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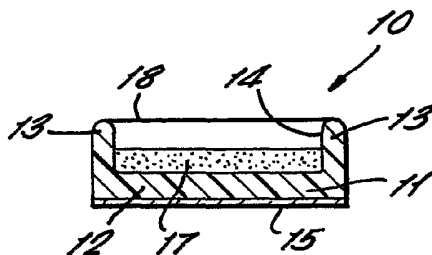
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(54) Title: AIR FRESHENING DEVICE AND METHOD OF MANUFACTURE



(57) Abstract: The invention relates to improvements in or relating to air freshening or purifying devices, which are particularly suitable for use with telephone apparatus. The air freshening or purifying device comprises a container having a base and side walls defining a recess, said recess being at least partially filled with an air freshening or purifying composition. An underside of the base of the container is provided with an adhesive for fixing the device to another object.

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## AIR FRESHENING DEVICE AND METHOD OF MANUFACTURE

The invention relates to improvements in or relating to air freshening or purifying devices, which are particularly  
5 suitable for use with telephone apparatus.

Air freshening and purifying devices are used in many forms, such as plastic containers, jars, impregnated rings and the like. These contain, or are impregnated with, a  
10 fragrance which evaporates over a period of time and is thereby released into the atmosphere. In this specification the term "fragrance" may refer to a simple perfume, but it is also intended to include a deodorant which itself may or may not be perfumed. The term "air purifying" is intended to  
15 include compositions having disinfecting and insecticidal capabilities.

Different forms of these sorts of devices are sold as being particularly suitable for use in certain locations  
20 e.g. in the home, in vehicles, to be placed on radiators or lights etc., to generally freshen or purify the surrounding environment.

However, it is recognised that certain types of  
25 apparatus, which are commonly used by one or more people on a frequent basis, are prone to becoming a means for transmitting germs and to smelling stale. The most obvious example of such apparatus is a telephone handset or cradle, either for land based telephones or mobile phones.  
30 Telephone sanitisation cloths can be used to wipe down the handsets to remove germs and freshen the apparatus. However,

it is up to the user to remember to use such wipes on a frequent basis.

It is therefore an object of the present invention to  
5 provide an air freshening or purifying device which can be affixed to solid objects such as telephone handsets and receivers which provides a means for freshening or purifying the air in the region of the handset for a period of time.

10 According to the invention there is provided an air freshening or purifying device comprising a container having a substantially rigid polymeric base and raised side walls extending from the base and defining at least one open mouthed recess, said recess being only partially filled with  
15 an air freshening or purifying composition leaving a gap between a surface of the composition and the recess mouth, an underside of the base of the container being provided with an adhesive for fixing the device to another object and with means for protecting such an object from harmful  
20 effects of the composition.

The device preferably has an air permeable cover covering the recess.

25 The cover is preferably attached to the side walls of the container.

The cover may be made from a polymeric thermoformable plastic material.

The said composition is preferably a gel composition resulting from the cross linking in situ, of a homopolymer or copolymer in the presence of a perfuming, deodorising, purifying or insecticidal base. The composition is  
5 preferably microencapsulated. Alternatively the said composition is provided in the form of a solid disc secured in the recess. As a further alternative, the composition is a polymerised dispersion of oil.

10 The container may have a maximum diameter lying in the range of 10mm to 40mm.

The recess preferably has a maximum diameter lying in the range of 10mm and 30mm.  
15

Preferably a depth of the recess lies in the range of 0.1mm to 5.0mm and more preferably in the range of 0.1mm to 3.5mm.

20 In a preferred embodiment of the invention a protective layer overlies the adhesive.

The container is alternatively made of an elastomeric material.  
25

Preferably the container base is provided with one or more projections.

A plurality of recesses are preferably provided.  
30

In a preferred embodiment the container has a foil backing layer. The foil backing layer may serve to protect a support surface from the fragrance contained in the container.

5

The invention also provides a collocation of air freshening or purifying devices in which a plurality of said devices are releasably adhered to a backing sheet.

10 According to a further aspect to the present invention there is provided a process for the manufacture of the air freshening or purifying device as claimed in any one of the preceding claims, the process comprising the steps of:

- 15 i) applying an ink to one surface of a face web of polymeric or elastomeric material;
- ii) applying an air freshening or purifying composition to the ink;
- iii) applying a curable polymer to the ink and/or fragrance to form the container side walls;
- 20 iv) applying an adhesive to an opposing surface of the web; and
- iv) cutting the face web to the desired shape to form the base of the container.

25 The preferred process is an in line printing process.

Preferably the face web is a reeled self adhesive face web with carrying backing web material. This face web may be passed through a printing press including the following  
30 stages to convert the reeled face web material into the air

freshening or purifying device as hereinbefore described using a high speed in line process:-

- application of coloured inks to face web onto areas  
5 requiring decoration. The face web forms the base, once cut, of the container;

- application of fragrance (or example, fragranced  
slurry) through silk screen, letterpress or litho printing  
10 techniques onto the areas of the face web requiring fragrance. A silk screen process is the preferred route since it is most applicable to laying down significant weights of encapsulated or dispersed fragrance whilst imposing limited mechanical damage. The fragrance should be  
15 UV curable or able to be dried at a rate which matches the in line printing speed of a printing press;

- application of curable polymer, preferably UV curable, to provide dimensional relief/form onto the surface  
20 of the face web thereby creating the container side walls, which will extend upwardly from the base above the level of the fragrance. A silk screen process is the preferred route since it is most applicable to laying down significant weights of ink;

25

- die cutting the web such that it provides the correct carrying web shape, ie the container base, and individual face web shapes using kiss cut techniques.

It will be appreciated by those skilled in the art that other routes could be utilised using multiple stages of manufacture.

5        A preferred embodiment of the present invention will now be described, by way of example only, with reference to the accompanying drawings in which:-

Figures 1, 2 and 3 are cross-sectional side elevations  
10 of alternative embodiments of an air freshening or purifying device according to the present invention;

Figure 4 is a plan view of the device of Figure 1;

15        Figures 5 and 6 are perspective views of a telephone handset and cradle for a telephone handset respectively to which the device of Figure 1 has been adhered; and

Figure 7 is a schematic illustration of a process for  
20 the manufacture of an air freshening or purifying device according to the invention.

The air freshening or purifying device 10 shown in Figure 1 comprises a container 11 having a base 12 and side  
25 walls 13 defining at least one recess 14. The base 12 may be substantially flat, as shown in Figure 1, or curved upwardly so that no distinct boundary lies between the side walls 13 and base 12 as shown in Fig. 2. The container 11 may be substantially circular as shown in the accompanying  
30 drawings, or alternatively may be of any other suitable shape, such as elliptical or rectangular. It may also be

shaped to represent a leaf, flower or some other attractive shape.

On an underside of the base 12 is a layer of adhesive  
5 15 which enables the device 10 to be removably attached, as shown in Figure 3, to a solid object, such as the telephone handset 16.

The recess 14 is partially filled with an air  
10 freshening or purifying composition 17. The composition 17 may be in gel form and a suitable gel form may be as described in, for example, US-A-5780527. Such a gel results from cross-linking, in situ of a homopolymer or copolymer in the presence of a perfuming, deodorising, purifying or  
15 insecticidal base. A suitable copolymer is maleinised polybutadiene or polyisoprene such as Lythene, N4-900010MA (registered trade mark) obtainable from Revertex Limited. A suitable cross-linking agent, for example a cocoamine having five oxyethylene units per molecule, is sold under the  
20 Crodamet (registered trade mark) obtainable from Croda Chemicals Limited.

The composition 17 may alternatively be provided in the form of a solid disc, firmly secured in the recess 14.  
25 Alternatively the composition may be a polymeric dispersion of oil or an encapsulated scratch and sniff type fragrance, such that mechanical action is required to activate the release of fragrance.

30 In an alternative embodiment, shown in Figure 3, the container 11 is a substantially annular ring, having side

walls 13, which is affixed to a supporting substrate 20 which forms base 12 of the substrate. The composition 17 is a solid disc secured in the ring and also supported on the substrate 20. The adhesive is applied to the supporting  
5 substrate 20.

As many of the compositions used in air purifying and freshening applications, and in particular the aforementioned gel, cause erosion of plastics or corrosion  
10 of metals, the container 11 and/or the substrate 20 advantageously protects the apparatus to which the device 10 is affixed from these harmful effects.

As the recess 14 is only partially filled, the side  
15 walls 13 provide some protection against contact by the user of the composition 17.

The container base 12 may also be provided with one or more projections which may lie centrally with the recess 14,  
20 or divide the recess 14 into two or more smaller recesses 14. These projections help to provide further protection from direct contact as they limit the dimensional access to the recess 14.

25 To provide further protection a cover 18 is also preferably provided to cover the recess 14. The cover 18 is provided to protect the composition 17 from contamination or damage as well as to remove the likelihood of contact by the user. Additionally, where the composition 17 is not in the  
30 form of a gel or solid, the cover 18 may be necessary to retain the composition 17 within the container 11. The cover

18 must be made from a material which is air and fragrance permeable, to allow the dissipation of the fragrance. The cover 18 may be transparent, or alternatively may be translucent or opaque to provide a suitable surface, where  
5 required, for receiving printed information. A suitable material for the cover 18 would be a range of polymeric thermoformable plastic materials either having inherently high fragrance and air transmission rates or containing perforations or micropores to provide equivalent  
10 transmission effects.

The cover 14 is preferably attached to the side walls 13. This attachment is achieved through either thermal or chemical bonding methods.  
15

The material of the container 11 is preferably an polymeric or, alternatively, an elastomeric compound, such as a polyolefin or polyurethane. A polymer compound spray, such as that supplied by Dispense Technology, may  
20 conveniently be used to spray form the container 11. Alternatively another coated formable cellulose based material may be used.

For a device 10 intended for use with a telephone  
25 handset 16 or cradle 21 (as shown in Figures 5 and 6), the device 10 ideally has a maximum diameter which is in the region of 10mm to 30mm. Where a gel or other fragrance system is used, the recess 14 must also be of a suitable size and shape to provide a small open pool for filling or  
30 for the fragrance unit insertion. During the filling process such gels are supplied as a hot liquid or a cross linked

fragranced slurry, a drop of which is placed in the recess 14 which then flows outwardly to cover the recess base 12. A suitable height of the side walls 12, and therefore the depth of the recess 14, is preferably in the range of 0.1 to 5.0mm and more preferably 0.1 to 3.5mm. The recess 14 preferably has a maximum diameter in the range of 10 to 20mm.

The device 10 may be sold or supplied with a removable protective covering overlying the adhesive layer 15, which is then removed before use to enable the device to be affixed to a suitable surface. Alternatively, a number of the devices 10 may be supplied in a multi-pack, adhered to a coated sheet of paper, cardboard or laminate and over wrapped. The coating would be such as to enable the devices 10 to be temporarily retained in position, but also to allow them to be easily removed without affecting the adhesive qualities of the adhesive layer 15. The device 17 lies in an appropriate location on the apparatus e.g. as shown in Figures 5 and 6.

After a period of time has elapsed and the fragrance dissipated, the device 10 may be easily removed from the surface of the apparatus and replaced by a new one.

Foils can be used as the supporting substrate 20, adhesive layer, protective cover or the recess cover 18 to improve the optical brightness and thus the devices 10.

In figure 7 a reeled self adhesive face web and carrying backing web is provided in a roll (22) and is

passed through a suitable printing press (not shown) having the following stages:

- ink application to one surface of the face web for  
5 decorative purposes (23);
- fragrance(24) applied to the ink;
- tactile areas in the form of a UV curable polymer  
applied to give dimensional relief (25), thereby forming the  
side walls which extend upwardly from the web above the  
10 fragrance; and
- finished device is cut to shape (26).

## CLAIMS:-

1. An air freshening or purifying device comprising a container having a substantially rigid polymeric base and  
5 raised side walls extending from the base and defining at least one open mouthed recess, said recess being only partially filled with an air freshening or purifying composition leaving a gap between a surface of the composition and the recess mouth, an underside of the base  
10 of the container being provided with an adhesive for fixing the device to another object and with means for protecting such an object from harmful effects of the composition.
2. An air freshening or purifying device as claimed in  
15 claim 1 further comprising an air permeable cover covering the recess.
3. An air freshening or purifying device as claimed in  
20 claim 2 in which the cover is attached to the side walls of the container.
4. An air freshening or purifying device as claimed in  
claim 2 or claim 3 in which the cover is made from a  
polymeric thermoformable plastic material.
- 25 5. An air freshening or purifying device as claimed in any one of the proceeding claims in which the said composition is a gel composition resulting from the cross linking in situ, of a homopolymer or copolymer in the presence of a  
30 perfuming, deodorising, purifying or insecticidal base.

6. An air freshening or purifying device as claimed in any one of the necessary claims in which the composition is microencapsulated.
- 5 7. An air freshening or purifying device as claimed in any one of claims 1 to 4 in which the said composition is in the form of a solid disc secured in the recess.
8. An air freshening or purifying device as claimed in any  
10 one of claims 1 to 4 in which the composition is a polymerised dispersion of oil.
9. An air freshening or purifying device as claimed in any  
15 one of the preceding claims in which the container has a maximum diameter lying in the range of 10mm to 40mm.
10. An air freshening or purifying device as claimed in any  
one of the preceding claims in which the recess has a maximum diameter lying in the range of 10mm to 30mm.  
20
11. An air freshening or purifying device as claimed in any one of the preceding claims in which a depth of the recess lies in the range of 0.1mm to 5.0mm.
- 25 12. An air freshening or purifying device as claimed in any one of the preceding claims in which a depth of the recess lies in the range of 0.1mm to 3.5mm.
13. An air freshening or purifying device as claimed in any  
30 one of the preceding claims further comprising a protective layer overlying the adhesive.

14. An air freshening or purifying device as claimed in any one of the preceding claims in which the container is alternatively made of an elastomeric material.

5

15. An air freshening or purifying device as claimed in any of the claims in which the container base is provided with one or more projections.

10 16. An air freshening or purifying device as claimed in any one of the preceding claims in which a plurality of recesses are provided.

15 17. An air freshening or purifying devices as claimed in any one of the preceding claims in which the container has a foil backing layer.

18. A collocation of air freshening or purifying devices as claimed in any one of the preceding claims in which a plurality of said devices are releasably adhered to a backing sheet.

19. A process for the manufacture of the air freshening or purifying device as claimed in any one of the preceding claims, the process comprising the steps of:

- 25
- i) applying an ink to one surface of a face web of polymeric or elastomeric material;
  - ii) applying an air freshening or purifying composition to the ink;
  - 30 iii) applying a curable polymer to the ink and/or fragrance to form the container side walls;

iv) applying an adhesive to an opposing surface of the web; and

iv) cutting the face web to the desired shape to form the base of the container.

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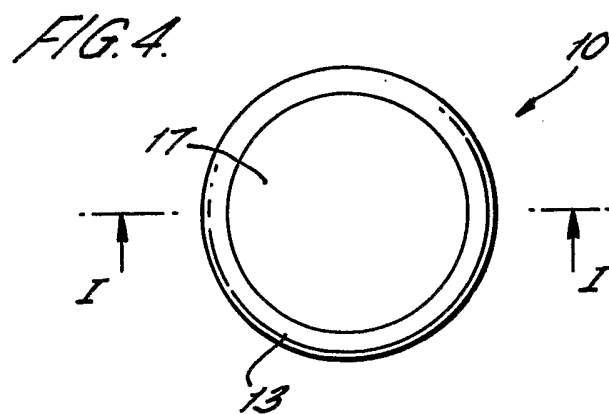
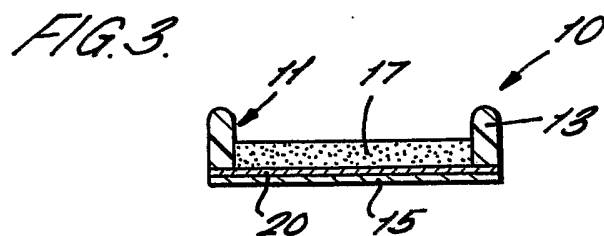
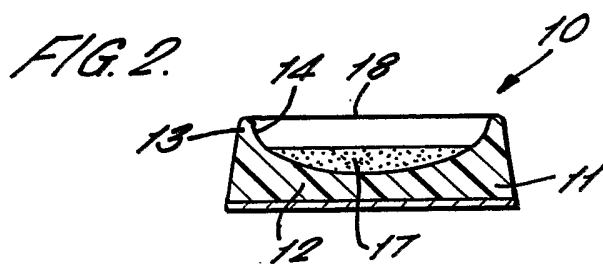
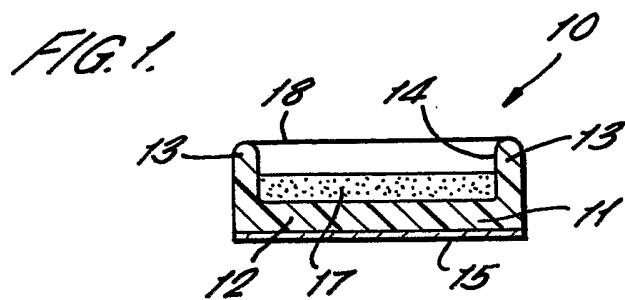
20. An air freshening or purifying device substantially as hereinbefore described with reference to and as shown in the accompanying drawings.

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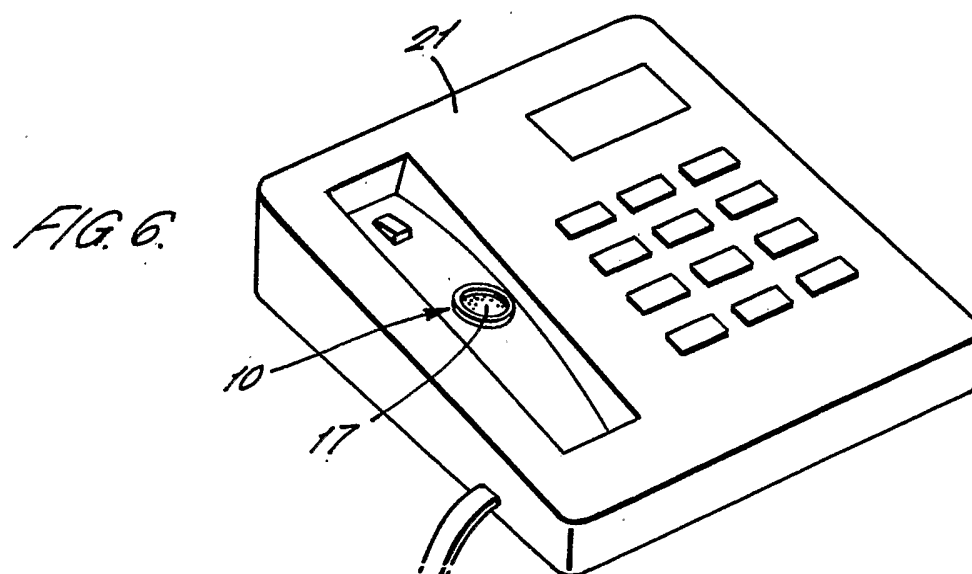
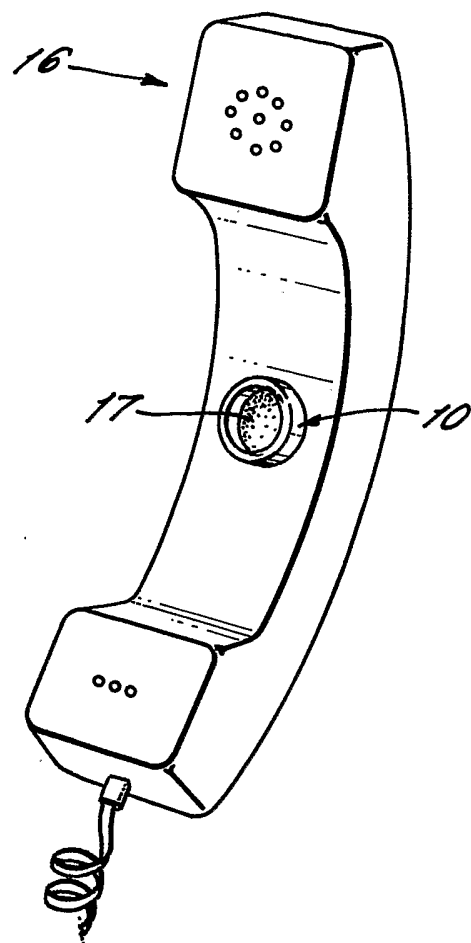
21. A process for the manufacture of an air freshening or purifying device substantially as hereinbefore described with reference to and as shown in the accompanying drawings.

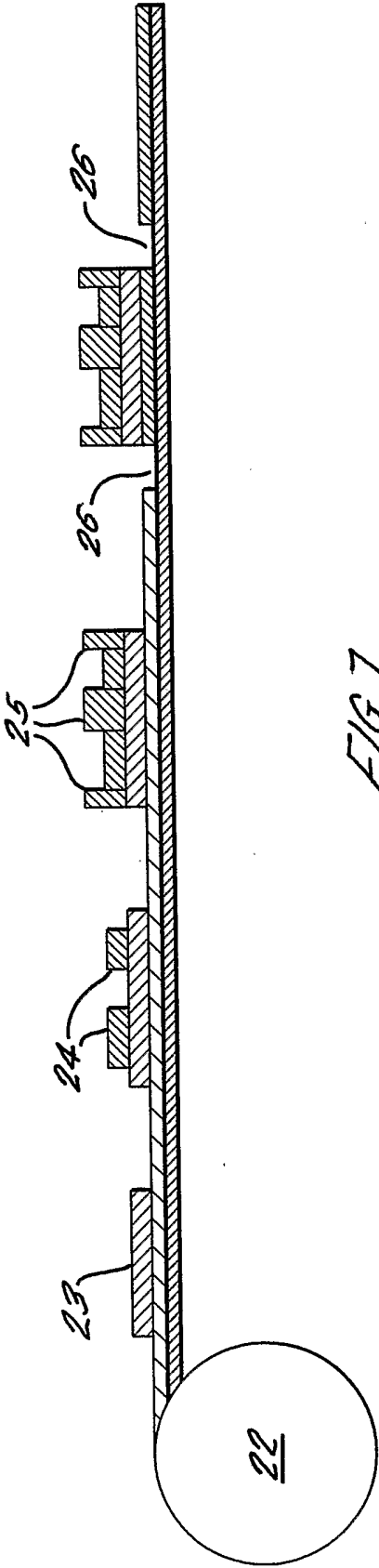
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## INTERNATIONAL SEARCH REPORT

Application No

/GB2004/002293

A. CLASSIFICATION OF SUBJECT MATTER  
 IPC 7 A61L9/12 A61L9/04

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ

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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

10 September 2004

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## INTERNATIONAL SEARCH REPORT

Application No

GB2004/002293

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