Aug. 11, 1970 E. N. BEAUCHAMP 3,523,645

INSECT REPELLANT DEVICE

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Fig. 1.

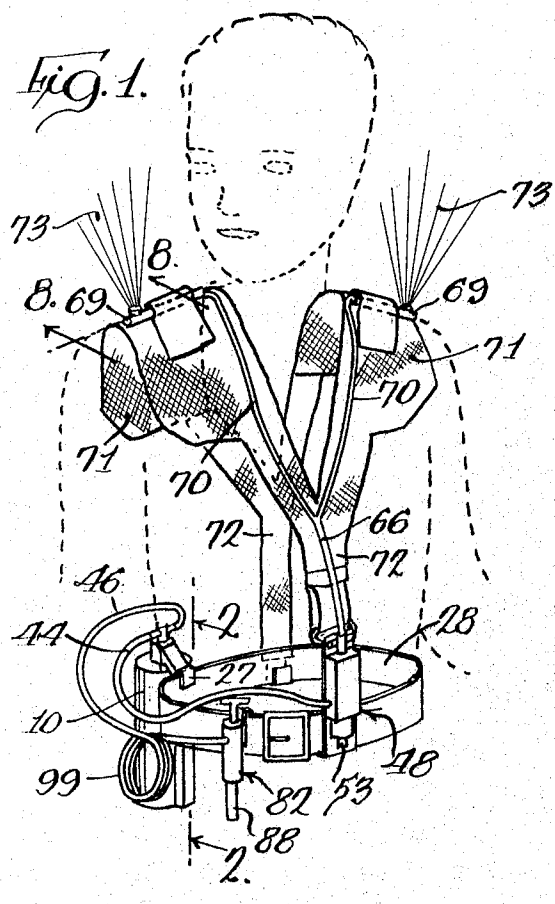


Fig. 2.

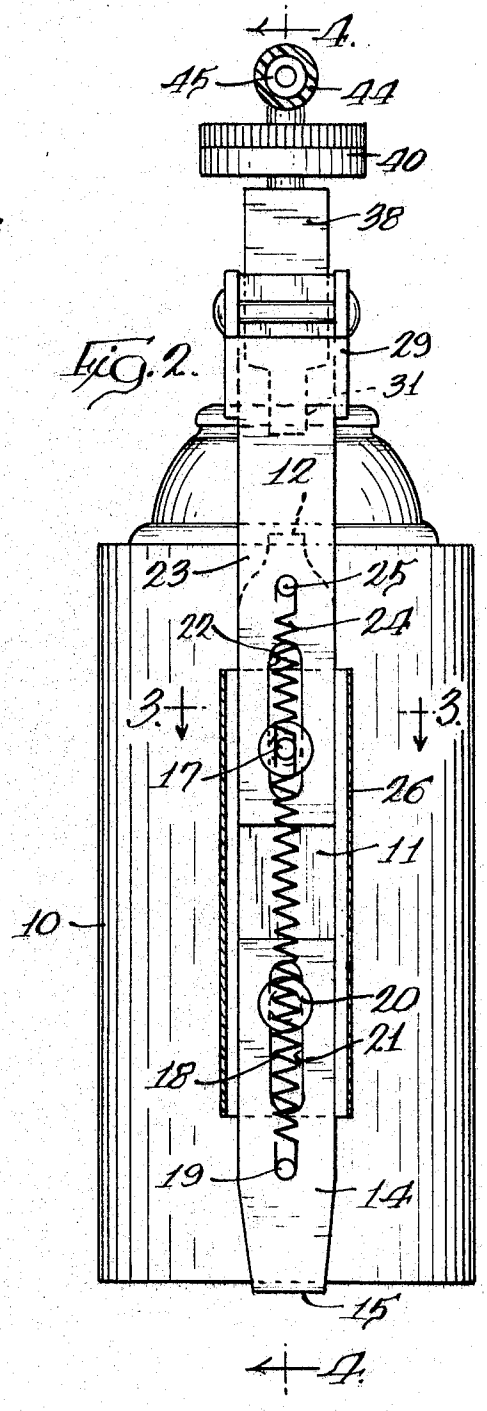
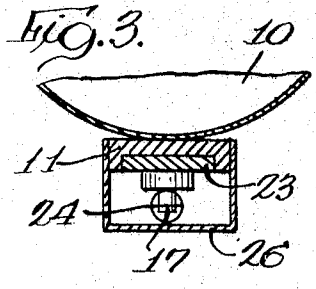


Fig. 3.

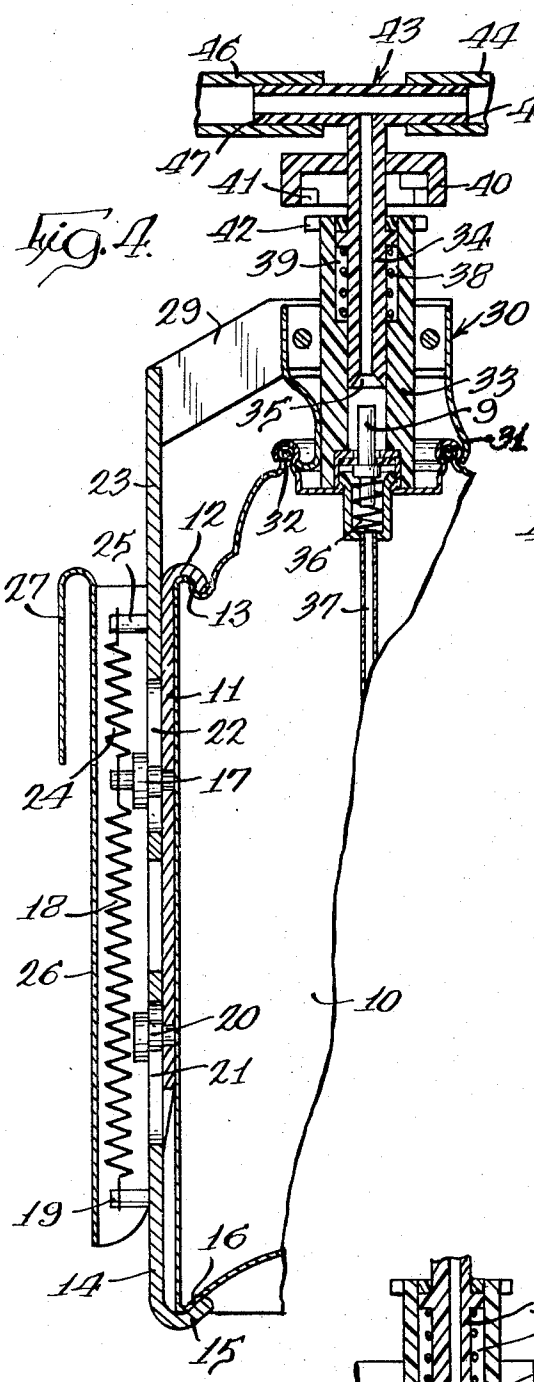


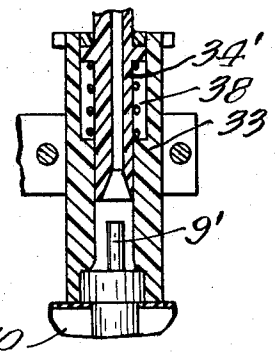
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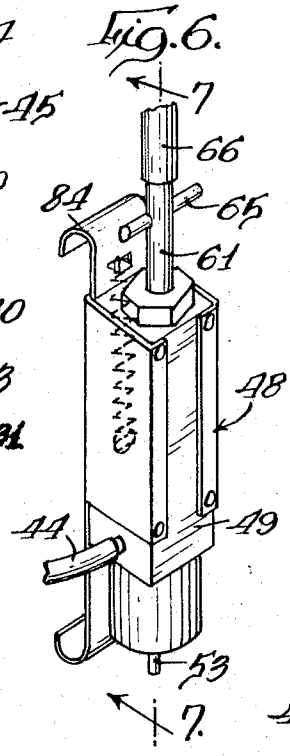
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INSECT REPELLANT DEVICE

Filed Sept. 23, 1968 3 Sheets-Sheet 2







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INSECT REPELLANT DEVICE

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Fig. 8.

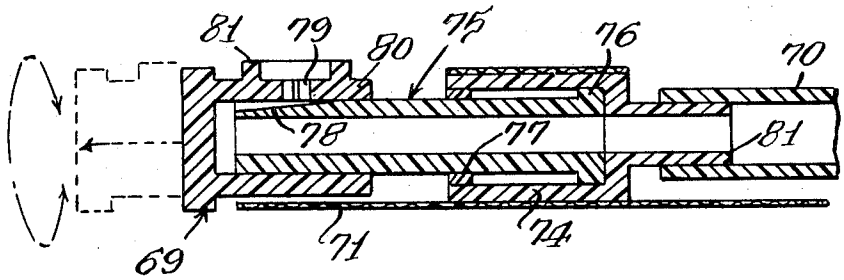


Fig. 10.

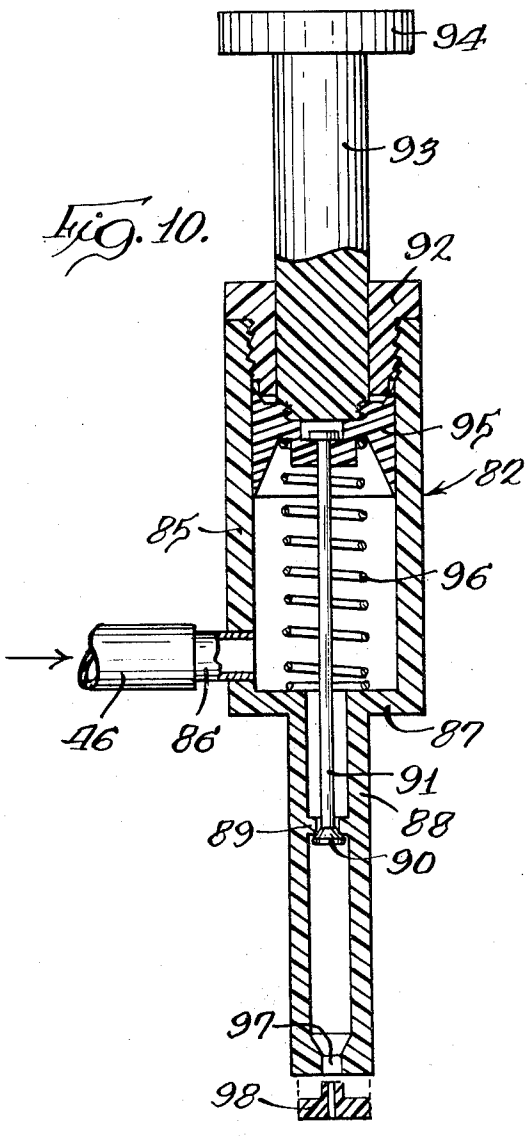
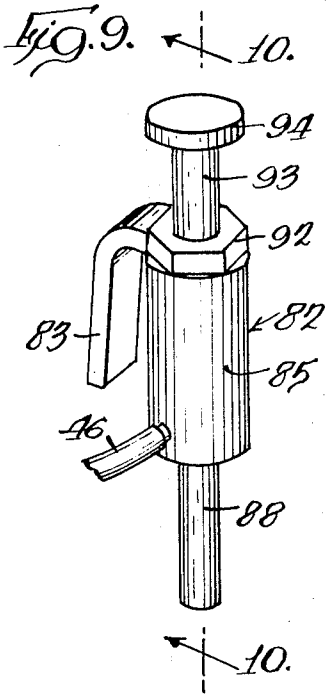


Fig. 9.



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3,523,645

INSECT REPELLANT DEVICE

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Int. Cl. B05b 9/08
U.S. Cl. 239—154 10 Claims

ABSTRACT OF THE DISCLOSURE

Means for dispensing an aerosol, such as an insect repellant, from an aerosol bomb at a point remote therefrom comprising a body harness including a belt adapted to be engaged about the body of a wearer, and a spring-loaded size-adjustable bomb holder clamp means anchored to said belt and to dispense therefrom said insect repellant through manually operable pump means anchored to said belt and leading to either a hand-held jet on an elongated conduit, or to jets mounted on shoulder pieces of said body harness, or both.

Means for dispensing an aerosol from an aerosol bomb at a point remote therefrom comprising a body harness including a belt adapted to be engaged about the body of a wearer, spring-loaded bomb holder adapter clamp means anchored to said belt and adapted to engage bombs of different size, an aerosol bomb including a spring pressed dispensing valve engaged thereby, said adapter including a housing embracing spring loaded detent means disposed above said dispensing valve and adapted to cause said valve to be selectively disposed in opened and closed position, an inlet conduit leading from said housing to a cylinder of a manually operable pump means anchored to the belt of said wearer, and an outlet conduit leading from said pump whereby to discharge under the influence of said pump aerosol discharged thereto from said bomb.

More particularly, the present invention relates to a convenient, effective way of keeping mosquitos and other biting and bothersome insects from a person without touching or holding a can of pressurized insect repellant, i.e., an aerosol bomb, in their hands, especially fishermen, woodsmen or any person engaged in work.

The invention is particularly adapted for use with any pressurized can of spray insect repellant commercially available that can be used on the skin of the person regardless of the size of the can. As is well known, an aerosol is a system of collodial particles dispersed in a gas, smoke or fog, i.e. a liquid substance sealed in a metal container under pressure with an inert gas and released through a push button or nozzle. The metal container or bomb sprays the insect repellant, insecticide, disinfectant or the like when its gas pressure is released by manual pressure or tilting of the spray nozzle in well known manner.

It is an object of the present invention to provide a harness including a belt which fits about the body of a wearer in which an aerosol bomb may be engaged and the aerosol dispersed therefrom under an increased velocity at a remote point such as at the shoulders of the wearer so that the insect repellant may be sprayed about the area of the head of the wearer. In the alternative, or at the same time, a similar valve or pump may be suspended from the belt of the aforesaid harness and insect repellant propelled therefrom at increased velocity through an elongated conduit at points of the wearer such as feet, ankles and the like remote points.

I have in general found that the pressure of aerosol bombs commercially available while propelling a disseminated spray to a reasonable distance are not adequate for the purposes hereinabove mentioned and to that end

I first conduct the spray from the aerosol bomb to a manually operated plunger type booster valve or pump from which the aerosol may then be propelled at increased velocity to the desired points or areas.

Other objects and advantages of the present invention, its details of construction, arrangement of parts and economies thereof will be apparent from the following specification and accompanying drawings, wherein:

FIG. 1 diagrammatically illustrates harness about the body of a wearer illustrating my present invention.

FIG. 2 is a side elevational view with parts in section of an aerosol bomb engaged by a size adjustable adapter therefor.

FIG. 3 is a sectional detail on line 3—3 of FIG. 4.

FIG. 4 is a fragmentary vertical section of an aerosol bomb engaged by the variable size adapter and illustrating details of means for adapting the contents thereof to one or more booster valves or pumps as they will be hereinafter termed.

FIG. 5 is a modified detail of the top of an aerosol bomb and means for releasing the contents thereof.

FIG. 6 is a perspective view of one of the pumps of the present invention.

FIG. 7 is a section on line 7—7 of FIG. 6 in relative enlargement.

FIG. 8 is a longitudinal sectional view of one of the shoulder nozzles illustrated in FIG. 1.

FIG. 9 is a perspective view of a modified form of pump.

FIG. 10 is an enlarged vertical section taken on the line 10—10 of FIG. 9.

Referring to the drawings, the adjustable size holder for the aerosol bomb **10** comprises an elongated flat plate **11** terminating at its upper end in hook **12** which is engaged about the shouldered portion **13** of the bomb **10**. There are two members slidably engaged thereto, one being the lower member **14** terminating in the hook **15** which goes around the bottom corner or lip **16** of the bomb **10**. A stud **17** is engaged to the plate **11** adjacent the upper portion thereof and a coil spring **18** extends between the stud **17** and the lower stud **19** on the slidable member **14**. The slidable member **14** is further retained in slidable engagement with the fixed plate member **11** by means of the stud **20** and slot **21** or in any other suitable manner.

The stud **17** also holds in slidable manner, through the slot **22**, the upper slidable member **23**, there being a further spring **24** between the stud **17** and the stud **25**.

The assembly of the fixed member **11** and the slidable members **23** and **14**, and the springs **18** and **24** are suitably enclosed in a U-shaped or channel-like casing **26** as shown in FIG. 3 as a protective casing. At the upper end of the casing **26** there is provided a hook member **27** which is adapted to be engaged about the belt **28** of the harness about the body of the wearer shown in dotted lines in FIG. 1.

At the upper end of the slidable member **23** there is an inclined arm **29** which may be integral therewith, and is attached to the hood assembly generally indicated as **30** which fits over the nozzle **9** of the aerosol bomb **10**. The assembly **30** has an annular hook portion **31** which seats beneath the upper rim of the aerosol bomb can portion **32** and forms a locked assembly with the aid of the springs **18** and **24**. In this manner and particularly in view of the slidability of the parts **23** and **14** and under the influence of the springs **18** and **24**, the adapter may engage, within reason, aerosol bombs of varying sizes and capacity.

When the adapter is then clamped onto the aerosol bomb, its nozzle or valve **9** may be actuated so as to release the contents of the bomb and in the present in-

stance a part of the assembly **30** comprises the sleeve **33** which seats within the annular well defined by the bomb portion **32** to embrace the nozzle **9**. Disposed within this sleeve **33** there is a slidable tube **34** which has a conical bottom portion **35** which is adapted to tightly seat over and embrace the nozzle **9** when the tube **34** is pressed downwardly over it and against the conventional spring **36** of the aerosol bomb nozzle leading to the tube contents in tube **37**. The tube **34** is normally under the influence of the spring **38** disposed in the well **39** and which tends to normally urge the tube **34** upwardly out of contact with the aerosol bomb nozzle **9**.

A cap **40** is secured to the tube **34** and normally by turning it 90° its bayonet slot or thread component **41** may be caused to engage with the flange or thread components **42** on the member **33** so as to cause aerosol from the can **10** to be delivered upwardly through tube **37**, nozzle **9** and tube **34** outwardly to the T generally indicated as **43**. While the T is shown in FIG. 5, in the alternative it will be understood that when a single bomb as hereinafter explained is employed it may be in the form of an L, but as indicated herein desirably two pumps can be attached to the belt **28** of the wearer and in such case a conduit **44** is attached to the branch **45** and a conduit **46** is attached to the branch **47**. Even though a T may be employed, if a single pump is desired to be attached to the belt **28**, one of the branches **47** or **45** can be plugged up, in a readily understood manner.

The modification in FIG. 5 is similar to the arrangement shown in FIG. 4, except that it may be employed with an aerosol bomb nozzle **9'** in which event the tube **34** is here employed as a tube **34'** with its aperture eccentric so that when the tube **34'** is brought down by means of the knob **40** the nozzle **9'** may be pressed to one side instead of pressed down against the spring **36** and the contents permitted to be ejected.

As above indicated, the T **43** leads in at least one direction for remote control and for the present one path therefrom will be considered, namely the branch **45** to which there is connected the conduit **44**, which leads to the pump generally indicated as **48**. This pump comprises an elongated chamber **49** which is closed at its bottom **50** except for an opening **51** providing a seat for the head **52** of the poppet valve **53** urged closed by the spring **54** acting between the head **52** and the transverse disc **55**. Fixed to the apertured disc **55** at one end is the valve rod **56** having a head **57** which seats against the annular seat **58** disposed between the vertically slidable tube **59**. The upper end of chamber **48** is closed by the plug member **60**. Slidably disposed within the plug member **60** is the tube **61** which as previously indicated carries the valve seat **58** intermediate its length and at its lower end has secured thereto the plunger **62** which tightly fits within the chamber **49** of pump **48** and preferably has a conical shaped bottom wherein there is seated one end of spring **63**, the other end of the said spring being seated against the disc **55** previously referred to.

When the contents of the aerosol bomb are received into chamber **49** of pump **48** through the intermediaries previously explained and the conduit **44** leading to inlet **64**, the aerosol may become partially condensed by discharge of the air thereof so that there is a concentration of liquid within the chamber **49**. By manually forcing down the tube **61** by the handholds **65**, **65** the aerosol and/or liquid within chamber **49** is caused to elevate by compression thereof through the valve head **62**. This same action presses spring **63** and unseats valve head **57** from its seat **58** permitting liquid to pass therethrough and outwardly into the conduit **66** and branch conduits **70** leading to shoulder nozzles generally indicated as **69**, **69**. These shoulder nozzles **69** are secured to the shoulder pads **71** of the body harness and connected to the belt **28** through the portions **72**, **72**.

Although action of the pump by manipulation of the hand-holds **65** causes sprays **73**, **73** to be ejected adjacent the head of the wearer, in the event that it is desired to obtain a small portion of the liquid for rubbing on the hands and face and other parts of the body, one may merely manipulate the poppet valve **53** which will release some of the liquid or aerosol contents from the pump **48**.

FIG. 8 shows one of the nozzles **69** attached to the shoulder pads **71** in a fixed manner. That is to say, the component **74** is fixed to the shoulder pad **71** and has disposed therein the slidable tube **75** which is locked at its rear end **76** to the annular shoulder **77** to limit the movement of the tube **75** in the component **74**. The opposed end of the tube **75** is tapered as at **78** for cooperation with the orifice of jet **79** disposed in slidable and rotatable member **80**. Thus, liquid leading from the branch conduit **70** connected at **81** to the assembly **69** of the shoulder pad **71** can be adjusted in several ways. First, it can be adjusted the desired distance from the head of the wearer by sliding the tube within the sleeve component **74** to the limits of the components **76**, **77**. Secondly, the velocity of the stream **72** emanating from the jet **79** may be adjusted by the longitudinal movement of the member **80** on the member **75** permitting greater or lesser flow from the hollow of the member **75** around the tapered portion **78** and outwardly through the jet **79**. Again, another adjustment may be made for directional purposes by rotating the member **80** about the sleeve **75**.

In order to prevent an accumulation of aerosol liquid after it leaves the jet **79** on release of the plunger, I provide a collar **81** embracing the jet **79**. Another means of absorbing any such overflow is that the shoulder pad **71** is of absorbent fabric.

As previously indicated, a second or alternative pump may be employed and this is generally indicated as **82** shown in FIGS. 9 and 10. This has a hook **83** similar to the hook **84** of the device in FIG. 6 for engagement to the belt **28** or some other suitable portion of the harness, for example an upright portion thereof **72**. The valve or pump of FIGS. 9 and 10 will be referred to as an auxiliary valve or pump and comprises a chamber portion **85** with a lateral lead-in **86** to which there may be connected a conduit **46** shown in FIG. 4. This leads the aerosol and/or liquid into the chamber **85**. The bottom **87** of chamber **85** opens to a tube **88** which has medially disposed therein the transverse valve seat **89** which seats the valve **90** on movable stem **91**. The upper end of chamber **85** is closed by the member **92** through which extends the plunger stem **93** having a head **94** by which it may be manually manipulated. To the lower end of the stem **93** there is connected the valve head **95** retained under the compression of spring **96** in chamber **85**. Thus, by manually pressing the valve or pump head **94** against the spring **96** aerosol and/or liquid is compressed in chamber **85** and directed outwardly through valve seat **89** and outwardly through the orifice **97**. The latter may be fitted with jets **98** of various size. The conduit **46** leading to the pump **82** may be elongated and coiled up as shown in FIG. 1 so that one may grasp the valve **82** manually and by manipulating its stem **93** by the head **94** can project insect repellant to the legs, ankles, etc. of the body of the wearer.

It should also be noted that due to the bevel or taper **78** of jet **79**, the jet **79** can be of fairly large orifice size and for such reason it can be easily cleaned by disengaging member **80** from tube **75** and then merely putting it back in place.

It will be understood that in the alternative, it is not essential that the auxiliary pump **82** contain insect repellant but on the other hand it may be employed with insecticides or plant sprays and the like aerosols.

Although I have shown and described the preferred embodiments of my invention, it will be understood by those skilled in the art that changes may be made in the details thereof without departing from its scope as comprehended by the following claims.

I claim:

1. Means for dispensing an aerosol from an aerosol bomb at a point remote therefrom comprising a body harness including a belt adapted to be engaged about the body of a wearer, spring-loaded bomb holder adapter clamp means anchored to said belt and adapted to engage bombs of different size, an aerosol bomb, including a spring pressed dispensing valve, engaged by said clamp means, said adapter including a housing embracing spring loaded detent tube means disposed above said dispensing valve and adapted to cause said valve to be selectively disposed in opened and closed position, an inlet conduit leading from the tube means of said housing to a cylinder of a manually operable pump means anchored to the belt of said wearer, and an outlet conduit leading from said pump whereby to discharge under the influence of said pump aerosol discharged thereto from said bomb.

2. The device of claim 1 wherein the outlet conduit from said pump leads to jets secured on opposed shoulder pads comprising portions of said body harness whereby aerosol can be dispensed adjacent the head of a wearer.

3. The device of claim 2 wherein said shoulder pads are composed of absorbent material.

4. The device of claim 2 wherein the jet orifices are embraced by an annular collar to inhibit dripping.

5. The device of claim 2 wherein said jets are comprised of bodies longitudinally adjustable for size.

6. The device of claim 2 wherein said jets are comprised of bodies adjustable for orifice opening size.

7. The device of claim 2 wherein said jets are comprised of bodies having rotatable components for controlling the direction of the streams emitted therefrom.

8. The device of claim 1 wherein the chamber of said pump includes poppet-valve means for discharging aerosol therefrom without pumping influence.

9. The device of claim 1 where said detent tube means terminates outwardly in a pair of tubes, and a pair of manually operable pumps engaged to said belt each having an inlet branch connected to one of said tubes.

10. The device of claim 9 wherein one of said pumps has its outlet connected to an elongated flexible tube terminating in a spray nozzle, and the other pump has its outlet connected to size and direction adjustable jets mounted on shoulder pad portions of said body harness.

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U.S. Cl. X.R.

239—337; 222—175