

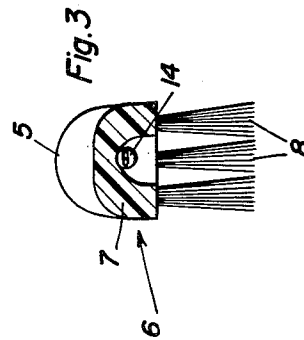
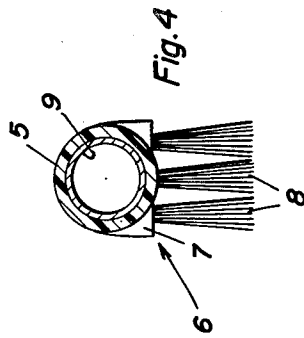
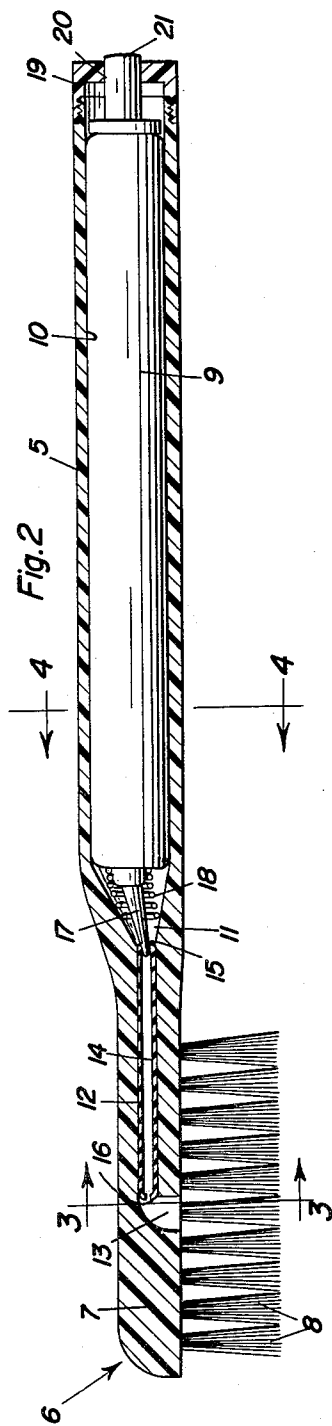
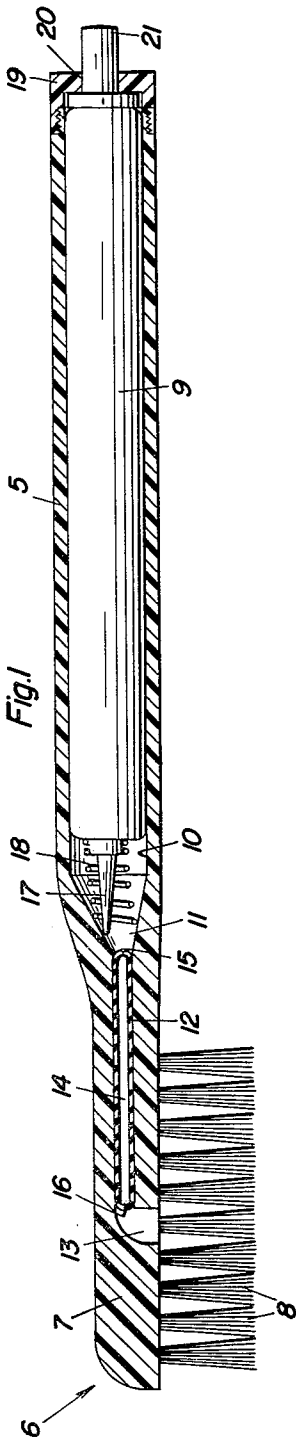
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3,021,850

CARTRIDGE TOOTHBRUSH

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CARTRIDGE TOOTHBRUSH

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5 Claims. (Cl. 132-84)

This invention relates to new and useful improvements in toothbrushes and has for its primary object to provide, in a manner as hereinafter set forth, an article of this character having embodied therein a novel pressurized supply of tooth paste.

Another very important object of the present invention is to provide a toothbrush of the aforementioned character comprising unique means for controlling the discharge of the paste to the bristles.

Still another important object of the invention is to provide a cartridge toothbrush of the character set forth comprising automatic sealing means whereby any paste ejected from the cartridge and remaining in the forward portion of the brush after use, will be prevented from drying, hardening and clogging the device.

Other objects of the invention are to provide a cartridge toothbrush of the character described which will be comparatively simple in construction, strong, durable, compact, of light weight, sanitary, attractive in appearance and which may be manufactured at low cost.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a view in vertical longitudinal section through a toothbrush constructed in accordance with the present invention, showing the cartridge in retracted position and closed;

FIGURE 2 is a vertical longitudinal sectional view substantially similar to FIGURE 1 but showing the cartridge in discharging position;

FIGURE 3 is a view in transverse section through the head, taken substantially on the line 3-3 of FIGURE 2; and

FIGURE 4 is a reduced view in transverse section, taken substantially on the line 4-4 of FIGURE 2.

Referring now to the drawing in detail, it will be seen that the embodiment of the invention which has been illustrated comprises a tubular handle 5 of suitable dimensions and material. Formed integrally with the tubular handle 5, on the forward end thereof, is a head 6. The head 6 includes a back 7 having embedded therein bristle tufts 8.

The tubular handle 5 provides a cylindrical chamber for the reception of a charged or pressurized tooth paste cartridge 9. At its forward end, this cartridge chamber 10 is substantially conical, providing what may be considered a cam 11. Communicating with the chamber 10 through the substantially conical portion 11 thereof is a longitudinal passage 12 in the back 7 of the head 6. The passage or bore 12 terminates in an enlarged, downwardly extending forward end portion or outlet 13 for discharging the tooth paste from the cartridge 9 among the bristles 8. Mounted in the passage or bore 12 is a resilient tube 14. The inner end of the resilient tube 14 is provided with a self-closing inlet slit 15. The forward end of the tube 14 has formed therein a similar discharge slit 16. The slit 16 communicates with the outlet 13 of the passage or bore 12.

The cartridge 9 is provided on its forward end with a laterally swingable nozzle 17 which actuates a spring-loaded control valve (not shown) in said cartridge. Also

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mounted on the forward end portion of the cartridge 9 and encircling the nozzle 17 is a coiled spring 18. The spring 18 is adapted to seat in the conical portion 11 of the chamber 10.

Threadedly mounted on the rear end portion of the tubular handle 5 is a removable cap 19. The cap 19 has formed therein a central opening 20. A thumb actuated plunger 21 is operable in the opening 20 behind the cartridge 9.

It is thought that the use of the toothbrush will be readily apparent from a consideration of the foregoing. Briefly, the spring 18, seated in the conical cam portion 11 of the chamber 10, yieldingly retains the cartridge 9 in retracted position as seen in FIGURE 1 of the drawing. When a quantity of the paste in the cartridge 9 is desired, the plunger 21 is actuated, thus pushing said cartridge forwardly against the tension of the spring 18. The nozzle 17 engages and rides on the cam 11, thus opening the cartridge 9 for permitting the paste to be ejected therefrom. The cone 11 guides the nozzle 17 into the tube 14 through the slit 15 thereof for discharging the paste into said tube. From the tube 14 the paste passes through the slit 16 into the outlet 13 and is discharged among the bristles 8 in an obvious manner. When the plunger 21 is released the cartridge 9 is immediately retracted by the spring 18 and the nozzle 17 returns to the position of FIGURE 1 of the drawing, thus closing said cartridge. As the nozzle 17 is withdrawn from the tube 14 the self-closing slit cleans the tip of said nozzle and seals the rear end of said tube. The self-closing slit 16 automatically seals the forward end of the tube 14 when the pressure ceases, thus preventing the paste in said tube from drying and hardening.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A fountain-type toothbrush comprising, in combination, a bristle equipped head having a longitudinally bored passage with an outlet for toothpaste at one end and a toothpaste intake at the other end, a tubular handle rigidly connected at a forward end to an adjacent rearward end of the head, said handle embodying an elongated hollow portion defining a chamber for an insertable and removable cartridge having a valve at one end and charged with pressurized toothpaste, the forward end of said chamber communicating operatively with the intake end of the passage by a duct having sloping side walls which comprise camming means, the longitudinal axes of said chamber and said bored passage being substantially parallel and offset from one another and connected by said duct, said chamber being of a length substantially equal to the length of said handle and greater than the length of the cartridge so that when the cartridge is inserted and fitted into the chamber it and the valves are capable of being slid toward and from said camming means for causing the camming means to operate the valve means, said handle being open at the rearward end to allow the cartridge to be inserted into or removed from the chamber, and manually actuatable chamber-closing and cartridge actuating means for actuating and sliding the cartridge toward the camming means and alternatively releasing it for movement in a direction away from the camming means.

2. The structure defined in claim 1 and in combination, a separate pressurized toothpaste containing member comprising said cartridge removably mounted in said chamber and being provided at its discharge end with a

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valved spring-loaded nozzle comprising said valve which is normally closed, the tip portion of said nozzle engaging and sliding against the camming means when said cartridge is moved toward said head whereby the nozzle is tilted laterally with respect to the axis of the cartridge and said valved nozzle is connected with the interior of said cartridge, the camming means serving to guide the tip of the nozzle into communicating and sealing relationship in respect to the intake of the aforementioned passage.

3. A fountain-type toothbrush comprising, in combination, a bristle-equipped head having a longitudinally bored passage therein for reception of toothpaste under pressure, said passage having an outlet at the forward end thereof to deliver the toothpaste to the bristles, the rearward end of said passage providing an intake for toothpaste, a tubular handle having a forward end fixed to a rearward end of the head, and being open at its rearward end, said handle having an elongated hollow portion defining a chamber, substantially all of the forward end of said chamber being conical in cross-section and the surface of the conical portion providing a cam surface, the apical portion of the cam surface registering and communicating with the intake of the passage in said head, a removable cap provided on the rearward end of the handle and cooperating with and closing the adjacent end of the chamber and provided with a central opening, and a thumb actuated plunger reciprocable in said opening, a portion of the plunger extending into the chamber and being adapted to engage a cooperating end portion of a tube of toothpaste for moving it toward said cam surface.

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4. The structure defined in claim 3 and in combination, a readily insertable and removable cartridge separate from said handle embodying a tube of toothpaste charged with pressurizing media, said cartridge being of a length less than the chamber and capable of sliding back and forth in the chamber between the plunger and conical camming surface, the forward end of said cartridge having a laterally tiltable valved nozzle mounted thereon, the tip of said nozzle having sliding and camming cooperation with said camming surface, the camming surface serving when the cartridge is moved forwardly to tilt and guide the discharge tip of the nozzle into communicating relation with the intake of the aforementioned passage, and a spring in said chamber for moving said cartridge rearwardly, said plunger being cooperable with the end of the cartridge adjacent thereto.

5. The structure defined in claim 4 and in combination, a resilient tube fitting within said bored passage having a self closing inlet at said intake for toothpaste and a self closing discharge at said outlet, said nozzle automatically guided into said inlet by said cam surface for opening same when said cartridge is moved toward said passage by said plunger.

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