

[54] **ADJUSTABLE ORAL EXAMINATION ASSISTANCE DEVICE**

[76] Inventor: **Steven D. Meltzner**, 10216 Finley, Oklahoma City, Okla. 73120

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[51] Int. Cl.² **A44B 21/00; A61B 1/06**

[58] Field of Search. **24/81 CL, 81 H, 263 SW, 24/11 CT; 128/15, 16**

[56] **References Cited**

UNITED STATES PATENTS

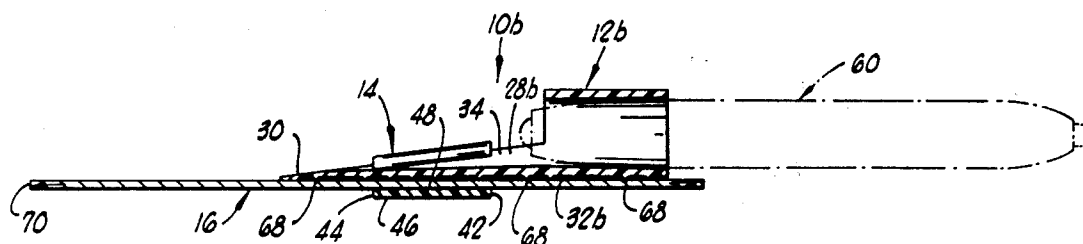
1,274,547	8/1918	Hohle	128/16
1,518,554	12/1924	Bering	24/11 CT
1,666,265	4/1928	Rosenfeld	128/15
2,685,848	8/1954	Meighan et al.	24/263 SW X
3,153,267	10/1964	Rowland	24/81 CL
3,247,564	4/1966	Barnum	24/263 SW

Primary Examiner—Donald A. Griffin
Attorney, Agent, or Firm—John M. Fish, Jr.

[57] **ABSTRACT**

An improved device for securing a disposable tongue depressor blade to an elongated disposable flashlight or the like. The device comprises a first clip member securable to one end of the flashlight housing a light source and having a tongue blade engaging surface formed thereon to position a disposable tongue blade in parallel laterally offset alignment with the longitudinal axis of the flashlight. The device also includes a second clip member for securing a disposable tongue depressor blade to the first clip member through mutual sliding wedge action between the first and second clip members with the tongue blade disposed therebetween. The device further discloses friction means for providing a secure grip on the tongue blade to prevent movement of the blade relative to the flashlight during an oral examination.

6 Claims, 7 Drawing Figures



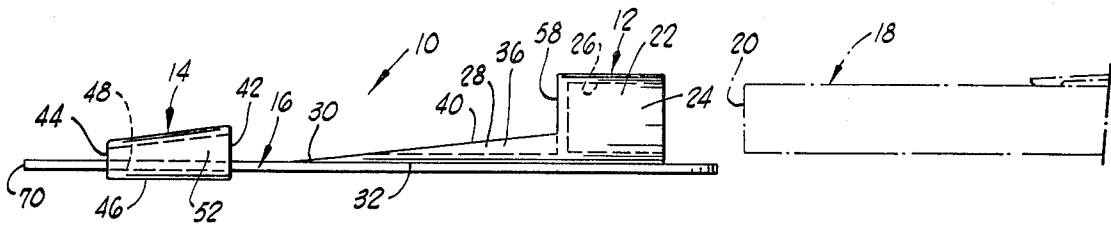


FIG. 1

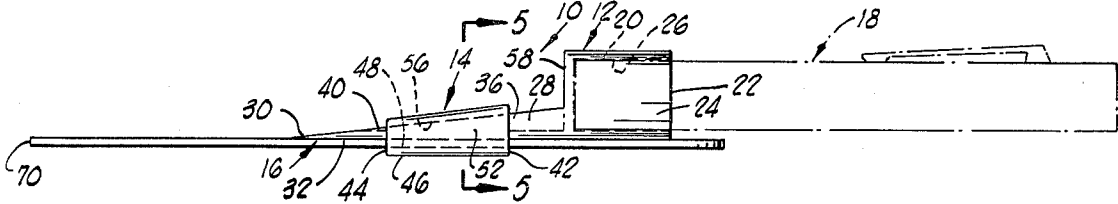


FIG. 2

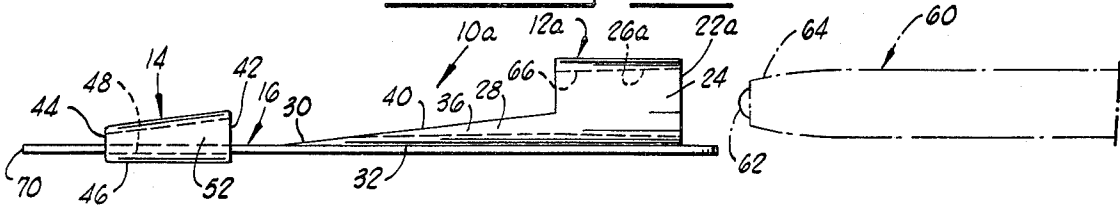


FIG. 3

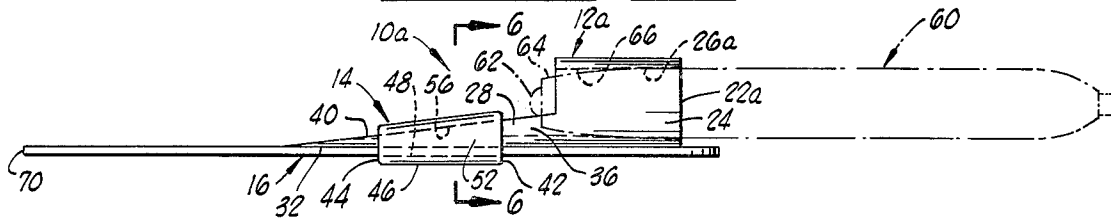


FIG. 4

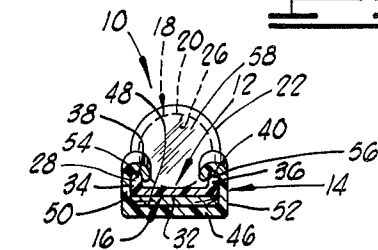


FIG. 5

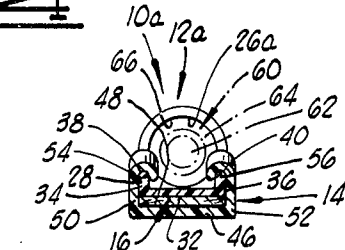


FIG. 6

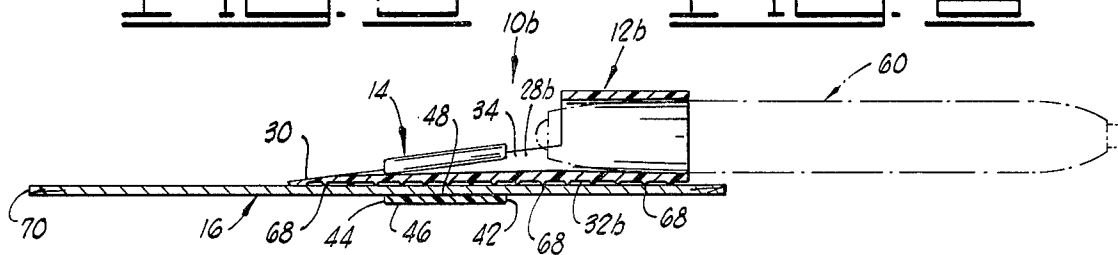


FIG. 7

ADJUSTABLE ORAL EXAMINATION ASSISTANCE DEVICE

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to diagnostic instruments and more particularly, but not by way of limitation, to improved apparatus for rigidly securing a disposable tongue depressor blade to a small flashlight to form an oral examination assistance device.

2. Description of the Prior Art

As is well known by dentists and physicians, it is often necessary to visually examine the interior of a patient's mouth for various diagnostic purposes. Such oral examination is normally accomplished by depressing the tongue of a patient by means of an elongated, flat, wooden splint, which is usually referred to as a tongue blade, while simultaneously directing a light beam into the mouth of the patient. Although numerous devices have been constructed for assembling a tongue blade and a light source into a single unit, these devices have generally proven unsatisfactory to the extent that most oral examinations are still conducted by holding the tongue blade in one hand and directing the light beam with the other hand. Clearly such an examination technique restricts the extent of examination which may be performed by the examining dentist or physician since he cannot conveniently use one free hand to position the patient's head or mouth or pull the tongue or use other instruments in conjunction with the tongue blade and light source.

One type of oral examination device for holding a tongue depressor blade and a light includes a battery case which serves as a handle to which the light source and a tongue blade holder are connected such that the tongue blade is positioned at substantially right angles to the battery case. In addition to being exceedingly complex and expensive to manufacture, this device requires a relatively complicated movement of the entire hand and arm in order for the examining physician to depress the patient's tongue or otherwise manipulate the tongue depressor within the patient's mouth. Other oral examination devices have provided a flashlight including a battery case which is disposed parallel to the tongue blade. These latter devices have not received general acceptance in the medical profession for a number of reasons. It is believed that a primary reason for such non-acceptance of this latter type of examination device resides in the fact that such devices are difficult to load an unload, difficult to clean and sterilize and are otherwise generally unsatisfactory due to the complicated structure which has been necessitated in attempting to provide for securing both adult and pediatric size tongue blades to the examination devices.

It has also been found that the oral examination devices currently available provide neither the strength nor the length and size adjustability to provide the type of oral examination tool necessary for convenient oral examinations. Many of the prior art devices rely on distortion of the tongue blade engaging structure to hold the disposable tongue blade, however, such devices generally fail to secure a disposable tongue blade to a flashlight with sufficient rigidity to apply much force to the interior of an oral cavity without the danger of the tongue blade moving relative to or being inadvertently disconnected from the light source within the oral cavity.

SUMMARY OF THE INVENTION

The present invention contemplates an apparatus for connecting an elongated flashlight having a longitudinal axis and a generally circular cross-section to an elongated tongue blade having a longitudinal axis and a substantially rectangular cross-section to form an oral examination assistance instrument. The apparatus comprises a first clip member having a first end portion and a second end portion. The first clip member includes flashlight engaging means formed on the first end portion thereof for connecting the first end portion of the first clip member to one end of the elongated flashlight. The first clip member also includes an elongated tongue blade engaging member having a generally U-shaped cross-section including a base portion and a pair of upwardly extending side portions and extending from the flashlight engaging means to the second end portion of the first clip member, the base portion being aligned substantially parallel to and offset downwardly from the longitudinal axis of the flashlight connected thereto and having a substantially planar lower tongue blade engaging surface formed thereon lying in a plane substantially parallel to and downwardly offset from the longitudinal axis of the flashlight. The upwardly extending side portions each include a straight inclined ramp surface formed on the upper edge thereof extending from the flashlight engaging means and converging downwardly toward the substantially planar tongue blade engaging surface. The apparatus further includes a second clip member, mutually engageable with the first clip member, having a first end portion and a second end portion and having a generally U-shaped cross-section including a base portion and a pair of upwardly extending side portions. The base portion includes substantially planar tongue blade engaging means formed on the upper side thereof for engaging an elongated tongue blade against the substantially planar lower tongue blade engaging surface of the first clip member. The side portions are spaced apart a distance sufficient to slidably receive the upwardly extending side portions of the first clip member therebetween and each includes inwardly extending inclined straight ramp surface means formed thereon for mutually engaging a respective one of the straight inclined ramp surfaces formed on the clip member to rigidly secure an elongated tongue blade between the substantially planar lower tongue blade engaging surface of the first clip member and the substantially planar tongue blade engaging surface means of the second clip member. This rigid securement is achieved through mutual wedging action between the straight incline ramp surfaces and the inwardly extending inclined straight ramp surface means.

An object of the present invention is to provide an improved device for securing a disposable tongue depressor blade to an elongated flashlight in close, parallel relationship to provide a convenient instrument for performing oral examinations.

Another object of the present invention is to provide an improved device of the type described above capable of securely attaching disposable tongue compressor blades of various widths and thicknesses to an elongated flashlight to provide an instrument for performing oral examinations.

A further object of the present invention is to provide an improved device of the type described which may be

economically manufactured and which may be easily and quickly removed from the flashlight to be either sterilized or disposed of.

Another object of the present invention is to provide a device of the type described which may be economically formed of metallic materials or molded from synthetic resins or the like.

Still another object of the present invention is to provide a device of the type described which includes two rigid interlocking clip members which are not susceptible to physical distortion after repeated use.

Other objects and advantages of the present invention will be evident from the following detailed description when read in conjunction with the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a side elevation of one form of the present invention illustrating the various elements thereof prior to their assembly on a flashlight to secure a tongue blade thereto.

FIG. 2 is a side elevation view of the apparatus of FIG. 1 illustrating the elements in assembled relation securing the tongue blade to the flashlight.

FIG. 3 is a side elevation view illustrating another form of the present invention illustrating the various elements thereof prior to their assembly on a flashlight to secure a tongue blade thereto.

FIG. 4 is a side elevation view of the apparatus of FIG. 3 illustrating the elements thereof in assembled relation securing the tongue blade to the flashlight.

FIG. 5 is a cross-sectional view taken along line 5—5 of FIG. 2.

FIG. 6 is a cross-sectional view taken along line 6—6 of FIG. 4.

FIG. 7 is a cross-sectional view of another form of the present invention employing friction means engageable with the tongue blade.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIGS. 1, 2 and 5, the adjustable oral examination assistance device of the present invention is designated by the reference character 10. The apparatus 10 includes a first clip member 12 and a second clip member 14. The device 10 is illustrated in conjunction with a disposable flat wooden tongue depressor blade 16 and a disposable elongated flashlight 18.

The flashlight 18 is of conventional configuration having a longitudinal axis and a generally circular cross-section. Such a flashlight is commercially available from the Kendall Co. or Concept, Inc. and includes an incandescent light source positioned within the first end portion 20 to provide a beam of light extending to the left along the longitudinal axis thereof as viewed in FIGS. 1 and 2. The first clip member 12 includes a flashlight engaging member 22 formed on the first end portion 24 thereof. The flashlight engaging member 22 includes a cylindrically shaped cavity 26 formed therein having a longitudinal axis and sized to securely receive the first end portion 20 of the disposable elongated flashlight 18 therein in coaxial alignment therewith to secure the first clip member 12 to the flashlight 18 as clearly shown in FIGS. 2 and 5.

An elongated tongue blade engaging member 28, having a generally U-shaped cross-section, extends from the flashlight engaging member 22 to the second

end portion 30 of the first clip member 12. The tongue blade engaging member 28 includes a planar lower surface 32 formed thereon which lies in a plane substantially parallel to and laterally downwardly offset from the longitudinal axis of the cavity 26, and the flashlight 18 secured therein a distance greater than the cross-sectional radius of the flashlight 18. A pair of side portions 34 and 36 extend upwardly from the planar lower surface 32 in spaced parallel relation and carry a pair of spaced parallel elongated inclined straight ramp surfaces 38 and 40 formed respectively thereon with the ramp surfaces 38 and 40 lying in mutually parallel planes perpendicular to the planar surface 32. The inclined ramp surfaces 38 and 40 converge toward the planar surface 32 at the second end portion 30 from the flashlight engaging member 22.

The second clip member 14 is engageable with the first clip member 12 and includes a first end portion 42 and a second end portion 44 and is generally U-shaped in cross-section. The second clip member 14 includes a bottom portion 46 extending from the first end portion 42 to the second end portion 44 and having a planar upper surface 48 formed thereon for securely engaging the tongue depressor blade 16 against the lower planar surface 32 of the first clip member 12 as shown in FIGS. 2 and 5.

The second clip member 14 further includes a pair of mutually parallel aligned members 50 and 52 extending upwardly from the planar upper surface 48 of the bottom portion 46 and extending from the first end portion 42 to the second end portion 44. The upwardly extending members 50 and 52 are laterally spaced from each other a distance sufficient to slidably receive the elongated tongue blade engaging member 28 of the first clip member 12 therebetween as shown in FIG. 5. This lateral spacing is of sufficient width to also receive a tongue depressor blade 16 of approximately 2.25 centimeters in width or smaller therein which is the size of a standard adult wooden tongue blade of substantially rectangular cross-section.

Inwardly extending and downwardly facing inclined straight ramp engaging surfaces 54 and 56 are formed respectively on the upwardly extending members 50 and 52 for sliding mutual engagement with the inclined straight ramp surfaces 38 and 40 of the first clip member when the first and second clip members 12 and 14 are slidably engaged as shown in FIGS. 2 and 5 to serve the tongue depressor blade 18 through mutual wedging action between the inclined straight ramp engaging surfaces 54 and 56 and the inclined straight ramp surfaces 38 and 40. It will be understood that the angle of inclination of the inclined straight ramp engaging surfaces 54 and 56 and the inclined straight ramp surfaces 38 and 40 are substantially equal and are preferably approximately $8^{\circ} 15'$ from the horizontal as viewed in FIGS. 1 and 2.

The flashlight engaging member 22 of the first clip member 12 may be suitably formed of a translucent or transparent synthetic resin and may suitably include a transparent circular window portion 58 through which the beam of light from the flashlight 18 will be readily projected. The transparent window portion 58 also provides a positive barrier to the first end portion 20 of the flashlight 18 upon the insertion thereof into the cavity 26 of the flashlight engaging member 22 as shown in FIG. 2.

DESCRIPTION OF THE EMBODIMENT OF FIGS. 3, 4 AND 6

Referring now to FIGS. 3, 4 and 6, there is shown a slightly modified alternate embodiment of the present invention which will be designated by the reference character 10a. The adjustable oral examination assistance device 10a is slightly modified for use with a flashlight 60 which houses an incandescent light bulb 62 in the first end portion 64 thereof. The flashlight 60 has a longitudinal axis and a substantially circular cross-section and is of slightly different configuration from the disposable elongated flashlight 18 described above. Such a flashlight is manufactured by Welch Allyn, Inc. and carries the designation No. 77700.

The device 10a employs a slightly modified first clip member 12a adapted for engagement with the flashlight 60 and the previously described second clip member 14. The first clip member 12a differs from the previously described first clip member 12 in that the modified flashlight engaging member 22a thereof includes a slightly modified cylindrically shaped cavity 26a sized and shaped to securely receive the first end portion 64 of the flashlight 60 therein. The substantially cylindrically shaped cavity 26a preferably includes a slightly convergent portion 66 adjacent to the longitudinal tongue blade engaging member 28 which communicates with the end of the modified flashlight engaging member 22a opposite the first end portion 24 of the modified first clip member 12a. The convergent portion 26 of the substantially cylindrical cavity 26a provides a positive stop to prevent the flashlight 60 from extending any further through the cavity 26a when secured to the first clip member 12a as is illustrated in FIG. 4. The longitudinal tongue blade engaging member 28 of the slightly modified first clip member 12a is substantially identical to that described above for the device 10 and therefore employs the same reference characters. The securement of the tongue depressor blade 16 between the modified first clip member 12a and the second clip member 14 in the device 10a is substantially identical to that described in detail above for the device 10.

DESCRIPTION OF THE EMBODIMENT OF FIG. 7

FIG. 7 illustrates in cross-section a slight modification of the device 10a which will be designated by the reference character 10b. The device 10b employs a slightly modified first clip member 12b of structure substantially identical to that previously described above for the first clip member 12a with the exception that the planar lower surface 32b of the slightly modified longitudinal tongue blade engaging member 28b includes a plurality of serrations 68 formed thereon to provide increased frictinal engagement with the tongue depressor blade 16 when the first clip member 12b and the second clip member 14 mutually engage the tongue depressor blade 16 in mutual wedging relation as clearly shown in FIG. 7 and as described in detail above. It will be seen that the serrations 68 provide means for more rigidly securing the tongue depressor blade 16 through the employment of the present invention by penetrating to some extent the upper surface of the blade 16.

In operation, the first clip member, either 12, 12a or 12b is first properly secured to the first end of an appropriate flashlight, either 18 or 60. A tongue depressor

blade 16, of either the standard adult size or the smaller pediatric size, is then positioned along the planar lower surface 32 or 32b of the longitudinal blade engaging member 28 or 28b with the outer end 70 of the tongue depressor blade 16 extending the desired distance beyond the second end portion 30 of the first clip member 12, 12a or 12b. The second clip member 14 is then slidably engaged with the first clip member as illustrated in FIGS. 2, 4 and 7 to secure the tongue depressor blade 16 to the first clip member 12, 12a or 12b and the flashlight 18 or 60 to provide a suitable oral examination assistance device for use by a dentist or physician.

In order to adjust the length of the tongue depressor blade 16 relative to the flashlight to which it is secured, the operator need only slightly disengage the second clip member 14 from its sliding wedging engagement with the first clip member 12, 12a or 12b to freely manipulate the tongue depressor blade 16 longitudinally relative to the first clip member. When the length has been properly adjusted, the first and second clip members may then be mutually slidably re-engaged in wedging relation to securely engage the tongue depressor blade 16.

It will be seen that the various embodiments of the apparatus described above provides simple, rigid and adjustable means for securing disposable tongue depressor blades of varying dimensions to an elongated flashlight in close, parallel relationship to provide a convenient instrument for the performing of oral examinations requiring the use of only one hand while freeing the other hand to manipulate the head, mouth or tongue of the patient or manipulate other instruments.

Changes may be made in the combination and arrangement of parts or elements as set forth in the specification and shown in the drawing without departing from the spirit and scope of the invention as defined in the following claims.

What is claimed is:

1. Apparatus for connecting an elongated flashlight having a longitudinal axis and a generally circular cross-section to an elongated tongue blade having a longitudinal axis and a substantially rectangular cross-section to form an oral examination assistance instrument, said apparatus comprising:

a first clip member and a first end portion and a second end portion and including:

flashlight engaging means formed on the first end portion thereof for connecting the first end portion of said first clip member to one end of the elongated flashlight; and

an elongated tongue blade engaging member having a generally U-shaped cross-section comprising a base portion and a pair of upwardly extending side portions and extending from said flashlight engaging means to the second end portion of said first clip member, said base portion being aligned substantially parallel to and offset downwardly from the longitudinal axis of the flashlight connected thereto and having a substantially lower tongue blade engaging surface formed thereon lying in a plane substantially parallel to and downwardly offset from the longitudinal axis of the flashlight, said upwardly extending side portions each including a straight inclined ramp surface formed on the upper edge thereof extending from said flashlight engaging means and

converging downwardly toward the substantially planar tongue blade engaging surface; and
 a second clip member, mutually engageable with said first clip member, having a first end portion and a second end portion and having a generally U-shaped cross-section including a base portion and a pair of upwardly extending side portions, said base portion having substantially planar tongue blade engaging surface means formed on the upper side thereof for engaging an elongated tongue blade to secure said blade against the substantially planar lower tongue blade engaging surface of said first clip member, said side portions being spaced apart a distance sufficient to slidably receive the upwardly extending side portions of said first clip member therebetween and each including inwardly extending inclined straight ramp surface means formed thereon for mutually engaging a respective one of said straight inclined ramp surfaces formed on said first clip member to rigidly secure an elongated tongue blade between the substantially planar lower tongue blade engaging surface of said first clip member and the substantially planar tongue blade engaging surface means of said second clip member through mutual wedging action between said straight inclined ramp surfaces and said inwardly extending inclined straight ramp surface means.

2. The apparatus as defined in claim 1 wherein the substantially planar lower tongue blade engaging surface of said first clip member includes frictional means formed thereon for providing increased frictional engagement between said first clip member and an elongated tongue blade engaged thereby.

3. The apparatus as defined in claim 1 wherein the substantially planar lower tongue blade engaging surface of said first clip member includes separations formed thereon engageable with an elongated tongue blade engaged thereby.

4. Apparatus for connecting an elongated flashlight having a longitudinal axis and a generally circular cross-section to an elongated tongue blade having a longitudinal axis and a rectangular cross-section to form an oral examination assistance instrument, said apparatus comprising:

an elongated first clip member having a first end portion and a second end portion and including:

a flashlight engaging member formed on the first end portion and having a cylindrically shaped cavity formed therein having a longitudinal axis and sized to securely receive one end of an elongated flashlight therein to coaxial alignment therewith to secure said clip member to the flashlight; and

an elongated tongue blade engaging member having a generally U-shaped cross-section and extending from said flashlight engaging member to

the second end portion of said elongated first clip member, said tongue blade engaging member including a planar lower surface formed thereon substantially parallel to and laterally offset from the longitudinal axis of the cylindrically shaped cavity a distance greater than the radius of the cylindrically shaped cavity and a pair of spaced parallel elongated inclined straight ramp surfaces extending from said flashlight engaging member to the second end portion of said tongue blade engaging member, said ramp surfaces lying in mutually parallel planes perpendicular to said planar surface and converging toward said planar surface at the second end portion from said flashlight engaging member; and

a second clip member engageable with said first clip member and having a first end portion and a second end portion and a generally U-shaped cross-section and including:

a bottom portion extending from the first end portion to the second end portion and having planar upper surface means formed thereon for securely engaging an elongated tongue blade against the lower planar surface of said first clip member;

a pair of mutually parallel aligned upwardly extending members extending between the first and second end portions of said second clip member and extending upwardly from the upper planar surface means, the upwardly extending members being laterally spaced from each other a distance sufficient to slidably receive said elongated tongue blade engaging member therebetween,

inwardly extending inclined straight ramp engaging surface means formed on each upwardly extending member for slidably mutually engaging a respective one of said spaced parallel elongated inclined straight ramp surfaces of said first clip member to rigidly secure an elongated tongue blade between the planar lower surface of said first clip member and the planar upper surface means of said second clip member through mutual wedging action between said inclined straight ramp engaging surface means of said second clip member and said spaced parallel elongated inclined straight ramp surfaces of said first clip member.

5. The apparatus as defined in claim 4 wherein the planar lower surface formed on said first clip member includes friction means formed thereon for providing increased frictional engagement between said first clip member and an elongated tongue blade engaged thereby.

6. The apparatus as defined in claim 4 wherein the planar lower surface formed on said first clip member includes serrations formed thereon engageable with an elongated tongue blade engaged thereby.

* * * * *

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,900,924 Dated August 26, 1975

Inventor(s) Steven D. Meltzner

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

In Column 1, line 50, "an" should be --and--.

In Column 4, line 48, "18" should be --16--.

In Column 5, line 55, "frictinal" should be --frictional--.

In Column 6, line 61, insert --planar-- before the word "lower".

In Column 7, line 37, "separations" should be --serrations--.

Signed and Sealed this

fourth Day of November 1975

[SEAL]

Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents and Trademarks