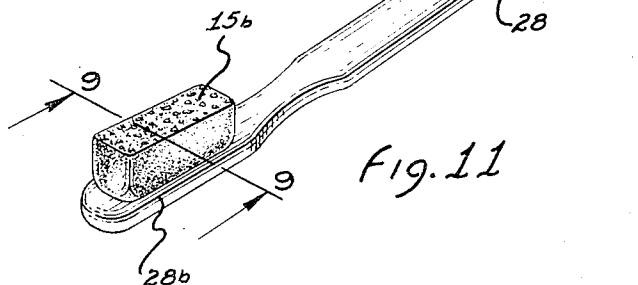
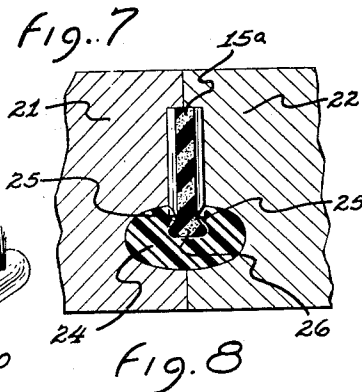
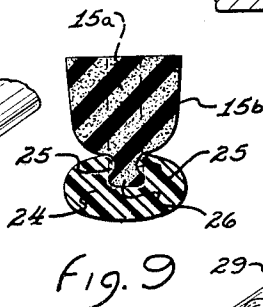
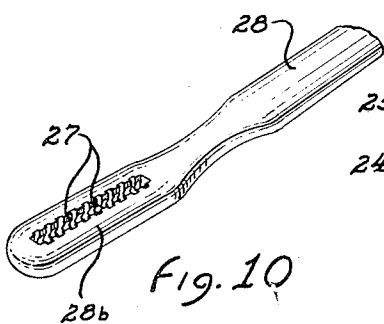
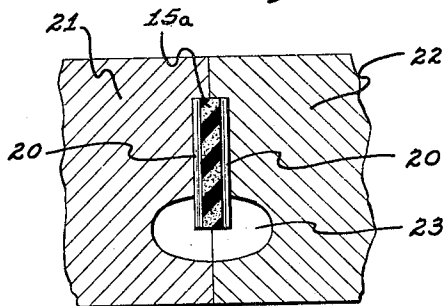
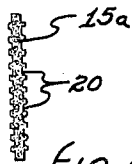
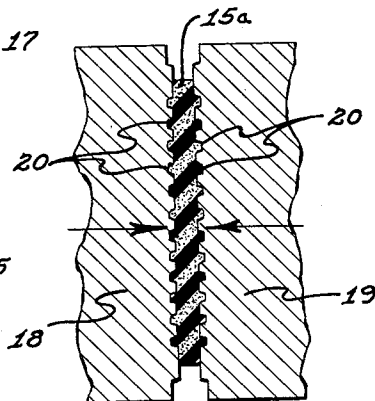
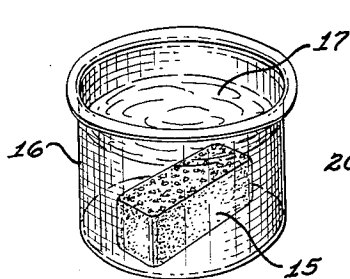
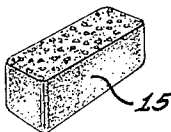


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R. B. POTTER
METHOD OF MAKING TOOTHBRUSHES

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METHOD OF MAKING TOOTHBRUSHES

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3 Claims. (Cl. 18—59)

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This invention pertains to improvements in the method of making dental equipment, and is particularly directed to improvements in making a toothbrush or tooth cleaning device.

One of the objects of this invention is to provide an improved and economical method of making toothbrushes.

Another object of this invention is to provide a method for making an improved brushing device for teeth including a sponge rubber abrasive cleaning element attached in an efficient manner to the operating handle for the device.

A further object of this invention is to provide a novel method of proceeding in the preparation of a sponge rubber type abrasive toothbrush in which the sponge rubber element is initially saturated with a suitable adhesive material, then compacted to a wafer thin shape and while in that condition held in the mold of a plastic injection machine at which time the plastic handle material is injected around a portion of the wafer so as to lock it into the handle with an hour glass shape, and then to finally dissolve the adhesive from the sponge rubber wafer member to allow it to expand to its normal operating shape.

Further features and advantages of this invention will appear from a detailed description of the drawings in which:

Fig. 1 is a perspective view of the sponge rubber abrasive element at the beginning of the process.

Fig. 2 is a view showing the sponge rubber member of Fig. 1 being soaked in a suitable soluble adhesive material.

Fig. 3 shows the saturated member of Fig. 2 compressed to wafer shape.

Fig. 4 shows the wafer after release from the compression operation of Fig. 3 and showing it retaining its wafer-like shape after drying of the adhesive material of Fig. 2.

Fig. 5 is a side elevation of the compressed wafer of Fig. 4.

Fig. 6 is an end elevation of the compressed wafer of Fig. 4.

Fig. 7 is a fragmentary view showing the wafer held in the dies of a plastic injection machine.

Fig. 8 is a view similar to Fig. 7 but showing the situation after the plastic material has been injected in the mold.

Fig. 9 is a view on the line 9—9 of Fig. 11 showing the expansion of the wafer to normal operating shape after the adhesive material has been dissolved.

Fig. 10 is an enlarged perspective view of the slot formed in the handle by the wafer during the injection process of Fig. 8.

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Fig. 11 shows the general perspective view of the completed toothbrush made by the process of applicant's invention.

As exemplary of one preferred method of making a toothbrush or the like in accordance with this invention there is shown in Fig. 1 the initial sponge rubber abrasive carrying element for the brush ready to be placed through the novel process. The sponge rubber element 15 is first soaked in a suitable adhesive, mucilage, or other similar material such as a colloidal solution of acacia (gum arabic) in water or any other suitable soluble adhesive capable of holding the sponge rubber in compressed condition after the adhesive sets. This is shown in Fig. 2 wherein the sponge rubber element 15 may be placed in a beaker 16 containing the solvent or vehicle 17 containing the adhesive.

After the sponge rubber has been so treated in Fig. 2 it is placed in a press or suitable clamp means 18 and 19 which may be formed with serrations 20 and compressed to the flat wafer-like shape shown in Figs. 3, 4, 5, and 6. After the adhesive has set up the clamp members 18 and 19 may be removed resulting in the compressed wafer shape 15a shown in Figs. 4, 5 and 6. The thus formed wafer is then placed between the dies 21 and 22 of a plastic injection molding machine as shown in Fig. 7 having a cavity 23 formed by the dies having the correct cross sectional shape for the toothbrush handle to be utilized.

In Fig. 8 is shown the situation after the plastic material 24 has been forced into the cavity 23 resulting in the hydrostatic pressure causing the side portions 25 of the wafer 15a to be indented or formed in hour glass shape with the bulbous portion 26 of the wafer 15a embedded in the plastic material 24. The serrations of the wafer at 20 also cause the plastic to form in corrugated or serrated hour glass shape sides at 27 shown in Fig. 10 so as to prevent the longitudinal deflection or movement of the abrasive sponge rubber member in the handle 28 of the toothbrush at the completion of the injection operation of Fig. 8.

In Fig. 9 is shown the wafer at 15a at the time it is removed from the injection machine while still held in compacted form by the adhesive. Upon dissolving the adhesive from the sponge rubber by soaking it in water or other suitable solvent for the adhesive selected, the element 15a then expands to the normal operative shape 15b forming the abrasive carrying element for the toothbrushing device. It is to be noted that the element 15b is held by the hour glass bulbous end

26 of the sponge rubber member 15b in the tooth brush handle in a rigid positive manner.

The completed brushing device is shown in Fig. 11 wherein the element 15b is now secured to the outer end 28b of the toothbrush handle 28 and preferably at the same time that the handle 28 is formed a single tuft 29 may be formed at the other end of the handle together with a hanging hole 30 between the element 15b and the tuft 29 at the end of the handle.

Thus by a highly novel and efficient process a completely new type of toothbrushing device is provided and in which the sponge rubber abrasive carrying element is securely, positively and quickly secured to the plastic handle 28 of the device.

While the apparatus herein disclosed and described constitutes a preferred form of the invention, it is also to be understood that the apparatus is capable of mechanical alteration without departing from the spirit of the invention and that such mechanical arrangement and commercial adaptation as fall within the scope of the appended claims are intended to be included herein.

Having thus fully set forth and described this invention, what is claimed and desired to be obtained by United States Letters Patent is:

1. The method of attaching a sponge rubber abrasive carrying element to a handle to form a tooth cleaning device comprising the steps of: (a) soaking said sponge rubber element in a soluble adhesive; (b) compressing said sponge rubber element to a thin wafer shaped element; (c) drying said compressed element to retain said thin wafer shape; (d) securing said wafer shaped element in a die with a portion thereof projecting into the cavity to be filled in said die; (e) injecting plastic material in said cavity around said wafer shaped element to form a locking connection of hour glass shape between said wafer shaped element and said injected plastic material forming the handle of said device; and (f) finally dissolving said adhesive from

said wafer shaped element projecting from said handle to expand said wafer to form the abrasive carrying medium for said tooth cleaning device.

2. The method of forming a sponge rubber toothbrush device comprising: (a) soaking the initial sponge rubber element in an adhesive; (b) reducing said adhesive soaked sponge rubber element to a wafer shape; (c) drying said wafer shaped element to dry and be held in said shape by said adhesive; (d) injecting a plastic material around a portion of said wafer to form a handle therefor; (e) soaking the exposed portion of said wafer shaped element projecting from said plastic handle in a solvent to dissolve said adhesive to expand said element to its initial size and shape.

3. The method of making a sponge rubber type toothbrush comprising: (a) soaking the sponge rubber element in an adhesive solution; (b) compressing said so saturated sponge rubber element to wafer form with corrugated sides thereon and solidifying said wafer into said shape; (c) placing said wafer with said corrugations engaging the dies of a plastic injection machine with a portion of said wafer projecting into the cavity to be filled with injected materials; (d) injecting plastic material in said cavity to form an hour glass locking connection between said wafer and said plastic material having longitudinally spaced corrugations in said hour glass connection therebetween; and (e) finally soaking said sponge rubber element in a solvent to remove said adhesive material from the so mounted sponge rubber element to expand said sponge rubber to operating shape.

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