April 1, 1952 E. W. BAUMBACH 2,591,331

FOOT BRUSH

Filed Dec. 22, 1949

FIG. 1.

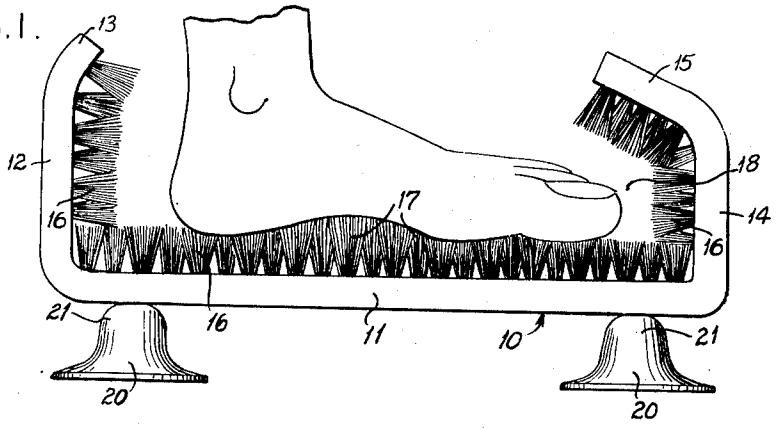


FIG. 2.

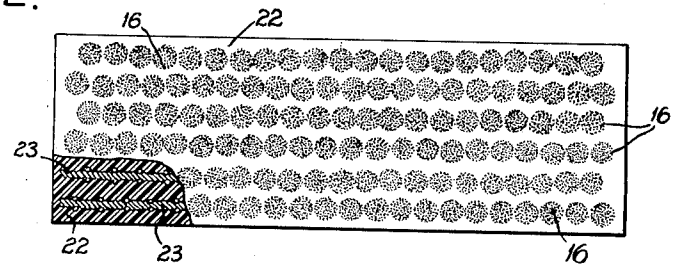


FIG. 3.

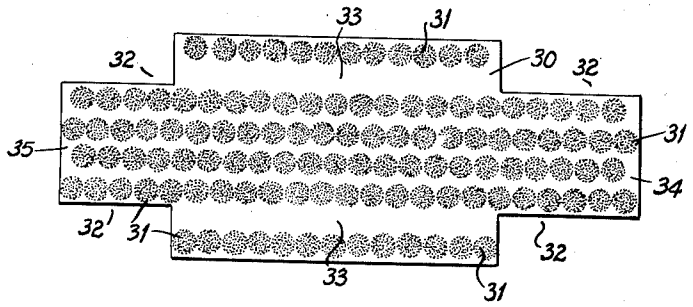
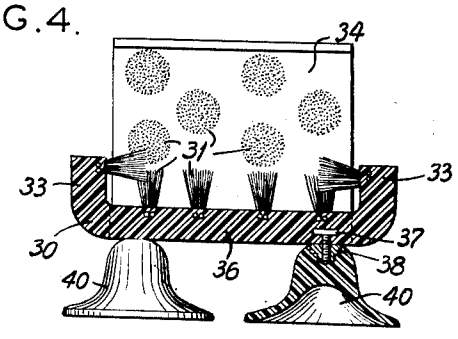


FIG. 4.



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Patented Apr. 1, 1952

2,591,331

UNITED STATES PATENT OFFICE

2,591,331

FOOT BRUSH

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Application December 22, 1949, Serial No. 134,429

3 Claims. (Cl. 15—160)

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This invention relates to foot brushes, and more particularly to a foot-conforming brush structure designed to be utilized in a fixed position, as in a bath tub, shower stall, or the like.

This applicant is aware of the virtually universal difficulties incident to a proper and thorough cleansing of the feet, particularly under conditions such that the bather occupies a standing position or posture, as in a shower stall or the like. Particularly in the case of older persons or those suffering from illness, or from injuries of the legs or feet, proper foot cleansing often entails difficulties of balance and results in either a compromise with thorough cleansing, or subjection of the person to considerable hazard of injury, as is evidenced by the high incidence of falls and other injuries occurring under these conditions. It is accordingly a major objective of the present invention to provide an improved, preferably stationary foot brush, which may be conveniently employed for thoroughly cleansing of either foot, and with a minimal personal hazard, while conducing to greater cleanliness.

The present invention may be summarized by reference to the current disclosure as embodying a one-piece brush body of an impervious material such as a thermoplastic resin in which are embedded a number of bristles all projecting from a common surface of the body of the brush. The forepart or toe region of the brush is extended upwardly thence rearwardly so as to provide a toe pocket containing bristles which are presented toward the bottoms, tips and upper surfaces of the toes, together with an intermediate bristle-bearing brush area of normally horizontal aspect, acting upon the sole area of the foot, and an upwardly extended heel-cleansing area characterized by a number of bristles presented toward the heel region of the foot. It is contemplated that the body of the brush embodying the several formed portions aforesaid, may be made of a single, initially planar block or strip of molded plastic or synthetic resin, so that the brush may be produced in a variety of sizes, but from such more or less standardized strip or block of formable material, for example, a thermoplastic resin. A suitable means of anchorage of the brush to any convenient wall or tub surface is provided, such means currently consisting of a plurality of suction cups serving securely to position the brush upon either a wet or dry surface, as in a bath tub.

A further and important objective of the present improvements is realized in a brush structure for the general purpose noted, and which is given a novel toe and heel formation, and which as may be desired, is augmented by lateral or wing elements carrying bristles presented toward the hollow interior of the brush, for cleansing engagement with the sides of the foot.

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A further objective of marked production advantage, consists in the provision of lengths of a stock material from which brushes of a considerable variety of sizes may be formed, and which material is characterized by internal linear reenforcing elements such as rods or wires, which elements serve the further purpose of anchorage means for rows of tufted bristles rooted in the molded body of the material. Such lengths of material are thus severable to produce brushes of different lengths and sizes, and are susceptible of receiving various formations such as different brush shapes and styles, to meet various user demands.

Further objectives of the current improvements include a novel attachment of suction cups or the like for anchorage of the brush securely in a position of use; a novel arrangement of the bristle tufts in and upon the material forming the brush body, so as to enable the parts of the length or block of such material to be readily shaped as by heating and bending to the desired form and contour of the brush.

The foregoing and numerous other objects and advantages of the invention will more clearly appear from the following detailed description of present embodiments, particularly when considered in connection with the accompanying drawing, in which:

Fig. 1 is a side elevational view of a foot brush embodying present improvements;

Fig. 2 is a top or plan view on a somewhat reduced scale, of a length or block of the material suitable for forming up the body of the brush, a portion of the body being broken away and shown in section in order better to reveal elements internally of the body;

Fig. 3 is a view similar to Fig. 2 but showing a slightly modified form of body-forming block or strip, and

Fig. 4 is a transverse sectional view of a brush body formed up of the strip or block element shown by Fig. 3.

Referring now by characters of reference to the drawing, and first to Fig. 1, the body of the brush generally indicated at 10, includes a substantially planar intermediate portion 11, inte-

gral with which is an upturned heel engaging portion 12 provided with a somewhat forwardly pitched tip 13.

The fore end of the body as formed up, includes a substantially vertical riser portion 14 and a distinctly rearwardly presented part 15, constituting a continuation of the element 14. It will be noted that tufts of bristles 16 are substantially vertically presented upwardly of the bottom of the hollow structure resulting from the formation described, and similarly project from the inner surfaces of the toe and heel elements. The bristles 16 may as shown, be of even length across the intermediate or sole-engaging portion 11, but as will now be obvious, certain of the intermediate bristles indicated at 17, may be extended somewhat higher, in order better to cleanse the intermediate sole area, below the arch of the foot. As desired, the portion 11 of the brush body may be given a slight upward curvature (not shown) in addition to or in lieu of the provision of the central group of extended bristles 17. The bristles extended from the surface of the upstanding portion 14 at the forepart of the brush, project inwardly toward the foot, and substantially horizontally toward the tips of the toes of the user, particularly for cleansing the tips of the toes and nails, whereas the bristles now depending from the overhanging or terminal portion 15 are presented in a generally downward direction to facilitate cleansing the upper surfaces of the toes. It results from this formation that the hollow interior of the brush provides a toe pocket 18 so as to enable a more or less simultaneous cleansing, incident to various movements of the foot into engagement with the several bristles carried by parts 11, 14 and 15.

In the heel portion 12—13 of the brush body, a somewhat greater extent in number of the bristles or tufts are provided than in the part 14, the bristles on part 12 extending inwardly in a substantially horizontal direction, while those lining the tip or terminus 13 of the heel region of the brush, are sloped both inwardly and downwardly toward the interior of the brush. The present brush construction contemplates that the brush will be located in a fixed position, usually on the bottom surface of a tub or shower stall. As a convenient means of anchorage there are provided a plurality of, for example four, suction cups 20 each of somewhat bell shape and each with a relatively heavy upper wall portion 21. These may be attached to the body of the brush as will be hereinafter described in reference to Fig. 4.

Referring now to Fig. 2, except for a minor sectional portion, this consists of a plan view of a length of a molded thermoplastic strip of which the body of the brush may be formed. The molded plastic material thereof is indicated at 22. Extending longitudinally of the block or strip of material 22 is a series of laterally spaced reenforcing rods or wires 23. These extend in a direction of the strip or block 22 such that they lie longitudinally of the finished brush. Assuming the use of twisted wires as shown, these same elements will serve as internal root anchorages for the several tufts or bristles 16 which are shown in Fig. 2 as arranged, but without limitation as to number, in six rows, there being provided one length of the metal reenforcement 23 such as the twisted wires for each such row of bristle tufts. It is a preference for better distribution of bristles, that the bristle-bearing wires 23 be

endwise staggered to an extent of about one-half the distance between centers of adjacent tufts in each row, thus producing a desirable distribution of bristles, as will appear from Fig. 2. The length of stock material such as shown by Fig. 2 may be automatically produced by equipment currently known to plastics manufacturers and brush producers, so that it may for example, be extruded substantially in the form shown by Fig. 2, such extrusion being comprehended as within the term "molded" sometimes herein employed.

For production of the brush, a predetermined length of the article of manufacture as shown by Fig. 2, is severed as by a transverse cut. Assuming further the use of a thermoplastic resin, for example, a resin of the phenol-formaldehyde class, the severed length of the material 22 with wires and bristles in situ, will be thermally softened, and bent within or over a forming jig to produce the desired contouring as suggested by Fig. 1. Such finishing or polishing operations as are necessary for good appearance and entire safety of use, will follow the forming operation.

The description thus far has related to a hollow brush body which is open at its sides, and which possesses certain advantages in easy introduction of the foot lateraly of the brush. It is, however, desired by certain users to include in the structure one or more rows of bristles which are presented inwardly of the hollow brush structure for engagement with the sides of the foot. Fig. 3 accordingly represents a block or body of internal construction similar to that of Fig. 2 and containing the same number of rows of bristles and which will be understood to be of similar internal construction as to bristle anchorage and reenforcement through the agency of the twisted wires. However, in Fig. 2 in which the plastic matrix is indicated at 30, rows of bristles 31 are provided and each of the corner regions of the original block as indicated at 32, are cut away. Such tailoring results in a pair of laterally extended wing sections 33. According to this modification the forepart 34 is or may be formed up similarly to the elements 14 and 15 of Fig. 1, and the heel region 35 upturned and formed similarly to the parts 12 and 13 (Fig. 1). The sides of the tailored strip or block are turned upwardly at about a right angle, as will now appear from Fig. 4, from a central or intermediate region 36 of the modified form.

It is a preference at the time of curing the resin strip or block such as shown by Figs. 2 and 3, to embed therein the head element and part of the shank element of each of a linear series of attachment screws 37, the threaded shank of which extends from that surface of the unit which is opposite its bristles, as will appear from Fig. 4. Each such extension serves to engage an embedded metal nut 38 which may be cured in and form a fixed part of the uppermost heavy wall region of the suction cup. In this manner, the suction cups may be, if desired, renewed from time to time merely by threading them away from the body of the brush and substituting others therefor.

The manner of usage of the brush is thought to have been rendered fully apparent from the foregoing description of its parts, but it may be noted for completeness that the brush will usually be anchored as by means of its suction cups indicated at 20 (Fig. 1) or at 40 (Fig. 4) to the bottom of the shower stall or a bath tub. Soap

or any other desired cleansing medium may be applied to either or both the foot and the bristles of the brush, and upon moistening, agitation of the foot in a fore and aft direction within the brush will effect a thorough cleansing action. Digital agitation within the toe pocket **18** will likewise result in a thorough cleansing of the toe region of the foot, and the heel conformity provided by the elements **12** and **13** will similarly produce a thorough cleansing action in that region of the foot. Alternate engagement of the sides of the foot with the horizontal, inwardly presented bristles of the wings **33** when the latter are utilized, will thus complete with thoroughness, the foot cleansing process.

An added advantage incident to the use of a brush of the present type, may be noted in passing in that, according to stiffness of bristles provided (and since these may be furnished to the trade in differing grades), there results a very desirable and beneficial massage effect with concomitant stimuli of the nerves and skin of the user.

It will have appeared from the foregoing description that the described brush constructions will serve fully to attain each of the several objectives herein expressed, as well as others implied from the description. Although the invention has been described by detailed reference to a principal embodiment and a minor variant thereof, the detail of disclosure should be understood in an instructive, rather than in any limiting sense, numerous further variants being contemplated within the scope of the claims hereunto appended.

I claim as my invention:

1. In a plastic foot brush for use in a stationary position, a brush body consisting of a one-piece molded synthetic resin, a plurality of twisted wires arranged in rows longitudinally of and within the body, tufts of bristles each rooted in the plastic body and anchored in situ by the rows of twisted wires, the bristles in adjacent rows being alternately longitudinally staggered, the brush including an intermediate bristled area merging into a forward end turned upwardly at a substantial angle and having the bristles thereon presented substantially horizontally toward the toes of the user, said forward end portion being thence continued into a back-turned portion with downwardly extended bristles, adapted to engage the upper surfaces of the toes of the foot, and thus forming a toe pocket of substantially C-shaped section at the front end of the brush; the rear end of the body being formed upwardly at a substantial angle to the intermediate brush portion, and thus forming a heel-

brushing region the tip of which is bent forwardly toward the foot, and means for anchoring the brush in a fixed position of usage.

2. The combination and arrangement of elements and features in a fixed foot brush substantially as recited by claim 1, further characterized by the provision of integral, lateral, upturned wing portions, each bearing bristles presented substantially horizontally toward the opposite sides of the foot of the user, the wing portions being of slightly lesser length than the intermediate bristled area and so related thereto as to provide the cavity within the brush, with corner drainage openings.

3. In a plastic foot brush adapted for mounting and for use in a stationary position, a brush body consisting of a one-piece molded synthetic resin, a plurality of twisted wires arranged in rows longitudinally of and within the body, tufts of bristles each rooted in the plastic body and anchored in situ by the rows of twisted wires, the bristles in adjacent rows being alternately longitudinally staggered, the brush including an intermediate bristled area, the center region of which is characterized by an upwardly convex arrangement of bristles conformably to engage the arch of the foot, the intermediate area merging into a forward end turned upwardly at a substantial angle, and having the bristles thereon presented substantially horizontally toward the toes of the user, said forward end portion being thence continued upwardly and rearwardly into a back-turned portion with downwardly extended bristles, adapted to engage the upper surfaces of the toes of the foot, and thus forming a toe pocket of substantially C-shaped section at the front end of the brush; the rear end of the body being formed upwardly at a substantial angle to the intermediate brush portion, said rear end having a forwardly projecting bristled terminus and thus forming a heel-brushing region the tip of which extends forwardly toward the foot in conformity with the back of the heel and ankle areas, and means for anchoring the brush in a fixed position of usage.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
747,031	Bartoszek	Dec. 15, 1903
2,210,365	Gilpin	Aug. 6, 1940
2,241,876	Cohen	May 13, 1941
2,251,327	Gromie	Aug. 5, 1941