United States Patent [19]

Drohomirecky

[11] **3,712,747**

[45] **Jan. 23, 1973**

[54] **TOOTHBRUSH WHICH DISPENSES TOOTHPASTE**

[76] Inventor: **Walter Drohomirecky,** 164 5th Street, Rankin, Pa. 15104

[22] Filed: **Sept. 18, 1970**

[21] Appl. No.: **73,421**

[52] **U.S. Cl.** **401/155**

[51] **Int. Cl.** **A46b 11/02**

[58] **Field of Search** ..401/155; 222/95, 105; 132/84B

[56] **References Cited**

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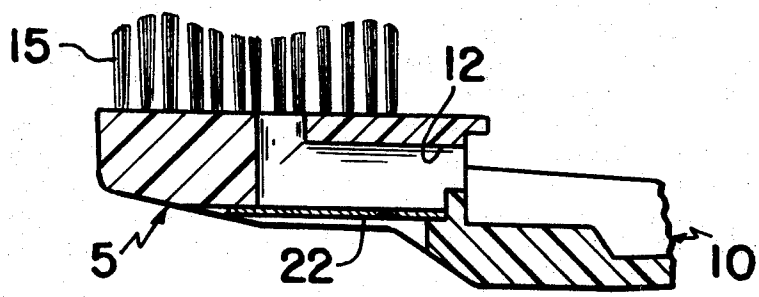
Primary Examiner—Robert W. Michell

Attorney—Webb, Burden, Robinson & Webb

[57] **ABSTRACT**

A toothbrush which contains a toothpaste cartridge cavity located within its hollow or split handle into which a toothpaste cartridge is inserted. An outlet bore runs from the toothpaste cartridge nozzle to the bristle portion of the toothbrush. Movement of a thumb slide mounted on the handle causes the toothpaste cartridge to be compressed so that toothpaste is ejected from the cartridge through the outlet bore and onto the bristles of the toothbrush.

3 Claims, 12 Drawing Figures



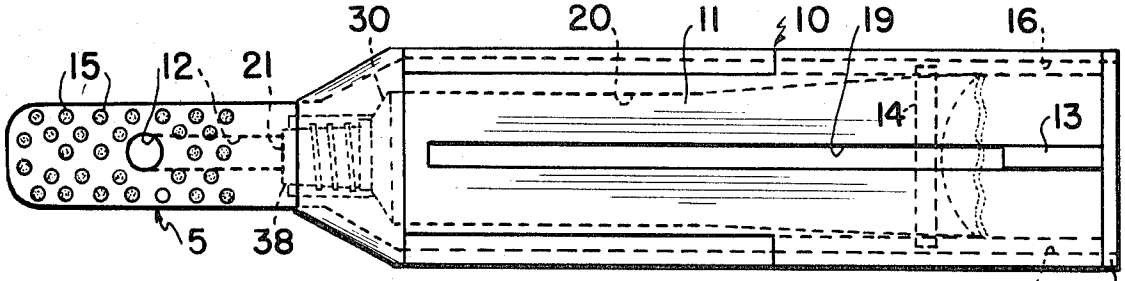


Fig. 1

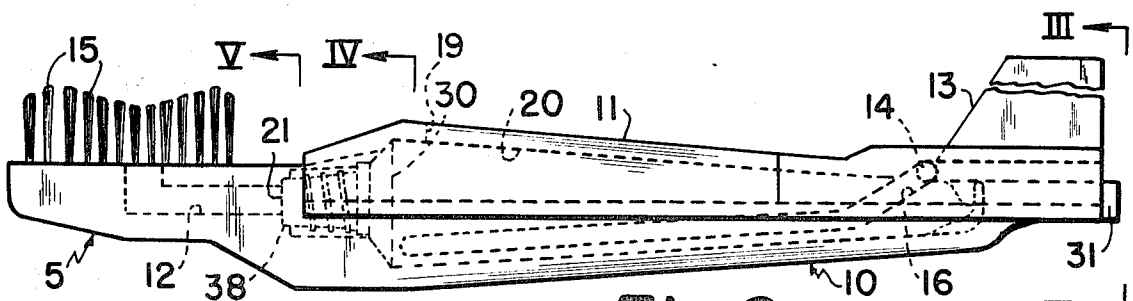


Fig. 2

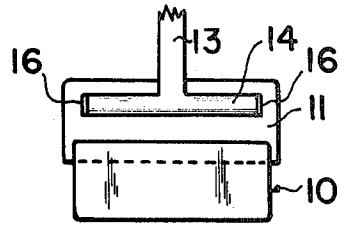


Fig. 3

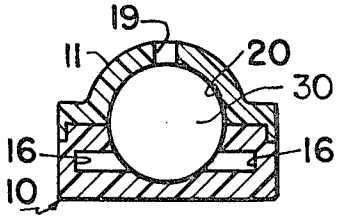


Fig. 4

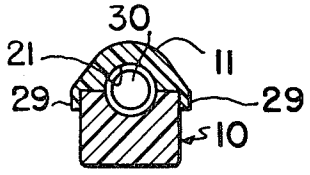


Fig. 5

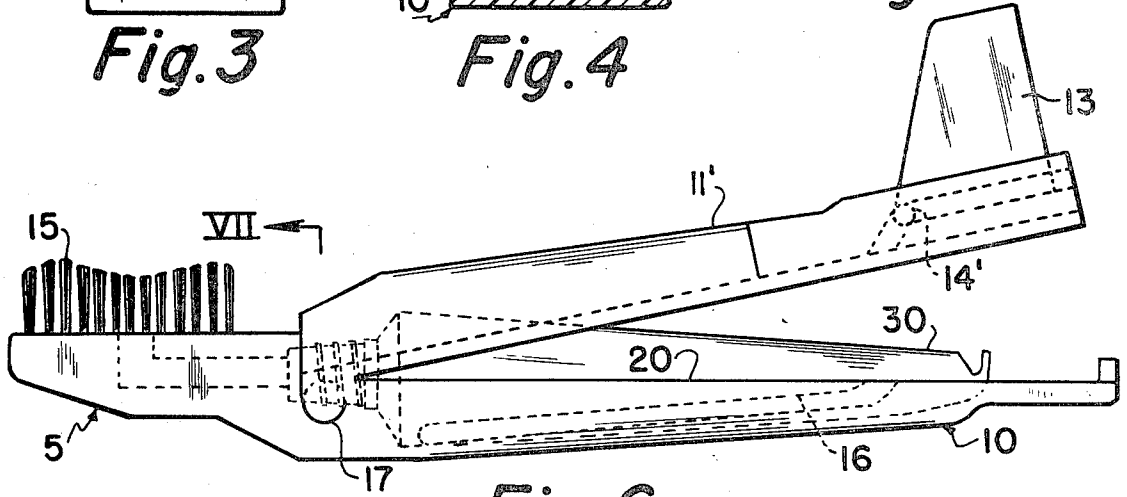


Fig. 6

INVENTOR.
Walter Drohomirecky
BY Webb Burden Robinson & Webb
HIS ATTORNEYS

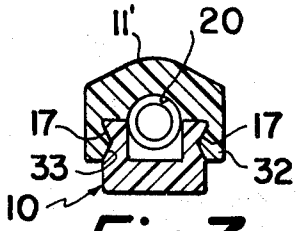


Fig. 7

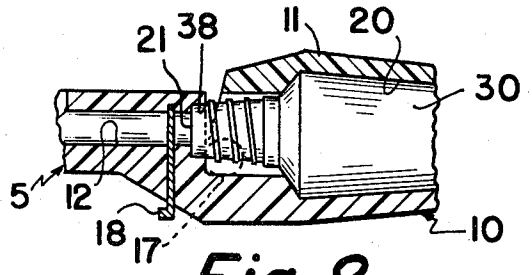


Fig. 8

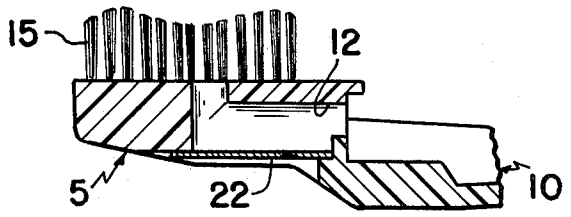


Fig. 9

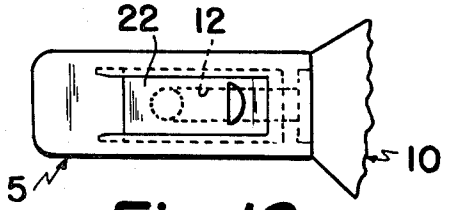


Fig. 10

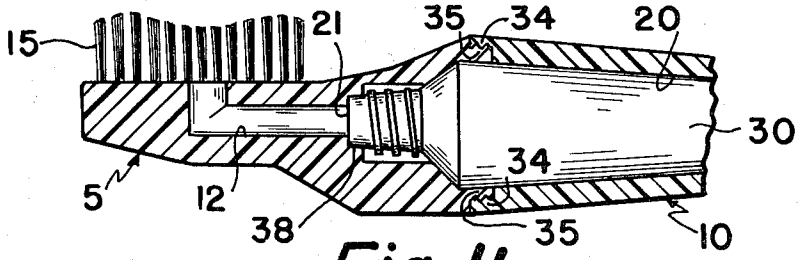


Fig. 11

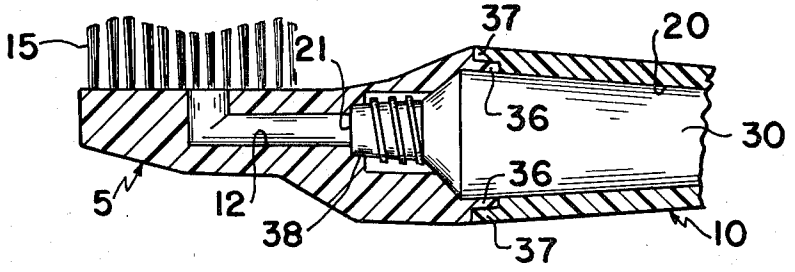


Fig. 12

INVENTOR.
Walter Drohomirecky
BY Webb Burden Robinson & Webb
HIS ATTORNEYS

TOOTHBRUSH WHICH DISPENSES TOOTHPASTE

BACKGROUND OF THE INVENTION

My invention relates to a new toothbrush device and, more particularly, to a toothbrush which dispenses toothpaste onto its bristles from a toothpaste cartridge positioned within its handle.

In toothbrushes of the general type known heretofore, the toothpaste is applied to the bristles from a toothpaste dispensing source apart and independent from the toothbrush. The person applying the toothpaste must maintain a close alignment between the bristles of the toothbrush and the toothpaste cartridge so that the toothpaste being ejected from the cartridge is not wasted due to spillage. This is particularly a problem with younger children.

Prior attempts have been made to design a fountain-type toothbrush, but these have proved unsuccessful due to their complicated structural designs and inefficient or difficult-to-operate dispensing means. I have overcome these various problems with my invention. In my invention the toothpaste is ejected directly onto the bristles, thereby eliminating the possibility of spillage.

The present invention also affords another advantage over prior art toothbrushes in that the time required to dispense toothpaste onto the bristles is reduced since it is not necessary to uncap and recap the toothpaste cartridge as is required when using the prior art toothbrush-toothpaste cartridge combination. In addition, preparation for travel is simplified in that a single unit includes both the toothbrush and the toothpaste. My invention also provides a simple, yet efficient toothbrush having an integral dispensing means.

My invention is a toothbrush having a hollow or split handle to accommodate a toothpaste cartridge. A thumb slide slidably mounted in a longitudinal slot on the handle operates to compress the toothpaste cartridge and eject toothpaste through an outlet bore onto the bristles.

In the accompanying drawings, I have shown my presently preferred embodiments in which:

FIG. 1 is a plan view of the toothbrush showing a toothpaste cartridge positioned within the handle member;

FIG. 2 is a side elevation of the toothbrush having a push fit cover member;

FIG. 3 is an end view taken from line III—III of FIG. 2;

FIGS. 4 and 5 are sectional views taken respectively along lines IV—IV and V—V of FIG. 2;

FIG. 6 is a side elevation of the toothbrush showing a pivotally mounted cover or split handle member;

FIG. 7 is a sectional view taken on line VII—VII of FIG. 6;

FIG. 8 is a partial cut-away side view showing a shut-off gate valve;

FIG. 9 is a cut-away side view showing a clean-out slide in the outlet bore;

FIG. 10 is a bottom plan view showing the clean-out slide of FIG. 9;

FIG. 11 is a partial cut-away side view showing a head member coupled to a handle member by a threaded, screw-type connection; and

FIG. 12 is a partial cut-away side view showing a head member coupled to a handle member by a press-fit.

My toothbrush includes a head member, generally designated **5**, a handle member, generally designated **10**, and a thumb slide arrangement **13**. The head member, which contains the bristles **15**, can be detachably connected to the handle **10**, as shown in FIGS. **11** and **12**, or may be integral with the handle **10**, as shown in FIGS. **2** and **6**. The head member **5** has an outlet bore **12** extending from the end of the head member **5** adjacent the handle member **10**, through the head member **5** and exiting among the bristles **15**.

The handle member **10** is hollow to form the toothpaste cavity **20** into which a toothpaste cartridge **30** is inserted. The toothpaste cartridge **30** is preferably a standard toothpaste tube thereby permitting easy replacement. As will be described in detail hereinafter, the toothpaste cartridge **30** is positioned in the cavity **20** so that the nozzle **21** of cartridge **30** cooperates with the outlet bore **12** of head member **5** to permit toothpaste to be ejected therethrough onto the bristles **15**.

Toothpaste leakage around the nozzle **21** is prevented by the annular shaped, counter bore **38** located at the toothpaste cartridge nozzle-outlet bore interface, as shown in FIGS. **1** and **2**. It will be recognized that other forms of sealing means can be employed to effectively eliminate leakage. In the embodiment of FIGS. **1** and **2**, force exerted on the thumb slide dispensing means **13** causes the toothpaste cartridge to be compressed toward the head member **5** whereby the open end of nozzle **21** is pressed tightly against the bearing surface of the counter bore **38** so as to form a seal at that point and thus prevent the leakage of toothpaste around the nozzle.

The handle member **10** has a top surface **11** which has a longitudinal slot **19** running substantially the length of surface **11**. This slot **19** accommodates the thumb-slide arrangement **13**. This thumb-slide arrangement consists of a planar upper surface upon which the thumb is positioned for pushing movement. A web section depends downwardly from the planar upper surface and is slidably positioned in slot **19** and terminates in an elongated lateral member **14**, the web and lateral compressing member **14** forming an inverted T. The ends of lateral compressing member **14** ride in alignment tracks **16** recessed into the inner walls of handle **10**, see FIGS. **3** and **4**.

As the thumb-slide arrangement **13** is moved toward the bristle portion **15**, the compressing member **14** moves along alignment tracks **16** and slidably compresses the toothpaste cartridge **30** causing toothpaste to be ejected from the cartridge through the outlet bore **12** and onto the bristle portion **15**.

To aid in the initial contact of compressing member **14** and the cartridge **30**, the bottom interior surface of handle **10** is curved upwardly at its rear end so that the cartridge **30** is forced upward and into starting engagement with compressing member **14**, see FIG. **2**.

There are several embodiments by which the handle member can be opened to allow the insertion and removal of a toothpaste cartridge.

The upper surface **11** of handle **10** may be in the form of a cover plate, as shown in FIG. **2**. This cover plate at its forward end has downwardly depending peripheral flanges **29** which snugly fit over the sides of handle **10**, see FIG. **5**, and at its rearward end the cover

plate fits snugly against upwardly depending flange **31** positioned at the rear of handle **10**, see FIG. **2**. In other words, a press fit is formed.

The cover **11** may also be pivotably connected to the handle **10**, as shown at **17** in FIGS. **6** and **8**. The pivotable connections **17** is formed by inwardly disposed lugs **32** in cover **11'** which fit into mating recesses **33** in handle **10**, see FIG. **7**.

The head member **5** may also be threadably coupled to the hollow handle member **10** as shown in FIG. **11**. Threads **35** on the outside surface of the head member **5** mate with threads **34** on the inside diameter of the handle member **10**. The head member **5** can thereby be removed from the handle member **10** by a twisting force, thus allowing the insertion or removal of a toothpaste cartridge **30** into or from the toothpaste cartridge cavity **20**.

The head member **5** may also be detachably connected to the hollow handle member **10** by means of a press fit, as shown in FIG. **12**. Outwardly depending peripheral flanges **36** and **37** are formed on the open end of the head member **5** and the open end of the handle member **10**, respectively. The outside diameter of the head member flange **36** and the inside diameter of the handle member flange **37** are closely matched so that a snug fit is achieved when they are pressed together.

A shut-off gate valve **18** can be employed to block the passage of toothpaste in the outlet bore **12**. The gate valve is slidably mounted in a mating slot in the hollow handle member **10** and perpendicular to the longitudinal axis of the outlet bore **12**. In the closed position, the gate valve **18** seals the outlet bore **12** thereby preventing the toothpaste from hardening in the area of the toothpaste cartridge nozzle **21**.

FIGS. **9** and **10** show a clean-out slide **22** slidably mounted in a recessed guide in the bottom surface of the head member **5** and in communication with the outlet bore **12**. In the event toothpaste becomes hardened in the outlet bore, the clean-out slide can be opened to allow the removal of the hardened toothpaste.

I claim:

1. A toothbrush which dispenses toothpaste comprising:

A. a head member having bristles depending outwardly therefrom and an outlet bore extending from an end thereof through the head member and exiting among the bristles;

B. a handle member attached to the head member having a toothpaste cartridge cavity and an annular counterbore communicating with said outlet bore located at the outlet bore-cartridge cavity interface, said counterbore shaped to receive the open end of a toothpaste cartridge nozzle in such a manner that the forward end of the nozzle sealably seats against the internal annular surface of the counterbore, said handle member also having a longitudinal slot through its surface communicating with the toothpaste cartridge cavity and running substantially the length of the handle member, and said handle member also having a pair of diametrically opposite alignment tracks recessed into the inner wall of said handle member extending longitudinally along the length of the toothpaste cartridge cavity;

C. means corresponding with the toothpaste cartridge cavity for gaining access to said cavity to allow the insertion of a toothpaste cartridge into the handle member;

D. a thumb-slide dispensing means including a rod shaped compressing member and a planar upper surface member connected thereto, said planar upper surface member slidably positioned in the longitudinal slot of the handle member, the ends of said compressing member slidably positioned in the alignment tracks within the interior of the toothpaste cartridge cavity, so that when the planar upper surface member of the thumbslide is moved toward the head member, the compressing member compresses the toothpaste cartridge, forcing the nozzle of the cartridge into a sealable position at the nozzle-counterbore interface and also causing the toothpaste to be ejected through the outlet bore and onto the bristles; and

E. a clean out slidably mounted on the bottom surface of the head member opposite the bristle surface, said clean out slide positioned adjacent the outlet bore so as to allow access to substantially the entire interior of the head member and outlet bore.

2. A toothbrush as recited in claim **1** wherein the access means comprises a cover plate detachably mounted on the handle member by a press fit.

3. A toothbrush as recited in claim **1** wherein the access means comprises a press fit connection between the head member and the handle member.

* * * * *

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,712,747 Dated January 23, 1973

Inventor(s) Walter Drohomirecky

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Claim 1, Column 4 Line 18 --corresponding-- should read --cooperating--. Claim 1, Column 4 Line 37 --a clean out slidably-- should read --a clean out slide slidably--.

Signed and sealed this 29th day of May 1973.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents

FORM PO-1050 (10-69)

USCOMM-DC 60376-P69
* U.S. GOVERNMENT PRINTING OFFICE : 1969 O—366-334