**ABSTRACT**

An apparatus for a blood-hit effect includes a pressurized reservoir, a valve, and a hose having a first end portion coupled to the reservoir through the valve. The hose is configured to store an ejection fluid and the hose includes a second end portion. A membrane is configured to cover a second end portion of the hose. The membrane is disposed at a location on a subject where an effect is to occur. The membrane is configured to burst in accordance with an instantaneous release of pressure from the valve to eject the ejection fluid through the membrane.
Fit vest or garment support nozzle on actor

102

Close solenoid

104

Pressurize vessel

106

Set nozzle and hose on the actor

108

Fill hose with eject material

110

Prepare wardrobe item for ejection

112

Activate solenoid to release blood

114

Repeat for other solenoids

116

FIG. 6
PNEUMATIC BLOOD-HIT EFFECT

RELATED APPLICATION INFORMATION

[0001] This application claims priority to Provisional Application No. 60/845,701 filed on Sep. 19, 2006 and incorporated herein by reference.

TECHNICAL FIELD

[0002] The present invention generally relates to special effects technology and, more particularly, to a system and method where for a blood-hit effect without pyrotechnics.

BACKGROUND

[0003] Conventional techniques for achieving a bloody bullet hit on an actor include using what the industry refers to as a “SQUIB”. The squib, in reality, is an electrically ignited detonator that an actor wears on their person. The squib is backed by a steel plate to protect the actor from harm when the charge is detonated. On top of the detonator, a pre-manufactured plastic bag of stage blood is fastened. The whole setup is wire harnessed with a control cable connected to a pyrotechnic controller. The actor then places his costume over the blood bag/detonator/steel plate setup.

[0004] A state licensed pyrotechnic operator is required to activate the detonator from the controller and the detonators explosive powers will burst through the blood bag and rupture the pre-scored/distressed area of the costume where this effect will reveal a simulation of a bullet hole with blood being ejected.

[0005] The conventional blood-hit effects may be dangerous, and require bulky components, such as a steel plate. This limits the scenarios in which the effect can be used since the plate and the equipment is cumbersome. In addition, a pyrotechnic specialist is needed by law in many jurisdictions to activate the charge. This adds to the complexity of usage and the overall expense.

[0006] Therefore, a need exists for a blood-hit effect that overcomes these disadvantages.

SUMMARY

[0007] A blood-hit effect system includes a pressure vessel and a solenoid configured to fit on a person. A hose connects to the solenoid and is filled with a fluid. A radio control device activates the solenoid to open to release air from the pressure vessel such that the fluid in the line is ejected from a nozzle located on the body of the person to provide the effect of being shot at the location of the nozzle.

[0008] The nozzle may be located on the person at an arbitrary location. In one embodiment, a vest is provided with a plurality of predefined holes where the nozzle is installed. Multiple nozzles may be employed in communication with the same or different pressure vessels and solenoids. The effect hits may be timed to simulate multiple shots at different locations or at different times.

[0009] An apparatus for a blood-hit effect includes a pressure vessel, a valve, and a hose having a first end portion coupled to the reservoir through the valve. The hose is configured to store an ejection fluid and the hose includes a second end portion. A membrane is configured to cover a second end portion of the hose. The membrane is disposed at a location on a subject where an effect is to occur. The membrane is configured to burst in accordance with an instantaneous release of pressure from the valve to eject the ejection fluid through the membrane.

[0010] An apparatus for a blood-hit effect includes a pressurized reservoir having a controlled valve for releasing pressure in accordance with a control event, a hose having a first end portion coupled to the reservoir through the valve, the hose configured to store an ejection fluid, the hose having a second end portion; and a fitting connected to the second end portion of the hose and having an opening in fluid communication with the hose; and a membrane configured to cover the opening in the fitting, the membrane configured to burst in accordance with an instantaneous release of pressure from the valve to eject the ejection fluid through the membrane in accordance with the control event.

[0011] In alternate embodiments, the apparatus is mounted on the subject where an effect is to occur. A garment may be mounted on the subject where an effect is to occur and configured with at least one hole, the at least one hole being dimensioned and configured to receive a fitting on which the membrane is connected, wherein the membrane is disposed at least flush with a surface of the garment. The at least one hole may include a plurality of holes formed at a plurality of locations on the garment. The garment may include a vest which fits under a wardrobe item. The second end portion may include a fitting and an open ended cap such that the membrane is secured between the fitting and the cap. The cap preferably includes an inner circumference having a knife edge for contacting the membrane. The fitting may include a flange. The apparatus further includes a pyrotechnic power source for controlling the valve and the valve includes a normally closed solenoid valve. The valve may be controlled remotely. The membrane preferably includes a polymeric material stretched across a seal ring. The ejection fluid may include at least one of a colored fluid and particulate matter.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] The advantages, nature and various additional features of the invention will appear more fully upon consideration of the illustrative embodiments now to be described in detail in connection with accompanying drawings wherein:

[0013] FIG. 1 is a schematic diagram of an exemplary system showing a back side of a vest having two pressure vessels, two solenoids, batteries and a radio controlled device for opening the solenoids to release pressure into a material-filled hose in accordance with one embodiment;

[0014] FIG. 2 is a schematic diagram of an exemplary system showing a front side of the vest of FIG. 1 having predefined hole locations where the effect may be desired in accordance with the embodiment of FIG. 1;

[0015] FIG. 3 is a diagram showing an alternate enclosure to permit pressure build up before yielding in accordance with an illustrative embodiment;

[0016] FIG. 4 is a side view of an exit nozzle in accordance with one illustrative embodiment;

[0017] FIG. 5 is an exploded view showing the use of a check valve in the hose/pressure line in accordance with one illustrative embodiment;

[0018] FIG. 6 is a flow diagram showing operation of the blood-hit effect in accordance with one illustrative embodiment;
FIG. 7 is an exploded view showing the use of a membrane and ring in accordance with one illustrative embodiment;

FIG. 8 is a perspective view of a fitting and cap assembly for capturing a membrane therebetween in accordance with one embodiment;

FIG. 9 is a cross-sectional view showing the cap and membrane of FIG. 8; and

FIG. 10 is a cross-sectional view showing the fitting with a direction changing feature for redirecting fluid.

It should be understood that the drawings are for purposes of illustrating the concepts of the invention and are not necessarily the only possible configuration for illustrating the invention.

DETAILED DESCRIPTION

The present invention provides systems and methods for pneumatic blood-hit effects. Advantageously, a non-pyrotechnic detonator supported effect is provided, which overcomes the disadvantages of conventional effects. In accordance with one embodiment, the blood-hit effect incorporates principles of compressed air to deliver high velocity gas into a chamber capable of exploding. The chamber includes an effect liquid, which may be theatrical stage blood or any other matter which is needed to exit a terminating output nozzle so as to burst out the loaded substance. Such matter may include particulate matter, which would have been unacceptable and dangerous while using a pyrotechnic charge. The blood-hit in accordance with the present principles achieves an alternative to the standardized technique as previously described using non-pyrotechnic devices and explosive perishables such as detonators.

It is to be understood that the present invention is described in terms of a blood-hit effect; however, the present invention is much broader and may include any effect carried out on a person. For example, another effect may include an oozing wound or blemish, etc. In addition, the present invention is applicable to any method where a bursting action is needed including replacing any application where pyrotechnics were previously employed.

The present description illustrates the principles of the present invention. It will thus be appreciated that those skilled in the art will be able to devise various arrangements that, although not explicitly described or shown herein, embody the principles of the invention and are included within its spirit and scope.

All examples and conditional language recited herein are intended for pedagogical purposes to aid the reader in understanding the principles of the invention and the concepts contributed by the inventor to furthering the art, and are to be construed as being without limitation to such specifically recited examples and conditions.

Moreover, all statements herein reciting principles, aspects, and embodiments of the invention, as well as specific examples thereof are intended to encompass both structural and functional equivalents thereof. Additionally, it is intended that such equivalents include both currently known equivalents as well as equivalents developed in the future, i.e., any elements developed that perform the same function, regardless of structure.

The functions of the various elements shown in the figures may be provided through the use of dedicated hardware as well as hardware capable of executing software in association with appropriate software. When provided by a processor, the functions may be provided by a single dedicated processor, by a single shared processor, or by a plurality of individual processors, some of which may be shared. Moreover, explicit use of the term “processor” or “controller” should not be construed to refer exclusively to hardware capable of executing software, and may implicitly include, without limitation, digital signal processor (“DSP”) hardware, read-only memory (“ROM”) for storing software, random access memory (“RAM”), and non-volatile storage.

Other hardware, conventional and/or custom, may also be included. Their function may be carried out through the operation of program logic, through dedicated logic, through the interaction of program control and dedicated logic, or even manually, the particular technique being selectable by the implementer as more specifically understood from the context.

In the disclosure hereof, any element expressed as a means for performing a specified function is intended to encompass any way of performing that function including, for example, a) a combination of circuit elements that performs that function or b) software in any form, including, therefore, firmware, microcode or the like, combined with appropriate circuitry for executing that software to perform the function. The invention as defined resides in the fact that the functionalities provided by the various recited means are combined and brought together in the manner which the disclosure calls for. It is thus regarded that any means that can provide those functionalities are equivalent to those shown herein.

Referring now in specific detail to the drawings in which like reference numerals identify similar or identical elements throughout the several views, and initially to FIGS. 1 and 2, a system 10 for a blood-hit in accordance with one embodiment is illustratively shown. The illustrative system includes a garment such as, e.g., a body vest 12 in two pieces 14 and 16. The body vest 12 may be constructed of a foam material or other soft and flexible material. In one embodiment, vest 12 includes, e.g., 1/4" and/or 1/8" closed cell foam incorporating hook and loop fasteners 18 (or other fasteners) to strap or sandwich an actor/wearer with the vest 12 for a snug fit. In one example, one piece 14 of the vest material is positioned on the front (chest & belly) and one piece 16 of the material is placed on the actor/wearer’s back. Fasteners 18 can be employed to secure the pieces 14 and 16 of material, e.g., at the locations of broadside from waist area to the area under the armpit on both sides left and right. Fasteners 18 may also be used to secure the two pieces 14 and 16 over the left and right shoulders. Straps 20 may be stretchable or non-stretchable as needed and connect to fasteners 18.

It should be understood that the device to may be employed without the vest 12. A piece of foam or other material may be secured by tape of the like to an actor and the hose and the fitting as will be described below may be stowed in a concealed way somewhere on the actor’s body. If the vest 12 is employed, the end fitting 46 and hose can easily be stowed and concealed in or under the vest 12.

The front piece 14 includes an array of bullet hole locations 22 preset to achieve a desired effect of a bullet hit on the actor’s body wearing the vest 12. The end of a fitting 46 is preferably flush or underflush with the vest material to help conceal the fitting 46 during a performance. It should be understood that the pattern of holes may be modified or placed on any body part of an actor. In this example, the back
piece 16 secures multiple components including a delivery system 24 employed to achieve the desired effect from the front piece 14. The vest 12 may be provided in different sizes, e.g., petite, small, med, large and extra large.

[0035] Delivery system 24 includes an ultra light weight pressure vessel 26 (two are illustratively shown) constructed to hold, e.g., about 100 psi. Vessel 26 may include a plastic material, such as polyvinyl. Vessel 26 is preferably a cylinder with about a 1" diameter having modified hose barb plugs 28 connected with ¼" npt female threads on a first end and a ¼" npt shorts nipple plugs 32 on the other end. The plugs 28 and 32 may create a seal that is secured using hose clamps 34 or equivalent devices. Plugs 28 are preferably fitted with an air intake valve 36 employed to charge the vessels 26 with air or gas. Intake air fill valve 36 may be of the kind used to inflate automobile and bicycle tires. Vessel(s) 26 may be configured in different orientations and may be of different sizes.

[0036] Modified hose barb plug 32 includes a short nipple fitted to the input side of a ¼" Normally Closed 12 Volt DC solenoid 40. A battery pack 52 or other power source is employed. It should be understood that other diameter fittings may be used and that the system 10 can also be adapted to operate with 110 Volt AC or other power source. However, use of AC power includes the use of a cable from the solenoid 40 to connect to a powered voltage line.

[0037] Fitted to the output side of the solenoid 40 is a fitting 42 (e.g., a ¼" npt PI (push-in) fixed elbow or straight fitting). "Push-in" connected to this fitting 42 is a hose 44, e.g., ¼" polyvinyl hose. The length of the hose 44 may be determined by the distance to the location of the desired effect hole or location on the body where the effect is needed. Fitted at the end of the hose 44 is fitting 46, which may include a modified ¼" npt PI (push-in, i.e., a spring loaded quick connect fitting) fixed elbow. Fitting 46 may be a threaded end of an elbow cut down by at least about 50%. This is done to minimize the protruding profile when fitted into the front part 14 of the vest 12. At the end of this modified open ended elbow or fitting 46, a piece of light gauge plastic shipping tape 48 or other polymeric material is adhered to the fitting 46 to create a leak-proof seal under normal atmospheric pressure. Tape 48 may be employed to be the burstable interface during operation of the system 10. Tape 48 may include plastic wrap, cellophane, transparent tape, rubber, etc. While tape 48 may be employed with adhesive other mechanical, chemical bonding or adhesive connections may be employed to secure the membrane or tape to the fitting 46.

[0038] It should be understood that the apparatus depicted in FIGS. 1 and 2 is preferably secured to a user or subject on, which the effect will be employed. A user preferably employs the effect on his/her person and the effect is activated during a film or television production, in an on-stage-production, reenactment or other event where a staged blood-hit or similar effect is needed.

[0039] In an alternate embodiment in FIG. 3, fitting 46 securely receives a plastic cup-like enclosure 50. Enclosure 50 may be glued or otherwise fixed in place. Enclosure 50 is open ended toward the pressure line 44 to receive high velocity fluid. Enclosure 50 is designed to burst when solenoid 40 releases pressurized fluid into the hose 44. Enclosure expands and then yields to provide a burst with fluid ejected. Enclosure 50 may be scored 53 to provide weak spots to ensure that the enclosure 50 bursts under pressure.

[0040] In another embodiment in FIG. 7, enclosure 50 may include a membrane 59 stretched, adhered or formed on a ring 67. The ring 67 can thread onto fitting 46 (or attach by other means). The membrane 59 can function similarly to the enclosure 50 and provide a pressure build up to permit a bursting effect in operation. The membrane 59 and ring 67 could provide an easy and repeatable attachment/detachment with the fitting to permit reliable operation of the device. The membrane 59 may be bonded, glued, mechanically connected (compression fitted or interference fitted), etc. to the ring. The ring 67 may be employed to secure fitting 46 to vest 12 as depicted in FIG. 7.

[0041] Referring to FIGS. 8 and 9, an alternate embodiment is shown for securing a membrane 159 in accordance with the present principles. Membrane 159 includes a polymeric material, rubber, plastic or the like. In one embodiment a polyethylene plastic is employed, in another embodiment, a rubber is employed. Membrane 159 may have a thickness of between about 0.25 mils to about 2 mils, the thickness of which is adjusted to provide a particular effect. For example, if the effect is to make blood splatter a thicker membrane 159 is desirable. If the blood or other fluid is to ooze, a thinner membrane 159 is desirable. A preferred thickness range for a blood hit is between about 1 to 1.5 mils. Membrane may also be scored to create a desired effect. Membrane 159 may be stretched and secured on a ring 160. Ring 160 may include an o-ring or other sealing device. In addition or alternately, one or more o-rings 167 may be employed on either side of the membrane 159 to provide a pressure seal against pneumatic pressure during the effect operation.

[0042] A fitting 162 includes a threaded portion 164 to receive a threaded portion 174 of a cap 168. Cap 168 includes an open end with an overhanging surface 170 that terminates in a knife edge 172 at its inner circumference. During assembly in preparation for the effect, membrane 159 is placed into cap as shown in FIG. 9. Cap 168 is threaded over fitting 162 to capture the membrane 159 and ring 160 between a surface 166 and an underside of the overhang 170 as shown in FIG. 9. When the membrane 159 experiences a suitable pressure, membrane 159 expands outward in the direction of arrow A. Expansion of the membrane 159 causes contact with knife edge 172 all around the inner circumference of the cap 168. This permits a circumferential yielding effect and permits an additional amount of fluid to exit the cap 168 from the fitting 162. In addition, by selecting the pressure and the thickness of the membrane 159, a predictable and repeatable effect can be achieved. The inner circumference of the cap may have other profiles including points which can yield the membrane sooner. These points may extend radially inward from the inner circumference or take other shapes.

[0043] Referring to FIG. 10, fitting 162 may be modified in a plurality of ways to provide directional or splattering effects. In one embodiment, a flat head screw 182 or other hardware that effects flow may be installed in fitting 162. A securing portion 180 may be connected or attached to fitting to secure the screw or hardware 182. During operation, as fluid is ejected, the fluid is directionally splattered in the direction of arrows "B". Alternatively, a cotton ball or other obstructions may be employed in the fitting to create splatter.
Referring again to FIG. 1, during operation, one or more solenoids are powered by a battery pack (or other power source). A recharge plug may be included to recharge the batteries. An in-line power switch may also be included to disconnect the batteries when not in use. A radio receiver receives a command from a remote operator or a transmitter (not shown) and signals the solenoid or solenoids to open, releasing pressure into the hose. Due to the pressure change, tape enclosure bursts open or off the fitting to create the blood-hit effect.

It should be understood that the activation of solenoids may be provided by wireless or wired means. For example, wired means may include a hand switch on the actuator carrying the blood-hit device. Switch connection may be activated by an on-stage switch, e.g., the actor steps on a contact that makes a connection with a contact on the actor’s shoe to activate the blood-hit device. It should also be understood that solenoids may be controlled and timed electronically using a processor chip or other computer-like device (on or off the subject with the effect) to synchronize the activation of blood-hit effects at different positions. The chip may be remote or on the blood-hit apparatus.

Radio receiver may be configured to set off multiple shots by controlling multiple solenoids, or a single solenoid which includes a mechanical switch (e.g., valves) to switch between hoses (to permit multiple shots to be produced).

Referring to FIG. 4, fitting may include a flange to permit better attachment to the vest. Flange further assists in reducing the amount of protrusion passed the vest. Other spacers and pads may also be employed as needed to ensure that the amount of protrusion is maintained to a desired amount. A membrane may be adhered to the open end of the fitting or otherwise secured to the fitting to resist fluid in the tube or hose until the burst effect is provided.

Referring to FIG. 5, a one-way check valve may be employed between the fitting from the solenoid and the hose. This prevents back flow and increases the reliability of the effect. Check valve may include a cracking pressure of e.g., 2 pounds.

Referring to FIG. 6, a method for employing the effect in accordance with present principles is illustratively depicted. In block 102, ensure subject (e.g., actor/talent) has a snug fit by pre-fitting into a correct sized one or two-piece vest. In block 104, one or more solenoids are set at a normally closed position. In block 106, using a compressor, e.g., fitted with an air hose with a tire valve chuck, provide pressure regulated to 100 psi, or charge the pressure vessel or vessels to an appropriate level. In block 108, guide poly vinyl hose from solenoid output to a location or locations of a desired blood effect by placing the end with the fitting outwardly from the body of the actor into the vest through one of the preset bullet hole locations. Preferably, the hose should be tucked inside between the front part of vest and the body of the actor. The modified elbow fitting with adhesive tape at the end of the poly vinyl hose should fit into any one of the preset bullet hole locations pushed in and flush with the front of the vest. Alternately, the exit end of the hose is preferably terminated with a membrane and cap.

In block 110, the poly vinyl hose is disconnected from the solenoid and carefully filled with blood (e.g., between about 5-15 milliliters) or other liquid or particulate matter. The hose is then reconnected to the solenoid. In block 112, a wardrobe item or costume to be worn over the vest is pre-cut, e.g., in the pattern of a plus sign (+) and then temporarily fastened together on the actor so that the costume is ready to be ruptured by placing the precut over the output nozzle.

In block 114, the system is commanded for the solenoid to open via electrical connection, releasing contents of stage blood fluid in the hose between solenoid and output nozzle. The force will rupture the precut wardrobe/costume and blood fluid will burst out with high velocity. The command is preferably activated by a wireless method, although a wired method may also be employed. For total wireless remote control, a 12 volt solenoid is preferred. A small 12 volt battery or an eight cell battery harness using AAA or AA batteries may be securely fastened to the back part of the vest alongside the pressure vessel. A 12 volt radio receiver switch in line between battery and solenoid is triggered by a radio remote transmitter (not shown).

In block 116, the procedure may be repeated as the equipment is re-usable. In addition, multiple effect shots may be run concurrently or in succession on a same person. While the vest is preferably, other garments, costumes or props may be employed with the blood-hit effect in accordance with the present principles.

Many advantages are provided by the present system over the standard methods for creating the blood-hit effect with the use of pyrotechnics. For example, a state licensed pyrotechnicians is not needed, and permission to use explosives and permits granted by the Fire Dept are also not needed. Department of Traffic (DOT) hazardous shipment or transport of explosives is not necessary. Alcohol, Tobacco and Firearms (ATF) agency permits for the permission to purchase and/or store ATF regulated detonators, is no longer needed. Permission to use hazardous materials of a pyrotechnic substance at a location of an agreed property owner is necessary. Additional liability coverage of crew and talent hired by the production company is not needed. Detonators, pyrotechnic controllers, cables, channel devices boxes, fire extinguishers etc. are no longer needed. In addition, the fear factor and risk of actors including production crew is greatly reduced, and no more hazards involved for scenes including fire or actors smoking cigarettes.

In addition, the actor remains relatively clean since the blood or other material is directed away from the vest and outside of the vest. It should be understood that similar embodiments may be employed for wall hits or other hits in accordance with the present principles.

It should also be understood that the present principles provide a great amount of flexibility in the type of effect provided. For example, the following may be adjusted: levels of pressurization stored in the air reservoir (up to e.g., 120 psi for safety reasons), choice of desired amount of liquids in delivery hoses creates differentiating mechanical output effects, a small cotton wad may be installed in the elbow fitting directly under the membrane prior to loading liquids in delivery hoses (to distribute the load), viscosity of liquid loaded into delivery hoses may be controlled, membrane thickness, length of delivery hose, wardrobe preparations etc.

Having described preferred embodiments for system and method for a pneumatic blood-hit effect (which are intended to be illustrative and not limiting), it is noted that
modifications and variations can be made by persons skilled in the art in light of the above teachings. It is therefore to be understood that changes may be made in the particular embodiments disclosed which are within the scope and spirit of the invention as outlined by the appended claims. Having thus described aspects of the invention, with the details and particularity required by the patent laws, what is claimed and desired protected by Letters Patent is set forth in the appended claims.

1. An apparatus for a blood-hit effect, comprising:
   a pressurized reservoir;
   a valve;
   a hose having a first end portion coupled to the reservoir
   through the valve, the hose configured to store an
   ejection fluid, the hose having a second end portion;
   and
   a membrane configured to cover a second end portion of
   the hose, the membrane being disposed at a location on
   a subject where an effect is to occur, the membrane
   configured to burst in accordance with an instantaneous
   release of pressure from the valve to eject the ejection
   fluid through the membrane.

2. The apparatus as recited in claim 1, wherein the
   apparatus is mounted on the subject where an effect is to occur.

3. The apparatus as recited in claim 1, further comprising
   a garment mounted on the subject where an effect is to occur
   and configured with at least one hole, the at least one hole
   being dimensioned and configured to receive a fitting on
   which the membrane is connected, wherein the membrane is
   disposed at least flush with a surface of the garment.

4. The apparatus as recited in claim 3, wherein the at least
   one hole includes a plurality of holes formed at a plurality
   of locations on the garment.

5. The apparatus as recited in claim 3, wherein the
   garment includes a vest which fits under a wardrobe item.

6. The apparatus as recited in claim 1, wherein the second
   end portion includes a fitting and an open ended cap such
   that the membrane is secured between the fitting and the cap.

7. The apparatus as recited in claim 6, wherein the cap
   includes an inner circumference having a knife edge for
   contacting the membrane.

8. The apparatus as recited in claim 1, wherein the fitting
   includes a flange.

9. The apparatus as recited in claim 1, further comprising
   an electrical power source of activate the valve and the valve
   includes a normally closed solenoid valve.

10. The apparatus as recited in claim 1, wherein the valve
    is controlled remotely.

11. The apparatus as recited in claim 1, wherein the
    membrane includes a polymeric material stretched across a
    seal ring.

12. The apparatus as recited in claim 1, wherein the
    ejection fluid includes at least one of a colored fluid and
    particulate matter.

13. An apparatus for a blood-hit effect, comprising:
    a pressurized reservoir having a controlled valve for
    releasing pressure in accordance with a control event;
    a hose having a first end portion coupled to the reservoir
    through the valve, the hose configured to store an
    ejection fluid, the hose having a second end portion;
    and
    a fitting connected to the second end portion of the hose
    and having an opening in fluid communication with the hose;
    and
    a membrane configured to cover the opening in the fitting,
    the membrane configured to burst in accordance with an
    instantaneous release of pressure from the valve to
    eject the ejection fluid through the membrane in accor-
    dance with the control event.

14. The apparatus as recited in claim 13, wherein the
    apparatus is mounted on a subject where an effect is to occur.

15. The apparatus as recited in claim 13, further comprising
    a garment mounted on the subject where an effect is to occur
    and configured with at least one hole, the at least one hole
    being dimensioned and configured to receive the fitting on
    which the membrane is connected, wherein the membrane
    is disposed at least flush with a surface of the garment.

16. The apparatus as recited in claim 15, wherein the at
    least one hole includes a plurality of holes formed at a
    plurality of locations on the garment.

17. The apparatus as recited in claim 15, wherein the
    garment includes a vest which fits under a wardrobe item.

18. The apparatus as recited in claim 13, further comprising
    an open ended cap configured to threadedly engage the
    fitting such that the membrane is secured between the fitting
    and the cap.

19. The apparatus as recited in claim 18, wherein the cap
    includes an inner circumference having a knife edge for
    contacting the membrane.

20. The apparatus as recited in claim 13, wherein the
    fitting includes a flange.

21. The apparatus as recited in claim 13, further comprising
    an electrical power source and the valve includes a
    normally closed solenoid valve.

22. The apparatus as recited in claim 13, wherein the
    valve is controlled remotely.

23. The apparatus as recited in claim 13, wherein the
    membrane includes a polymeric material stretched across a
    seal ring.

24. The apparatus as recited in claim 13, wherein the
    ejection fluid includes at least one of a colored fluid and
    particulate matter.

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