

June 18, 1963

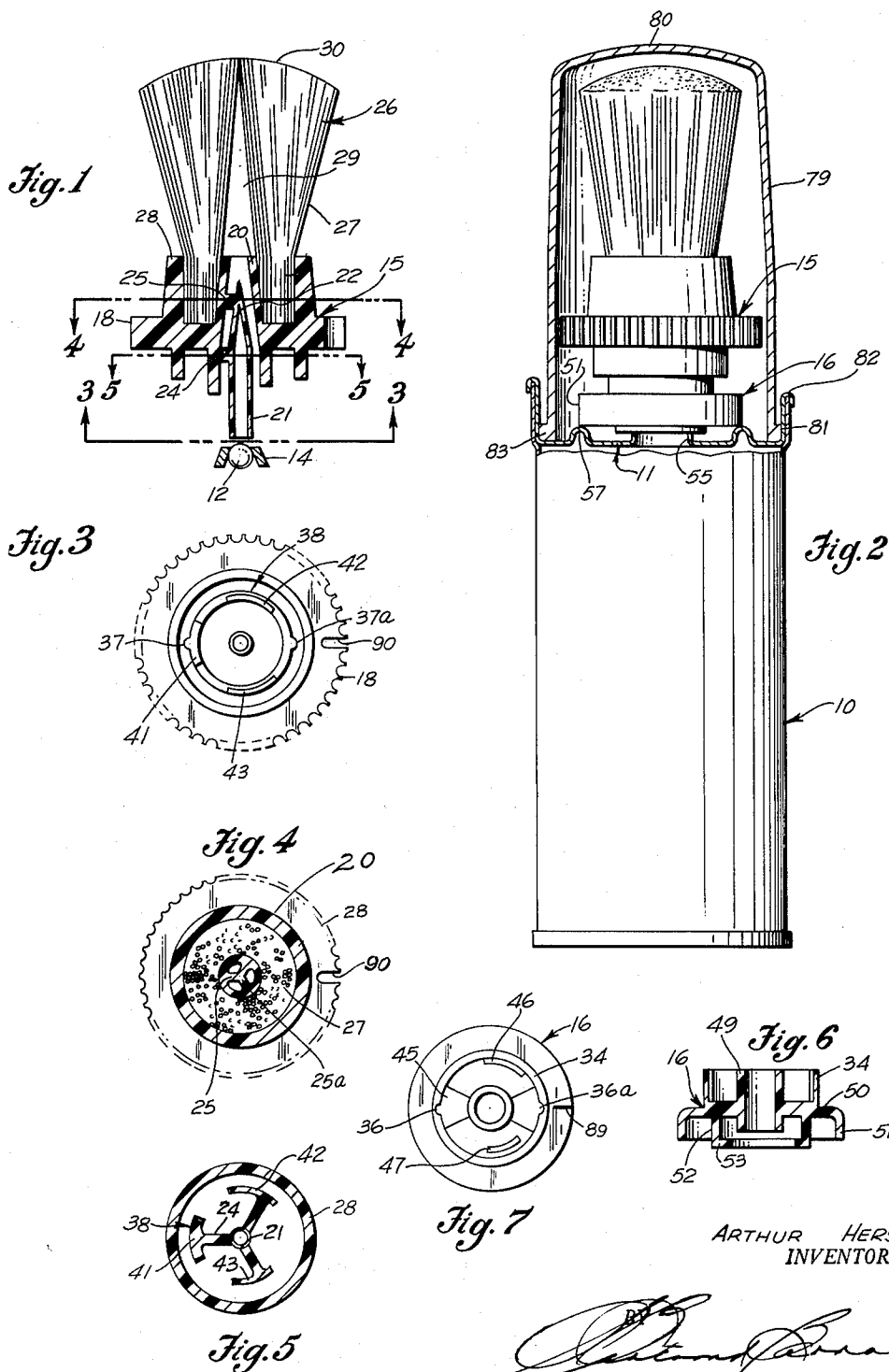
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3,093,857

AEROSOL CONTAINER CONTROL MECHANISM FITTED WITH APPLICATOR

Filed Aug. 21, 1961

2 Sheets-Sheet 1



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Fig. 8

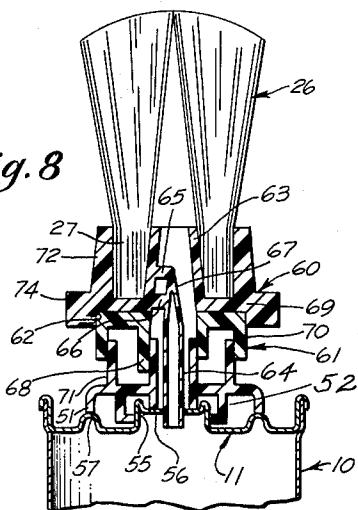


Fig. 9

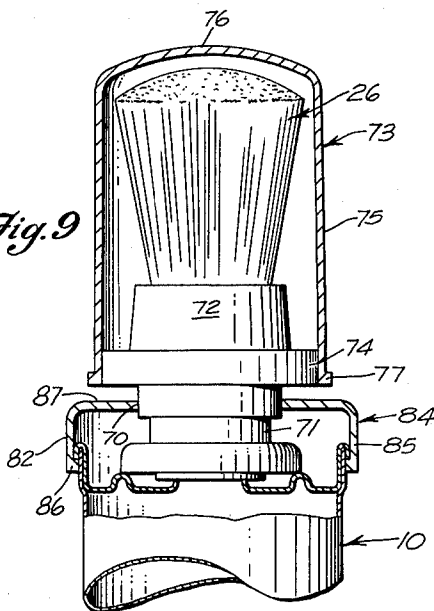
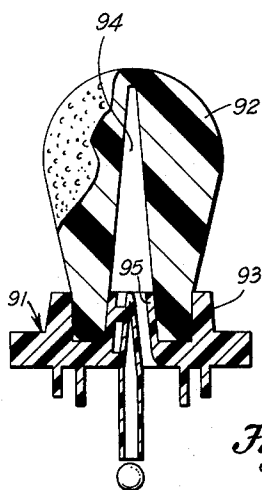


Fig. 10

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AEROSOL CONTAINER CONTROL MECHANISM FITTED WITH APPLICATOR

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Filed Aug. 21, 1961, Ser. No. 132,982

2 Claims. (Cl. 15-552)

This invention relates to aerosol containers for materials in paste form, and is particularly directed to a control mechanism, which is utilized to aerate and discharge the material in the container.

It is primarily directed to a device, in which a brush, or other type of distributor is attached to the control cap of the aerosol control mechanism, to facilitate spreading the material in the container, such as shaving cream, after it is aerated and discharged from the container.

In the conventional type of aerosol container for shaving cream and the like, a hollow cylindrical cap is provided at the top of the control mechanism of the container, the cap being adapted to be rotated through a small angle into the reciprocating position, in which the cap is pressed inward coaxially with the axis of the container, the cap having a check valve control mechanism incorporated therewith, which is adapted to open the check valve, thereby allowing the material stored in the container to be aerated by the compressed air in the container, and discharged through a discharge spout or other type of outlet incorporated in the control mechanism.

Applicant's improvement is directed to a brush, or other type of distributor mechanism which is fixedly attached to the control cap, to allow the material discharged from the container to pass through the brush, or other type of distributor or applicator, to facilitate spreading the shaving cream or other type of material in the container.

In the conventional type of control mechanism used with aerosol containers, it is necessary to transfer the material discharged from the outlet spout of the container to the fingers of the user in order to distribute the material over the face, or other surface to be shaved.

It is thus necessary to wash the fingers after the distribution of the material is completed.

In applicant's control apparatus, a brush, or other type of distributor or applicator, is attached to the control cap, means being provided to discharge the aerated material from the container, thus facilitating the application and distribution of the material over the face of the user.

In one type of control cap, a brush formed of bristles of various types, is fixedly attached to the control cap, in alignment and communication with the discharge passages through the control mechanism, thereby depositing the material over various parts of the brush, thus facilitating the distribution of the shaving cream, or other material, over the face of the user.

In another modification of the cap construction, a diffuser or applicator made of a porous plastic material, is fixedly attached to the cap, co-axially with the cap and in communication with the discharge passage through the aerosol control mechanism, thereby diffusing the material through the porous applicator, and facilitating distribution of the shaving cream, or other material over the face, or other surfaces to be shaved.

The accompanying drawings, illustrative of one embodiment of my invention, and several modifications thereof, together with the description of their construction and in the method of operation, mounting, activation and utilization thereof, will serve to clarify further objects and advantages of my invention.

In the drawings:

FIGURE 1 is a vertical section through the control cap of the aerosol container, shown in FIGURE 2, with

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a brush fixedly attached to the upper end of the control cap.

FIGURE 2 is a front elevational view of the assembled aerosol container, with the control mechanism, attached to the upper end thereof, with the control cap and brush mechanism, shown in FIGURE 1, fitted to the upper end of the control mechanism.

FIGURE 3 is a bottom plan view of the control cap shown in FIGURE 1, showing the radially positioned extensions integral with the lower end of the cap, the view being taken on the line 3-3, FIGURE 1.

FIGURE 4 is a cross-section through the control cap and brush combination, shown in FIGURE 1, the section being taken on the line 4-4, FIGURE 1.

FIGURE 5 is a cross-section through the control cap, shown in FIGURE 1, the section being taken on the line 5-5, FIGURE 1.

FIGURE 6 is a vertical section through the control cap support member, shown in FIGURE 2.

FIGURE 7 is a plan view of the control cap support member shown in FIGURE 6.

FIGURE 8 is a vertical section, similar to FIGURE 1, through a modification of the control cap, and brush combination, shown in FIGURE 1, the cap being fitted to a cap holder attached to the upper end of an aerosol container.

FIGURE 9 is a front elevational view of the cap and brush combination shown in FIGURE 1, attached to an aerosol container, a skirt or shield being attached to the upper end of the container, the control cap being fitted with a modification of the brush shown in FIGURE 1.

FIGURE 10 is a vertical section, similar to FIGURE 1, through a modification of the control cap shown in FIGURE 1, the cap having an applicator of a porous plastic material attached thereto, to replace the brush shown in FIGURE 1.

It will be understood that the following description of the construction and the method of operation and utilization of the aerosol container control mechanism fitted with applicator, is intended as explanatory of the invention and not restrictive thereof.

In the drawings, the same reference numerals designate the same parts throughout the various views, except where otherwise indicated.

One embodiment of the control mechanism shown in FIGURES 1 and 2, is used in conjunction with a substantially cylindrical aerosol container 10, such as that shown in FIGURE 2, which is used for shaving cream, or a similar material, the hollow container 10, being charged with compressed air or gas, which is utilized to mix with and aerate the shaving cream or other material in the container and discharge it through the discharge apparatus attached to the top 11 of the container in a manner hereinafter described.

The shaving cream or other material and the gas under pressure, is normally retained and sealed in the container by a ball check valve 12, which is normally seated in a frusto-conical seat 14, which is supported within the container, the check valve and seat being located in substantially the position shown in FIGURE 1, relative to the control cap.

The control cap 15, is fitted to and supported by a cap holder 16, which is removably attached to the top 11 of the container in the manner shown in FIGURE 8, and hereinafter described.

The control cap is molded of a thermo-plastic, or other type of plastic material.

The control cap 15 includes an integral circular base 18, the circumferential outer surface of which is knurled or otherwise corrugated in the manner shown in FIGURE 4, to facilitate rotation of the control cap, to move it into the operating position.

The control cap, has a tapered outlet tube 20, integral with the base 18 thereof, and projecting upward therefrom in the form of a frusto-conical tube, as shown in FIGURE 1.

The control member of the cap is a central tubular section 21, which projects downward from the base 18, in the manner shown in FIGURE 1. A hollow conical upper section 22, integral with the central tubular section 21 and projecting upward therefrom, is supported by a plurality of rows of radially/positioned ribs 24, 24a, 25, 25a, as shown in FIGURES 1, 4 and 5, the ribs extending radially inward from the tubular outlet section of the cap, to the hollow conical upper section 22 of the tubular control section 21.

A brush 26 formed of a plurality of fine flexible bristles 27, is supported by the upper portion of the control cap, a tubular boss 28, integral with the cap and projecting upward from the base thereof, supporting and gripping the lower portion of the bristles 27 in the manner shown in FIGURE 1, the bristles being gripped by the annular area, between the circular boss, and the frusto-conical outer surface of the outlet tube 20, which projects upward from the base 18.

The portion of the brush bristles located within the annular clamping area are cemented, glued or otherwise attached to the inner surfaces of the boss 28 and the frusto-conical outer surface of the outlet tube 20.

The outer contour of the portion of the bristles 27 of the brush, projecting beyond the upper edge of the boss 28 of the control cap, is of frusto-conical form. The portion of the bristles 27 located adjacent the tapered outlet tube has a tapered substantially conical space 29 formed therein, to allow a foaming mixture of shaving cream and gas discharged from the frusto-conical outlet tube to be discharged therethrough to the upper projecting portion of the bristles. The upper end 30, of the bristles of the brush, is of rounded spherical segmental or other suitable contour, as shown in FIGURES 1 and 2.

In order to move the control cap into the operating position, relative to the cap holder 16, the control cap is manually rotated until the circular segmental ribs 37, 37a, integral with the outer surface of the intermediate section 38, of the control cap, are aligned with the mating grooves in the tubular upper section 34 of the cap holder, thus allowing the cap 15 and the central tube 21 integral therewith to be moved toward the top of the container.

When the control cap 15 is manually moved downward toward the top of the container, the central tubular control section of the cap is forced downward against the spherical check valve 12, thereby moving the check valve 12 away from the frusto-conical seat and allowing the shaving cream and gas emulsion to be discharged through the annular area surrounding the control tube 21.

The cap holder 16, which is removably attached to the top 11 of the container is shown in FIGURES 6 and 7.

The cap holder includes a tubular upper section 34, which is integral with the base 50 thereof, the tubular upper section having a diametrically aligned pair of grooves 36, 36a of circular segmental form cut into the inner surface thereof, the grooves being adapted to receive a pair of diametrically aligned ribs or projections 37, 37a which are of circular segmental form, corresponding to the contour of the grooves, the ribs or projections being integral with the circumferential outer surface of the intermediate section 38 of the control cap shown in FIGURES 1 and 2.

The tubular central section 49 of the cap holder is integral with and projects upward and downward from the base 50 of the holder.

The grooves 36, 36a in the control cap holder and the projections 37, 37a integral with the cap, are provided to align the control cap with the holder, in the operating position, to allow the control cap 15 and the control tube 21 thereof to be moved downward into the valve control position in a manner hereinafter described.

As shown in FIGURES 1 and 3, the tubular intermedi-

ate section 38 of the control cap, has three circular segmental extensions integral therewith, and projecting downward therefrom.

These include a long circular segmental extension 41, the thickness of which is substantially equal to the thickness of the intermediate section 38 of the control cap, a thin inner circular segmental section 42, which is located adjacent the inner circumferential surface of the intermediate section 38 of the control cap, and a circular segmental outer section 43, which is located adjacent the circumferential outer surface of the circular intermediate section 38 of the control cap.

As shown in FIGURE 7, the bottom of the inner surface of the cap holder 16, between the circular outer section, and the central section 49 thereof has a plurality of mating depressions therein, to receive the circular segmental extensions 41, 42, 43 of the control cap 15 when the ribs, or projections 37, 37a, of the intermediate section of the control cap 15 are aligned with the grooves in the circular outer section 34 of the cap holder.

These include a wide circular segmental depression 45, which is aligned with the projection 41, a narrow inner circular segmental depression 46, which is adapted to receive and clear the inner segmental extension 42, of the control cap, and a relatively large circular segmental depression 47, which clears the outer circular segmental extension 43, the three depressions allowing the central section 21 of the control cap 15, to be moved downward when the ribs or projections 37, 37a, are aligned with the circular segmental grooves 36, 36a in the cap holder, thereby allowing the tubular central section of the cap to be moved downward, and in that manner moving the ball check valve out of engagement with the valve seat 14 and allowing the emulsified mixture from the interior of the container to be discharged through the annular area surrounding the tubular central section of the control cap.

When the ribs or projections 37, 37a, are out of alignment with the grooves 36, 36a in the cap holder, the bottom of the circular segmental extension 41 of the control cap, which is longer than the other extensions thereof, engages the bottom of the upper portion of the annular area between the outer section of the cap holder and the central section thereof, to hold the cap out of engagement with the ball check valve 12, thereby sealing the interior of the container, and preventing the discharge of the emulsified material therefrom.

As shown in FIGURE 6, the cap support member includes a tubular central section 49, which extends upward and downward from a thin substantially circular base 50, the central section clearing the central control section 21 of the control cap in the assembled position, shown in FIGURE 8. A circular rim 51 integral with the base, surrounds the base and extends downward therefrom as shown in FIGURE 6.

The cap holder 16 shown in FIGURE 6, is molded of a thermoplastic material, or other suitable material having some degree of flexibility, to facilitate assembly with the top 11 of the container.

The cap holder includes a tubular lower, or support section 52 integral with the base and extending downward therefrom, the tubular support section 52 having a flat annular flange 53 integral with the lower end thereof.

As shown in FIGURE 8, the cap holder is removably attached to and supported by the top 11, of the container 10.

As shown in FIGURE 8, the top of the container includes a tubular raised central section 55, the outer circumferential surface of which receives and removably supports the flange 53 at the lower end of the support section 52 of the cap holder 16.

The upper wall 56 of the tubular central section of the top of the container has a central opening therethrough to clear the tubular control section 21 of the control cap.

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In the assembled position, shown in FIGURE 8, the open bottom surface of the rim 51 of the cap holder rests against and is supported by an annular bead 57 integral with the top of the container, the circular bead limiting the downward movement of the holder 16 when the holder is attached to the top of the container, as in the position shown in FIGURE 8.

FIGURE 8 shows a modification of the control cap, in which the control cap is molded in two sections, including an upper section 60 integral with the circular base, and a lower section 61, which is inserted into a circular counterbore 62 cut into the bottom surface of the base, the lower section of the control cap being heat sealed, cemented or otherwise fixedly attached to the upper section 60 of the control cap, so that from an operating standpoint both sections of the control cap function as a unit.

The tubular outlet section 63 of hollow frusto-conical form, is integral with the base of the upper section of the control cap in the same manner as that shown in FIGURE 1.

The central tubular control section 64 of the control cap is similar to that shown in FIGURE 1, the central section being supported by two rows of radially positioned ribs 65, 66, extending inward from the frusto-conical outlet section of the cap, which are integral with the hollow conical extension 67 of the control section, in a manner similar to those shown in FIGURES 1, 3 and 4.

The depending intermediate section 68 of the lower section of the control cap, which is integral with upper wall 69 of the lower section, is shown in FIGURE 8.

The circular outer section 70 of the lower section 61, which is integral with the lower section of the control cap, is fitted to the tubular upper section 71 of the cap holder, shown in FIGURE 8, in the same manner as those shown in FIGURES 3 and 7. The essential difference is that the ribs integral with upper section of the holder are similar to the ribs 37, 37a shown in FIGURE 3, the ribs being fitted to corresponding diametrically aligned circular segmental grooves formed in the inner surface of the circular outer section 70 of the lower section of the control cap.

The brush 26 attached to the upper section 60 of the control cap is substantially the same as that shown in FIGURE 1, the lower section of the bristles of the brush being supported by the annular area, between the boss 72 integral with the upper section of the control cap, and the tubular outlet section 63 in substantially the same manner.

As shown in FIGURE 9, a brush cover 73 is removably attached to the circumferential outer surface of the base 74 of the upper section of the control cap. The cover includes a hollow tubular body 75, of tapered circular contour, a top 76 of arcuate cross-sectional contour being integral with the upper end of the body 75 to seal the interior of the cover, which is fitted around the brush 26. A narrow band 77, integral with the circumferential outer surface of the body 75 reinforces the body of the cover and forces the inner surface of the body 75, against the circumferential outer surface of the base 74 of the cap, in the position shown in FIGURE 8.

FIGURE 2 shows a modification of the brush cover shown in FIGURE 9. In this construction, the hollow tubular body 79 of the cover is substantially the same as that shown in FIGURE 8, a top 80 integral with the upper section of the body being substantially the same as that shown in FIGURE 9. A narrow rim 83 is integral with the circumferential outer surface of the body of the cover, the circumferential outer surface of the rim being pressed into, or otherwise removably supported by the annular rim 81, of the top of the container, which is integral with the top of the container, the annular rim of the top being attached to the upper end of the circular con-

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tainer, by means of an annular bead 82, or other suitable attaching means.

In the modified construction shown in FIGURE 9, a circular protecting skirt 84 is removably attached to the upper end of the container 10. The skirt 84 includes a hollow circular body 85 having an inner rim 86 integral with the open lower end thereof. A top wall 87, having a central circular opening therethrough is integral with the top of the body of the skirt, the opening being adapted to clear the circumferential outer surface of the circular outer section 70, which is integral with the lower section 61 of the control cap, to allow the control cap to be moved toward the top of the container in the operating position, in the same manner as that shown in FIGURES 1 and 2.

The inner rim 86 at the bottom of the skirt 84 is held in place by the bead 82 formed at the top of the container, the body of the skirt being of a high enough degree of flexibility to allow the annular rim 86 of the skirt to be expanded over the bead 82 at the top of the container.

In all other respects, the control cap and the cap holder shown in FIGURES 8 and 9, are substantially the same as those shown in FIGURES 1 and 2.

In order to align the ribs 37, 37a integral with the intermediate section of the control cap, shown in FIGURE 3, with the diametrically aligned grooves in the tubular upper section of the control cap, thereby aligning the extensions 41, 42, 43 of the control cap, with the corresponding depressions in the control cap holder, to allow the control cap to be depressed in the manner hereinbefore described, an indicator is provided, as shown in FIGURES 3 and 7. The upper face of the base 50 of the cap holder 16, shown in FIGURE 7, has a radial indicator line 89, engraved or otherwise depressed therein, as shown in FIGURE 7.

The circular base 18 of the control cap, shown in FIGURES 1 and 3, has a narrow radial slot 90, cut through the outer circumference thereof, the slot being aligned with the indicator line on the cap holder, when the ribs 37, 37a integral with the intermediate section of the control cap, are aligned with the grooves 36, 36a in the upper section 34 of the cap holder, thereby allowing the control cap to be depressed into the operating position, hereinbefore described. In all other positions, the bottom surface of the extension 41 of the control cap, engages the raised portion of the top of the base 50 of the cap holder, thereby preventing downward movement of the control cap.

FIGURE 10 shows a modification of the control cap, shown in FIGURE 1. This control cap 91, is essentially the same as that shown in FIGURE 1, except that an applicator 92 is substituted in place of the brush 26 shown in FIGURES 1 and 2. The applicator is molded of a porous plastic material, thus providing a high degree of flexibility, which enables it to function in substantially the same manner as the conventional sponge. The applicator may be made of a spongy or soft material, such as a rubber composition, a plastic material, or other suitable plastic material.

The circular lower section of the applicator is fitted to the interior of the circular boss 93 integral with the upper end of the base 18 of the control cap.

The outer surface of the cylindrical section of the applicator 92 and the frusto-conical inner surface of the lower end thereof are cemented or otherwise fixedly attached to the adjacent surface of the control cap.

The cylindrical outer surface of the applicator is attached to the inner surface of the tubular boss 93, the inner surface of the applicator, which forms an extension of the frusto-conical inner surface of the central cavity 94, through the interior of the applicator, being fixedly attached by cementing, or other suitable means, to the mating frusto-conical outer surface of the frusto-conical outlet tube 95 of the control cap, which allows the aerated material in the container to be discharged through the

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central cavity 94 in the applicator, from which it is distributed through the porous material of the applicator to the outer surface thereof. The upper end of the central cavity 94 through the applicator may extend entirely through the upper end of the applicator.

In addition to the central cavity through the applicator, a plurality of additional radially positioned openings may be out through the body of the applicator, the outer end of the openings passing through the rounded upper end of the applicator, the inner end of the openings being in direct communication with and connecting with the central cavity 94 through the applicator 92. The auxiliary openings would be angularly positioned relative to the vertical axis of the applicator.

After the control cap 91, with the applicator attached thereto, as shown in FIG. 10, is rotated into the operating position, hereinbefore described, with the circular segmental ribs, integral with the intermediate section of the control cap, as shown in FIG. 3, aligned with the mating grooves in the tubular upper section 34 of the cap holder, this allows the control cap 91, and the central tube integral therewith to be moved toward the top of the container. The central tubular section of the control cap is then forced downward against the spherical check valve 12, thereby moving the check valve 12 away from the frusto-conical seat, and allowing the shaving cream and gas emulsion to be discharged through the annular area in the frusto-conical outlet tube 95, thence through the central cavity 94 through the applicator, and out through the top of the applicator, in the manner hereinafter described.

After the control cap 91 is rotated into this position, the rounded upper portion of the applicator may be pressed against the face of the user, thus forcing the control cap, which supports the applicator, toward the cap holder 16, thereby forcing the central tubular section of the control cap, downward against the spherical check valve 12, thereby moving the check valve from the seat thereof, and in that manner discharging the emulsion of shaving cream and gas through the applicator, directly against the face of the user, and allowing the applicator to distribute the shaving cream over the face of the user.

This allows the shaving cream and gas mixture to be discharged through the central cavity 94, or through the porous material of the applicator directly against the face of the user, the applicator distributing the shaving material over the face of the user.

The applicator functions in a manner similar to the brush shown in FIGURES 1 and 2.

In all other respects, the construction and operation of the control cap shown in FIGURE 10, and its relation to the cap holder 16 and the container shown in FIGURES 1, 2, 6, 7 and 9 are essentially the same as those shown in FIGURES 1, 2, 6, 7 and 9, and hereinbefore described.

It will be apparent to those skilled in the art that the present invention is not limited to the specific details described above and shown in the drawings, and that various modifications are possible in carrying out the features of the invention and the operation, and the method of utilization thereof, without departing from the spirit and scope of the appended claims.

What is claimed is:

1. In combination with an aerosol container having a top fixedly attached thereto, a control valve seat fixedly attached to the top of the container located within the container near the top thereof, and a control valve seated in the valve seat for sealing the interior of the container, a control cap holder removably attached to the top of the container, a reciprocally controllable cap removably attached to the cap holder, and an applicator fixedly attached to the top of the control cap, the applicator projecting beyond the control cap in a direction opposite the top of the container, the control cap having means integral therewith adapted to guide the material discharged from the interior of the container toward the applicator,

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said control cap being rotatably supported by the cap holder, the applicator having a substantially cylindrical attaching section integral therewith, the control cap being formed in two sections, the first section fixedly supporting the applicator, the second section being co-axial with the first section of the control cap and fixedly attached thereto, the first section of the control cap having a hollow, substantially cylindrical boss integral therewith, the boss being adapted to receive and fixedly support the cylindrical attaching section of the applicator, the portion of the second section of the control cap directed toward the top of the container having a plurality of radially positioned circular segmental extensions integral therewith, the control cap holder having mating cavities therein to receive the extensions of the second section of the control cap in the valve opening position of the control cap, the circular segmental sections of the control cap being adapted to retain the control cap in an inoperative position out of engagement with the valve when the control cap is rotated out of the valve control position, the first section of the control cap having a tubular control section integral therewith and extending through the second section thereof, the tubular control cap having a tubular control section integral therewith and extending through the second section thereof, the tubular control section being adapted to move the valve out of engagement with the valve seat to open the valve and allow the material in the container to be discharged through the control cap, the first section of the control cap having a tubular outlet section integral therewith and co-axial with the control section, the outlet section of the control cap being adapted to guide the material discharged from the container to the interior of the applicator, said material passing through the porous material of the applicator to the outer surface thereof.

2. In combination with an aerosol container, having a top fixedly attached thereto, a control valve seat fixedly attached to the interior of the container, near the top thereof, and a control valve seated in the valve seat for sealing the interior of the container, a control cap support holder removably attached to the top of the container, a reciprocally controllable control cap removably attached to the control cap holder, the control cap being formed in two sections, the first section being located remotely from the cap holder, the second section being coaxial with the first section and being fitted to a counterbore in the first section of the control cap, and an applicator fixedly attached to the first section of the control cap, the applicator projecting beyond the first section of the control cap and in a direction opposite the top of the container, the first section of the control cap having means integral therewith adapted to guide the material discharged from the interior of the container toward the applicator, said control cap being rotatably supported by the cap holder, the applicator being formed of a porous highly compressible material, the applicator having a substantially cylindrical attaching section integral therewith, the first section of the control cap having a hollow, substantially cylindrical boss integral therewith, the boss being adapted to receive and fixedly support the cylindrical attaching section of the applicator, the portion of the second section of the control cap, directed toward the top of the container, having a plurality of radially positioned circular segmental extensions integral therewith, the control cap holder having mating cavities therein to receive the extensions of the second section of the control cap in the valve opening position of the control cap, the circular segmental sections of the control cap being adapted to retain the control cap in an inoperative position out of engagement with the valve when the control cap is rotated out of the valve control position, the first section of the control cap having a tubular control section integral therewith and extending through the second section thereof, the tubular control section being adapted to move the valve out of engagement with the valve seat to open

the valve and allow the material in the container to be discharged through the control cap, the first section of the control cap having a tubular outlet section integral therewith and co-axial with the control section, the outlet section of the control cap being adapted to guide the material discharged from the container to the interior of the applicator, said material passing through the porous material of the applicator to the outer surface thereof.

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