June 19, 1956 B. J. COLLINS ET AL 2,750,614

DISPENSING TOOTHBRUSH

Filed April 8, 1952

Fig. 1

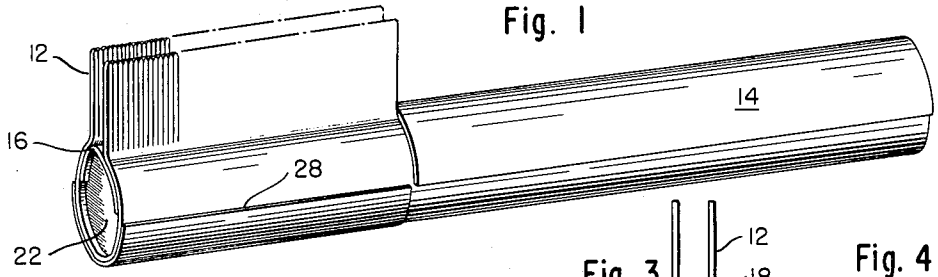


Fig. 3

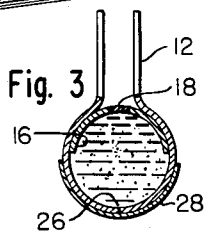


Fig. 4

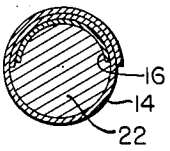


Fig. 2

Fig. 5

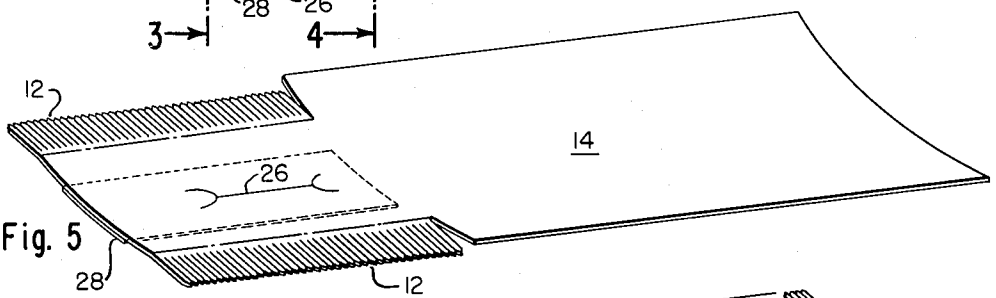


Fig. 6

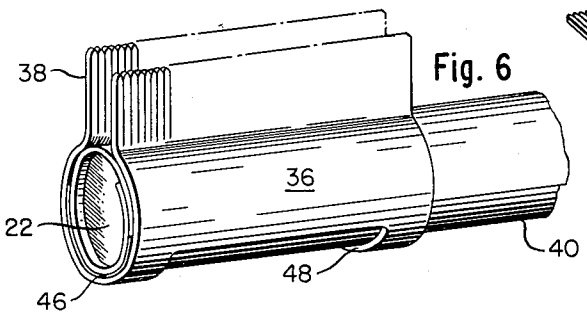


Fig. 7

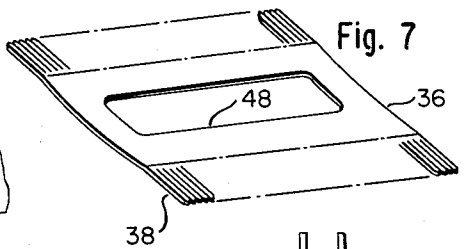


Fig. 9

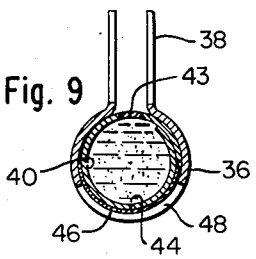


Fig. 8

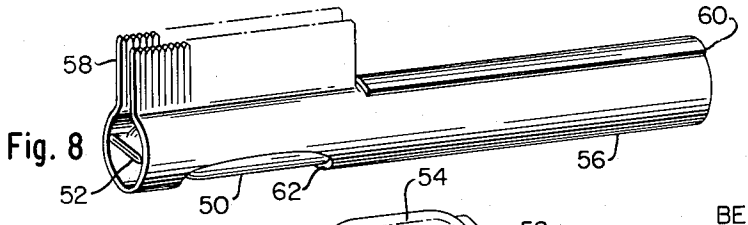
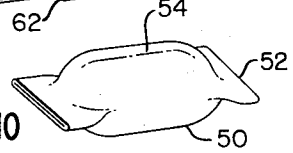


Fig. 10



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DISPENSING TOOTHBRUSH

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1 Claim. (Cl. 15—131)

The present invention relates to toothbrushes and more particularly to improvements in toothbrushes wherein the paste or powder is combined with the brush in a single article.

The invention has as one of its objects the provision of a toothbrush of novel construction, capable of being manufactured at low cost and therefore suitable for dispensing by means of automatic coin controlled vending machines.

Another object of the invention is to provide a toothbrush construction in which the paste or powder may readily be incorporated within the unit for convenient distribution to the brush itself when the article is to be used.

Still another object of the invention is to provide a toothbrush construction of low cost wherein the bristle portion and the body portion may be of the same type of material, and if desired, fashioned from a single piece of such material.

In accordance with these and other objects, a feature of the invention reside in a toothbrush wherein the bristle portion is formed of suitable paper or like material, fabricated ot provide a plurality of closely spaced bristles having brushing characteristics resembling those of conventional bristles.

Another feature of the invention consists of the provision of a toothbrush having a bristle and body portion of paper or the like, with a sac or similar containier for the toothpaste disposed within the head portion of the brush adjacent the base of the bristles, the paste having a deformable membrane or covering which may be pressed or squeezed by the finger of the operator to discharge the paste into the region intermediate the rows of bristles.

Other objects and features of the invention will be apparent from the following description taken in conjunction with the accompaying drawings in which Fig. 1 shows in oblique view a completed toothbrush constructed in accordance with one embodiment of our invention; Fig. 2 is a view in longitudinal sectional elevation of the brush shown in Fig. 1; Fig. 3 is a transverse section taken along the line 3—3 of Fig. 2; Fig. 4 is another view in sectional elevation, taken on the line 4—4 of Fig. 2; Fig. 5 is a view of a paper blank prior to being formed into the completed brush; Fig. 6 is an oblique view showing the head portion of an alternative embodiment of brush construction, wherein the bristle section is an element separate from the body portion of the article; Fig. 7 shows the brush or bristle section prior to incorporation in the body; Fig. 8 is a view of another embodiment employing a unitary bristle and handle construction; Fig. 9 is a sectional elevation of the structure shown in Fig. 6, and Fig. 10 is an oblique view of a sac of paste adapted for use in the embodiment of Fig. 8.

The toothbrush of our invention is characterized by a substantially all paper construction wherein the bristle portion **12** may, if desired, be integral with the handle **14**. The toothbrush is tubular in section to provide not only a convenient shape of handle, but also to afford a rigid structure well suited for the intended purpose. The paper stock which is employed may be of the resin treated type

to provide appreciable waterproofing and to enhance substantially the stiffness of the paper stock.

The blank from which the embodiment illustrated in Figs. 1–5 is made up is shown in Fig. 5, the handle **14** being formed from the plain portion while the head end is cut to provide rows of bristles **12** extending along margins of the material. These bristles are formed by slitting the stock inwardly at closely spaced intervals to provide a bristle length substantially that of conventional toothbrush bristles. By reason of the resin impregnated paper, it is found that these paper bristles function effectively to clean the teeth and do not become limp or soggy during the course of a brushing of normal length of time.

When the blank is rolled up into shape as shown in Fig. 1, the handle portion **14** extends around in overlapping relation as shown in the sectional view Fig. 4, the overlapping regions of the paper being adhesively joined by suitable adhesive applied prior to the forming.

The spacing between the base lines of the rows of bristles in the flat blank is such that when the blank is rolled up into shape, the bristles will be disposed in parallel, relatively closely spaced relationship, as shown in Fig. 1. To close the gap between the bristles at their base, an insert of paper stock is made as shown at **16**, this preferably being adhesively secured to the interior portions of the blank within the head end.

To permit the ejection of the paste which is contained within the head of the brush, the bridging insert **16** is provided with perforations which open into the space between the rows of bristles. Until the brush is ready to be used, these holes are closed by wax droplets **18** or other soft material which will readily be ejected when pressure is applied to the back of the brush to force out the paste from within the brush head.

The toothpaste is contained within the tubular portion of the head end in any suitable manner. As shown in Fig. 2, the paste region may be defined by plugs **22** of wax or other suitable material which provide closures for the tube. In view of the relatively rigid structure of the paper tube, it is desirable to weaken the paper stock in the region of the paste so that pressure applied in such region may be readily transmitted to the paste to cause its ejection through the holes provided.

For this purpose, the paper stock in the regoin of the head opposite the bristles may be slit as shown at **26** to permit the stock to bend inwardly under the influence of externally applied pressure. This slit may be covered by a strip **28** of thin material, preferably thin flexible material, and is placed over the outside of the head in the region of the slit. This, in conjunction with the wax-filled discharge apertures, serves to provide a substantially air-tight enclosure for the paste until the brush is to be used.

The operation of the brush is readily apparent from its mode of construction. The articles will customarily be sold wrapped in the usual protective covering (not illustrated), generally of a thin flexible transparent nature. When the brush is to be used, the covering will be stripped off and pressure applied to the back of the brush in the region of the flexible strip **28**. This pressure will cause the strip **28** and paper stock beneath it to bend inwardly. The resulting pressure on the paste will cause the wax plugs **18** in the apertures of strip **16** to be ejected, with the result that paste will be supplied to the region between the bristles **12**. The brush may then be used in the customary manner, the resin-impregnated paper stock being relatively resistant to softening by exposure to water. It has been found that the bristles, even though of paper, provide a highly effective cleansing action without objectionable stiffness or hardness, and without softening during the usual period of use.

What the inventors have provided therefore is a highly satisfactory toothbrush and self-contined paste supply

which may be manufactured at extremely low cost, such as to make it suitable for use in dispensing or vending machines. The nature of the construction is such that the paste may remain completely sealed within the brush until it is time to use the article.

A modified form of construction is illustrated in Fig. 6 wherein the bristle portion of the brush may be formed as a separate unit from the tubular handle portion. Such construction may be employed when it is considered desirable to employ a different stock for the bristles from that in the handle itself. In this construction the bristle section 36 may be formed from a single piece of paper stock with bristles 38 slit in the stock along opposite edges to form relatively closely spaced rows when the bristle section is wrapped around the tubular body 40. The flat blank of the bristle section is shown in Fig. 7 with rows of bristles along opposite margins. In this construction, a separate insert at the base of the bristles is unnecessary; accordingly, the apertures for the discharge of paste into the bristle region may be formed in the body blank, as shown in Fig. 9. These will be sealed off with wax plugs 43, if the paste is placed directly within the tube as in the previously described embodiment. Likewise, the slitting to permit inward bending of the stock in the region of the paste is indicated at 44, with the thin flexible backing strip shown at 46. To facilitate pressing the strip inwardly to expel the paste, the blank 36 containing the bristles is preferably cut away in its central portion 48 so as to eliminate the extra thickness of material that would otherwise result in the region of the slit 44 and its thin flexible covering strip 46.

An alternative form of construction is illustrated in Fig. 8, wherein the paste, instead of being contained directly within the head portion of the toothbrush, is sealed within a sac 50 which is then placed in the brush body. This sac may consist of thin flexible material such as plastic tubing which may be filled with paste and sealed at its ends 52 by flattening and bonding the material in its flattened condition. Preferably the flexible envelope or sac will be formed with a weakened line 54 which is disposed to lie adjacent the base of the bristles when the sac is inserted within the tube.

The use of the sac of paste permits the tooth brush to be further simplified in its construction. As shown in Fig. 8, the handle portion 56 and bristles 58 are formed from a single piece of stock, the handle portion being formed into a tube with slight overlap 60 to permit securing. A cut out 62 is provided in order that a portion of the paste sac 50 may be readily accessible for inward displacement by the user. With this construction, pressure may be applied through the back of the head within the region of the cut-out 62 to the paste-containing sac within the tube, with the result that the envelope or sac will rupture along the weakened line 54 and allow paste to be discharged directly into the region between the spaced rows of bristles 58.

The use of the paste sac within the head of the brush, while particularly adapted to the simplified construction shown in Fig. 8, is not so limited, and may be used alternatively in the constructions shown in Figs. 1 and 6. In such case, the apertures at the base of the bristles need not be sealed off, nor is it necessary to employ either the plugs 22 or the strip of flexible sealing material 28 or 46 in said embodiments, since the sac itself provides an air-tight enclosure for the paste.

It is clearly apparent, as a result of the above described and illustrated embodiments, that we have provided a novel and useful construction of toothbrush and tooth paste unit, capable of being manufactured at extremely low cost yet adapted to function effectively in the intended manner. Units constructed as shown and described have proved to be highly satisfactory in their brushing action, the paper bristles functioning with remarkable effectiveness and providing a resiliency and cleaning ability comparable to that of the standard bristles. Furthermore, the construction permits the paste to be readily embodied within the tube with adequate sealing to prevent the paste from drying out before use. Whether the paste be sealed off by wax plugs, or contained in a sealed sac, the paste is maintained in substantially air tight condition so as to remain clean and moist until used. By reason of the simple tubular construction, the use of a substantially all-paper handle and bristle combination becomes entirely feasible.

While the invention has been illustrated and described as embodied in preferred and alternative constructions and arrangements, it will be understood that the invention is not specifically limited to such precise forms, but may be comprehended in other forms and arrangements within the terms of the appended claim.

We claim as our invention:

A toothbrush comprising a tubular paper handle, a tubular head portion having paper bristles projecting therefrom in spaced rows, an aperture in the wall of the head portion intermediate the rows of bristles, a sac of paste within the tubular head portion, said sac being formed of thin flexible material having rupturable means disposed adjacent the aperture intermediate the rows of bristles, and an opening in the wall of the tubular head portion spaced around the head portion from the bristles, a portion of the sac being accessible through the opening for the application of external pressure to rupture the sac and eject paste to the bristles.

References Cited in the file of this patent

UNITED STATES PATENTS

1,725,852	Cressler	Aug. 27, 1929
1,767,313	Salvucci	June 24, 1930
1,811,833	Simon	June 23, 1931
2,031,990	Turner	Feb. 25, 1936
2,175,487	Stall	Oct. 10, 1939
2,265,102	Cressler et al.	Dec. 2, 1941
2,294,747	Habeck et al.	Sept. 1, 1942
2,419,896	Hobelmann	Apr. 29, 1947
2,548,255	Cressler	Apr. 10, 1951