ADJUSTABLE NONRESTRICTIVE NASAL CANNULA

INVENTOR
WILLIAM H. SMITH

BY
ATTORNEYS
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ADJUSTABLE NONRESTRICTIVE NASAL CANNULA

William H. Smith, Rahway, N.J., assignor to Metro Hospital Supply Co., Inc., Brooklyn, N.Y.

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2 Claims

ABSTRACT OF THE DISCLOSURE

A nasal cannula made of a flexible material having a formable insert in the connecting cross-tube between the nostril conduits permitting manual shaping and contouring of the cross-tube to the contour of the upper lip of the patient. The insert, which may be a flat piece of metal, may be provided with non-restricting notches to prevent constriction of the gas flow.

BACKGROUND OF THE INVENTION

Field of the invention

Hospital and out-patient equipment, particularly oxygen feeding tubes.

Description of the prior art

The following U.S. patents are known to show nasal cannulas of varying types:


Among the above patents only one bears directly upon the present disclosure, namely, Caldwell Pat. No. 2,693,800 which shows a wire insert in and between the nostril conduits for adjusting the spacing therebetween. As will be described presently, the present invention uses neither a wire nor any other adjusting means for regulating the distance between the nostril conduits.

Summary of the invention

The present invention provides a nasal cannula which is both economical enough to be produced in great quantity and thereby be disposable (one patient use) while at the same time being readily and simply adaptable to the contour of the support upon which the cannula rests when in use. That support being the patient’s upper lip, it may be appreciated that great variations occur from patient to patient, not only to mention variations of the facial contour of a given patient during times of varying physical condition.

Basically and not by way of limitation the present invention provides a nasal cannula having a cross-tube connecting between the nostril conduits and adapted to rest on and be supported by the upper lip of the patient. The cross-tube is of a flexible material. Inserted within the cross-tube is a formable insert, preferably a metal having the characteristics of aluminum, which is manually formable to the contour of the patient’s upper lip. The insert retains its formed shape and imparts that shape to the cross-tube.

A notable feature of the present invention is the provision, where necessary, of non-restricting notches in opposite side edges to prevent gas flow constriction regardless of the position of the strip within the cross-tube or the shape assumed after manual forming.

Brief description of the drawing

FIG. 1 is a pictorial view of the adjustable non-restrictive nasal cannula of the present invention.

FIG. 2 is a pictorial view of the adjustable non-restrictive nasal cannula of FIG. 1 shown in use on John Q. Patient.

FIG. 3 is a partial cross-sectional view taken across line 3-3 of FIG. 1.

FIG. 4 is a partial cross-sectional view taken across line 4-4 of FIG. 3 and showing in phantom a formed condition.

FIG. 5 is a cross-sectional view taken across line 5-5 of FIG. 3.

FIG. 6 is a front view, partially in phantom, of the adjustable non-restrictive nasal cannula of the present invention.

FIG. 7 is a partial cross-sectional view taken across line 7-7 of FIG. 6.

FIG. 8 is a plan view of an insert strip made in accordance with the teachings hereof.

FIG. 9 is a plan view of another insert strip in accordance with the teachings hereof.

Description of preferred embodiments of the invention

Referring to the drawing, the adjustable nonrestrictive cannula of the present invention comprises an inlet tube 10, a cross-tube 12 in flow communication with said inlet tube, a pair of nostril conduits extending from and in flow communication with said cross-tube and a headband 16 connecting between the end of said cross-tube 12 opposite inlet tube 10 on the one hand and an adjustable buckle 18 which slides on inlet tube 10 on the other hand. Headband 16 may be joined to cross-tube 12 simply by passing it through a hole in cross-tube 12 provided for the purpose and knotting the end of the headband to prevent its withdrawal therefrom as shown in FIGS. 3 and 4 or it may be tied to a connecting flange 20 integral with cross-tube 12 provided for the purpose. In the event that a hole is placed in the cross-tube, care must be taken to provide a hermetic seal for obvious purposes.

A formable flat insert strip 22 is placed within cross-tube 12. Insert strip 22, which may be made of aluminum or other material of like formable properties, is free to rotate within cross-tube 12 but is at all times held in substantially axial alignment with the cross-tube. Insert strip 22 may easily be hand shaped as desired by bending its major plane but is not easily formable in any other direction. Thus, in contrast to the wire of Caldwell Pat. No. 2,693,800, insert strip 22 may be formed into a planar curve (having two dimensions only) and is resistant to being formed into a nonplanar curve (having three dimensions). Accordingly, if insert strip 22 is rotated so as to be co-planar with the plane of nostril conduits 14, as shown in FIG. 5, then forming will result in the curvature shown in FIGS. 1, 2, 7 and in phantom in FIG. 4. In this configuration, it may be noted that the substantially parallel relationship of the nostril tubes is not altered although their inherent flexibility permits adaptation to the upper lip contour as shown on the fictitious Mr. Patient of FIG. 2.

In forming, it is unlikely that insert strip 22 will restrict the internal flow of oxygen or other gases. Nevertheless, the possibility cannot be discounted as such a restriction may have a less than desirable effect on Mr. Patient. Accordingly, insert strip 22 may be provided with notches 30 in its side edges 32. Normally, notches 30 are provided in pairs, one notch 30 in each side edge 32 and, as shown in FIG. 6, there may be two such pairs of notches 30 each in alignment with a nostril conduit 14. For comfort, a pad 34 may be provided across tube 12. While the foregoing is illustrative of preferred embodi-
ments of the invention it is clear that other embodiments and modifications may be had within the teachings of the disclosure and the scope of the claims.

What is claimed is:

1. An adjustable non-restrictive nasal cannula, comprising:
   (a) an inlet tube;
   (b) a cross-tube in flow communication with said inlet tube;
   (c) a pair of upstanding nostril conduits in flow communication with said cross-tube;
   (d) a formable insert strip in said cross-tube for manual shaping and shape retention in correspondence with the shape of the user's upper lip; and
   (e) an adjustable headband for securing the cannula to the patient;
   (f) said insert strip being provided with notches in its opposite side edges.

2. An adjustable non-restrictive nasal cannula, comprising:
   (a) an inlet tube;
   (b) a cross-tube in flow communication with said inlet tube;
   (c) a pair of upstanding nostril conduits in flow communication with said cross-tube;
   (d) a formable insert strip in said cross-tube for manual shaping and shape retention in correspondence with the shape of the user's upper lip; and
   (e) an adjustable headband for securing the cannula to the patient;
   (f) said insert strip being provided with two pairs of notches in its side edges, each pair being in alignment with one of said nostril conduits.

References Cited

UNITED STATES PATENTS
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2,693,800 11/1954 Caldwell ----------- 128—206

RICHARD A. GAUDET, Primary Examiner
G. F. DUNNE, Assistant Examiner