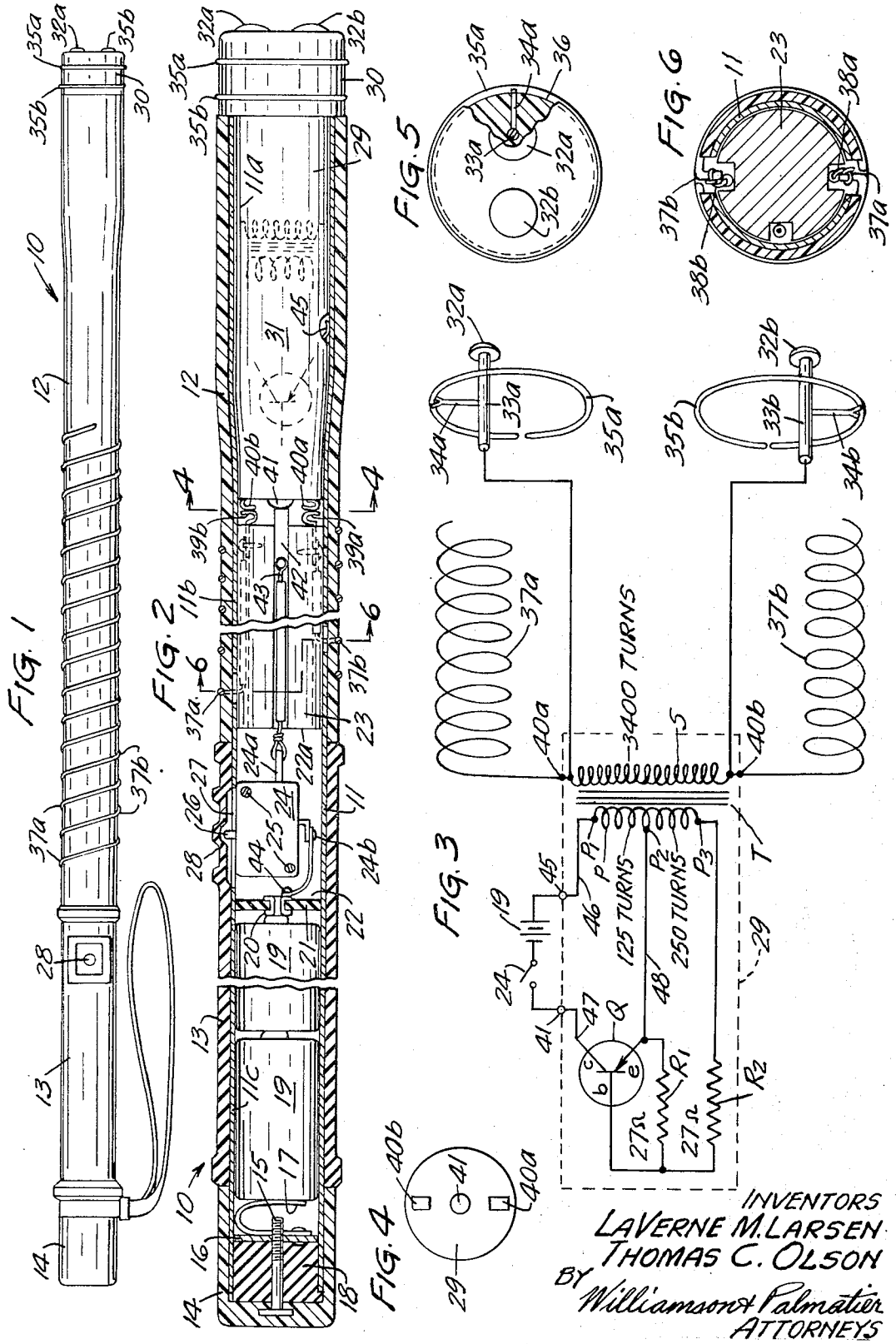
Jan. 9, 1968 LA VERNE M. LARSEN ET AL 3,362,711

NIGHT STICK WITH ELECTRIC SHOCK MEANS

Filed Sept. 24, 1964



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United States Patent Office 3,362,711 Patented Jan. 9, 1968

3,362,711

NIGHT STICK WITH ELECTRIC SHOCK MEANS

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Filed Sept. 24, 1964, Ser. No. 398,996
3 Claims. (Cl. 273—84)

This invention relates to an improved night stick or policeman's billy.

Civilian and military police have learned that the night stick is a versatile and effective weapon and tool for controlling crowds and riots. However it has been experienced in riot control duty, which necessarily involves occasional hand-to-hand combat, that a rioter will grab the officers night stick and attempt to take it from him.

An object of our invention is to provide a new and improved night stick of simple and inexpensive construction and operation.

Another object of our invention is to provide a novel night stick which is constructed and may be operated so as to minimize the likelihood of the night stick being grabbed and wrestled away from the policeman by an unauthorized person.

A further object of our invention is to provide an improved and novel policeman's billy which may be used in various manners with increased efficiency as a weapon in hand-to-hand fights and similar violent situations.

These and other objects and advantages of our invention will more fully appear from the following description made in connection with the accompanying drawings, wherein like reference characters refer to the same or similar parts throughout the several views, and in which:

FIG. 1 is an elevation view of the invention.

FIG. 2 is a longitudinal section of the invention with portions thereof being broken away to facilitate enlargement of detail.

FIG. 3 is an electro-mechanical schematic view illustrating the circuit and components of the invention.

FIG. 4 is a detail view taken of a portion of the apparatus as viewed at 4—4 in FIG. 2.

FIG. 5 is a front end elevation view of the invention with portions thereof broken away and shown in section for clarity of detail.

FIG. 6 is an enlarged detail section taken at 6—6 in FIG. 2.

One form of the invention is shown in the drawings and is described herein. The policeman's billy is indicated in general by numeral **10** and includes an elongated rigid member **11** of generally tubular construction, and the rigid tube **11** is preferably constructed of steel. The forward end portion **11***a* of the rigid tube is enlarged, slightly, as compared to the intermediate portion **11***b* and the rear end portion **11***c*. The intermediate and front portions **11***b* and **11***a* respectively of the elongate steel tube **11** are confined within a resiliently compressible and electrically insulating sleeve **12** which may be constructed of vinyl plastic material, and the rear portion **11***c* of the tube is confined within another resiliently compressible and electrically insulating sleeve **13** constructed of rubber. The front end of sleeve **13** abuts the rear end of sleeve **12** so as to completely confine and seal the rigid steel tube **11**. The extreme rear end of tube **11** is confined by a removable insulating cap **14** constructed of substantially rigid molded plastic material with a threaded stud **15** embedded therein. The stud **15** is threaded through a metallic plate **16** which mounts a spring **17** which may be either a leaf spring or a coil spring and in the form shown, a leaf spring is

illustrated. The plate **16** confines an expandible plug **18** of rubber so that when the cap **14** is moved onto the rear end of tube **11**, and when the cap **14** is subsequently rotated, the spring **17** will engage the rear most battery **19** in the tube **11** and may also engage the interior periphery of tube **11** so as to restrain the plate **16** from revolving in the tube **11**, and therefore the stud **15** will revolve in the threaded aperture of the plate **16** so as to cause the plate **16** to compress the plug **18** and expand the same laterally outwardly into engagement with the tube **11** for holding the cap **14** in desired place.

The several batteries **19** in the tube **11** engage each other in end-to-end relation and forward most battery engages a metallic contact **20** mounted in a insulating disc **21** which is affixed to the rear end **22** of an insulating conductor guide and filler **23** which in the form shown is constructed of wood. The rear end **22** is bifurcated so as to define a slot type opening **22***a* in which a switch **24** is mounted on rigid pins **25** extending through both sides of the bifurcated rear end **22** of the conductor mounting member **23**.

It will be seen that the switch **24** has an operating button **26**, projecting through an enlarged opening **27** of the tube **11** so that the resilient thumb-operating button portion **28** of the rubber sleeve **13** bears directly against the button **26** to permit operating the switch **24** by merely applying manual pressure with a person's thumb against the portion **28** of the rubber sleeve **13**.

A rigid plastic plug or capsule **29** is illustrated pictorially in FIGS. 2 and 4, and is denoted in the circuit diagram of FIG. 3 by the dotted line to emphasize that the plug or capsule **29** confines a number of circuit elements and circuit conductors. The capsule **29** is constructed primarily of an insulating plastic molded material suitable as a potting compound for encapsulating the circuit components illustrated in FIG. 3. The capsule or plug **29** is rigid and has a head portion **30** projecting outwardly beyond the end of the rigid tube **11**, and also has a diminished portion **31** projecting well into the steel tube **11** and being secured therein by a friction fit or in some instances by adhesive. The head portion **30** of the capsule or plug **29** has a pair of bare electrical contacts **32***a* and **32***b* mounted thereon. The contacts have elongate shank portions extending into the head **30** to provide electrical connection to the remainder of the circuitry hereinafter described. The shanks **33***a* and **33***b* have conductive studs **34***a* and **34***b* projecting radially outwardly to the side periphery of the head **30**, and each of the studs **34***a* and **34***b* engages in electrically conductive relation, a substantially rigid open ended loop or ring of bare wire or rod type conductor indicated at **35***a* and **35***b*. The rings **35***a* and **35***b* are embedded slightly in spaced grooves **36** in the plastic material of the head **30**, but as clearly shown in FIGS. 2 and 5, portions of the bare wires or conductor rings **35***a* and **35***b* do project radially outwardly beyond the surface of the head **30** so as to be readily engageable by a person's hand which grips the end of the night stick **10**.

A pair of substantially rigid wire conductors **37***a* and **37***b* are wound in parallel, spaced, and side-by-side relation with each other spirally along the intermediate portion of the rigid member **11** in overlying relation with the exterior periphery of the insulating sleeve **12** so that the bare wires **37***a* and **37***b* are exposed to the exterior. The wires **37***a* and **37***b* are embedded, at least, partly into the surface of the resilient sleeve **12** and the resilient material of the sleeve **12** conforms itself closely to the surface configuration of the wires **37***a* and **37***b* where embedded so as to minimize access to the lower side of these wires and thereby prevent ripping of these wires from the night stick **10**. The wires **37***a* and **37***b*, which are preferably constructed of substantially rigid ma-

terial which may be steel are turned inwardly through the insulating sleeve **12** at their opposite ends, and at one end of each of the wires a connection is made to the insulated wires **38***a* and **38***b* which extend through grooves formed in the conductor mounting member **23** and are connected by spring contacts **39***a* and **39***b* to contacts **40***a* and **40***b* on the capsule or plug **29**. The contacts **40***a* and **40***b* are on the rear end face of the capsule **29**, and an additional contact **41** is also centered at this rear end of the capsule **29** for engagement with an additional spring contact **42** connected by a conductor **43** extending through one of the grooves of the member **23** to an ear **24***a* on the switch **24**. It will be seen that another ear **24***b* of the switch **24** is connected by a conductor **44** to the eyelet **20** and the insulating panel **21** for connecting the batteries to the circuitry in the capsule **29**.

The capsule **29** has a further spring contact **45** at its side periphery and engaging the steel tube **11** for connecting the circuitry to the negative side of the batteries **19**.

The capsule **29** confines a transformer T, a transistor Q and a number of resistances R–1 and R–2. It will be seen that the contact **40***a* is connected within the capsule directly to the pounding shank **33***a* and therefore to the contact **32***a* the wire ring **35***a*. The contact **40***b* is likewise connected directly to the mounting shank **33***b* and therefore to the contact **32***b* and the wire conductor **35***b*. The contacts **40***a* and **40***b* are connected to the opposite ends of the secondary winding S of the transformer T, it will be seen that the secondary winding has in one instance, 3400 turns of wire.

The primary winding P of the transformer T has a center tap terminal P–2, and also has terminals P–1 and P–3 at the opposite ends of the primary winding. The primary winding in the form shown has 125 turns between terminals P–1 and P–2; and has 250 turns of wire between terminals P–2 and P–3. The terminal P–1 of the primary winding is connected by conductor **46** directly to the contact **45** which is connected through the battery **19** and switch **24** to the contact **41**. The contact **41** is connected directly to the collector of the transistor Q by conductor **47**.

The center tap terminal P–2 of the primary winding of the transformer is connected directly by conductor **48** to the emitter *e* of the transistor Q. The base *b* of transistor Q is connected by resistor R–1 to the emitter *e* of transistor Q; and the base *b* of the transistor Q is also connected by resistor R–2 to the terminal T–3 of the primary winding of transformer T.

In the operation of the circuit, closing of the switch **24** causes an emitter-to collector current to flow which necessarily also flows through the primary winding between terminals P–1 and P–2. Because of the transformer action, an extremely high potential is generated at the opposite ends of the secondary winding S, and therefore this high potential is developed between the bare wire conductors **37***a* and **37***b*; between contacts **32***a* and **32***b*; and between bare wire conductive rings **35***a* and **35***b*. If the end of the night stick is touched against a person's body simultaneously with closing of the switch **24**, a person will experience a shock due to the high initial voltage between the contacts **32***a* and **32***b*. Likewise if a person were to grip the conductor rings **35***a* and **35***b* with his hand while the switch is closed, a substantial shock would be experienced. Similarly, if a person takes hold of the intermediate portion of the night stick so as to simultaneously engage the wire conductors **37***a* and **37***b*, a substantial shock is obtained. The circuit has very small sustaining power and therefore the potential diminishes rapidly after a person's hand or body is engaged between opposite conductors or contacts. However it will be understood that even though one is able to resist the initial shock produced by engaging the wire conductors **37***a* and **37***b*, if the switch **24** is opened and then closed again, a second substantial shock is produced to the person gripping the conductors.

The person using this night stick will ordinarily hold the rubber sleeve **13** or handle so as to be ready to push the button **28** to operate switch **24**.

The night stick may be used to prod or push persons in riot control and the contacts **32***a* and **32***b* and alternately rings **35***a* and **35***b* are effective to administer substantial shock to persons in sensitive areas.

Occassionally it becomes necessary to physically push persons, as when attempting to restrain a crowd at parades and appearances of new worthy persons. The person using the night stick **10** will grip the night stick at the handle **13** and also adjacent the front end of the night stick, between the windings **37***a*, **37***b* and the rings **35***a* and **35***b*.

If one attempts to grip the night stick at its intermediate portion in an attempt to take it away from the possessor of it the bare conductors **37***a* and **37***b* will undoubtedly be engaged, whereupon as the switch **24** is closed a substantial shock will be administered.

Additionally, the night stick **10** may be used in a multiplicity of manners that night sticks are traditionally used without any likelihood of damaging the electrical circuit effecting the electrical shocks at the contacts and wires.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the various parts without departing from the scope of our invention.

We claim:

1. A policeman's billy:

comprising an elongate rigid member having opposite ends and an intermediate portion, said intermediate portion having means defining an electrically insulating exterior periphery, one of said ends forming a handle and the other of said ends being unencumbered as to permit additional manual grasping of said member,

a pair of bare conductors on the exterior insulating periphery of said rigid member at said intermediate portion, said conductors being disposed adjacent each other to thereby be simultaneously engaged by a person's hand gripping said rigid member at the intermediate portion thereof,

and electrical means connected with said rigid member and with said conductors and applying a shocking electric potential to said conductors, whereby to loosen the grip of a person's hand applied to said intermediate portion.

2. A policeman's billy:

comprising an elongate rigid member having opposite ends an an intermediate portion, said intermediate portion having means defining an electrically insulating resiliently compressible exterior periphery, one of said ends forming a handle and the other of said ends being unencumbered as to permit additional manual grasping of said members,

a pair of bare wire conductors in side-by-side relation spirally wound on the resiliently compressible insulating periphery and said wires being partially embedded in said compressible periphery, said means conforming closely to the surface configuration of the embedded portions of the wire conductors to retain the wire conductors in stationary position on the rigid member and to obstruct access beneath the spirally wound wire conductor and thereby prevent forcible detachment of the wire from the rigid member,

and electrical means connected with said rigid member and with said conductors and applying a shocking electric potential to said conductors whereby to loosen the grip of a person's hand applied to said intermediate portion.

3. A policeman's billy:

comprising an elongate rigid member having opposite

ends and an intermeditate portion and also having a hollow interior, said rigid member being encompassed by insulative material substantially throughout the entire length thereof, the insulative material being resiliently compressible at said intermediate portion and forming the exterior periphery, one of said ends forming a handle and the other of said ends being unencumbered as to permit additional manual grasping of said member,

a first pair of bare wire conductors in side by side relation and spirally wound on the insulating periphery of said intermediate portion and being partially embedded in the resiliently compressible material, said insulative and compressible material conforming closely to the surface configuration of the embedded portions of the wire conductors to retain the wire conductors in stationary position on the rigid member and to obstruction access beneath the spirally wound conductors and thereby prevent forceable detachment of the wire from the rigid member,

said other of said ends of the rigid member also having a second pair of bare wire conductors spaced from said intermediate portion and each of said second pair of bare wire conductors being connected elec-

trically to said first mentioned bare wire conductors, and an electrical circuit means within the hollow interior of said rigid member and including a manually operable switch adjacent the handle and also including battery means within the hollow interior of said rigid member, the circuit means producing a shock between said bare wire conductors with a high initial potential and a rapidly diminshing potental subsequent to operaton of the switch and engagement by a person's hands simultanously with one pair of said bare wire conductors.

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