July 18, 1967 R. T. ANGLIN 3,331,493

PROTECTOR DEVICE FOR BRUSH HEAD

Filed June 7, 1966

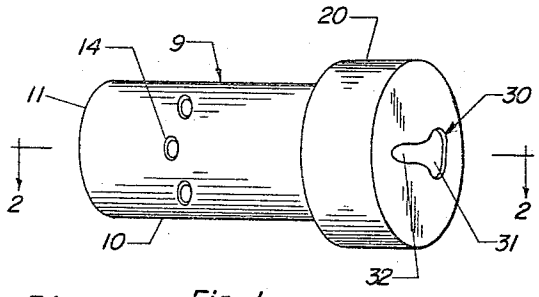


Fig. 1

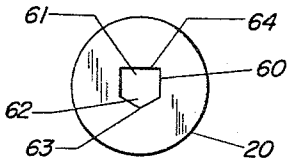


Fig. 6

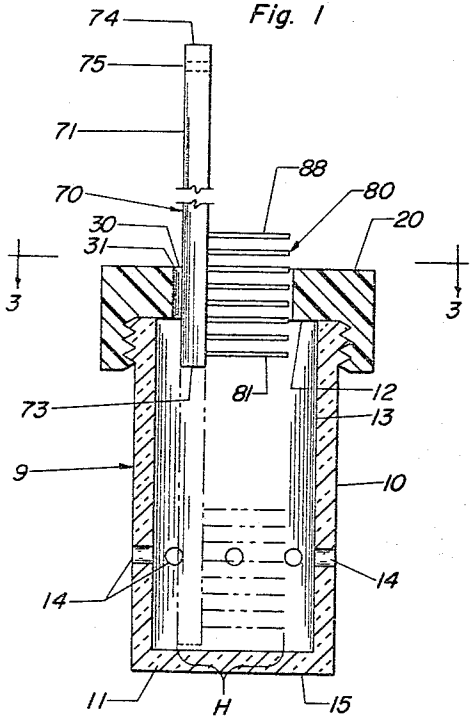


Fig. 2

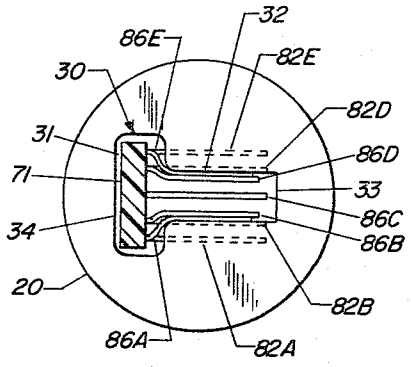


Fig. 3

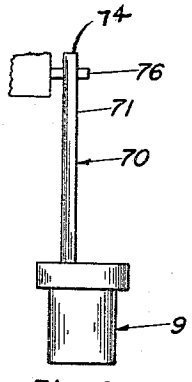


Fig. 4

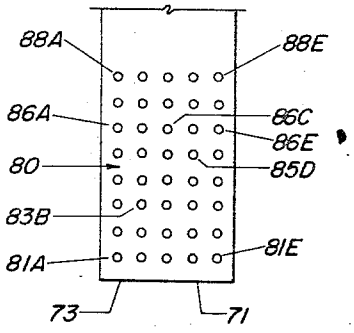


Fig. 5

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PROTECTOR DEVICE FOR BRUSH HEAD

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This invention relates to protector devices for a brush head. In particular this invention relates to a protector device which may be removably attached over the headed end of a tooth brush and similar brushes of the type comprising an elongate stock or shank having an array of bristles attached to the elongate stock near the forward end thereof. For the purposes of this patent application, the headed end of a brush is defined to mean the array of bristles together with that adjacent portion of the stock to which the bristles are attached.

It is an object of the present invention to provide a removable brush protector device that will fully protect the headed end of a tooth brush or similar type brush from its environment.

It is another object of the present invention to provide a means for promoting the sanitation of tooth brushes between dental uses thereof.

It is another object to provide a removable brush protector device that is adapted to serve as a tooth brush carrying case and which is equally suitable for home use and for travel purposes.

In the case of home use, it is an object to provide a brush protector device that is adapted to stand uprightly on a shelf to uprightly support the enclosed brush, and in addition which will permit the tooth brush and its associated protector to be hung from a hook or peg.

In the case of travel use, it is an object to provide a brush protector which may be packed within luggage without subjecting the tooth brush bristles to unsanitary conditions.

It is yet another object to provide a brush protector device of suitable ventilated construction to allow moist bristles to dry between periods of use.

It is a further object to provide a brush protector device that is admirably suited as a merchandising package for tooth brushes.

It is another object of the present invention to provide a brush protector device that may be firmly, yet removably, engaged to the headed end of a brush without damage to the bristle members thereof.

It is a further object to provide a removable protector device through which the rearward portion of the brush stock extends so that the brush and its protector may be carried about by grasping either the brush stock or the associated protector.

With the above and other objects and advantages in view which will become apparent as the description proceeds, the invention comprises the novel form, combination, and arrangement of parts as hereinafter more fully described, reference being had to the accompanying drawings wherein like numbers refer to like parts in the several views and in which:

FIGURE 1 is a perspective view of the preferred embodiment of the brush protector device of the present invention.

FIGURE 2 is a sectional elevational view of the brush protector device taken along line 2—2 of FIGURE 1, the brush head being disposed within the rearward entrance opening of the brush protector device.

FIGURE 3 is a sectional plan view taken along line 3—3 of FIGURE 2 showing temporary lateral deflection of opposed peripheral bristles upon insertion of the brush head through the entrance opening of the brush protector device.

FIGURE 4 is a side elevational view of the brush protector device surrounding the head end of a brush, said brush being supported from its rearward end.

FIGURE 5 is a schematic view showing a typical spacing of bristles for a brush head of the common type comprising an array of substantially parallel bristles.

FIGURE 6 is a top plan view of the brush protector device showing an alternate shape of entrance opening.

As can best be seen in FIGURE 1–4, the brush protector device **9** is adapted to removably surround the array of bristles located at the forward portion of a common brush **70**. Brush **70** may typically comprise an elongate rigid stock or shank **71** having a forward end **73** and a rearward end **74** there being an array **80** of substantially parallel flexible bristles located nearer to the brush forward end **73**. The respective bristle members of array **80** are normally substantially parallel to each other and perpendicular to a surface of brush stock **71**. Brush protector device **9** is of generally elongate tubular form having a rearward entrance opening of appropriate size and shape to permit insertion therethrough of the brush stock forward portion while temporarily laterally deflecting opposed peripheral bristle members of bristle array **80**.

The brush protector device **9** preferably comprises two distinct elements including a hollow tubular member **10** having a closed forward end **11** and an open rearward end **12**, and a cap member **20** removably attached over the tubular member open rearward end **12**. When two distinct elements **10** and **20** are so employed, the device **9** may be readily disassembled to permit cleansing of the device interior walls. Although cap member **20** may be removably attached to tubular member **10** in a variety of ways, including the use of tight frictional engagement between the members **10** and **20**, the respective elements may be threadedly engaged as shown in the drawing. To facilitate the cleansing operation of device **9**, the interior walls thereof are desirably of linearly generated configuration. For example, tubular member **10** may desirably assume a cylindrical shape having a curvilinear internal elongate wall. Device **9** may have a plurality of ventilation perforations to permit drying of wet bristles, as for example, the lateral perforations **14** within tubular member **10**. Device **9** preferably includes a planar external surface remote of the brush entrance opening to uprightly support device **9** and a brush **70** contained therein; for example, the forward end external surface **15** of tubular member **10** at end **11** may be planar as shown.

The rearward entrance opening of device **9** is of irregular shape. The preferred type entrance opening has two portions including an upper portion and a lower portion, the average width of the upper portion being greater than the average width of the lower portion. For example, the entrance opening **30** of FIGURES 1–3 is of T-shaped configuration having a transverse wider upper portion **31** and a narrow stem lower portion **32** having a finite width.

The combination of protector device **9** and brush **70** is illustrated in FIGURE 2–4. As shown in phantom line in FIGURE 2, the length of brush **70** between its forward and rearward ends **73** and **74** exceeds the elongate length of device **9** so that, when the brush **70** is fully inserted within device **9** to abut end **11**, its rearward end **74** extends rearwardly and externally of device **9**, the brush shank **71** being disposed within the device rearward entrance opening e.g. **30**. The internal cross-sectional size of the tubular member **10** exceeds the maximum cross-sectional size for the brush headed portion i.e., the bristles array **80** and the adjacent stock **71** attached thereto, so that the device **9** will accommodate the brush headed portion therewithin without deformation of the bristles array. However, in order that device **9** may securely, though removably, surround the brush headed portion, it is necessary that peripheral members of the bristles array **80** be temporarily laterally deflected upon insertion of the

brush head through the device rearward entrance opening without deflecting the cap member along the length of the brush elongate shank.

FIGURES 2 and 3 illustrate the condition of the bristles array **80** upon insertion of the brush **70** through the irregular rearward entrance opening **30**, to temporarily laterally deflect at least peripheral members of the bristles array **80**. For the purposes of illustrating the required lateral deflection of the peripheral bristle members toward each other, an array of forty substantially parallel bristles (as schematically shown in FIGURE 5) is arbitrarily chosen, said array comprising eight aligned rows **81–88** (also shown in FIGURE 2) and five aligned columns A–E (also shown in FIGURE 3). As can best be seen in FIGURES 2 and 3, the cross-sectional size of the opening wider upper portion e.g. **31**, is larger than the maximum cross-sectional size of the brush shank forward portion. "Shank forward portion" is defined to mean that portion of shank **71** adjacent to its forward end **73** internally within device **9**, said forward portion not exceeding the axial or elongate length of device **9**. The overall height of opening **30** from its base **33** to its top **34** preferably exceeds the maximum aggregate height of the brush head (the distance H of FIGURE 2) so that at least one medial column of bristles e.g. C, may be inserted through the rearward opening without rearward deflection of the bristles.

The width of the rearward opening lower portion **32** is less than the maximum width of the bristles array e.g. between peripheral opposed columns A and E, so that opposed peripheral bristles e.g. columns A and E, will temporarily deflect laterally toward the center of array **80** upon insertion of the array through the device rearward opening **30**. As can be seen in FIGURE 3, opposed peripheral bristles **86A** and **86E** are laterally deflected a marked degree by the T-shaped opening **30**, said peripheral bristles **86A** and **86E** conforming to the curved juncture of portions **31** and **32**. Intermediate member bristles **86B** and **86D** are laterally deflected only a very slight degree, while the bristles of medial column C (and specifically bristle **86C**) are neither laterally nor rearwardly deflected when passing through the device rearward opening. However, as indicated in dotted line in FIGURE 3, upon emergence into the hollow interior of device **9**, the temporarily deformed flexible bristles reassume their normal configuration, herein perpendicular to stock **71**. Because the brush head is of greater cross-sectional size than is rearward opening **30**, and specifically the bristles array **80** being of greater cross-sectional size than opening lower portion **31**, the protector device **9** will remain securely about the brush headed end. The protector device **9** may be removed from its surrounding engagement with the brush head by exerting a firm rearward pull upon brush **70** and thus temporarily laterally re-deflecting the bristles through rearward opening **30**. If the weight of removable protector device **9** is sufficiently light, the device will remain firmly about the brush headed portion even when the brush **70** is uprightly supported from its rearward end **74** as being hung on a peg **76** passing through brush rearward hole **75**. Transparent thermoplastic structural materials are preferred for their visual clarity and ease of cleansing and because they are normally sufficiently light in weight as not to laterally deflect the peripheral bristles when the brush is uprightly supported as in FIGURE 4. Under the conditions of FIGURE 4, bristles array **80** is adjacent to cap member **20**. If height of device **9** is kept reasonably short and the cross-sectional size thereof is not too narrow, the device **9** will stably rest upon its exterior planar end surface **15** even with a brush contained therein.

The alternate shape rearward opening **60** of FIGURE 6 comprises a wider rectangular upper portion **61** and a narrower triangular lower portion **62**. Wider upper portion **61** is designed to accommodate the forward portion

of brush shank **71** while the narrower lower portion **62** is designed to laterally deflect the peripheral bristle members of array **80** as in the case of analagous portion **32** of rearward opening variety **30**. As with the rearward opening **30** heretofore described, the brush head is of greater cross-sectional size than is opening **60**, and further the bristles array **80** is of greater cross-sectional size than is triangular lower portion **62**.The overall height of opening **60** between apex **63** and top end **64** is preferably greater than aggregate height H of the brush head so that at least one interior column of bristles may be inserted through opening **60** without rearward deflection of the bristles during insertion thereof into the interior of device **9**.

From the foregoing, the construction and operation of the removable brush protector device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claim.

What is claimed is as follows:

A protector device in removable combination with the headed end of a brush having an elongate shank and an array of substantially parallel bristles attached adjacent to the forward end of said shank, the bristles of said brush being disposed internally within the protector device, said protector device comprising: a hollow elongate tubular member having a closed forward end and an open rearward end, the forward end of the tubular member being imperforate and having a planar external surface adapted to uprightly support the protector device and the brush disposed therein, and a cap member removably attached over the open rearward end of the elongate tubular member, said cap member being provided with a perforation of generally T-shaped configuration having an upper transverse portion and a lower stem portion that is narrower than the upper transverse portion, the cross-sectional size of the T-shaped perforation transverse upper portion being larger than the maximum cross-sectional size of that portion of the brush shank disposed within the tubular member, the perforation narrower lower portion having a finite cross-sectional width that is less than that of the bristles array, the juncture of the two perforate portions being curved and the cap member being relatively inflexible whereby, when the brush head passes through the cap member perforation, opposed peripheral bristles of the bristles array will temporarily deflect laterally toward the center of the bristles array to assume the contour of the perforation curved juncture without deflecting the cap member along the length of the brush elongate shank, the cross-sectional height of the cap perforation being greater than the maximum height of the bristles array to permit passing of the bristles array through the perforation without rearward deflection of the bristles, the elongate length of the protector device being shorter than the length distance of the brush between its forward and rearward ends whereby the brush shank extends through the cap member perforation and the brush rearward end is disposed externally and rearwardly of the protector.

References Cited

UNITED STATES PATENTS

741,321	10/1903	Flower	206—15.1
1,606,360	11/1926	Giles	206—15.1
3,061,080	10/1962	Stephen	206—1

FOREIGN PATENTS

734,246	7/1955	Great Britain.

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