

- [54] **EMERGENCY NEEDLE AIRWAY**
[76] Inventor: **Earl G. Wolf**, 1750 N. Palafox St., Pensacola, Fla. 32501
[22] Filed: **Feb. 16, 1973**
[21] Appl. No.: **333,066**
[52] U.S. Cl. **128/305, 128/347, 128/351, 206/223, 206/366**
[51] Int. Cl. **A61b 17/34, A61m 25/00, A61B 17/24, A61b 19/02**
[58] Field of Search..... **206/366, 315, 223; 128/305, 351, 347, 329**

[56] **References Cited**

UNITED STATES PATENTS			
510,413	12/1893	Dolge.....	128/329
3,057,347	10/1962	McGee	128/351
3,182,663	5/1965	Abelson	128/351
3,306,298	2/1967	Raimo.....	128/351
3,415,250	12/1968	Peterson	128/351

3,476,113 11/1969 Tarsitano 128/351

Primary Examiner—William T. Dixon, Jr.
Attorney, Agent, or Firm—Berman, Bishoff & Platt

[57] **ABSTRACT**

A kit comprising a holder and guide for five No. 13 hypodermic needles in order to properly insert the needles in the cricothyroid membrane or in any other of the intertracheal spaces as a first aid measure to guarantee an adequate airway until such time as more definitive measures can be instituted. The device is to be used in situations where the larynx of a person has become blocked due to food lodging therein, or some other similar occurrence, and adequate medical treatment is not immediately available. The guide is so designed that the needles will be placed in the cricothyroid membrane in the proper position to ensure an adequate air supply.

8 Claims, 6 Drawing Figures

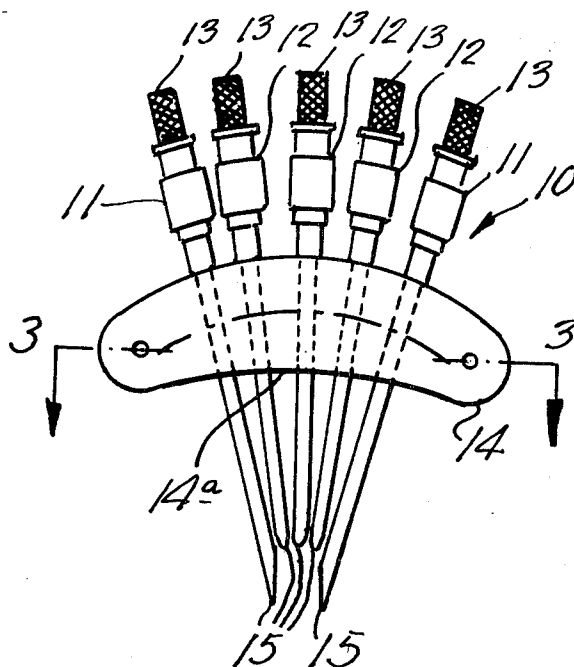


FIG. 1.

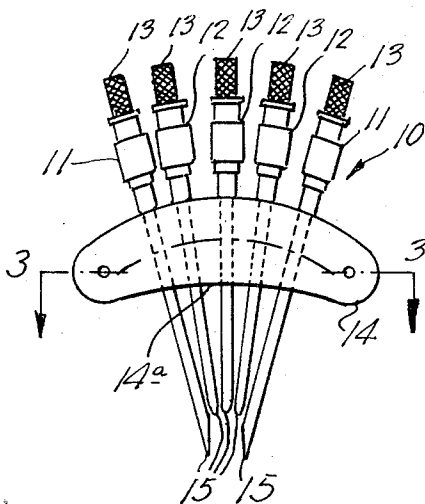


FIG. 2.



FIG. 3.



FIG. 4.

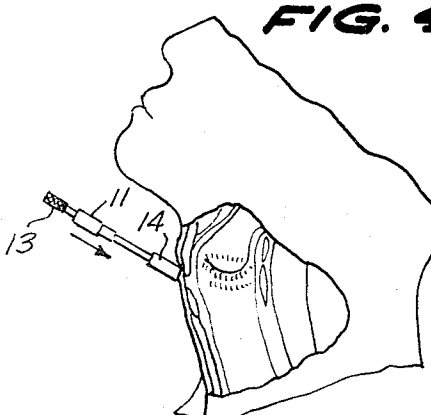


FIG. 5.

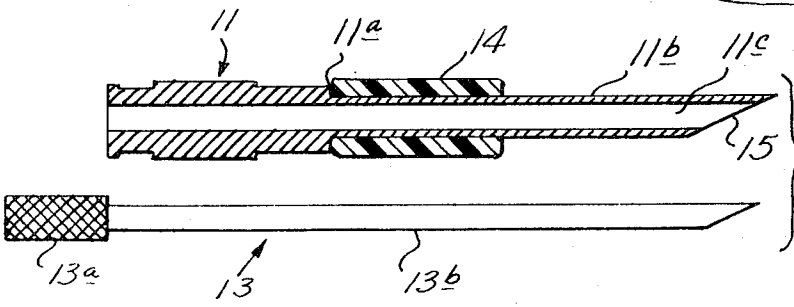
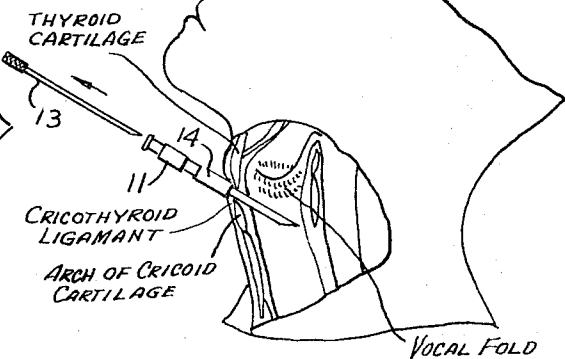


FIG. 6.

EMERGENCY NEEDLE AIRWAY

BACKGROUND OF THE INVENTION

Field of the Invention

This invention relates to emergency tracheostomies and more particularly relates to a combination kit, guide and set of needles for performing an emergency needle tracheostomy.

The Prior Art

There has been found to occur, with alarming frequency deaths due to laryngeal obstruction caused, for example, by food becoming lodged in the trachea. Such emergency situations frequently occur in restaurants, on boats, on the battle field and in other locations where skilled surgical personnel are not readily available. Therefore, it is desirable that a method of obtaining a temporary airway that could be used by paramedical personnel and, in some situations, laymen, be available. However, to date, no such system has been satisfactorily developed.

The instruments developed to date that have been used, require an incision of some form, the most widely advocated being the Shelden tracheotome, set forth in U.S. Pat. No. 2,991,787 to Shelden et al. Other instruments of this general type are set forth in U.S. Pat. Nos. 3,511,243 to Toy, 3,555,103 to Calhoun, 2,865,374 to Brown et al, 3,182,663 to Abelson, and 3,476,113 to Tarsitano. All of these instruments and devices require some degree of expertise, even in the hands of an otolaryngologist and can cause serious complications such as hemorrhage, tracheo-esophageal fistula, pneumothorax scarring, mediastinal emphysema and tracheal stenosis.

While the needle tracheostomy has been previously investigated, see for example "The Needle Tracheostomy: Reevaluation," printed in Medical Times, December 1968, pages 1218 through 1222, no practical device utilizing this technique has been developed.

Accordingly, the object of the present invention is to provide an emergency needle tracheostomy kit which provides an emergency airway in a simple manner, which can be readily available in restaurants, ambulances, boats and the like, which is inexpensive to manufacture, which entails a minimum amount of equipment, and which may be used with relative safety.

SUMMARY OF THE INVENTION

In the present invention, the above objects are achieved by providing a kit comprising a holder formed of plastic or the like having passageways therein designed to suitably receive five No. 13 hypodermic needles, modified so as to be substantially open at their ends with a sharpened tip designed to easily penetrate the intratracheal space through the cricothyroid membrane of a person suffering from acute laryngeal obstruction. The holder for the needles also serve as a guide in that the passageways therein are angulated toward each other so that the needles converge and once properly positioned within the trachea of the patient, in effect form a single passageway of sufficient diameter of sustain the patient's breathing. In addition, the inner surface of the holder is curved in such a manner so as to conform to the area of the patient's throat just below the arch of the cricoid cartilage, sometimes referred to as the cricothyroid notch.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front elevational view of the emergency airway kit of the present invention fully assembled;

FIG. 2 is a side elevational view of the emergency airway kit shown in FIG. 1;

FIG. 3 is a cross-sectional view taken on the line 3—3 in FIG. 1, looking in the direction of the arrows;

FIG. 4 shows a sagittal section through the human neck, illustrating the first step in the utilization of the emergency airway kit of the present invention;

FIG. 5 is a view similar to that in FIG. 4, illustrating the emergency airway kit of the present invention after it has been inserted in the trachea of a patient;

FIG. 6 is an enlarged cross-sectional view, showing the stilette separated from the needle and guide.

DETAILED DESCRIPTION OF THE INVENTION

Referring now to the drawing and in particular FIGS. 1, 2, 3 and 6, there is shown the emergency needle airway kit of the present invention generally designated by the reference numeral 10. The kit comprises a holder and guide 14 having five passages 16 therein, disposed at approximately an angle of 5° with respect to each other. Inserted in the two outer passages 16 are needles 11, while somewhat shorter needles 12 are disposed within the inner three passages 16. Needles 11 and 12 have angularly pointed open ends 15 and are hollow throughout their length. Disposed within needles 11 and 12 are stillettes 13 having similarly pointed ends and designed to snugly fit within the inner passages of needles 11 and 12. The purpose of stillettes 13 will become more apparent from a description of the operation of the invention set forth below with respect to FIGS. 4 and 5.

As can be seen in FIG. 6, needle 11, as is equally true of needle 12, comprises a shoulder 11a designed to abut against the upper portion of guide 14 so as to limit the passage of needle portion 11b therethrough. Passageway 11c extends throughout the entire length of needle 11. Stilette 13 includes handle portion 13a and shank 13b having a length and diameter equal to those of passageway 11c.

In a preferred embodiment of the invention, guide 14 is formed of a hard plastic material, but could equally well be formed of any other suitable material such as metal or the like. Needles 11 and 12 are formed from No. 13 hypodermic needles, since it has been discovered that this size needle provides the proper combination of ease of insertion in the patient's trachea and adequate air passageway. Needles 11 are approximately 2-½ inches in length over-all with needle portion 11b being approximately 1-¾ inches in length. Needles 12 are approximately 2-5/32 inches long, with the needle portion thereof being approximately 1-½ inches in length.

In practice, when it has been determined that a person is suffering from an acute laryngeal obstruction, the kit of the present invention is placed at the cricothyroid notch, between the thyroid cartilage and the arch of the cricoid cartilage so that the needles 11 and 12 may pass through the cricothyroid ligament, as shown in FIG. 4. In this position, needles 11 and 12 are drawn back so that their tips are within the confines of guide 14 with curved surface 14a resting on the throat of the patient so as to guide the needles into the proper posi-

tion in the intratracheal space. As can be seen in FIG. 4, stilettes 13 are in place.

The needles and stilettes are then pushed forwardly entering the intratracheal space of the patient, as shown in FIG. 5. Stilettes 13 which have insured the smooth passage of the needles are then removed and needles 11 and 12 held firmly in place by guide 14 provide an emergency airway until the patient can be taken to a hospital for further treatment.

There has thus been described an emergency needle airway kit which permits a needle tracheostomy to be performed in a simple manner, which can be made readily available, which is inexpensive and which may be operated with relative safety. If it were desired that the kit of the present invention be utilized by laymen, it could, of course, be packaged with instructions to guide the user in its proper placement. While it has been found that with the kit of the present invention, respiration can be continued for an indefinite period of time, it is the intent of the present invention to be used only to create an airway availability for a period of approximately one hour which, under reasonably normal circumstances, should be a sufficient period of time to allow a patient to be brought to a medical facility where standard tracheotomy can be performed or other medical treatment instituted to alleviate the laryngeal obstruction.

While a preferred embodiment of the present invention has been described, it should be realized that various modifications may be made therein without departing from the spirit and overall philosophy of the invention. Therefore, it is intended that the scope of the invention be defined only by the claims appended hereto.

I claim:

1. An emergency airway kit for relieving laryngeal obstruction in human beings comprising in combination:

- a. guide means including a plurality of passageways therein; and
- b. a hollow pointed open-ended needle slidably engaged in each of said passageways.

2. The emergency airway kit set forth in claim 1, wherein said passageways are angularly disposed with respect to each other so that the pointed ends of said needles converge.

3. The emergency airway kit set forth in claim 2, wherein said guide means comprises two substantially flat sides, said passageways passing between and parallel to said flat sides.

4. The emergency airway kit set forth in claim 3, wherein said guide means further comprises a side transverse to said flat sides, curved to conform to the cricothyroid notch of the human throat.

5. The emergency airway kit set forth in claim 4, wherein said needles engaged in the end passageways are longer than those in the center passageways.

6. The emergency airway kit set forth in claim 5, further including stilette means snugly engaged in each of said hollow needles.

7. The emergency airway kit set forth in claim 1, wherein said needles are No. 13 hypodermic needles.

8. The emergency airway kit set forth in claim 6, wherein five passageways and five needles are provided and said needles are No. 13 hypodermic needles.

* * * * *

35

40

45

50

55

60

65