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AUTOMATIC TOOTHBRUSH AND DISPENSER

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Fig. 1

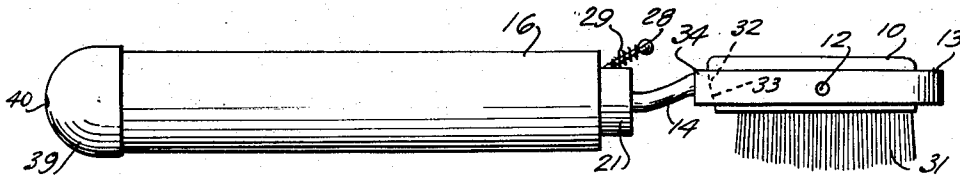


Fig. 2

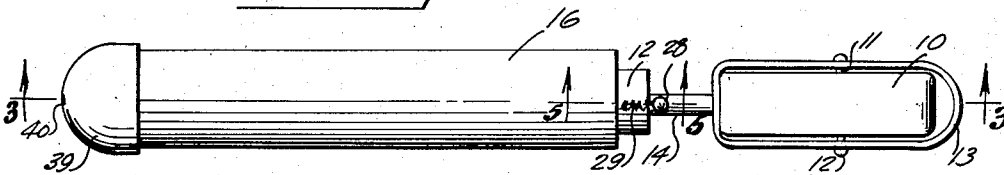


Fig. 3

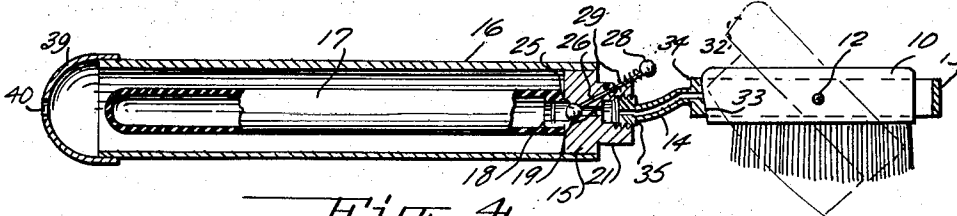


Fig. 4

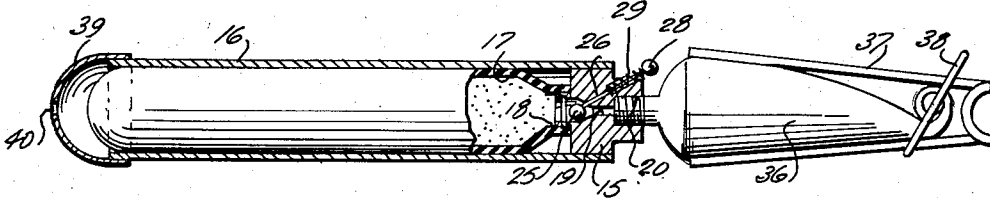
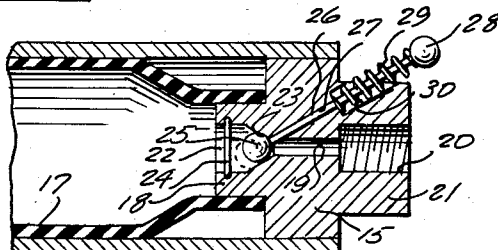


Fig. 5



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ATTORNEYS

1

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AUTOMATIC TOOTHBRUSH AND DISPENSER

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1 Claim. (Cl. 15—138)

This invention relates to toothbrushes particularly of the fountain brush type wherein toothpaste or other paste or liquid products are provided in a storage chamber in a handle with a brush head at the end of the handle, and in particular a tubular handle having a container of elastic material therein with a neck supporting a frame having a brush head pivotally mounted therein on one end of the handle and with the brush head positioned whereby products forced through the neck are deposited on bristles thereof.

The purpose of this invention is to provide an improved fountain brush wherein toothpaste carried in the handle thereof may readily be applied to the bristles and in which an outlet opening for the toothpaste is sealed when the brush is not in use.

Various types of toothbrushes and other devices have been provided with storage chambers in handles thereof and with heads connected to the handles with tubular elements, however, in conventional toothbrushes of this type the toothpaste is forced through relatively small openings in the head and into areas between the bristles. With the toothpaste remaining in the small openings in the head it readily hardens and continuous operation thereof is substantially impossible. With this thought in mind this invention contemplates a method of applying toothpaste from a reservoir in the handle of a toothbrush to the bristles of the head wherein the toothpaste is applied to the outer end of the bristles of the head instead of passing through a passage in the head.

The object of this invention is, therefore, to provide means for suspending a toothbrush head at the end of a handle whereby toothpaste from a reservoir in the handle may be applied directly to ends of the bristles of the brush head.

Another object of the invention is to provide a toothbrush of the type having a toothpaste reservoir in the handle in which the head is threaded in the end of the handle and mounted so that the head may be removed and the threaded nipple of collapsible tubes threaded in the opening thereof whereby products may be forced from the tube into the reservoir of the handle.

A further object of the invention is to provide a toothbrush having a reservoir in the handle and a head suspended from one end of the handle in which a passage from the reservoir to the head is closed when the device is not in use.

A still further object of the invention is to provide a toothbrush having a toothpaste reservoir in the handle and a brush head pivotally mounted on one end thereof in which the device is of a simple and economical construction.

With these and other objects and advantages in view the invention embodies a tubular handle having a plug with an opening therethrough in one end, a container of resilient material or toothpaste sack therein and a brush head pivotally mounted in a frame suspended by a tubular nipple threaded in a socket in the outer end of the plug.

Other features and advantages of the invention will

2

appear from the following description taken in connection with the drawing, wherein:

Figure 1 is a side elevational view of the improved automatic toothbrush.

Figure 2 is a plan view of the toothbrush.

Figure 3 is a longitudinal section through the toothbrush taken on line 3—3 of Fig. 2 with parts of the toothpaste container or sack shown in elevation.

Figure 4 is a longitudinal section similar to that shown in Fig. 3 showing a toothpaste tube threaded in the socket in the outer end of the plug for refilling the toothpaste sack or container.

Figure 5 is a longitudinal section taken on line 5—5 of Fig. 2 with the parts shown on an enlarged scale illustrating the plug with the resilient container mounted on a boss on the inner end and with a ball check valve shown in the inner end of a passage through the plug.

Referring now to the drawing wherein like reference characters denote corresponding parts the improved toothbrush of this invention includes a brush head 10 pivotally mounted by pins 11 and 12 in a frame 13 which is suspended by a tubular nipple 14 from a plug 15 positioned in the end of a handle 16 and having a container 17 of resilient material, such as rubber, secured over a boss 18 on the inner end of the plug.

The plug 15 is provided with a passage 19 having an internally threaded counterbore 20 providing a socket in a cylindrical section 21 on the outer end, and a counterbore 22 providing a valve seat 23 in the boss 18, in the inner end. The counterbore 22 is provided with a transversely disposed pin 24 which provides a retainer for the valve element or ball 25 on the inner end of a stem 26 that extends through an opening 27 in the plug and that is provided with a knob 28 on the outer end which is urged outwardly by a spring 29 in a recess 30 whereby with the valve element released the spring 29 urges the stem 26 outwardly with the ball 25 closing the inner end of the passage 19. By this means toothpaste is retained in the rubber sack or reservoir 17 after a charge of toothpaste has been removed from the handle. The tension inherent in the material of the sack or container 17 drives the toothpaste through the passage 19 and also through the tubular neck or stem 14. The pressure of the toothpaste also urges the ball 25 against the seat 23 thereby closing the passage as soon as the knob 28 is released.

The toothbrush head is provided with bristles 31 the outer ends of which are positioned on a radius from the axes of the pins 11 and 12 whereby with the head rotated to the position indicated by the broken lines in Fig. 3 toothpaste forced through the neck or tube 14 is directly applied to the ends of the bristles of the toothbrush. The inner end of the head 10 is provided with a beveled surface 32 that coacts with a similar surface 33 on a cross bar 34 forming the inner end of the frame whereby with the head rotated to the position shown in Fig. 1 the inclined or beveled surfaces 32 and 33 provide stop means limiting the rotating movement of the toothbrush head.

The end of the nipple 14, opposite to that on which the cross member 34 of the frame is positioned is provided with an enlarged member 35 that threads into the threaded socket 20 of the plug for retaining the brush head in position on the end of the handle. The opposite end of the nipple 14 is integral with the cross member 34 of the frame 13 and with the ball 25 held away from the seat 23 by pressing inwardly upon the knob 28 toothpaste is forced by resiliency inherent in the material of the container 17 through the passage 19 and nipple 14, passing through the opening in the inclined surface 33 so that with the brush head rotated on the pins 11 and 12 toothpaste may be deposited upon the ends of the bristles, and as soon as sufficient toothpaste is deposited upon the bristles the knob 28 is released whereby the pressure of

3

the toothpaste in the container 17 in combination with the action of the spring 29 moves the ball 25 against the seat 23 closing the passage 19.

When toothpaste is exhausted in the container 17 the frame 13 with the brush head is removed from the socket 20 and the threaded nipple of a toothpaste tube 36 is threaded in the socket 20 and upon rolling the tube in a frame 37, such as by a key 38 toothpaste is forced into the resilient container 17, expanding the container and substantially filling the interior of the handle.

The outer end of the handle is provided with a cap 39 and the end of the cap is provided with an opening 40.

With the parts designed and assembled in this manner the container 17 is filled with toothpaste by removing the brush head and nipple 14 and inserting the nipple of a collapsible tube, such as the tube 36 in the socket 20 and as the tube is collapsed paste therein is forced through the passage 19 and into the container 17. The escape of the toothpaste, upon removing the tube 36, is prevented by the ball check valve 25, which closes the passage 19, as illustrated in Fig. 5.

With the toothbrush head and tube 14 replaced in the socket 20, as illustrated in Fig. 3 the brush is actuated as indicated by the broken lines whereby the bristles pass across the mouth or end of the opening through the tube 14 and with the ball 25 held inwardly by the knob 28 resiliency inherent in the material of the container 17 forces the toothpaste through the passage 19 and tube 14 whereby the toothpaste is applied to ends of the bristles.

It will be understood that although the device is illustrated and described as being particularly adapted for use as a toothbrush, the improved applicator is also adapted to be used for other materials and for other purposes.

It will also be understood that other changes, within

4

the scope of the appended claim, may be made in the design and arrangement of the parts without departing from the spirit of the invention.

What is claimed is:

In an applicator, a frame, a brush head pivotally mounted in said frame, an end of said head being provided with a beveled surface that coacts with a similar beveled surface on a crossbar forming the inner end of the frame whereby the beveled surfaces provide stop means for limiting pivotal movement of the head, a tubular nipple connected to said frame, a plug connected to said nipple, said plug including a boss, a handle having said plug mounted therein, a paste holding container of resilient material secured over said boss, said plug being provided with a passage having one end terminating in an internally threaded first counterbore and its other end terminating in a smooth second counterbore, said passage being shaped to include a valve seat, a pin mounted in said second counterbore, a stem mounted in said plug and having a knob on its outer end and a ball on its inner end engaging said valve seat, a spring for normally urging said stem outwardly, and a cap mounted on an end of said handle and provided with an opening therein.

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