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J. HROMOKO ET AL

2,976,554

BRUSH

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FIG. 1

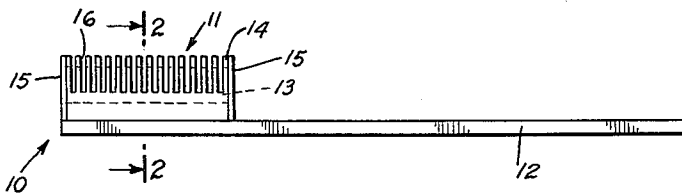


FIG. 2

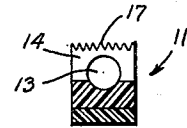


FIG. 3

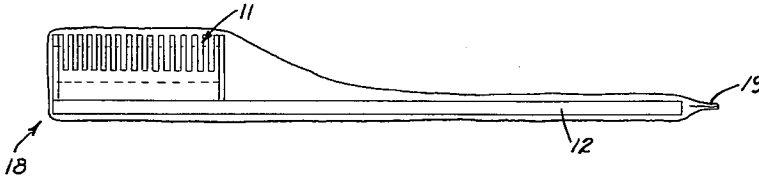


FIG. 4

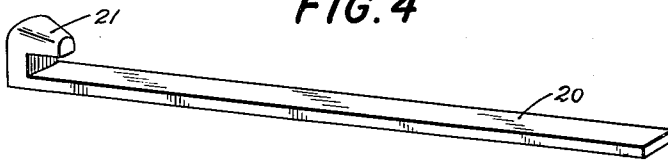


FIG. 5

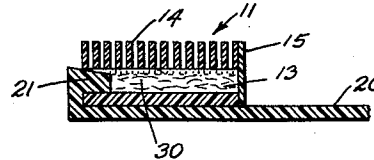


FIG. 6

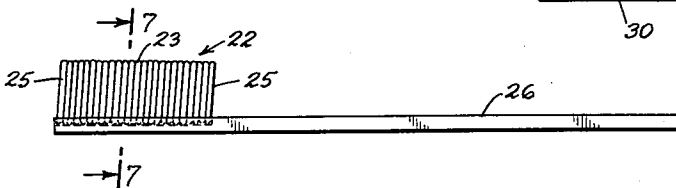
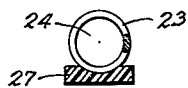


FIG. 7



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BRUSH

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The present invention relates to brushes.

More particularly, the present invention relates to brushes which are capable of being manually operated. For example, the present invention may be applied to tooth brushes, shoe polish daubers, and the like.

One of the objects of the present invention is to provide a brush which is so inexpensive that it may be economically used once and then disposed of.

Another object of the present invention is to provide a brush which is capable of holding a charge of material which is to be applied with the brush. For example, in the case of a tooth brush, it is an object to provide a tooth brush capable of holding a charge of toothpaste which is spread and applied during use of the brush.

A further object of the present invention is to provide a brush which is of extremely simple construction while at the same time being fairly rugged and capable of brushing a desired object with considerable force applied to the brush.

An additional object of the present invention is to provide a brush which is capable of having the stiffness of its brushing portions easily regulated.

It is also an object of the present invention to provide a brush arrangement wherein a charge of material held by the brush to be spread and applied by the latter during use of the brush may be stored in the brush in a manner which will prevent the material from being attacked by the atmosphere.

With the above objects in view the present invention include in a brush an elongated body of flexible resilient material formed with a cavity extending longitudinally along said body. This body of the invention has a plurality of portions separate from each other and arranged in a row extending longitudinally along the body, and these body portions define part of the cavity so that a material such as toothpaste, in the latter may pass to the exterior of the body by moving from the cavity between the body portions to the exterior thereof.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings, in which:

Fig. 1 is a side elevational view of one possible embodiment of a brush according to the present invention;

Fig. 2 is a transverse sectional view taken along line 2-2 of Fig. 1 in the direction of the arrows;

Fig. 3 is a side elevational view of the brush of Fig. 1 shown in conjunction with a container which is adapted to hermetically seal the brush;

Fig. 4 is a perspective view of a brush handle according to the present invention;

Fig. 5 is a longitudinal sectional elevational view showing how the brush handle of Fig. 4 cooperates with the brush portion proper of the brush of Fig. 1;

Fig. 6 is a side elevational view of another embodiment of a brush according to the present invention; and

Fig. 7 is a transverse sectional view of the brush of Fig. 6 taken along the line 7-7 of Fig. 6 in the direction of the arrows.

Although in the description which follows reference

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is made to a tooth brush, it is to be understood that the invention is not limited to tooth brushes and is equally applicable to other types of brushes such as, for example, shoe polish daubers.

Fig. 1 shows a brush 10 composed of a brush body 11 and an elongated handle 12. The body 11 is made of a flexible resilient material, and this material may be a plastic such as a polystyrene, polyvinylchloride, cellulose acetate, or a polyamide. However, it is preferred to make the brush body 11 of polyethylene. As is apparent from Fig. 2, the elongated brush body 11 is of rectangular cross sectional configuration. The body 11 is fixed at its bottom face, as viewed in Figs. 1 and 2, to the handle 12 by any suitable glue or the like. Where the handle 12 is also made of a plastic such as polyethylene, then the handle 12 and the body 11 may be bonded to each other with the use of a suitable solvent.

The body 11 is formed with an elongated cavity 13 extending longitudinally along the body 11 between and terminating at the ends thereof.

Furthermore, the body 11 is provided with a plurality of body portions 14 which are separate from each other and which are arranged in a row extending longitudinally along the body 11 as is evident from Fig. 1. These portions 14 are integral with the remainder of body 11 and define part of the cavity 13, as is evident from Figs. 1 and 2. Therefore, a material such as toothpaste or the like which is located in the cavity 13 is capable of moving to the exterior of the body 11 by passing from the cavity 13 between the body portions 14. The ends of the cavity 13 may be closed by a suitable closure means such as a pair of sheet portions 15 which may be made of the same material as the body 11 and which are joined to the ends thereof as by being glued thereto. Where the sheet portions 15 are of the same material as the body 11 they may be bonded thereto with a suitable solvent.

The portions 14 of the body 11 may be slightly spaced from each other so as to define between themselves gaps 16 which communicate with the material of the body 11, which is to say with the cavity 13 thereof. Thus the toothpaste or the like in the cavity 13 is capable of moving through the gaps 16 to the exterior of the body 11. As is evident from Fig. 2, the upper free edge, as viewed in Fig. 2, of each body portion 14 is provided with serrations 17 so that the intensity of the brushing action may be increased with these serrations.

Before the closure member 15 is applied to the ends of the body 11, the cavity 13 thereof is filled with a material such as toothpaste. Then the closure element 15 is applied. The body 11 may be fixed to the handle 12 either before or after closure elements are applied to the ends of the body 11. The brush 10 is then ready for use. When the brush body 11 is moistened with water, the toothpaste in the cavity 13 will co-operate with the water to start to form a foam, and this action is intensified during use of the brush by the flexing of the body portions 14 which greatly increase the foaming action while compression of the flexible resilient body 11 during use thereof as well as the movement of the body portions 14 will cause the foaming material to move from the cavity 13 between the body portions 14 to the exterior of the brush body 11. In this way a very superior cleaning action is provided, and in fact the action is such that the material which leaves the body 11 is essentially in the form of a foam, so that a minimum amount of energy is devoted to transferring a material in paste form from the interior of the body 11 to the exterior thereof.

The body 11 is capable of being molded in a single operation. First, once a mold is manufactured, this mold may be used to very rapidly produce a large number of

bodies 11 in a short time in a single operation, so that the bodies 11 are extremely inexpensive. For this reason the brushes of the invention are capable of being economically used once and then being disposed of. If desired the brushes may be placed in suitable dispensing machines.

In order to store in the cavity of the body 11 materials which may be sensitive to the atmosphere, the body 11 together with the portion of the handle 12 which supports the same may be enclosed in a container 18 shown in Fig. 3. This container takes the form of a bag of flexible plastic which may be transparent, and for this purpose any of the above plastic materials or cellophane, for example, may be used. The bag 18 is heat-sealed at 19, so that the interior of the bag 18 which contains the brush part 11 is completely closed off from the atmosphere, and the interior of the bag 18 is suitably evacuated in any known way.

The embodiment of the invention which is illustrated in Figs. 4 and 5 is of advantage in that it eliminates the necessity for closing one end of the brush body 11 and at the same time provides a strong reliable support for the brush body 11. Thus, as may be seen from Fig. 4 the handle of the brush is composed of an elongated member 20 made of any suitable plastic and being of substantially U-shaped configuration at its left end, as viewed in Figs. 4 and 5. This left end of the handle 20 terminates in an end portion 21 which is of tapered configuration. When the body 11 is joined to the handle 20 as by being glued thereto and is placed on the handle 20 in the position with respect to the handle 20 which is illustrated in Fig. 5, the end portion 21 of the handle 20 extends into and closes the left end of the cavity 13, as is evident from Fig. 5, so that with this arrangement it is unnecessary to provide a separate closure element for closing one end of the cavity 13. A sheet member 15 may be applied to the right end of the body 11, as viewed in Fig. 5, for closing this right end, in the same way as was described above in connection with Fig. 1. The toothpaste 30 is shown in the cavity 13 in Fig. 5.

Instead of forming the brush member of the invention from a block of resilient plastic material, the brush member may be in the form of a coil of resilient plastic material. Such an embodiment of the invention is illustrated in Figs. 6 and 7 where the brush body 22 is in the form of a coil of a suitable flexible resilient material such as polyethylene. The convolutions 23 of the coil 22 are located closely adjacent to each other so as to define the cavity 24 which corresponds to the cavity 13. Thus, the coil 22 forms an elongated body having a cavity extending longitudinally along the same, and the upper portions of the convolutions 23, as viewed in Figs. 6 and 7, provide portions of the body which are arranged in a row longitudinally along the body, which are separate from each other, and which allow material in the cavity 24 to move to the exterior of the body by passing between the convolutions thereof. The ends of the elongated body 22 may be closed by suitable sheet members 25 or the like glued or otherwise joined to the end convolutions.

It will be noted that the handle 26 which carries the body 22 is formed at its top face with an elongated groove 27 (Fig. 7) which provides a seat for the brush body 22. It will be noted that the curvature of the groove 27 corresponds to the curvature of the elongated body 22 which is in the form of a coil, and this coil may be fixed to the handle 26 as by being glued thereto or as by being bonded thereto by the use of a suitable solvent which may be used when the handle 26 is made of a suitable plastic material.

The embodiment of Figs. 6 and 7 is also extremely inexpensive and may be used in the same way as the other embodiments of the invention as described above. However, the body 22 must be cut from an elongated coil, while such cutting is not necessary with the body 11

which may be molded very inexpensively in a single operation, as pointed out above.

Of course, instead of toothpaste a suitable tooth powder may be located in the cavities 13 or 24.

A particular advantage of the brush of the invention resides in the fact that it is possible to very easily control the stiffness of the brush simply by varying the thickness of the body portions 14 or convolutions 23. Thus, where a relatively stiff brush is desired the body portions 14 and the convolutions 23 will be made relatively thick, while when a relatively soft brush is required the body portions 14 and the convolutions 23 will be made relatively thin.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of brushes differing from the types described above.

While the invention has been illustrated and described as embodied in brushes holding a charge of material to be applied by the brushes, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be secured by Letters Patent is:

1. A brush comprising, in combination, an elongated body of flexible resilient material formed with an elongated cavity extending longitudinally along said body between and terminating at the ends of said body, said body having a plurality of portions spaced from each other and arranged in a row extending longitudinally along said body, and said cavity of said body being defined at least in part by said body portions so that a material in said cavity may move from said body; and an elongated handle fixed to and carrying said body, said handle having a free end portion extending into one end of said cavity and closing the latter at said one end thereof.

2. A brush comprising, in combination, an elongated body of flexible resilient material formed with an elongated cavity extending longitudinally along said body between and terminating at the ends of said body, said body having a plurality of portions spaced from each other and arranged in a row extending longitudinally along said body, and said cavity of said body being defined at least in part by said body portions so that a material in said cavity may move from the latter between said body portions to the exterior of said body; and an elongated handle fixed to and carrying said body, said handle having a substantially U-shaped end portion one end of which extends into said cavity at an end of the latter for closing said cavity at said end thereof.

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