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(54) Improvement in safety electric and magnetic caps for electric bulbs.

(57) A safety electric and magnetic connection cap between a lampholder and an electric bulb, in which said lampholder is made up of an insulating block (10) having an upper disc (11) below which and in correspondence with proper holes the electric contact reeds (23,24) end, said reeds being connected to the supply terminals. The bulb shows a base comprising a cylindrical sleeve (21) and a pin, or otherwise, according to a variant of this embodiment, two pins (25, 26), which are connected to the terminals of the bulb filament and are designed to contact electrically the lampholder contact reeds. Interchageable magnetic means are provided on the lampholder as well as on the bulb base, said means cooperating with one another to realize the mechanical and the electric coupling between the lampholder and the bulb. The contact reeds of the lampholder are always in a safety position, which is out of the reach of fingers.

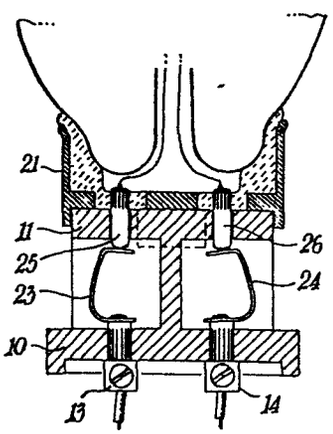

FIG.5

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IMPROVEMENT IN SAFETY ELECTRIC AND MAGNETIC CAPS FOR ELECTRIC BULBS

The present invention relates to electric and mechanical connection caps which are complementary for electric bulbs, and more particularly it relates to an improved safety electric and magnetic cap between a bulb and a lampholder.

As it is well known, particular attention has been paid in the past to the realization of bulb-lampholder caps in order to ensure before all a good electric connection, so as to avoid a faulty or an intermittent illumination, and also to get a good mechanical connection, in order to avoid the accidental detachment of the bulb. In addition to screw caps, bayonet type caps are also known.

It is a first and more immediate object of the present invention that of realizing a bulb-lampholder connection cap wherein, from the mechanical viewpoint, there is no need for two distinct operations for coupling, i.e. insertion and rotation, said need occurring on the contrary not only in the case of screw caps, but also, though at a lower extent, in the case of bayonet type caps. Moreover, such object is to be obtained with no prejudice for the mechanical reliability of coupling.

A further object of this invention is that of realizing a bulb-lampholder connection cap in which, more particularly, said lampholder gives maximum safety in operation both in hot and neutral wire supply mains (for instance 110 Volt) as well as in two hot-wires supply mains (for instance 220 Volt), as a result of the inaccessibility of the two terminals from the outside, except for the two corresponding bulb terminals.

The objects outlined above are realized in the present inven-

tion by means of a safety electric and magnetic connection cap between a lampholder and an electric bulb, in which the lampholder consists of an insulating block with an upper disc, a number of electric contact reeds, connected to the supply terminals, ending below said disc in correspondence to proper holes. The bulb shows a base comprising a cylindrical sleeve and a pin, or otherwise according to a variant of this embodiment two pins, which are connected to the terminals of the bulb filament and are designed to come into electric contact with the contact reeds of the lampholder. Interchangeable magnetic means are provided on thelampholder and on the bulb base, said means cooperating with one another for realizing the mechanical and electric coupling between the lampholder and the bulb. The contact reeds of the lampholder are always in a safety position which is out of the reach of fingers.

Further details and advantages will be evident from the following disclosure with reference to the enclosed drawings, wherein the preferred embodiments of the present invention are shown for illustrative and not for limitative purposes.

In the drawings:

Figure 1 shows a schematic partial cross-section of a lampholder with the associate bulb in an uncoupled condition;

Figure 2 shows a schematic complete view of the lampholder with the associate bulb in the coupled position;

Figures 3(a) and (b) show axial views of the lampholder and the relative bulb;

Figure 4 shows a modified detail view;

Figure 5 shows a second embodiment of the connection cap of the present invention;

Figure 6 shows a third embodiment of the connection cap of the

present invention;

Figures 7(a) and (b) show axial views of the bulb and the lampholder of Figure 6;

Figure 8 shows an adapter that allows the employment of a common bulb with a lampholder according to Figures 1-4.

With reference now to the enclosed drawings, and in particular with reference to Figures 1-3, said lampholder is seen to comprise a supporting block 10 bearing an upper disc 11, which support consists of an insulating material. Terminals 13 and 14 for fastening or clamping the electrical wires of the supply mains are housed in said block 10 accoraing to a known manner. A hole 18 is provided at the center of said disc 11. Two contact reeds 15 and 16 project from the terminals 13 and 14 the reed 15 projects with its end 15a from the rim of said disc 11, whereas reed 16 extends up to the space below hole 18 of said disc 11. The separation diaphragm 12 makes the insulation of the two contact reeds 15 and 16 easier in the space.

The contact reeds 15 and 16 are made up of an elastic metallic conductive material and they are bent so as to aid the elasticity of the material itself and to keep them in the position shown in Figure 1.

If desired, small separate springs can be employed (not shown in the drawings) for obtaining this aid action on the elasticity of the material.

Two small magnets 19 and 20 are embodied within said disc 11, the function of such magnets being shown in the following.

The bulb shows a ferromagnetic metallic base consisting of an outside sleeve 21 and an annular inside diaphragm 22, which base is assembled on the bulb by means of the common insulating adhesive cement 23.

The two terminals of the bulb filament are connected respectively to the outside sleeve 21 of the base and to a projecting central pin 17.

Figure 2, in which the outside common components of the lampholder are also shown, shows the bulb in the operating position, with the outside sleeve 21 of the bulb in reliable, good contact with the lampholder reed 15 and with the central pin 17 passing through the hole 18 and in reliable, good contact with the lampholder reed 16.

The position of Figure 2 is easily obtained taking the bulb base 21 near to said disc 11 of the lampholder, and allowing the two magnets 19 and 20 to attract the annular diaphragm 22 of the bulb base, so that an electric and mechanic coupling is simultaneously obtained. For separating the bulb it is sufficient to exert a pulling action on the bulb to overcome the magnetic attracting force of said magnets.

It is to be observed that the magnetic action could also be exerted inverting the positions of the magnets, i.e. by making the base 21, 22 with a magnetic material and employing ferromagnetic material strips replacing said magnets 19 and 20. It is to be understood that the same principle can also be applied to the next embodiments shown.

Figure 4 shows the fact that said reed 15 can also be realized as comprising a terminal part 15b bent downwards, so as to obtain a surface contact with the sleeve 21 and not only a rim contact as shown in Figure 2.

Figure 5 shows an embodiment of the present invention in which two almost identical reeds 23 and 24 are provided in the lampholder, said reeds cooperating with two holes provided in the upper disc 11. The bulb base, in itself, shows two pins 25 and 26 connected to the

filament terminals and cooperating with the respective reeds 23 and 24 through the holes of the disc 11. The same considerations already made for the preceding embodiment are also valid in this embodiment as regards the arrangement of the magnets. It is only to be observed that, in order to make it easier to insert pins 25 and 26 into the corresponding holes of the lampholder, the base of the bulb as well as the lampholder are to be of coordinated shapes, for instance elliptical shapes, or otherwise they must have quick geometric coupling devices, for instance of the groove-rib type or of the groove-tab type and the like.

A further embodiment is shown in Figures 6 and 7, in which embodiment the lampholder shows a disc 11 bearing a central hole 30 and a peripheral hole 31. A contact reed 27 is provided, which is connected to the terminal connection 14 and cooperates with the central hole 30 of disc 11. The contact reed 28 connected to the terminal connection 13 bears a ferromagnetic material pin 29 cooperating with the peripheral hole 31 of the disc 11 and having a rest position as that shown by dotted lines in Figure 6. The pin 29 in such a position does not project from the upper surface of the disc 11.

The bulb base, according to this embodiment of the present invention, consists in that case also of a sleeve 31 bearing a central annular diaphragm, but such base is made up of magnetic material and it cooperates with ferromagnetic strips 33 and 34 fastened within the lampholder disc 11 for obtaining the locking of the mechanical coupling between the bulb and the lampholder, and cooperating also with the ferromagnetic pin 29 which is attracted into the position shown by the full line of Figure 6, where it is in contact with the annular diaphragm 22 of said sleeve 32.

It is a basic feature of all embodiments of the present inven-

tion the already mentioned fact that the contacts that carry electric current to the lampholder always are below said disc 11, i.e. they are placed inside and never come out except after the bulb is applied. Thus it is evident that the lampholder is extremely safe and that when touching the lampholder inside with a finger, no currying contact can ever be touched.

As already observed above, the reeds are per se elastic but they can be assisted by the action of supplementary springs.

As already mentioned above, the magnets positions can also be inverted, introducing suitable adaptions to be designed at any time easily by those who are skilled in the art.

Figure 8 shows an adapter operating according to any embodiment of the present invention with possible suitable obvious changes, for making it possible to use a bulb of the traditional or normal type with any lampholder realized according to the present invention. For the sake of precision, it is to be noted though obvious that the central pin 35 of said adapter is in an insulated condition because of its outside envelope 36 which shows a lower part consisting of a cylindrical sleeve, as also occurs in the case of sleeves 21 and 32 of the preceding embodiments, as well as an upper part which is threaded for making it possible to screw down the same the threaded base of any traditional bulb.

The preferred embodiments of the present invention have been disclosed above, but it is to be understood that those who are skilled in the art can introduce modifications and variants in the constructive details, or they can use the single features disclosed and illustrated in any combination thereof, without departing from the spirit and scope of the present invention for which a patent right is claimed.

CLAIMS:

1. A safety electric and magnetic connection cap between a lampholder and an electric bulb, characterized in that the lampholder consists of an insulating block bearing an upper disc which has a central hole and houses two contact reeds which are connected to the connection terminals of a supply mains, one of said reeds projecting sidewise from the insulating block and the other one ending below said central hole, and characterized in that said bulb comprises a base consisting of a cylindrical sleeve bearing an annular diaphragm and a central pin, which are connected respecively to the terminals of the bulb filament and cooperating with the two contact reeds of the lampholder; and furter characterized in that magnetic means are provided on said lampholder as well as on the bulb base, said means cooperating with one another in realizing the coupling between lampholder and bulb.

2. A connection cap according to claim 1, characterized in that said contact reeds are made up of an elastic metallic material.

3. A connection cap according to claim 1, characterized in that it comprises springs for supporting the elasticity of said contact reeds.

4. A connection cap according to claim 1, characterized in that said reed which projects sidewise is bent downward.

5. A connection cap according to claim 1, characterized in that said magnetic means comprise magnets incorporated within the upper disc of said block and cooperating with the annular diaphragm of the bulb base, said base being of a ferromagnetic material.

6. A connection cap according to claim 1, characterized in that said magnetic means are made up of the annular diaphragm of the

bulb base, which base is of a magnetic material, and they are also made of ferromagnetic material strips incorporated within said upper disc of the lampholder block.

7. A safety electric and magnetic connection cap between the lampholder and the electric bulb, said cap being characterized in that the lampholder consists of an insulating block bearing an upper disc that shows two holes and houses two contact reeds which are connected to the connection terminals of a supply mains and end respectively below said holes, and also characterized in that said bulb comprises a base consisting of a cylindrical sleeve bearing a diaphragm through which two pins can pass in an insulated state, said two pins being connected to the terminals of the filament and cooperating with the contact reeds of the lampholder through said holes; and being further characterized in that magnetic means are provided on the lampholder as well as on the bulb base, which means cooperate with each other in realizing the coupling between the bulb and the lampholder.

8. A connection cap according to claim 7, characterized in that said magnetic means are interchangeable between the bulb and the lampholder.

9. A connection cap according to claim 7, characterized in that the bases of the bulb and of the lampholder have complementary shapes or they show devices having complementary shapes in order to make it easier the geometrical coupling.

10. A safety electric and magnetic connection cap between a lampholder and an electric bulb, characterized in that said lampholder consists of an insulating block bearing an upper disc that has a central hole and a peripheral hole and housing two contact reeds which are connected to the connection terminals of a supply

mains, one of said contact reeds ending below said central hole whereas the other contact reed bears a pin in correspondence to said peripheral hole but not projecting through the same till out that disc; and characterized in that the bulb comprises a base consisting of a cylindrical sleeve bearing an annular diaphragm and a central pin, which are connected respectively to the terminals of the bulb filament and cooperate respectively with the pin of the second contact reed and with the first contact reed of the lampholder; said cap being further characterized in that magnetic means are provided both on the lampholder and on the base of the bulb, said means cooperating with each other in realizing the mechanical coupling between said lamholder and the bulb and in realizing the electric coupling between said pin of the second contact reed of the lampholder and said annular diaphragm of the bulb base.

11. A connection cap according to claim 10, characterized in that said contact reeds are made up of an elastic metallic material.

12. A connection cap according to claim 10, characterized in that it comprises springs as a support to the elasticity of said contact reeds.

13. A connection cap according to claim 10, characterized in that said pin that is borne by said second contact reed is made up of a ferromagnetic material.

14. A connection cap according to claim 10, characterized in that said coupling magnetic means comprise said sleeve bearing an annular diaphragm which is made up of a magnetic material and they also comprise ferromagnetic material strips incorporated within the upper disc of said lampholder block.

15. An adapter allowing to employ a traditional or normal bulb in connection with a lampholder embodied according to any of the

preceding claims, said adapter being characterized in that it consists of an outside sleeve showing a lower part which is smooth and of cylindrical shape and an upper cylindrical part which is threaded inside, as well as a central pin which is insulated with respect to said outside sleeve and is supported by an intermediate diaphragm incorporating means cooperating with corresponding and coordinated means of said lamholder for realizing the magnetic coupling.

16. Improvement in safety electric and magnetic connection caps for electric bulbs according to any of the preceding claims and substantially as disclosed in the disclosure above and illustrated in the enclosed drawings.

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FIG.1

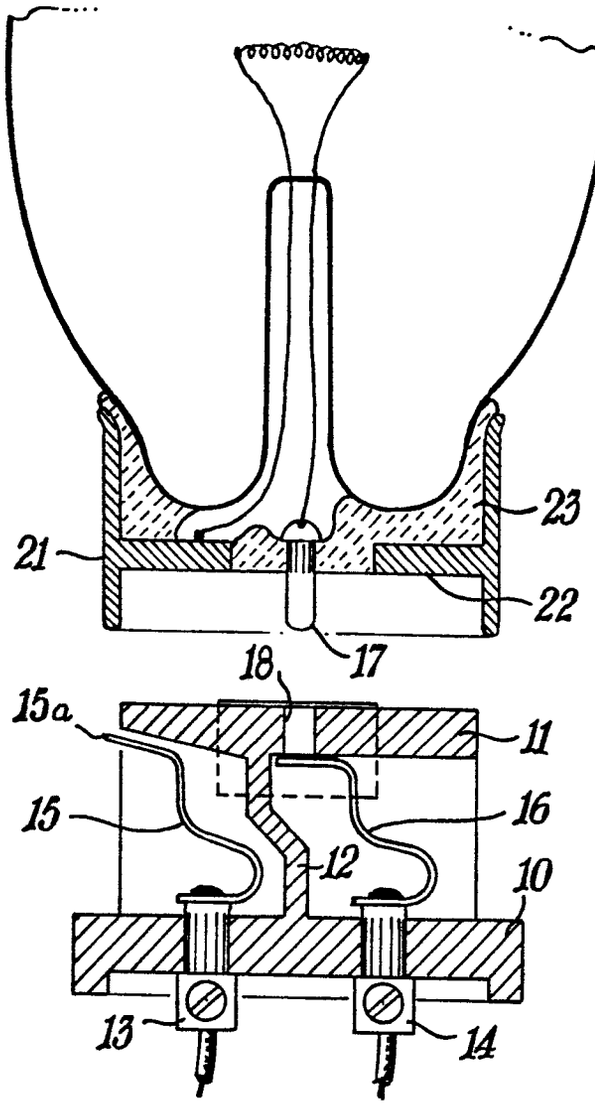
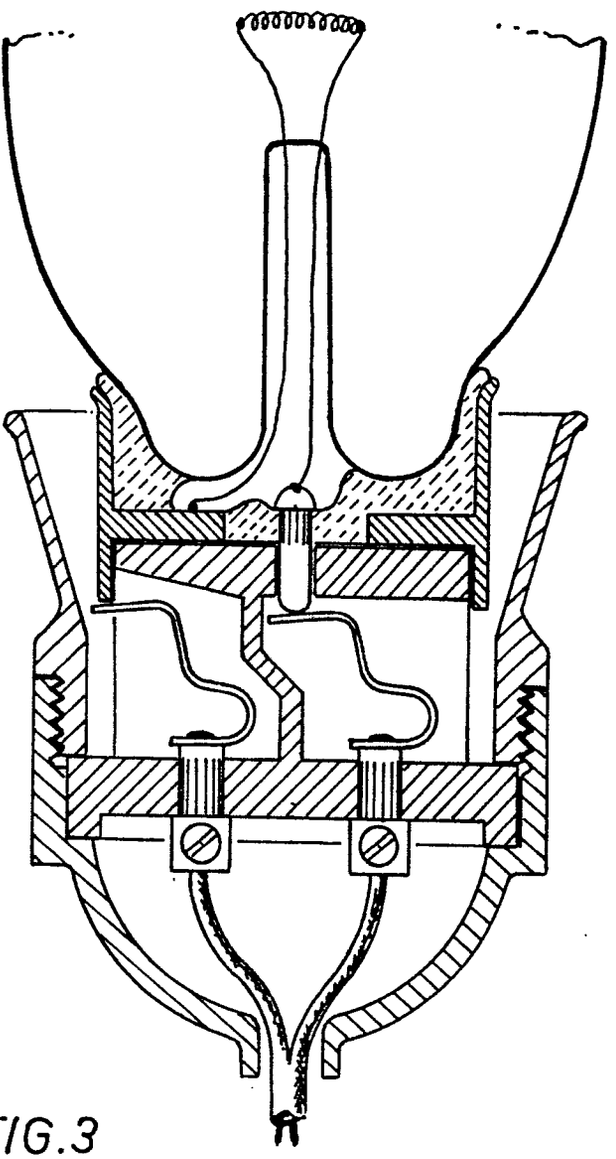


FIG.2



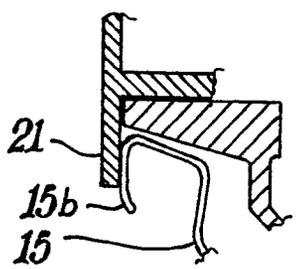
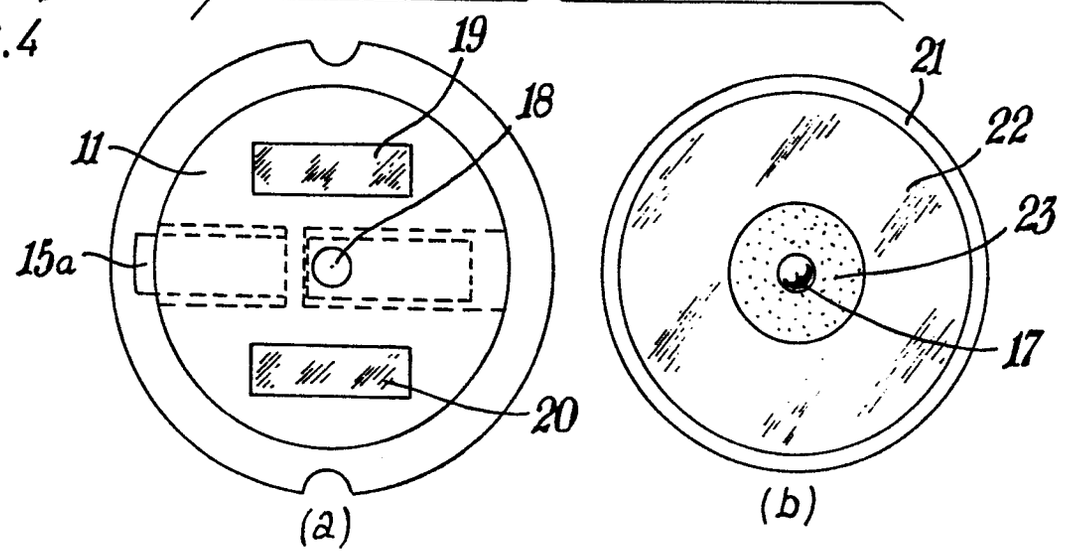


FIG.4

FIG.3



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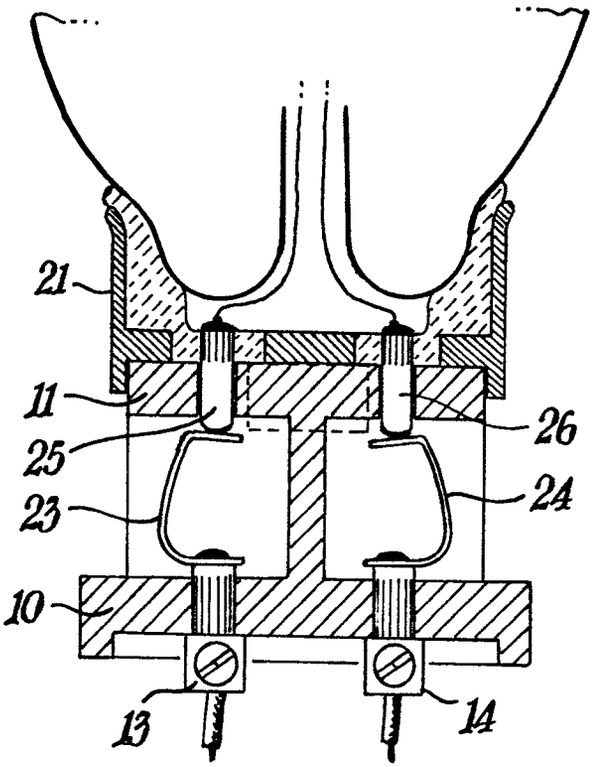

FIG.5

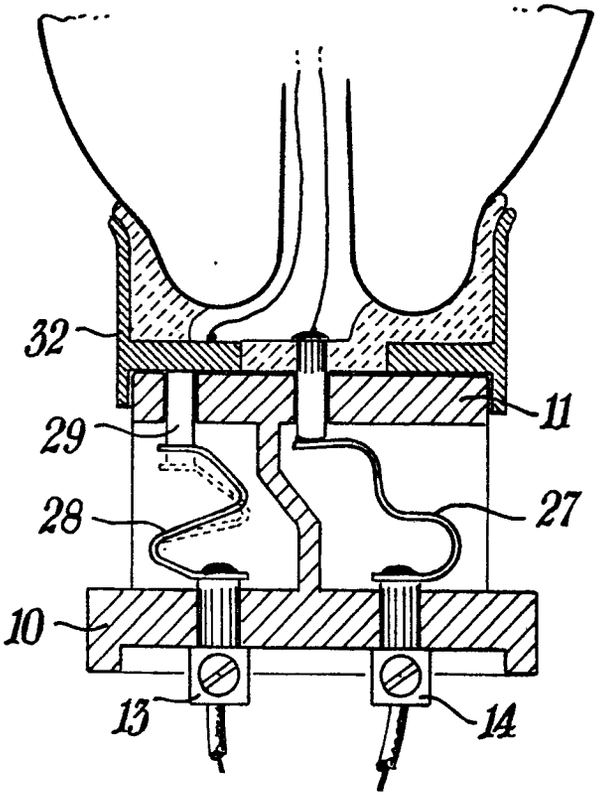

FIG.6

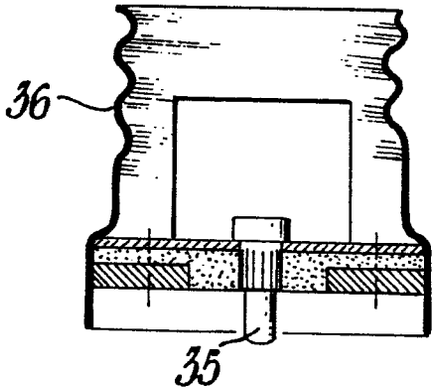

FIG.8

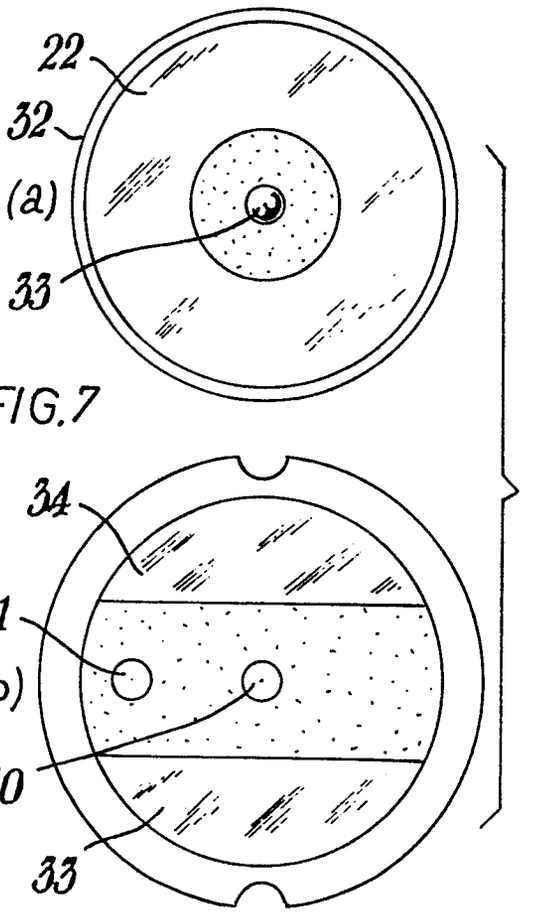

FIG.7