An assembly and method for time delay actuation of a spray canister is provided whereby said time delay for actuation is selected by a user.
SYSTEM AND METHOD FOR TIMER ACTUATION OF AEROSOL CANISTERS

BACKGROUND OF THE INVENTION

[0001] Since the introduction of aerosol spray dispensing system in the 1920s and 1930s there have been numerous attempts at improving the aerosol spray system. One area, which has shown an added need for improvement, is the actual actuation of the aerosol system. Typically a user uses a finger and presses down on an aerosol spray head such that the pressurized aerosol contents are released through an outlet nozzle. There are many situations where a person would rather not handle a particular aerosol spray canister based on the contents contained therein. Although there have developed numerous methods for actuating aerosol spray bottles, there exists a need for an assembly that can be interchangeably attached and reused to a variety of aerosol spray canisters that will provide a release of the pressurized aerosol contents at a predetermined desired time in the future. The present invention addresses this need by providing a system by which conventional aerosol spray canisters can be used and actuated without being handled.

SUMMARY OF THE INVENTION

[0002] In one embodiment, the present invention is an assembly to be affixed to an aerosol canister said assembly comprising:

a timer mechanism;

a timer ring and cam assembly operatively associated with said timer mechanism said assembly constructed and arranged to be affixed on the top of an aerosol canister, said mechanism further constructed with a first configuration whereby a spray head of said canister is un-actuated in said first configuration, and a second configuration operatively associated with said time in which said assembly actuates said spray head;

an on off cam recess incorporated with said timer ring and cam assembly;

wherein said timer ring and cam assembly and said cam recess are constructed and arranged to actuate an aerosol spray head of an aerosol canister at a user determined time.

[0003] The assembly and cam body form a system in which the timer ring and cam assembly has disposed therein indicia related to the delayed actuation of an aerosol spray head.

[0004] The assembly cam recess is constructed and arranged to actuate said aerosol spray head at a time congruous with a start position indicated on said timer ring and cam assembly.

[0005] Also contemplated is a method of actuating an aerosol canister, said method comprising:

selecting a canister;

providing an assembly according to claim 1;

affixing said assembly to the top of said canister, wherein said affixing includes affixing said assembly in said un-actuated configuration;

selecting a time period in which said assembly will actuate said spray head and setting said timer in accordance with said selected time;

placing said canister with said assembly in a desired position for actuation;

allowing said timer to function until said timer reaches said selected time;

actuating said spray head with said assembly.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

[0006] FIG. 1 is a partial cross-section side view of an aerosol canister used in the present invention

[0007] FIG. 2 is a section view through the actuator plane a partial front section according to the present invention

[0008] FIG. 3 is a side cross-section view of an aerosol can according to the present invention.

[0009] FIG. 4 is a top view depicting a timer according to the present invention set at a time delay of thirty delay units.

[0010] FIG. 5 is a top view of a timer of the present invention with the timer at the on or start position.

[0011] FIG. 6 is a top view of a timer according to the present invention in the on or spray position.

[0012] FIG. 7 is a section view through section lines BB of FIG. 3 showing the spray feed tube according to the present invention.

[0013] FIG. 8 is a section view through section AA of FIG. 3 showing the timer keys of the present invention.

[0014] FIG. 9 is a perspective detail view of the timer ring and cam according to the present invention.

[0015] FIG. 10 is another embodiment of a top view of the timer of the present invention.

[0016] FIG. 11 is a section view through section lines CC of FIG. 10 showing the relationship of spray head to the timer of the present invention.

[0017] FIG. 12 shows the cam according to the present invention.

[0018] FIG. 13 shows the cam according to the present invention.

[0019] FIG. 14 is a partial side cross section of a timer mechanism incorporated on the canister in the off position.

[0020] FIG. 15 is a partial side cross section of a timer mechanism incorporated on the canister in the actuated position.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0021] The assembly 10 has generally a main canister body 24 affixed on one end, typically referred to as the top end of canister 24 is aerosol spray head 14 having aerosol nozzle incorporated therewith. As generally understood in the art, aerosol spray head 14 incorporated on the top edge of canister 19 is constructed and arranged such that when pressure is applied downward towards the canister a mechanism as is known in the art actuates and releases contents contained within canister 24. Aerosol contents 15 are typically pressurized such that upon actuation of aerosol spray head 14 pressurized aerosol contents 15 are released through aerosol spray nozzle 16. Aerosol spray head 14 has an aerosol spray head bottom edge 17 that contacts top edge of canister 19 such that aerosol spray head 14 only moves a fixed and measured distance. In use, return spring 38 is contained within spring and stem housing 32 and urges against spring retainer 30 in an upward fashion such that aerosol spray head 14 is in an off or un-actuated position when no pressure is applied. Application of downward pressure on aerosol spray head 14 provides pressurized aerosol contents 15 to pass through aerosol inlet gasket 40 and enter aerosol feed stem 26 at aerosol feed stem inlet 42.

[0022] Also as understood in the art, aerosol feed stem 26 is guided along the interior of aerosol dip tube 34. Aerosol dip tube 34 has an opening at one end typically the lower end
called aerosol dip tube inlet 36. FIG. 2 generally shows aerosol spray head 14 in the rest or off position. As seen in FIG. 3, aerosol spray head 14 is in a position such that the bottom edge 17 of spray head 14 is about to contact top edge of canister 19. This is the actuating position in which pressurized aerosol content 15 enter dip tube inlet 36, travel, through dip tube 34, enter aerosol feed step 26 and ultimately exits spray head 14 at aerosol spray nozzle 16. As is known in the art, this is accomplished typically by a user pressing downward on aerosol spray head 14. However, the apparatus of the present invention includes a timer ring and cam assembly 18 that is constructed and arranged with an internal on/off cam recess 22 operatively associated with a male timer coupling key 46, an actuator female timer coupling key 48 and an alignment cam pin 50. As is generally understood, a user will affix cam timer assembly 18 to an aerosol can and utilize timer ring and cam assembly 18 to dispense of aerosol contents 15 at a preset time according to user operation of timer ring and cam assembly 18.

[0023] Although as depicted in FIGS. 5, 6 and, enumerated timing delay positions 52 have numerals associated therewith, the present invention is not intended to be limited to any particular type of timing. That is to say the numerals do not necessarily represent timing in seconds or timing in minutes. The numerals are demonstrative to show that timer ring and cam assembly 18 is constructed and arranged such that the user can selectively actuate the device for a particularized delay after which the device will activate the release of pressurized aerosol 15 from within aerosol canister 24. Timer ring and cam assembly 18 will be affixed to the top portion of canister 24 above aerosol spray head 14. Location indicator 15 is constructed and arranged to be operatively associated with timing delay position 52 relative to off or start position 54 and end or spray position 56. Timer ring and cam assembly 18 is constructed and arranged with cam recess 22 operatively associated with timer ring and cam assembly 18. Cam recess 22 is formed and positioned within timing cam recess 20. Timer mechanism 44 is operatively associated with male timer coupling key 46 and actuator female timer coupling key 48.

[0024] Each coupling key interacts one with another when timer 44 reaches actuation time as determined by a user. Timer coupling assembly 18 has incorporated therewith a top end 61 and a bottom end 62. In one embodiment, an alternative cam recess 63 has indentations in cam recess 64. Indentations 64 provide an audible signal indicating movement of cam recess 64. As seen in FIGS. 12 and 13, the circular 360 degree timer ring and cam assembly is shown in a hypothetically open and flat position. This is demonstrative to show cam recess 22 and cam recess 63 respectively. As shown in FIG. 12 cam recess 22 is positioned such that when timer ring and cam assembly 18 reached and actuated position as demonstrative in FIG. 12 said actuated position being at 270 degrees indicated by start position 54. Cam recess 22 in this position will press against aerosol spray head 14 and actuate the release of pressurized aerosol contents 15. In an embodiment, as demonstrated in FIG. 13 a plurality of indentations 64 along cam recess 63 will create an audible sound as aerosol spray head 14 contacts each successive indentation 64. Again, as contemplated herein, when cam recesses reach a start position 54 aerosol spray head 14 is actuated. After actuation timer ring and cam assembly 18 reach the end spray position 56 as generally understood.

[0025] In the timer ring and cam assembly 18 of the present invention on off recess 22 moves along assembly recess 20 and cam pin 50 is contained within these recess. As timer ring and cam assembly 18 move with the timing components being timer 44 and timer coupling keys 46 and 48 timer ring and cam assembly 18 ultimately moves into a spray position 56 whereby aerosol spray head 14 is activated. In one embodiment, as shown in FIG. 10 aerosol spray nozzle 16 is moved 90 degrees or in an upward position relative to the side discharge positions show in FIGS. 1, 2 and 3.

[0026] In use, it is contemplated that a user will select a partially configured timer ring and cam assembly 18 depending on a particular aerosol canister 24 in which one desires to affix an assembly of the present invention. Upon selecting an appropriate timer ring and cam assembly 18 a user will affix said timer ring and cam assembly 18 to a canister 24 by removing any cam insert cap 12 that may be supplied with canister 24. A user will rotate assembly 18 such that location indicator 58 is directional with a desired timing delay position 52 on assembly 18 of the present invention. Once a desired alignment has been established the user will leave canister 24 with assembly 18 attached thereto and timer 44 will commence a countdown to an end time when assembly is in end or spray position 56 which will actuate aerosol spray head 14 and subsequently release pressurized aerosol contents 15 through aerosol spray nozzle 16.

[0027] In addition to the removable attachment configuration described above, the timer assembly, in one embodiment, is integral with, or fixedly attached to, a canister. In an embodiment, shown in FIGS. 14 and 15, canister 85 is provided with a timer mechanism incorporated thereon. It is not a separate unit to be placed on an existing can. This embodiment shows placement of the spray method described above with the components arranged within the spray cap 78 with the use of escapement 44 coupled to cam (cam 72 is similar to 18 above) by means of couplings 46 and 48. FIG. 14 shows cam 72 in the start or “up” position 80. FIG. 15 shows Cam 72 in the “down” or spray position as it has rotated by means of the escapement 44 from position 80 to position 82. The spray 83 is terminated by means of spring 74 urging cap 78 upward.

[0028] While the invention has been described in its preferred form or embodiment with some degree of particularity, it is understood that this description has been given only by way of example and that numerous changes in the details of construction, fabrication, and use, including the combination and arrangement of parts, may be made without departing from the spirit and scope of the invention.

1 claim:

1. An assembly to be affixed to an aerosol canister said assembly comprising:
a timer mechanism;
a timer ring and cam assembly operatively associated with said timer mechanism said assembly constructed and arranged to be affixed on the top of an aerosol canister, said mechanism further constructed with a first configuration whereby a spray head of said canister is un-actuated in said first configuration, and a second configuration operatively associated with said time in which said assembly actuates said spray head:
an off cam recess incorporated with said timer ring and cam assembly;
wherein said timer ring and cam assembly and said cam recess are constructed and arranged to actuate an aerosol spray head of an aerosol canister at a user determined time.

2. The system of claim 1 wherein said timer ring and cam assembly has disposed thereon indicia related to the delayed actuation of an aerosol spray head.

3. The assembly of claim 1 wherein said cam recess is constructed and arranged to actuate said aerosol spray head at a time congruous with a start position indicated on said timer ring and cam assembly.

4. The system of claim 1 wherein said timer ring and cam assembly is removably attached to said canister.

5. The system of claim 1 wherein said timer ring and cam assembly is fixedly attached to said canister.

6. A method of actuating an aerosol canister, said method comprising:
   selecting a canister;
   providing an assembly according to claim 1;
   affixing said assembly to the top of said canister, wherein said affixing includes affixing said assembly in said un-actuated configuration;
   selecting a time period in which said assembly will actuate said spray head and setting said timer in accordance with said selected time;
   placing said canister with said assembly in a desired position for actuation;
   allowing said timer to function until said timer reaches said selected time;
   actuating said spray head with said assembly.

7. The method of claim 6 wherein said affixing is a removable affixing.

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