March 31, 1953 P. M. BRYANT 2,633,271

TOOTH PASTE DISPENSER HAVING TOOTHBRUSH-RECEIVING RECESSES

Filed Nov. 15, 1951

FIG. 1

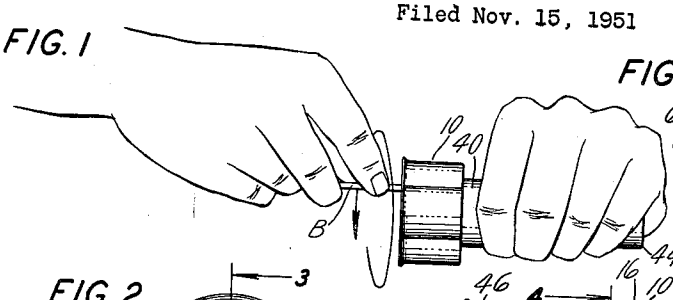


FIG. 16

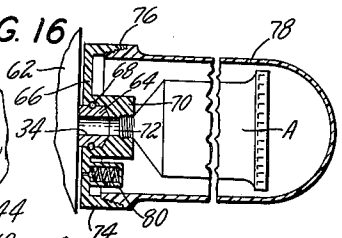


FIG. 2

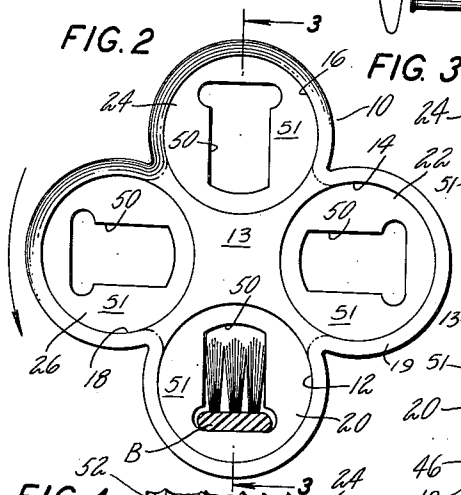


FIG. 3

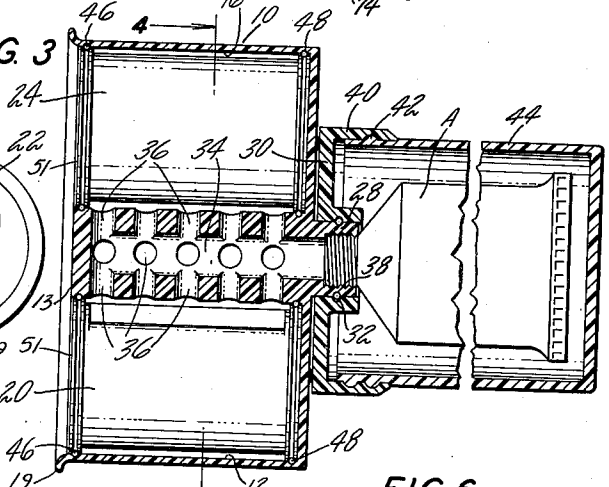


FIG. 4

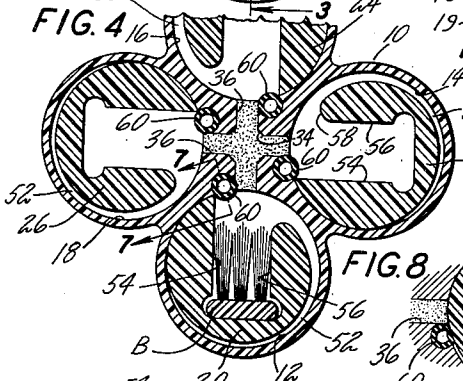


FIG. 5

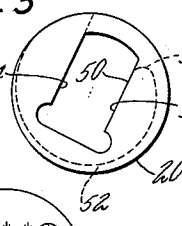


FIG. 6

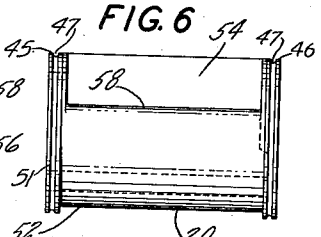


FIG. 8

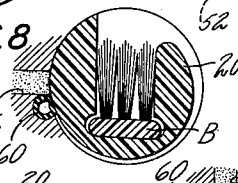


FIG. 7

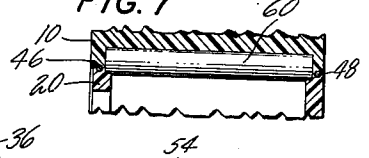


FIG. 9

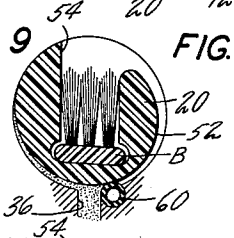


FIG. 10

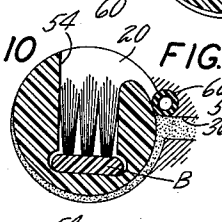


FIG. 11

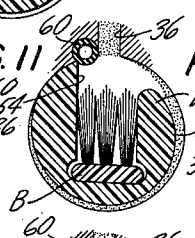


FIG. 12

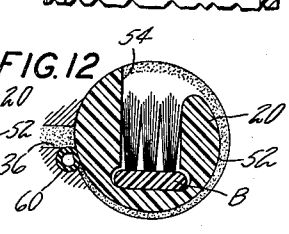


FIG. 13

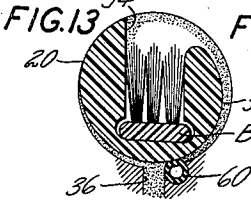


FIG. 14

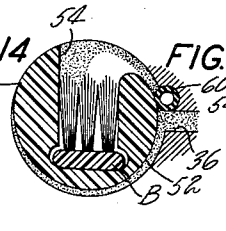
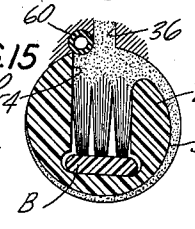


FIG. 15



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UNITED STATES PATENT OFFICE

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TOOTH PASTE DISPENSER HAVING TOOTH-BRUSH-RECEIVING RECESSES

Paul M. Bryant, Akron, Ohio

Application November 15, 1951, Serial No. 256,471

11 Claims. (Cl. 222—127)

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The invention relates to a tooth paste dispenser and the general object of the invention is to provide a dispenser wherein a toothbrush can be inserted in a recess and supplied with a suitable quantity of tooth paste by a simple manipulation of parts of the dispenser. More specific objects of the invention are to provide various features of mechanical construction for attaining the said general object.

In the drawing I have shown in detail two embodiments of the invention, but it will be understood that various changes may be made from the constructions shown, and that the drawing is not to be construed as defining or limiting the scope of the invention, the claims forming a part of this specification being relied upon for that purpose.

Of the drawing:

Fig. 1 is a perspective view showing a tooth paste dispenser embodying the invention and illustrating the manner of use.

Fig. 2 is a left end view on an enlarged scale.

Fig. 3 is a longitudinal vertical sectional view taken along the line 3—3 of Fig. 2.

Fig. 4 is a transverse vertical sectional view taken along the line 4—4 of Fig. 3.

Figs. 5 and 6 are side and end views respectively of one toothbrush unit.

Fig. 7 is a fragmentary longitudinal sectional view taken along the line 7—7 of Fig. 4.

Figs. 8 to 15 are fragmentary transverse sectional views similar to the lower portion of Fig. 4, but showing the housing in various positions with respect to the lowermost toothbrush unit shown in the said Fig. 4.

Fig. 16 is a fragmentary longitudinal vertical sectional view on a reduced scale similar to the right portion of Fig. 3 but showing an alternative embodiment of the invention.

Referring to the drawing, more particularly Figs. 1 to 7 thereof, 10 is a main housing having at least one cylindrical chamber 12 therein which chamber is open at a face 13 of the housing, this being shown as the left face. Preferably the housing has a plurality of similar chambers having their axes parallel with each other and equally spaced about a main central axis. There may be variation as to the number of chambers, but as shown there are four chambers 12, 14, 16 and 18. The housing 10 may be cylindrical in exterior shape but for economy of material it is preferably shaped in cross section as shown in Figs. 2 and 4. Preferably the housing 10 has a peripheral rib 19 which projects toward the left beyond the face 13. A generally cylindrical toothbrush

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unit is provided for each housing chamber, the unit being relatively rotatable in the chamber. When there are four chambers, there are four toothbrush units 20, 22, 24 and 26.

The housing 10 preferably has a hub 28 at its right end, the said hub being concentric with the central axis of the housing and being rotatable in a bearing aperture in a member 30 forming a part of a tube enclosure. The exterior of the hub 28 and the interior of the aperture in the member 30 are annularly grooved to receive a snap ring 32 which prevents relative longitudinal movement of the hub and housing while permitting relative rotative movement.

The housing 10 is provided with a passageway including a central longitudinal hole 34 communicating at one end with the side of at least one cylindrical chamber and adapted at the other end for connection with the threaded portion of a tooth paste tube. The hole 34 extends through the hub 28 and it is interiorly threaded at 38 to receive and fit the threaded end of a tooth paste tube A. When there is a plurality of chambers, such as 12, 14, 16 and 18, the passageway has branches extending respectively to the sides of the several chambers. As shown, the central longitudinal hole 34 is closed at its left end, and the housing is provided with a plurality of rows of transverse holes 36, 36. The holes 36, 36 in the several rows extend from the central hole 34 to the inner sides of the respective chambers 12, 14, 16 and 18.

The member 30 is provided with a peripheral flange 40 which is interiorly threaded at 42. A cylindrical tube enclosing member 44 is provided which is closed at its right end and is exteriorly threaded near its left end for engagement with the interior threads 42 of the flange 40. The length of the enclosing member 44 is such that it can receive a completely filled tooth paste tube. The members 30 and 44 serve to completely enclose the tube, and the said members collectively serve as a supporting means for the housing and the parts carried thereby. The member 44 constitutes a handle which can be engaged and held by one hand of the user as indicated in Fig. 1. The housing 10 and the parts carried thereby are rotatable relatively to the members 30 and 44, as hereinafter explained, the tube A rotating with the housing within the enclosing member 44.

Each of the toothbrush units 20, 22, 24 and 26 is relatively rotatable in its corresponding housing chamber as previously stated, and it has cylindrical end portions 45 and 46 as shown in Fig. 6 which fit the interior of the corresponding cham-

ber. In order to prevent relative longitudinal movement of the said units, the said end portions of each unit are provided with annular grooves 47, 47 and the interior of the corresponding housing chamber is provided with mating grooves. Rings 48 and 49 are entered in the said grooves to prevent relative longitudinal movement of the toothbrush unit. The rings 48 and 49 also serve as sealing members to prevent leakage of tooth paste. The rings 48 and 49 may be formed of metal, but if more effective sealing is found necessary they may be formed of rubber or of a pliable plastic material.

Each toothbrush unit is provided with a recess 50 open at its left end face 51 and closed at its right end, each recess being of suitable size and shape to receive the tufted portion of a toothbrush B. The left end face 51 of each toothbrush unit is preferably in substantial register with the left end face 13 of the housing 10. When there is a plurality of toothbrush units, they are intended for use respectively by different members of a household and they therefore have distinguishing characteristics, as for instance different colors so that each user can recognize his own unit. The toothbrush units and also the other heretofore described parts, except the snap and sealing rings, may advantageously be formed of suitable plastic materials.

Each toothbrush unit serves upon relative rotation to suctionally withdraw tooth paste from the tube A and through the passageway 34, 36, 36 in the housing and into the corresponding housing chamber 12, 14, 16 or 18, and each toothbrush unit 20, 22, 24 or 26 has means serving during relative rotation of the unit to guide tooth paste from the corresponding housing chamber into the corresponding toothbrush recess 50 and onto the toothbrush.

As shown, each toothbrush unit has a portion 52 between its cylindrical end portions 45 and 46, the said portion 52 being smaller than the end portions and being eccentrically positioned. The said eccentric portion 52 is tangent to the said cylindrical portions, and adjacent the position of tangency the said toothbrush recess 50 is extended so as to be open at the periphery of the eccentric portion 52. One wall 54 of the recess 50 extends to the periphery at or near the position of tangency and the opposite wall 56 is shorter and is connected by a rounded wall 58 with the periphery of the eccentric portion. The rounded wall 58 provides a relatively wide space between the eccentric portion and the interior wall of the chamber.

Each chamber in the housing 10 is provided with a longitudinal groove closely adjacent the corresponding holes 36, 36. The length of the groove is the same as the length of the smaller eccentric portion 52 of the toothbrush unit. A sealing member or seal 60, which is preferably a rubber tube, is entered in the last-described groove, the length of the sealing member being equal to the length of the eccentric portion 52 of the toothbrush unit. The sealing member 60 is of such size and is so positioned that it will at all times engage with the surface of the eccentric portion 52 of the toothbrush unit, being collapsed to various extents for different relative rotative positions of the unit.

Preparatory to use the tube enclosing member 44 is removed and the usual threaded cap of the tube A is removed and discarded. The tube is screwed into place as shown in Fig. 3, being held by the threads at 38. Then the tube is squeezed sufficiently to force toothpaste therefrom in a sufficient amount to completely fill the central hole 34 and the transverse holes 36, 36. Then the tube enclosing member 44 is screwed into position as shown.

In use the tube enclosing member or handle 44 is grasped and held by one hand of the user as shown in Fig. 1, the dispenser preferably being so positioned that the toothbrush unit designated for the particular user is at the bottom. The toothbrush B is inserted in the bottom unit and is grasped by the other hand of the user as shown in Fig. 1. Then the user, while preventing rotation of the toothbrush, gives it an eccentric motion in the counterclockwise direction as viewed from the right, this eccentric movement of the toothbrush serving to rotate the housing 10 relatively to the enclosing member or handle 44. Inasmuch as the toothbrush is held against rotation, the corresponding toothbrush unit is held against rotation but due to the described circular movement of the toothbrush the housing is rotated as stated and the housing parts adjacent the selected toothbrush unit rotate around it.

The bottom portion of Fig. 4 shows the starting position and Figs. 8, 9, 10 and 11 show successive relative positions during one rotation of the housing. During relative rotation tooth paste is withdrawn by suction from the tube A and through the holes 34, 36, 36 into the corresponding chamber 12. In moving from the Fig. 4 position to the Fig. 8 position there is little or no suction, but in moving from the Fig. 8 position to the Fig. 9 position the space at the left of the holes 36, 36 is filled with tooth paste as the result of suction. The seal 60 prevents the entry of air into the said space. The action in moving from the Fig. 9 position to the Fig. 10 position is the same as that previously described and the space below and at the left of the holes 28 is filled with tooth paste. When movement takes place slightly beyond the Fig. 10 position, the seal 60 no longer engages the eccentric portion 52 and there is no further suction action. However, some of the tooth paste adheres to the wall of the recess and is moved therewith during movement to the Fig. 11 position.

The eccentric movement of the toothbrush is continued to cause another complete revolution of the housing as indicated in Figs. 12 to 15. During the second revolution, the suction action is exactly the same as previously described. However, some of the tooth paste already within the chamber 12 and surrounding the eccentric portion 52 is moved counterclockwise with the wall of the chamber 12, such movement being assisted by the seal 60. The tooth paste so moved impinges upon the wall 54 of the toothbrush recess 50 and the said wall serves to guide the said paste into the said recess and onto the toothbrush. When the Fig. 15 position is reached the toothbrush is withdrawn from the recess with a layer of tooth paste thereon.

The described two revolutions are necessary only for the initial application of tooth paste to a toothbrush in each unit. After the first application there is a body of tooth paste already in position as shown in Fig. 15. The first revolution serves for priming and after that only one revolution is necessary for each application of tooth paste to the brush.

The operation has been described as to one toothbrush unit and it is the same as to the others. Obviously, only one unit is operative at any one time. For each unit two revolutions

are necessary initially, but thereafter one revolution is ordinarily sufficient. When the dispenser is not in use it is preferably placed on a flat surface with the end of the housing engaging the said surface. When a rib such as 19 is provided, the dispenser is supported by the said rib. This prevents the circulation of air through the toothbrush recesses, thus eliminating any deposits of dust and minimizing any possible tendency of the exposed tooth paste to harden.

Fig. 16 shows an alternative construction differing somewhat from the previously described construction. A housing 62 is provided which is or may be identical in construction with the housing 10, except that it has a somewhat different hub 64. The parts carried by the housing 62 may be the same as those carried by the housing 10.

A member 66 is provided which is generally similar to the member 30. The member 66 has a bearing aperture for the hub 64, and a ring 68 similar to the ring 32 is provided to prevent relative longitudinal movement. The ring 68 may also serve as a seal to prevent the escape of tooth paste. The said member 66 has a longitudinal extension 70 provided with a central hole 72 therein which registers with the central hole 34 in the housing 62. The hole 72 is interiorly threaded to receive and fit the threaded end of the tooth paste tube A. It will be observed that the tube A is carried by the nonrotatable member 66 and therefore is not rotatable with the housing 62.

The member 66 is provided with a peripheral flange 74 which is interiorly threaded at 76. A cylindrical tube enclosing member 78 is provided which is generally similar to the member 44. The said member 78 is exteriorly threaded near its left end for engagement with the interior threads 76 of the flange 74. The member 78 has the same functions as the member 44, but it differs in that it is formed of a suitable flexible or pliable material. A suitable check valve 80 is carried by the member 66. The said check valve prevents the escape of air from the space within the members 66 and 78, but it permits air to readily enter the said space.

The manner of use of the dispenser shown in Fig. 16 is the same as already described, except that the flexible or pliable member 78 when grasped and squeezed by the hand of the user develops pneumatic pressure within the said member which is applied to the exterior of the enclosed tube A. This pneumatic pressure on the tube tends to cause paste to move from the tube through the holes 34 and 36, 36 in the housing, thus facilitating the described suctional action of each tooth paste unit. When the pressure on the member 78 is released, air can flow into the space within the said member through the check valve 80.

The invention claimed is:

1. In a tooth paste dispenser, the combination of a housing having a cylindrical chamber open at one face thereof which housing has a passageway therein communicating with one side of the said chamber and adapted at one end for connection with the threaded discharge portion of a tooth paste tube, a toothbrush unit relatively rotatable in the housing chamber and having a longitudinal recess open at the end thereof adjacent the said face of the housing which recess is of such size and shape as to receive the tufted end of a toothbrush, means serving upon relative rotation between the toothbrush unit, and the housing for suctionally withdrawing tooth paste from the tube and through the passageway in the housing and into the housing member, and means on the toothbrush unit serving during relative rotation to guide tooth paste from the housing chamber into the said toothbrush recess and onto a toothbrush therein.

2. In a tooth paste dispenser, the combination of a housing having a cylindrical chamber open at one face thereof which housing has a passageway therein communicating with one side of the said chamber and adapted at one end for connection with the threaded discharge portion of a tooth paste tube, a toothbrush unit relatively rotatable in the housing chamber and fitting at its end portions with the interior wall of the chamber, the said unit having an eccentric portion between its end portions and the said unit having a longitudinal recess open at the end thereof adjacent the said face of the housing which recess is of such size and shape as to receive the tufted end of a toothbrush and which recess at its interior portion is open at the eccentric portion of the unit, sealing means carried by the housing and engaging the eccentric portion of the unit during relative rotation to cause the said eccentric portion during the said relative rotation to suctionally withdraw tooth paste from the tube and through the passageway in the housing and into the housing chamber, and means on the toothbrush unit serving during relative rotation to guide tooth paste from the housing chamber into the said toothbrush recess and onto a toothbrush therein.

3. In a tooth paste dispenser, the combination of a housing having a cylindrical chamber open at one face thereof which housing has a passageway therein communicating with one side of the said chamber and adapted at one end for connection with the threaded discharge portion of a tooth paste tube, a housing supporting member positioned to surround the tooth paste tube, a toothbrush unit relatively rotatable in the housing chamber and having a longitudinal recess open at the end thereof adjacent the said face of the housing which recess is of such size and shape as to receive the tufted end of a toothbrush, means serving upon relative rotation between the toothbrush unit and the housing for suctionally withdrawing tooth paste from the tube and through the passageway in the housing and into the housing member, and means on the toothbrush unit serving during relative rotation to guide tooth paste from the housing chamber into the said toothbrush recess and onto a toothbrush therein.

4. In a tooth paste dispenser, the combination of a housing having a plurality of cylindrical chambers each open at one face thereof which housing is provided with a passageway therein adapted at one end for connection with the threaded discharge portion of a tooth paste tube and having a plurality of branches communicating respectively with the sides of the said chambers, a plurality of similar toothbrush units relatively rotatable respectively in the housing chambers and each having a longitudinal recess open at the end thereof adjacent the said face of the housing which recess is of such size and shape as to receive the tufted end of a toothbrush, a plurality of means each serving upon relative rotation between the corresponding toothbrush unit and the housing for suctionally withdrawing tooth paste from the tube and through the corresponding branch of the passageway in the housing and into the correspond-

ing housing member, and a plurality of means on the respective toothbrush units each serving during relative rotation of the corresponding unit to guide tooth paste from the corresponding housing chamber into the corresponding toothbrush recess and onto a toothbrush therein.

5. In a tooth paste dispenser, the combination of a housing having a plurality of cylindrical chambers each open at one face thereof which housing is provided with a passageway therein adapted at one end for connection with the threaded discharge portion of a tooth paste tube and having a plurality of branches communicating respectively with the sides of the said chambers, a plurality of similar toothbrush units relatively rotatable respectively in the housing chambers and each fitting at its end portions with the interior wall of the corresponding chamber, each said unit having an eccentric portion between its end portions and the said unit having a longitudinal recess open at the end thereof adjacent the said face of the housing which recess is of such size and shape as to receive the tufted end of a toothbrush and which recess at its interior portion is open at the eccentric portion of the unit, a plurality of sealing means carried by the housing and each engaging the eccentric portion of the corresponding unit during relative rotation to cause the said eccentric portion during the said relative rotation to suctionally withdraw tooth paste from the tube and through the corresponding branch of the passageway in the housing and into the corresponding housing chamber, and a plurality of means on the respective toothbrush units each serving during relative rotation of the corresponding unit to guide tooth paste from the corresponding housing chamber into the corresponding toothbrush recess and onto a toothbrush therein.

6. In a tooth paste dispenser, the combination of supporting means, a housing rotatable relatively to the supporting means and having a plurality of similar cylindrical chambers parallel to the axis of rotation and spaced therefrom each of which chambers is open at one face of the housing, the said housing having a passageway therein which passageway includes a central hole adapted at one end for connection with the threaded discharge portion of a tooth paste tube and also includes branch holes extending from the central hole and communicating respectively with the sides of the said chambers, a plurality of similar toothbrush units relatively rotatable respectively in the housing chambers and each having a longitudinal recess open at the end thereof adjacent the said face of the housing which recess is of such size and shape as to receive the tufted end of a toothbrush, each said toothbrush unit when engaged by a toothbrush serving as a means for rotating the housing relatively to the supporting means with the engaged unit held by the toothbrush against rotative movement, a plurality of means each serving upon relative rotation of the adjacent housing portions around the corresponding toothbrush unit for suctionally withdrawing tooth paste from the tube and through the corresponding branch holes in the housing and into the corresponding housing chamber, and a plurality of means on the respective toothbrush units each serving during relative rotation of the adjacent housing portions around the corresponding unit to guide tooth paste from the corresponding housing chamber into the corresponding toothbrush recess and onto a toothbrush therein.

7. In a tooth paste dispenser, the combination of supporting means, a housing rotatable relatively to the supporting means and having a plurality of similar cylindrical chambers parallel to the axis of rotation and spaced therefrom each of which chambers is open at one face of the housing, the said housing having a passageway therein which passageway includes a central hole adapted at one end for connection with the threaded discharge portion of a tooth paste tube and also includes branch holes extending from the central hole and communicating respectively with the sides of the said chambers, a plurality of similar toothbrush units relatively rotatable respectively in the housing chambers and each fitting at its end portions with the interior wall of the corresponding chamber and each having an eccentric portion between its end portions and also having a longitudinal recess open at the end thereof adjacent the said face of the housing which recess is of such size and shape as to receive the tufted end of a toothbrush and which recess at its interior portion is open at the eccentric portion of the unit, each said toothbrush unit when engaged by a toothbrush serving as a means for rotating the housing relatively to the supporting means with the engaged unit held by the toothbrush against rotative movement, a plurality of sealing means carried by the housing and each engaging the eccentric portion of the corresponding unit during relative rotation of the adjacent housing portions around the corresponding toothbrush unit for causing the said eccentric portion to suctionally withdraw tooth paste from the tube and through the corresponding branch holes in the housing and into the corresponding housing chamber, and a plurality of means on the respective toothbrush units each serving during relative rotation of the adjacent housing portions around the corresponding unit to guide tooth paste from the corresponding housing chamber into the corresponding toothbrush recess and onto a toothbrush therein.

8. In a tooth paste dispenser, the combination of supporting means including a hollow handle, a housing rotatable relatively to the supporting means about an axis extending through the said handle which housing has a plurality of similar cylindrical chambers parallel to the axis of rotation and spaced therefrom each of which chambers is open at one face of the housing, the said housing having a passageway therein which passageway includes a central hole adapted at one end for connection with the threaded discharge portion of a tooth paste tube located within the hollow handle and also includes branch holes extending from the central hole and communicating respectively with the sides of the said chambers, a plurality of similar toothbrush units relatively rotatable respectively in the housing chambers and each having a longitudinal recess open at the end thereof adjacent the said face of the housing which recess is of such size and shape as to receive the tufted end of a toothbrush, each said toothbrush unit when engaged by a toothbrush serving as a means for rotating the housing relatively to the supporting means with the engaged unit held by the toothbrush against rotative movement, a plurality of means each serving upon relative rotation of the adjacent housing portions around the corresponding toothbrush unit for suctionally withdrawing tooth paste from the tube and through the corresponding branch holes in the housing and into the corresponding housing chamber, and a plurality of means on the respective toothbrush units each serving during

relative rotation of the adjacent housing portions around the corresponding unit to guide tooth paste from the corresponding housing chamber into the corresponding toothbrush recess and onto a toothbrush therein.

9. In a tooth paste dispenser, the combination of a housing having a cylindrical chamber open at one face thereof which housing has a passageway therein communicating with one side of the said chamber and adapted at one end for connection with the threaded discharge portion of a tooth paste tube, a toothbrush unit relatively rotatable in the housing chamber and having a longitudinal recess open at the end thereof adjacent the said face of the housing which recess is of such size and shape as to receive the tufted end of a toothbrush, means serving upon relative rotation between the toothbrush unit and the housing for suctionally withdrawing tooth paste from the tube and through the passageway in the housing and into the housing member, means on the toothbrush unit serving during relative rotation to guide tooth paste from the housing chamber into the said toothbrush recess and onto a toothbrush therein, and means for enclosing the tooth paste tube for applying pneumatic pressure thereto during relative rotation between the toothbrush unit and the housing which pneumatic pressure facilitates the suctional withdrawal of tooth paste from the tube.

10. In a tooth paste dispenser, the combination of a housing having a cylindrical chamber open at one face thereof which housing has a passageway therein communicating with one side of the said chamber and adapted at one end for connection with the threaded discharge portion of a tooth paste tube, a housing support comprising a hollow member with a closed chamber therein adapted to enclose the tooth paste tube which hollow member is formed of pliable material and serves when squeezed to apply pneumatic pressure to the exterior of the tube to thereby tend to force paste therefrom, a toothbrush unit relatively rotatable in the housing chamber and having a longitudinal recess open at the end thereof adjacent the said face of the housing which recess is of such size and shape as to receive the tufted end of a toothbrush, means serving upon relative rotation between the toothbrush unit and the housing for suctionally withdrawing tooth paste from the tube and through the passageway

in the housing and into the housing member, and means on the toothbrush unit serving during relative rotation to guide tooth paste from the housing chamber into the said toothbrush recess and onto a toothbrush therein.

11. In a tooth paste dispenser, the combination of a supporting member, a housing rotatable relatively to the supporting member and having a plurality of similar cylindrical chambers parallel to the axis of rotation and spaced therefrom each of which chambers is open at one face of the housing, the said housing having a passageway therein which passageway includes a central hole adapted at one end for connection with the threaded discharge portion of a tooth paste tube and also includes branch holes extending from the central hole and communicating respectively with the sides of the said chambers, a plurality of similar toothbrush units relatively rotatable respectively in the housing chambers and each having a longitudinal recess open at the end thereof adjacent the said face of the housing which recess is of such size and shape as to receive the tufted end of a toothbrush, each said toothbrush unit when engaged by a toothbrush serving as a means for rotating the housing relatively to the supporting means with the engaged unit held by the toothbrush against rotative movement, a plurality of means each serving upon relative rotation of the adjacent housing portions around the corresponding toothbrush unit for suctionally withdrawing tooth paste from the tube and through the corresponding branch holes in the housing and into the corresponding housing member, a plurality of means on the respective toothbrush units each serving during relative rotation of the adjacent housing portions around the corresponding unit to guide tooth paste from the corresponding housing chamber into the corresponding toothbrush recess and onto a toothbrush therein, and a hollow member connected with the said supporting member and having an enclosed chamber therein within which the said tooth paste tube is located, the said hollow member being formed of pliable material and serving when squeezed to apply pneumatic pressure to the exterior of the tube to force paste therefrom.

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No references cited.