May 2, 1967 R. E. SWENSON 3,316,913

CATHETER GUIDING FORCEPS

Filed Feb. 28, 1964

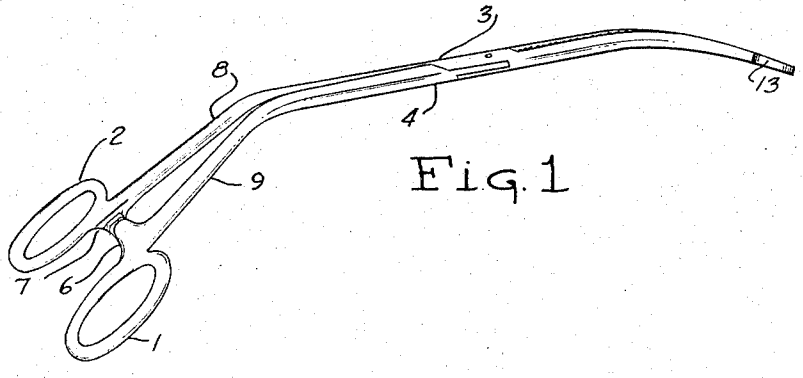


Fig. 1

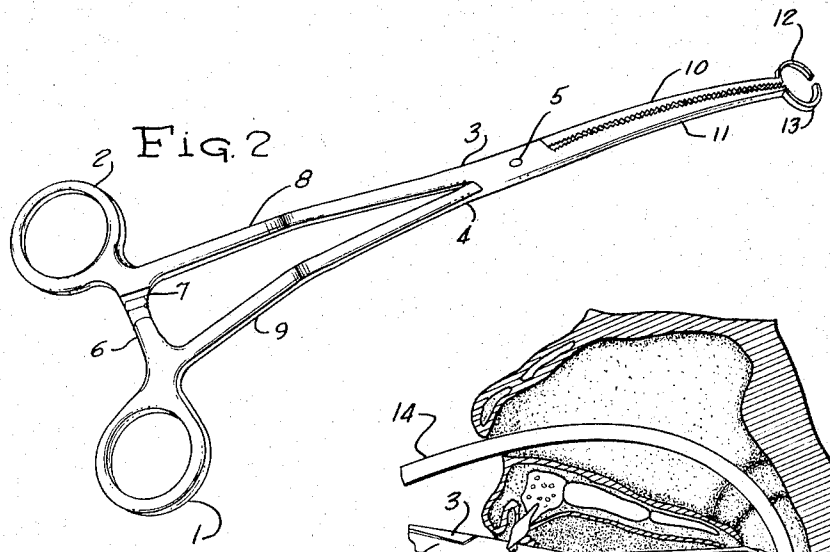


Fig. 2

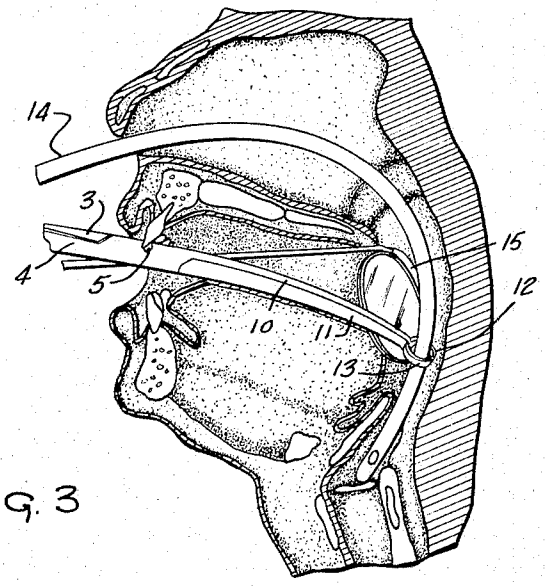


Fig. 3

INVENTOR.
RUDOLPH E. SWENSON
BY Joseph A. Hill
ATTORNEY

United States Patent Office 3,316,913 Patented May 2, 1967

3,316,913

CATHETER GUIDING FORCEPS

Rudolph E. Swenson, 40 Acacia Ave., Berkeley, Calif. 94708

Filed Feb. 28, 1964, Ser. No. 348,918
2 Claims. (Cl. 128—321)

The invention described herein may be manufactured and used by or for the Government for governmental purposes without the payment to me of any royalty thereon.

This invention relates to a surgical instrument and more particularly to a nongripping catheter guiding forceps for passing a catheter into the trachea.

In most cases, after topical anaesthesia of the nasal cavity, pharynx, larynx, and tracheobronchial tube, the passage of a catheter into a patient's trachea is a routine matter. This passage is accomplished by means of indirect laryngoscopy. When the anatomy of the pharynx and larynx is normal, the catheter usually can be passed into the trachea without the aid of intubating forceps. If the tip of the catheter is seen in the laryngeal mirror to be just lateral to the aryepiglottic fold, a simple turn of the patient's head causes the lateral pharyngeal muscles to push the catheter directly over the glottic chink so that the catheter may be pushed into the trachea.

Intubation can be quite difficult, however, if the patient has certain anatomical conformations or abnormalities and especially difficult if the patient also tends to gag excessively. In these cases, a forceps has been used to aid intubation. The procedure has been to grasp the catheter with the forceps and push it into the trachea with a downward motion of the forceps. This downward motion of the conventional forceps usually causes an undesirable spasm of the glottis because of gagging, even though the patient is well anaesthetized.

Accordingly, it is an object of this invention to provide a catheter guiding forceps which will overcome the above disadvantages.

Another object is to provide a catheter guiding forceps which do not grasp the catheter but rather loosely encircles the catheter to guide it into the trachea.

Another object of my invention is to provide a catheter guiding forceps so shaped as to minimize gagging reflex and improve vision and ease of manipulation.

Briefly, the invention comprises a scissors-type forceps having a substantial bend in its shank portion and a slight curve in its blade portion to facilitate insertion into a patient's mouth and throat. The tip of each blade is preferably curved to form a semicircular jaw. In the closed position the jaws of the forceps form a loosely encircling guide through which the catheter is passed. The jaws do not grip the catheter.

The structural features of the invention are illustrated in the accompanying drawings, in which:

FIG. 1 is a perspective view showing the curve of the blades and the angulation of the shanks;

FIG. 2 is a perspective view showing the configuration of the blade tips; and

FIG. 3 is a sagittal view showing the catheter guided by the forceps into the trachea by indirect largyngoscopy.

Referring to the drawings, the guiding forceps comprise scissor-type handles **1** and **2** and levers **3** and **4**. The levers are pivotally connected by pin **5**. At the handle portion is an adjustable, releasable latching device for locking the jaws in closed position. This device consists of overlapping serrated lateral tabs **6** and **7**. The shank portions **8** and **9** of levers **3** and **4** are bent at a substantial angle to permit better vision into the patient's mouth and to provide for easier manipulation during the operation. An included angle of 140 degrees

between the longitudinal axes of those portions of shanks **8** and **9** which include the handle ends and those portions which include the pivot ends has been found to be satisfactory.

The blade or arm portions **10** and **11** of the forceps are slightly curved to fit the contour of the back portion of the mouth and to cant the blade tips so as to more easily guide the catheter into the trachea. The inner opposing faces of blades **10** and **11** may be serrated. The curvature of the blades and the bend of the shanks are in the same direction which is downward from a horizontal plane as the forceps is normally held. An overall length of approximately nine inches has been found to be satisfactory for manipulation, with the distance between the blade tips and the shank bend being approximately five and one-half inches.

The tips **12** and **13** of the blades are smooth surfaced and are each bent within the longitudinal plane of the blades, preferably into the shape of a semicircle. When the forceps blades are closed, the tips preferably form a circular aperture through which the catheter is passed. The distal ends of the blade tips do not touch in the closed position.

In operation, the catheter **14** is inserted through the nasal cavity into the mid-pharnyx region. The catheter is then gently encircled with the tips of the guiding forceps. With the help of a laryngeal mirror **15**, the tip of the catheter is then guided just superior to the glottic chink and an attendant is signalled to push the catheter along the floor of the nose until it has been observed to enter the trachea. The encircling tip of the forceps does not grasp the catheter but merely guides it. Consequently, no downward motion of the forceps is required to pass the catheter into the trachea, and thus the gag reflex is minimal. The shank design allows the operator to see into the mouth and at the same time more easily manipulate the forceps, and the curve of the blades helps to reduce the gagging reflex and more easily align the catheter with the trachea opening.

I claim:

1. An intubating forceps for use with a catheter dimensioned for entry through the nasal cavity into the trachea for indirect laryngoscopy comprising, a pair of levers pivotally connected to provide forward reaching arms and rearwardly extending handles, said arms terminated in semi-circular formed tips movable with said arms to closed and open positions and in closed position providing a circular opening having an internal dimension to loosely encircle at least a majority of the periphery of said catheter, said tips in open position separating to a dimension clearing said catheter periphery for removal therefrom, said handles directly diverging rearwardly from said pivot with the ends being formed into finger engaging rings for operating the forceps, said divergence being on an acute angle to a straight line taken from the pivot rearwardly to a point between the rings, said handles having a downwardly extending obtuse angle therein intermediate the pivot and the rings, said handles extending rearwardly from the pivot to the obtuse angle in a common horizontal plane and from the obtuse angle to the rings in another common horizontal plane and at the obtuse angle to the first horizontal plane, said arms extending forwardly from the pivot in engagement with each other in closed position to the point of the semicircular tips and having a downwardly extending curve intermediate the pivot and tips, said arms extending from the pivot to the point of curvature in a common horizontal plane and in alinement with the first horizontal plane of the handles and from the point of curvature to the tips in another common horizontal plane, said tips and arms being so formed and dimensioned to position said opening in a plane substantially perpendicular to

e longitudinal axis of the midpharnyx passageway and bstantially coaxially thereto with said handles extend- g exteriorly of the mouth for movement of said tips open and closed positions without obstruction to view the operating area of the rear of the mouth and roat, said tips and adjacent arms being formed and mensioned for insertion through the mouth and into e midpharnyx passageway and for opening and closing said tips therein to encircle the leading end portion said catheter for guided axial reciprocation and lateral ɔsitioning into alinement with the trachea.

2. The method of inserting into the trachea a catheter mensioned for entry through the nasal cavity for in- rect laryngoscopy comprising, passing said catheter ırough the nasal cavity and into the midpharnyx pas- ıgeway, positioning in the mouth intubating forceps aving complementarily formed tips moveable to closed ıd open positions and in closed position providing an pening having an internal dimension to loosely encircle least a majority of the periphery of said catheter and ı open position being formed to separate to a dimen- on clearing said catheter periphery for encircling and ɔmoval therefrom, locating said tips in said midpharnyx assageway with the plane of said opening substantially

perpendicular to the longitudinal axis thereof, encircling the leading end portion of said catheter with said tips for guided axial movement therein, moving laterally said tips to position said end portion superior to and in alignment with the trachea, axially advancing said catheter through the nasal cavity and down said midpharynx passageway between said tips into said trachea, opening said forceps to clear said catheter periphery, and removing said forceps from the mouth.

References Cited by the Examiner

UNITED STATES PATENTS

3,063,455 11/1962 Markley ---------- 128—321

FOREIGN PATENTS

138,700 10/1960 Russia.

OTHER REFERENCES

The Lancet, page 687, column 2 relied on, September 1960.

RICHARD A. GAUDET, *Primary Examiner.*

G. McNEILL, *Assistant Examiner.*