

BRUSHES

The present invention relates to brushes, for example hairbrushes. More particularly, it relates to portable brushes of the type in which the combing members (which term is to be understood to include bristles or combing or brushing members in general) are arranged so as selectively to protrude from and retract within a brush shell.

Portable hairbrushes of this type have been proposed previously. Examples of earlier brushes are shown in Figs. 8 and 9 of the drawings. The prior art hairbrush shown in Fig. 8 comprises a shell 103 containing a combing plate 100 bearing combing members 104. Rotatable plug piece 101 has a slanted portion inserted in a slanted hole 102 on the back of the bristled plate. Rotation of the plug piece about an axis parallel to the combing members causes the combing plate to be pressed towards the apertures.

Disadvantages of this particular hairbrush are that manual rotation of the plug piece is difficult, and that there is only a small range of movement of the combing plate, so that even in a retracted position, the combing members still protrude to a considerable extent.

The hairbrush shown in Fig. 9 employs a U-shaped rotatable arm 113 to control the movement of a combing plate 111. The arm acts in a similar manner to a cam-shaft and is rotated by manually turning a knob 112. Manipulation of this knob is difficult, and a significant degree of finger power is required in order to rotate the arm 113. A ratchet mechanism is employed for restraining the combing plate 111 at the protruding position, against this action of springs. The mechanism thus employs a large number of elements and is somewhat complicated in construction.

According to the present invention, there is provided a brush comprising a hollow shell accommodating a combing plate bearing a plurality of combing members on a front face thereof, the plate being selectively moveable between a brushing position in which the combing members project through corresponding apertures in the shell, and a retracted position in which they are at least substantially retracted within the shell, the plate being biased towards said retracted position by one or more compression springs disposed between said combing plate and the apertured wall of the shell, the brush further comprising a lever pivoted about a journal pin mounted in a cut-away portion of the shell adjacent the rear of said combing plate, the lever having two arms extending from the journal pin, said two arms being a manipulation arm extending outwardly of the shell, so as to be capable of being engaged and pivoted by an operator, and a biasing arm extending inwardly of the shell, arranged operatively to contact the rear of the combing plate and to bias the same towards said operative position upon rotation of the manually operable arm, the biasing arm having a flattened end portion which in operation is brought into abutment with a corresponding flat portion of the rear of the combing plate, when said plate is in said brushing position, to restrain the combing plate in said brushing position.

The invention provides a brush of simple construction which permits the accommodation of the combing members almost completely within a brush shell, while allowing for easy manipulation for retracting and protruding the combing members in and out of the brush shell without impairing the mechanical strength thereof, allowing easy usability. The compression springs not only provide for automatic retraction of the combing members when the brush is not in use, but also gives a positive feel to manual operation of the lever.

Preferably, a stop member is provided on the shell, positioned so that the lever is brought into abutment therewith at a predetermined position on its rotational path corresponding to a desired degree of protrusion of the combining members from the shell.

The invention is hereinafter described by way of example only, with reference to the accompanying drawings, in which:-

Fig. 1 is a perspective view of an embodiment of brush (in this case a hairbrush) according to the present invention, in operative brushing configuration;

Fig. 2 is an explanatory exploded schematic illustration of the hairbrush of Fig. 1;

Fig 3 is a plan view of the hairbrush of Fig. 1 in retracted configuration;

Fig. 4 is a vertical section of the hairbrush of Fig. 1 along the line A-A of Fig. 3;

Fig. 5 is a vertical sectional view of the hairbrush of Fig. 1 along the line A-A of Fig. 3, but in the Fig. 1 operative configuration, and with some combing members omitted for clarity;

Fig. 6 is a plan view of the double arm lever of the hairbrush of Fig. 1;

Fig. 7 is a vertical sectional view of the lever of Fig. 6, along the line B-B of Fig. 6;

Fig. 8 is a sectional view of a prior art hairbrush; and

Fig. 9 is an exploded perspective view of a different prior art hairbrush.

The hairbrush comprises a brush shell (1) arranged generally along a longitudinal axis, and having a gripping

end (or handle) (2) generally towards one end thereof, and a brushing portion (3) generally towards the other end.

As will be seen from Fig. 2, the brush shell (1) comprises an upper housing (1a) having a top plate (1c) provided with a cut-away portion (4b) for receiving lever (5) and a bottom plate (1b) having a plurality of apertures (for example slits or perforations) (8) distributed over and passing through the bottom face thereof so as to permit emergence and retraction of the combing members (7) therethrough. Combing plate (6) is accommodated within the brush shell (1) and is provided with combing members (7) on one side (the "front side") thereof.

Combing plate (6) is generally ellipsoidal in shape and rests in bottom plate (1b) shaped generally in the form of a ship's bilge. Upper housing (1a) fits onto bottom plate (1b) to build up the brush shell. Two guide posts (8a, 8b) are provided, at opposite ends of bottom plate 1b, and these are received in guide holes (6a and 6b) disposed one at each end of the combing plate (6) so as to guide the vertical movement of the combing plate (6). Two coil compression springs having the same length are compressedly arranged, one on each of the guide posts (8a, 8b) in between the combing plate (6) and the bottom plate (1b) so as to create a stable support for the combing plate (6). The springs are compressed when the combing plate (6) is moved downwards in operation, thus urging the plate upwards towards its retracted position.

The lever (a double arm lever) (5) has a configuration as shown in Figs. 2, 6 and 7, and is placed, as mentioned above, in the cut-away portion (4b) of the top plate, situated in the brushing portion (3) of the brush.

Adjacent the cut-away portion (4b) is concave recess (4a) formed in the outer face of the top plate (1c) and designed for receiving manipulation arm (5a) of the lever

means (5) when in its non-operative position. When so received, the manipulation arm lies generally flush with the upper surface of top plate (1c), thus helping to prevent unintentional actuation of the double arm lever (5). The concave nature of the recess, which extends beyond the manipulation arm, also assists insertion of a finger to operate the arm.

In the illustrated embodiment, the journal pin (5c) is received in supports (4c) and (4d) and oriented at an angle to the longitudinal axis of the brush, so that the manipulation arm can be engaged and pulled more comfortably and easily by the finger of an operator gripping the handle (2). An alternative arrangement, with journal pin (5c) disposed laterally to the longitudinal direction of the brush is also possible.

Manipulation arm (5a) and biasing arm (5b) of the double arm lever extend from the journal pin (5c) to an extent adequate to provide sufficient leverage to enable the lever to be operated by finger power against the action of the springs, and for the combing members (7) thereby to be urged to protrude, in operation, to a pertinent predetermined height from the brush shell bottom face through the apertures.

In the illustrated embodiment, the rear face of arm (5b) is convex in form, so as to facilitate smooth sliding on the rear side of the combing plate (6) upon turning of the lever (5). Upon rotation the top face of the manipulation arm (5a) comes to abut the side wall (4e) of the cut away portion (4b) and the front end of the biasing arm (5b) pushes the combing plate (6) down to the lower extreme position as shown in Fig. 5. This is a stable position for the lever, with the upper surface of the manipulation arm abutting the stop member formed by the edge of recess 4a, and the flat rear surface resting on the

top of combing plate 6. The return action of the springs additionally assists in maintaining this stable brushing configuration by urging the flat portions of the combing plate and biasing arm towards each other.

After use of the brush, the operator pushes the manipulation arm 5a away from its restrained position (i.e. towards the left in Fig. 1), allowing the springs 9 to urge the combing plate 6 upwards to retract the combing members within the shell.

CLAIMS

1 A brush comprising a hollow shell accommodating a combing plate bearing a plurality of combing members on a front face thereof, the plate being selectively moveable between a brushing position in which the combing members project through corresponding apertures in the shell, and a retracted position in which they are at least substantially retracted within the shell, the plate being biased towards said retracted position by one or more compression springs disposed between said combing plate and the apertured wall of the shell, the brush further comprising a lever pivoted about a journal pin mounted in a cut-away portion of the shell adjacent the rear of said combing plate, the lever having two arms extending from the journal pin, said two arms being a manipulation arm extending outwardly of the shell, so as to be capable of being engaged and pivoted by an operator, and a biasing arm extending inwardly of the shell, arranged operatively to contact the rear of the combing plate and to bias the same towards said operative position upon rotation of the manually operable arm, the biasing arm having a flattened end portion which in operation is brought into abutment with a corresponding flat portion of the rear of the combing plate, when said plate is in said brushing position, to restrain the combing plate in said brushing position.

2 A brush according to Claim 1, wherein the portion of the biasing arm which contacts the combing plate in operation is generally convex in profile, so as to facilitate sliding of the arm over the rear surface of the plate.

3 A brush according to Claim 1 or Claim 2, wherein a stop member is provided on said shell and positioned so that the lever is brought into abutment therewith at a predetermined position on its rotational path corresponding to a desired degree of protrusion of the combing members from the shell.

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4 A brush according to any preceding Claim, arranged generally along a longitudinal axis, with a handle portion situated generally at one end thereof, and a brushing portion, containing the apertured shell wall and lever, towards the other end.

5 A brush according to Claim 4, wherein the manipulation arm extends from the journal pin on the far side thereof from the handle portion, so as to be readily operable by an operator using a finger of the same hand used to grip the handle.

6 A brush according to Claim 5, wherein the journal pin is oriented obliquely to the longitudinal axis.

7 A brush according to any preceding Claim, constructed so that when the combing plate is in the retracted position, the manipulation arm of the lever is received in a recess in the shell wall, so as to lie generally flush therewith.

8 A brush according to Claim 7, in which the recess extends beyond the manipulation arm to provide a hole for insertion of a finger in operation.

9 A brush substantially as hereinbefore described, with reference to and as shown in Figs. 1 to 7 of the drawings.
