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A. NEFF ET AL

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NEEDLE HAIRBRUSH

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FIG. 1

FIG. 2

FIG. 4

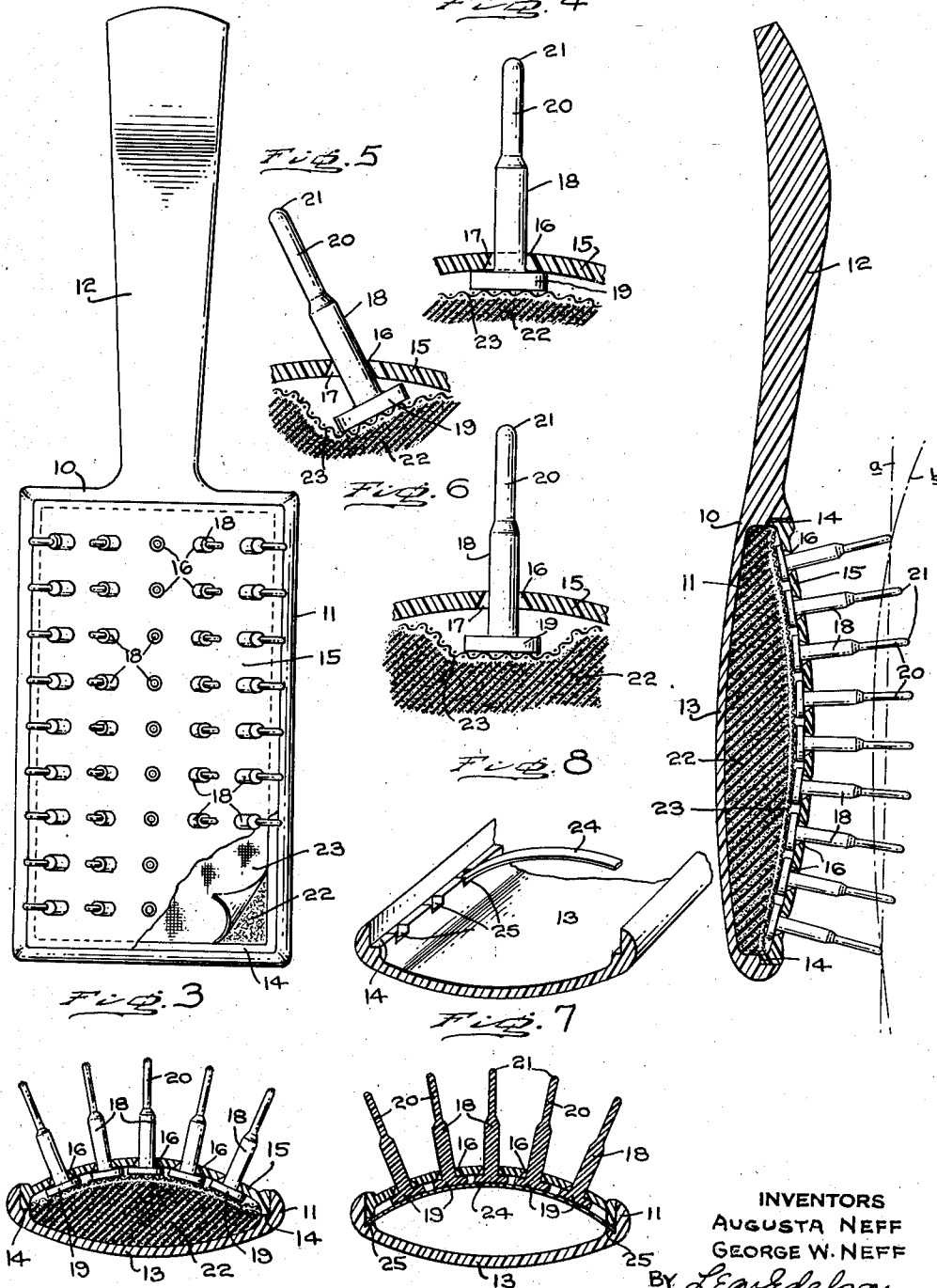
FIG. 5

FIG. 6

FIG. 8

FIG. 3

FIG. 7



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NEEDLE HAIRBRUSH

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6 Claims. (Cl. 128-62)

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This invention relates generally to toilet brushes and more particularly to an improved construction of hair brush especially adapted for use to massage and invigorate the scalp and hair, this application being a continuation in part of our co-pending application, Serial No. 717,496, filed December 20, 1946 and now abandoned.

Among the principal objects of the present invention is the construction of a hair brush characterized by the provision of a plurality of more or less closely spaced bristles each of which is in the form of a relatively rigid or inflexible needle-like element having a capacity for axial as well as angular movement with respect to the face of the brush through which the bristles project, the bristles being each so resiliently mounted in and supported by the head of the brush as to impart thereto in the region of each bristle a localized resiliency enabling the free extremities of the bristles, considered as a group, to simultaneously conform to the contour of the head and so exert a substantially uniform pressure over the area of the scalp undergoing massage.

It is also an important object of the present invention to provide a hair brush of the character aforesaid which is constructed principally of readily assembled molded plastic parts, which is simple and inexpensive of construction and which is light in weight and aesthetic in appearance.

Other objects and advantages of the present invention will appear more fully hereinafter, it being understood that said invention consists substantially in the combination, construction, location and relative arrangement of parts, all as described in detail hereinafter, as shown in the accompanying drawings and as finally pointed out in the appended claims.

In the accompanying drawings which illustrate preferred constructions of brush embodying the principles of the present invention:

Figure 1 is a plan view of the bristle face of the brush with portions thereof broken away to expose internal details of its construction;

Figure 2 is a central longitudinal sectional view of the brush;

Figure 3 is a transverse sectional view thereof;

Figure 4 is a fragmentary view showing in enlarged scale the normal position assumed by a single bristle of the brush;

Figures 5 and 6 are similar fragmentary views illustrating the permissible movements of the single bristle relatively to its mounting;

Figure 7 is a transverse sectional view of a modified construction of the brush; and

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Figure 8 is a perspective view showing the relation of certain component parts of the modified brush construction of Figure 7.

Referring now to the drawings and more particularly to Figures 1 to 6 inclusive, it will be observed that the brush of the present invention comprises a main body member 10 preferably molded of plastic material to provide a recessed part 11 having an integral handle 12. If desired, the handle 12 may be omitted, the part 11 being then adapted to be held directly in the palm of the hand. Although it is preferred to mold the body member of the brush of plastic material, it is to be understood that such body, with or without a handle, may be formed of any other material, such as metal, wood, hard rubber, or other suitable composition of matter, it being only necessary that the body member be recessed as shown to provide a relatively thin-walled backing 13 the perimetral edge of which is shouldered, as at 14, to form a seat for reception of a perforated face plate 15. Preferably, the solid rear wall 13 of the recessed part 11 is longitudinally and transversely dished, as is the face plate 15, so that when these parts are permanently assembled, as shown in Figures 2 and 3, they form a rigid hollow casing of generally oval shape in longitudinal and transverse cross-section. Any suitable means may be employed for securing the face plate 15 in permanent assembly with the backing 13.

The face plate is provided with a plurality of more or less closely spaced apertures 16 each of which is undercut, as at 17, for a purpose which will be apparent hereinafter, the spacing of these apertures being substantially uniform throughout the full area of the face plate. Adapted for projection outwardly through each of the apertures 16 is a bristle element 18 formed of a solid material, preferably plastic, each such bristle element being provided at its inner end with an enlarged head 19 and with an outer shank portion 20 of reduced diameter terminating in a smoothly rounded, blunt end 21. Although it is preferred to form the bristle elements 18 of the stepped configuration shown, it will be understood that the shape of the bristle shank may be varied as desired, it being only required that the base of the shank immediately adjoining the enlarged head 19 be of a diameter sufficient to snugly fit the restricted outer portion of the aperture 16 through which the bristle is outwardly projected. Thus, each bristle element may be of elongated conical form to provide it with a shank of the requisite base diameter and with a relatively

small diameter apex or external end. The bristle elements 18 may be cast, molded or otherwise formed of any suitable material, such as plastic above referred to, hard rubber, metal or the like.

In its preferred construction, the hollow casing 5 formed of the assembled backing 13 and face plate 15 is internally fitted with a cushion 22 of suitable resilient material, which may be solid or porous as desired. Material suitable for this purpose may be foam or sponge rubber or any other such material having the requisite properties of resiliency and compressibility. Overlying the outer surface of this internal resilient cushion 22 is a water-impervious sheet 23 of flexible material, such as rubber, rubberized fabric, or the like, said sheet being thus in direct contact with the rear ends of the enlarged heads 19 of the bristle elements 18. It will be understood, of course, that the several bristle elements 18 are respectively projected through the apertures 16 of the face plate 15 prior to final assembly of the latter with the cushion-filled backing 13, it being evident that when so assembled the outer lined surface of the internal cushion engages the enlarged heads 19 of the several bristles and resiliently presses them outwardly of the face plate 15 into their fully extended positions as shown in Figures 2, 3 and 4.

It will be apparent that the several bristle elements 18 are so individually shiftable relatively to the face plate 15 that in use of the brush the outer extremities 21 thereof, singly or as a group, may readily conform to the contour of the body surface undergoing massage, such as the scalp of the head. The general arrangement of the bristles is thus such that their outer ends may terminate in a flat surface, as indicated by the dotted line *a* of Figure 2, or in an irregularly curved surface as indicated by the dotted line *b*. In any case, the bristles are individually each subjected to a constant, uniformly applied pressure, thereby increasing the massaging effectiveness of the brush.

The individual action of each bristle 18 is probably best illustrated in Figures 5 and 6, in the first of which the bristle is shown shifted inwardly of the perforated face plate 15 with its axis coincident with that of the perforation 16 through which it projects. In Figure 6, the bristle is shown axially shifted inwardly of the face plate along an axis inclined with respect to that of its face plate aperture. Thus, during all manipulations of the brush to provide a thorough and vigorous massage, the several bristles may individually shift relatively to the face plate without, however, any reduction in pressure exerted outwardly by the bristles against the massaged surface, this pressure being maintained substantially uniform by the resiliency and compressibility of the internal cushion 22 pressing against the inner ends of the bristles. This pressure so locally exerted upon each bristle element is maintained even when the brush is subjected to a rotary motion during the massaging operation, in which case the bristle elements are free to move in such manner that their outer ends each describe a relatively large circle while their inner ends are restricted against substantial movement.

In the modified construction of brush shown in Figures 7 and 8, the internal resilient cushion 22 is omitted and in lieu thereof a series of flat spring steel members 24 or the like are employed for urging the bristle elements outwardly of their

perforated face plate 15. In such modified construction, it is preferable to arrange the bristles in several groups with each group thereof disposed along a straight line extending transversely of the face plate 15, each such straight-line group of bristle elements being backed by one of the spring members 24. The latter members are respectively disposed in bowed relation as shown in Figures 7 and 8 with the opposite ends of each such member respectively seated in a notch 25 suitably formed in the side wall of the recessed backing 13. While the arrangement of Figures 7 and 8 does not quite provide the high degree of localized resiliency for the bristles as in the arrangement of Figures 1 to 6, it nevertheless provides the brush with an effective massaging action in accordance with the principles of the present invention.

It will be understood, of course, that the brush of the present invention is susceptible of various changes and modifications in addition to those hereinbefore described, all without departing from the general principles or real spirit of the present invention, and it is accordingly intended to claim the same broadly as well as specifically as indicated in the appended claims.

What is claimed as new and useful is:

1. In a brush of the character described, a main body member having a recess formed therein, a perforated inflexible face plate rigidly secured to said body member to enclose said recess, a plurality of rigid bristle elements respectively projecting loosely through the perforations of said face plate, said bristle elements being axially movable independently of each other through the perforations of said face plate, and resilient means disposed within said recess and operative to impose an outward bias upon said bristle elements to maintain the same normally fully extended outwardly of said face plate.

2. In a brush of the character described, a hollow body member having a pair of spaced inflexible walls one of which is provided with a plurality of apertures uniformly spaced throughout substantially the entire area thereof, a plurality of rigid bristle elements respectively projecting loosely through said apertures, said bristle elements being axially movable through the perforated wall with each of said bristle elements having an enlargement at its inner end engageable with the apertured wall to limit movement of the element outwardly of said wall, and means disposed internally of said hollow body member for resiliently engaging said inner enlargements of the bristle elements to resiliently urge the latter outwardly of said apertured wall, said inner enlargements of said bristle elements being in frictional pivotal engagement with said internal means to permit said bristle elements to gyrate about the axes of the perforations through which they project.

3. In a brush of the character described, a hollow body member having a pair of spaced inflexible walls one of which is provided with a plurality of apertures uniformly spaced throughout substantially the entire area thereof, a plurality of rigid bristle elements respectively projecting loosely through said apertures, each of said bristle element having an enlargement at its inner end engageable with the apertured wall to limit movement of the element outwardly of said wall, and means disposed internally of said hollow body member for resiliently engaging said inner enlargements of the bristle elements to resiliently urge the latter outwardly of said apertured wall,

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said bristle elements being individually axially shiftable inwardly of said apertured wall against the compressive force exerted by said internal means.

4. In a brush of the character described, a main body member having a recess formed in one side thereof, a perforated inflexible face plate secured to said body member to overlie the open end of said recess, a plurality of headed bristle elements projected respectively loosely through the perforations of said face plate with the headed ends thereof disposed interiorly of said face plate to limit outward movement of the bristle elements relatively to said face plate, said apertures of the face plate being each undercut to permit angular movement of each bristle element relatively to the axis of the aperture through which it projects, and resilient means disposed within said recess and engageable with the headed ends of said bristle elements to normally urge the latter outwardly of said perforated plate while permitting the same to be individually shifted axially inwardly of said perforated plate.

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5. In a brush of the character defined in claim 2 wherein said resilient means comprises a body of compressible material one surface of which commonly engages the headed ends of all of said bristle elements.

6. In a brush of the character defined in claim 4 wherein said resilient means comprises a plurality of bands of springy material extending transversely across the recess in said body member and engageable with the headed ends of spaced groups of said bristle elements.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
1,364,971	Alexander	Jan. 11, 1921
1,518,480	Buchanan	Dec. 9, 1924