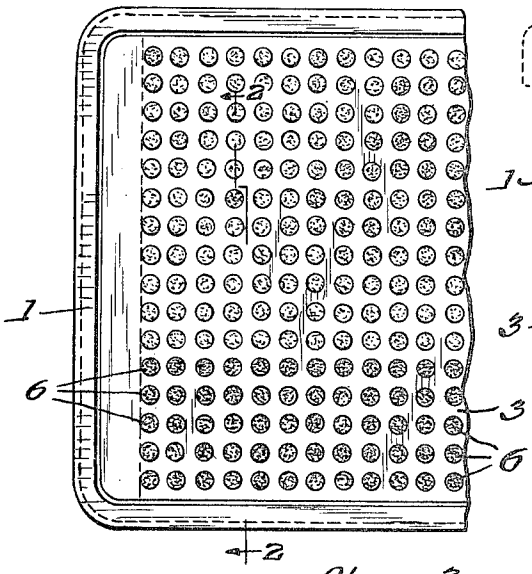
Nov. 1, 1966 H. G. YETTER 3,281,881

FINGER AND FINGER NAIL CLEANING DEVICE

Filed Oct. 19, 1965

Fig. 1.



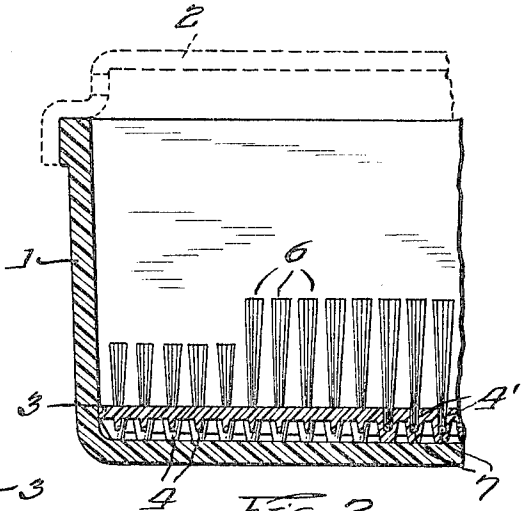


Fig. 2.

Fig. 3.

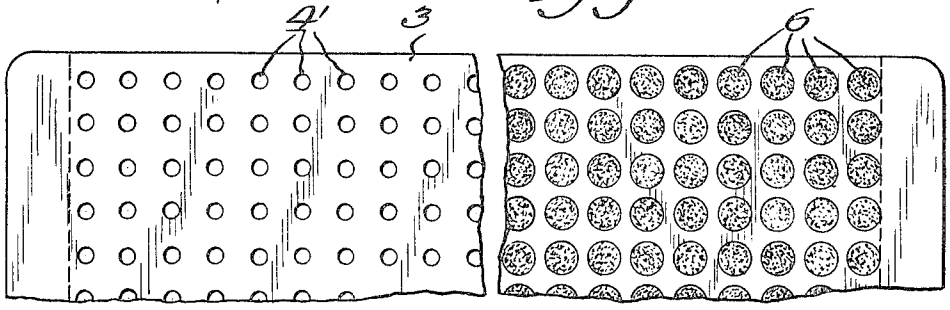
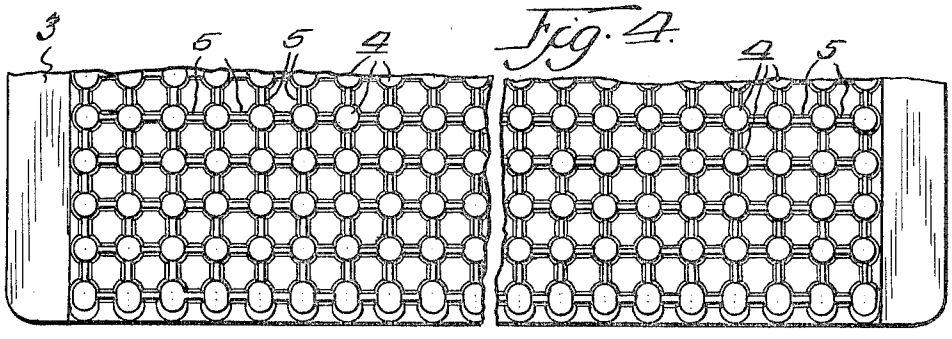


Fig. 4.



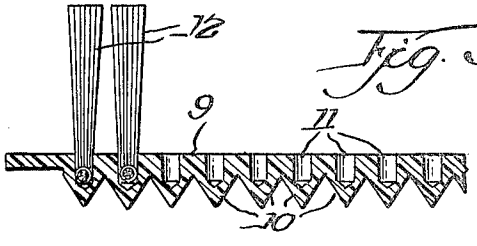


Fig. 5.

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FINGER AND FINGER NAIL CLEANING DEVICE

Harry G. Yetter, Colchester, Ill.

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1 Claim. (Cl. 15—167)

This invention relates to improvements in brush heads, particularly to the heads or bodies of plastic formed brushes in which the brush bristles are mounted and anchored, being especially advantageous and beneficial for use in the production of hand and fingernail brushes of that kind described and claimed in my pending applications for patents, Serial Numbers 376,181, filed June 18, 1964, and 473,296, filed July 20, 1965, though obviously not limited to such usage.

In the manufacture of plastic material constituted brushes and/or brush heads, especially thermoplastics, it is desirable (indeed necessary) for the attainment and maintenance of production economies and efficiencies plus a high rate of production, that the product cooling cycle of a molding operation shall be effectively and evenly accomplished in the shortest period of time. This desire maintains in both compression and injection molding, especially in the latter, wherein a high rate of production with a minimum of flash introduces a large labor saving, and the cost of cleaning the molded pieces is generally much less costly than in the former.

With the above in mind, it is an object of my invention to provide a plastic brush head of such construction and design that, when molded and yet in the mold cavity, will cool rapidly during the cooling cycle, thereby not only increasing production rate, but also less, though uniform, shrinkage than will a piece taken from the mold hot, but sufficient to assure satisfactory "draw" from the mold.

It is also an object of the invention to provide a plastic brush head or bristle anchoring piece which will reduce the presence of large flat areas therein or thereon, thus be far less susceptible to warpage or the showing of flow lines, and at the same time will be strengthened or stiffened materially while being of minimum wall thickness whereby to afford the advantage of a fast curing time as well as heat dissipation.

More particularly, it is an object of my invention to provide a plastic formed piece having, on one of its sides, a plurality of integral relatively spaced uniformly sized and shaped interconnected brush bristle mounting bodies, the arrangement of which is such that they will be capable of radiating (dissipating) a maximum of mold heat during the cooling cycle of a molding operation.

For the attainment of the aforesaid and such other objects and benefits as may hereinafter appear or be pointed out, I have shown embodiments of my invention in the accompanying drawing wherein:

FIGURE 1 is a partial top plan view of my improved brush head in a receptacle;

FIGURE 2 is a fragmentary sectional view taken on the line 2—2 of FIGURE 1, looking in the direction in which the arrows point;

FIGURE 3 is a fragmentary top plan view of the brush head, drawn on a slightly enlarged scale;

FIGURE 4 is a fragmentary bottom plan view of the brush head, drawn on a slightly enlarged scale; and

FIGURE 5 is a fragmentary cross-sectional view of a modified form of my invention wherein rows of substantially parallel ribs are formed on the normally underside of the brush head, in lieu of the reenforcing and brush bristle anchoring protuberances shown in the FIGURES 1 through 4.

Referring in detail to the drawings, the invention is intended for use in connection with a receptacle of the type shown in the drawings, designated by the reference numeral 1, being preferably, though not necessarily, made

of plastic material rectangular in shape with its side and end walls deep enough to retain a sufficient amount of a liquid cleansing solution without displacement, as by splashing or spilling during use. If desired, a cover 2 shown in dotted lines may be provided to the receptacle.

The invention consists of a substantially flat sheet-like plastic formed body or piece 3, the thickness of which is such that it will be substantially inflexible. The shape and size thereof corresponds to that of the flat-bottom of the receptacle 1 whereby it will be snugly received flatly on and over said bottom in the manner shown in FIGURE 2 of the drawing.

The lower side of the plastic body or piece is formed with a plurality of relatively spaced uniformly shaped and sized circular bosses or protuberances, generally indicated at 4, each of which has a more or less centrally located inwardly or upwardly opening pocket 4' therein, the purpose of which will be presently described. The forming of the pockets in the protuberances, as by drilling, is preferably, though not necessarily effected immediately prior to or substantially concurrently with the insertion and anchoring of the bristles or tufts of bristles, hereinafter described, in the plastic head piece.

Upstanding heat dissipating and reenforcing webs or fins 5 are provided or formed between the bosses 4, being integral therewith and with the body or piece 3.

Bristles or tufts of bristles 6 are engaged and anchored, as at 7, within the pocket 4' of the bosses 4 to complete the brush construction. The bristles may, as disclosed in my aforesaid patent applications, be of different stiffness and/or different lengths or of uniform stiffness and length, as desired.

The brush head or bristle anchoring piece of my invention, when provided with the bristles 6, may be seated flushly on and over the receptacle bottom and secured thereto by cement or mechanical fastening means, such as conditions or preference dictates. However, if desired, it may be loosely seated on the receptacle bottom, hence readily removable for cleaning, replacement, etc. Because of its relatively snug positioning in the walled receptacle, it will be retained against undesirable shifting movement during use.

As heretofore stated, during the molding of a brush head or bristle anchoring piece in accordance with my invention, as and when the same is in formed condition within the mold and is subjected to the curing and cooling cycle of production, the bosses 4 and fins or webs 5 serve to effect an accelerated radiation of heat from the molded piece. A further and materially accelerated cooling and curing of the molded piece will be effected by reason of the contact of the water cooled brush head mold (not shown) with the flat areas of the piece between the protuberances 4 and with the adjacent portions or sides of said protuberances. Thereby, its period of cooling and curing is greatly reduced, hence effecting a materially increased rate of production, as well as greater and more valuable economies.

In the FIGURE 5 of the drawings I have shown a modified form of plastic brush head or bristle anchoring piece comprising a substantially flat plastic sheet-like body 9, the shape and size of which is such that it will be snugly received or fitted into the walled receptacle, such as hereinbefore identified by the numeral 1.

With a view toward providing the head or piece with means for effecting an accelerated, hence a lesser period of cooling of a mold formed and retained piece, the sheet-like body 9 has a plurality of relatively parallel corrugations or ribs 10 formed on and over its normally lower side. The depths of the ribs substantially, though not necessarily, correspond. Upwardly opening pockets or holes 11 are formed in the ribs in approximately equi-spaced relation, and each has bristles or tufts of bristles 12 per-

manently engaged therein and extended therefrom. Thereby, a brush is constituted.

As will be understood, molding heat will be radiated from the ribs **10**, thus quickening the usually required cooling and curing cycle of the molding operation and so increasing the rate of finished article products.

I claim:

A toiletry device comprising:

(a) a receptacle the inner side of the bottom of which is substantially flat;

(b) a sheet-like plastic brush bristle mounting body of shape and size substantially corresponding to that of the receptacle bottom received thereon within the receptacle;

(c) a plurality of relatively spaced substantially uniformly shaped and sized integral plastic protuberances on and over the normally lower side of the body bearing on the receptacle bottom and supporting it in spaced relation thereto, each of which is formed with an upwardly disposed pocket opening into said receptacle;

(d) bristles mounted in each of the pockets of said relatively spaced protuberances and extending upwardly into said receptacle; and

(e) webs on and integral with the inner side of said body arranged between and interconnecting said protuberances.

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