Dec. 31, 1968 R. A. BERMAN 3,419,004

RESPIRATORY DEVICE

Filed Aug. 31, 1966

FIG. 1

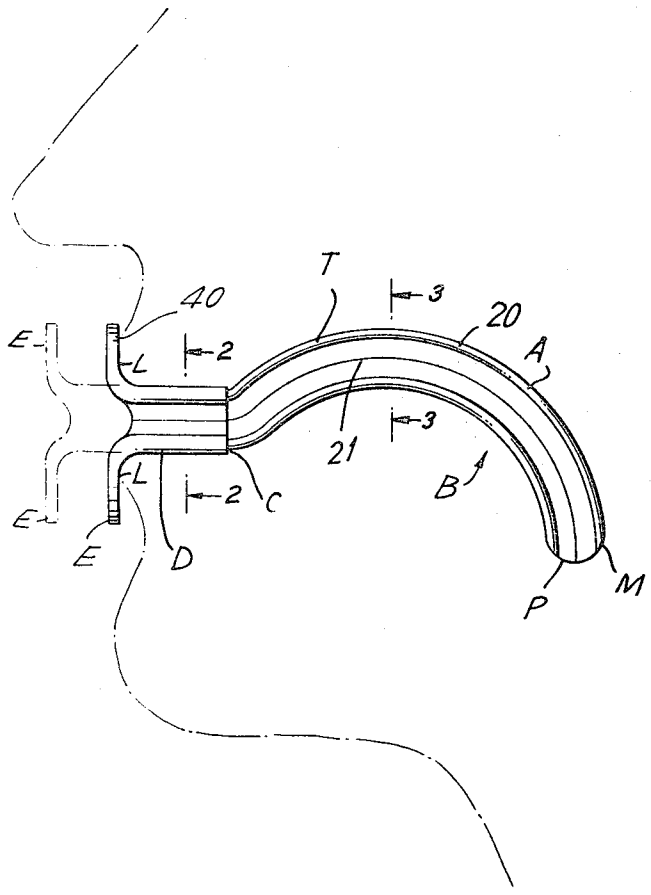


FIG. 2

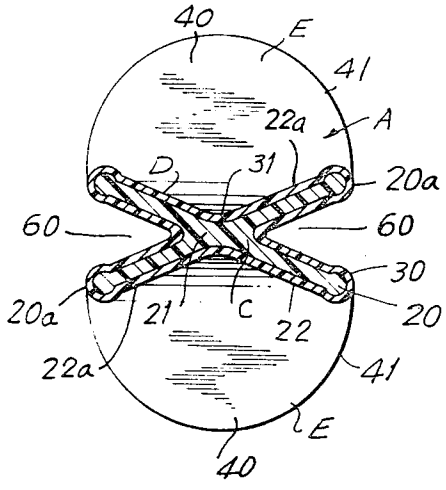
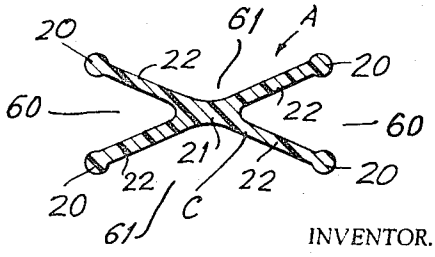


FIG. 3



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RESPIRATORY DEVICE

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4 Claims. (Cl. 128—208)

The present invention relates to a respiratory device and it particularly relates to a respiratory device for insertion in the mouth and upper throat.

It is among the objects of the present invention to provide a simple, low cost respiratory device which may be readily inserted without likelihood of swallowing into the mouth and upper throat portion of a child or adult and which may be thrown away after usage without recovery or need for sterilization.

Another object is to provide a novel respiratory device which can be conveniently placed in emergency equipment and packs, which will not be subject to deterioration upon standing or storage in humid or dry climates or under winter or tropical conditions, and which may be readily maintained in sterile condition.

Still further objects and advantages will appear in the more detailed description set forth below, it being understood, however, that this more detailed description is given by way of illustration and explanation only and not by way of limitation, since various changes therein may be made by those skilled in the art without departing from the scope and spirit of the present invention.

In the preferred form of the present invention the airway consist of a curved member to be inserted and to conform to the shape of the throat, with a telescoping external portion which has continuing lips or flanges to contact the upper and lower lips to hold the respiratory device in position. The section which has been found to be most efficacious is one involving a flattened cross which is relatively wide horizontally and relatively short vertically, and preferably the material of manufacture consists of an extruded, soft, flexible plastic of the nature of polyvinyl chloride polymers, polyvinyl acetate polymers, polyethylene, or polypropylene.

Although these are the preferred materials, it is also possible to use other relative materials. For example, these may be a relative soft elastomer, such as natural or artificial rubber, a cellulose ester, such as cellulose acetate, cellulose propionate or cellulose butyrate, a cellulose ether such as ethyl cellulose or benzyl cellulose, acrylic resins such as methyl methacrylate, or other suitable synthetic materials. However, it is preferred to use polyethylene, a polymer of ethylene which is a solid characterized by being tough, light in weight, extremely low in water absorption and moisture permeability and resistant to alkalies, acids and oxygenated solvents. Polyethylene can be injection and compression molded and has a softening point of from 220 to 240° C., and accordingly readily lends itself to the respiratory airway of this invention.

With the foregoing and other objects in view, the invention consists of the novel construction, combination and arrangement of parts as hereinafter more specifically described, and illustrated in the accompanying drawings, wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which fall within the scope of the claims hereunto appended.

In the drawings, wherein like reference characters denote corresponding parts throughout the several views:

FIG. 1 shows a picture of a head with a respiratory airway in position in the mouth and throat portion thereof.

FIG. 2 is a transverse sectional view upon the line 2—2 of FIG. 1, upon an enlarged scale as compared to FIG. 1.

FIG. 3 is a transverse vertical sectional view upon the line 3—3 of FIG. 1, upon an enlarged scale as compared to FIG. 1.

While the respiratory device A may be injection or compression molded, it is preferably formed in relatively long lengths by extruding thermoplastic material, such as polyethylene, through a suitable die in the form of an X-bar.

A strip of desired length is then cut from the longer length of material A and it is subjected to heat formation to form the curve B and the straight portion C. The beads **20** at the end of the arms enable ready insertion and also strengthen the device, while a central web **21** forms a central point of strength. The outstanding arms **22** may be of relatively thin stock. The curvature as indicated at B is desirably pharyngeal.

The respiratory airway is usually inserted into the mouth as soon as anesthesia has been induced. The structure of the present invention, with its two substantially large passageways, is such that adequate air space is present. Moreover, when polyethylene is employed as the base material of the present invention, the airway is relatively soft, resilient and therefore non-traumatic. Furthermore, the polyethylene being soft, breakage or chipping of the patient's teeth is prevented.

A particular feature of the present invention relates to the telescoping shell D, which has arms **22***a* closely conforming to arms **22**, end beads **20***a*, closely corresponding to the beads **20** and a central portion **31** closely conforming to the central web **21**.

The telescoping shell D also has the upwardly and downwardly turned lips E to contact the mouth, as indicated at **40**, which have a semicircular outline **41**.

As many changes could be made in the above respiratory device, and many widely different embodiments of this invention could be made without departure from the scope of the claims, it it intended that all matter contained in the above description shall be interpreted as illustrative and not in a limiting sense.

Having now particularly described and ascertained the nature of the invention, and in what manner the same is to be performed, what is claimed is:

1. A respiratory device for insertion in the mouth and pharynx, comprising a curved, elongated, extruded plastic body of flat X-shaped cross-section, with beaded ends and a telescoping outer portion having laterally extending means contacting the lips.

2. The device of claim **1**, said device being extruded of polyethylene.

3. The device of claim **1**, said device having a horizontal straightthrough portion passing through the lips and an upwardly and downwardly curved portion passing upwardly over the tongue and downwardly and to the throat.

4. The device of claim **1**, said telescoping outer portion having upstanding and downstanding semicircular portions for contacting the lips.

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CHARLES F. ROSENBAUM, *Primary Examiner.*

U.S. Cl. X.R.

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