

Sept. 8, 1942.

E. W. ANDERSON

2,295,321

NASAL FILTER ELEMENT

Filed June 12, 1941

FIG. 1.

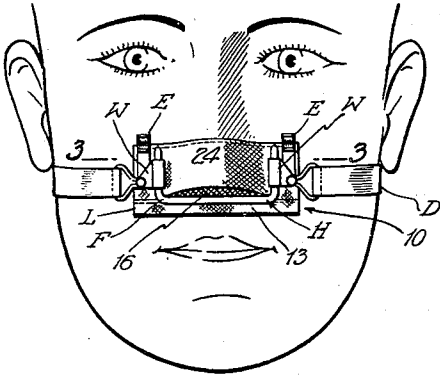


FIG. 2.

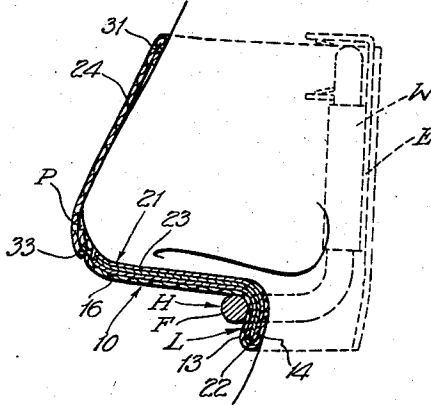


FIG. 3.

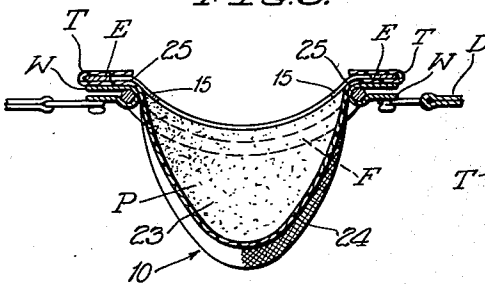


FIG. 4.

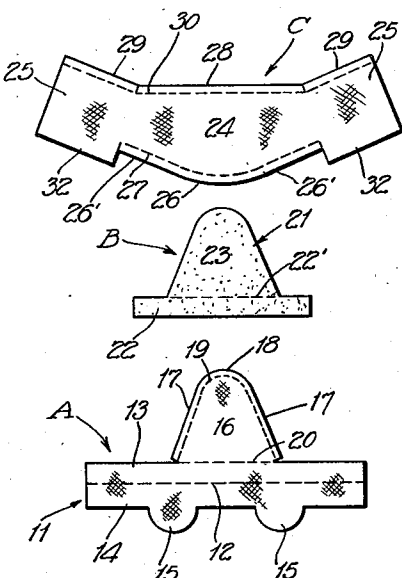
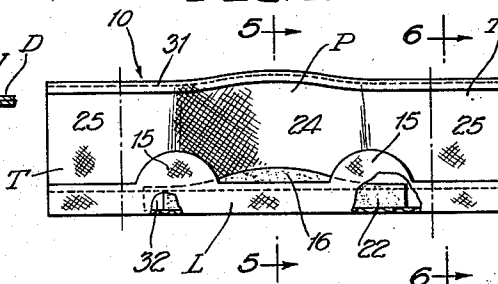


FIG. 5.

FIG. 7.

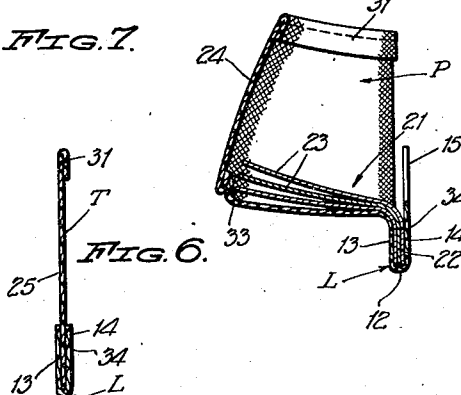


FIG. 6.

ELMER W. ANDERSON.
INVENTOR.

BY

Ely & Pattison.
ATTORNEYS.

WITNESS:
E. W. Anderson

UNITED STATES PATENT OFFICE

2,295,321

NASAL FILTER ELEMENT

Elmer W. Anderson, Leonia, N. J.

Application June 12, 1941, Serial No. 397,689

7 Claims. (Cl. 128—148)

This invention relates to improvements in nasal filter devices for excluding irritant and injurious minute particles, such as pollen and dust from being inhaled into the nasal passage of a wearer.

One of the primary objects of this invention is to provide a nasal filter which is external to the nose and which is intended for use in association with a nasal filter holder of the kind set forth in my Patent No. 2,161,607 granted June 6, 1939.

Another object is to provide a nasal filter made of flexible material and which will conform closely to the shape of the human nose and to its adjoining facial mergings, such as where the nose joins into and merges with the upper lip, and also where the sides of the nose join into and merge with the cheeks.

One of the important features of the invention is to provide a close snug fitting nasal filter so that there is no leakage of air around it and at the same time so that only a very light pressure is needed to hold it in position.

Another feature of the invention is to provide a nasal filter which will have a neat appearance when in position on the wearer's face and achieving this purpose first by taking up a minimum of facial area; second by having its surfaces smooth, wrinkle free and without any bunching up or gathering together of excess material; third by having a smoothly rounded end for the tip of the nose instead of a sharply pointed peak; and fourth by having its outline in the full face view giving a straight line appearance.

Another feature of the invention resides in a nose filter having a nose receiving pocket constructed of porous fabric, the bottom wall of the pocket which fits beneath the bottom of the nose and covering the nostrils having removable superposed filter sheets whereby the porosity of the bottom of the pocket may be regulated to suit the breathing comfort of the wearer. A person having a naturally light inhalation may remove such number of filter sheets so that those remaining in the pocket permit free and easy breathing. However, where it is desirable for the wearer to have maximum protection as in very dusty conditions all of the filter sheets are permitted to remain in place.

A further feature of the invention is the provision of a sanitary nasal filter which is of simple construction and of inexpensive manufacture so as to permit of the disposal of the

same after reasonable use without economic loss to the user.

Other features of the invention reside in a nasal filter device which may be snugly fitted and secured over the nose of a wearer; which is light in weight and which in covering only a minimum amount of facial area in the facial regions adjoining the nose has therefore no tendency to cause facial warmth and perspiration when worn; which is capable of being worn for a relatively long period of time without any feeling of discomfort; which may be worn while talking, eating, and smoking; and which may be safely worn while sleeping, for it does not interfere with the natural respiration of a wearer when relaxed.

Other novel features of the invention will become apparent as the following specification is read in conjunction with the accompanying drawing, in which:

Figure 1 is a front elevational view of the nasal filter device in position upon the face of a wearer.

Figure 2 is an enlarged central vertical transverse sectional view through the nasal filter device in worn position.

Figure 3 is a horizontal sectional view on the line 3—3 of Figure 1, but omitting the facial features.

Figure 4 is a rear elevational view of the nasal filter device per se with part broken away in section.

Figure 5 is a vertical transverse sectional view on the line 5—5 of Figure 4.

Figure 6 is a vertical transverse sectional view on the line 6—6 of Figure 4.

Figure 7 is a collective plan view of the several separate parts from which the nasal filter device is constructed.

Referring to the drawing by reference characters, the numeral 10 designates the nasal filter device in its entirety which is constructed of three separate parts, namely a fabric piece adapted to overlie the entrances to the nostrils of a wearer and to fit against the upper lip and which I shall term a fabric base piece A; a filter element B; and a body piece C adapted to fit over the nose and against the adjacent cheek portions of the wearer's face; these several pieces being illustrated in plan and separated condition in Figure 7.

The base piece A is made from a single piece of fabric such as linen, cotton, or other like flexible porous material and is cut to provide an elongated lip portion 11 foldable upwardly

lengthwise upon itself on the medial fold line 12 to provide a relatively narrow front wall 13 and a like rear wall 14. Integral with the rear wall 14 and extending from the free longitudinal edge thereof are spaced apart semi-circular shaped gap covering flaps 15—15. The flaps 15—15 are equidistantly spaced from the mid portion of the wall 14 for a purpose to be explained hereinafter. Integral with the front wall 13 and extending centrally from the free longitudinal edge thereof is a bottom wall 16, the same having rearwardly diverging side edges 17—17 and a rounded front edge 18. The bottom wall 16 is of a shape conforming substantially to the shape of the under side of a human nose. The free edges of the bottom wall 16 are foldable upwardly on the dotted seam line 19. The bottom wall 16 is foldable at substantially right angles to the wall 13 on the dotted fold line 20. The ends of the dotted seam line 19 terminate in central alignment with the flaps 15—15, for when the wall 14 is folded against the wall 13, the flaps are disposed behind the ends of the dotted seam line 19.

The filter element B consists of a plurality of like superposed porous paper sheets, each of which is designated 21. I have discovered that a relatively thin tissue-like paper known under the name of "Textilex" meets the requirement for it is thin, soft, tough, and porous and not disintegratable by the presence of moisture. Each filter sheet 21 includes an elongated attaching flap 22 having a filter body portion 22 integral therewith and detachable therefrom by tearing on the tear line 22'. The body portion 23 is of a shape and size substantially equal to the bottom wall 16 to overlie the same as will be hereinafter explained. The flap 22 is of a height substantially equal to that of the walls 13 and 14 between which it fits and is of a length shorter than the walls 13 and 14 so as to terminate short of the ends of the said walls to enable free and easy folding of the ends as illustrated in Figure 3.

The body piece C like the base piece A is constructed from a like porous fabric material which is cut to provide an intermediate side wall portion 24 and opposed angularly extending end portions 25—25. The side wall portion 24 has a mid-rounded bottom edge 26 which merges with upwardly diverging straight edges 26'—26', the said edges 26, 26'—26' being foldable upwardly on the dotted seam line 27 which extends parallel to the said edges. The top edge 28 of the side wall portion 24 is straight and its ends meet the top angular straight edges 29—29 of the end portions 25—25. A dotted fold line 30 extends parallel to the top edge of the body piece C on which the edge is folded and stitched to provide a hemmed edge 31. Attaching flaps 32—32 extend downwardly from the end portions 25—25 for reception between the walls 13 and 14 of the base piece A so that when in position between these walls 13 and 14 the bottom edges of the flaps 32—32 will touch the fold line 12 of the base piece A. With respect to each of the end portions 25—25 the bottom edge of each flap 32—32 is parallel to the top edge 29—29 and in the completed article as shown in Figure 4 the top edges of the attaching tabs T—T will therefore be parallel to the bottom edge of the lip section L.

The side wall portion 24 of body piece C is attached or joined to the bottom wall 16 of base piece A by sewing the two pieces together while flat in such a manner that dotted line 27 will coincide exactly with dotted line 19, the seam 33

being along these lines and causing that purpose to be obtained. After seam 33 is completed, the pocket thus formed is reversed to the position shown so that a smooth external appearance is obtained.

A line of stitching 34 adjacent to the top edges of the walls 13 and 14 secures these walls together and also serves to hold the flaps 22 of the filter sheets 21 as well as the attaching flaps 32—32 of body piece C in position between walls 13 and 14. Where the respective surfaces of bottom wall 16, side walls 24 and end portions 25 intersect or meet at a point, the flaps 15—15 act as gap covers, to prevent leakage of air, by their overlapping or covering of any gaps that might occur at that point as a result of accidental slight misalignment of parts in assembling.

When the parts A, B, and C are folded, fitted together and stitched in the manner described, a nasal filter 10 is produced and which is of a shape as shown in Figures 4 and 5. The finished nasal filter 10 includes a pre-shaped nose receiving pocket P consisting of the bottom wall 16 and side wall portions 24, a stack of filter sheets 23 overlying the bottom wall 16, rearwardly foldable attaching end tabs T—T, and a depending lip portion L.

Whereas various means of securing the nasal filter device 10 in position on the nose of a wearer may be used, I have illustrated in Figures 1 to 3 inclusive the device as being held in wearing position by a nasal filter holder H, of the kind set forth in my Patent No. 2,161,607 granted June 6, 1939. The holder H includes a U-shaped frame F having wing plates W—W attached to the respective upstanding arms thereof and which have the ends of an elastic head band D detachably connected thereto. Fixed to the wing plates are spring clips E—E having their free ends facing downwardly. In applying the filter device 10 to the holder H, the top edges of the end tabs T are inserted between the wing plates W and the respective clips E to the position shown in Figures 1 to 3 inclusive. The nose receiving pocket P extends forwardly between the arms of the frame F while the forwardly bowed right portion of the frame is disposed against the lip portion L. After the filter device 10 has been thus positioned in the holder H, the pocket P is fitted to the nose with the rearwardly folded tabs T fitting against the cheeks and protecting the skin against contact with the metal clips E. When the filter device is correctly adjusted to the nose, the filter sheets 23 underlie the entrances to the nostrils while the lip portion L is snugly held against the upper lip by the forwardly bowed right portion of the frame F. It will therefore be apparent that the filter device is snugly held in position over the nose of the wearer and any air breathed in is drawn through the filter sheets 23. The porosity of the filter element 21 may be varied to meet the strong or weak inhalation of the user, by tearing away certain of the sheets 23 on the tear line 22'.

From the foregoing description, it will be understood that I have provided a simple and inexpensive nasal filter device which when applied to the face of a wearer, does not hide the facial features or facial expressions of the wearer, for only the tip end of the nose and a portion of the upper lip are covered, and which covering portions of the filter device substantially conform to the particular shaped nose and lip of the individual. The filter device 10 may be comfortably worn while eating, drinking, smoking, and sleep-

ing, and will be found extremely helpful by sufferers of hayfever to prevent pollen and other irritants from coming in contact with the delicate mucous membranes of the nose during natural breathing. The inexpensive nature of the device permits of its disposal after a limited use and for sanitary reasons.

Whereas the porous sheets 23 are referred to as filter sheets, they may be medicated for the relief of head-colds, catarrh, and other nasal or head ailments.

If desired, the lip portion L may be made wider to depend over the mouth of the user in instances of use where a mouth shield is desired.

The invention set forth herein constitutes an improvement over the nasal filter element disclosed in my prior application Serial No. 263,382, filed March 22, 1939.

While I have shown and described what I consider to be the most practical embodiment of my invention, various changes in construction as come within the scope of the appended claims may be resorted to if desired.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent of the United States, is:

1. A nasal filter device including a nose shaped body constructed of porous fabric material defining a nose receiving pocket having a bottom wall of a shape substantially conforming to the shape of the underside of a human nose, a side wall for bridging the nose, a lip portion depending from the rear edge of the bottom wall, a plurality of porous flexible filter sheets secured to the lip portion and having their free portions folded into the pocket flat against the bottom wall, the free portions of the filter sheets being of a shape substantially conforming to that of the bottom wall.

2. A nasal filter device including a nose shaped body constructed of porous fabric material defining a nose receiving pocket having a bottom wall of a shape substantially conforming to the shape of the underside of a human nose, a side wall for bridging the nose, a lip portion depending from the bottom wall, a flexible porous filter element comprising a plurality of like thin paper filter sheets arranged one against the other, each paper filter sheet being divided by a weakened tear line into an attaching flap portion and a free body portion, the body portion being of a shape substantially conforming to the shape of the bottom wall, said attaching portions being secured to the lip portion by stitching while the body portions are folded along the tear line into the pocket and lie in superposed relation over the bottom wall.

3. A nasal filter device comprising a base piece of flexible porous fabric having an elongated lip forming section folded lengthwise upon itself to provide front and rear walls, a bottom wall section integral with the top edge of the front wall and extending substantially at right angles thereto, said bottom wall section being of a shape substantially conforming to the underside of a human nose; a fabric body piece having a side wall portion and end portions, the lower edge of

the side wall portion fitting against the edges of the bottom wall section and stitched thereto, attaching tabs extending downwardly from the end portions and being disposed between the front and rear walls; a flexible porous filter element having a body portion of a shape substantially conforming to the shape of the bottom wall and an integral attaching portion, said attaching portion being disposed between the front and rear walls while the body portion overlies the bottom wall section, and a line of stitching extending the length of the front and rear walls and passing through said walls and through the attaching tabs and attaching portions which are disposed therebetween.

4. A nasal filter device as set forth in claim 3, in which the filter element comprises a pack of separate porous paper sheets, each sheet having a weakened tear line extending thereacross to permit the tearing away of the free portion thereof.

5. A nasal filter device as set forth in claim 3, including flexible gap covering tabs integral with the top edge of the rear wall of the lip forming section and respectively disposed in alignment with ends of the side edges of the bottom wall section.

6. A nasal filter device including a base piece of flexible porous fabric material having an elongated lip forming section folded lengthwise upon itself to provide front and rear layers of material, a bottom wall section integral with the top edge of the front layer and extending substantially at right angles thereto, said bottom wall section being of a shape substantially conforming to the underside of a human nose; a fabric body piece having a side wall portion and end portions, the lower edge of the side wall portion fitting against the edges of the bottom wall section and stitched thereto, attaching tabs extending downwardly from the end portions and being disposed between said front and rear layers, and a line of stitching extending the length of the front and rear layers and passing through the same and through the attaching tabs.

7. A nasal filter device including a nose shaped body constructed of porous fabric material defining a nose receiving pocket having a bottom wall of a shape substantially conforming to the underside of a human nose, a side wall for bridging the nose, a lip portion depending from the bottom wall, a flexible porous filter element comprising a plurality of thin paper filter sheets arranged one against the other, each paper sheet being divided by a hinge score into an attaching flap portion and a free body portion, the body portion being of a shape substantially conforming to the shape of the bottom wall, the attaching flap portions being secured to the lip portion by stitching while the body portions are folded inwardly along the hinge scores into the pocket and lie in superposed relation over the bottom wall.

ELMER W. ANDERSON.