

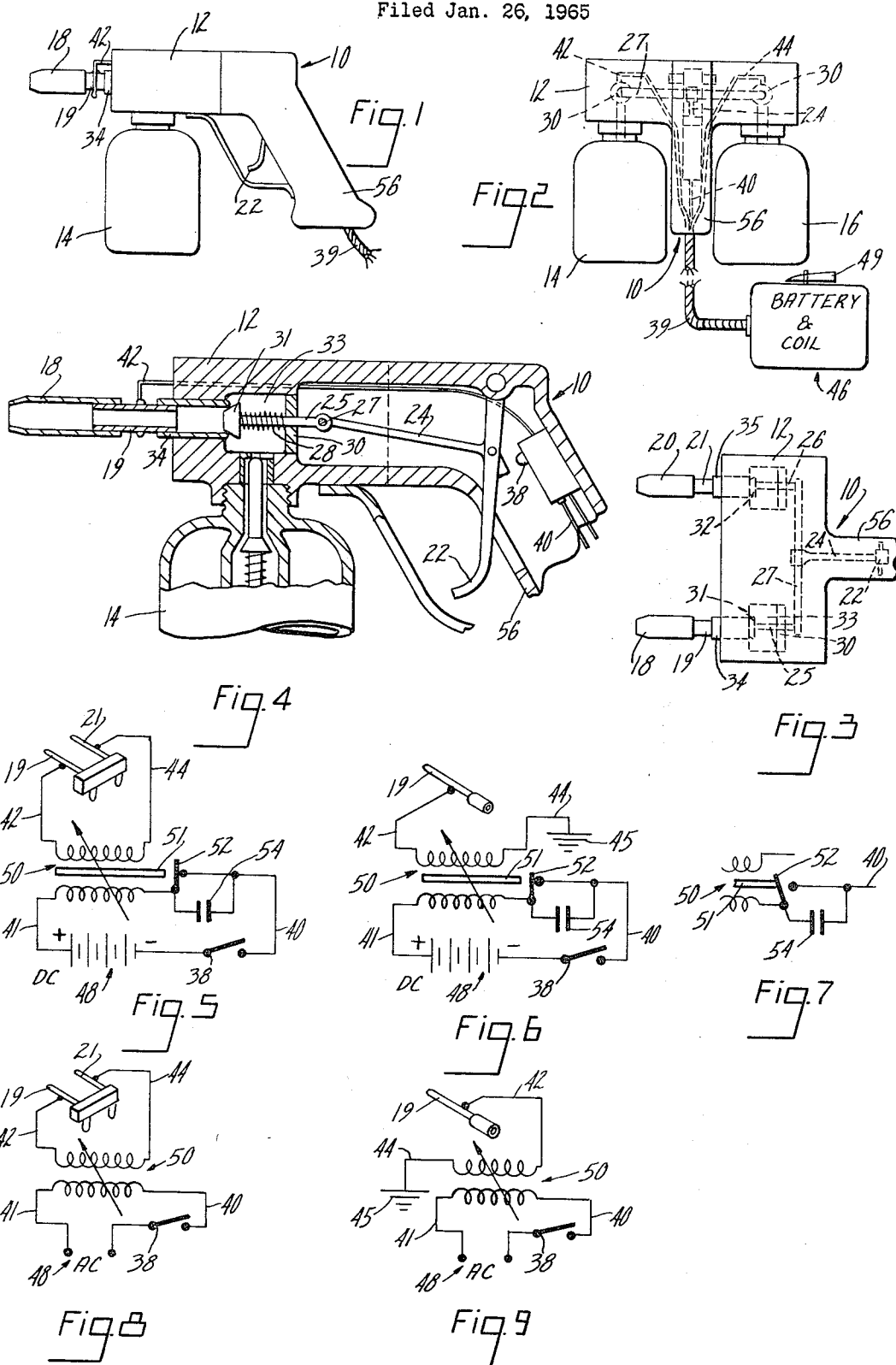
March 26, 1968

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3,374,708

ELECTRICAL ANTI-PERSONNEL WEAPON

Filed Jan. 26, 1965



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ELECTRICAL ANTI-PERSONNEL WEAPON

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Filed Jan. 26, 1965, Ser. No. 428,096

11 Claims. (Cl. 89—1)

ABSTRACT OF THE DISCLOSURE

An electrical anti-personnel method and apparatus. The method comprises electrically energizing a stream of conductive liquid and directing the stream at a person. The apparatus comprises a pair of conductive liquid sources, a pair of conduits, a pair of nozzles, and a pair of conductive means contacting the liquid, each pair of elements separate from the other, whereby a pair of oppositely charged streams of liquid may be directed against a person.

This invention relates to a method and to a weapon for the deterrence of hostile persons by electrical means. More particularly this invention relates to a method and to a weapon for transmitting electricity via unconfined streams of electrically charged liquids to persons in remote positions from the operator of such apparatus.

Generally speaking, the method comprises directing at least one unbroken and unconfined, ballistic stream of electrically energized conductive liquid at a remote person for deterring hostile activities and advances by such a person. The apparatus for practicing this method, in general, comprises at least one source of pressurized conductive liquid connected to means for directing said liquid to a remote object in an unbroken stream. Also provided are means adapted for energizing the liquid, such means being adapted for conveying an electrical current from a power source to said liquid.

Other objects, advantages and features will appear from the following detailed description of the invention taken together with the accompanying drawings, in which:

FIG. 1 is a side elevation of apparatus embodying the invention;

FIG. 2 is a rear view of the apparatus shown in FIG. 1;

FIG. 3 is a plan view of the apparatus;

FIG. 4 is an enlarged, fragmentary, side elevation of the apparatus in section;

FIGS. 5, 6, 8 and 9 are circuit diagrams for use in preferred embodiments of the invention; and

FIG. 7 is a fragmentary circuit diagram showing the induction coil of FIGS. 5 and 6 in a circuit broken condition.

Referring now to the drawings, and more particularly to FIGS. 1-4 thereof, it will be seen that in the preferred embodiment of the apparatus two sources 14, 16 of conductive liquid are provided. In the preferred embodiment the liquid is provided in pressurized containers having electrical insulating, non-corrosive properties, but it is contemplated that the sources may be from any pressure source, such as a pump, provided only that each source be separate and insulated lest there be a short circuit making the apparatus inoperative. The liquid is conductive and may be water containing an electrolyte, such as ordinary sea water or water mixed with sulphuric acid, which has been used successfully. The liquid may also contain thickening or other agents such as methyl cellulose or cellulose gum to prevent too early a break in streams of the liquid.

The liquid sources 14, 16 are connected in pressure sealed relationship to either side of the cross bracket 12 of a preferably pistol shaped device generally designated

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10. The bracket 12 includes sealed pressure chambers 33 above each of the liquid sources into which the liquid flows. The chambers 33 each include a seal element 30 at the rear thereof and a valve 31, 32 at the front thereof, the valves each normally being urged by spring means 28 to a closed position. Actuating linkage means for selectively opening the valves 31, 32 are also provided including rods 25, 26 connected at one end to the valves 31, 32 and at their other ends extending through the seal elements 30 for connection to cross rod 27. The actuating linkage means also includes link 24 pivotally connected at one end to the rod 27 and at the other end to a trigger mechanism 22 at a point remote from the upper end of the trigger 22. The trigger 22 is pivotally connected at the upper end thereof to the internal structure of the pistol 10 and at its lower end protrudes from the pistol for digital actuation. On actuation of the trigger the valves 31, 32 are thus opened to permit the flow of liquid from the sources 14, 16.

Leading from the valves 31, 32 at the front of the chambers are conduits 34, 35 leading to simple nozzles 18, 20 adapted for directing the pressurized liquids from the pistol 10 is unbroken, unconfined, ballistic streams. The nozzles are laterally spaced from each other on the bracket 12 and are arranged to provide streams which do not converge within their effective range, i.e. the range at which the streams remain unbroken. Likewise, the nozzles are arranged so that the streams are sufficiently close together as to be capable of simultaneously striking the hostile person against which they are directed. Preferably the nozzles will be arranged to provide parallel streams embodying these limitations but in this specification the word "parallel" when used to describe such arrangements will be understood to include non-parallel nozzles and streams which embody the foregoing limitations.

Preferably the conduits and nozzles are of materials having electrical insulating properties. Interposed between the conduits and nozzles and disposed for contacting the liquid flowing through the pistol are conductive elements such as tubes 19, 21 adapted to convey an electric charge to the liquid as it flows thereby.

Except for elements 19, 21 and the electrical connections to be described and possibly the trigger 22 and the springs 28, all of the elements of the pistol 10 per se are preferably of non-conductive, non-corrosive materials, for reasons of safety and for the prevention of short circuits. In any event, the liquid sources and elements 19, 21 are insulated from each other and from the external portions of the pistol 10.

Connected to tube elements 19, 21 and extending therefrom through the body of the pistol are wires 42, 44 adapted for conveying electricity to the tubes 19, 21 and hence for energizing the liquids flowing therethrough. Wires 42, 44 extend through the handle 56 of the pistol together with wires 40 in the form of a cable 39 and are adapted for connection to a power source generally designated 46.

The power source 46 is preferably portable and adapted to be carried by the operator of the apparatus (not shown). The power source 46 includes wires 40, 41 adapted for connection to a source of either an AC or DC current, preferably the latter and preferably a battery 48. The circuit diagram for the preferred embodiment of the invention is shown in FIG. 5 and includes induction coil 50 for stepping up the voltage in the secondary circuit, represented by the wires 42, 44, from that in the primary circuit, represented by the wires 40, 41. To permit operation of the coil in the DC current provided in the FIG. 5 embodiment, an iron core 51 is provided in the coil 50 to periodically interrupt the primary circuit, which is normally completed through the armature 52, by attract-

ing the armature 52 as in FIG. 7 away from its contact. Condenser means 54 are provided in the primary circuit between the armature 52 and wire 40 to prevent sparking and undue wear as the armature is actuated. A switch 38 is also provided in the primary circuit for completing and disconnecting the circuit. Preferably this switch 38 is located in the handle 56 of the apparatus 10, wires 40 extending from the power source 46 in cable 39 to the switch 38, and is adapted for completing the primary circuit as the trigger 22 is actuated to open the valves 31, 32. Preferably the coil 50 may be adjusted, via selector 49 on an accessible portion of the power source 46, to vary the voltage in the secondary circuit.

Alternative arrangements of the circuits are shown in FIGS. 6, 8 and 9 in which the circuits are essentially the same as that in FIG. 5 except that in FIG. 8 an AC current is used permitting elimination of the core, armature and condenser. FIGS. 6 and 9 disclose embodiments in which but a single stream of liquid is energized in which case one end of the secondary circuits is grounded at 45 via wire 44. FIG. 6 otherwise is identical to the circuit in FIG. 8.

To convey an electric charge to a hostile individual, the trigger 22 is actuated to open valves 31, 32 and to close the switch 38 completing the primary electrical circuit. High voltage electricity, which may be varied by means of selector 49, is then transmitted via tubes 19, 21 to the streams of liquid flowing therethrough, preferably each stream having simultaneously an opposite electrical charge. The streams are then directed at the hostile individual whom it is desired to deter provided only that the person be sufficiently close to the apparatus 10, that the liquid streams remain unbroken until contact with the person. Upon contact of the oppositely charged streams with the individual, the secondary circuit is completed through the individual via the oppositely charged streams extending from elements 19, 21 causing at least some discomfort. If but a single stream is energized, proper grounding of the hostile person may be assured to complete the circuit extending from element 19 via the stream to the person by directing sufficient liquid to assure good contact between the person and ground the other end of the circuit being to ground 45 as shown in FIG. 6.

By means of this method and apparatus, therefore, it is possible to provide for deterrence of hostile persons electrically without the necessity of dangerous physical proximity.

Other embodiments within the following claims will occur to those skilled in the art.

What is claimed is:

1. The method of deterring a hostile person by electrical means which comprises the steps of:
providing at least one unbroken and unconfined ballistic stream of conductive liquid;
electrically energizing said stream; and
directing said stream at said person from a point remote therefrom.

2. The method claimed in claim 1 having as an additional step the grounding of said person by directing sufficient liquid at said person to assure contact between said person and ground.

3. The method of deterring a hostile person by electrical means which comprises the steps of:
providing a plurality of parallel, unbroken and unconfined ballistic streams of conductive liquid;
electrically energizing each of said streams; and
directing said streams at said person from a point remote therefrom.

4. The method claimed in claim 3 having as an additional step the grounding of said person by directing sufficient liquid at said person to assure contact between said person and ground.

5. The method of deterring a hostile person by electrical means which comprises the steps of:

providing a pair of parallel unbroken and unconfined ballistic streams of conductive liquid;
electrically energizing each of said streams simultaneously with a charge of opposite sign from that of the other of said streams; and
directing each of said streams simultaneously at said person from a point remote therefrom.

6. An electrical anti-personnel device comprising:
at least one source of pressurized conductive liquid;
nozzle means for directing said liquid in a stream at remote hostile personnel;

conduit means between said nozzle means and said source for conveying said liquid to said nozzle means; conductive means positioned in said device for contacting said liquid; and

electrical circuit means connected to said conductive means for conveying an electrical charge from a source of electrical power to said conductive means thereby to energize said liquid in contact with said conductive means.

7. An anti-personnel device comprising:

a plurality of separate sources of pressurized conductive liquid;

separate nozzle means, disposed in parallel relation to each other, one for each of said sources, for directing said liquid therefrom in streams at remote hostile personnel;

separate conduit means between each of said nozzle means and each of said sources for conveying said liquid from each of said sources to said nozzle means;

separate conductive means positioned in said device for contacting said liquid from each of said sources; and

electrical circuit means connected to said conductive means for conveying an electrical charge from a source of electrical power to said conductive means thereby to energize said liquid in contact with said conductive means.

8. The anti-personnel device claimed in claim 7 wherein said plurality of sources of liquid comprises a pair of sources.

9. The anti-personnel device claimed in claim 8 wherein valve means are interposed between each of said conduit means and said sources of liquid and wherein actuating means, adapted for manual actuation to open and close said valve means, are connected to said valve means.

10. The anti-personnel device claimed in claim 9 wherein said device includes switch means adapted for connection to and for operating said source of electric power, said switch means also being adapted for actuation by said actuating means to operate said source of electric power and thus to energize said liquid from each of said sources thereof when said actuating means is actuated to open said valve means.

11. An anti-personnel device comprising:

a pair of separate sources of pressurized conductive liquid;

a plurality of separate nozzle means disposed in parallel relationship to each other, one for each of said sources, for directing said liquid therefrom in streams at remote hostile personnel;

separate conduit means between each of said nozzle means and each of said sources for conveying said liquid from each of said sources to said nozzle means; valve means interposed between each of said conduits and said conductive liquid sources;

separate conductive means positioned in said device for contacting said liquid from each of said sources, said conductive means connected to opposite poles of a source of electric power, thereby to simultaneously energize said liquid from each source thereof with a charge of opposite sign from that of the liquid from the other source thereof;

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switch means adapted for connection to said source of electric power, said switch means when closed being adapted for operating said source of electric power thereby to energize said conductive means and said liquid; and

manually operable actuating means connected to said valve means and adapted to actuate said switch means, said actuating means being adapted selectively to simultaneously open said valve means and close said switch means and to simultaneously close said valve means and open said switch means, whereby said device may be selectively operated to discharge

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a pair of energized liquid streams of opposite charge at said hostile person.

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