Nov. 24, 1953 M. A. COLEMAN 2,660,166

NASAL FILTER

Filed Jan. 18, 1951

FIG. 1

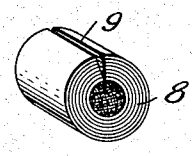


FIG. 2

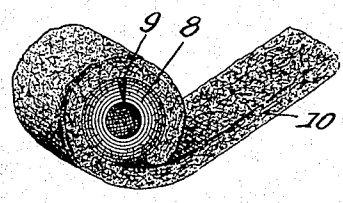


FIG. 4

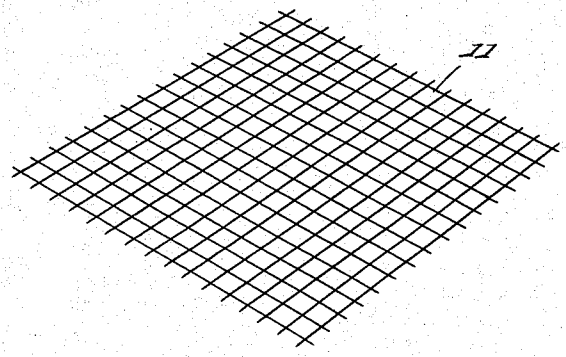


FIG. 3

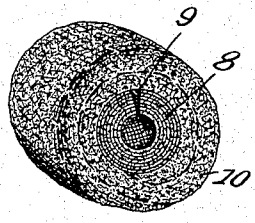


FIG. 5

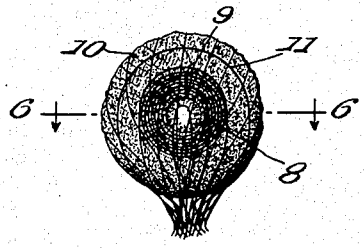
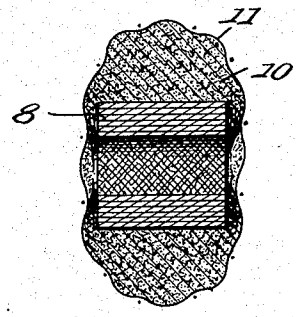


FIG. 6



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NASAL FILTER

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10 Claims. (Cl. 128—148)

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The specification which follows relates to an improvement in nasal filters of the type which can be inserted into each nostril independently. Where the air being breathed contains smoke, dust, or small particles which are irritating to the nose and throat, or detrimental to health, nasal filters usually provide a means of removing these foreign particles and injurious matter from the air during inhalation.

This invention deals with the production of a simple but effective filter for such purposes. Requirements for this are ease of application and effective trapping of the foreign particles and injurious matter in air without impeding the normal intake of air.

One of the objects of the invention is to provide a simple, disposable filter which can be adjusted and applied by the user without particular care or skill.

Another object of the invention is to provide a device which has inherent resilience so that it may conform in size and shape to the outer passageway of the nostril.

A further object of the invention is the provision of means to hold the several parts in position when packaged or when being handled.

A further object of the invention is to provide a nasal air filter having one, or more, open-end hollow cores, the inside passage-way of which embodies fine strips or particles of hair, or animal or vegetable fiber, and the outside surfaces of which are packed or surrounded by porous, pliable material, around all of which there is a film, binder, or low-count fabric over-all covering. This will provide supplemental air filtering intended to resist, trap, and retard dust, dirt, smoke or other injurious particles in the air, and for the purpose of providing a means for inclusion, or to permit the inclusion, where desirable, of nasal medicinal inhalant or application for combatting bacteria, germs, infection or contagion.

Other and further objects of the invention will be apparent from the following particular description of the preferred form of the invention as illustrated in the accompanying drawings.

Fig. 1 is a perspective view of the core of the improved nasal filter;

Fig. 2 is a similar view of the core partially wrapped in the covering band;

Fig. 3 is a perspective view of the core and wrapping band in final form;

Fig. 4 is a perspective view of the overall covering material;

Fig. 5 is a side elevation of the completed filter, and

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Fig. 6 is a horizontal transverse section of the filter on the line 6—6 of Fig. 5.

Briefly described the invention consists in a tubular core through which the greater part of the air passes during breathing, modified by the presence of a surrounding mass of loose fibrous material. This material combines a filtering action with a deformable and slightly resilient property by which the article may be held in position in the nostril without inconveniencing the wearer.

In the drawings I have shown the nasal filter to include a core 8. This core is made of a sheet of paper wrapped spirally and cut into a suitable length, preferably one fourth of an inch. The tube is slit longitudinally as shown at 9, and there is a resulting tendency for the core to spread out slightly if not confined. The central passageway has filaments 12 or like material to catch dust and the like.

The outer surface of this core is coated with a water-proof varnish or lacquer for greater stability and durability.

The core is wrapped with a spiral band 10 of a porous mass of loose fibers. This band is slightly wider than the length of the core 8. It is wrapped two or more times around the core before the latter is permitted to expand. This wrapping operation is illustrated in Fig. 2. The surface filaments of the band 10 are interlocked and the convolutions are thus held together as shown in Fig. 3. At the same time, the inner core 8 expands slightly and thus places the inner portions of the band 10 under slight tension. Under these conditions the side edges of the band will spread beyond the ends of the core 8 to a considerable degree as shown in Fig. 6.

The fibers of which the band 10 is made up, or surrounding the core, may be of any suitable type. I have illustrated the band as being made up of natural cotton fibers closely felted but still porous. The term "porous" is here used to indicate ready permeability for air to pass through the mass in all directions.

The cotton fiber may be treated in any customary manner to increase its porosity.

Other fibers, both vegetable and animal, may be utilized for this purpose, and chief among these I include linen and lamb's wool.

To facilitate the handling and permanence of the filter thus produced, I provide an outer wrapper 11. In Fig. 4 I have shown this wrapper to consist of a square of open-mesh woven fabric. This is reticulate, so that it offers no obstruction to the free passage of air.

The square of fabric is large enough so that

it may be bound around the mass 10 as shown in Fig. 5, and the corners may then be twisted together, knotted or cemented.

In the course of the wrapping, the loose fibers on the side of the band 10 will be brought together to the center of the toric or ring-shaped article and thus partially cover the ends of the tube 8. This is shown in Fig. 6.

The filter thus made is easily assembled and sterilized and will stand storage and transportation without alteration. The filter may be made in several sizes, and a number of filters of a selected size may be packed in a small container, such as a pill box. The filter may be shaped generally to conform to the nasal opening, but the overall pliability and softness of the component parts may permit of further manual shaping for specific individual use.

The filters may be readily held in the fingers and inserted within each nostril. In doing so, the tube 8 will normally take a position co-axial with the passageway, and the mass 10 of fibers will be brought into contact with the wall of the nostril. The filter will then conform closely to the nostril and be retained in position. At the same time, it will offer the minimum obstruction to normal breathing. The filter will permit air to pass both through the core and through the filter mass. Foreign particles will be trapped in the filter, and it will also absorb excess moisture and the like, thus increasing its filtering property.

Filters of this type may be readily applied and after once being used can be disposed of and replaced with fresh filters.

The choice of material and the particular shape or form of these filters, including the shape and number of component parts, can be selected to suit the convenience of the maker, and such variation in material, form and proportions is within the scope of the invention as defined in the following claims.

What I claim is:

1. A nasal filter having an axial resilient tubular core that is split longitudinally and contains particles of filtering material, a surrounding porous mass of loose fibers and an open-mesh wrapper.

2. A nasal filter having an axial resilient tubular paper core that is split longitudinally and contains particles of filtering material, a surrounding porous mass of fibers and an open-mesh wrapper.

3. A nasal filter having an axial tubular core of disposable paper and containing particles of filtering material, a surrounding mass of vegetable fibers and an open-mesh wrapper.

4. A nasal filter having an axial tubular core of disposable paper and containing particles of filtering material, a surrounding mass of cotton fibers and an open-mesh wrapper.

5. A nasal filter having an axial tubular core of disposable paper and containing particles of filtering material, a surrounding mass of linen fibers and an open-mesh wrapper.

6. A nasal filter having an axial resilient tubular core that is split longitudinally and contains particles of filtering material, a spirally wrapped porous band of loose fibers and an open-mesh wrapper.

7. A nasal filter having an axial resilient tubular core that is split longitudinally and contains particles of filtering material, a surrounding porous mass of loose fibers and an open-mesh reticulate woven fabric wrapper.

8. A nasal filter having an axial resilient tubular core that is split longitudinally and contains particles of filtering material, a surrounding porous mass of loose fibers and a square wrapper of open-mesh reticulate woven fiber extending across the ends of the core and having its corners twisted together.

9. A nasal filter having an axial tubular core, a surrounding porous mass of loose fibers extending loosely over the ends of the core, and an open-mesh fabric wrapper completely covering the fiber mass and having its corners twisted together.

10. A ring-shaped nasal filter having an inner tubular core that is split longitudinally and contains particles of filtering material, a spiral-wrapped outer porous band of loose fibers materially wider than the adjacent tubular walls of the core, said fibers extending beyond each end of the core, and an open-mesh wrapper over the band and confining a portion of said fibers over each open end of the core.

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