(Model.)

C. BESELER.

LARYNGOSCOPE.

No. 257,646. Patented May 9, 1882.

Fig. 1

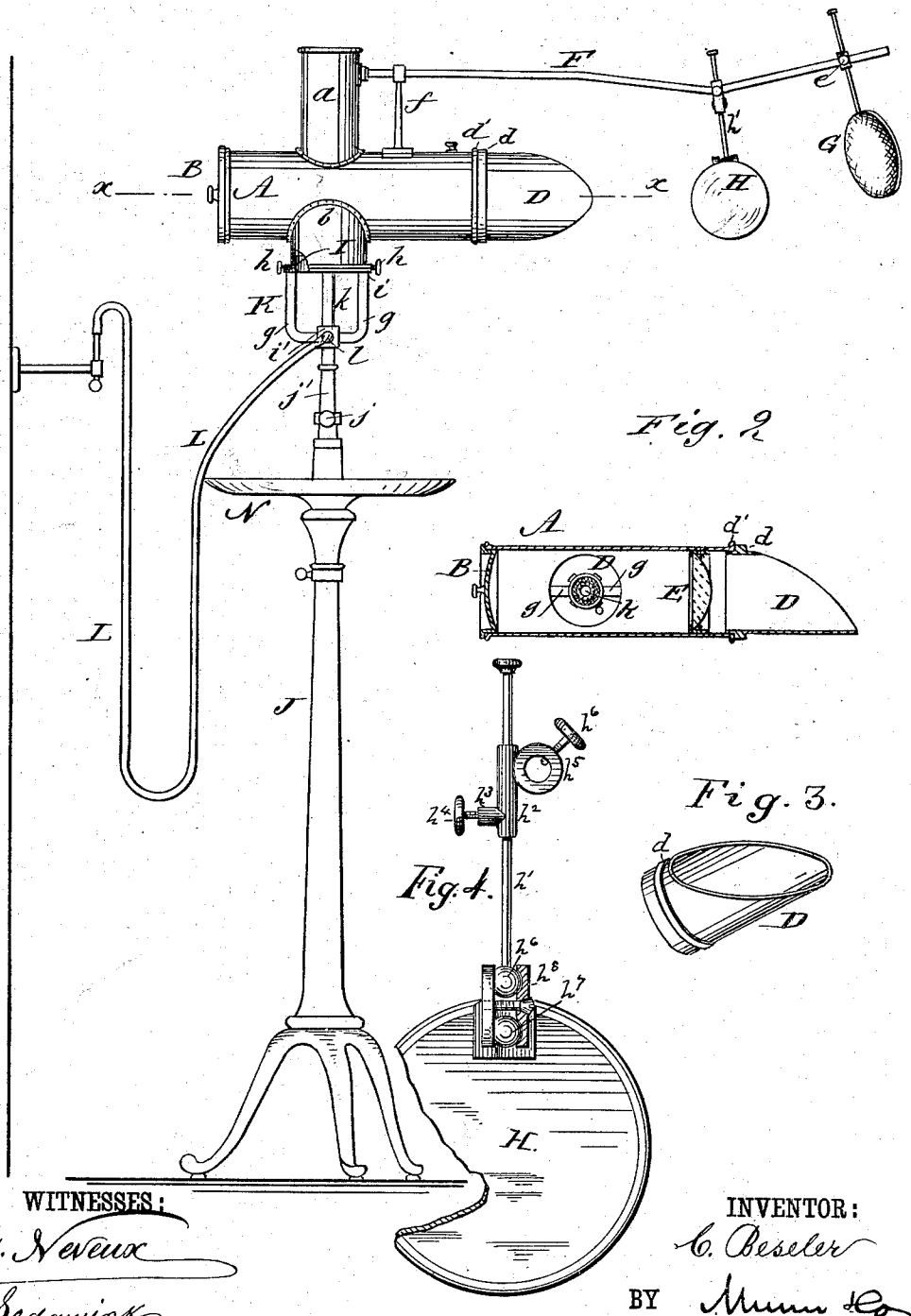

Fig. 2

Fig. 3.

Fig. 4.

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LARYNGOSCOPE.

SPECIFICATION forming part of Letters Patent No. 257,646, dated May 9, 1882.

Application filed December 15, 1881. (Model.)

To all whom it may concern:

Be it known that I, CARL BESELER, of the city, county, and State of New York, have invented a new and Improved Laryngoscope, of which the following is a full, clear, and exact description.

This invention is especially adapted for dentists' use for reflecting a strong light into the mouth of the patient during any operation upon the teeth; and the invention consists in the construction, combination, and arrangement of parts, as hereinafter fully described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of my improved laryngoscope. Fig. 2 is a sectional plan view of the light-chamber, taken on the line *x x* of Fig. 1; and Fig. 3 is a perspective view of the removable shade. Fig. 4 is an elevation enlarged in size to show the mirror-arm with its adjustments.

The light-chamber is composed of the cylinder A, of sheet metal, which is provided with the downward extension *b* and the upward extension *a*, which are fitted and secured in suitable openings formed in the material of the light-chamber, the extension *b* serving to admit the burner D into the center of the light-chamber, the extension *a* forming a passage immediately above the burner for the escape of the products of combustion from the burner. In one end of the cylinder is placed the concaved metallic reflector B, and in the cylinder, near the other end thereof, is secured, by means of the thumb-screw *d*, the convex lens E, which concentrates and intensifies the rays of light from the burner. In front of the burner, upon the bent arm F, is placed the concaved mirror G, which reflects the intensified light from the burner back into the mouth of the patient. This mirror is held by the set-screw *e* upon the arm, and is fitted with ball-and-socket joints, so that it may be adjusted to reflect the light to suit the different positions of the head of the patient while operations are being performed in different parts of the mouth. The arm F is externally screw-threaded at its rear end, and is secured upon the top of the light-chamber by passing through the post *f* and screwing into a threaded perforation made in the extension *a*.

h' represents the arm which connects the mirror with the rod F. On this arm is a sleeve, h^2, having a threaded branch tube, h^3, through which works the clamp-screw h^4, and a side tube, h^5, which slides on rod F, and may be held at any desired point by the screw h^6, while the distance of the mirror from the rod F may be regulated by sliding the rod in the sleeve h^2 and clamping it at the desired point.

h^7 h^8 h^7 represent the ball-and-socket joint connecting the rod with the mirror, so that the latter may be placed at any desired angle.

D represents a shade, which is placed on or within the forward end of the cylinder A, to shield the eyes of the operator from the reflected light which comes from the lens. This shade is provided with a collar, *d*, that abuts against an end collar, *d'*, of the cylinder A and works on the cylinder, so that it can be turned with the hand and held by friction in any desired position. The rod F and the shade D are correspondingly reversible, so that the operator can work on the right or left of the instrument.

H represents a common mirror, which is also universally adjustable upon the rod F, so that it may be set for reflecting light upon the bracket where the tools are placed, or so that the patient himself, or any person back of the chair, may see the operation performed.

The head K of the stand J, upon which the light-chamber is placed, is vertically adjustable, and is held at any desired point by means of the set-screw *j*, which passes through the sleeve *j'* and impinges upon a rod or post of the stand, as will be clearly understood. The head K is formed of the two arms or supports *g g*, which reach up from the square enlargement *i'*, and are made integral therewith and with the sleeve *j'*, and upon the upper ends of these arms or supports is secured the rim I, which is formed with the flange *i*, as shown. This rim is of a size to just fit in the extension *b*, the loose edge thereof being adapted to rest upon flange *i*, as shown in Fig. 1, these parts being secured by the set-screws *h h*.

Between the arms or supports *g g* is the central tube, *k*, upon which the burner D is placed. This tube *k* screws into the square enlargement *i'*, and is intersected by the small short

tube *l*, which also enters the square portion *i'*, and upon which the pipe L is placed for conducting gas from an ordinary burner or other supply to the burner D.

The stand is provided with the circular shelf or bracket N for holding the dentist's tools.

In order that the dentist may use the instrument to advantage, he must not throw from the concave mirror a reflected light greater than about three and one-half inches in diameter, so as to cover a space slightly larger than the patient's mouth, and in order to do this the metallic reflector at the rear end of cylinder must have a focus of about three inches. The focus of the plano-convex lens should be about five and one-fourth inches, and that of the concave mirror near the extreme end of rod F should be about nine inches. The plane mirror H is placed at the elbow of rod F for the convenience of the patient and for lighting the bracket where the tools are placed. As the dental surgeon uses artificial light for several hours consecutively, the diameter of the main tube is made about four inches, and the distance from the lens to the concave mirror about eighteen inches, so as to give the light an opportunity to cool before entering the patient's mouth.

In use the light-chamber is first to be raised five or six inches above the mouth of the patient, and the stand is to be placed upon the opposite side of the chair from that upon which the operator is to stand. The reflector is then to be arranged to throw the light from the light-chamber downward into the mouth of the patient, so that the tool used will not shade the tooth or part of the mouth to be operated in.

It is better to have no other light in the room but that of the laryngoscope. If used in daylight, the shades of the window should be drawn.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The head K, consisting of the sleeve *j'*, carrying the lateral screw *j*, tube *l*, enlargement *i'*, arms *g g*, the flanged rim I *i*, and the tube *k*, said head being adapted to connect by screws *h* with an extension, *b*, on cylinder A, and to be turned, raised, or lowered in the socket of a stand, as described.

2. The combination, with the cylinder A, having the upward extension *a* and a post, *f*, with a guide-aperture at the top, of the rod F, end-threaded to screw into a threaded perforation on said extension *a*, passing through the guide-aperture of post, and provided with a bend or elbow, whereby the mirrors may be held in their true relative position to the cylinder, whether the dentist works on the right or left of the instrument, as described.

3. The combination, with the cylinder A, of the shade D, swiveled on the end thereof and cut at an angle of about forty-five degrees, whereby it may be held by friction in any desired position to protect the eyes of the operator from the light which comes from the lens, as described.

4. The combination, with the rod F and mirrors connected therewith by arms *h'*, of the sleeves h^2, having threaded branch tubes h^3, clamp-screws h^4, side tubes, h^5, with clamp-screws h^6, and the ball-and-socket joint h^7 h^8 h^7, whereby the mirrors G H may be adjusted with great nicety to each other and to the cylinder, as described.

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