

Dec. 26, 1967

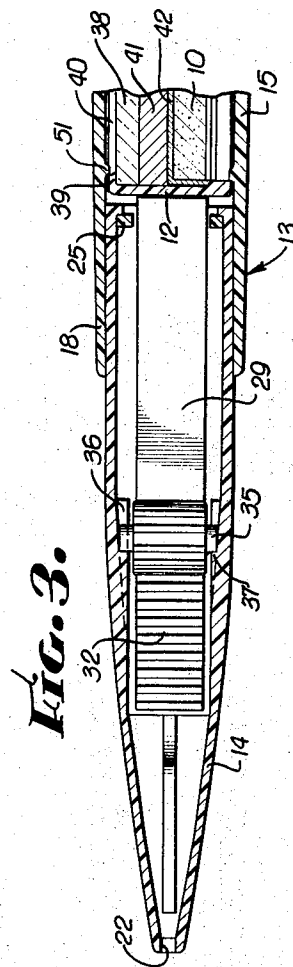
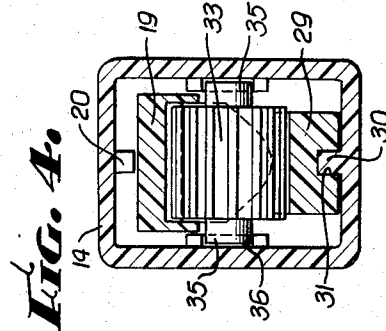
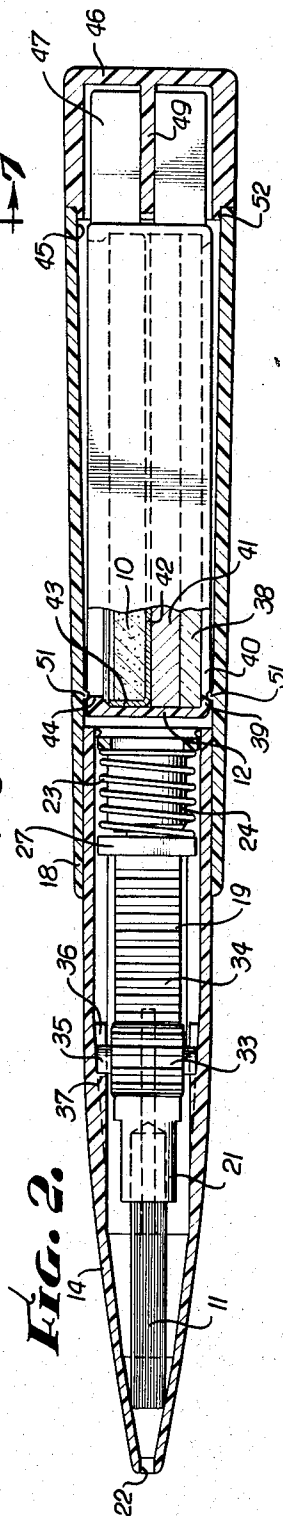
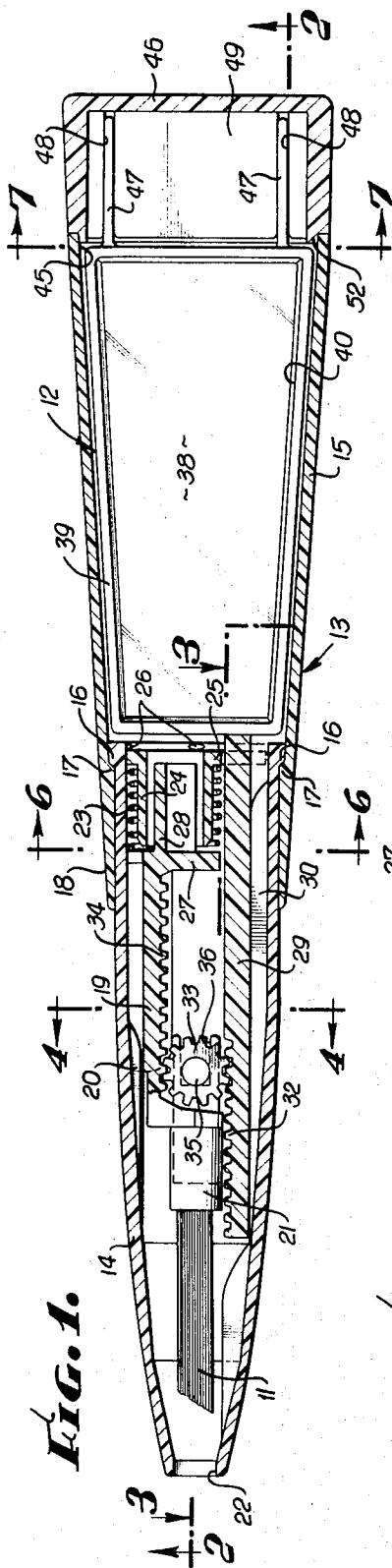
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3,359,991

COSMETIC APPLICATORS

Filed Sept. 28, 1964

4 Sheets-Sheet 1



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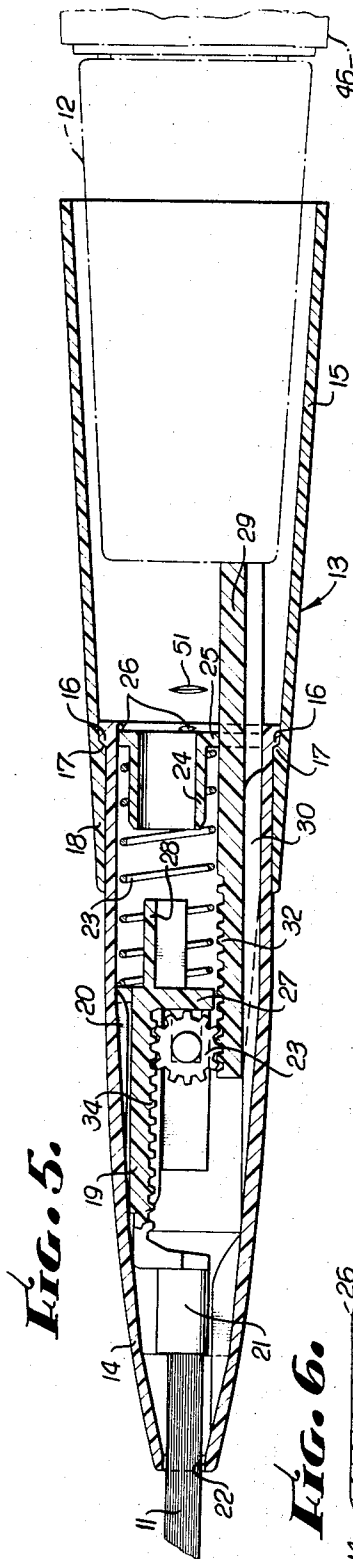


FIG. 6.

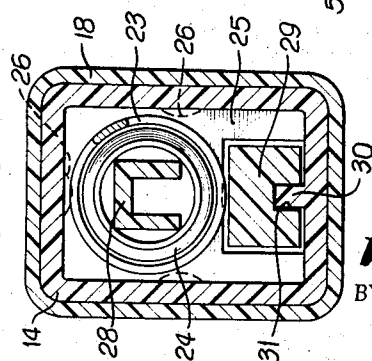


FIG. 8.

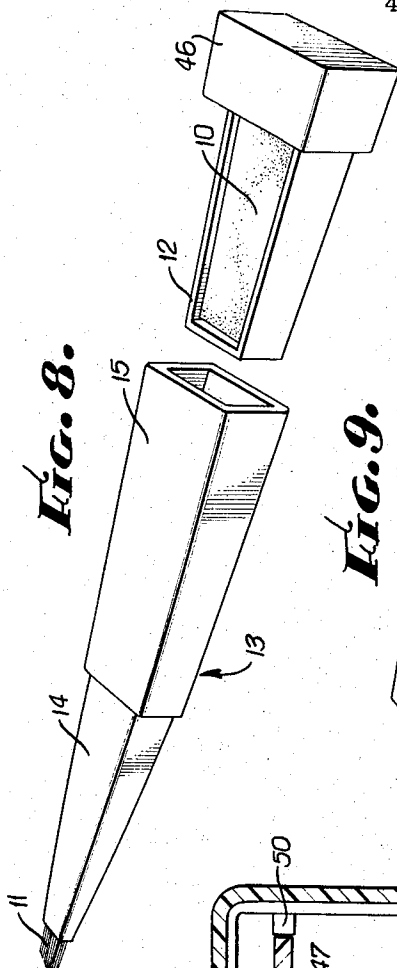


FIG. 7.

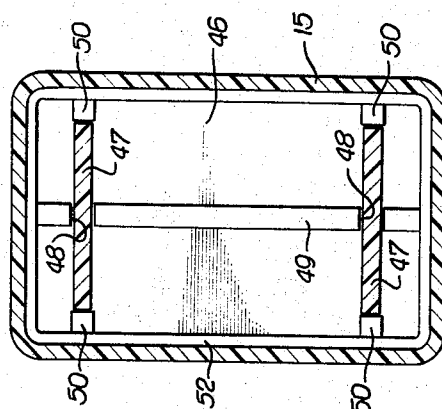
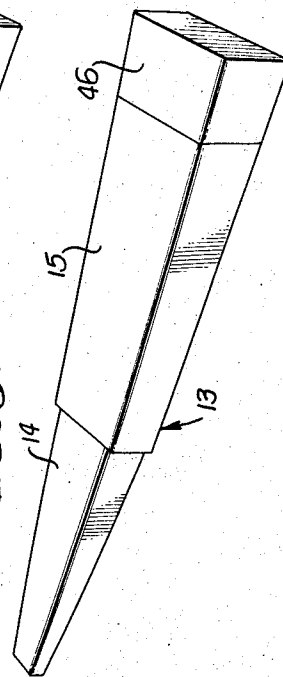


FIG. 9.



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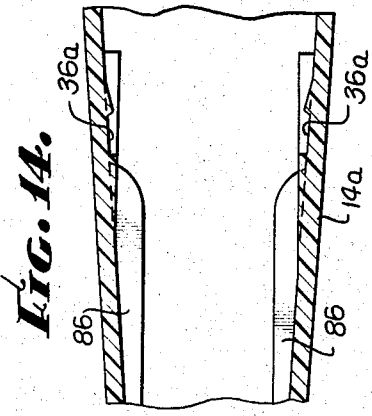
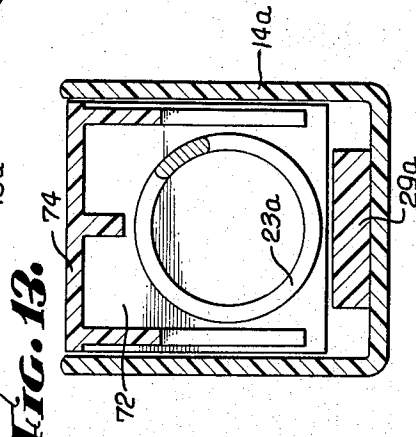
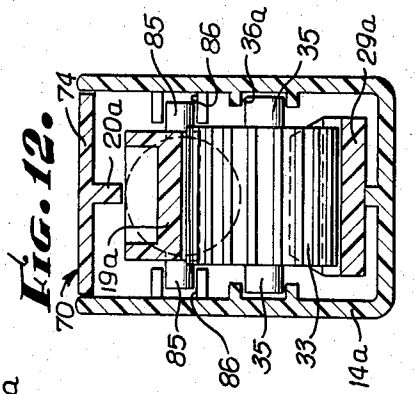
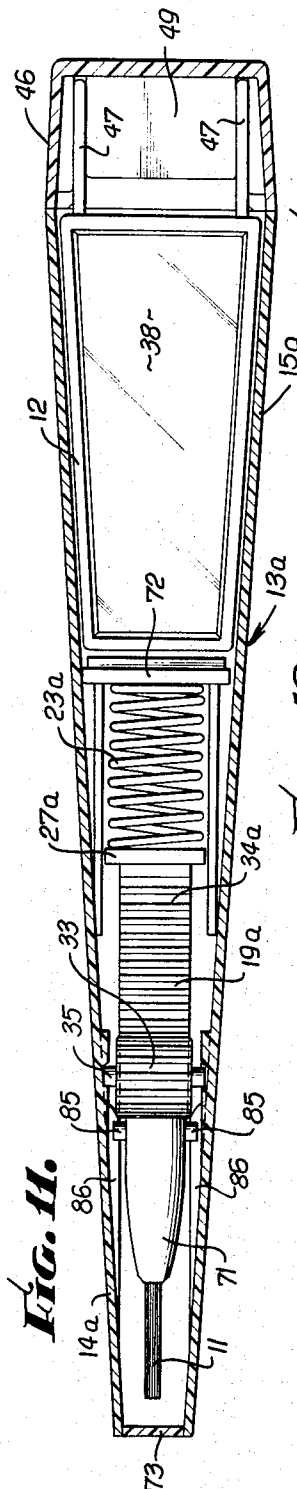
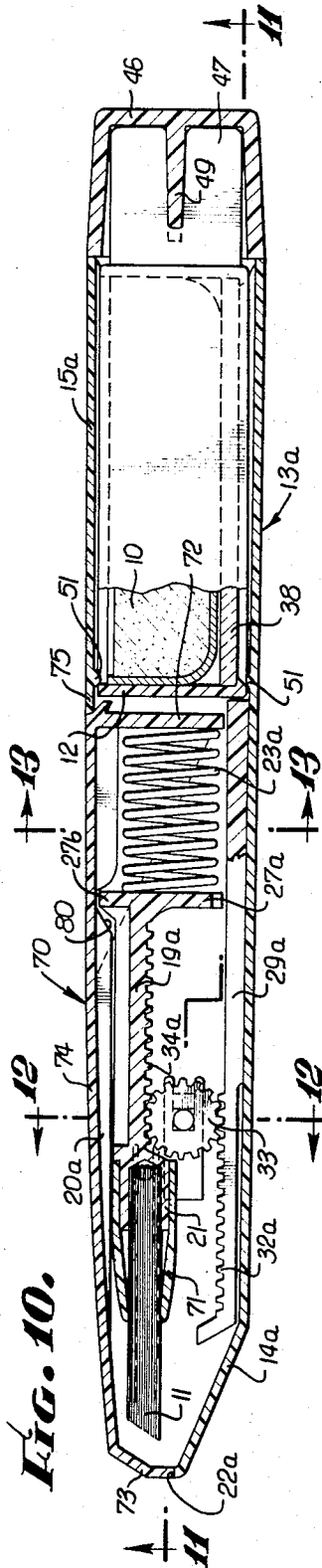
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COSMETIC APPLICATORS

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4 Sheets-Sheet 3



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Fig. 15.

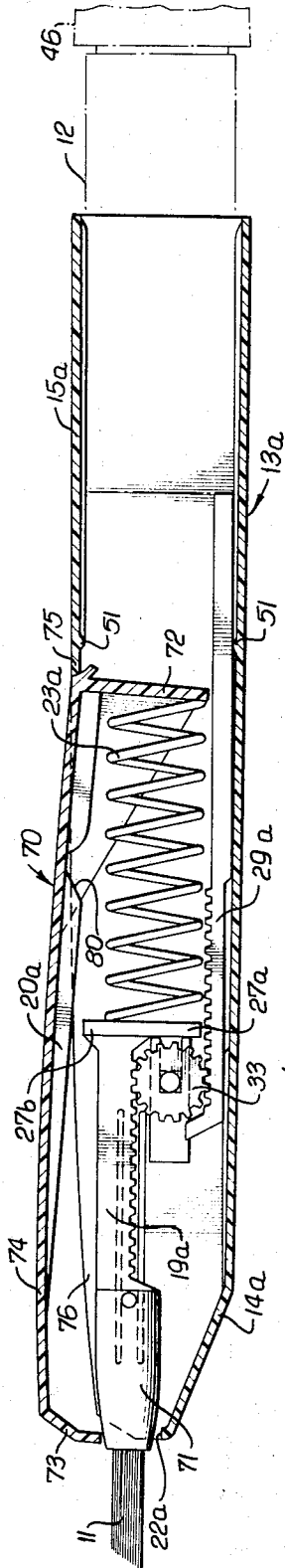


Fig. 16.

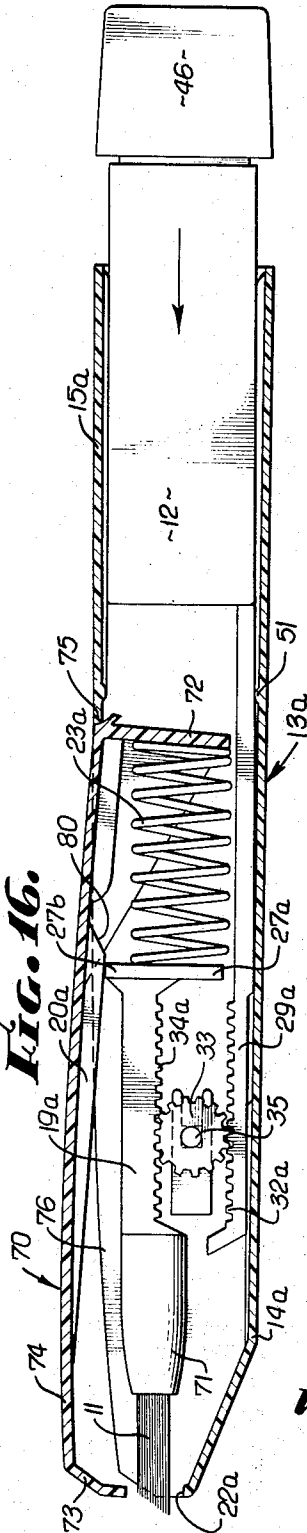


Fig. 17.

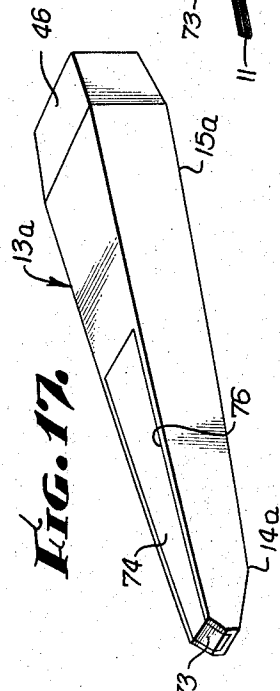
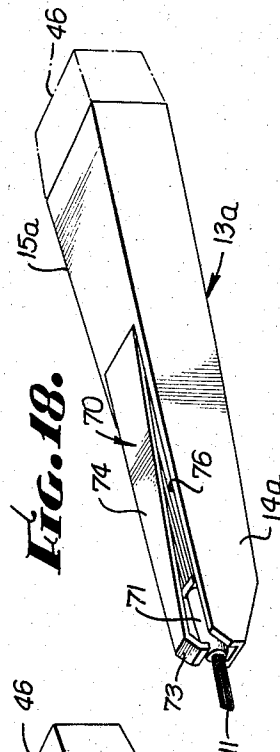


Fig. 18.



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COSMETIC APPLICATORS

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7 Claims. (Cl. 132-85)

The present invention relates to applicators for applying cosmetics to the surface of the human body.

An object of the invention is to provide a cosmetic applicator embodying a marking device, such as a brush or crayon, or other instrumentality, which is propelled from a confining housing and retracted therewithin in response to the withdrawal of an associated device from the housing and its reinsertion therein. Accordingly, the marking device or other instrumentality and the associated device are readily accessible and available for use in conjunction with one another.

Another object of the invention is to provide an improved applicator embodying a marking instrumentality, or the like, which is readily projectible from and retractable within a confining housing adapted to be held in a person's fingers for the application of a desired cosmetic.

A further object of the invention is to provide a cosmetic applicator which is compact, of strong and sturdy construction, economical to manufacture, and comparatively easy to use.

An additional object of the invention is to provide a cosmetic applicator of the type above indicated, in which the outlet of the housing through which the marking or similar instrumentality is projectible and retractable is automatically covered and closed in response to projection and retraction of the instrumentality.

This invention possesses many other advantages, and has other objects which may be made more clearly apparent from a consideration of several forms in which it may be embodied. Such forms are shown in the drawings accompanying and forming part of the present specification. These forms 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, since the scope of the invention is best defined by the appended claims.

Referring to the drawings:

FIGURE 1 is a longitudinal section through a cosmetic applicator embodying the invention;

FIG. 2 is a longitudinal section taken along the line 2-2 on FIG. 1;

FIG. 3 is a longitudinal section taken along the line 3-3 on FIG. 1;

FIG. 4 is an enlarged cross-section taken along the line 4-4 on FIG. 1;

FIG. 5 is a view similar to FIG. 1 illustrating the marking instrumentality of the applicator projected from the applicator housing;

FIG. 6 is an enlarged cross-section taken along the line 6-6 on FIG. 1;

FIG. 7 is an enlarged cross-section taken along the line 7-7 on FIG. 1;

FIG. 8 is an isometric projection of the applicator with the marking portion projecting from the housing;

FIG. 9 is an isometric projection of the applicator with its marking instrumentality in retracted position;

FIG. 10 is a longitudinal section through another embodiment of the invention, with its marking instrumentality in retracted position from the housing;

FIG. 11 is a longitudinal section taken along the line 11-11 on FIG. 10;

FIG. 12 is an enlarged cross-section taken along the line 12-12 on FIG. 10;

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FIG. 13 is an enlarged cross-section taken along the line 13-13 on FIG. 10;

FIG. 14 is an enlarged longitudinal section through a portion of the housing of the applicator illustrated in FIG. 10;

FIG. 15 is a longitudinal section corresponding to FIG. 10, with the parts in the relative position they occupy when the marking instrumentality is fully projected from the applicator housing;

FIG. 16 is a view similar to FIGS. 10 and 15 illustrating the parts in the relative position they occupy with the marking instrumentality partially retracted within the applicator housing;

FIG. 17 is an isometric projection of the applicator illustrated in FIGS. 10 to 16, with the marking instrumentality fully retracted within the applicator housing;

FIG. 18 is a view similar to FIG. 17 illustrating the applicator of FIGS. 10 to 16, inclusive, with its marking instrumentality projecting from the applicator housing.

The applicators illustrated in the drawings contain a suitable cosmetic 10 and a marking device, which may include a brush 11, for applying the cosmetic to the surface of the human body. The insertion of a container or support 12 for the cosmetic material within the applicator housing 13 effects an automatic retraction of the marking instrumentality or brush within the housing; whereas, removal of the cosmetic mass from the housing effects an automatic propelling or projection of the marking instrumentality or brush 11 from the housing to facilitate its use in connection with the particular cosmetic material.

In the form of invention illustrated in FIGS. 1 to 9, inclusive, the cosmetic applicator includes an elongate housing 13, comprising a forward section 14 and a rearward section 15, the housing being of suitable shape. As disclosed, the forward and rearward sections taper from the rear of the housing toward its forward portion and is substantially rectangular in cross-section, although the particular configuration can be varied, as desired. The housing sections are made of a suitable material, such as a flexible synthetic resin, which, because of its flexibility or elasticity, enables the sections to be readily assembled to one another. As disclosed, the rear end of the forward housing section 14 has outwardly directed shoulders 16 adapted to engage companion inwardly directed shoulders 17 on the forward portion 18 of the rear housing section 15, to prevent the forward section from being pulled out of the rear section. The forward portion 18 of the rear housing section snugly embraces the perimeter of the forward housing section to retain the parts in assembled relation.

An upper or driven rack 19 is slidably mounted in the forward housing section 14, its upper surface bearing against a longitudinal guide rib 20 in the housing section. This rack has a forward socket portion 21 adapted to receive a suitable marking instrumentality, such as the brush 11, which is adapted to be projected and retracted through a spout or forward opening 22 in the housing. The rack 19 is urged in a forward direction, to propel or project the brush 11 through the opening 22, by a helical actuating compression spring 23 encompassing a centering tube and spring seat 24 mounted in the forward housing section 14, the latter having a rear plate portion 25 engaging a plurality of retaining projections or tabs 26 extending inwardly from the rear end of the forward housing section, to prevent rearward movement of the seat 24 in the housing.

The forward end of the actuating compression spring 23 engages a vertical plate portion 27 of the brush rack, the latter being integral with a rearwardly extending tailpiece 28 extending in the tube 24.

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The spring 23 constantly urges the driven brush rack 19 and the brush 21 in a forward direction. Forward movement of the rack 19 can be restrained by a driving retracting rack actuator 29 slidable longitudinally in the lower portion of the housing, being guided in its longitudinal movement by a lower longitudinal guide rib 30 projecting upwardly from the lower wall of the housing and received within a longitudinal groove 31 of the retracting rack. The teeth 32 of the retracting rack 29 mesh with a pinion 33, which engages companion teeth 34 on the driven brush or marking instrumentality rack 19, the motion of one rack being transmitted to the other through the pinion. As disclosed in FIG. 1, when the retracting or driving rack 29 is disposed in its forward position, the driven rack 19 is in its rearward position, in which the helical spring 23 is fully compressed. When the retracting rack 29 is permitted to move in a rearward direction, the spring 23 can propel the brush rack 19 in a forward direction, the forward motion of the latter acting through the pinion 33 to shift the retracting rack 29 in a rearward direction. The pinion itself does not move longitudinally in the housing, its opposed trunnions 35 being received within opposed grooves 36 in the walls of the forward housing section 14, the trunnions engaging end housing shoulders 37 at the forward ends of the grooves, as illustrated in the drawings. The thrust spring 23 acts constantly on the driven brush rack 19 to urge it in a forward direction, and thereby retains the pinion 33 in its full forward position within the housing grooves 36.

The retracting rack 29 is normally held in a forward position, to retain the brush rack 19 rearwardly in the housing, by the tray or support 12 releasably retained within the rear housing section 15. As disclosed in the drawings, this tray or support carries a mirror 38 in its bottom portion, which rests upon the lower flange 39 of the support that defines an opening 40 through which the mirror can be viewed. Resting upon the mirror is a separator or filler 41 engaged by the base portion 42 of a cup or container 43 for the desired cosmetic mass 10, which, for example, may be caked talcum powder or lip rouge. The cup or container 43 is retained within the support 12 by upper support flanges 44 overlying the cup. The support device 12 is movable into and out of the rear housing section 15 through its rear opening 45 by grasping a cap 46 secured to the support 12, the cap being adapted to close the rear opening 45 or end of the rear housing section 15. The cap has a shape conforming to the shape of the rear housing section and, in effect, forms a continuation thereof. It is fixedly secured to the tray or support 12 by virtue of a pair of blades or ribs 47 integral with and extending from the rear end of the support 12 which are firmly received within spaced grooves 48 in a cap rib 49 (FIG. 7), the sides of the blades 47 snugly engaging ribs 50 projecting inwardly from opposed walls of the cap 46.

When the cap 46 and tray 12 are moved inwardly of the housing 13, the forward end of the tray engages the driving, retracting rack 29 and shifts it forwardly, such forward movement acting through the pinion 33 to shift the driven brush rack 19 to its rearward position against the force of the helical spring 23. When the tray or support 12 is disposed in its forwardmost position, it will snap through flexible ribs or projections 51 extending inwardly of the rear housing section 15, the ribs 51 then being disposed at the rear of the forward flanges 39, 44 of the support 12. At this time, a pilot portion 52 of the cap 46 is disposed within the rear housing section 15, the inwardly directed flexible ribs 51 serving not only to releasably retain the tray or support 12 within the housing 13, but also acting through the retracting rib rack 29 and pinion 33 to retain the driven brush rack 19 and the brush 11 in their full retracted position within the forward housing portion 14, as disclosed in FIG. 1.

When the brush 11 and cosmetic 10 are to be used, it

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is only necessary to grasp the housing cap 46 by the fingers and exert a rearward pull to deflect the housing ribs 51 out of the way and allow the support 12, with the mirror 38 and cosmetic mass 10 therein, to be removed from the housing. Withdrawal of the support 12 allows the spring 23 to shift the brush rack 19 in a forward direction, acting through the pinion 33 to shift the lower retracting rack 29 in a rearward direction, the extent of forward movement of the brush rack 19 being determined by engagement of its plate 27 with the pinion 33, at which time the brush 11 will have moved through the outlet or forward opening 22 to a position externally of the forward end of the housing 13 (FIG. 5). A person wishing to apply the cosmetic 10 to the body can then grasp the housing 13 by the fingers of one hand and press the brush 11 against the cosmetic mass 10, the support 12 then being held in the other hand in a position to enable the person to view herself in the mirror 38 to enable the brush 11 to apply the cosmetic to the desired portion of her body. When the makeup operation has been completed, the tray or support 12 is reinserted through the rear end 45 of the housing 13, the forward end of the tray engaging the rear end of the retracting rack 29 and moving it in a forward direction to rotate the pinion 33 and reshift the driven brush rack 19 rearwardly to its fully retracted position against the force of the spring 23. When the fully retracted position has been reached (FIG. 1), the forward portion of the tray will have snapped through the retaining projections 51 to releasably lock the applicator in a dormant condition, the brush 11 being disposed entirely within the housing 13.

The embodiment of invention illustrated in FIGS. 10 to 18, inclusive, is essentially the same as in the form of invention disclosed in FIGS. 1 to 9, inclusive. The main difference resides in the provision of an automatically operable closure device 70 for closing and opening the forward opening 22a of the housing 13a from which the brush 11 is projectible. The forward projection of the brush from the housing automatically shifts the closure member or device 70 to an open position, and retraction of the brush is accompanied by automatic reclosing of the spout or forward opening 22a of the housing.

The cosmetic applicator specifically illustrated in FIGS. 10 to 18, inclusive, has its housing 13a made in essentially one piece. It embodies a lower driving, retracting and retaining rack 29a meshing with a pinion 33, which, in turn, meshes with a driven brush rack 19a having the forward socket portion 21 to receive the brush 11, or other instrumentality, the latter being enclosed by a tapered nose or guide piece 71 fitting over the socket. A helical compression spring 23a bears against the rear plate portion 27a of the driven rack member 19a, urging it in a forward direction in the housing, the rack 19a being guided in its movement in the housing by opposed rack pinions 85 slidable in longitudinal housing grooves 86, the rearward end of the compression spring bearing against a depending leg 72 of the lid or closure member 70, which constitutes a forward portion 74 of the upper wall of the housing 13a and which has an end closure portion 73 adapted to close the spout or opening 22a in the end wall of the forward portion of the housing. At the juncture between its leg or spring seat portion 72 and the upper wall portion 74 of the closure member, the closure member is pivotally mounted upon a fulcrum 75 provided by the upper wall of the housing at the end of its longitudinal opening 76 in which the upper wall portion 74 is received. Thus, the spring 23a bears against the rack 19a and constantly tends to urge it in a forward direction within the housing, and also bears against the depending or inwardly directed leg portion 72 of the lid or closure member 70 to swing it downwardly fully across its opening 76 and with its end closure portion 73 fully across the spout or opening 22a of the housing. When the tray or support 12 is disposed fully within the housing for-

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wardly of the retaining ribs or tabs 51, its forward end holds the rack 29a in its forward position and the rack 19a in its rearward position to prevent the spring 23a from projecting the rack 19a and brush 11 in a forward direction, the spring force holding the closure member 70 in its housing closing position (FIGS. 10, 11, 17).

Upon removal of the tray 12 rearwardly from the housing 13a, its restraining action on the retracting rack 29a is removed, allowing the spring 23a to expand. During the initial forward movement of the brush rack 19a, the upper portion 27b of its flange or plate 27a engages a tapered or cam surface 80 at the rearward end of a closure member guide rib 20a and pivots the lid 70 in an upward direction about its fulcrum 75 to elevate its end closure portion 73 from its position across the spout or opening 22a. Shifting of the end closure portion to open position occurs during initial forward motion of the rack 19a and before the end of the brush 11 can contact the end closure portion 73. As the spring continues to shift the rack 19a and brush 11 forwardly, the upper portion 27b of the rack or flange plate merely slides along the inner surface of the rib 20a, the spring 23a holding the rib 20a downwardly against the plate 27a. In the specific device illustrated in the drawings, the spring 23a will project the rack 19a and brush 11 forwardly to the extent limited by engagement of the flange or plate 27a with the pinion 33, as disclosed in FIG. 15, at which time the tapered nose portion 71 will engage the inner end of closure 73, elevating the rib 20a slightly from contact with the flange 27a.

The apparatus illustrated in FIGS. 10 to 18 is used in essentially the same manner as the other form of the invention. That is, the brush 11 is pressed against the cosmetic 10 in the exposed tray or support 12 and is then applied to the surface of the human body, with the assistance, if desired, of the mirror 38. Reinsertion of the tray 12 in the housing causes the forward portion of the tray to shift the rack 29a in a forward direction, the latter acting through the pinion 33 to move the upper brush rack 19a in a rearward direction against the force of the spring 23a. The spring is constantly urging the lid or closure 70 to its closed position in the housing, and when the rack 19a has been retracted sufficiently to move the flange 27a from the rib 20a, the spring shifts the lid 70 to fully closed position, the brush 11 being disposed completely within the housing 13a. At this time, the forward portion of the tray or housing 12 would have snapped through the retaining projections 51 of the housing, to releasably lock the applicator in its closed condition, or condition of non-use.

I claim:

1. In a cosmetic applicator: a housing having a forward outlet; a marking device slidable in said housing between a forward position projecting through said outlet and a rearward position retracted within said housing, said device having a rack portion; a spring acting on said device to urge said device to said forward position; a rack actuator movable forwardly and rearwardly in said housing; a pinion rotatably mounted in said housing and meshing with said rack portion and rack actuator whereby forward movement of said rack actuator in the direction of said outlet retracts said marking device rearwardly through said outlet and into said housing; means disposed rearwardly of and in axial alignment with said actuator and operatively associated therewith for shifting said actuator forwardly in said housing; and means releasably retaining said shifting means and actuator forwardly in said housing to hold said marking device in its rearward position in said housing.

2. In a cosmetic applicator: a housing having a forward outlet; a marking device slidable in said housing between a forward position projecting through said outlet and a rearward position retracted within said housing, said device having a rack portion; a spring acting on said device to urge said device to said forward position; a rack actuator movable forwardly and rearwardly in said hous-

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ing; a pinion rotatably mounted in said housing and meshing with said rack portion and rack actuator whereby forward movement of said rack actuator in the direction of said outlet retracts said marking device rearwardly through said outlet and into said housing; shiftable means disposed rearwardly of and in axial alignment with said actuator and movable forwardly in said housing into engagement with said actuator to shift said actuator forwardly in said housing; and means releasably retaining said shiftable means in its forward position in said housing to hold said marking device in its rearward position in said housing.

3. In a cosmetic applicator; a housing having a forward outlet; a marking device slidable in said housing between a forward position projecting through said outlet and a rearward position retracted within said housing, said device having a rack portion; a spring acting on said device to urge said device to said forward position; a rack actuator movable forwardly and rearwardly in said housing; a pinion rotatably mounted in said housing and meshing with said rack portion and rack actuator whereby forward movement of said rack actuator in the direction of said outlet retracts said marking device rearwardly through said outlet and into said housing; a support for cosmetic material disposed rearwardly of and in axial alignment with said actuator and movable rearwardly out of said housing and forwardly into said housing into engagement with said actuator to shift said actuator forwardly in said housing; and means releasably retaining said support and actuator in the forward position in said housing to hold said marking device in its rearward position in said housing.

4. In a cosmetic applicator: a housing having a forward outlet; a marking device slidable in said housing between a forward position projecting through said outlet and a rearward position retracted within said housing, said device having a rack portion; a helical compression spring acting on said device to urge said device to said forward position; a rack actuator movable forwardly and rearwardly in said housing; a pinion rotatably mounted in said housing and meshing with said rack portion and rack actuator whereby forward movement of said rack actuator in the direction of said outlet retracts said marking device rearwardly through said outlet and into said housing; means disposed rearwardly of and in axial alignment with said actuator and operatively associated therewith for shifting said actuator forwardly in said housing; and means releasably retaining said shifting means and actuator forwardly in said housing to hold said marking device in its rearward position in said housing.

5. In a cosmetic applicator: a housing having a forward outlet; a marking device slidable in said housing between a forward position projecting through said outlet and a rearward position retracted within said housing, said device having a rack portion; a closure member for said outlet; a spring acting between said closure member and device for urging said closure member to closed position across said outlet and for shifting said device to said forward position; means responsive to forward movement of said device for shifting said closure member to outlet opening position; a rack actuator movable forwardly and rearwardly in said housing; a pinion rotatably mounted in said housing and meshing with said rack portion and rack actuator whereby forward movement of said rack actuator in the direction of said outlet retracts said marking device rearwardly through said outlet and into said housing; means disposed rearwardly of and in axial alignment with said actuator and operatively associated therewith for shifting said actuator forwardly in said housing; and means releasably retaining said shiftable means and actuator forwardly in said housing to hold said marking device in its rearward position in said housing and said closure member in its outlet closing position.

6. In a cosmetic applicator: a housing having a forward outlet; a marking device slidable in said housing between a forward position projecting through said outlet and a

rearward position retracted within said housing, said device having a rack portion; a closure member for said outlet; a helical compression spring acting between said closure member and device for urging said closure member to closed position across said outlet and for shifting said device to said forward position; means responsive to forward movement of said device for shifting said closure member to outlet opening position; a rack actuator movable forwardly and rearwardly in said housing; a pinion rotatably mounted in said housing and meshing with said rack portion and rack actuator whereby forward movement of said rack actuator in the direction of said outlet retracts said marking device rearwardly through said outlet and into said housing; means disposed rearwardly of and in axial alignment with said actuator and operatively associated therewith for shifting said actuator forwardly in said housing; and means releasably retaining said shifting means and actuator forwardly in said housing to hold said marking device in its rearward position in said housing and said closure member in its outlet closing position.

7. In a cosmetic applicator: a housing having a forward outlet; a marking device slidable in said housing between a forward position projecting through said outlet and a rearward position retracted within said housing, said device having a rack portion; a closure member for said outlet; a helical compression spring acting between said closure member and device for urging said closure member to closed position across said outlet and for shifting said device to said forward position; means responsive to forward movement of said device for shifting said

closure member to outlet opening position; a rack actuator movable forwardly and rearwardly in said housing; a pinion rotatably mounted in said housing and meshing with said rack portion and rack actuator whereby forward movement of said rack actuator in the direction of said outlet retracts said marking device rearwardly through said outlet and into said housing; a support for a cosmetic disposed rearwardly of and in axial alignment with said actuator and movable rearwardly out of and completely from said housing and forwardly into said housing into engagement with said actuator to shift said actuator forwardly in said housing; and means on said housing releasably engaging said support for releasably retaining said support and actuator in the forward position in said housing to hold said marking device in its rearward position in said housing.

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