May 4, 1965 B. D. ASTON 3,181,539

FLUENT COSMETIC APPLICATOR WITH REPLACEABLE CARTRIDGE

Filed June 12, 1961

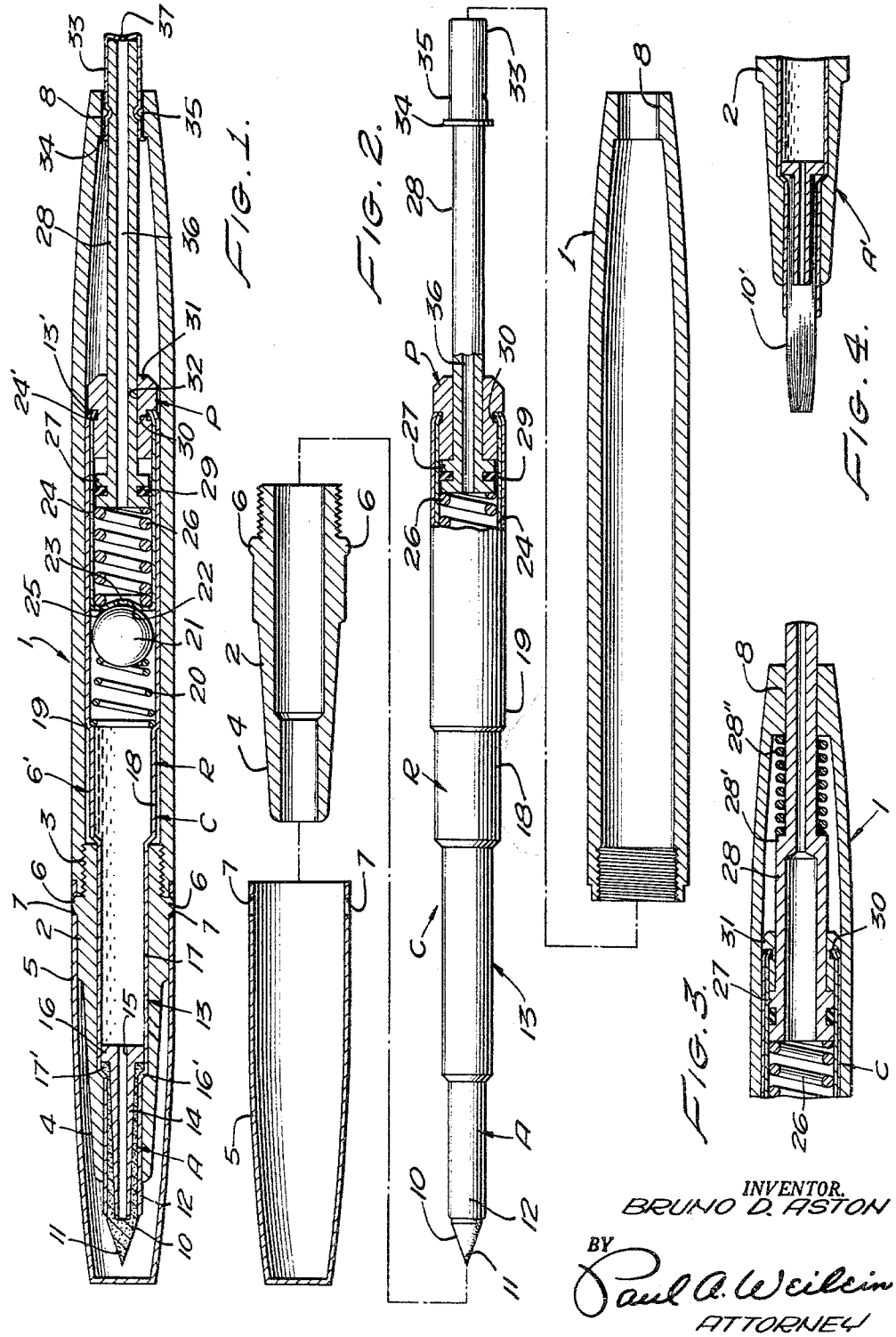


FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4.

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3,181,539

Patented May 4, 1965

3,181,539

FLUENT COSMETIC APPLICATOR WITH REPLACEABLE CARTRIDGE

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Filed June 12, 1961, Ser. No. 116,562
5 Claims. (Cl. 132—79)

The present invention relates to cosmetic applicators, and more particularly to an applicator which has means for supplying a fluent cosmetic to an applicator element.

Cosmetics such as lipstick and mascara, are variously packaged for ease of handling and storage whereby a supply of cosmetic of the above mentioned types, particularly, is readily available and may be easily carried in a woman's purse or pocket without fear of damage to or staining of the clothing, the purse or articles contained therein.

Precise application of such cosmetics as lipstick and mascara has been facilitated by employment of rather fine brushes or brush-like applicators with liquid cosmetic which dries upon application.

An object of the present invention, therefore, is to provide a convenient and effective liquid cosmetic applicator containing a reservoir or source of cosmetic which is continuously available during use of the applicator.

Another object is to provide a fluid cosmetic applicator of a type comprising a cartidge which is readily replaceable in a case and which contains all of the necessary instrumentalities for the application of fluent cosmetic, including an applicator head in the nature of a brush or other porous or absorbent applicator means, a source of fluent cosmetic, and means for forcefully feeding cosmetic to the applicator means. In accordance with this objective the present invention provides an expendable cartridge which contains a supply of fluent cosmetic so that upon depletion of the supply the cartridge may be removed from its carrying case and thrown away, and a replacement cartridge may be installed in the housing with ease.

Yet another object of the invention is to provide a unitized liquid cosmetic containing cartridge for insertion in a supporting case, the cartridge unit being of a novel and easily manufactured construction, yet being easily manually operated to supply fluid cosmetic to the applicator means thereof, and at the same time being reliable in its operation as well as being safe insofar as leakage of cosmetic therefrom is concerned.

Other objects and advantages of the invention will be hereinafter described or will become apparent to those skilled in the art, and the novel features of the invention will be defined in the appended claims.

In the accompanying drawing:

FIG. 1 is a longitudinal sectional view through an embodiment of a cosmetic applicator made in accordance with the present invention;

FIG. 2 is an exploded detail view partly in section and partly in longitudinal section;

FIG. 3 is a fragmentary detail view in longitudinal section of a modification of the cosmetic applicator of FIG. 1; and

FIG. 4 is a fragmentary view in longitudinal section through a modified applicator end of the invention.

Like reference characters in the several views of the drawing and in the following description designate corresponding parts.

Referring first to FIG. 1, the cosmetic applicator assembly is illustrated as including an elongated body or case 1 which is preferably of a size and shape such that it may be readily manipulated in the hand of a user, and to this end, the case is preferably relatively long and slender. The case 1 is hollowed and has at one of its ends a nose section 2 adapted to be threadedly connected to the case 1 as at 3 and having an elongated tapered gripping portion 4 readily engageable by the fingers of a user. The nose section 2 is adapted to receive a closure cap 5, and preferably, means are provided for securely retaining the cap on the nose section, such as, for example, lugs 6 formed on the nose section 2 adjacent the connection thereof to the case 1 and engageable in recesses 7 in the closure cap 5.

At the other end of the case 1 from the nose section 2, the case is suitably provided with a retainer flange 8 which, as will hereinafter be more particularly described, constitutes an abutment for a unitized fluent cosmetic dispensing and applying cartridge generally designated C.

This cartridge C is composed of three cooperatively related sections, namely, an applicator section A, a reservoir section R and a pressure supplying section generally designated P.

Means are provided in the applicator section A for facilitating the coating of cosmetic material on the lips, eyebrows or the like, and such means may be, as in this illustrative embodiment, composed of a body 10 of porous material preferably substantially pointed as at 11 to enable fine control of the area of application of the cosmetic material. It will be apparent that any suitable brush-like material having the ability to carry and supply liquid material to a surface, will be appropriate as an applicator means.

The illustrative applicator means or body 10 is generally of cylindrical form and is disposed in the open end of a neck 12 of an elongated hollow housing 13 which may be composed of sheet metal, plastic material or the like. An elongate longitudinally tapered member 14 having a central opening 15 therethrough is disposed coaxially within the applicator body 10 and is provided at its inner end with a retainer head 16 closely fitting in the wall of the housing 13 in opposed relation to a wall 16' of the housing provided at the juncture of the neck portion 12 thereof with an elongated reservoir section 17 of the housing. The body 10 is provided with a flange 17' interposed between the retainer head 16 and the opposing wall 16' so that the applicator body 10 may not be displaced from the end of the neck portion 12 of the housing 13.

The reservoir section R of the cartridge C comprises an elongated cylindrical section 17 referred to above which fits snugly in the nose section 2 of the case 1, and the reservoir is preferably flared outwardly to provide an enlarged reservoir section 18 which is stepped further outwardly as at 19 to provide a shoulder against which seats one end of a coiled compression spring 20. The other end of the spring 20 engages a ball check valve 21 which may be of plastic material. This ball check valve 21 engages in a tapered seat 22 through which is a port 23 so that the valve effectively prevents the flow of liquid cosmetic from the reservoir section R.

The pressure supplying section of the cartridge comprises a generally cylindrical or tubular member 24, the end wall of which adjacent the valve 21 not only provides the valve seat 22, but also provides an annular spring seat 25 in which is engaged one end of a coiled compression spring 26. The other end of the spring 26 engages a piston 27 supported or formed on the inner end of an actuator stem 28 which projects longitudinally of the case 1 through the retainer flange 8 previously described. An appropriate sealing means such as a resilient, preferably non-metallic ring 29, is provided between the piston 27 and the wall of the member 24.

It will be noted that the member 24 is coaxially disposed and fits snugly within the outwardly stepped portion

19 of the cartridge housing 13 and, preferably, both the member 24 and the housing 13 have their ends 24' and 13' crimped radially inwardly into engagement in a groove 30 in a plug 31. This plug 31 has an opening 32 therethrough through which the piston stem 28 extends.

It will now be noted that the housing, commencing at the plug 30, progressively steps down to smaller diameter sections, and that each of the parts within the housing heretofore described, commencing with the applicator body 10 and including the piston 29, are insertable through the large end of the cartridge housing 13, and upon the subsequent crimping of the ends 13' and 24' of the member 24 and the housing 13 into locking engagement with the groove 30 in the plug 31, the cartridge is completed as a unitized assembly easily insertable into the case 1 upon removal of the nose section 2, as shown in FIG. 2.

Means are provided to limit movement of the piston stem 28 through the retainer flange 8 at the right hand end of the case 1 when the cartridge is installed in the case and during use of the assembled cosmetic applicator. In the illustrative embodiment of FIGS. 1 and 2, this means comprises a retainer cap 33 which fits over the outer extremity of the plunger stem 28 and has an outwardly extended abutment flange 34 engageable with the retainer flange 8 of the case. Preferably, the retainer cap 33 is dimpled as at 35 or otherwise crimped into frictional engagement with or connected to the stem 28.

Means are provided whereby air is supplied to the pressure supplying means between the piston 27 and the ball valve seat 22. In the embodiment of the invention herein shown, the piston stem 28 is provided with a passageway extending longitudinally therethrough and designated 36, the retainer cap being provided with an opening 37 communicating with the passageway 36. Accordingly, it will be noted that air is free to pass into the chamber defined between the piston and the valve seat 22.

In the use of the cosmetic applicator, when it is desired to force feed fluent cosmetic material to the applicator body or brush 10, the user will simply apply a thumb or finger to the outer end of the plunger stem 28, and more particularly to the retainer cap 33 thereon, so as to effectively close the opening 37 therein, thus trapping in the chamber lying between the piston and the valve seat 22, a volume of air. Upon depression of the piston stem 28 with consequent movement of the piston toward the valve seat 22 against the spring 26, the air in the chamber will be forced through the port 23 in the valve seat 22 so as to unseat the valve 21 against the pressure of spring 20 and thereby raise the pressure of fluid in the reservoir section R so as to cause flow through the opening 15 in the retainer 14 and to supply a quantity of fluent cosmetic to the applicator body or brush 10. If more than one stroke of the piston 27 is desired in order to force additional cosmetic into the applicator body or brush 10, then the user need simply release the thumb or finger from the opening 37 to allow air to enter the passage 36 through the piston stem 28 and to allow the spring 26 to urge the stem outwardly. At the same time, the spring 20 will return the ball valve 21 to its seat so as to prevent the escape of cosmetic material into the pressure supplying section of the cartridge. Upon next depressing the stem 28, a further quantity of cosmetic material will be supplied to the applicator body or brush 10, as just described.

Referring now to FIG. 3, a somewhat modified embodiment of the invention is shown wherein, in lieu of the retainer cap 33, outward movement of the stem 28 is limited by engagement of the piston 27 with the inner end of the plug 31. In this embodiment the stem, moreover, is provided with a shoulder 28' on which seats one end of a coiled compression spring 28'', the other end of this spring abutting with the retainer flange 8. With this construction, it will be observed that the entire cartridge C is resiliently urged outwardly by the spring 28'' in the direction of the applicator end of the device. In either case, however, that is whether the cartridge assembly in its entirety, including the piston and stem, is biased toward the applicator end as in FIG. 3, or whether the housing 13, together with its positively connected parts including the plug 31, is biased toward the applicator end by the spring 26, while the stem 28 and piston 27 are biased in the opposite direction by the spring 26, the cartridge assembly need not be made to fit with any degree of precision within the case C. The reason that the spring 26 urges the entire cartridge assembly except the piston 27 toward the nose portion 4 of the case 1 is that, as shown in FIG. 1, the piston 27 is at the limit of its outward movement and spaced from plug 31 due to the flange 34 on the retainer cap 33 abutting the flange 8 on the case. Therefore, the force of the spring 26 is ineffective against the piston but is effective against the spring seat 25 of the tubular member 24, which latter, together with the tubular housing 13, is crimped to the plug 31. It follows that since the members 24 and 13 are joined as a unit to the plug 31 while the piston 27 is spaced from the plug, the spring 26 tends to bias members 24 and 13 to the left. The reason that the spring 28'' shown in FIG. 3 urges the cartridge including the piston and stem as a whole to the left is that the piston 27 normally abuts the plug 31 and the force of the spring against the piston 27 and against the spring seat of the member 24 is uniform. In other words, the spring does not exert a greater force against the piston 27 than against its seat at the end of the member 24 opposite the piston. Consequently, the spring 28'' will bias the entire cartridge including the piston and its stem in the direction above noted. As a result, the manufacture, installation and replacement of the cartridges is a relatively simple matter.

Referring to FIG. 4, there is shown a modified applicator end A' in which a brush 10' preferably composed of suitable synthetic bristles, is illustrated in lieu of a porous applicator body or brush 10 as previously described. In either case, however, the porous applicator 10 and the brush applicator 10' constitute applicator means composed of a material which enables the feed of fluent cosmetic material therethrough to the tip thereof for ease of application of the material to the lips, eyebrows, and the like of a user.

While the invention has been described in connection with the application of fluent cosmetic materials, it will be understood that such use is not exclusive, and that changes and alterations in the details may be resorted to without departing from the spirit of the invention as defined in the appended claims.

I claim:

1. A device for applying fluent material, comprising: an elongated case; a cartridge removably disposed in said case and including applicator means extending from one end of said case; said cartridge including a reservoir for fluent material communicating with said applicator means; pressure supplying means for supplying fluid under pressure to said reservoir to displace fluent material therefrom to said applicator means; said pressure supplying means including a chamber in said cartridge; a piston in said chamber; a stem on said piston projecting from said cartridge and the other end of said case and manually engageable to shift said piston in said chamber; means for allowing air to enter said chamber, interengaging means between said stem and casing limiting projection of said stem from said other end of said case, and means urging said cartridge toward said one end of said case and urging said stem toward said other end of said case.

2. A device for applying fluent material, comprising: an elongated case having a nose section at one end; a tubular cartridge in said case including applicator means at one end extending through said nose section; an elongate portion of said cartridge providing a reservoir for fluent material communicating with said applicator means; a plug in the other end of said cartridge; means providing a chamber between said plug and said reservoir; a passageway from said chamber to said reservoir; a check

valve normally closing said passageway between said chamber and said reservoir; a piston in said chamber having a stem extending through said plug; means for admitting air to said chamber between said piston and said check valve; and said stem extending through the end of said case opposite said applicator means and being engageable to shift said piston; said tubular cartridge enclosing and having fixed thereto said applicator means and said stem for removal therewith from said case and nose section, said plug being provided with a groove extended therearound and said end of said tubular cartridge having a portion projecting into said groove; said means providing said chamber including a tubular member disposed in said tubular cartridge and having an end wall providing a seat for said check valve; said tubular member also having a portion projecting into said groove.

3. A device as defined in claim 2, including means for biasing said cartridge in said case in the direction of said applicator means.

4. A device as defined in claim 2, wherein said case has a retainer flange through which said stem extends; and including a cap on said stem extending through said flange and having a projection engageable therewith to limit movement of said stem outwardly of said case; said means for admitting air to said chamber including a passageway leading through said cap; and a passageway extending through said stem and said piston.

5. A device as defined in claim 2, wherein said case has a retainer flange through which said stem extends; and including a compression spring engaged with said flange; an abutment on said stem engaged by said spring; and a compression spring interposed between said piston and the means providing said chamber.

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