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[54] **ILLUMINATED TONGUE DEPRESSOR**

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[52] **U.S. Cl.** **128/16;** 128/16

[51] **Int. Cl.**[2] **A61B 1/06**

[58] **Field of Search** 128/3, 15, 16; 32/40

[56] **References Cited**

UNITED STATES PATENTS

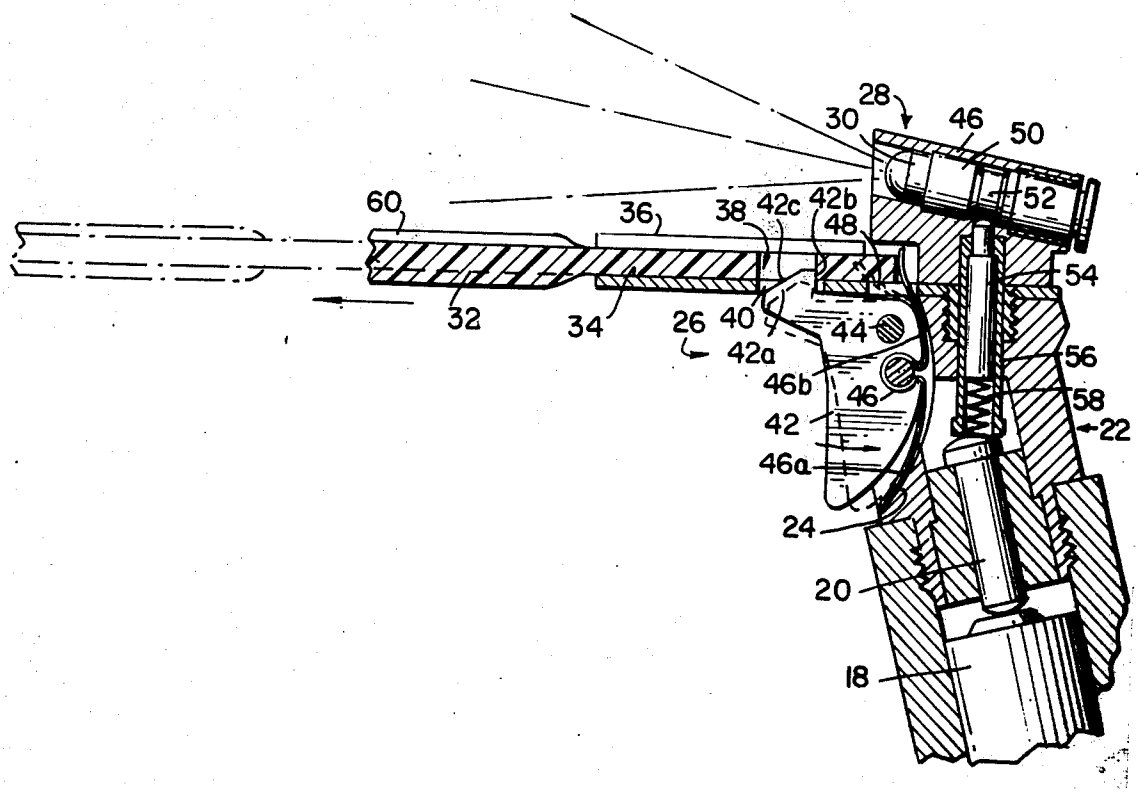
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Attorney, Agent, or Firm—Amster & Rothstein

[57] **ABSTRACT**

This application discloses an illuminated tongue depressor including an illumination handle adapted to receive a disposable tongue depressor blade. The handle assembly includes a bulb mounted over a partially reflective, partially light transmitting depressor blade which reflects stray light into the throat and simultaneously conducts non-reflected light to the distal end of the blade to further illuminate the throat. Applicant's device also includes a blade retention arrangement which maintains the blade securely in the handle and propels the blade forward when it is released for disposal without the need of manual handling.

1 Claim, 4 Drawing Figures



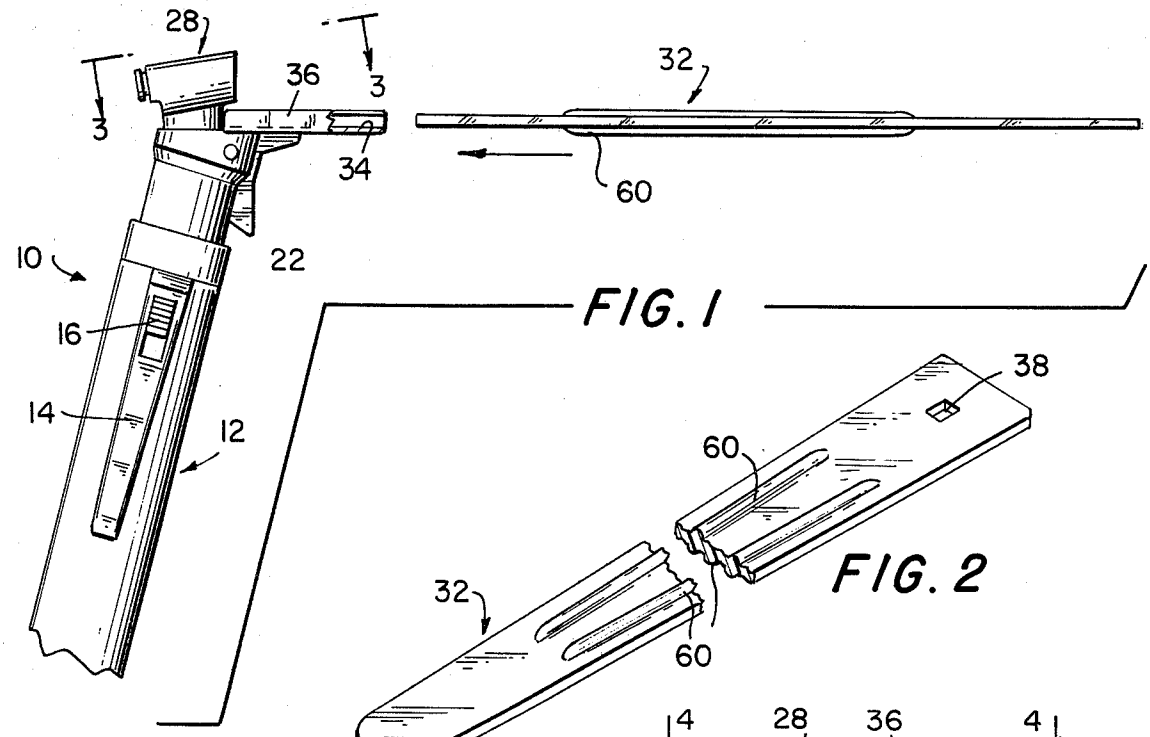


FIG. 1

FIG. 2

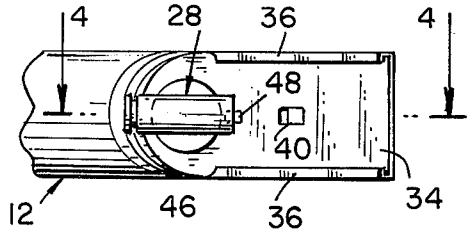


FIG. 3

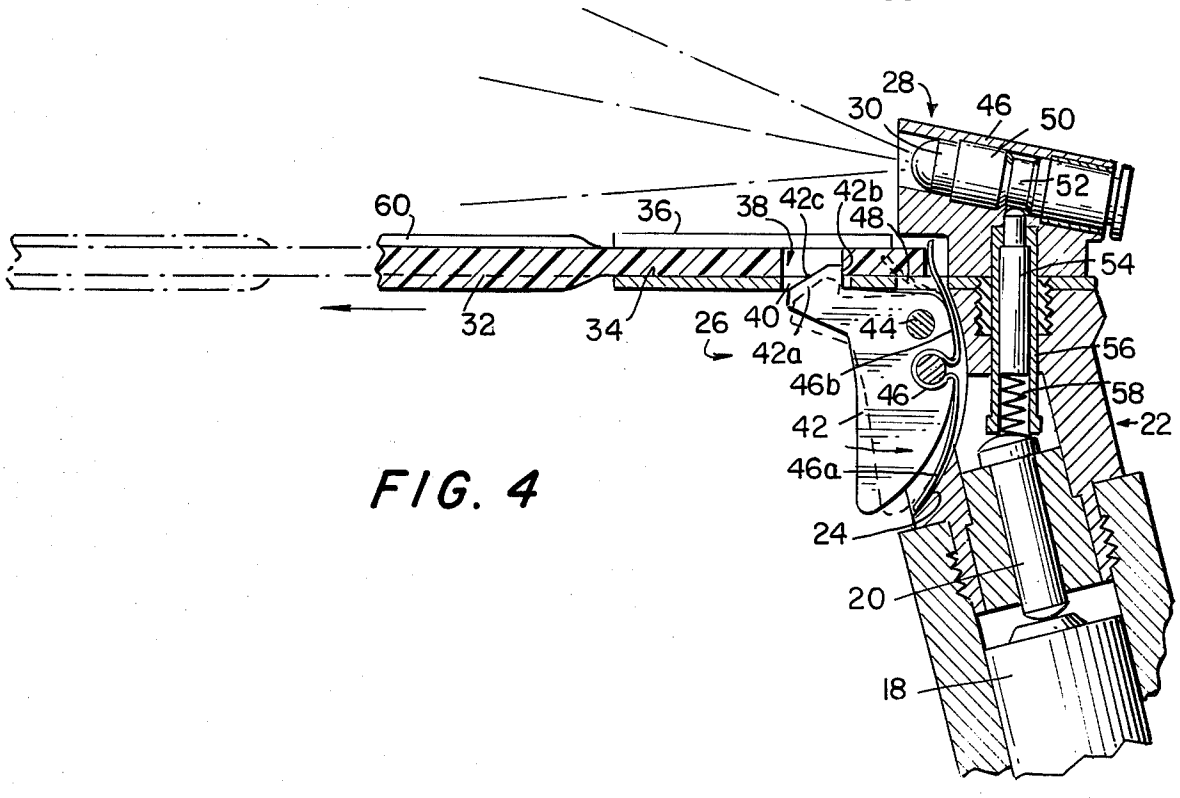


FIG. 4

ILLUMINATED TONGUE DEPRESSOR

This invention relates generally to medical instruments and appliances and more specifically to an illuminated tongue depressor.

In examining the throat, the doctor conventionally uses a small penlight to illuminate the back portion of the throat and a disposable flat stick (referred to as a tongue depressor) to depress the patient's tongue and keep it out of the field of view. However, this procedure requires the use of both hands, one to manipulate the light and the other to manipulate the tongue depressor, preventing the doctor from performing certain procedures without more complicated and less efficient illumination devices.

To avoid the necessity of involving both of the doctor's hands, it is known in the art to employ an illumination device wherein the depressor blade is retained directly in the illuminating handle, thereby leaving the doctor's other hand free for other procedures. However, the devices of this type known in the art provide notorously poor illumination and require manual insertion and removal of the depressor blade in the illuminating handle which may result in contaminating the doctor's hands or gloves with bacteria or other material from the throat.

Accordingly, it is an object of the present invention to provide an illuminated tongue depressor arrangement wherein a broad and deep field of view is brightly illuminated.

A further object of the present invention is to provide an illuminated tongue depressor in which the blade can be removed without the doctor touching the blade.

In accomplishing these and other objects in accordance with the present invention an illuminated tongue depressor includes a battery handle containing a receiving slot for accepting a disposable tongue depressor blade. The handle includes a pivotal trigger arrangement which retains the blade in position during examination and which applies a longitudinal force to the proximal end of the blade upon release thereof, driving the blade forward out of the retaining slot. The blade is preferably of a material which partially reflects light at high angles of incidence, so that the illumination of the bulb may be directed above the surface of the blade with the area between the surface of the blade and the center of direct illumination of the bulb being in part filled with light reflected from the tongue depressor; and which partially conducts light so that light which is not reflected by the blade surface is transmitted through the blade and eminates at the distal end of the blade.

Further features and advantages of the present invention will be apparent from a review of the following detailed description when taken in conjunction with the appended drawings, wherein:

FIG. 1 is a side elevation of tongue depressor blade and illuminating handle, partially broken away;

FIG. 2 is a perspective view of the depressor blade;

FIG. 3 is a view taken along line 3—3 in FIG. 1; and

FIG. 4 is a cross sectional view of the depressor blade and illumination handle.

Referring to the drawings, FIG. 1 shows applicant's illuminating handle **10** and depressor blade **32** with the blade removed. Handle **10** includes an illumination head section **22** and a battery carrying body section **12**. The construction of the body section **12** is relatively

conventional and includes a pocket clip **14** and an on-off switch **16**. As shown in more detail in FIG. **4**, the body section carries a series of batteries **18** which make positive contact with a pin **20** which protrudes from the battery compartment into head section **22**. In accordance with custom, contact **20** provides the positive contact while negative contact is provided from the base of battery **18** (not shown) through the sides of handle **12** or a metallic strip mounted within handle **12** (not shown) which engages the metallic body of head section **22**. As seen in FIG. **4**, head section **22** may be adapted to screw directly into body **12**.

Head section **22** includes a blade receiving and retaining assembly **26** and a bulb carrying assembly **28**, with the bulb carrying assembly being positioned over the blade receiving assembly so as to direct light from the bulb **30** over the surface of blade **32**.

The blade retaining mechanism includes a flat blade supporting surface **34** (best shown in FIG. **3**) having two upstanding and overturned guide members **36** which define a receiving channel for the proximal end of the blade **32**. Blade **32** is provided with a rectangular cutout **38**, and surface **34** includes a corresponding cutout **40**. A release trigger **42** is provided beneath surface **34**, with trigger **42** being pivoted at pin **44**. Trigger **42** includes an upstanding stud **42***a* which projects through aperture **40** in surface **34** and defines a vertical retaining surface **42**b and an oblique deflecting surface **42**c.

Trigger **42** is retained in the clockwise pivoted position by a spring **46** which includes a central portion mounted on pin **48** on the trigger and two laterally extending legs **46***a* and **46***b*. Leg **46***a* (shown in FIG. **4**) extends downwardly into a trigger seat area in head section **22** and bears against interior surface **24** of the trigger seat, urging trigger **42** in the clockwise direction. At the same time, leg **46***b* of spring **46** projects upwardly behind trigger **42** and protrudes through an aperture **48** in surface **34**.

When the proximal end of blade **32** is inserted on surface **34** between guides **36** the proximal lip of blade **32** bears against surface **42***c* of stud **42***a*, rotating trigger **42** in a counterclockwise direction to the position shown in broken line in FIG. **4**. In this position, projection **42***a* is below surface **34** and the blade slides freely into the receiving slot. As it approaches the back of the receiving slot, the distal end of blade **32** bears against spring leg **46***b* cocking leg **46***b* rearwardly. When blade **32** is fully inserted in the receiving slot, stud **42***a* pivots into aperture **40** retaining the blade in its inserted position against the longitudinal force of spring leg **46***b*.

When it is desired to remove the blade, the doctor simply depresses trigger **42** pivoting the trigger in a counterclockwise direction removing stud **42***a* from aperture **38** and permitting spring leg **46***b* to drive the blade outwardly into a waste receptacle.

The bulb assembly **28** includes a bulb guide **46** having a cylindrical aperture adapted to receive the bulb **30**. In the present preferred embodiment, bulb **30** includes positive and negative side contact provided by a negative jacket contact **50** and a recessed positive side contact collar **52**. This side contact arrangement permits bulb **30** to be inserted from the rear of bulb receiving element **46**. Negative contact to bulb **30** is made through negative jacket **50** which engages metal bulb guide **46** which is in contact with head **22**, which in turn makes negative contact with batteries **18** as previously described. Positive contact to the bulb **30** is

made through positive contact collar **52** which is contacted by a spring loaded pin **54** which moves axially in guide channel **56.** Pin **54** is urged by spring **58** against the positive contact collar **52** of bulb **30** while the rear end of spring **58** and guide tube **56** are in positive contact with pin **20,** completing the positive connection as previously described.

Preferably, depressor blade **32** is of clear plastic or other material such as poly carbonate, poly methyl methacrylate or other materials which partially reflects light directed against the blade at a high angle of incidence, i.e., the angle formed by the illumination of bulb **30** on blade **32.** Blade **32** also has the property of transmitting incident light which is not reflected, such light being released at the curved distal end of the blade. Numerous clear plastic materials are available in the art for use in the depressor blade. In addition, blade **32** preferably includes a series of ridges **60** which act to strengthen blade **32** against longitudinal bending and act to disperse light reflected off the blade. Further, bulb collar **46** positions bulb **30** at an angle upwardly with respect to blade **32** when blade **32** is in position. Applicant has found that this illumination angle illuminates a greater portion of the throat in that the center of illumination of bulb **30** is relatively high in the throat with the area between the center of illumination of bulb **30** and the depressor **32** being illuminated partially by direct light from bulb **30,** partially by light reflected from the surface of blade **32** and partially from light transmitted through blade **32.** Applicant has found that this arrangement substantially increases the area and intensity of illumination within the throat and hence the effectiveness of this device.

It is to be understood that the above description relates to a preferred but nonetheless representative embodiment of the present invention and that numerous modifications of the present invention will be apparent to those skilled in the art without departing from the spirit or scope of the invention.

I claim:

1. An illuminated tongue depressor comprising an illumination handle, a tongue depressor blade adapted to be inserted in said handle, a blade guide on said handle for receiving said blade, illumination means mounted on said handle above said blade guide for projecting light over the surface of said blade, movable trigger means on said handle including retaining means adapted to securely retain said blade in position, said trigger being pivoted at a pivot point on said handle and including a single spring having two legs, one leg bearing against said handle for retaining said trigger in locked position and the other leg projecting into said blade guide in position to bear against said blade for urging said blade outwardly from said blade guide so that depression of said trigger ejects said blade.

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