

[54] **FOLDABLE TOOTHBRUSH WITH PASTE SUPPLY: AND DISPENSER AND COVERING MEANS**

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[57] **ABSTRACT**

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A folding toothbrush includes a brush element which is pivoted to a carrier member and shiftable on this member from non-use to use positions. The carrier member also forms the support and alignment means for a pliable receptacle for toothpaste having a discharge slot which registers with the brush head when the brush is in the completely folded non-use position. A cover member for the brush and receptacle in the non-use position serves as a handle when the brush is extended for use.

[52] U.S. Cl. ....132/84

[51] Int. Cl. ....A63h 27/00

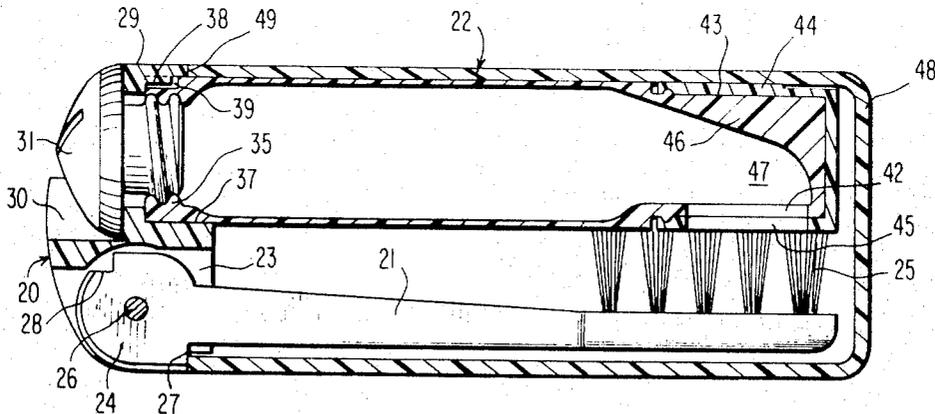
[58] Field of Search .....132/84 R, 84.2, 84.4, 132/92 R; 206/15.1, 15.2

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**16 Claims, 19 Drawing Figures**



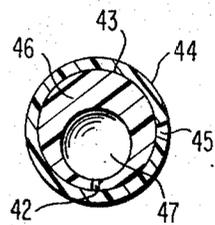
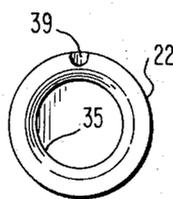
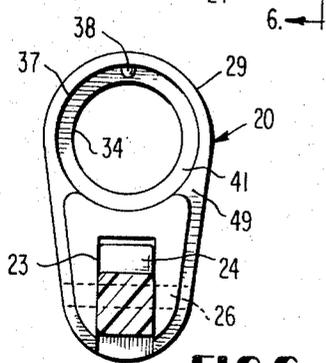
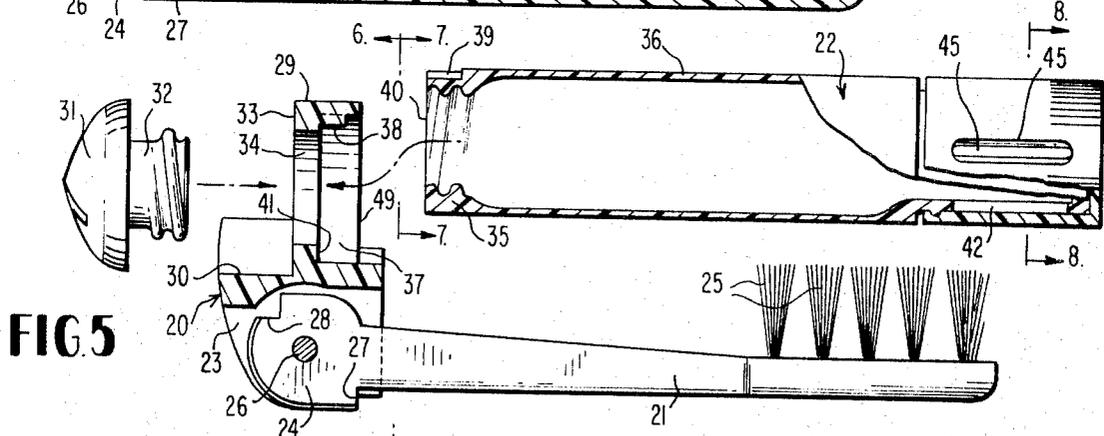
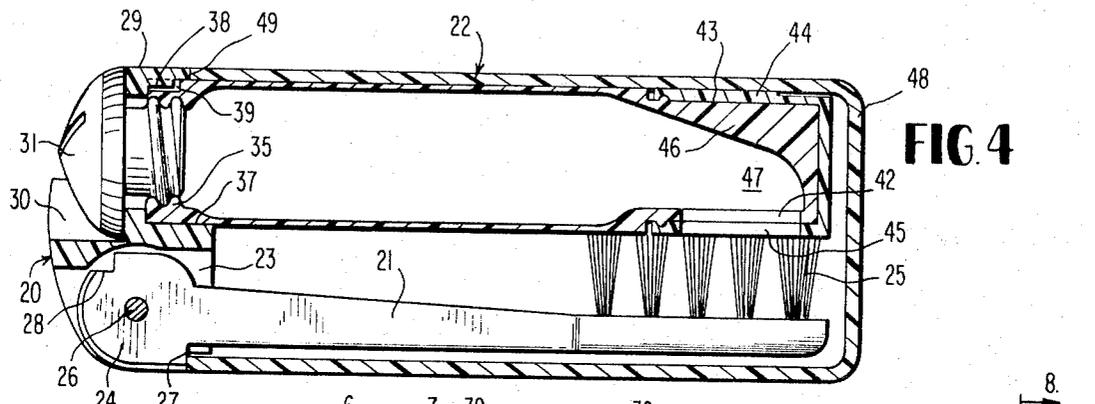
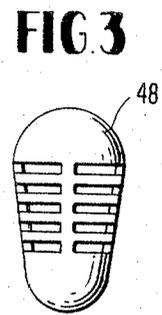
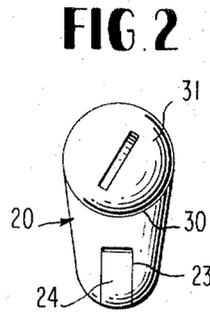
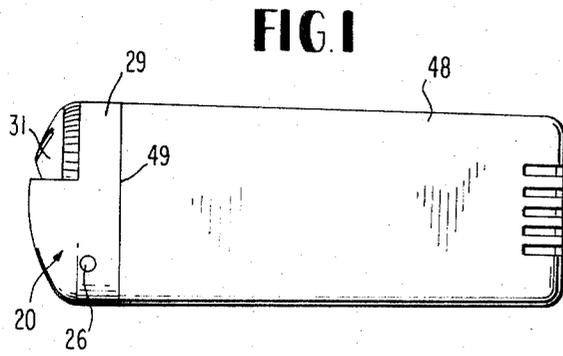


FIG. 6

FIG. 7

FIG. 8

FIG. 9

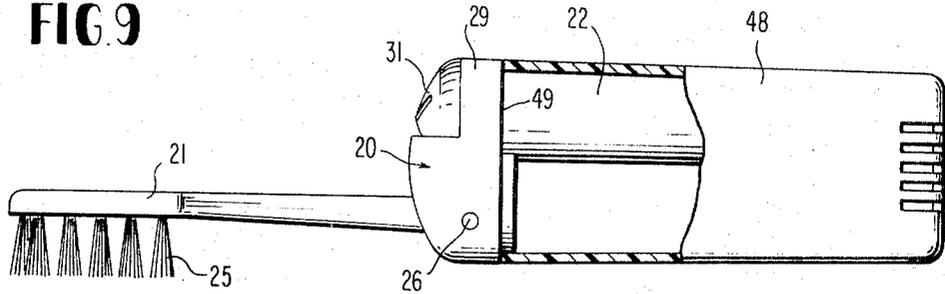
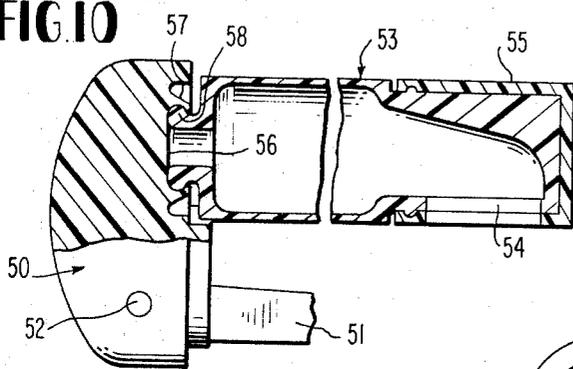


FIG. 10



12. 13.

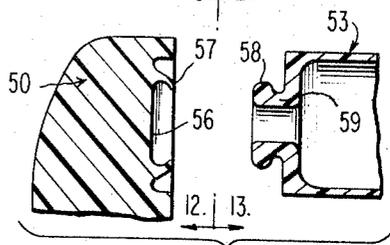


FIG. 11

FIG. 14

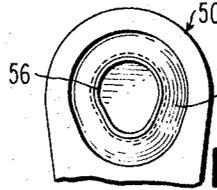
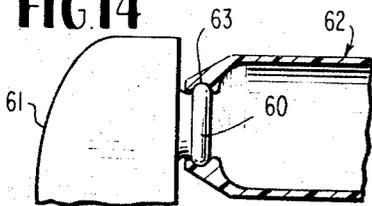


FIG. 12

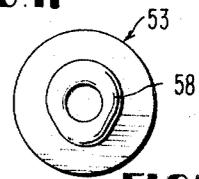


FIG. 13

FIG. 18

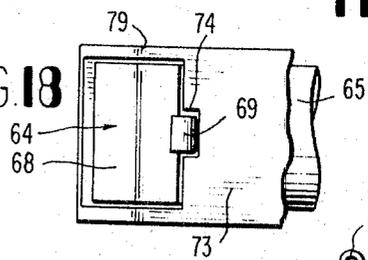


FIG. 15

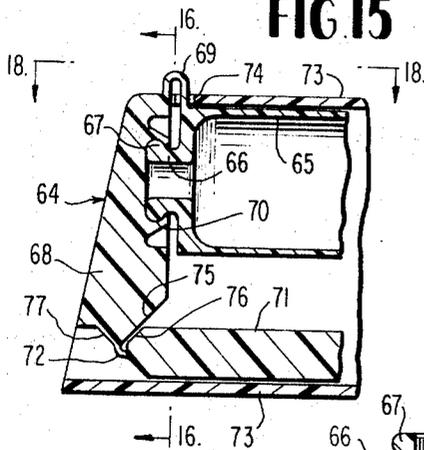


FIG. 16

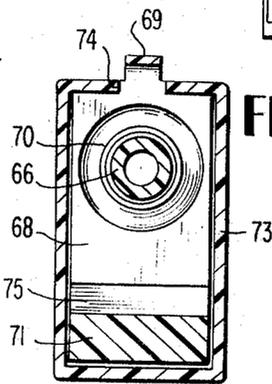


FIG. 17

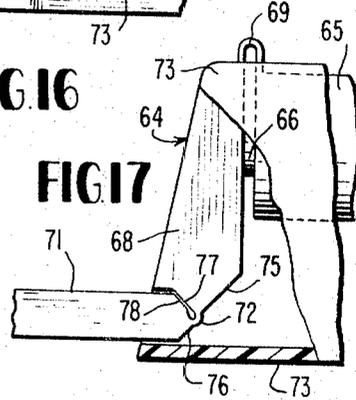
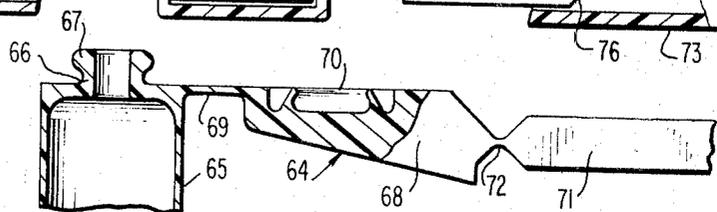


FIG. 19



## FOLDABLE TOOTHBRUSH WITH PASTE SUPPLY: AND DISPENSER AND COVERING MEANS

The invention arises as a result of a need for a toothbrush and toothpaste supply which may be conveniently carried as a compact unit in a purse or in a garment pocket or in a small toilet kit of the type commonly used in traveling. Office workers frequently neglect their teeth during the day because of the inconvenience of carrying a conventional toothbrush and supply container of paste or other dentifrice. While the prior art contains some teachings of folding brushes and brushes integrated with dentifrice receptacles and dispensers, there is believed to be as yet no fully satisfactory answer to the above need in the form of a sufficiently compact, convenient and sanitary device of the character in question.

Accordingly, the objective of the invention is to provide such a device which is economical to manufacture, taking advantage of certain modern materials which are ideally suited for the elements involved. More particularly, an object of the invention is to provide a combined folding toothbrush and dentifrice container and dispenser which enables the use of any popular type toothpaste rather than powders or other less popular compounds. The paste receptacle and dispenser utilized is easily refillable and carries a closure element for the paste dispensing opening or slot. Means are provided to assure registration of the paste dispensing slot with the brush bristles when the brush is pivoted to the paste receiving position. In a preferred form of the invention, a closure plug for the squeezable paste receptacle serves the additional purposes of securing the receptacle to the brush carrier element and for locking the receptacle with its paste discharge slot properly aligned relative to the brush head. A convenient slip-on cover for the device completely encloses the brush and receptacle when folded into the non-use position, the cover forming a handle for the device when the brush is extended for use and also locking the brush securely in the use position.

Other features and advantages of the invention will become apparent during the course of the following description.

### BRIEF DESCRIPTION OF DRAWING FIGURES

FIG. 1 is a side elevation of a foldable toothbrush and paste supply container in the folded condition with a cover applied to the device;

FIG. 2 is an end elevation of the device as shown in FIG. 1;

FIG. 3 is an opposite end elevation;

FIG. 4 is an enlarged central vertical longitudinal section through the device shown in FIGS. 1-3;

FIG. 5 is an exploded vertical cross sectional view partly in elevation, similar to FIG. 4 and with the cover element removed;

FIG. 6 is a transverse vertical section taken on line 6-6 of FIG. 5;

FIG. 7 is a similar view taken on line 7-7 of FIG. 5;

FIG. 8 is a similar view taken on line 8-8 of FIG. 5;

FIG. 9 is a side elevational view of the device, partly in section, with the brush element extended and locked in the use position;

FIG. 10 is a fragmentary vertical section showing a modification of the invention;

FIG. 11 is a fragmentary exploded vertical section showing parts of the modified form separated;

FIG. 12 is a fragmentary end elevation taken on line 12-12 of FIG. 11;

FIG. 13 is a similar view taken on line 13-13 of FIG. 11;

FIG. 14 is a fragmentary side elevation, partly in section, showing another modification;

FIG. 15 is a fragmentary vertical section taken through a further modified form of the invention;

FIG. 16 is a vertical section taken on line 16-16 of FIG. 15;

FIG. 17 is a fragmentary side elevation of the device shown in FIG. 15 with the brush element in the extended use position;

FIG. 18 is a fragmentary plan view taken on line 18-18 of FIG. 15; and

FIG. 19 is a fragmentary vertical section, partly in elevation, showing a three-part molded unit employed in the modification of FIG. 15.

### DETAILED DESCRIPTION

Referring to the drawings in detail wherein like numerals designate like parts and referring first to FIGS. 1 through 9 showing a preferred embodiment, the numeral 20 designates a base element or carrier for a toothbrush 21 and toothpaste storage and dispensing container 22, to be described in detail. The carrier 20 which may be conveniently formed of plastic has a slot 23 in its lower side for the reception of an enlargement 24 on one end of the shank of the toothbrush 21, the other end of the shank carrying the usual bristles 25, or equivalent tooth scrubbing means. The enlargement 24 which has opposite flat faces received within the slot 23 is permanently pivotally secured to the carrier element 20 by a transverse pivot pin 26. For purposes to be described, the enlargement 24 has a pair of shoulders 27 and 28 provided thereon, FIG. 4, at approximately diametrically opposite points with respect to the axis of the pivot pin 26.

The carrier element 20 has an upper substantially cylindrical axially narrow portion 29 thereon and forwardly of this portion, the element 20 has an arcuate recess 30 to provide clearance for a cap 31 having a short screw-threaded shank 32. This cap and shank are well adapted to be molded from plastic along with the other parts of the device. The forward face of the cap 31 abuts a square end face 33 on the carrier portion 29 and the latter has a cylindrical bore 34 to allow passage of the shank 32 through the portion 29 and into threaded engagement with the internally screw-threaded neck 35 of an elongated cylindrical thin-walled container 36 for toothpaste. The container 36 is preferably formed of a pliant-type plastic, such as commonly used for various types of squeeze bottles. The end of the container 36 having the internal screw threads is received snugly within an enlarged bore section 37 of carrier portion 29, and a small integral key 38 projecting into the bore section 37 interlocks with a keyway 39 in the adjacent end of the container 22. When the parts are assembled, FIG. 4, the end face 40 of the container 22 abuts an internal shoulder 41 on the portion 29 of the carrier element.

The container 22 has a narrow toothpaste discharge slot 42 in its side wall near its end remote from the threaded neck 35, and this slot is spaced circumferentially 180° from the key 38 and keyway 39. The adjacent end of the container 22 has its diameter somewhat reduced at 43 and on this portion carries a swivel cap

44 having a slot 45 adapted to be turned into and out of registry with the paste discharge slot 42, see FIG. 8. The swivel cap 44 can be turned to cover the slot 42 completely so that the toothpaste will not dry and clog up the slot 42 when the device is not in use. Adjacent the discharge slot 42, the opposite wall portion of the pliant container 22 is thickened and inclined as at 46 to resist deformation when the thin-walled container is squeezed and to guide the toothpaste through a somewhat restricted nozzle passage 47, FIG. 8, toward the slot 42. The construction also prevents toothpaste from accumulating in the corner of the container 22 generally opposite the discharge slot 42. The tube or container 36 is readily refillable with toothpaste through the threaded neck 35. The cap 31 serves as a removable closure for the neck 35 of the paste container and serves additionally to anchor the container to the carrier element 20 and to lock the dispensing container with the slot 42 properly indexed for registration with the toothbrush bristles when the brush is in the paste-receiving position, FIG. 4.

The device additionally embodies a preferably plastic cover or shell 48 also serving as a handle for the assembly in the toothbrushing or use position shown in FIG. 9. The open end of the cover 48 has a simple slip fit over the cylindrical container 22 and lower part of the carrier element 20, and the cover, when enclosing the brush and container, FIGS. 1 and 4, abuts the end face 49 of element 20. With the cover applied to the device as in FIGS. 1 and 4, the brush and toothpaste container are fully enclosed and protected and the device is so compact that it can easily be carried in a trouser pocket, small purse or the like.

When the device is to be used, the cover 48 is removed and with the brush 21 and container 22 still arranged in the folded parallel positions, the container is squeezed with the fingers to dispense a proper amount of toothpaste onto the brush head. The brush may be backed away slightly from the slot 42 for better control and distribution of the toothpaste and this technique can be easily mastered by the user. The brush 21 is then pivoted 180° to the extended use position shown in FIG. 9 and the cover 48 is reapplied over the carrier element 20 and container and serves as a substantially rigid handle for the toothbrush during use. After usage, the parts are simply returned to their relative positions of FIG. 4 and the swivel cap 44 is first twisted to cover the slot 42 with a wiping action.

In FIGS. 10 through 13, there is shown a modification of the invention wherein the carrier element 50 is molded from deformable polypropylene or the like. A toothbrush 51 is pivoted at 52 to the carrier element in the same manner already described. A pliant, preferably plastic, container and dispenser 53 for toothpaste is provided as in the previous embodiment and has the same paste discharge slot 54 and swivel cap 55, previously described. The threaded cap 31 and indexing or keying means 38 and 39 is dispensed with in the present modification for simplicity and to reduce the number of parts. Instead of these elements, the forward face of the carrier element 50 is provided with a socket recess 56 having a resilient marginal lip 57 which returns to its normal shape shown in FIG. 11 after stretching. This socket receives an integral enlarged head 58 formed on the neck 59 of the container 53. The head 58 snaps firmly into the socket recess 56 and is held therein by the lip 57, FIG. 10, but the parts can be separated

readily when necessary to refill the container 53. So that the slot 54 will register properly with the toothbrush, the socket recess 56 and the coating head 58 are shaped other than round and may be oblong or pear-shaped, as illustrated in FIGS. 12 and 13. Any shape other than round will prevent relative rotation of the parts 53 and 50 when they are assembled as in FIG. 10, and this will maintain the slot 54 properly positioned for dispensing paste onto the brush when the container 53 is squeezed.

FIG. 14 shows a slight modification of the construction in FIGS. 10 through 13, the only difference being that the male element or head 60 of the connecting means is formed on the carrier element 61 instead of on the pliant paste container 62, as in the previous embodiment. The female component of the connection, or socket, indicated at 63 is now formed on the mouth of the container 62, and this socket like the lip 57 is formed of yielding material. The connecting elements, therefore, are simply reversed from their arrangements in FIGS. 10 through 13 and the same type of snap-on separable connection is produced. The inner connecting parts 60 and 63 may be shaped as indicated in FIGS. 12 and 13 for the corresponding elements 58 and 56 of the prior embodiment.

FIGS. 15 through 19 show a final modification of the invention in which the number of separable parts is further reduced and the major components are molded from plastic as a single unit for economy of manufacture and convenience of use. The unit referred to is shown in FIG. 19 designated by the numeral 64 and comprises a squeezable container or tube 65 for toothpaste having a connecting neck 66 and head 67 which may be annular. The leading end of container 65 is permanently joined to a carrier element 68 by an integral thin flexible hinge strap 69. The carrier element 68 is provided with a yielding socket 70 adapted to receive the head 67 securely and detachably in substantially the manner shown for the elements 57 and 58 in FIG. 10. The unit 64 further comprises a toothbrush extension 71 corresponding to the brush 21 and permanently joined to the carrier element 68 by an integral plastic hinge 72. The device shown in FIGS. 15-19 further embodies a slip-on cover 73 of rectangular cross section and being open at one end like the cover 48 and adapted to enclose the container 65 and brush 71 when these parts are folded into parallelism, FIG. 15, with the carrier element 68 extending transversely at the leading end of the assembly. FIG. 15 therefore depicts the non-use position of the parts.

As shown in FIG. 15, folding of the three-part unit 64 causes the strap 69 to project outwardly as a loop through a clearance notch 74 provided in the cover 73 to allow this projection. Instead of the indexing means 38 and 39 and 57 and 58 of the prior embodiments, the hinge strap 69 maintains the proper alignment of the toothbrush discharge slot in the container 65 with the head of the toothbrush. It is to be understood that the container 65 has a slot similar to the slot 42 and is also equipped with a swivel cap to close this slot as previously described. When the toothbrush 71 is folded to the position in FIG. 15, the brush head will lie adjacent to the toothpaste discharge slot as illustrated in FIG. 4 in the first embodiment. Also in FIG. 15, the beveled faces 75 and 76 on the elements 68 and 71 positively limit folding of the unit 64 at a point where the container 65 and brush 71 are properly parallel.

FIG. 17 shows the device in the use position wherein the cover 73 has been removed from the folded unit 64 and replaced thereon after the toothbrush 71 has been pivoted relative to the element 68 so as to project forwardly. In this position, the opposing beveled faces 77 and 78 limit pivoting of the brush 71 in one direction and the projecting wall of the cover 73 below the toothbrush limits pivoting in the opposite direction on the hinge 72 so that the brush is effectively locked in the use position. FIG. 18 shows how the removable cover 73 is recessed at 79 in its forward end and top ahead of the notch 74 to receive the carrier element 68. The device is used in substantially the same manner fully described in connection with the initial embodiment of the invention and such use or operation need not be repeated in connection with the modification of FIGS. 15 through 19 since the elements not shown are identical to those previously illustrated in FIGS. 1 - 10.

The terms and expressions which have been employed herein are used as terms of description and not of limitation, and there is no intention, in the use of such terms and expressions, of excluding any equivalents of the features shown and described or portions thereof but it is recognized that various modifications are possible within the scope of the invention claimed.

I claim:

1. A foldable toothbrush with toothpaste supply and dispensing means comprising in combination a carrier element, a toothbrush pivotally secured to said carrier element and swingable relative thereto between non-use and use positions rearwardly and forwardly of the carrier element, respectively, a yielding squeezable refillable container and dispenser for toothpaste having a toothpaste fill mouth at one end thereof, a separable connection including said fill mouth between the container and dispenser and the carrier element and said container and dispenser extending rearwardly of said carrier element in substantial parallelism to the toothbrush when the toothbrush is in said non-use position, said container and dispenser having a toothbrush discharge opening adjacent the opposite end thereof in substantial registration with the tooth cleaning portion of the brush when the brush is in said non-use position, and a removable cover for the toothbrush and said container and dispenser in said non-use position and being detachably engageable with said carrier element, said cover engaged with said carrier element and forming a handle for the device when the toothbrush is in the use position and extending forwardly of said carrier element.

2. The structure of claim 1, and cooperating means on said carrier element and said container and dispenser serving to maintain said toothpaste discharge opening in alignment with the tooth cleaning portion of the brush.

3. The structure of claim 2, and said cooperating means forming a part of said separable connection.

4. The structure of claim 2, and said cooperating means comprising interlocking key and keyway parts on said carrier element and container and dispenser.

5. The structure of claim 2, and said cooperating means comprising eccentrically formed separable interlocking parts on said carrier element and container and dispenser.

6. The structure of claim 5, and said eccentric interlocking parts comprising an eccentric enlargement on the mouth of said container and dispenser and a correspondingly-shaped yielding socket on said carrier element.

7. The structure of claim 2, and said cooperating means comprising an integral interconnecting hinge element between said carrier element and said container and dispenser.

8. The structure of claim 1, wherein said separable connection comprises a closure cap for the fill mouth of said container and dispenser through which the same is filled and refilled with toothpaste, said closure cap clampingly securing said container and dispenser to said carrier element in the use and non-use positions of the toothbrush.

9. The structure of claim 8, and said closure cap having a screw-threaded shank, said carrier element having a bore receiving said shank and the mouth of said container and dispenser and said mouth having internal screw threads engageable with the screw threads of said shank.

10. The structure of claim 1, and a swivel closure for said toothpaste discharge opening on said container and dispenser.

11. The structure of claim 10, and said swivel closure comprising a swivel cap on said opposite end of said container and dispenser adjacent said discharge opening, said cap having a side wall opening turnable into and out of registry with said discharge opening.

12. The structure of claim 11, and said toothpaste discharge opening and swivel cap opening comprising elongated slots extending longitudinally of said container and dispenser near the end thereof remote from said carrier element.

13. The structure of claim 1, and a pin element forming the pivotal connection between said toothbrush and carrier element.

14. The structure of claim 1, and the pivotal connection between the toothbrush and carrier element formed by an integral flexible hinge element.

15. The structure of claim 1, and said carrier element, toothbrush and container and dispenser comprising an integral foldable unit including integral flexible hinge parts between and interconnecting the carrier element and toothbrush and the carrier element and said container and dispenser.

16. The structure of claim 15, and a projecting wall portion on said cover underlying said toothbrush when the latter is pivoted to extend forwardly of the carrier element in the use position and serving to releasably lock the toothbrush in the use position, the carrier element and toothbrush having opposing faces which cooperate with said projecting wall portion of the cover in locking the toothbrush in the use position.

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