HU000030987T2

(19) **HU**

(11) Lajstromszám: **E 030 987**

(13) **T2**

MAGYARORSZÁG
Szellemi Tulajdon Nemzeti Hivatala

EURÓPAI SZABADALOM
SZÖVEGÉNEK FORDÍTÁSA

(21) Magyar ügyszám: **E 07 854529**
(22) A bejelentés napja: **2007. 10. 31.**

(51) Int. Cl.: ***A62B 7/10*** *(2006.01)*
A62B 23/06 *(2006.01)*

(96) Az európai bejelentés bejelentési száma:
EP 20070854529
(97) Az európai bejelentés közzétételi adatai:
EP 2081650 A2 **2008. 05. 08.**
(97) Az európai szabadalom megadásának meghirdetési adatai:
EP 2081650 B1 **2016. 08. 24.**

(86) A nemzetközi (PCT) bejelentési szám:
PCT/US 07/083086
(87) A nemzetközi közzétételi szám:
WO 08055192

(30) Elsőbbségi adatok:

855711 P	**2006. 10. 31.**	**US**
928226	**2007. 10. 30.**	**US**

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(54) **Respiratórikus orrszűrő**

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

(11) EP 2 081 650 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
24.08.2016 Bulletin 2016/34

(21) Application number: **07854529.0**

(22) Date of filing: **31.10.2007**

(51) Int Cl.:
A62B 7/10 *(2006.01)* ***A62B 23/06*** *(2006.01)*

(86) International application number:
PCT/US2007/083086

(87) International publication number:
WO 2008/055192 (08.05.2008 Gazette 2008/19)

(54) **RESPIRATORY NASAL FILTER**

ATEMNASENFILTER

FILTRE NASAL RESPIRATOIRE

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR

(30) Priority: **31.10.2006 US 855711 P**
30.10.2007 US 928226

(43) Date of publication of application:
29.07.2009 Bulletin 2009/31

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EP 2 081 650 B1

Description

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] This invention relates to a respiratory filter for use by an individual to assist in filtering pollutants.

Description of the Background Art

[0002] Presently, there exists a need to filter contaminants, pollutants, and other environmental elements from entering a person's nasal passages. U.S. Patent 5,392, 773, discloses a respiratory particulate nasal filter with a fine mesh filtering material that is intended to be removably adhered to the lower surfaces of a person's nose to fully cover both of the person's nostrils. The adhesive section has distal, medial, and proximal adhesive tabs which secure and seal the filter while leaving the upper surfaces of the nose exposed. The fine mesh filter functions to filter the air the person breaths through his nose to thereby reduce contaminates, bacteria, viruses that might otherwise be inhaled. The filter taught by U.S. Patent 5,392,773 comprises tabs that facilitate attachment over both of the person's nostrils. The tabs also facilitate removal. However, because the filter fits over both nostrils and is tabbed, the filter is quite noticeable when worn. Additionally, because the proximal tab is generally rectangular in shape to connect the triangular shape of the filter to the skin found at the junction of the face with the bottom of the nose, this creates difficulty and discomfort in removing the filter from a wearer's face as the filter pulls unnecessarily on facial hair in this region. For these reasons, some people are reluctant to wear the filter.

[0003] US 2005/161046 A1 discloses a similar filter, with one embodiment providing a separate filter for each nostril yet disposed on the same adhesive tape. In use the adhesive tape surrounds the nostril openings on all sides.

[0004] U.S. Patent 5,740,798, discloses a disposable nasal band filter, which covers the exterior of the user's nose. The approach of the '798 Patent requires an elastic strand which is noticeable and visible externally, which makes the device less tolerable for wearing for long periods of time. The approach of the '798 Patent is also cumbersome and invasive reducing the usability of the filter.

[0005] U.S. Patent 7,004,165, similarly requires external hardware in order to provide filtration to the nasal passages. The filter of the '165 Patent requires a supporting arrangement which includes a pair of elongated ear support members which the user is required to wear. Such a filter device is cumbersome, heavy and quite noticeable externally.

[0006] Likewise, U.S. Patent 5,636,629, discloses an externally worn nasal glove. The nasal glove of the '629 Patent requires a band worn around or about the user's face. This nasal glove is cumbersome and externally visible when worn. As with the previously mentioned patents, this nasal glove covers both nostrils at the same time, adding to its cumbersome nature.

[0007] Other prior art nasal filters must be inserted into the nasal passage. U.S. Patent 7,156,099, discloses a nasal insert, having a flexible frame. This nasal insert is placed inside the nostrils, as opposed to worn outside the nostril. Such an approach not only subjects the nasal insert to additional contamination, but also crushes nasal hairs within the nostril. These nasal hairs are the first defense against the very pollutants and contaminants sought to be excluded from the nasal passage by the teachings of the present invention.

[0008] Similarly, U.S. Patent Nos. 6,701,924; 5,746,200; and 6,213,121, each require the nasal filter be inserted into the nasal passage.

[0009] Therefore, it is an object of this invention to provide an improvement which overcomes the aforementioned inadequacies of the prior art devices and provides an improvement which is a significant contribution to the advancement of the respiratory nasal filter art.

[0010] Another object of this invention is to provide a respiratory nostril filter that is esthetically pleasing to wear without being too noticeable.

[0011] Another object of this invention is to provide a respiratory nostril filter that is lightweight and unnoticeable when worn by the user.

[0012] The foregoing has outlined some of the pertinent objects of the invention. These objects should be construed to be merely illustrative of some of the more prominent features and applications of the intended invention. Many other beneficial results can be attained by applying the disclosed invention in a different manner or modifying the invention within the scope of the disclosure. Accordingly, other objects and a fuller understanding of the invention may be had by referring to the summary of the invention and the detailed description of the preferred embodiment in addition to the scope of the invention defined by the claims taken in conjunction with the accompanying drawings.

SUMMARY OF THE INVENTION

[0013] The invention is defined by the appended claims. The invention comprises a hypoalogenic clear, almost nonvisible, oval-shaped respiratory nasal filter designed to be adhered about a single nostril of a person. The filter is designed in an oval-shaped configuration and proportionately sized to fit over a person's nasal passage. The filter layer is made of a woven fiber for the filtration of air to help prohibit the inhalation of foreign pollutants, pollens, poisons, viruses and other airborne contaminates. The clear adhesive layer comprises a corresponding clear ring with an adhesive applied to one side that encircles the filter layer. The adhesive functions to allow the filter layer to be adhered thereto. The adhesive also

functions to adhere to the periphery of the person's nostril.

[0014] The filter is ideal for use in the medical, industrial, pharmaceutical and environmental fields in addition to being ideal for use by the general public, particularly those with asthma and/or allergies to everyday exposure of daily contaminants. Additionally, the filter greatly reduces the inhalation of second hand smoke which has been proven to cause disease at any level.

[0015] The filter of the present invention is lighter weight and achieves much greater tolerability than prior art nasal filters, while only using as little as $1/10^{th}$ of the materials needed with prior art filters. The filter, utilizing a smaller filter media than prior art filters, allows the filter to be placed closer to the nasal passage, without actually being inserted into the nasal passage. As discussed at length herein, this results in the filter being less visible or noticeable when worn.

[0016] The close proximity of the filter to the nasal passage also allows back pressure from a user's exhalation to clean the filter mechanism. Further, because the filter is designed to be worn on an individual nostril, the filter can create an inner and outer seal for greater effectiveness in excluding pollutants and contaminants from the user's respiratory system, while only covering approximately 0.16 cm ($1/16^{th}$ of an inch) of skin per nasal passage.

[0017] Additionally, due to the small size of the nasal filters, the filters are extremely lightweight, leading to make the filter unnoticeable to the user when wearing the filter. Similarly, this small size allows for construction of the nasal filter utilizing less filter material than has been required by other nasal filters. Similarly, the thin nonvisible self-sealing outer ring of the nasal filter disclosed herein allows for individually sealing the nasal cavity off without insertion of a nasal filter or other additional discomfort.

[0018] The filter's small and novel design also overcomes the prior art's requirement that the filter be visible when worn. The design is not only small, which necessarily reduces its visibility, but also relies upon clear adhesives and skin colored filters thus minimizing any visibility of the filter.

[0019] The foregoing has outlined rather broadly the more pertinent and important features of the present invention in order that the detailed description of the invention that follows may be better understood so that the present contribution to the art can be more fully appreciated. Additional features of the invention will be described hereinafter which form the subject of the claims of the invention. It should be appreciated by those skilled in the art that the conception and the specific embodiment disclosed may be readily utilized as a basis for modifying or designing other structures for carrying out the same purposes of the present invention. It should also be realized by those skilled in the art that such equivalent constructions do not depart from the scope of the invention as set forth in the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawings in which:

Fig. 1 is a plan view of an example of the respiratory nasal filter, which is not part of the invention;
Fig. 2 is a longitudinal cross-sectional view of Fig. 1 along lines 2-2 showing the layers of the respiratory nasal filter;
Fig. 3 is a plan view of the respiratory nasal filter of the invention;
Fig. 4 is an exploded view of Fig. 3 showing the filter layer, the clear base layer and the layer of additional adhesive;
Fig. 5 is a plan view showing a manner is which the respiratory nasal filter of the invention may be mounted onto a carrier sheet during packaging;
Fig. 6 is a plan view showing a manner in which the respiratory nasal filter of the invention may be packaged;
Fig. 7 is a perspective view showing the nasal filter being attached to the periphery of a nasal orifice of a user;
Fig. 8 is a plan view showing the nasal filter attached to the periphery of a nasal orifice of a user;
Fig. 9 is a cross-sectional view of the nasal filter attached to the periphery of a nasal orifice of a user; and
Fig. 10A is plan view showing a user's nose prior to attaching the nasal filters; and
Fig. 10B is a plan view showing two nasal filters attached to the peripheries of each of a user's nostrils.

[0021] Similar reference characters refer to similar parts throughout the several views of the drawings.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0022] As shown in Fig. 1, the nasal filter 10 of of an example, which is not part of the invention comprises a generally oval-shaped configuration dimensioned to be slightly larger than the usual size of the periphery of a person's nasal orifice, namely a person's nostril. As best shown in Fig. 2, the nasal filter 10 comprises a filter layer 12 composed of a microporous filter material. The microporous filter material of the filter layer 12 preferably is composed of a moisture resistant filter material with sufficient pore size to filter out the unwanted particulate, bacteria or virus.

[0023] The microporous filter is preferably a spunlaced polyester fabric. This spunlaced fabric is nonwoven. A preferred nonwoven fabric is the PS-1025 provided by Polymer Science, Inc., the technical disclosure of which is hereby incorporated by reference. The PS-1025 is a

21.3 gram (3/4 ounce) beige colored apertured spunlaced polyester fabric, with a total thickness of 0.0076 cm (0.003 inches). As would be appreciated by a personal skilled in the art, various color nonwoven fabrics could be utilized so as to match the nostril filter 10's color as closely as possible to the color and hue of the user's skin, further diminishing the nostril filter 10's visibility when worn. Similarly, transparent nonwoven fabrics could be utilized, which would also reduce the visibility of the nostril filter when worn. This fabric is comfortable while also mechanically stable allowing the fabric to be used effectively in the nasal filter disclosed herein.

[0024] The microporous filter layer 12 is permanently adhered to the upper surface of an oval ring-shaped base layer 14, preferably composed of a clear plastic material. An adhesive 16 is applied to the underside of the base layer 14. Adhesive 16 is designed to securely adhere to the peripheral edge of the person's nostril, yet is removable when desired. During manufacturing, the filter 10 may be packaged onto a releasable carrier sheet 18.

[0025] During use, the person simply pulls one of the filters 10 from the carrier sheet 18 and aligns it over one of his nostrils. *See* Fig. 7. Upon alignment, the filter 10 is pressed onto the leading peripheral edge of a nasal orifice, as shown in Fig. 8. As indicated by the arrows 20 in Fig. 8, the user firmly attaches the nasal filter 10 to the periphery of the user's nostril by guiding the nasal filter 10 around the entire nasal orifice to create a complete seal. The person then removes another filter 10 from the carrier sheet 18 and similarly positions it over his other nostril.

[0026] Fig. 9 shows a cross sectional view of a user's nasal orifice 6 while wearing the nasal filter 10. As shown, the nasal filter 10 is attached firmly, by way of the adhesive 16, to the periphery of the user's nasal orifice 8. As shown, the filter layer 12 then serves to filter all air coming into the user's nasal passage 6.

[0027] Figs. 10A and 10B show a user's nose and the pertinent features thereto in detail. In Fig. 10A, the user is not wearing the nostril filters 10, while in Fig. 10B, the user is wearing two nostril filters 10. As shown, the nostril filters 10 bond to the periphery of the user's nasal orifices. The anterior portion of the nostril filter 10 bonds with the facet or soft tissue triangle 30 of the user's nose. The lateral portions of the nostril filters 10 bond with the alar sidewalls 32A and 32B of the user's nose. The medial portion of the nostril filter 10 bonds with the columella 36 of the user's nose. The posterior portion of the nostril filters 10 bonds with the nostril sills 38A and 38B of the user's nose. As described above, the nostril filter 10 is thus firmly sealed around the entirety of the user's nasal opening.

[0028] Notably, the ring-shaped base layer 14 may comprise an appropriate size and configuration that fits a traditional nostril size such that it only adheres to the peripheral edge of the nostril (not to the inside the nostril nor over too much area of the nose). Indeed, ring-shaped base layer 14 may be offered in multiple sizes (e.g., small, medium and large) to accommodate noses of different sizes. Importantly, the clear, nearly transparent, appearance of the ring-shaped base layer 14 assures that the outward appearance of wearing the nostril filters 10 will be minimized. The nostril filters 10 of the invention will therefore be esthetically pleasing to wear without being too noticeable.

[0029] This microporous filter layer 12 and ring-shaped base layer 14 are flexible, allowing the nasal filter to completely seal a nostril. Due to this innovative design, the ring-shaped base layer 14 should be no more than 0.16 cm (1/16 of an inch) wide, and preferably as small as 0.079 cm (1/32 of an inch) wide. This minimal size combined with the flexibility of the material is sufficient to firmly attach the nostril filter 10 to the user's nostril, regardless of the shape and size of the respective nostril. The configuration of the respiratory nasal filter 10 as illustrated in Figs. 1 and 2 does not form part of the claimed invention.

[0030] Referring now to Figs. 3-5, the preferred embodiment of the respiratory nasal filter 10 of the invention comprises a clear, oval ring-shaped base layer 14 with the adhesive 16 applied to the underside of the base layer 14. The filter layer 12 is formed in a smaller size relative to the clear base layer 14 and is affixed to the underside of the base layer 14. The base layer 14 therefore slightly overlaps the peripheral edge of the filter layer 12 such that the filter layer 12 is adhered to its underside by the adhesive 16. However, the size of the base layer 14 is sufficiently large to define an adhesive area 14A on the base layer 14 beyond the periphery of the filter layer 12. The adhesive 16 thus functions to permanently adhere the filter layer 12 to its underside while also providing adhesive area 14A that removably adheres to the person's skin about the periphery of the person's nostrils.

[0031] It is noted that additional adhesiveness may be provided to the adhesive area 14A. More specifically, a stronger adhesive 16S may be applied to the inner portions of the filter layer 12 that overlap with the base layer 14. As shown, the stronger adhesive 16S may comprise spots of adhesive 16S that are applied to opposing sides of the overlapping of the filter layer 12 and base layer 14. In this regard, it is believed that only two spots are necessary to provide adequate adherence to the peripheral edge of the person's nostril.

[0032] Different strength adhesives can be utilized for different uses. For instances, industrial uses where high level of airborne contaminants are present benefit from stronger adhesives. These stronger adhesives securely maintain the seal around the user's nostril preventing contaminants from entering the user's nasal passage. A preferred industrial adhesive is a double coated medical grade acrylic pressure sensitive adhesive such as Polymer Science, Inc.'s PS-1006 . Polymer Science, Inc.'s PS-1006 is a double coated high performance medical grade acrylic adhesive with a polyethylene carrier on a 54# C2S paper differential release liner. Adhesives such as the PS-1006 from Polymer Science, Inc. bond well to

most porous and non-porous surfaces. Additionally, these adhesives have high initial tack, enabling immediate application to a user's nostril once the nasal filter is removed from its packaging. Similarly, these adhesives provide exceptional skin adhesion and leave no residue when removed from the skin.

[0033] Alternatively, for more recreational usages whereby the contaminant level is not so severe, a lighter weight adhesive suffices. A preferred recreational adhesive is a single coated medical grade acrylic pressure sensitive adhesive, such as Polymer Science, Inc.'s PS-1010. Polymer Science, Inc.'s PS-1010 is a single coated high performance medical grade acrylic adhesive with a polyethylene carrier on a 54# C2S paper differential release liner. Adhesives such as the PS-1010 from Polymer Science, Inc. bond well to most porous and non-porous surfaces. Additionally, these adhesives have high initial tack, enabling immediate application to a user's nostril once the nasal filter is removed from its packaging. Similarly, these adhesives provide exceptional skin adhesion and leave not residue when removed from the skin.

[0034] The novel nasal filter disclosed herein also provides substantial improvement in weight, breatheability and tolerability for users to wear the nasal filter.

[0035] Figure 4 depicts a preferable embodiment of the nostril filter 10. As shown in Fig. 4, outer ring base layer 14 is generally oval in shape having two axes of symmetry, where each axes of symmetry has an outer diameter and an inner diameter. Along the horizontal axis, the outer diameter, in a preferable embodiment, is 2.7686 cm (1.0900 inches), while the inner diameter is 1.829 cm (0.7200 inches). Along the vertical axis, the outer diameter is 1.946 cm (0.7660 inches) while the inner diameter is 1.346 cm (0.5300 inches). The outer ring base layer 14 is preferably a clear polyethylene overlaminate. Pressure sensitive adhesive 16 is applied to one side of the outer ring base layer 14. When the filter layer 12 is connected to the outer ring base layer 14, the pressure sensitive adhesive 16 bonds the filter layer 12 to the outer ring base layer 14. As explained below, the outer diameter of the filter layer 12 is smaller than the outer diameter of the outer ring base layer 12, thus creating an overlap when the filter layer 12 is affixed to the outer ring base layer 14. The pressure sensitive adhesive 16 on this overlapping portion of the outer ring base layer 14 will bond to the user's skin when the nostril filter 10 is in use.

[0036] The filter layer 12 is also generally oval in shape having two axes of symmetry. The horizontal axis diameter is 2.146 cm (0.8447 inches), while the vertical axis diameter is 1.663 cm (0.6546 inches). When configured as described herein such that the filter layer 12 is arranged on the outer ring base layer 14, approximately 0.310 cm (0.122 inches) of the outer ring base layer 14 along the horizontal axis is exposed. Similarly, approximately 0.141 cm (0.0557 inches) of the outer ring base layer 14 along the vertical axis is exposed. Additionally, as shown in Fig. 4, the bottom adhesive layer 16S is preferably 1.266 cm (0.4983 inches) long and approximately 0.158 cm (0.0622 inches) high such that the bottom adhesive layer 16S overlaps the filter layer 12 along the horizontal axis, thus providing additional securement to the user's nose.

[0037] Finally, as noted above, a pair of the respiratory nasal filters 10 of the invention may be mounted onto a carrier sheet 18 during packaging. See Fig. 5. Once mounted, a preferable way to package and distribute the nasal filters 10 is in individual heat sealed polyester packaging 19, such as depicted in Fig. 6.

[0038] The nostril filter 10 disclosed herein also benefits from the following novel manufacturing process. First, the raw materials comprising the non-woven fabric filter layer 12, the pressure sensitive skin-safe adhesive 16 and the polyethylene overlaminate base layer 14 are cut to two inches wide so that these raw materials can properly move through the manufacturing equipment. Notably, the base layer 14 comes preconfigured with one side containing pressure sensitive skin-safe adhesive 16. Additionally, the manufacturing process described herein operates with two nostril filters 10 being prepared side-by-side at the same time.

[0039] Next, the pressure sensitive skin-safe adhesive 16 is cut into strips 16S, which form the additional adhesive used to provide enhanced securement to a user's nose. These strips 16S are then affixed to the filter layer 12. The filter layer 12 containing the two strips 16S is then cut into the oval pattern described above, namely an oval shape having a horizontal axis diameter of 2.146 cm (0.8447 inches) and a vertical axis diameter of 1.663 cm (0.6546 inches).

[0040] During this step in the process, the inner periphery is cut out of the overlaminate base layer 14. This inner periphery, as discussed above, is oval in shape having a horizontal diameter of 1.829 cm (0.7200 inches) and a vertical axis diameter of 1.354 cm (0.5330 inches).

[0041] Once the inner periphery of the base layer 14 is cut out, the remaining base layer 14 material is overlaid onto the filter layer 12, positioning the adhesive side of the base layer 14 to be in contact with the filter layer 12 so as to position the filter layer 12 over the inner periphery that had been cut out of the base layer 14.

[0042] Next, the outer periphery of the base layer 14 (which now is affixed to the filter layer 12) is cut into the oval shape discussed above, namely having a horizontal axis diameter of 2.7686 cm (1.0900 inches) and a vertical axis diameter of 1.946 cm (0.7660 inches). At this stage, the nostril filter 10 has been manufactured and is ready to be packaged.

[0043] As mentioned above, this process is done so as to prepare two nostril filters 10 simultaneously. Now, a carrier sheet 18 is placed over the side-by-side finished nostril filters 10. This carrier sheet 18 is then cut so that a carrier sheet 18 contains two nostril filters 10. Finally, the pair of filter assemblies 10 are packaged in heat sealable polyester packaging 19.

[0044] The present disclosure includes that contained

in the appended claims, as well as that of the foregoing description. Although this invention has been described in its preferred form with a certain degree of particularity, it is understood that the present disclosure of the preferred form has been made only by way of example and that numerous changes in the details of construction and the combination and arrangement of parts may be resorted to without departing from the scope of the invention and the claims.

Claims

1. A respiratory nasal filter (10) comprising:

   an outer ring (14) having concentric outer periphery and inner periphery sized to the periphery of a user's nasal orifice;
   a filter layer (12) having an outer periphery larger than the inner periphery of the outer ring, but smaller than the outer periphery of the outer ring;
   an adhesive (16) applied to said outer ring for bonding the filter layer concentrically to the outer ring and for bonding the outer ring to the columella, a nasal sill, an alar sidewall and the facet of the user's nose;
   an additional adhesive (16S) being positioned at opposing locations of the overlapping of the filter layer (12) and the outer ring (14), to provide adequate adherence to the peripheral edge of the person's nostril.

2. The nasal filter of claim 1 whereby the outer ring is approximately oval in shape.

3. The nasal filter of claim 1 whereby the filter layer is approximately oval in shape.

4. The nasal filter of claim 1 whereby the outer ring is a clear polyethylene overlaminate.

5. The nasal filter of claim 1 whereby the filter layer is a non-woven fabric

6. The nasal filter of claim 1 whereby the filter layer is a polyester fabric.

7. The nasal filter of claim 6 whereby the filter layer is a spunlaced polyester fabric.

8. The nasal filter of claim 1 whereby the adhesive is a pressure sensitive adhesive.

9. The nasal filter of claim 1 whereby the adhesive is a medical grade acrylic pressure sensitive adhesive.

10. The nasal filter of claim 9 whereby one or more of the adhesive and the additional adhesive comprises a single-coated medical grade acrylic pressure sensitive adhesive.

11. The nasal filter of claim 9 whereby one or more of the adhesive and the additional adhesive comprises a double-coated medical grade acrylic pressure sensitive adhesive.

12. The nasal filter of claim 1 further comprising a carrier sheet upon which the outer ring, the filter layer and the adhesive are bound.

13. A method of manufacturing a respiratory filter comprising:

    laying down a base layer (14) which has a first side and a second side whereby the first side is pre-bonded to an adhesive (16);
    laying down a non-woven fabric filter layer (12);
    and **characterized by** cutting a skin-safe pressure sensitive adhesive into two strips (16s);
    affixing the two strips (16s) of skin-safe pressure sensitive adhesive to the non-woven fabric filter layer (12);
    cutting the non-woven fabric filter layer (12) bonded to the two strips (16s) of skin-safe pressure sensitive adhesive into an oval;
    cutting an inner oval out of the base layer (14) whereby the inner oval cut out of the base layer is smaller than the oval cut out of the non-woven fabric filter layer (12);
    aligning and laying down the base layer (14) onto the oval cut filter layer (12) concentrically such that the filter layer covers the inner oval that was cut out of the base layer (14);
    cutting an outer oval out of the base layer (14) whereby the outer oval cut out of the base layer is larger than the oval cut out of the non-woven fabric filter layer (12) creating a nostril filter;
    attaching a carrier sheet (18) to two nostril filters;
    cutting the carrier sheet (18) into individual carrier sheets for packaging; and
    packaging individual carrier sheets in heat sealed polyester packaging (19).

14. The method of claim 13 whereby the skin-safe pressure sensitive adhesive is a medical grade acrylic pressure sensitive adhesive, and whereby the skin-safe pressure sensitive adhesive is a single-coated or a double-coated medical grade acrylic pressure sensitive adhesive.

Patentansprüche

1. Atmungsfilter (10) für die Nase, das Folgendes umfasst:

einen äußeren Ring (14) mit einer äußeren Peripherie und einer dazu konzentrischen inneren Peripherie, die passend zur Peripherie eines Nasenlochs eines Benutzers bemessen sind;
eine Filterschicht (12) mit einer äußeren Peripherie, die größer ist als die innere Peripherie des äußeren Rings, aber kleiner als die äußere Peripherie des äußeren Rings;
einen Klebstoff (16), der auf den genannten äußeren Ring aufgebracht wird, um die Filterschicht konzentrisch auf den äußeren Ring zu kleben und den äußeren Ring auf den Nasensteg, die Nasenscheidewand, eine Flügelseitenwand und die Facette der Nase des Benutzers zu kleben;
einen zusätzlichen Klebstoff (16S), der an gegenüberliegenden Stellen der Überlappung der Filterlschicht (12) und des äußeren Rings (14) positioniert ist, um dem peripheren Rand der Nasenöffnung der Person ausreichende Haftung zu geben.

2. Nasenfilter nach Anspruch 1, bei dem der äußere Ring eine etwa ovale Form hat.

3. Nasenfilter nach Anspruch 1, wobei die Filterschicht eine etwa ovale Form hat.

4. Nasenfilter nach Anspruch 1, wobei der äußere Ring ein durchsichtiges Polyethylenüberlaminat ist.

5. Nasenfilter nach Anspruch 1, wobei die Filterschicht ein Vliesstoff ist.

6. Nasenfilter nach Anspruch 1, wobei die Filterschicht ein Polyesterstoff ist.

7. Nasenfilter nach Anspruch 6, wobei die Filterschicht ein wasserstrahlverfestigter Polyesterstoff ist.

8. Nasenfilter nach Anspruch 1, wobei der Klebstoff ein Haftkleber ist.

9. Nasenfilter nach Anspruch 1, wobei der Klebstoff ein Acrylhaftkleber für die medizinische Anwendung ist.

10. Nasenfilter nach Anspruch 9, wobei der Klebstoff und/oder der zusätzliche Klebstoff einen einfach beschichteten Acrylhaftkleber zur medizinischen Anwendung umfasst.

11. Nasenfilter nach Anspruch 9, wobei der Klebstoff und/oder der zusätzliche Klebstoff einen doppelt beschichteten Acrylhaftkleber zur medizinischen Anwendung umfasst.

12. Nasenfilter nach Anspruch 1, der ferner eine Trägerlage aufweist, auf die der äußere Ring, die Filterschicht und der Klebstoff geklebt sind.

13. Verfahren zur Herstellung eines Atemfilters, das Folgendes beinhaltet:

Ablegen einer Basisschicht (14) mit einer ersten Seite und einer zweiten Seite, so dass die erste Seite auf einen Klebstoff (16) vorgeklebt wird;
Ablegen einer Vliestoff-Filterschicht (12); und **gekennzeichnet durch** Schneiden eines hautverträglichen Haftklebers in zwei Streifen (16s);
Fixieren der beiden Streifen (16s) aus hautverträglichem Haftkleber auf der Vliestoff-Filterschicht (12);
Schneiden der auf die beiden Streifen (16s) aus hautverträglichem Druckkleber geklebten Vliesstoff-Filterschicht (12) zu einem Oval;
Schneiden eines inneren Ovals aus der Basisschicht (14), so dass das aus der Basisschicht geschnittene innere Oval kleiner ist als das aus der Vliesstoff-Filterschicht (12) geschnittene Oval;
konzentrisches Ausrichten und Ablegen der Basisschicht (14) auf die oval geschnittene Filterschicht (12), so dass die Filterschicht das innere Oval bedeckt, das aus der Basisschicht (14) geschnitten wurde;
Schneiden eines äußeren Ovals aus der Basisschicht (14), so dass das aus der Basisschicht geschnittene äußere Oval größer ist als das aus der Vliesstoff-Filterschicht (12) geschnittene Oval, so dass ein Nasenöffnungsfilter entsteht;
Anbringen einer Trägerlage (18) an zwei Nasenöffnungsfiltern;
Schneiden der Trägerlage (18) in individuelle Trägerlagen zum Verpacken; und
Verpacken individueller Trägerlagen in thermogeschweißte Polyesterverpackung (19).

14. Verfahren nach Anspruch 13, wobei der hautverträgliche Haftkleber ein Acrylhaftkleber zur medizinischen Anwendung ist und wobei der hautverträgliche Haftkleber ein einfach beschichteter oder ein doppelt beschichteter Acrylhaftkleber zur medizinischen Anwendung ist.

Revendications

1. Filtre nasal respiratoire (10) comportant :

un anneau extérieur (14) ayant une périphérie extérieure et une périphérie intérieure concentriques, dimensionnées en fonction de la périphérie de l'orifice nasal d'un utilisateur ;
une couche filtrante (12) ayant une périphérie extérieure plus grande que la périphérie intérieure de l'anneau extérieur, mais plus petite que

la périphérie extérieure de l'anneau extérieur ;
un adhésif (16) appliqué sur ledit anneau extérieur pour lier la couche filtrante de façon concentrique à l'anneau extérieur et pour lier l'anneau extérieur à la columelle, un seuil nasal, une paroi latérale alaire et la facette du nez de l'utilisateur ;
un adhésif supplémentaire (16S) positionné au niveau d'emplacements opposés du chevauchement de la couche filtrante (12) et de l'anneau extérieur (14), pour fournir une adhérence adéquate sur le bord périphérique de la narine de la personne.

2. Filtre nasal selon la revendication 1, dans lequel l'anneau extérieur est de forme approximativement ovale.

3. Filtre nasal selon la revendication 1, dans lequel la couche filtrante est de forme approximativement ovale.

4. Filtre nasal selon la revendication 1, dans lequel l'anneau extérieur est un stratifié de protection en polyéthylène transparent.

5. Filtre nasal selon la revendication 1, dans lequel la couche filtrante est un tissu non tissé.

6. Filtre nasal selon la revendication 1, dans lequel la couche filtrante est un tissu polyester.

7. Filtre nasal selon la revendication 6, dans lequel la couche filtrante est un tissu polyester lacé par filage.

8. Filtre nasal selon la revendication 1, dans lequel l'adhésif est un adhésif sensible à la pression.

9. Filtre nasal selon la revendication 1, dans lequel l'adhésif est un adhésif en acrylique, sensible à la pression et de qualité médicale.

10. Filtre nasal selon la revendication 9, dans lequel un ou plusieurs parmi l'adhésif et l'adhésif supplémentaire comporte(nt) un adhésif en acrylique, sensible à la pression, de qualité médicale et du type monocouche.

11. Filtre nasal selon la revendication 9, dans lequel un ou plusieurs parmi l'adhésif et l'adhésif supplémentaire comporte(nt) un adhésif en acrylique, sensible à la pression, de qualité médicale et du type à double couche.

12. Filtre nasal selon la revendication 1, comportant par ailleurs une feuille maîtresse sur laquelle l'anneau extérieur, la couche filtrante et l'adhésif sont liés.

13. Procédé de fabrication d'un filtre respiratoire comportant :

l'étape consistant à poser une couche de base (14) qui a un premier côté et un deuxième côté, dans lequel le premier côté est pré-lié à un adhésif (16) ;
l'étape consistant à poser une couche filtrante de tissu non tissé (12) ; et **caractérisé par**
l'étape consistant à découper un adhésif sensible à la pression et sans danger pour la peau en deux bandes (16s) ;
l'étape consistant à fixer les deux bandes (16s) de l'adhésif sensible à la pression et sans danger pour la peau sur la couche filtrante de tissu non tissé (12) ;
l'étape consistant à découper la couche filtrante de tissu non tissé (12) liée aux deux bandes (16s) d'adhésif sensible à la pression et sans danger pour la peau sous la forme d'un ovale ;
l'étape consistant à découper un ovale intérieur dans la couche de base (14), dans lequel l'ovale intérieur découpé dans la couche de base est plus petit que l'ovale découpé dans la couche filtrante de tissu non tissé (12) ;
l'étape consistant à aligner et à poser la couche de base (14) sur la couche filtrante découpée en ovale (12) de manière concentrique, de telle sorte que la couche filtrante recouvre l'ovale intérieur qui avait été découpé dans la couche de base (14) ;
l'étape consistant à découper un ovale extérieur dans la couche de base (14), dans lequel l'ovale extérieur découpé dans la couche de base est plus grand que l'ovale découpé dans la couche filtrante de tissu non tissé (12) pour créer un filtre de narine ;
l'étape consistant à attacher une feuille maîtresse (18) sur deux filtres de narine ;
l'étape consistant à découper la feuille maîtresse (18) en feuilles maîtresses individuelles à des fins de conditionnement ; et
l'étape consistant à conditionner des feuilles maîtresses individuelles dans un emballage en polyester scellé à la chaleur (19).

14. Procédé selon la revendication 13, dans lequel l'adhésif sensible à la pression et sans danger pour la peau est un adhésif en acrylique, sensible à la pression et de qualité médicale, et dans lequel l'adhésif sensible à la pression et sans danger pour la peau est un adhésif en acrylique, sensible à la pression, de qualité médicale et du type monocouche ou du type à double couche.

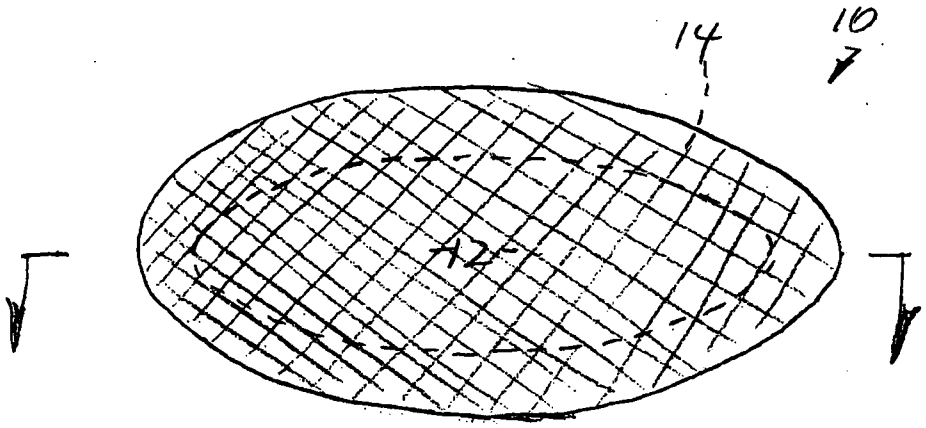


FIG. 1

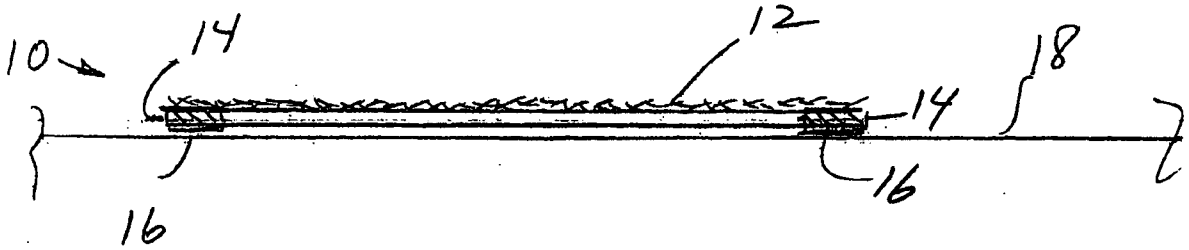


FIG 2

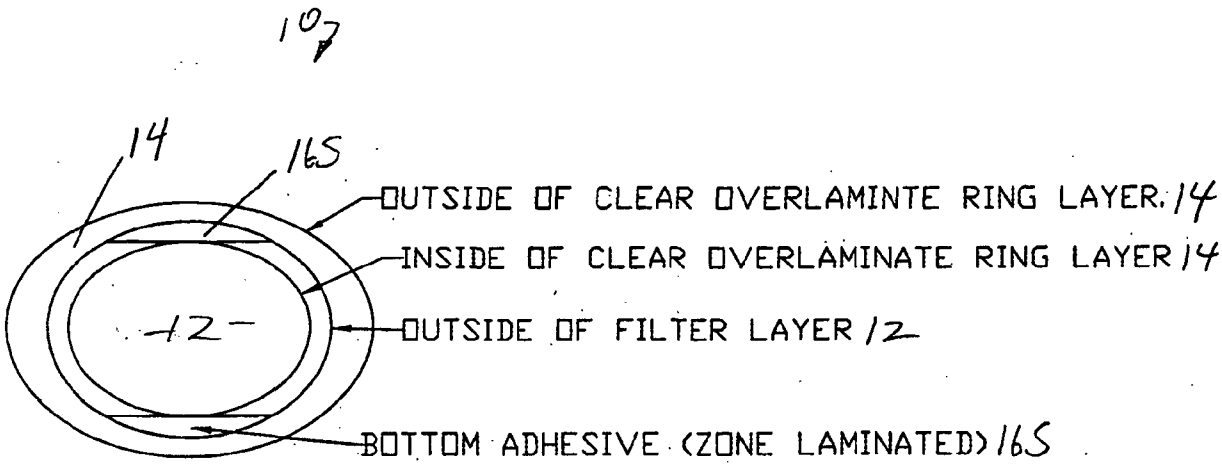
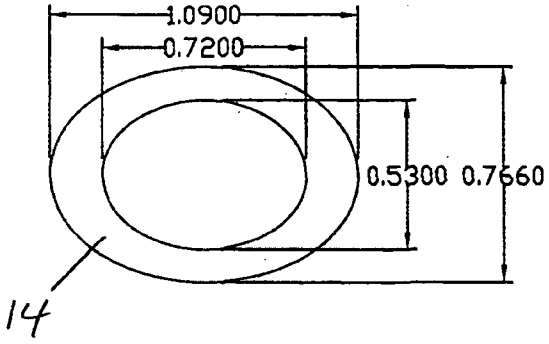
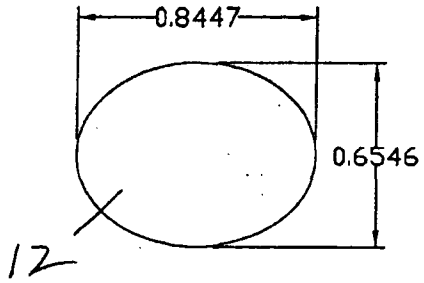

10
14
16
OUTSIDE OF CLEAR OVERLAMINTE RING LAYER 14
INSIDE OF CLEAR OVERLAMINATE RING LAYER 14
12
OUTSIDE OF FILTER LAYER 12
BOTTOM ADHESIVE (ZONE LAMINATED) 16

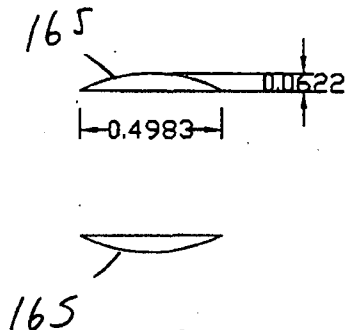
FIG-3



CLEAR OVERLAMINATE RING LAYER 14
****SKIN SAFE PSA ONE SIDE
BONDED TO FILTER MATERIAL
OVERHANGING PSA WILL BOND
TO SKIN WHEN IN USE.

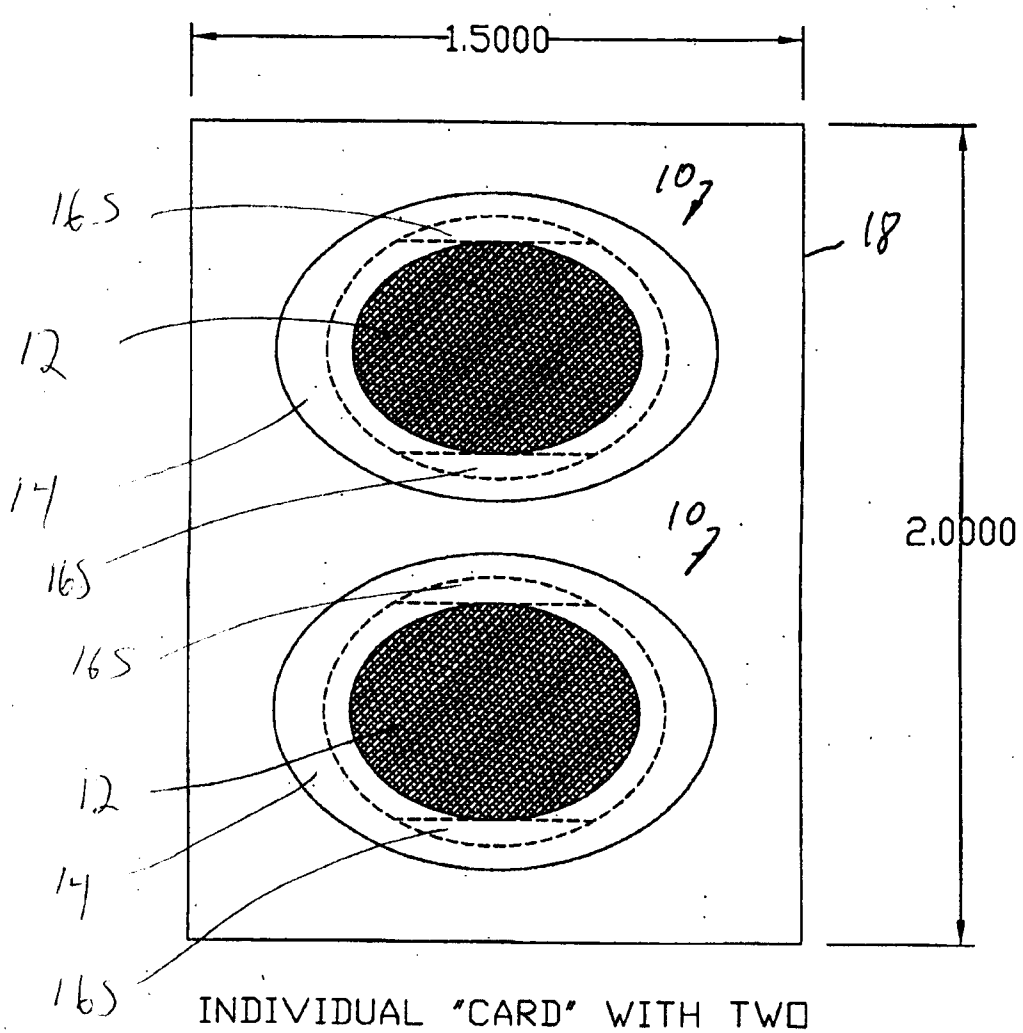


FILTER LAYER 12
****NON WOVEN FABRIC/FILTER
MATERIAL



BOTTOM ADHESIVE LAYER 165
****DOUBLE COATED SKIN SAFE PSA
BONDED TO FILTER LAYER

FIG. 4



INDIVIDUAL "CARD" WITH TWO NOSE FILTERS

FIG 5.

FIG. 6

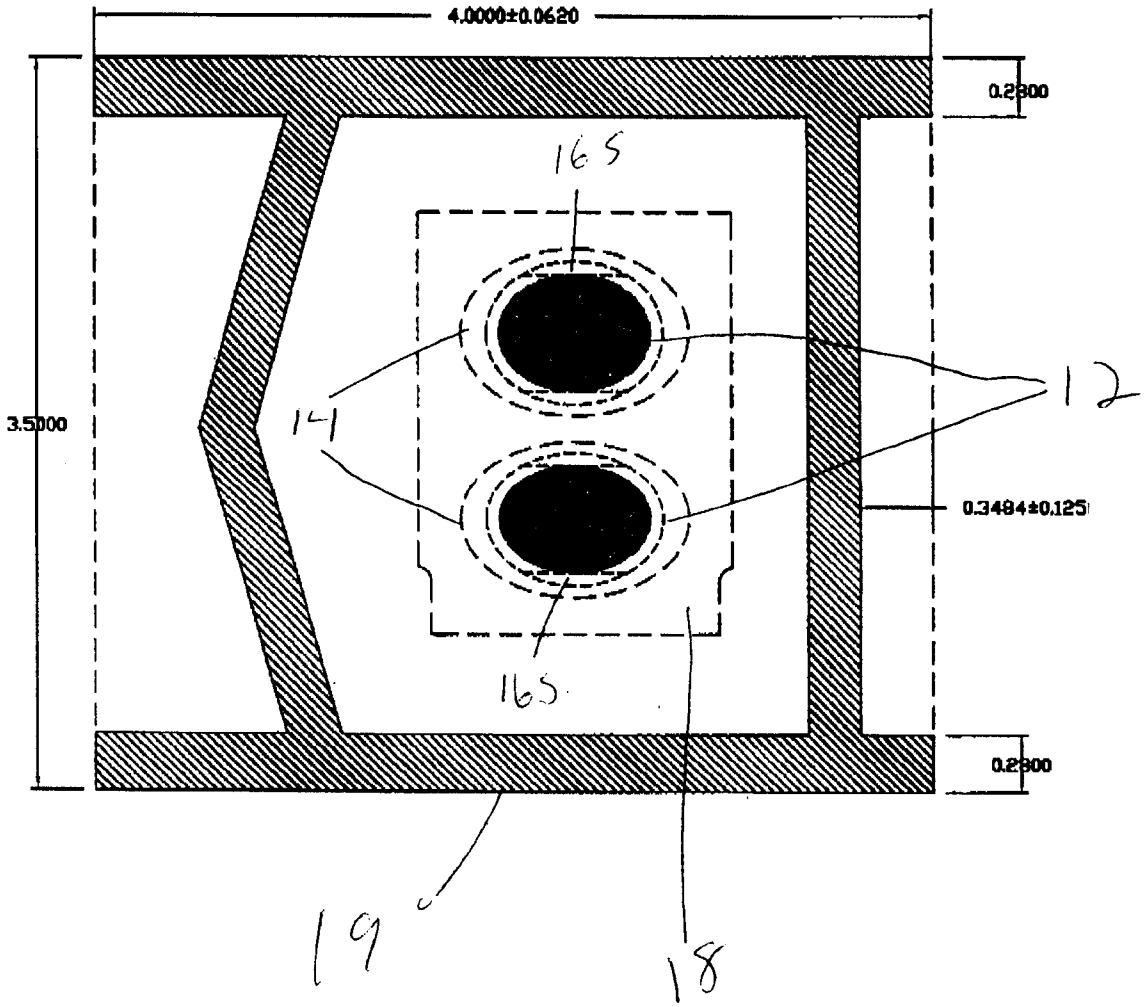


Fig. 7

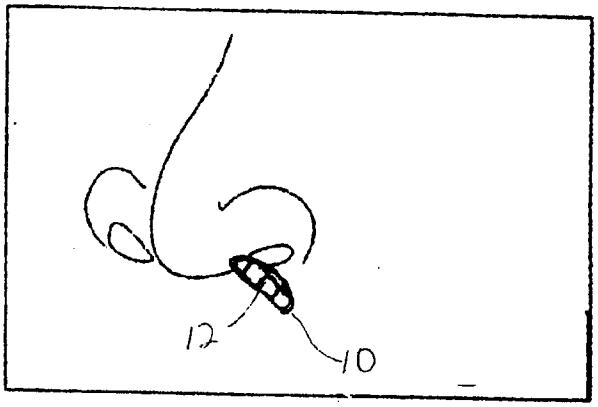


Fig. 8

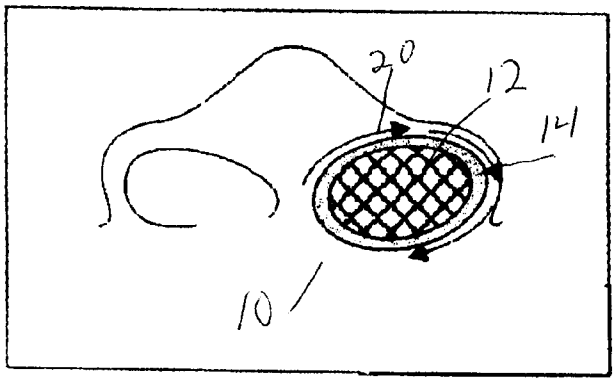


Fig. 9

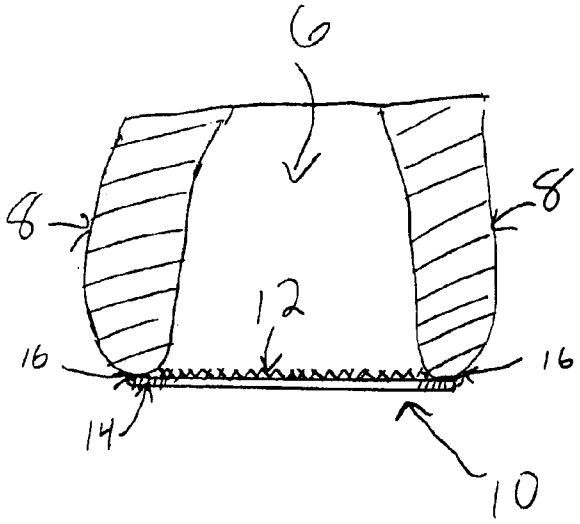


FIG. 10A

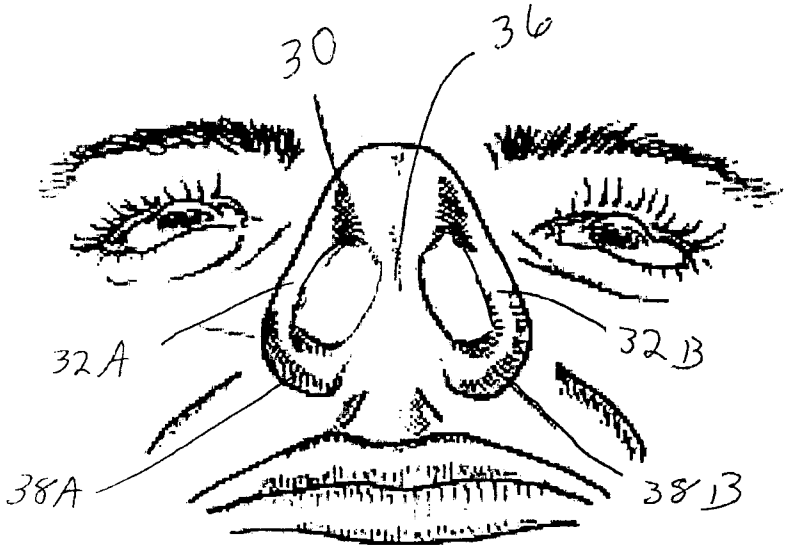
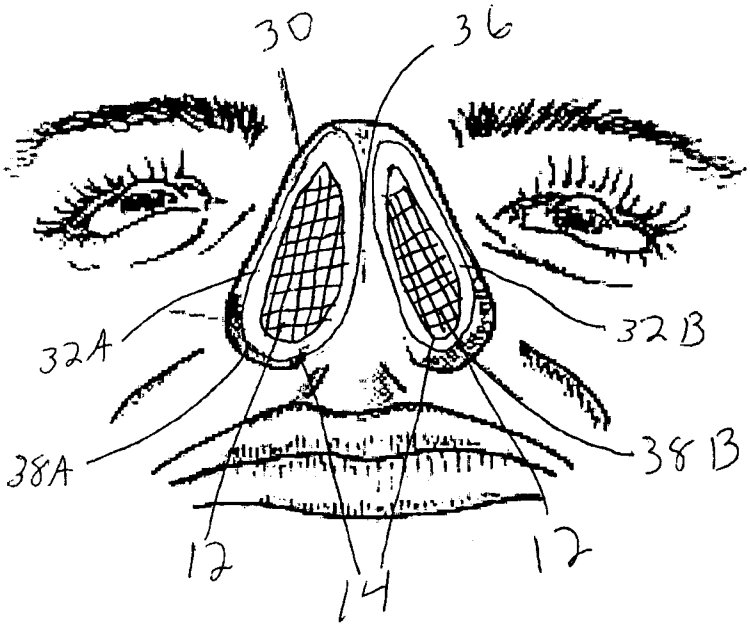


FIG. 10B



REFERENCES CITED IN THE DESCRIPTION

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RESPIRATÓRIKUS ORRSZŰRŐ

SZABADALMI IGÉNYPONTOK

1. Respiratórikus orrszűrő (10), amely tartalmaz:

   egy külső gyűrűt (14), amelynek koncentrikus külső és belső pereme van, amely egy felhasználó orrlyuka peremének megfelelően van méretezve;

   egy szűrőréteget (12), amelynek külső pereme nagyobb, mint a külső gyűrű belső pereme, azonban kisebb, mint a külső gyűrű külső pereme;

   ragasztót (16), amely a külső gyűrűre van felhordva annak érdekében, hogy a szűrőréteget koncentrikusan a külső gyűrűhöz ragassza, és hogy a külső gyűrűt a columellához, az orrcsúcs alaphoz, az orrszárny oldalfalához és a felhasználó orrának háromszög alakú lágyszövetéhez (facet) ragassza;

   járulékos ragasztót (165), amely a szűrőréteg (12) és a külső gyűrű (14) átlapolódásának az átellenes helyein van elhelyezve annak érdekében, hogy a személy orrnyílásának a kerületi peremével megfelelő tapadást biztosítson.

2. Az 1. igénypont szerinti orrszűrő, ahol a külső gyűrű megközelítőleg ovális alakú.

3. Az 1. igénypont szerinti orrszűrő, ahol a szűrőréteg megközelítőleg ovális alakú.

4. Az 1. igénypont szerinti orrszűrő, ahol a külső gyűrű egy tiszta polietilénből lévő külső réteg.

5. Az 1. igénypont szerinti orrszűrő, ahol a szűrőréteg egy nemszőtt anyagból van.

6. Az 1. igénypont szerinti orrszűrő, ahol a szűrőréteg egy poliészter anyagból van.

7. Az 1. igénypont szerinti orrszűrő, ahol a szűrőréteg egy vízsugaras erősítésű (spunlaced) poliészter anyagból van.

8. Az 1. igénypont szerinti orrszűrő, ahol a ragasztó egy nyomásérzékeny ragasztó.

9. Az 1. igénypont szerinti orrszűrő, ahol a ragasztó egy gyógyszerkönyvi nyomásérzékeny akrilragasztó.

10. A 9. igénypont szerinti orrszűrő, ahol a ragasztó és a járulékos ragasztó közül egy vagy több egy egyszeres bevonatú, gyógyszerkönyvi nyomásérzékeny akrilragasztót tartalmaz.

11. A 9. igénypont szerinti orrszűrő, ahol a ragasztó és a kiegészítő ragasztó közül egy vagy több egy kétszeres bevonatú, gyógyszerkönyvi nyomásérzékeny akrilragasztót tartalmaz.

12. Az 1. igénypont szerinti orrszűrő, amely tartalmaz továbbá egy olyan hordozóréteget is, amelyre a külső gyűrű, a szűrőréteg és a ragasztó van ráragasztva.

13. Eljárás respiratórikus szűrő előállítására, amely során:

leterítünk egy bázisréteget (14), amelynek első oldala és második oldala van, ahol az első oldal előzőleg egy ragasztóhoz (16) van hozzáragasztva;

leterítünk egy nemszőtt anyagú szűrőréteget (12);

azzal jellemezve, hogy az eljárás során

egy bőrbarát, nyomásérzékeny ragasztót két sávra (16s) vágunk szét;

a bőrbarát, nyomásérzékeny ragasztó két sávját (16s) a nemszőtt anyagú szűrőréteghez (12) rögzítjük;

a bőrbarát, nyomásérzékeny ragasztó két sávjához (16s) ragasztott nemszőtt anyagú szűrőréteget (12) ovális alakúra vágjuk;

a bázisréteg (14) belső ovális területét kivágjuk, ahol a bázisréteg kivágott belső ovális területe kisebb, mint a nemszőtt anyagú szűrőréteg (12) kivágott ovális területe;

a bázisréteget (14) koncentrikusan illesztjük és leterítjük az ovális alakúra kivágott szűrőrétegre (12) úgy, hogy a szűrőréteg a bázisrétegből (14) kivágott belső ovális területet befedje;

a bázisréteg (14) külső ovális területét kivágjuk, ahol a bázisréteg kivágott külső ovális területe nagyobb, mint a nemszőtt anyagú szűrőréteg (12) kivágott ovális területe, ezáltal egy orrnyílás-szűrőt hozunk létre;

két orrnyílás-szűrőre egy hordozóréteget (18) erősítünk;

csomagolás céljából a hordozóréteget (18) egyedi hordozórétegekbe vágjuk fel; és

az egyedi hordozórétegeket hőhegesztéssel lezárt poliészter csomagolásba (19) helyezzük.

14. A 13. igénypont szerinti eljárás, ahol a bőrbarát, nyomásérzékeny ragasztó egy gyógyszerkönyvi nyomásérzékeny akrilragasztó, és ahol a bőrbarát, nyomásérzékeny ragasztó egy egyszeres vagy kétszeres bevonatú, gyógyszerkönyvi nyomásérzékeny akrilragasztó.