United States Patent [19]

Spatz

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[45] **Sept. 24, 1974**

[54] **COSMETIC APPLICATOR**

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[73] Assignee: **Spatz Corporation,** Venice, Calif.

[22] Filed: **Mar. 12, 1973**

[21] Appl. No.: **340,473**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 205,225, Dec. 6, 1971, Pat. No. 3,768,915.

[52] **U.S. Cl.** **401/130,** 401/51, 401/76

[51] **Int. Cl.** **A45d 33/00**

[58] **Field of Search** 401/68–79, 401/29, 50, 51, 80, 81, 130, 125, 127

[56] **References Cited**

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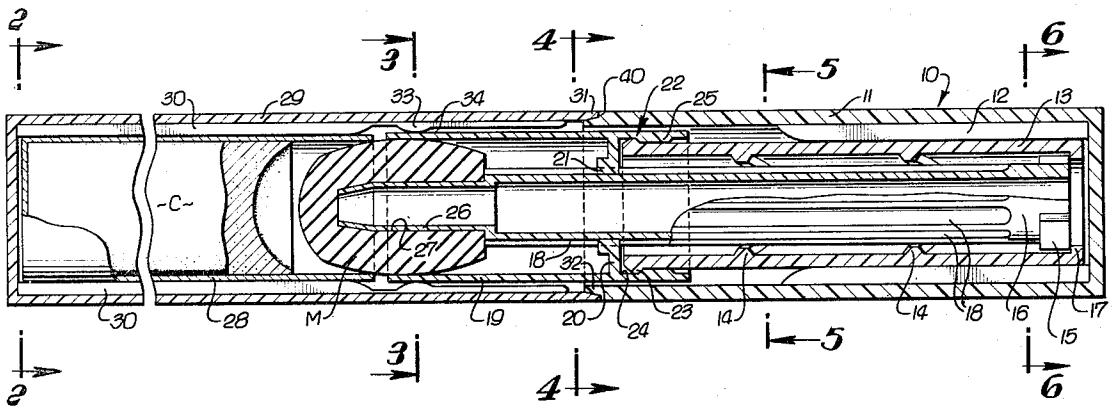
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Primary Examiner—Lawrence Charles
Attorney, Agent, or Firm—Bernard Kriegel

[57] **ABSTRACT**

An applicator is affixed to the forward end of an elongate driver or shaft extending into a barrel structure, and having a rear head meshing with internal threads in a female member of the barrel structure, the driver being splined to a forward sleeve adapted to surround the applicator and being swivelly connected to the female member. A removable cap containing a cosmetic mass has its rear portion surrounding the sleeve and rotatable on the barrel structure, the cap frictionally engaging the external portion of the sleeve to provide a slippable clutch therewith capable of transmitting a predetermined torque before slipping, whereby relative rotation in one direction between the barrel structure, on the one hand, and the cap, sleeve and driver, on the other hand, produces forward feeding of the applicator toward and against the cosmetic mass, continued relative rotation and application of torque causing the clutch to slip, while effecting relative rotary movement between the applicator and cosmetic mass to coat the applicator with a portion of the mass. Removal of the cap exposes the coated applicator for use.

10 Claims, 6 Drawing Figures



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FIG. 1.

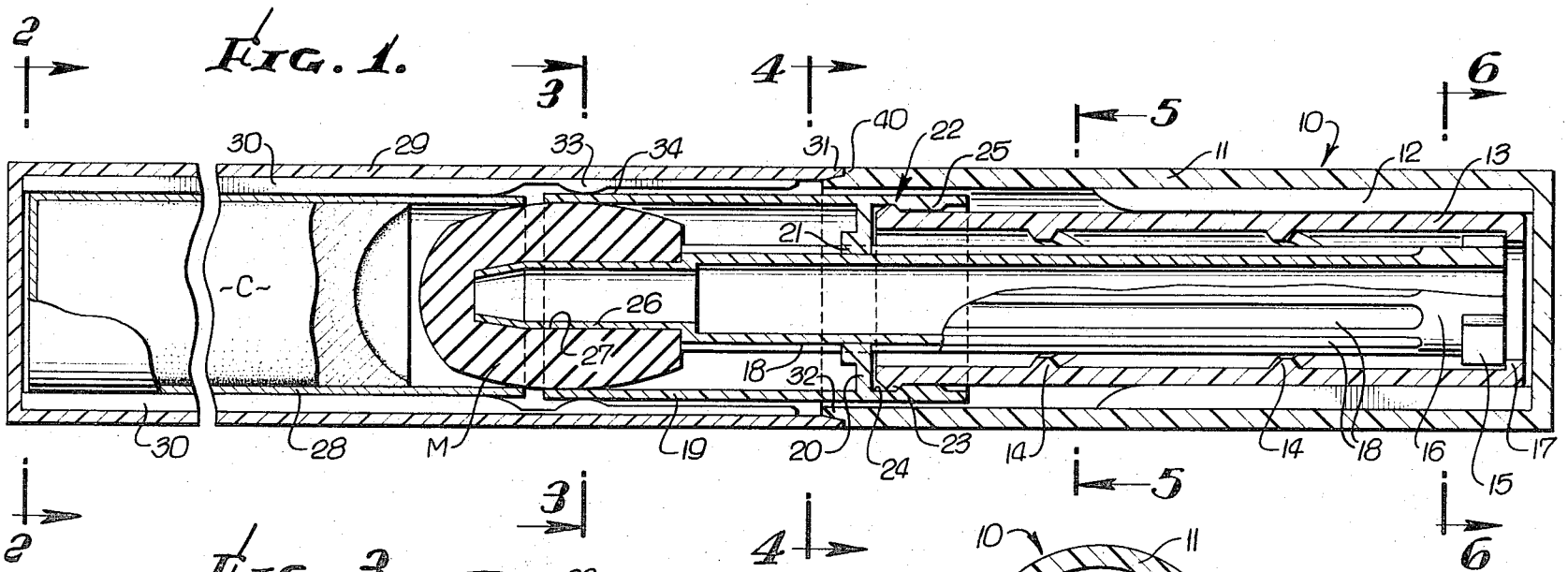


FIG. 2.

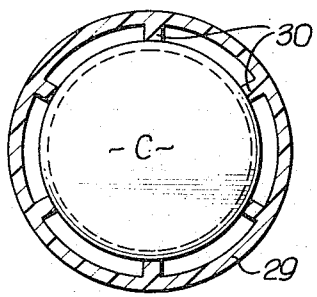


FIG. 3.

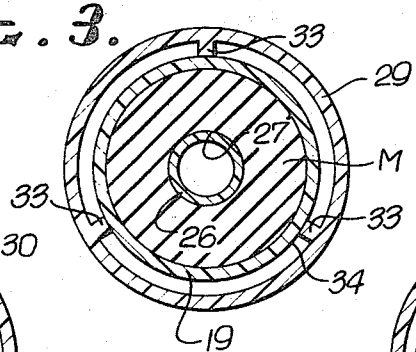


FIG. 4.

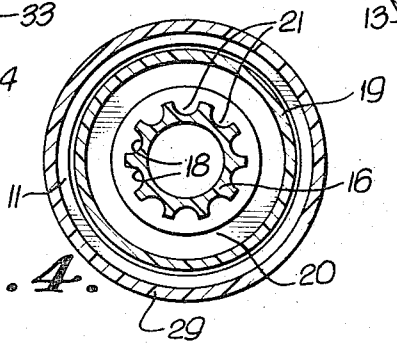


FIG. 5.

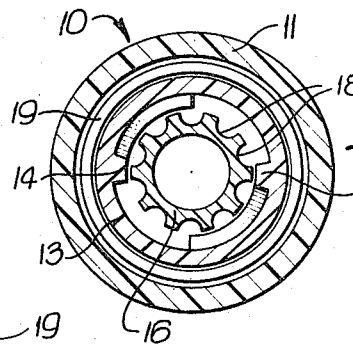
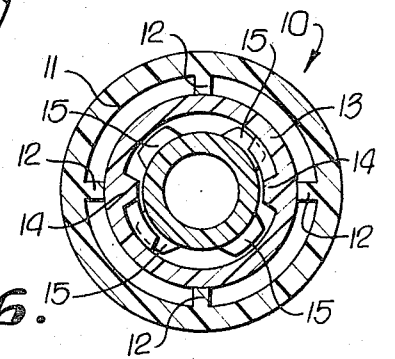


FIG. 6.



COSMETIC APPLICATOR

This application is a continuation-in-part of my prior copending United States Pat. application Ser. No. 205,225, filed Dec. 6, 1971, for "Axial Force Limiting Cosmetic Marking Devices," now U.S. Pat. No. 3,768,915, patented Oct. 30, 1973.

The present invention relates to cosmetic apparatus in which an applicator or marking member is advanced against a companion member or cosmetic mass to appropriately condition the member, as by applying a portion of the cosmetic mass thereto.

Screw and nut devices have been embodied in cosmetic applicators for axially feeding a crayon against a companion sharpener as a result of rotating the forward cap portion of the applicator relative to its rear barrel portion, to relatively turn the screw and nut portions of the device. The screw and nut device continues to feed the crayon against the sharpener while the latter rotates and cuts the point on the end portion of the crayon. However, the axial force may become too great, resulting in crushing of the crayon, or damage to parts of the applicator device.

By virtue of the present invention, an applicator member may be retracted into and projected from a barrel by a screw and nut device. The turning of a cap on the barrel, and the transmission of the relative rotary motion of the cap through a slippable clutch to the male member of the screw and nut device, will move the applicator member forwardly of the barrel and against a cosmetic mass in the cap, the relative rotation of the cap around the applicator member insuring the transfer of a sufficient portion of the mass to the latter. The axial force of the applicator member against the mass is limited by slipping of the clutch, which stops the axial feed of the member, the cap still being capable of rotating with respect to the member to continue applying the cosmetic mass thereto. Upon removal of the cap, the applicator member may be propelled forwardly from the barrel to the desired extent of exposure for application of the cosmetically coated member against the user.

Accordingly, it is an object of the present invention to provide improved cosmetic applicators in which the axial force or thrust of a marking or applicator member against a companion member is limited, while relative rotation between the member and companion member can continue. More specifically, the forward feeding occurs as a result of relatively rotating a cap on a barrel and transmitting the rotation through a slippable clutch to the male member of the screw and nut device connected to the marking member, to axially feed the same toward and against the companion member, the cap being able to continue rotating the companion member while the clutch is slipping, the cap also being removable from the barrel to expose the marking member for use.

Another object of the invention is to provide an improved cosmetic applicator, in which the applicator member is urged axially against a cosmetic mass in the cap by a screw and nut device, and in which forward feeding or pressure of the member against the mass is limited, while relative rotation of the member against the mass can continue.

This invention possesses many other advantages, and has other objects which may be made more clearly apparent from a consideration of a form in which it may be embodied. Such form is shown in the drawings accompanying and forming part of the present specification. This form will now be described in detail for the purpose of illustrating the general principles of the invention; but it is to be understood that such detailed description is not to be taken in a limiting sense.

Referring to the drawings:

FIG. **1** is a longitudinal section through a cosmetic applicator embodying the invention, portions being shown in elevation;

FIG. **2** is a cross-section taken along the line **2—2** of FIG. **1**;

FIG. **3** is a cross-section taken along the line **3—3** of FIG. **1**;

FIG. **4** is a cross-section taken along the line **4—4** of FIG. **1**;

FIG. **5** is a cross-section taken along the line **5—5** of FIG. **1**; and

FIG. **6** is a cross-section taken along the line **6—6** of FIG. **1.**

As illustrated in the drawings, an applicator is provided in which a pliant flexible applicator member M is urged and turned against a cosmetic mass C. As disclosed, the applicator includes a rear barrel structure **10** including an outer elongate cup-shaped barrel **11** provided with a plurality of elongate circumferentially spaced ribs **12** frictionally gripping a female member **13** of the barrel structure to effectively secure it to the outer barrel portion **11** of the structure. The female member has an internal thread **14,** preferably a left-hand thread, of divided pitch, such as a two start thread, meshing with the rear head **15** of an elongate driver or shaft **16** movable axially within the female member **13,** with its rearward movement being limited by engagement of its rear head **15** with an inwardly directed flange **17** of the female member. The driver itself has circumferentially spaced external splines **18,** and extends through a sleeve **19** having an inwardly directed flange or collar portion **20** provided with internal circumferential splines **21** coacting with the external splines to cause the driver **16** and sleeve **19** to rotate together, while permitting forward and rearward movement of the driver **16** with respect to the sleeve.

The sleeve is prevented from partaking of any substantial longitudinal movement by a swivel connection **22** between it and the forward portion of the female member **13,** such swivel connection permitting relative rotation to occur between the sleeve **19** and the female member or barrel structure **10.** As specifically disclosed, the swivel connection is provided by a forward external flange or rib **23** on the female member extending outwardly into a groove **24** provided between the collar **20** and an inwardly directed flange **25** on the sleeve, such internal flange being disposed rearwardly of the external flange **23,** and being engageable with the latter to prevent any substantial forward relative movement of the sleeve **19** with respect to the barrel structure **10.** Substantial relative movement of the sleeve with respect to the barrel structure is also limited by engagement of the collar **20** with the forward end of the female member **13.**

The applicator member M is suitably affixed to the forward reduced diameter portion **26** of the driver **16,** such forward portion being disposed within a companion socket **27** in the applicator member. One mode of adhering the applicator member to the driver is through use of a suitable glue. The applicator member

itself is surrounded by the forward portion of the sleeve **19** when the driver **16** is in its rearmost position within the barrel structure **10,** the applicator member M still projecting beyond the forward end of the sleeve to limit the extent of its exposure beyond the sleeve, if desired. The applicator member or head itself may be formed of pliant, elastic polyurethane.

The applicator member is adapted to be axially shifted against, and then relatively rotated with respect to, a suitable cosmetic mass C disposed within a cup or container **28** mounted within an elongate cap **29.** The container or cup, which may be made of aluminum, for example, is frictionally held against a plurality of elongate circumferentially spaced ribs **30** integral with and extending inwardly from the cap wall, the container **28** making a forced fit against the ribs, in order to prevent relative rotation of the container within the cap **29.** The cap can be placed over the sleeve **19** with its rear end **31** fitting closely over a forward terminal portion **32** of the barrel **11,** the cap being rotatable with respect to the barrel and being centered with respect thereto. The rearward portion of the cap further includes a plurality of circumferentially spaced inwardly directed friction pads **33** adapted to frictionally engage the periphery **34** of the sleeve **19,** forming a slippable friction clutch therewith. The parts are so constructed and proportioned that the cap **29** will slip rotationally with respect to the sleeve **19** when a predetermined torque is exceeded. At lower torques, the cap **29** and the sleeve **19** are secured together against rotation with respect to one another. It is to be noted that the friction pads **33** and the rear terminal portion **31** of the cap jointly hold the cap coaxial of the barrel **11** when the cap is mounted thereon.

The parts are made of suitable plastic materials. As an example, the cap **29** and the sleeve **19** may be formed of polypropylene, the barrel structure **10,** including its female member **13,** of medium impact styrene, and the driver or shaft **16** of an acetal.

In assemblying the apparatus, the driver head **15** may be inserted into the female member **13,** the sleeve **19** then being slipped longitudinally over the driver, the inner flange **25** having sufficient flexibility as to snap over the external flange **23** of the female member **13** to dispose the internal flange **25** behind the external flange **23,** as illustrated in FIG. **1,** and thereby provide the swivel connection **22** between the sleeve **16** and the female member. The female member can then for forced into the outer barrel **11,** the barrel ribs **12** gripping the periphery of the female member to prevent its relative turning in the barrel. The driver **16** can then be projected forwardly of the female barrel and the applicator M mounted over the reduced diameter portion **26** of the driver and adhered thereto by a suitable glue. The barrel structure **10** and the parts contained therein have now been assembled with respect to one another.

In the use of the applicator, the cap **29** containing the cosmetic mass C, such as an appropriate powder, is mounted over the sleeve **19** with the rear end **31** of the cap engaging the oppositely directed shoulder **40** on the forward end of the barrel. In use, the cap and barrel are relatively turned. For example, the cap **29** is turned while the barrel **11** is held stationary, the rotation or turning effort on the cap being transmitted through the slippable friction clutch **33, 34** to the sleeve **19,** which makes a slidable spline connection with the driver or shaft **16,** causing the latter to turn within the female member **13,** the meshing of the driver head **15** with the threads **14** on the female member producing axial forward feeding or movement of the driver shaft **16** within the barrel until the applicator member M bears against the cosmetic mass C in the cap. When the axial force of the applicator member against the cosmetic mass reaches a certain value corresponding to the predetermined torque transmitting capacity of the slippable clutch, the friction pads **33** will begin slipping on the sleeve **19,** the cap continuing to turn the cosmetic mass C therein relative to the applicator member M and transferring or coating a portion of the mass onto the member M. So long as the predetermined torque is exceeded, the axial force of the applicator member toward and against the mass cannot be excessive. Any reduction of the torque transmitted, as by the transfer of a portion of the cosmetic mass C to the applicator member M, will result in the cap effecting continued turning of the driver **16** through the clutch **33, 34** to feed the applicator member axially against the mass, until a predetermined longitudinal force or pressure is again exceeded, whereupon the clutch will slip again.

The cap **29** is then removed from the barrel **11** and the sleeve, leaving the applicator member M exposed for use. If desired, the applicator member can be retracted within the barrel structure **10** and sleeve **19** to its fullest extent, as limited by engagement of the head **15** with the rear flange **17** of the female member, whereupon the cap **29** can be removed, the applicator member being available for use, in view of its forward projection beyond the forward end of the sleeve. Of course, if desired, the applicator member can be projected forwardly to a greater extent after the cap has been removed simply by grasping the sleeve **19** and turning it relative to the barrel structure **10,** which will effect turning of the driver within the female member **13** and corresponding longitudinal movement of the driver **16** and applicator member M with respect to the barrel structure and the sleeve.

It is, accordingly, apparent that a cosmetic applicator has been provided in which the axial or end thrust of the applicator member M, or other marking member, against the cosmetic mass C, or other companion member, is limited, thereby precluding excessive application of the cosmetic mass to the applicator member, or damage to the latter and to other parts of the device. Not only does the friction clutch limit the amount of torque that can be transmitted to the driver or male member **16** of the screw and nut device, and the axial force exerted by the applicator member against the cosmetic mass, but it also serves to removably retain the cap **29** on the sleeve **19,** holding it in appropriate position with respect to the barrel structure when the apparatus is not in use.

I claim:

1. In an applicator: a barrel structure; a cap rotatably and removably mounted with respect to said barrel structure; marking means; companion means in and rotatable with said cap for operation upon said marking means when engaged therewith; a screw and nut device comprising a female member forming part of said barrel structure and having an internal thread, a male member in said female member meshing with said thread and connected to said marking means; a rotation transmitting member swivelly connected to said

barrel structure and projecting forwardly beyond the forward end of said barrel structure; means providing a slidable spline connection between said rotation transmitting member and male member to couple said members together for joint rotation while permitting axial movement of said male member along said rotation transmitting member; and means providing a torque responsive friction clutch between said cap and rotation transmitting member when said cap is mounted on said rotation transmitting member, said clutch slipping at a predetermined torque imposed thereon to limit the axial force that can be imposed upon said marking means when engaged with said companion means, said friction clutch being separate from the threaded engagement of said female member with said male member.

2. In an applicator as defined in claim **1**; said companion means comprising a cosmetic mass; said marking means comprising an applicator member engageable with said mass.

3. In an applicator as defined in claim **1**; said clutch comprising a plurality of circumferentially spaced pads on said cap frictionally engaging the periphery of said rotation transmitting member.

4. In an applicator as defined in claim **1**; said rotation transmitting member comprising a forward sleeve portion, an intermediate portion, and a rear portion swivelly connected to the forward portion of said female member; said slidable spline connection comprising internal splines in said intermediate portion and elongate external splines on said male member meshing with said internal splines.

5. In an applicator as defined in claim **1**; said rotation transmitting member comprising a forward sleeve portion, an intermediate portion, and a rear portion swivelly connected to the forward portion of said female member; said slidable spline connection comprising internal splines in said intermediate portion and elongate external splines on said male member meshing with said internal splines; said clutch comprising a plurality of circumferentially spaced pads on said cap frictionally engaging the periphery of said forward sleeve portion.

6. In an applicator as defined in claim **1**; said rotation transmitting member comprising a forward sleeve portion, an intermediate portion, and a rear portion swivelly connected to the forward portion of said female member; said slidable spline connection comprising internal splines in said intermediate portion and elongate external splines on said male member meshing with said internal splines; said clutch comprising a plurality of circumferentially spaced pads on said cap frictionally engaging the periphery of said forward sleeve portion.

7. In an applicator as defined in claim **1**; said barrel structure further comprising an outer barrel, circumferentially spaced ribs projecting inwardly of said barrel and gripping the periphery of said female member.

8. In an applicator as defined in claim **1**; said barrel structure further comprising an outer barrel, circumferentially spaced ribs projecting inwardly of said barrel and gripping the periphery of said female member; said companion means comprising a container and a cosmetic mass in said container; said cap having a plurality of circumferentially spaced ribs gripping said container; said marking means comprising an applicator member engageable with said mass.

9. In an applicator as defined in claim **1**; said barrel structure further comprising an outer barrel, circumferentially spaced ribs projecting inwardly of said barrel and gripping the periphery of said female member; said companion means comprising a container and a cosmetic mass in said container; said cap having a plurality of circumferentially spaced ribs gripping said container; said marking means comprising an applicator member engageable with said mass; said clutch comprising a plurality of circumferentially spaced pads on said cap frictionally engaging the periphery of said rotation transmitting member.

10. In an applicator as defined in claim **1**; said barrel structure further comprising an outer barrel, circumferentially spaced ribs projecting inwardly of said barrel and gripping the periphery of said female member; said companion means comprising a container and a cosmetic mass in said container; said cap having a plurality of circumferentially spaced ribs gripping said container; said marking means comprising an applicator member engageable with said mass; said clutch comprising a plurality of circumferentially spaced pads on said cap frictionally engaging the periphery of said rotation transmitting member; said rotation transmitting member comprising a forward sleeve portion, an intermediate portion, and a rear portion swivelly connected to the forward portion of said female member; said slidable spline connection comprising internal splines in said intermediate portion and elongate external splines on said male member meshing with said internal splines.

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