

June 6, 1961

P. H. LANDIS
FOUNTAIN BRUSHES

2,986,766

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2 Sheets-Sheet 1

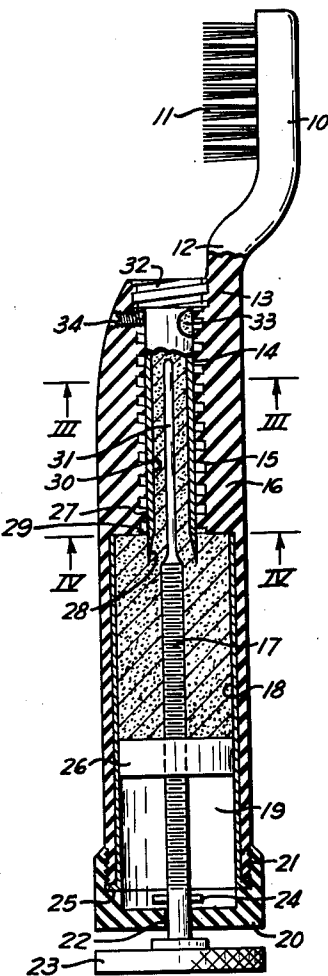


Fig. 1



Fig. 3

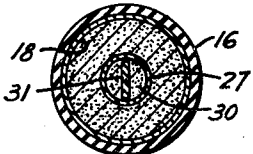


Fig. 4

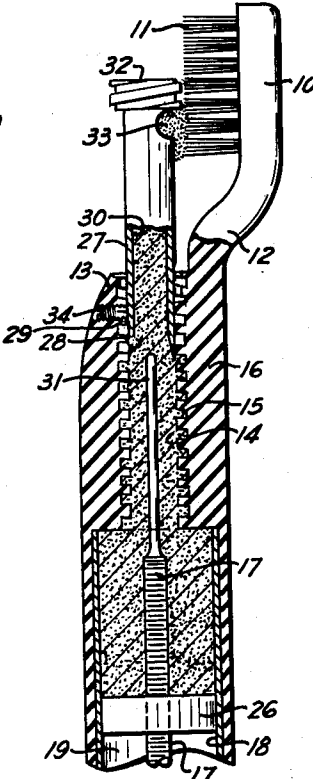


Fig. 2

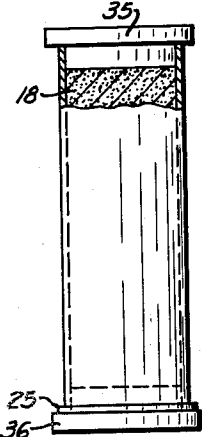


Fig. 5

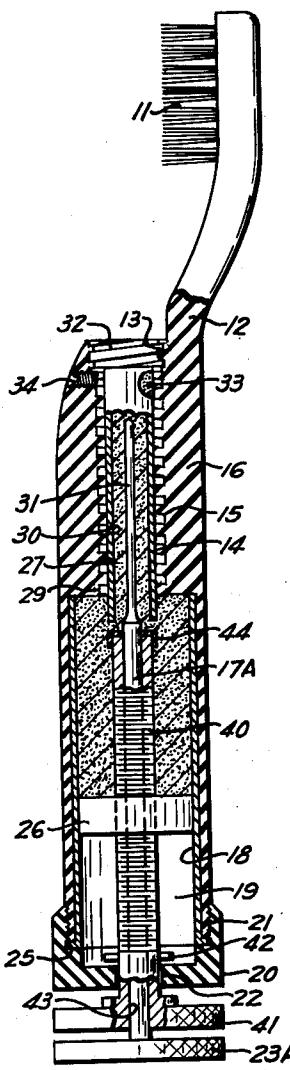


Fig. 6

INVENTOR.
PETER H. LANDIS

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Fig. 7

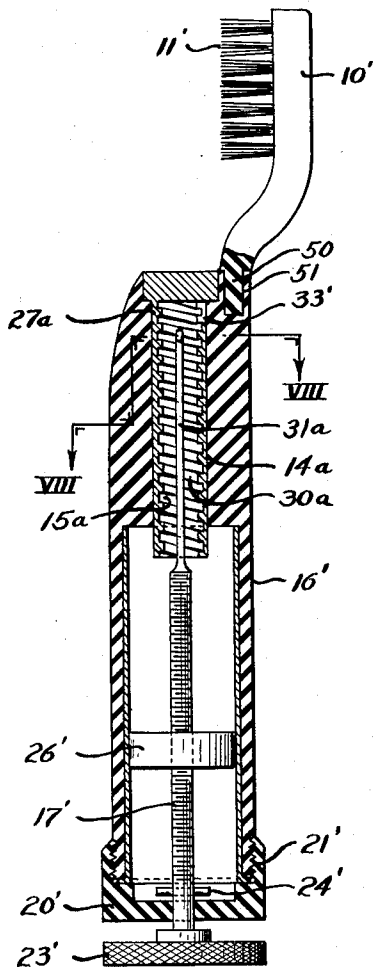
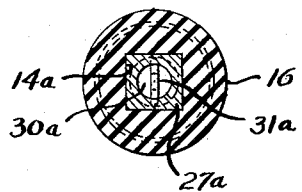


Fig. 8



INVENTOR
PETER H. LANDIS

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2,986,766

FOUNTAIN BRUSHES

Peter H. Landis, 142 Gulf Bldg., Pittsburgh, Pa.

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7 Claims. (Cl. 15-558)

The present invention relates to a fountain brush and more particularly to a fountain brush involving a magazine or reservoir in the brush handle adapted to receive a replaceable refill cartridge of dentifrice, shaving cream, and the like.

The primary object of this invention is to provide a highly sanitary, non-clogging fountain brush wherein material is delivered directly to the brushing surface of the bristles.

Another object of this invention is to provide an improved fountain brush including a novel, movable, and manually-operated means for feeding material directly to the brushing surface of the bristles.

Another object of this invention is to provide an improved, positive-closure means for preventing bacterial contamination of the material remaining in the reservoir after a certain amount of the material has been delivered to the brushing surface of the bristles.

A further object of this invention is to provide an improved fountain brush wherein a refill cartridge is employed for holding the material and discharging same into a telescopic feed member.

Various types of fountain brushes have been proposed; however, they have not proven commercially practical because of certain inherent disadvantages. All of these brushes, which are familiar to me, deliver material to the brush head through a longitudinal duct of minute bore in the brush shank; the diameter of the brush shank has to be very small so that the brush can be inserted with ease into one's mouth, thereby necessitating a bore in the shank of very small diameter. Such brushes have not proven practical because they were subject to failure due to frequent clogging of the material in the narrow shank passage. Furthermore the closure means at the discharge port of the proposed brushes is inadequate, permitting small amounts of material to remain thereon, thereby inviting bacterial contamination and accumulation of dirt at said port. No proposed fountain brush provides the means for sanitary, non-clogging delivery of the material directly to the brushing surface of the bristles.

The deciding factors for the lack of fountain brushes on the market for home use and travel are primarily the failure and frequent clogging of the proposed brushes and the fact that they were not completely sanitary due to inadequate closure means at the port of discharge.

I have invented a fountain brush which is comparatively inexpensive, simple in its construction, and which overcomes the aforementioned disadvantages of the prior fountain brushes by a novel and simple means.

I provide a fountain brush comprising a bristle head and a tubular handle, preferably made of plastic material, and a plastic, replaceable cartridge arranged in the tubular handle; said handle having a cylindrical passage at the forward portion and a reservoir at its lower portion. The cartridge is frictionally fitted into the reservoir of the handle.

A cylindrical, telescopic feed member, having a rectangular passage, is snugly yet rotatably fitted in the forward passage of the handle for delivery of material to the brushing surface of the bristles; said feed member is projected forward or retrograded by means of a lateral projection on said member engaging and cooperating with a helical groove formed in the wall of the forward passage of the handle; the passage of the feed member is closed at the upper end and open at the lower end; an externally threaded head is provided at the upper end of

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the feed member to engage complementary threads in the passage wall of the handle to lock said member within the handle so as to prevent contamination of the material in the passage of the feed member; a discharge port is provided adjacent to said threaded head for discharging material on the brushing surface of the bristles.

A threaded feed screw, preferably of non-corrosive metal, and a piston head mounted thereon are disposed in the reservoir of the handle in a manner that a rectangular forward portion of the feed screw is fitted into the rectangular passage of the telescopic feed member; a collar is provided at the lower portion of the screw to limit its longitudinal movement; a milled disc is mounted at the lower end of the screw to manually rotate it; a closure cap is detachably secured to the lower end of the handle; the reservoir, the refill cartridge, and the piston head have a somewhat non-circular form in cross-section to prevent axial rotation of the piston head but permit longitudinal movement along the threaded feed screw.

In the foregoing general description, I have set out certain advantages, purposes, and objects of my invention. Other advantages, purposes, and objects will be apparent from a consideration of the following description and accompanying drawings in which

FIGURE 1 is a longitudinal, partly sectional view of the preferred embodiment of a fountain brush provided by this invention.

FIGURE 2 is a fragmentary, partly sectional view of the device showing forward projection of the telescopic feed member.

FIGURE 3 is a transverse section taken on line 3-3 of FIGURE 1.

FIGURE 4 is a transverse section taken on line 4-4 of FIGURE 1.

FIGURE 5 is an enlarged side elevation, partly in section, of the refill cartridge.

FIGURE 6 is a longitudinal sectional view, partly in side elevation, of a second embodiment of the device shown in FIGURE 1.

FIGURE 7 is a longitudinal sectional view of a third embodiment of the device of my invention. FIGURE 8 is a transverse section taken on the line 8-8 of FIGURE 7.

Referring to the drawings, I have illustrated a tooth brush consisting of a cylindrical, tubular handle 16 having in its forward portion a cylindrical passage 14 to receive a cylindrical, telescopic feed tube 27, and having a reservoir 19 at its lower portion to receive a refill cartridge 18 from which dentifrice is extruded into said feed tube. Handle 16 is externally threaded at the lower end 21 for the reception of the internally threaded cap 20. Extending forward from handle 16 is a brush shank 12 forming a brush head 10 to which are secured bristles 11.

The telescopic feed tube 27 having an externally-threaded head 32 at its forward end and a lateral projection 29 at its lower end is provided with a rectangular passage 30 communicating with a short coniform passage 28; said feed tube is snugly yet rotatably fitted in the passage 14 of the handle and in a manner that the projection 29 engages a helical groove 15 formed on the wall of said passage; said telescopic feed tube is held against withdrawal from said passage by projection 29 abutting against stop 34 which is positioned at the upper end of the helical groove 15; an aperture 33 is provided adjacent to the threaded head 32 of the telescopic tube 27 and is adapted for discharging dentifrice to the brushing surface of the bristles when the feed tube has been advanced forward. Screw thread 13 formed at the forward end of the wall of passage 14 is adapted to engage threaded head 32 when the feed tube 27 is retrograded to its original position within said passage thereby preventing con-

tamination of the remaining dentifrice in the tubular handle.

A threaded feed screw 17 carrying a piston head 26 and having a flat or rectangular forward portion 31 is adapted to pass through aperture 22 of closure cap 20 and is arranged within tubular handle 16 in a manner that said flat or rectangular portion is positioned in the rectangular passage 30 of the telescopic feed tube 27. The lower end of the feed screw 17 is provided with a collar 24 to limit the longitudinal movement of said screw, and is also provided with a milled disc 23 by means of which said screw is operated manually. Rotation of said disc will simultaneously actuate the piston head 26 and the telescopic feed tube 27; said piston head is adapted to travel on the feed screw 17 and it is of such circumference so as to snugly engage the inner wall of the cartridge 18; said cartridge is frictionally fitted in the reservoir 19 and it is provided with an annular flange 25 and removable plugs 35 and 36.

In placing the device in operation, closure cap 20 is detached from the lower end of the handle 16, removing with it feed screw 17 and piston head 26. Upon removal of the two plugs 35 and 36, the cartridge 18 is inserted into the reservoir 19 in a manner that flange 25 of the cartridge is seated against the lower lip of the handle 16. The feed screw 17 is then positioned in the cartridge in such a manner that the flat or rectangular portion 31 is fitted into the rectangular passage 30 of the feed tube 27 and the closure cap 20 is threaded onto the lower end 21 of the handle. The arrangement is such that the connection effected between the end of the handle and the cap 20 serves to effectively secure the cartridge against displacement or rotation.

Clock-wise rotation of the disc 23 will detach the telescopic feed tube 27 from the screw thread 13 by causing the feed tube to rotate; rotation of the feed tube will force the projection 29 of the feed tube to move forward along the helical groove 15 thereby telescoping the feed tube forward to a position where the aperture 33 of the feed tube is directly opposite the bristles 11; at the same time the piston head 26 will advance forward forcing a certain amount of dentifrice to be deposited on the bristles through aperture 33 of the feed tube.

The ratio of the pitch of the helical groove to the pitch of the screw thread on the feed screw 17 may be such that a slight rotation of the disc 23 will quickly telescope the feed tube 27 to the position opposite the bristles before any dentifrice is extruded by the advancing piston head 26; further rotation of the disc will advance the piston head more, causing a discharge of dentifrice onto the bristles; however, this further rotation of said disc will have no effect on the feed tube because further movement of the feed tube is prevented by the projection 29 abutting against the stop 34; the end of the rectangular portion 31 of the feed screw will merely rotate freely in the coniform passage 28 of the feed tube 27.

To engage again the rectangular portion 31 of the feed screw with the rectangular passage 30 of the feed tube so as to retract and lock said feed tube in its original position prior to using the brush, it is necessary to slightly press forward on the disc 23 as it is rotated counter-clockwise. Counter-clockwise rotation of the disc will thus retract the telescopic feed tube and at the same time retrograde the piston head 26; this downward movement of the piston head will create a vacuum directly above it whereby the atmospheric pressure exerted at the aperture 33 of the feed tube will force the remaining dentifrice in the tube back into the reservoir.

In the embodiment shown in FIGURE 6 (in which like elements are represented by like characters), I have illustrated a tooth brush consisting of a cylindrical, tubular handle 16 having in its forward portion a cylindrical passage 14 to receive a cylindrical, telescopic feed tube 27, and having a reservoir 19 at its lower portion to receive a refill cartridge 18. Handle 16 is externally thread-

ed at the lower end 21 for the reception of the internally threaded cap 20. Extending forward from said handle is a brush shank 12 forming a brush head to which are secured bristles 11.

The telescopic feed tube 27 having an externally-threaded head 32 at its forward end and a lateral projection 29 at its lower end is provided with a rectangular passage 30; said feed tube is snugly yet rotatably fitted in the passage 14 and in a manner that said projection engages a helical groove 15 formed on the wall of said passage; said telescopic feed tube is held against withdrawal from said passage by projection 29 abutting against stop 34 which is positioned at the upper end of the helical groove 15; an aperture 33 is provided adjacent to the threaded head of the feed tube 27 and is adapted for discharging dentifrice to the brushing surface of the bristles. Screw thread 13 formed at the forward end of the wall of passage 14 is adapted to engage threaded head 32 when the feed tube 27 is retrograded to its original position within said passage thereby preventing contamination of the remaining dentifrice in the tubular handle.

An externally-threaded, tubular feed screw 40 carrying a piston head 26 and having a removable seal cover 44 at the forward end is passed through aperture 22 of cap 20 and is arranged in the reservoir 19 of the handle; the lower end of said tubular feed screw is provided with a collar 42 to limit the longitudinal movement of said screw, and is also provided with an apertured disc 41 by means of which said screw is operated manually; rotation of the disc 41 will actuate the piston head 26. Said piston head is adapted to travel on the tubular feed screw 40 and is of such circumference so as to snugly engage the inner wall of the refill cartridge 18; said cartridge is frictionally fitted into the reservoir 19 and it is provided with an annular flange 25 and removable plugs 35 and 36.

A plunger rod 17A having a flat or rectangular forward portion 31 is fitted into the tubular feed screw 40 through aperture 43 in such a manner that the rectangular portion 31 is positioned in the rectangular passage 30 of the feed tube 27. The lower end of said plunger rod is provided with a milled disc 23A by means of which the plunger rod is manually operated to project or retract the telescopic tube 27.

The embodiment illustrated in FIGURE 6 operates essentially in the same fashion as that shown for FIGURES 1 and 2 but with one exception. Whereas in FIGURES 1 and 2 the feed screw 17 simultaneously operates both the telescopic feed tube 27 and the piston head 26 upon rotation of the milled disc 23, in FIGURE 6 the feed tube 27 and the piston head are operated independently. Rotation of the milled disc 23A operates the plunger rod 17A to project or retract the telescopic feed tube 27; and rotation of the disc 41 will actuate the piston head 26 which is adapted to travel on the tubular feed screw 40.

It will be appreciated that the device described above is extremely sanitary and compact, it is free from clogging, it is comparatively inexpensive, and is ideally adapted for travel although it may also be used at home.

Various changes may be made without departing from the invention. For instance (FIGURES 7-8) the passage 14a of the handle may have a form other than cylindrical, such as the rectangular form shown in FIGURE 8, into which is fitted a suitable telescopic feed tube; and the passage 30a of the feed tube 27a may be made cylindrical, and the helical groove 15a may be formed on the wall of this passage with means 31a provided on the feed screw to engage said helical groove. The remaining parts which are identical with those of FIGURES 1-6 are identified with identical numbers primed. Also the brush head may be detachably secured to the brush shank by a friction fit plug 50 in socket 51 (see FIGURE 7).

While the invention is susceptible to various modifications and alternative constructions to those I have shown in the drawings and herein described in detail the pre-

ferred embodiment, it is to be understood that my invention is not to be limited to the specific form or arrangement of parts herein shown and described.

I claim:

1. A fountain brush having a bristle-carrying head and a hollow cartridge-bearing, tubular handle having coaxially end to end a larger and a smaller bore and carrying said head at the end thereof adjacent the smaller bore, a paste or cream extruding assembly arranged in said handle comprising a hollow, telescopic feed member of a form other than cylindrical positioned in the smaller bore at the forward portion of said handle; a cylindrical passage in said member and a helical groove in the wall of said passage; a feed screw and a piston head movably mounted thereon positioned in said handle; means on the forward portion of said screw received in the cylindrical passage of said member and engaged in said helical groove and cooperating therewith to project or retrograde said member; a head on said member and means on said head cooperating with complemental means on said handle to prevent contamination of the cleansing material in said handle; a discharge port adjacent to the head of said member movable with the said member axially of the handle and transverse to the bristle ends discharging cleansing material to the brushing surface of the bristles; a collar on the lower portion of said screw to limit longitudinal movement thereof; a handle rigidly mounted at the lower end of said screw to manually rotate same.

2. A fountain brush the combination of a bristle-carrying head and a tubular brush handle having a passage of a form other than cylindrical in its forward portion and a reservoir in its lower portion communicating therewith; a hollow, telescopic feed member of a form congruent to said passage is axially movably fitted in said passage; a cylindrical passage in said member and a helical groove formed in the wall of said cylindrical passage; a feed screw and a piston head movably mounted thereon are positioned in said brush handle; means on the forward portion of said screw received in the cylindrical passage of said member and engaging said helical groove and cooperating therewith so as to project or retrograde said member; a head on said member and means on said head cooperating with complemental means on said brush handle to prevent contamination of the cleansing material in said brush handle; a discharge port in said member adjacent to said head movable with the said member axially of the handle and transverse to the bristle ends discharging cleansing material to the brushing surface of the bristles; a stop means positioned at the forward end of said handle passage cooperating with said member to prevent withdrawal thereof from the handle passage; a refill cartridge frictionally fitted in said reservoir; a collar on the lower portion of said screw to limit longitudinal movement thereof; a screw handle on the lower end of said screw to manually rotate same; a closure cap detachably mounted on the lower end of said brush handle.

3. A fountain brush comprising a bristle-carrying head, a hollow cartridge-bearing, tubular handle offset from said head with its longitudinal axis generally transverse to the ends of the bristles on said head and having coaxially end to end a larger and a smaller bore and carrying said head at the end thereof adjacent the smaller bore, a paste or cream extruding assembly arranged in said handle comprising a hollow, telescopic feed member rotatable and axially movable in said smaller bore, said member having an inner axial passage of a form other than cylindrical, a helical groove in said smaller bore about the feed member, at least one stud externally projecting from said feed member engaged in and cooperating with said helical groove formed in the wall of said smaller bore whereby actuation of said stud will cause forward projection or retrogression of said member axially of the handle and transverse to the bristles on the head, a threaded head on said member adapted to engage comple-

mental threads formed above said helical groove in the wall of said smaller bore to lock said member within said handle, a discharge port on said member adjacent to said threaded head movable with the said member axially of the handle and transverse to the bristle ends for discharging cleansing material from the inner axial passage to the brushing surface of the bristles, a manually-operated, feed screw and a piston head movably mounted in the larger bore of the tubular handle, means on the forward portion of said feed screw positioned in said member passage and engageable therewith adapted to actuate said member whereby said member automatically releases its head and extends from the smaller bore on rotation of the feed screw; a collar on the lower portion of said feed screw to limit its longitudinal movement; and a handle rigidly mounted at the lower end of said screw to manually rotate same.

4. A fountain brush comprising a bristle-carrying head, a hollow cartridge-bearing tubular handle offset from said head with its longitudinal axis generally transverse to the ends of the bristles on said head and having coaxially end to end a larger and a smaller bore, a paste or cream extruding assembly comprising a hollow, telescopic feed member axially movable in said smaller bore longitudinally of the axis of the handle to a position opposite the bristles for delivering to the brushing surface of said bristles, a feed screw in the larger bore, a piston head movably mounted thereon, means on said feed screw engaging cooperating means on said feed member cooperating with the feed screw to project or retrograde said member, a head on said member, means on said head cooperating with locking means on said handle to prevent contamination of cleansing material in said handle, a collar on said feed screw to limit longitudinal movement thereof, and a handle mounted on the lower end of said screw to manually rotate same, whereby rotation of the screw causes the piston to move axially together with the telescoping feed member.

5. A fountain brush having a bristle-carrying head and a hollow cartridge-bearing, tubular handle offset from said head with its longitudinal axis generally transverse to the ends of the bristles on said head and having coaxially end to end bores and carrying said head at one end thereof, a paste or cream extruding assembly comprising a hollow, telescopic feed member positioned for axial movement in the bore of said handle adjacent the head, said member having an inner passage of a form other than cylindrical and being fitted snugly yet rotatably in said handle bore, at least one stud externally projecting from said member engaged in and cooperating with a helical groove formed in the wall of said bore whereby actuation of said stud will cause forward projection or retrogradation of said member, a threaded head on said member adapted to engage complemental threads formed above said helical groove in the wall of said handle bore to lock said member within said handle, a discharge port on said member adjacent to said threaded head movable with the said member axially of the handle and transverse to the bristle ends for discharging cleansing material to the brushing surface of the bristles, a tubular feed screw and a piston head movably mounted thereon in the other of said bores, a plunger rod disposed in said screw and having means on the forward portion thereof engaged in and adapted for actuation of said telescopic member, a collar on the lower portion of said screw to limit longitudinal movement thereof, a handle mounted on said screw and a handle mounted on said rod to manually rotate same.

6. A fountain brush the combination of a bristle-carrying head and a tubular handle offset from said head with its longitudinal axis generally transverse to the ends of the bristles on said head and thereon having a cylindrical passage in its forward portion adjacent the head and a reservoir in its rearward portion communicating therewith, a helical groove in the wall of said passage, a

hollow, telescopic feed member rotatably and axially movably arranged in said passage, at least one stud externally projecting from said member engaged in and cooperating with said helical groove whereby actuation of said stud will cause forward projection or retrogression of said member; a passage in said member having a form other than cylindrical, a threaded head on said member adapted to engage complementary threads formed in the wall of said handle passage to lock said member within the handle passage, a discharge port on said member adjacent to said head movably with the said member axially of the handle and transverse to the bristle ends for discharging cleansing material to the brushing surface of the bristles, a stop means positioned at the upper end of said helical groove and cooperating with said stud to prevent withdrawal of said member from said handle passage, a refill cartridge frictionally fitted in said reservoir, a feed screw and a feed piston head movably mounted thereon, means on the forward portion of said screw received in and adapted for rotation of said telescopic member, a closure cap detachably mounted on the lower end of the handle, a collar on the lower portion of said screw to limit longitudinal movement thereof, a handle on the lower end of said screw to manually rotate same whereby the feed piston head and telescopic feed member are simultaneously moved forwardly toward the bristle carrying head.

7. In a fountain brush, the combination of a bristle-carrying head and a tubular handle offset from said head with its longitudinal axis generally transverse to the ends of the bristles on said head and having a cylindrical passage in its forward portion adjacent the head and a reservoir in its rearward portion communicating therewith, a helical groove in the wall of said passage, a hollow, telescopic feed member arranged in said passage, axially movable and rotatably fitted therein, at least one stud

externally projecting from said member engaged in and cooperating with said helical groove whereby actuation of the stud will cause forward projection or retrogression of said member, a passage in said member having a form other than cylindrical, a threaded head on said member adapted to engage complementary threads formed in the wall of said handle passage to lock said member within the handle passage, a discharge port on said member, adjacent to said threaded head, movable with the said member axially of the handle and transverse to the bristle ends for discharging cleansing material to the brushing surface of the bristles, a stop means positioned at the upper end of said helical groove cooperating with said stud to prevent withdrawal of said member from said handle passage, a tubular feed screw and a piston head movably mounted thereon, a plunger rod positioned in said screw and having means at the forward position thereof received in the non-cylindrical passage of the telescopic member and adapted for actuation of said telescopic member, a collar on the lower portion of said screw to limit longitudinal movement thereof, a closure cap detachably secured on the lower end of the aforementioned handle, a disc mounted on the lower end of said rod to manually rotate same, an apertured disc mounted on the end of said screw to manually rotate same and a refill cartridge of dentifrice disposed in the reservoir of the handle when the brush is placed into operation.

References Cited in the file of this patent

UNITED STATES PATENTS

965,309	McDonald	July 26, 1910
2,793,792	Pilkington	May 28, 1957