An aerosol spray device of a type capable of holding an aerosol can in position for periodic operation in response to contact with a motor-driven camming means which contacts the upwardly disposed spray nozzle thereon to activate a valve disposed therebeneath. A unitary molded casing element forms a battery chamber which is externally accessible through an opening in a rearwardly disposed wall, the battery chamber shielding batteries disposed therein from any stray vapors within the casing element. The casing element forms track means slidably supporting an adjustably located chassis which mounts the timing means, as well as the motor-driven camming means. By shifting the chassis relative to the casing element, the period of time during a given operational cycle in which the nozzle is contacted and moved to spraying position is varied, thereby varying the amount of spray dispersed. The timing means includes a capacitor which is charged by the motor while it is coasting to a stop at the completion of a cycle, the condensor being discharged at the beginning of the next timing cycle to conserve battery power.

1 Claim, 6 Drawing Figures
AEROSOL SPRAY DEVICE WITH CAM ACTIVATOR

This invention relates generally to the field of aerosol spray dispensers of the type disclosed in my copending application, Ser. No. 105,332; filed Jan. 21, 1971. More particularly, the disclosure relates to a device of this type which is of simpler construction, more readily fabricated, and more attractive in appearance. By use of synthetic resinous materials, the spray dispensing adjustment means is materially simplified, both in the fabrication thereof and the manipulation as well.

DESCRIPTION OF THE PRIOR ART

The prior art includes structures in accordance with the above mentioned co-pending application, which while possessed of substantial utility, have been underrated and complicated in manufacture and cost of fabrication. Needless linkages have been employed to interconnect the motor-driven camming means with the spray nozzle of the aerosol can, and the adjustment means have been of a threaded type offering greater precision than is actually necessary for suitable operation. Prior art devices have, for the most part, featured casting elements which are of a metallic construction, subject to corrosion, and have maintained batteries within the casing which are subject to the deleterious action of vapor contained within the casing. Further, to replace the batteries, it has been necessary to open the casing and manually remove the corroded cells.

BRIEF DESCRIPTION OF THE PRESENT INVENTION

Briefly stated, the invention contemplates the provision of a synthetic resinous casing element of polystyrene or similar, relatively chemically inert material, in which the body and cover portions are molded to include an integral hinge. The battery chamber is disposed internally of the side walls of the body of the casing element, and accessible for battery replacement outwardly of the casing element, without the necessity of opening the cover. Electrical communication is provided from the battery chamber to the interior of the casing element, by means of small openings in the walls forming the battery chamber. The interior of the body of the casing is provided with track means slidably supporting a chassis mounting the motor-driven camming means and timing element. Externally disposed lever means penetrates the casing, and serves to adjustably shift the chassis relative to the casing element, to result in shifting the path of movement of the camming means, thereby varying the length of time during a given spray cycle in which the cam sufficiently moves the spray nozzle of the aerosol can to activate it.

BRIEF DESCRIPTION OF THE DRAWING

In the drawing, to which reference will be made in the specification, similar reference characters have been employed to designate corresponding parts throughout the several views.

FIG. 1 is a front elevational view of an embodiment of the invention.
FIG. 2 is a rear elevational view thereof.
FIG. 3 is an enlarged view in elevation of the embodiment showing the cover of the casing element in opened condition.

FIG. 4 is a fragmentary view in elevation of the chassis element slidably mounted within a casing element, and forming a part of the disclosed embodiment.
FIG. 5 is a top plan view of the casing element.
FIG. 6 is an enlarged fragmentary view corresponding to the upper left-hand portion of FIG. 3, and showing track means mounting the chassis element.

In accordance with the invention, the device, generally indicated by reference character 10, comprises a housing 11, a chassis element 12, a timing circuit 13, motor-driven camming means 14 and cam adjustment means 15.

The casing element 11, as has been mentioned, is preferably formed as an integral molding from synthetic resinous materials, such as polystyrene or the like, and includes a main body member 16 having a lower wall 17, a rear wall 18, an upper wall 19, and a first and second side walls 20 and 21, respectively. A laterally extending flange 22 forms part of an integral hinge 23 interconnecting a corresponding flange 24 on a pivotally mounted cover member 25. The cover member 25 includes a front wall 26 defining a circular spray opening 27, as well as short upper and lower walls 28 and 29, as well as side walls 30 and 31.

The wall 31 mounts a latching means 32 resiliently engaging corresponding means 33 on the main body member 16. A projection 34 carried by the cover member 25 engages a corresponding seat 35 on the upper wall 19 to maintain the last two mentioned members in relatively closed condition.

On an inner surface of the upper wall 19 there are a pair of track forming members 37 and 38, which cooperate with a lower track forming member 39 on the inner surface of the rear wall 18 to provide means for slidably supporting the chassis element 12. Ribs 40 provide a stiffening effect for the entire casing element, and a main rib 41 is positioned to engage the top of an aerosol can 100 in predetermined position. A battery chamber 42 is formed by longitudinal walls 43 and 44 and end walls 49 and 49a. An opening 45 in the rear wall (see FIG. 2) provides ingress to the chamber 42 for the positioning of dry cells 46. Conductor tabs 47 extend through openings 47a in the wall 44 and interconnect with current conducting wires 48 which power the timing circuit 13 and motor-driven camming means 14.

The chassis element 12 is also preferably integrally molded from a suitable synthetic resinous material, and includes a horizontal main wall 50, a vertical main wall 51 as well as a vertical end wall 52 which provides a base for the solid state timing circuit as well as the switch means 54 cooperating therewith. The details of the timing circuit and switch means 54 are described in my above mentioned co-pending application, which differ from the present timing circuit only in the provision of an additional condenser 53 which is charged while the motor is coasting to a stop, as mentioned hereinabove. The motor 55 is mounted on one surface 56 of the wall 51 and includes an output shaft 52 which projects therethrough to support a multi-lobe cam 58 adjacent an opposite surface thereof. A boss 59 is provided with a threaded bore 60 aligned with a slotted opening 61 in the upper wall 19. The bore is engaged by a threaded fastener 62 which penetrates the lever 63 one end 64 of which is provided with a projection engaging a bore 65 in the upper wall, thus providing a second class lever, movement of which lifts the entire chassis element 12 in the track forming members.
37-39 so that the arcuate path of motion of the cam 58 moves further into or out of the position occupied by the spray nozzle 101, to vary the effective length of the period in which the valve of the spray can is actuated.

I wish it to be understood that I do not consider the invention limited to the precise details of structure shown and set forth in this specification, for obvious modifications will occur to those skilled in the art to which the invention pertains.

I claim:

1. In a device for periodically operating an aerosol dispenser can, including a timing circuit, and motor-driven camming means positioned to repeatedly contact a spray nozzle to operate a valve associated therewith, the improvement comprising: a casing element including first and second angularly disposed outer walls, track means carried by said casing element having a principal axis parallel to one of said walls, said casing element defining an enclosure, a chassis element slideably carried by said track means for adjustable movement relative to the other of said walls, said motor-driven camming means being carried by said chassis, said camming means including at least one lobe having a substantially arcuate path of motion, movement of said chassis serving to translationally shift said arcuate path to vary the length of that portion of the path during which said spray nozzle is contacted; means on said chassis projecting outwardly of said casing element to permit manual adjustment outwardly of said enclosure of the position of said casing element relative to said casing element without opening the latter, said last mentioned means including a projection on said chassis, and a lever pivotally connected to said projection and a fixed point on said casing element.

* * * * *