(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 692 338 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
17.01.1996 Bulletin 1996/03

(51) Int Cl.[6]: **B24B 9/14**

(21) Application number: **95830268.9**

(22) Date of filing: **26.06.1995**

(84) Designated Contracting States:
BE DE FR GB NL

(30) Priority: **14.07.1994 IT MI940508 U**

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(54) Apparatus for cutting coloured and/or polarized additional lenses for spectacles

(57) An apparatus for cutting coloured and/or polarized lenses for spectacles comprises a supporting construction, having a bearing shoulder for bearing the outer contour of the spectacle frame for holding the lenses.

On the supporting construction is mounted a cutting tool, arranged near the bearing shoulder on the side thereof opposite to the spectacle frame bearing side, the cutting tool being controllably driven in order to progressively cut that portion of the additional lens, previously mounted on the frame, projecting from the frame and overlaying the bearing shoulder in the direction of the cutting tool, while the frame is driven, with respect to the bearing shoulder, so as to cause the bearing shoulder to follow the outer contour of the frame.

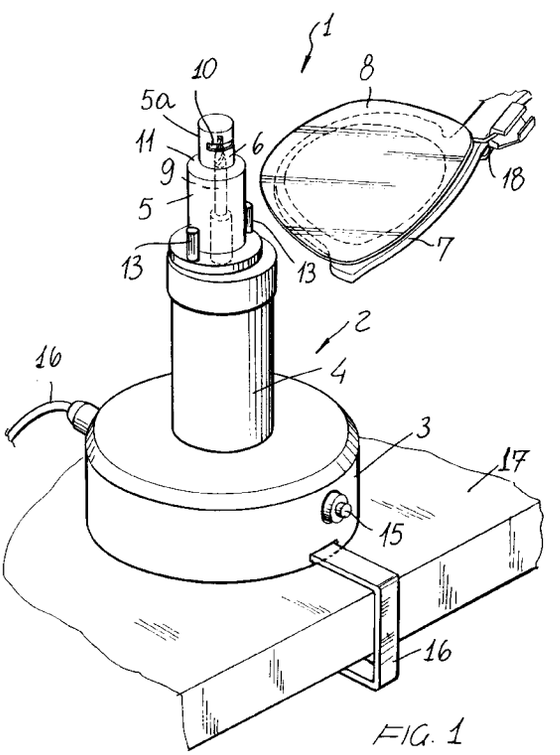

FIG. 1

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Description

BACKGROUND OF THE INVENTION

The present invention relates to an apparatus for cutting additional lenses, either coloured and/or polarized, to be assembled on spectacles.

As is known, particularly in spring time, in order to properly protect the eyes from an excessive light, there are used spectacles including either coloured and/or polarized lenses.

Those persons conventionally using view-lens spectacles, in this season, are compelled to use two pairs of spectacles, i.e. a pair with transparent lenses, for use in inside environments, and a pair of spectacles with view-lenses, either coloured and/or polarized, to be used outside.

Instead of buying two pairs of view spectacles, it is also possible to buy additional lenses, either coloured and/or polarized, having a very light frame which can be applied on the front side of the view spectacles, so that the additional lenses cover on the front the view lenses.

In recent times, the use of additional lenses, either coloured and/or polarized, to be assembled on view spectacles, particularly during the spring, has encountered a broad diffusion since the application of the additional lenses on the view spectacles is a very simple operation.

As they are not used, these additional lenses, owing to their reduced weight, can be easily held in pockets, purses and the like.

As known, the above mentioned additional lenses are made by starting from a standard-size lens which is cut, by using suitable cutting pantographs, so as to fit the contour or profile of the frame thereon they must be assembled.

The cutting pantographs provided for making the above mentioned additional lenses, require that a suitable working bench be used, which must have a suitable size for properly supporting the cutting pantograph, as well as to facilitate the use thereof.

On the other hand, the size occupied by a cutting pantograph and related working bench, even if they are not very large, are however frequently excessive for a lot of optics shops.

Moreover, the additional lenses must be cut with a comparatively high accuracy, since a shape largely different from that of the spectacles frame, in addition to being antiaesthetic, can be moreover dangerous for the user.

Because of the above mentioned reasons, the cutting of the additional lenses is frequently performed by specialized shops, with comparatively long delivery times, and with costs to be added to those of the additional lenses and related frame.

SUMMARY OF THE INVENTION

Accordingly, the aim of the present invention is to solve the above mentioned problems, by providing an apparatus for cutting additional lenses, either coloured and/or polarized, provided for being assembled on view-lens spectacles frames, which apparatus has a very reduced size and can be easily operated by unskilled personnel.

Within the scope of the above mentioned aim, a main object of the present invention is to provide a lens cutting apparatus which can cut additional lenses perfectly fitting to the shape of the view-lens spectacles.

Another object of the present invention is to provide such a lens cutting apparatus which is very competitive from a mere economic standpoint.

Yet another object of the present invention is to provide such an additional lens cutting apparatus which is very reliable and safe in operation.

According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by an apparatus for cutting either coloured and/or polarized additional lenses, to be mounted on view-lens spectacles, characterized in that said apparatus comprises a supporting construction, having a bearing shoulder for bearing thereon the outer contour of a spectacles frame, supporting view lenses, a cutting tool being provided, associated with said supporting construction and arranged near said bearing shoulder, on an opposite side from said frame bearing side.

The cutting tool, in particular, can be controllably driven in order to progressively cut that portion of the additional lens, associated with the frame, projecting from said frame, and overlaying the bearing shoulder in the direction of the cutting tool, while said frame is driven with respect to said bearing shoulder so as to cause said bearing shoulder to follow the outer contour of said frame.

BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the additional lens cutting apparatus according to the present invention will become more apparent hereinafter from the following detailed disclosure of a preferred, though not exclusive, embodiment thereof, which is illustrated, by way of an indicative, but not limitative, example, in the accompanying drawings, where:

Figure 1 is a perspective view illustrating the additional lens cutting apparatus according to the present invention;

Figure 2 is a partially cross-sectioned side elevation view illustrating the subject apparatus;

Figure 3 illustrates an enlarged detail of Figure 2;

Figure 4 is a top plan view, partially cross-sectioned, of the additional lens cutting apparatus according to the present invention, shown during an additional lens cutting operation thereof.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

With reference to the number references of the above mentioned figures, the additional lens cutting apparatus according to the present invention, which has been generally indicated by the reference number 1, comprises a supporting construction 2, which is preferably constituted by a base 3 with a vertical extension 4 on the top of which is connected, removably, an envelope 5.

The envelope or shell 5 defines a bearing shoulder 7, for bearing the contour or profile of the view-lens spectacles frame 7, for which the additional lenses 8 must be made.

Inside the envelope or shell 5 is arranged a cutting tool 9, located near the shoulder 6, on the opposite side thereof from the side bearing the frame 7, which tool can be controllably driven so as to progressively cut the additional lens 8, as preliminarily mounted on the frame 7, and projecting by the portion thereof overhanging from the frame 7, beyond the shoulder 6, in the direction of the cutting tool 9.

More specifically, the envelope or shell 5 has a substantially cylindrical shape, with a top portion 5a having a diameter smaller than that of the bottom portion thereof.

The side surface of the portion 5a of the envelope or shell 5 defines the shoulder 6, for the outer contour of the frame 7 and, on the side surface of the top portion 5a of the envelope or casing 5, is provided a slot 10, therethrough is introduced, into the inside of the casing 5, that portion of the additional lens 8 projecting from the contour of the frame 7, so that the projecting portion is cut or removed by the cutting tool 9.

The diameter narrowing from the bottom portion of the casing 5 to the top portion 5a thereof, defines a bearing surface 11, substantially perpendicular to the shoulder 6, thereon the frame 7 can be supported during the operation of the apparatus, as it will become more apparent hereinafter.

The cutting tool 9 comprises a milling implement, arranged with its axis in a vertical direction, inside the casing 5, and being driven by a known electric motor, not shown for simplicity, held in the extension 4 of the base 3.

The cutting end 9a of the cutting tool 9 is of substantially cone-shape and the cutting elements 12 helically extend on the surface of the cone so that the cutting chips deriving from the cutting of the additional lens, are caused to fall along the cutting tool 9 inside the casing 5.

The latter is connected to the top portion of the base 3, by means of easily removable screws 13, and is preferably made of a transparent material, so as to allow the operator to easily control or monitor the cutting operation performed inside the casing 5.

The electric motor driving the cutting tool 9 is power supplied through an electric cable 11, entering the base 3 and, on the base 3, is provided an energizing push-button 15.

The base 3 can also be provided with a clamping element 16, in order to connect the apparatus to a working panel 17.

The apparatus according to the present invention will operate as follows.

The additional lenses, provided in a standard size, are provided with a small weight frame 18 and are associated, by the frame 7, with the view-lens spectacles.

Then, the frame 7 is abutted by its outer contour against the shoulder 6, so as to cause that portion of the additional lens 8 projecting from the outer contour of the frame 7, to enter the slot 10.

By operating the cutting tool 9, the frame 7 is driven so as to hold it adhering to the shoulder 6, and so as to cause the shoulder 6 to follow the outer contour of the frame 7.

This displacement of the frame 7 will bring the cutting tool 9 to perform the cutting of that portion of the additional lens 8 projecting from the frame 7, according to a cutting line, reproducing the outer configuration of said frame.

This operation will be obviously repeated for the other additional lens.

Thus, the additional lenses will be cut in a very accurate manner, with a configuration perfectly mating that of the view-lens spectacle frame, on which the additional lenses must be assembled.

From the above disclosure and from the observation of the figures of the accompanying drawings, it should be apparent that the invention fully achieves the intended aim and objects.

In particular, the fact is to be pointed out that an additional lens cutting apparatus has been provided which has a very reduced size, and which allows to cut additional lenses, either coloured and/or polarized, to be mounted on view-lens spectacles, in a very reduced time and without the need of using skilled personnel.

The apparatus, as disclosed, is susceptible to several variations and modifications, all of which will come within the scope of the inventive idea.

Moreover, all of the details can be replaced by other technically equivalent elements.

In practicing the invention, the used materials, as well as the contingent size and shapes, can be any, depending on requirements.

Claims

1. An apparatus for cutting additional lenses, either coloured and/or polarized, to be mounted on view-lens spectacles, characterized in that said apparatus

comprises a supporting construction, having a bearing shoulder for bearing thereon an outer contour of a frame of said view-lens spectacles, a cutting tool associated with said supporting construction and arranged near said bearing shoulder on an opposite side from said frame bearing side, said cutting tool being controllably driven for progressively cutting a portion of an additional lens, associated with said frame, projecting from said frame and overlaying said bearing shoulder in a direction of the cutting tool, while said frame is driven, with respect to said bearing shoulder, so as to cause said bearing shoulder to follow the outer contour of said frame.

2. An apparatus, according to Claim 1, wherein through said bearing shoulder a slot is defined for allowing that portion of said additional lens projecting from said frame to pass therethrough.

3. An apparatus, according to Claim 1, wherein said supporting construction comprises a base and a casing, removably associated at the top of said base, said casing holding therein said cutting tool and defining, by an outer surface thereof, said bearing shoulder.

4. An apparatus, according to Claim 3, wherein said casing has a substantially cylindrical configuration, with a top portion of smaller diameter, defining said bearing shoulder, and with a bottom portion, of larger diameter, defining a supporting surface substantially perpendicular to said bearing shoulder.

5. An apparatus, according to Claim 4, wherein said slot is formed through the top portion of said casing.

6. An apparatus, according to Claim 1, wherein said cutting tool comprises a milling implement, arranged with a vertical rotary axis and having an end portion thereof, provided with cutting elements, of substantially cone-shape, said cutting elements helically extending on a surface of said cone configuration.

7. An apparatus, according to Claim 3, wherein said casing is made of a transparent material.

8. An apparatus, according to Claim 1, wherein said apparatus further comprises an electric motor housed in said base and driving said cutting tool.

9. An apparatus, according to Claim 1, wherein said base is provided with a clamping element for clamping the apparatus on a working bench.

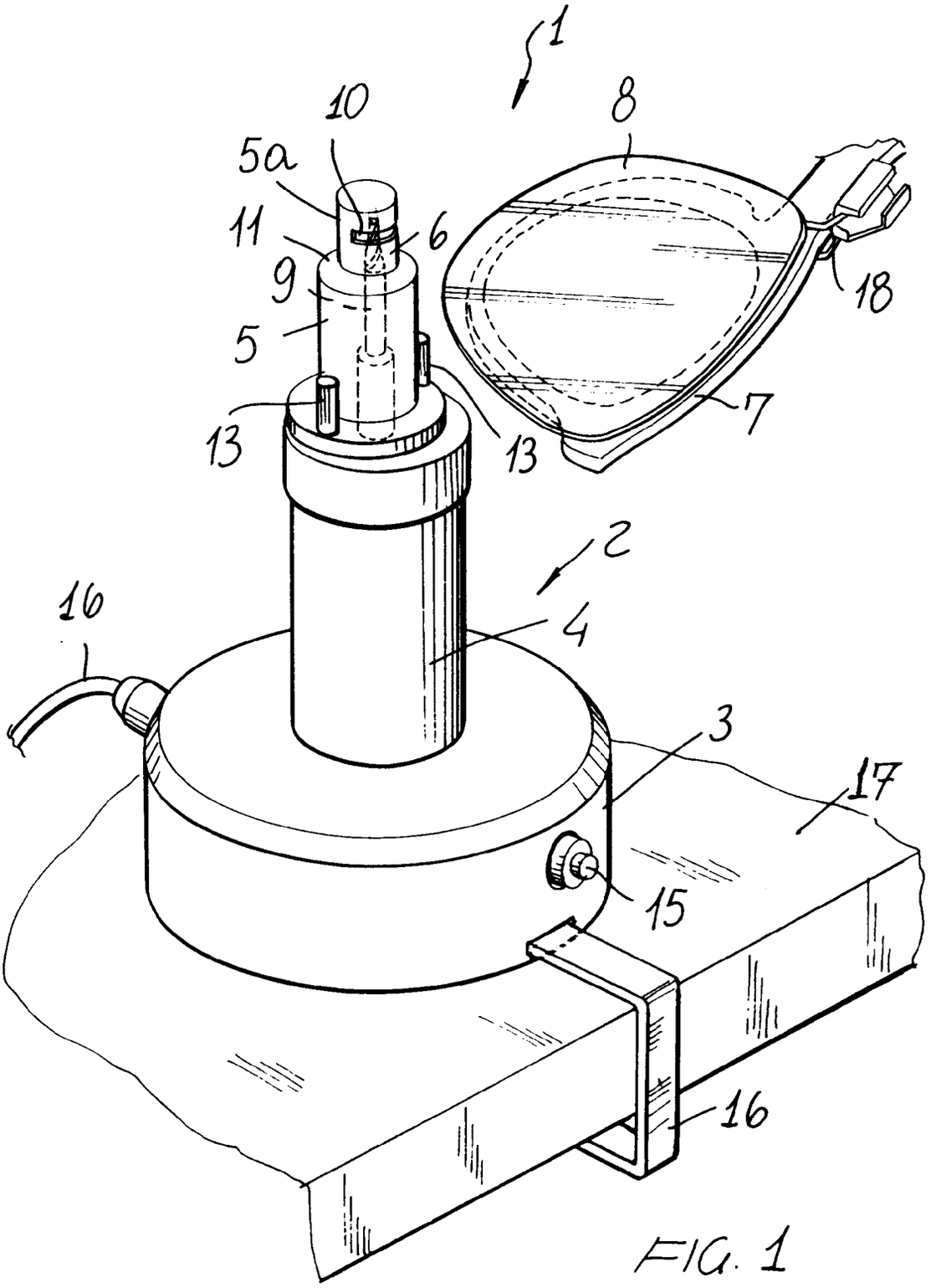

FIG. 1

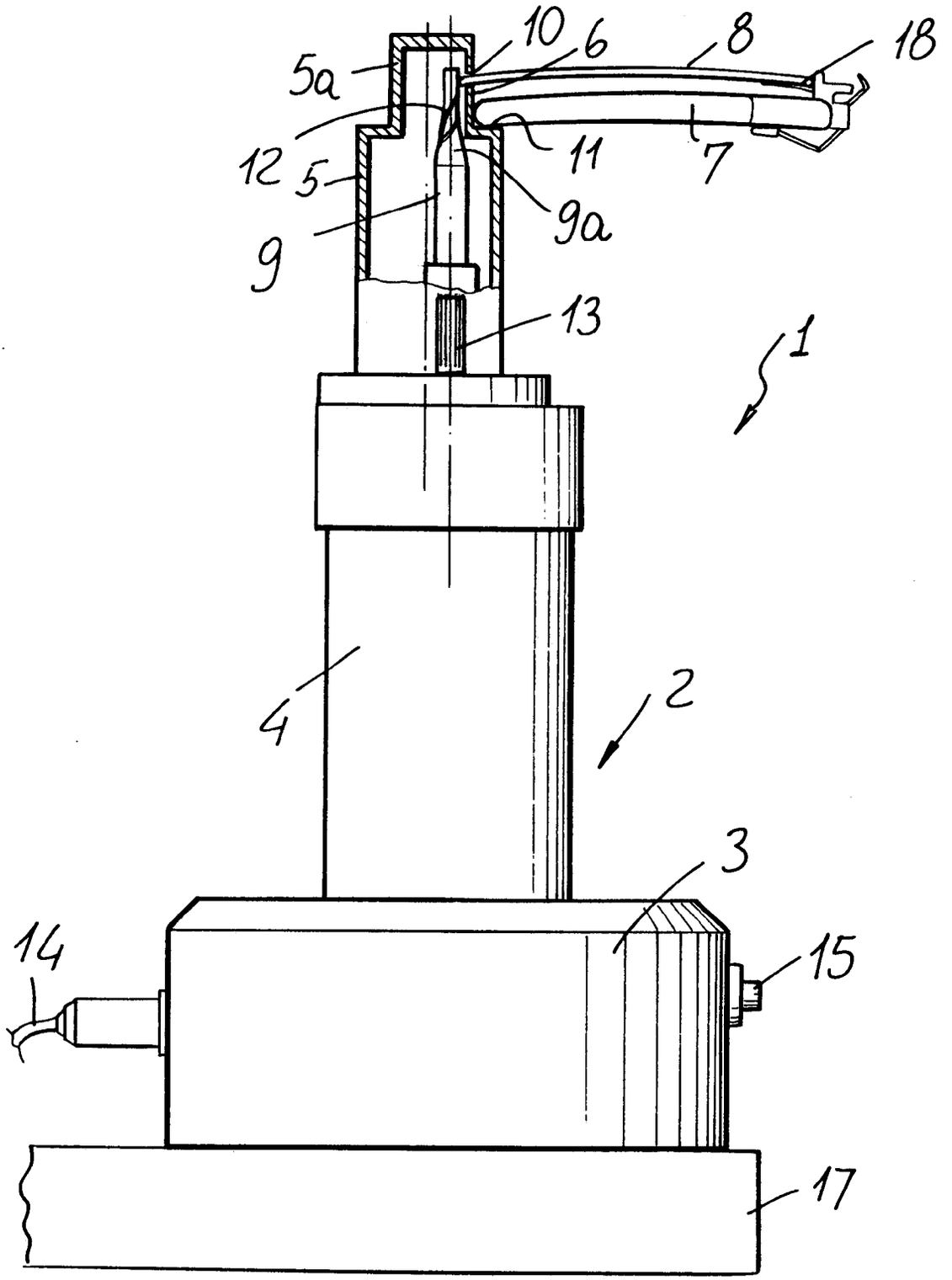

FIG. 2

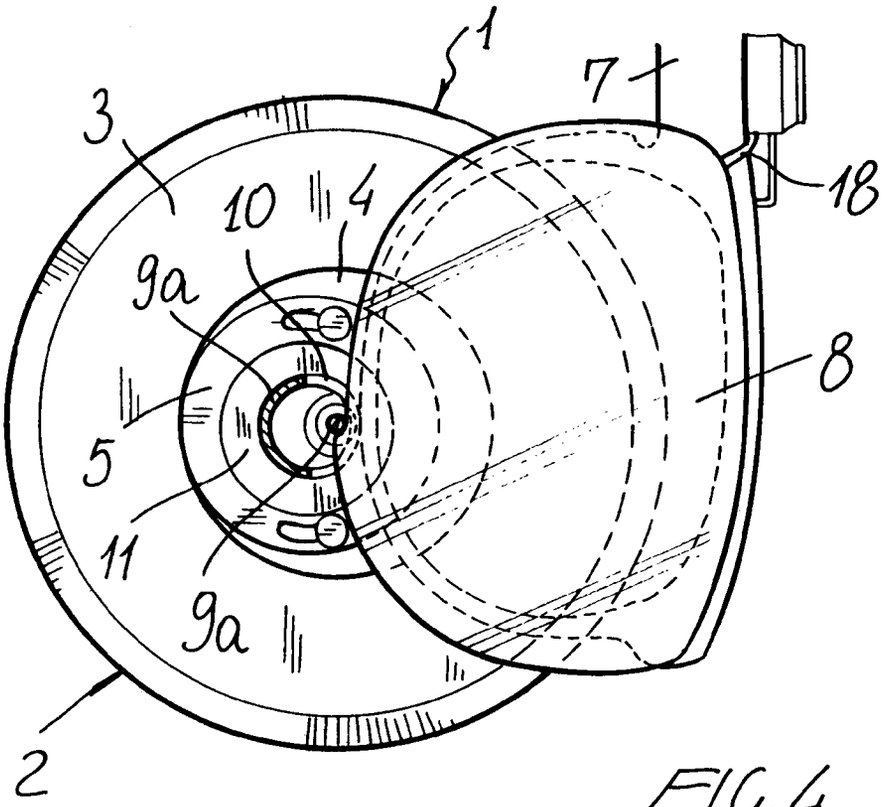

FIG. 4

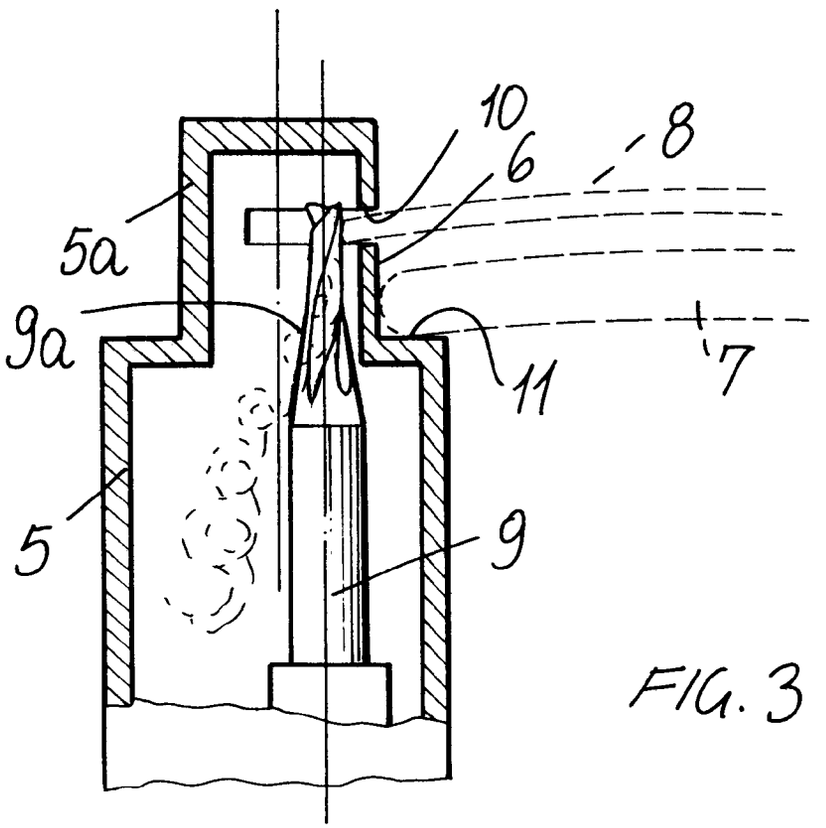

FIG. 3