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FOLDING HAIR BRUSH

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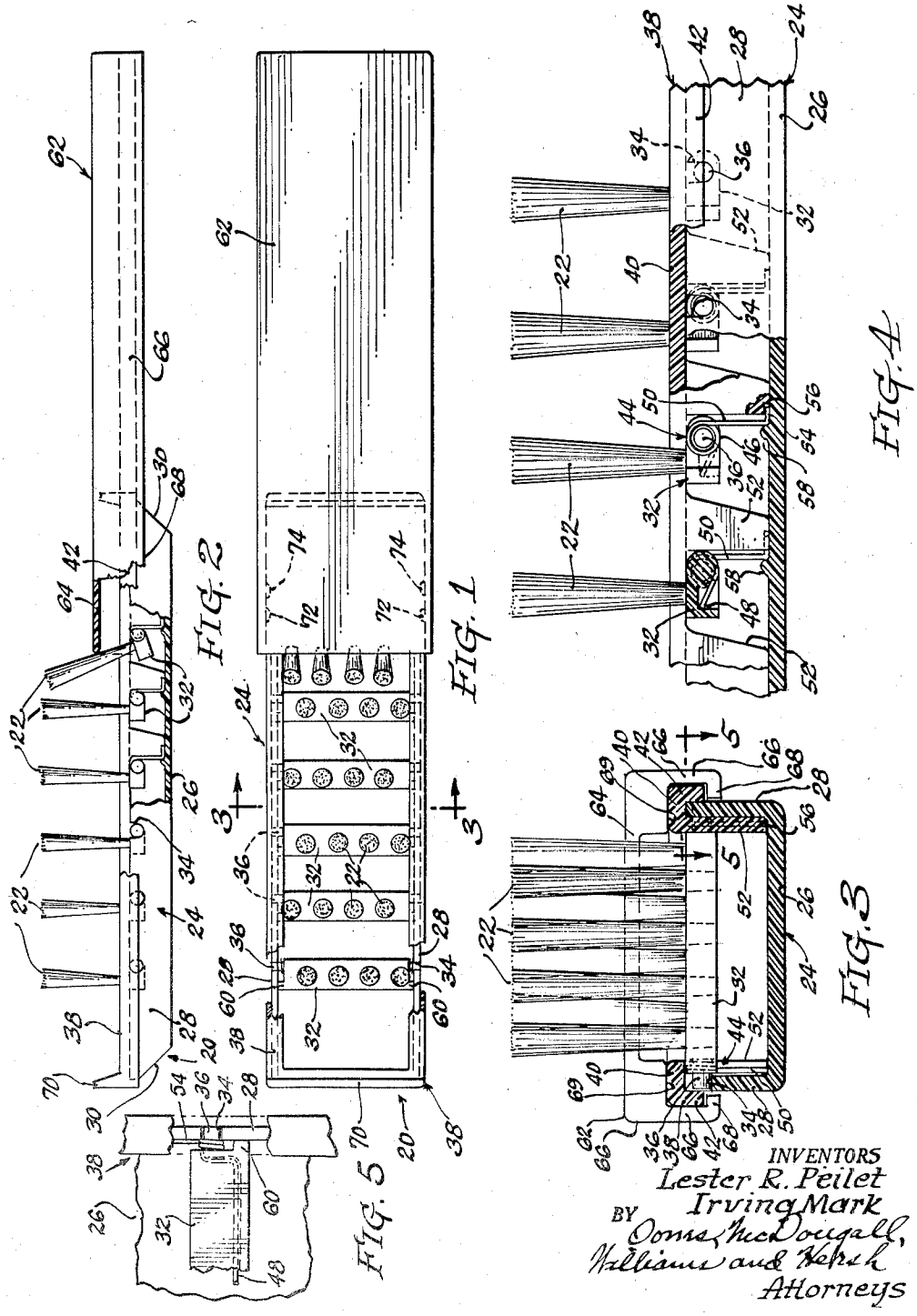


FIG. 1

FIG. 2

FIG. 3

FIG. 4

FIG. 5

INVENTORS
Lester R. Peilet
Irving Mark
BY Toms, McDougall, Williams and Kerkam
Attorneys

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FOLDING HAIR BRUSH

Lester R. Peilet and Irving Mark, Chicago, Ill.; said Mark assignor to said Peilet

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This invention relates to hairbrushes or other types of brushes and pertains particularly to folding brushes.

One principal object of the invention is to provide a new and improved folding brush which is arranged so that the bristles of the brush will move automatically into an active, upright position when the cover of the brush is opened.

A further object is to provide a new and improved folding brush of the foregoing character in which the bristles are automatically folded or collapsed into the body of the brush when the cover is closed.

Another object is to provide a new and improved folding brush which is adjustable into a partially opened position in which some of the bristles are actively disposed and available for use while others are collapsed within the brush.

It is another object to provide a new and improved folding brush which is effective and foolproof yet is extremely compact and economical.

Further objects and advantages of the invention will appear from the following description, taken with the accompanying drawings, in which:

Figure 1 is a plan view of a folding hairbrush constituting an illustrative embodiment of the present invention.

Fig. 2 is an elevational view of the brush of Fig. 1 with certain parts broken away and shown in section for clarity of illustration.

Fig. 3 is a transverse enlarged elevational sectional view taken generally along the line 3—3 of Fig. 1.

Fig. 4 is a fragmentary enlarged longitudinal elevational view, similar to Fig. 2, with various parts broken away and shown in section.

Fig. 5 is a fragmentary enlarged horizontal sectional view taken generally along the line 5—5 of Fig. 3.

If the drawings are considered in greater detail, it will be seen that Figs. 1–5 show an illustrative embodiment of the invention in the form of a foldable or collapsible brush 20 which is particularly well adapted for use as a hairbrush. It will be seen that the brush 20 has a plurality of bristles 22 which stand upright when the brush is in its open or active position, as shown in Fig. 2. When the brush is closed or collapsed, the bristles are swung or folded out of the way and are fully concealed. Thus, the folded brush may be carried very conveniently in a pocket or purse.

The exemplary brush 20 comprises a body housing 24 which may assume various forms but is illustrated as a tray-like member of channel-shaped cross section. Thus, the body housing 24 has a flat elongated bottom wall 26, together with a pair of longitudinal side walls 28 extending upwardly from the longitudinal edges of the bottom wall. End walls 30 are formed at the opposite ends of the body housing 24. It will be understood that the body housing may be formed as a single piece from various plastics or other suitable materials.

The bristles 22 are mounted on bars or shafts 32 which are rotatably supported on the body housing 24. While

the shafts 32 might be arranged in various ways, they are arranged in the illustrated embodiment so as to extend across the body housing 24 between the side walls 28. Generally semi-circular notches or openings 34 are formed in the upper edges of the side walls 28 to receive pivots 36 provided at the opposite ends of the bristle shafts 32. The bristle shafts 32 are substantially parallel to each other and are arranged to extend transversely to the length of the body housing 24.

Various means might be employed to hold the bristle shafts 32 on the body housing 24, but in this case they are retained by a member 38 which is cemented or otherwise suitably secured to the upper edge portion of the body housing 24. As illustrated, the member 38 is in the form of a rectangular ring having a top wall portion 40 which extends along the upper edges of the side and end walls 28 and 30 and is effective to close the upper ends of the notches 34 so that the pivots 36 will be confined to the notches. An outer depending flange 42 extends downwardly from the top wall portion 40 and partially covers the notches 34 and the ends of the pivots 36.

Resilient means are provided to bias the bristles 22 into their active, upstanding positions. While the resilient means may take various forms, they comprise a plurality of springs 44 in the illustrative embodiment of Figs. 1–5. Each spring 44 biases one of the bristle shafts 32 toward a position in which the bristles will stand upright.

The springs might be constructed and arranged in various ways. However, each spring 44 is illustrated as comprising a pair of coils 46 extending around the pivots 36 at the opposite ends of the bristle shafts 32. A portion 48 in the form of a bail extends under the bristle shaft 32 between the two coils 46. The bail portion 48 exerts upward force on the overlying portion of the bristle shaft 32 and thereby tends to swing the bristle shaft in a clockwise direction as seen in Figs. 2 and 4.

The coils 46 have terminal arm portions 50 which extend downwardly into the body housing 24 and react against depending lugs or flange elements 52 formed on the retaining member 38. In this instance, each of the depending spring arms 50 has a foot or end portion 54 which is bent forwardly from the vertical line of the arm 50 and is received in a notch or recess 56 formed in the lower end of the adjacent lug 52. In this way, the lower end of the spring arm is securely anchored. At the heel of the foot 54, a lug or projection 58 is formed upwardly on the lower wall 26 of the body housing 24 so that the foot will be retained in the recess 56.

Stop elements are provided to limit the swinging movement of the bristle shafts 32 under the biasing impetus of the springs 44. The arrangement of the stop elements might be varied, but in this instance, a stop ear 60 is formed on each end of each of the bristle shafts 32. Each of the ears 60 is parallel to but spaced from the corresponding pivot 36. In the active position of the bristles, the upper side of each of the ears 60 abuts against the underside of the top wall 40 on the ring-shaped retaining member 38. The top wall 40 projects inwardly and overhangs the inside of each of the side walls 28 so as to be disposed in the paths of the ears 60 on the bristle shafts 32.

To close the body housing 24 and swing the bristles 22 to inactive positions, the folding brush 20 is provided with a cover 62, which might be arranged in various ways, but in this instance is slidably mounted on the body housing 24. It will be seen that the illustrated cover 62 is of an inverted channel-shape in cross section and is provided with a top wall 64, together with a pair of depending side walls 66. The cover 62 is retained on the

body housing 24 by means of a pair of flanges 68 which project inwardly from the lower edges of the side walls 66 and are received under the depending side wall elements 42 of the retaining member 38. Thus, the elements 42 of the retaining member 38 serve as guide rails for the cover 62. The cover 62 has longitudinal, downwardly facing shoulders 69 which ride along the top wall elements 40 of the member 38.

The brush 20 is closed by sliding the cover 62 across the top of the body housing 24. During such movement of the cover 62, the top wall 64 encounters the bristles 22 on each of the bristle shafts 32 in turn. The cover 62 thereby swings the bristles and the bristle shafts downwardly until the bristles pass under the top wall 64. It will be seen that the bristles 22 are arranged in tufts which are staggered or offset on adjacent bristle shafts so that the bristles on one shaft will mesh with or move between the bristles on the adjacent shaft as the bristles are collapsed by the cover 62. In this way, the bristles occupy a minimum of space when in their inactive or folded position. The closing movement of the cover 62 is limited by a stop flange 70 formed on one end of the retaining member 38. Thus, the stop flange 70 will be engaged by the front end of the cover 62 when the cover has been moved over the body housing 24.

The brush 20 may be opened or unfolded simply by sliding the cover 62 away from the stop flange 70. As the top wall 64 of the cover 62 is withdrawn from each set of bristles in turn, the bristles and the bristle shaft 32 are swung upwardly by the associated spring 44. The opening movement of the cover 62 may be limited by engagement between detent elements on the cover and the retaining member 38. In the illustrated construction, the detent elements assume the form of projections 72 which are formed on the side walls 66 of the cover 62 and are engageable with dimple-shaped recesses 74 formed in the side flanges 42 of the retaining member 38.

If only a portion of the bristles 42 are needed, the cover 62 may be opened partway. In this case, the exposed bristles will move upwardly into their active, upstanding position, while the remaining bristles will be retained under the cover 62.

The arrangement of the body member 24, the bristle shafts 32 and the retaining member 38 makes it a simple operation to assemble the brush 20. The assembly is carried out by inserting the bristle shafts 32 into the body housing 24 with the pivots 36 lying in the semi-circular notches 34. At this stage, the springs 44 are unstressed and the spring arms 50 are displaced in a counter-clockwise direction from the positions shown in Figs. 2 and 4. Next, the retaining member 38 is placed over the body housing 24 with the lugs 52 engaged with the ends of the arms 50. The lugs 52 are aligned with the arms 50 so that the bent end portions 54 will be received in the recesses 56. Then, the retaining member is pushed downwardly into its final position on the upper edge of the body housing 24. This stresses the springs 44. The recesses 56 retain the spring arms 50 during the assembly. It will be understood that cement is applied to either or both of the elements 24 and 38 before they are brought into their final assembled relation. In this way, the retaining element 38 will be secured to the body housing 24. The cover 62 may be slid on to the right-hand end of the retaining member 38 until the detent projection 72 engages the recesses 74. Then, the cover 62 may be closed by pushing it along the retaining member 38 over the top of the body housing 24.

Since the cover 84 extends all the way around the body member 24, it provides a particularly convenient handle for the brush 82 when the cover is in its open position. Moreover, the side walls 90 and 92 of the cover completely conceal the pivots 36 at the ends of the bristle shafts 32. It will be noted that the depending flanges 42 on the retaining member 38 are omitted from the construction shown in Figs. 6–8. The cover 84 is guided by sliding engagement between its bottom wall 86 and the bottom wall 26 of the body member 24. Moreover, longitudinal, downwardly facing shoulders 102 are formed on the cover for sliding engagement with the upper wall elements 40 of the retaining member 38.

It will be recognized that a folding brush constructed in accordance with the present invention is extremely useful in that it may be conveniently carried in a pocket, handbag or purse so that it will always be available for immediate use. The brush may be opened easily and quickly by sliding the cover to its open position. When this is done, the bristles will immediately spring up into their active positions. In its open position, the cover forms a convenient handle for the brush. If only a portion of the bristles are needed, the cover may be opened partially, to any desired degree.

When the cover is closed, the bristles are entirely housed within the brush, out of view and protected from damage. The contraction of the brush permits the bristles to be particularly long and hence effective. Nevertheless, the folded brush is extremely compact. Whether open or closed, the brush is attractive in appearance.

Various other modifications, alternative constructions and equivalents may be employed without departing from the true spirit and scope of the invention, as exemplified in the foregoing description and defined in the following claims:

We claim:

1. A folding brush, comprising, in combination, a channel-shaped body having generally parallel elongated side walls with a bottom wall extending therebetween, a plurality of generally parallel bars extending across said body between said side walls and pivotally mounted thereon, said side walls having upper edge portions with a plurality of openings, said bars having pivots disposed at their opposite ends and rotatably received in said openings, means defining a pair of retaining members extending along said upper end portions of said side walls and retaining said pivots in said openings, each of said bars having a spring with coiled portions disposed around said pivots and a bail portion extending between said coiled portions, each of said coiled portions having a terminal arm extending downwardly into said body, each of said retaining members having a plurality of downwardly projecting lugs adjacent said pivots, said terminal arms abutting against said lugs, said lugs having locating recesses receiving said terminal arms, each of said bars having bristles mounted thereon and extending outwardly therefrom, said springs biasing said bars into active positions with said bristles standing out from said body, said bars and said members having interengageable stop elements limiting swinging movement of said bars under the impetus of said springs and thereby defining said active positions of said bars, a channel-shaped cover slidably mounted on said body and having a top wall with side walls depending therefrom, said members having guide rail portions projecting laterally from said side walls of said body, said side walls of said cover having inwardly projecting flanges received in said guide rail portions for retaining said cover on said body, said top wall of said cover being engageable with said bristles on each of said bars in turn to swing said bristles and bars into inactive positions with said bristles housed between said body and said cover.

2. A folding brush, comprising, in combination, a channel-shaped body having generally parallel elongated side walls with a bottom wall extending therebetween, a plurality of generally parallel bars extending across said body between said side walls and pivotally mounted thereon, said side walls having upper edge portions with a plurality of openings, said bars having pivots disposed at their opposite ends and rotatably received in said openings, means defining a pair of retaining members extending along said upper end portions of said side walls and retaining said pivots in said openings, each of said bars

having a spring with coiled portions disposed around said pivots and a bail portion extending between said coiled portions, each of said coiled portions having a terminal arm extending downwardly into said body, each of said retaining members having a plurality of downwardly projecting lugs adjacent said pivots, said terminal arms abutting against said lugs, each of said bars having bristles mounted thereon and extending outwardly therefrom, said springs biasing said bars into active positions with said bristles standing out from said body, said bars and said members having interengageable stop elements limiting swinging movement of said bars under the impetus of said springs and thereby defining said active positions of said bars, and a cover slidably mounted on said body and having a top wall engageable with said bristles on each of said bars in turn to swing said bristles and bars into inactive positions with said bristles housed between said body and said cover.

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