it is internally provided, in the region facing said tube, with seats which can be engaged by said feet of the resting tabs of said power cord clamp.

20. A lamp holder according to one or more of the preceding claims, characterized in that it comprises a lamp holder body wherein there is provided the lamp seat, the electrical connection terminals, and a dome connected to an axial end of the tube or stem, said dome being connected to the lamp holder body by means of a snap-together coupling.

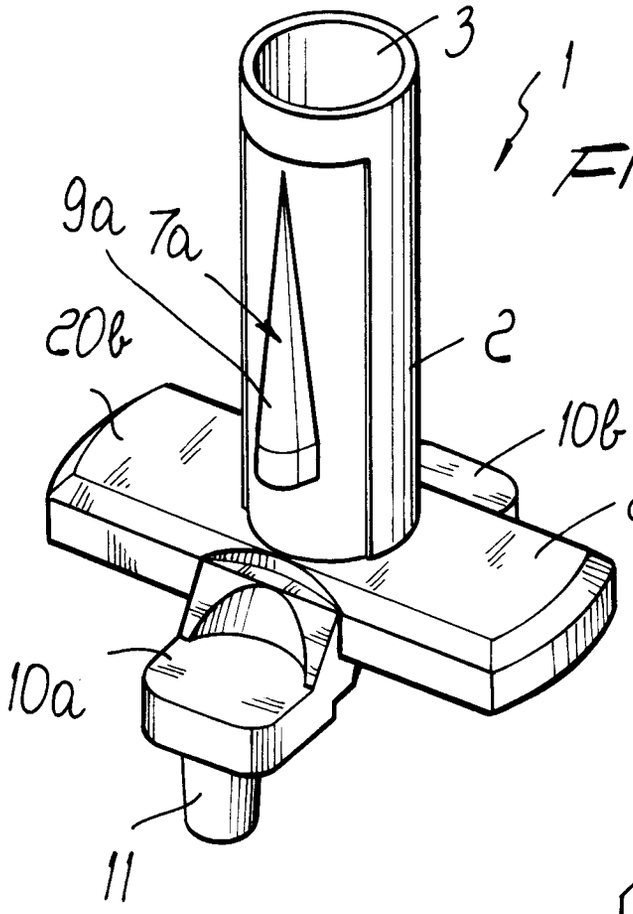


FIG. 1

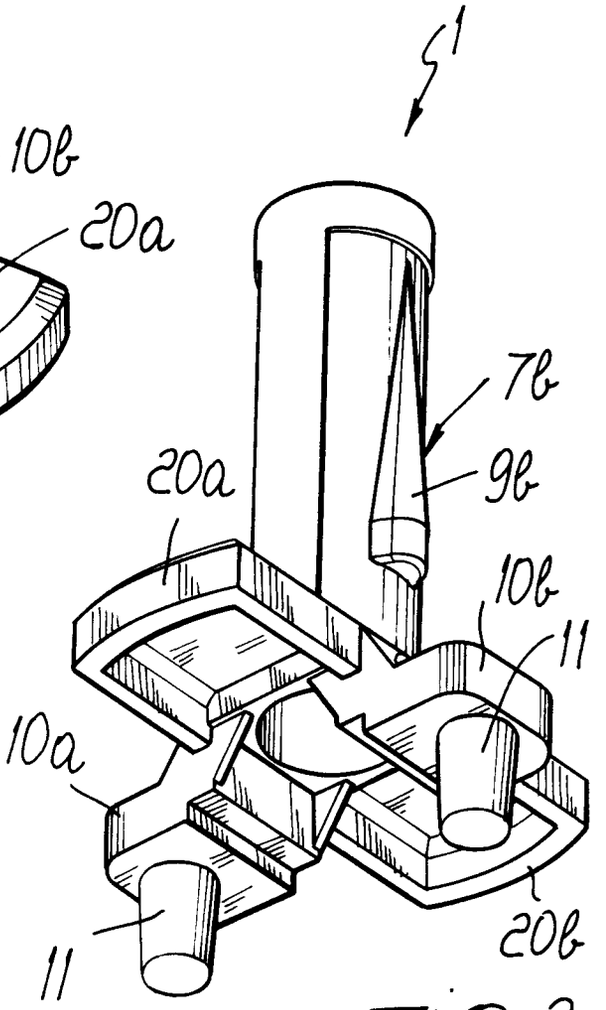


FIG. 2

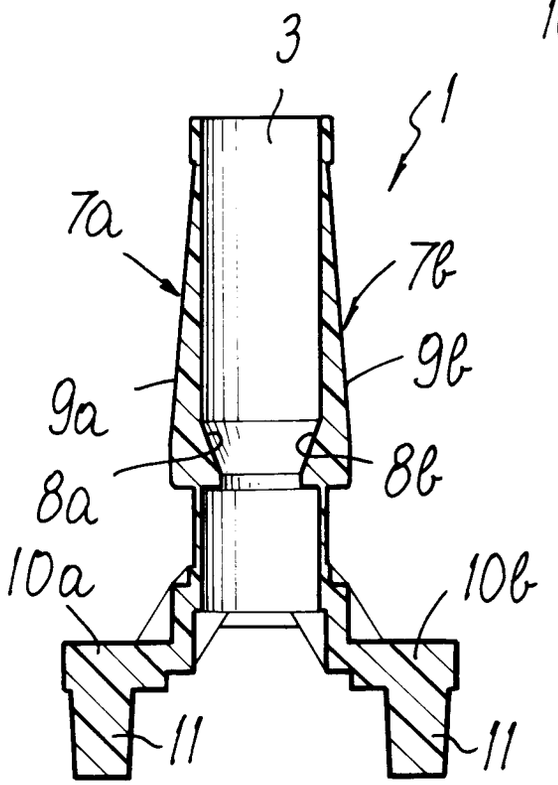
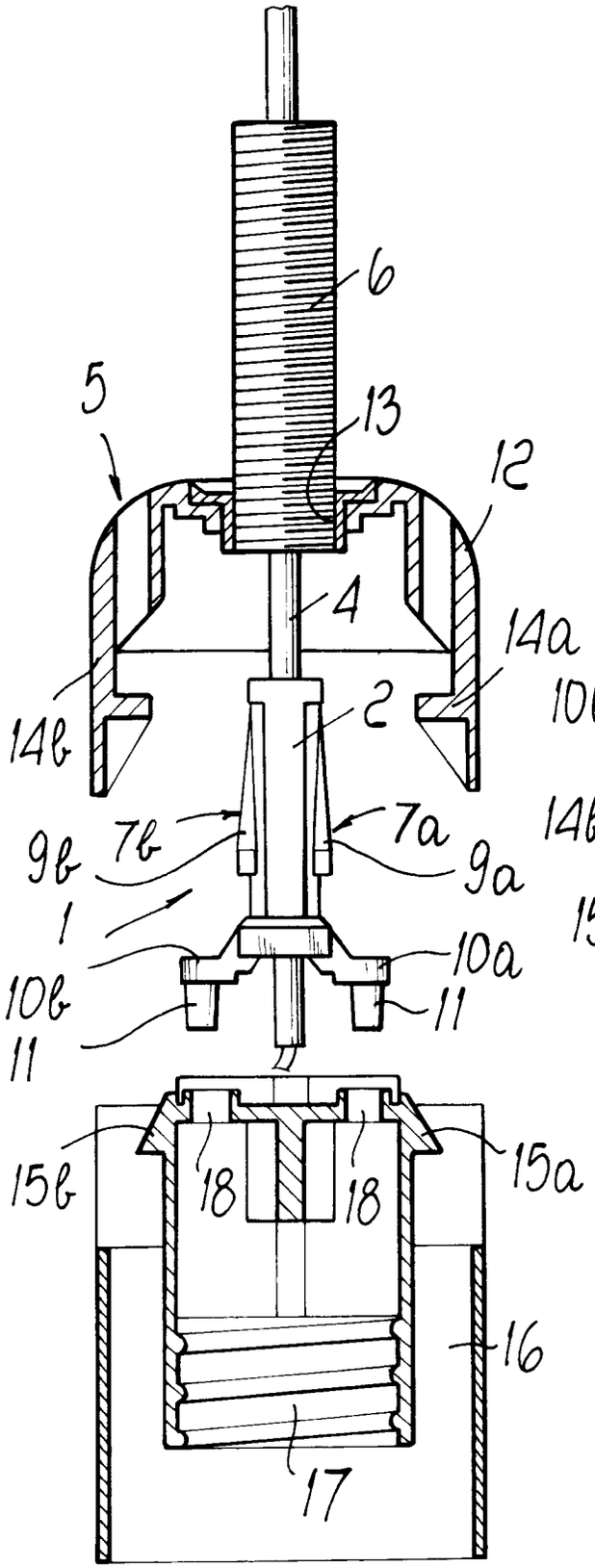


FIG. 3


6
5
13
12
4
14a
14b
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7b
7a
9b
9a
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10a
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11
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15b
18
18
15a
16
17

Fig. 4

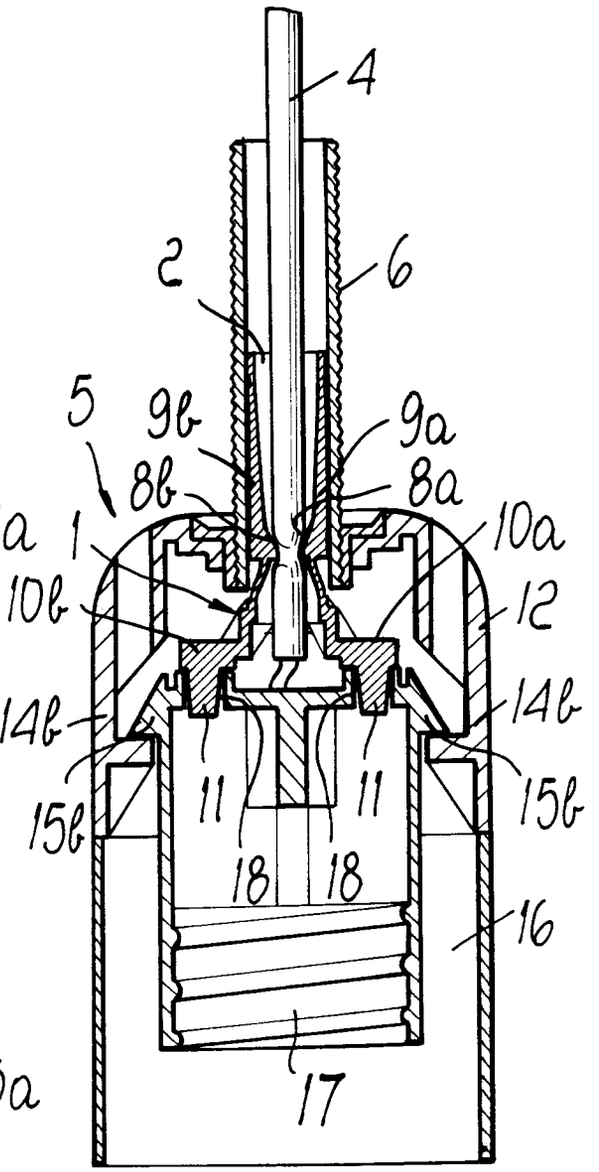
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Fig. 5

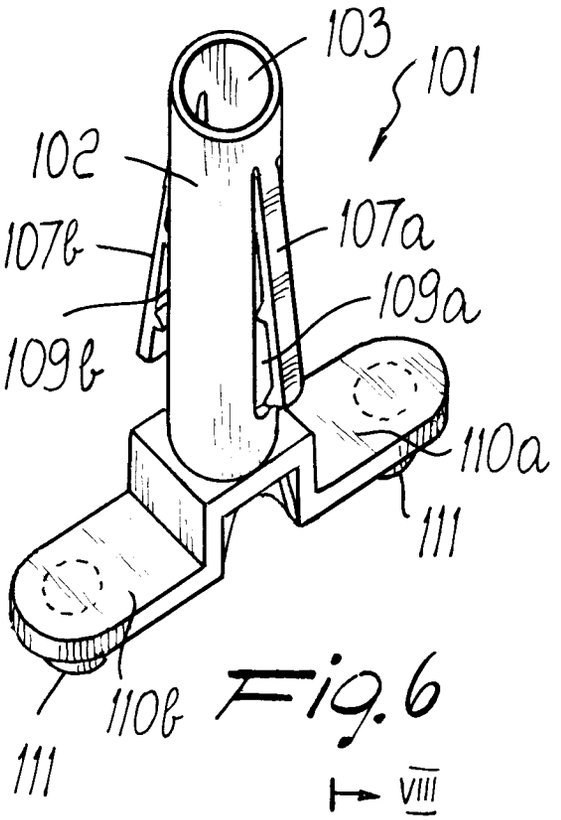

Fig. 6

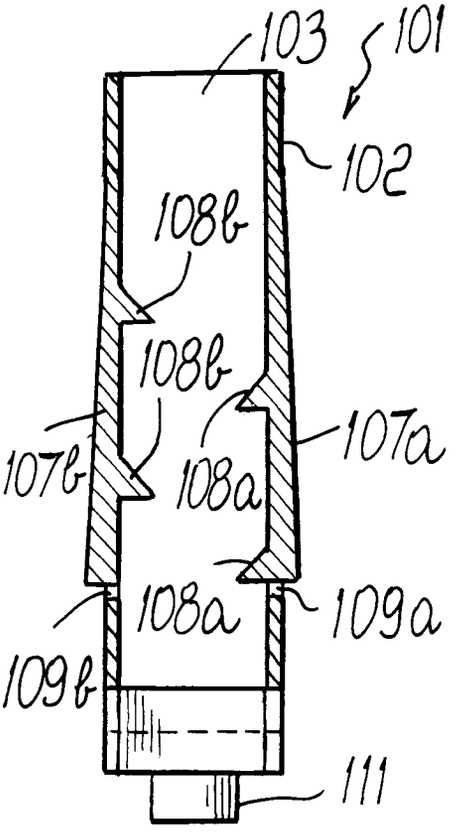

Fig. 8

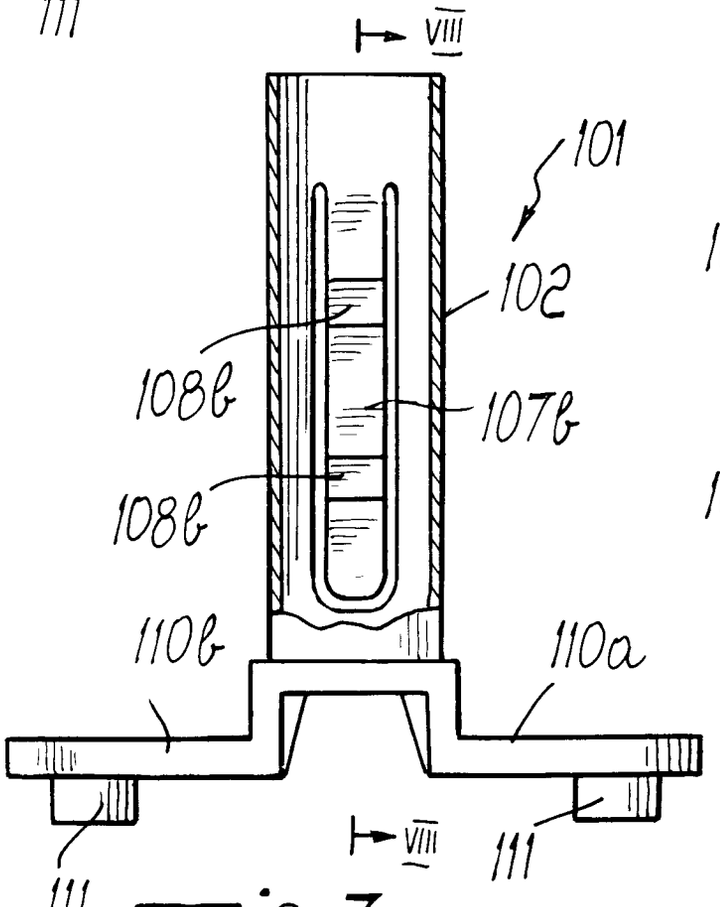

Fig. 7

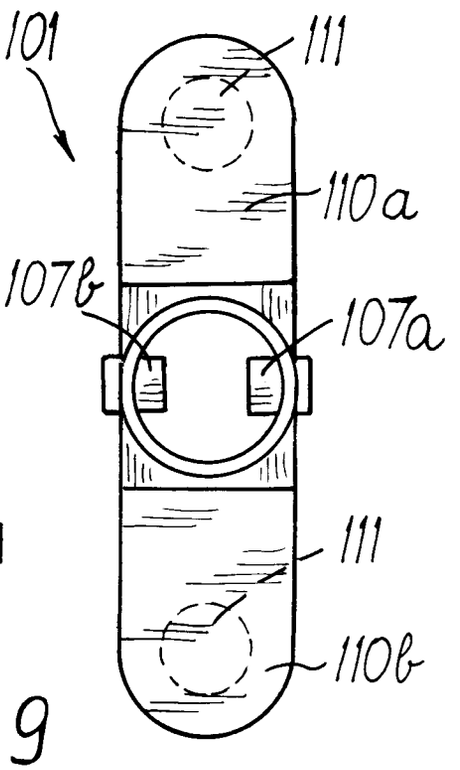

Fig. 9