

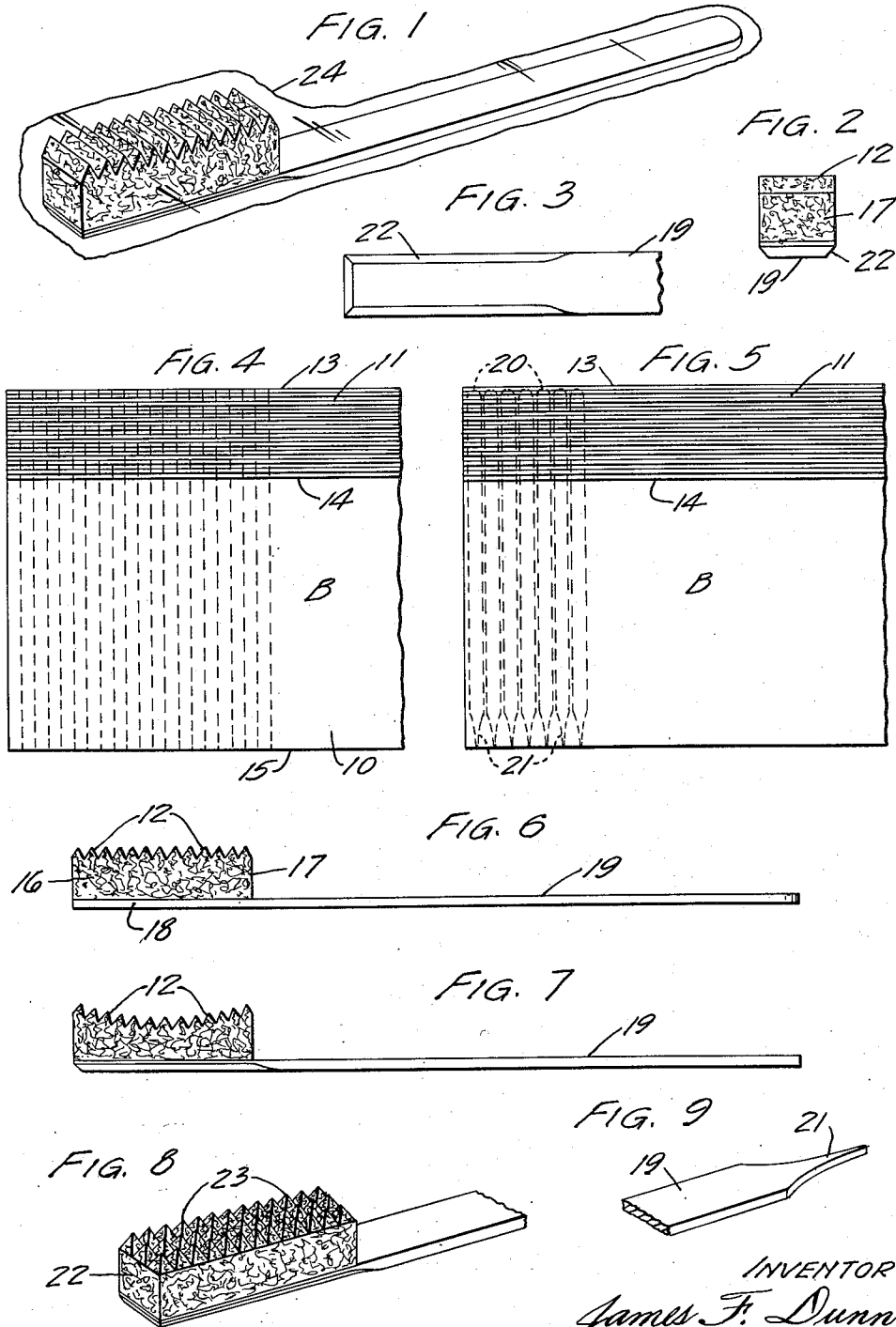
Nov. 11, 1958

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2,860,011

METHOD OF MAKING DISPOSABLE TOOTHBRUSHES

Filed March 25, 1953



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1

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METHOD OF MAKING DISPOSABLE TOOTHBRUSHES

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Application March 25, 1953, Serial No. 344,623

2 Claims. (Cl. 300—21)

This invention relates to a method of manufacturing sanitary, disposable toothbrushes.

The conventional toothbrush is an expensive toilet article which ordinarily is designed to last for a considerable length of time, the user employing the brush once or several times daily over a period of weeks or even months. It is well known that most dentifrices do not have germicidal properties. As a matter of fact, the exact opposite is true in most cases. Thus, a conventional toothbrush which has been restored to its place of rest after use usually contains bacteria and germs in contact with the wet bristles of the brush and very often in the presence of a trace of toothpaste containing sugars and other constituents amounting to a culture for germs and bacteria. Furthermore, the toothbrush is usually replaced after use in a warm atmosphere conducive to the growth of such germs and bacteria. If the brush is used outside of the user's home, it is usually carried in a toilet kit or suitcase and becomes subject to exposure of more foreign material upon which germs and bacteria may exist. It is also highly likely that the traveler may even forget to pack a toothbrush at all and hence must buy a new toothbrush to be used in the conventional and unsanitary manner.

It is therefore a general object of this invention to provide a method of manufacturing a plurality of cheap and simple disposable toothbrushes, each of which is designed to be used but once by the owner and then discarded.

Because of the fact that a disposable toothbrush must necessarily be inexpensive because of the large number required by each user, it is a further object of the invention to provide for a rapid and simple method of manufacture of such toothbrushes in which sheets or blanks of handle material continuously formed have brushing material disposed longitudinally adjacent one edge thereof, the individual brushes then being formed by cutting completely through the brushing material and at the same time partially cutting in lateral strips across the original prepared blank or sheet.

These and other objects and advantages of my invention will more fully appear from the following description made in connection with the accompanying drawings wherein like reference characters refer to similar parts throughout the several views and in which:

Fig. 1 shows one form of my disposable toothbrush packaged in a transparent sanitary package and ready for dispensing;

Fig. 2 is a front view of the toothbrush illustrated in Fig. 1;

Fig. 3 is a bottom view of the body portion of the toothbrush illustrated in Fig. 1;

Fig. 4 is a partial view of an elongated blank ready for cutting along the dotted lines to produce the individual toothbrushes shown in Fig. 1;

Fig. 5 is a part of an elongated blank similar to that shown in Fig. 4 ready for die punching along the dotted

2

lines as indicated to produce another form of disposable toothbrush;

Fig. 6 is a side view of an individual brush as cut along dotted lines from the blank in Fig. 4 and before beveling any of the edges thereof;

Fig. 7 is still another form of my brush in which the individual resilient body portion is constructed of a concave strip of material;

Fig. 8 is another form of surface configuration of the resilient body, the handle being cut away in part; and

Fig. 9 represents a form of handle extension on my disposable toothbrush which bears an instrument for picking the teeth, the remainder of the brush being cut away.

Referring now more particularly to the drawing, I first prepare a blank from which individual toothbrushes will subsequently be cut, the blank being indicated generally by the letter B as shown in Figs. 4 and 5. The blank B is constructed of a sheet of stiff material 10, the sheet being composed of such material as wood, cardboard, plastic or the like, and a strip 11 of absorbent material which will be water resistant and resilient. That is, the material must not soften to an excessive degree but still must have the capability of absorbing and holding a moderate amount of water. Further, the material should be resilient enough not to scratch the enamel of the teeth or injure the gums but at the same time should not be so resilient as to be ineffectual in cleaning the surface and the crevices between teeth. I have found that the material known as spun nylon in a resilient and matted form is ideal for my purpose. Nylon is a plastic material which is a superpolymeric amide of protein-like structure. It is understood that any other material having the above properties may be similarly employed. It is requisite, of course, that the substance does not dissolve in water and that it be capable of sterilizing and preservation during its shelf life after manufacture and before being sold to the ultimate consumer. The strip 11 may be formed of strip stock having a generally rectangular cross section and preferably provided with ribs 12 such as may be observed in Figs. 1, 6 and 7. If so desired, the rectangular cross section may be further modified with a longitudinal concave trough to form the cross section shown in Fig. 7. The ribbed portions 12, of course, assist in cleaning the teeth and amount to a surface formation simulating the bristles of a bristled toothbrush. The strip 11 is of uniform width and is secured adjacent and in parallel relation, or coincidental, with one side edge of the thin elongated sheet 10. When thus positioned the outer edge at the body portion of the individual toothbrush is disposed at 13, the inner edge 14 of the body is disposed in parallel relation with the outer edge 13 and the handle end portion of the sheet B forms a parallel edge 15 at the opposite side. The strip 11 may be secured to the upper surface of the sheet 10 in the position noted by such means as adhesion through a coating material or by a heat seal. In any event, the seal between the strip 11 and the sheet 10 should be strong and water resistant. Since the brush ultimately formed is to be disposable after a single use, it is not requisite that the seal be entirely and permanently waterproof. The sheet 10 is preferably formed of wood but may be constructed of any other thin and reasonably stiff material.

The blank B is now brought into engagement with cutting means (not shown) which will cut the blank B in equally spaced parallel cut lines transversely to the longitudinal direction of the blank B. It is understood that the cuts may be formed simultaneously in a plurality of positions or may be consecutively formed one at a time from the endmost position. Each brush which has been cut from the blank B will have the configuration

shown in Fig. 6, the sides 16 of the body 17 being co-extensive with the sides 18 of the handle 19.

An alternative form of toothbrush product formed from a similar blank is illustrated in Fig. 5. Thus, where so desired a single or multiple die may be employed to punch out the individual brushes on the dotted lines as shown, rather than cutting completely across the blank B as shown in Fig. 4. In the case of the die punch-out there will, of course, be some waste stock resulting from the die operation. There is, however, more flexibility in the die cut in that the forward ends of the handle and body portion can be cut in a curved line as shown at 20, and the opposite end of the handle portion may be cut out in a toothpick 21 without further steps in the manufacture of the individual brushes. Here again the die operation may be a consecutive movement with the blank B progressing one space at a time to form the individual toothbrush, or a plurality of the die members may cut out a prescribed number of the toothbrushes in each cutting movement. Where the die is used, the bevel 22 as shown in Figs. 2 and 3 may be formed during the cutting operation. It is understood, of course, that the bevel may be attained by other means such as touching the underside of the handle to a grinding or beveling instrument well known to the art. Since the latter requires a separate operation, it is preferred to accomplish the beveling of the edges in the same operation which cuts the toothbrush from the blank B. Details of the toothpick end 21 are shown in Fig. 9. The pointed end 21 can be formed either by punching as a die cut point or by subsequently shaving down the handle 19 of the individual brush as cut from the blank shown in Fig. 4. An alternative form of surface irregularity on the resilient strip 11 is shown in the brush body 22 of Fig. 8. Here the surface configuration consists in a plurality of points 23 which may individually take on the pyramidal shape as shown. The rest of the brush formation may be accomplished as previously noted. The points 23 will have the advantages of being able to enter crevices between the teeth regardless of the direction of motion employed by the user in brushing his teeth.

Either before or after the cutting of the individual toothbrushes from the prepared blanks B the resilient and absorbent strip 11 is preferably impregnated with a dentifrice. This dentifrice may be in liquid form in order to impregnate the seals or fibers of the brush body 17, after which the liquid vehicle may be evaporated so as to leave the body 17 in a dry or almost dry condition. Although dentifrice may be applied to the brush at the time of using, it is preferred to preliminarily impregnate the body so as to form an entirely self-contained toothbrush, ready for use without any other preparation on the part of the user. The toothbrush after formation may be sealed in a sanitary condition within a sack or container 24 as shown in Fig. 1. In some instances, I may cut blocks of individual toothbrushes at spaced intervals along the blank B and merely score or partially

cut between the individual brushes comprising each block. In such case, the user will purchase a block of individual brushes and will break off along the scored line each individual brush at the time of use.

My brushes may be dispensed in drug stores, hotel lobbies, transportation depots, vehicles such as airplanes or trains, hospitals, and in countless other private and public places, either by clerks or through mechanical dispensing equipment. When a purchaser desires to use the brush, he merely removes the sanitary container 24, wets the body of the brush with a few drops of water and then proceeds to clean his teeth in the ordinary manner. Immediately after usage, he disposes of the brush and will take a new one when he again desires to clean his teeth.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the parts without departing from the scope of my invention.

What I claim is:

1. A method for making a plurality of disposable sanitary toothbrushes from a sheet of relatively stiff and thin material and an elongated relatively narrow strip of resilient and absorbent material which consists in, bringing the strip into engagement with one surface of the sheet marginally thereof, sealing the engaging surfaces between the strip and sheet surface, cutting, at longitudinally spaced narrow intervals transversely through the strip and at the same time partially into the exposed surface of said sheet across the width thereof to produce easily severable lines.

2. A method for making a plurality of disposable sanitary toothbrushes from a sheet of relatively thin and stiff material and an elongated relatively narrow strip of resilient and absorbent material which consists in, bringing the strip into engagement with one surface of the sheet marginally thereof, sealing the engaging surfaces between the strip and sheet surface, cutting transversely in a plurality of narrowly spaced parallel cuts through the strip and at the same time continuing to cut into the exposed surface of the sheet across the full width thereof in score lines forming straightly aligned continuations of the respective spaced parallel cuts.

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