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(57) Abstract

Hermetically sealed package (10), for bathing the eyes and for their general treatment, to be thrown away after use comprising a bath (11), having an edge (12) of a size and shape such as to adhere to the eye socket, containing a quantity of active liquid (14) sufficient for a single treatment hermetically closed by the maker, under sterile conditions, by means of a cap (13) which the user can easily detach when required but which cannot then be used again to close said bath, so that the eye treatment can be effected without the need for manipulation and without contamination of the fluid while maintaining maximum conditions of sterility.
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DISPOSABLE HERMETIC PACKAGE FOR EYE TREATMENT

For eye treatment, whether a plain or medicinal wash is concerned, use is made of small glass or plastic baths of a suitable shape and size such as will allow them to adhere closely to the eye socket so that the open eye can be washed without letting the fluid in the bath run down the face.

To wash or treat the eye, the bath is filled with a suitable fluid poured into it from a bottle of already prepared fluid sold on the market.

The bath is then kept for use on subsequent occasions and this means that it can be easily contaminated by bacteria or virus present in the eye, on the hands or in the environment.

Contamination can also come from the bottle containing the liquid since said bottle is repeatedly opened and closed and is kept at room temperature favourable to development of bacteria.

The invention here described almost entirely avoids these drawbacks as will be explained below.

Subject of the invention is a disposable package for washing or treating the eyes by means of a liquid, said package comprising a bath whose size and edge are such as to allow it to adhere closely to the eye socket without any trouble or harm.

The packed receptacle contains sufficient active fluid for a single treatment and is hermetically sealed by the maker, under sterile conditions, by means of a cap which can easily be torn off, or otherwise removed, at the time of use.

The user can therefore carry out the eye treatment under sterile conditions without manipulation and contamination of the fluid and receptacle, all of which is thrown away after use.

When the bath is filled, the cover is fixed round its edges by heat welding, ultrasonic waves or some other method.
The cap is sealed on in such a way as to withstand any stresses received during transport and storage while at the same time permitting the user to take it off by application of moderate force only, and without there remaining on the edge of the receptacle any uneven zones, roughness or anything that could harm or irritate the eye socket and the eye during use.

In a preferred type of execution the cap is made of a lamina composed of two sheets fixed together, an outer one of aluminum and an inner one of polyethylene or other plastic material

In another type of execution the cap is made with an edge that can be pressed onto the edge of the bath exploiting the elasticity of one or other edge or of both.

Closure is ensured by a raised ring made inside the edge of the cap, said ring penetrating inside a ringwise channel made outside the edge of the bath, or else by a raised ring made outside the edge of the bath which can penetrate into a ringwise channel made inside the edge of the cap, or by other equivalent means.

The hermetic seal between cap and bath is ensured by means of a sealer spread between the two matching edges of the bath and of the cap.

On the cap there is a projecting tongue, or equivalent means, by holding which the user can, when required, apply the force needed to detach the cap from the bath by pulling or by pressure.

Characteristics and purposes of the invention will be made even clearer by the following examples of its execution illustrated by drawings.

Fig. 1 Package with laminar cap, closed.
Fig. 2 Package with laminar cap, being opened.
Fig. 3 Package with cap applied by pressure.

The package (10) includes a plastic bath (11) with edge(12)
sized and shaped to fit into the eye socket and bevelled smooth to avoid harming or troubling both the eye and the area surrounding it.

The laminar cap (13), with its tongue (17), is made of an outer sheet (15) of aluminum associated to an inner sheet (16) of polyethylene.

The bath is sterile and is filled under sterile conditions with a fluid for washing or for treatment (14).

A welder, fitted with a tool of a shape like that of the edge of the bath, still under sterile conditions fixes the sheet of polyethylene onto the edge of the bath by welding with heat or ultrasonic waves and then cuts the lamina to the shape of the bath.

Welding ensures that the bath is hermetically sealed and that such seal will withstand the stresses encountered in transport and storage.

When needed, the user pulls back the tongue and easily removes the cap.

When the cap has been pulled off, the edge (12) of the bath as seen in Fig. 2, is smooth and free of any residual material that could be harmful in contact with the eye socket or the eye.

When the eye has been washed or treated the bath (11) can be thrown away.

The variant (18) shown in Fig. 3 consists of a bath (19) with an edge (20) in which there is a continuous ringwise channel (21).

The cap (22), with tongue (25) of elastic plastic material, has a raised ring inside the edge (23).

The bath is filled with washing or medicinal liquid (27) and, after application of sealing material (26) inside the channel (21), the cap (22) is applied by pressure.

At the time of use the user pulls up the tongue (25) thus easily detaching the cap as shown by the dash-and-dot lines
and by the numbers (22'), (25'), (24') which indicate the cap and its parts while opening is proceeding.

When washing or eye treatment has been completed, the bath and cap are discarded.

5 Advantages

As it is hermetically sealed, the package remains sterile and uncontaminated up to the moment of use and since it is to be thrown away after being used only once, it cannot become a means of carrying infection to the eyes.

10 The material used for the bath and cap is of practically negligible cost and as no fluid is poured into the bath from a bottle, the inevitable waste connected therewith and related cost are avoided.

Bearing in mind the serious nature of numerous eye infections and their multiplication as a consequence of the increasing use of contact lenses, the invention must undoubtedly be considered of the greatest usefulness.

As the applications of the invention have been described as examples only, not limited to these, it is understood that every equivalent application of the inventive concepts explained and every product executed and/or in operation in accordance with the characteristics of the invention, will be covered by its field of protection.
CLAIMS

1. Hermetically sealed package (10), (18) for bathing and
generally treating the eyes by means of a fluid, charac-
terized in that, being disposable after use, it comprises
a bath (11), (19), whose edge (12), (20) is of a size and
shape such as to adhere to the eye socket, said bath con-
taining a quantity of active fluid (14), (27) sufficient
for one treatment only, hermetically sealed, under sterile
conditions at the factory, by a cap (13), (22), which the
user can easily detach when required by pulling it off or
otherwise removing it, said cap being so made that it can
not be put on again and the eye treatment being therefore
given without the need for any manipulation and without
contamination of the fluid, ensuring maximum sterility.

2. Hermetically sealed package (10), (18) for bathing and
generally treating the eyes by means of a fluid as in claim
1, characterized in that after the bath (11) has been filled
with active fluid (14), it is hermetically closed, fixing
the cover (13) at its edge (12) by heat, ultrasonic waves
or other type of welding in such a way that the seal so
produced withstands stresses received during transport or
storage while at the same time permitting the user to de-
tach the cap (13) by applying only moderate force and with
out any uneven zones, roughness or anything else remaining
on the edge (12) of the bath such as might harm or irritate
the eye socket and the eye during use.

3. Hermetically sealed package (10), (18) for bathing and
generally treating the eyes by means of a fluid as in claim
1, characterized in that the cap (13) comprises a lamina
composed of two sheets fixed together, an outer one (15)
of aluminum and an inner one (16) of polyethylene or of
some other plastic material.

4. Hermetically sealed package (10), (18) for bathing and
generally treating the eyes by means of a fluid as in claim
1, characterized in that the edge (23) of the cap (22) is
designed to adhere elastically by pressure to the edge (20) of the bath (19), its closed position being made stable by a raised ringwise rim (24) round the inside edge (23) of the cap (22) said rim able to penetrate into a ringwise channel (21) made outside the edge (20) of the bath, or by a raised ringwise rim made outside the edge (20) of the bath able to penetrate into a ringwise channel made inside the edge (23) of the cap (22), or by other equivalent means, the hermetic seal being ensured by sealing material (26) applied between the two matching edges (20), (23) of the bath and cap (22).

5. Hermetically sealed package (10), (18) for bathing and generally treating the eyes by means of a fluid as in claim 1, characterized in that the cap (22) has a projecting tongue (25), or equivalent means, by means of which the user can apply the force needed to detach said cap from the bath (19) at the time of use.
**INTERNATIONAL SEARCH REPORT**

**I. CLASSIFICATION OF SUBJECT MATTER**

According to International Patent Classification (IPC) or to both National Classification and IPC

**IPC**

| IPC | A 61 H 33/04 |

**II. FIELDS SEARCHED**

<table>
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<td>IPC</td>
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Documentation Searched other than Minimum Documentation to the extent that such Documents are Included in the Fields Searched

**III. DOCUMENTS CONSIDERED TO BE RELEVANT**

<table>
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<td>X</td>
<td>US, A, 2847010 (G.D. KNIGHT) 12. August 1958, see column 2, lines 8-12 and 41-47</td>
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<td></td>
<td>GB, B, 1460064 (K.J. FRANKLIN) 31 December 1976, see page 2, lines 94-101; page 2, line 125 - page 3, line 2; page 3, line 12</td>
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**IV. CERTIFICATION**

Date of the Actual Completion of the International Search: 17th June 1987

Date of Mailing of this International Search Report: 20 JUL 1987

International Searching Authority: EUROPEAN PATENT OFFICE

Signature of Authorized Official: M. VAN MOL
This Annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 01/07/87.

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