FLUID DISPENSING HAIRBRUSH

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ABSTRACT
A fluid dispensing hairbrush with a regulation valve is disclosed for dispensing hair products onto a user's hair and/or scalp, particularly viscous fluids, such as gel, mousse, or thick conditioners, in a drizzling manner. The valve is adjustable for use with various fluids depending upon viscosity levels, as well as amounts of fluid to dispense. Use of the hairbrush prevents a user from unwanted contact on a user's hands with fluids. Many hair products can be sticky or cause dry skin on a user's hands, and in some cases, a user's skin may become irritated by a hair product that may not irritate the user's scalp. Further, use of a fluid dispensing hairbrush can expedite one's hair preparation routine substantially.
FLUID DISPENSING HAIRBRUSH

RELATED APPLICATION

[0001] This application claims priority on co-pending U.S. provisional patent application Ser. No. 60/753,355 filed on Dec. 22, 2005, which is incorporated herein by reference in its entirety.

TECHNICAL FIELD OF THE INVENTION

[0002] This invention relates to a fluid dispensing hairbrush, and particularly to a hairbrush with a regulation valve for releasing various fluids of varying levels of viscosity, such as gel, mousse, thick conditioners, as well as more watery leave-in conditioners, and the like onto a user’s hair and/or scalp.

BACKGROUND

[0003] Certain fluid dispensing hairbrushes are known in the art and are useful for releasing fluids on hair and/or scalp for dissemination by the hairbrush bristles. Fluid dispensing hairbrushes known in the art most commonly dispense less viscous fluids, such as leave-in conditioners, or even hair-spray that a user mists onto hair. Many hair products can be sticky or cause dry skin on a user’s hands, and in some cases, a user’s skin may become irritated by a hair product that may not irritate the user’s scalp. Use of a fluid dispensing hairbrush prevents a user’s hands from having direct contact with the hair product. Further, use of a fluid dispensing hairbrush can expedite one’s hair preparation routine substantially by eliminating steps of dispensing hair product or fluid onto hands, transferring fluid from hands to hair, disseminating fluid throughout hair and/or scalp with hands or hairbrush bristles, then rinsing hands and drying hands.

[0004] Some such hairbrushes dispense fluid by spraying or misting the fluid from the hairbrush head or handle. Other such hairbrushes release fluid from openings in bristles. Hairbrushes having an ON/OFF control for controlling release of fluid are also known in the art, as well as hairbrushes having a control with precut bores or grooves for releasing set amounts of fluid. However, a user is limited when setting such a precut bores or grooved valve system.

SUMMARY OF THE INVENTION

[0005] A fluid dispensing hairbrush with a regulation valve is disclosed for dispensing hair products onto a user’s hair and/or scalp, particularly viscous fluids, such as gel, mousse, or thick conditioners (as well as more watery conditioners), in a drizzling manner. The valve is adjustable over a variable range for use with various fluids depending upon viscosity levels, as well as amounts of fluid to dispense. Use of the hairbrush prevents a user from unwanted contact on a user’s hands with fluids. Many hair products can be sticky or cause dry skin on a user’s hands, and in some cases, a user’s skin may become irritated by a hair product that may not irritate the user’s scalp. Further, use of a fluid dispensing hairbrush can expedite one’s hair preparation routine substantially.

DESCRIPTION OF THE DRAWINGS

[0006] It is noted that the appended drawings illustrate only exemplary embodiments of the invention and are, therefore, not to be considered limiting of its scope, for the invention may admit to other equally effective embodiments.

[0007] FIG. 1 is a top view of the hairbrush with openings among the bristles.

[0008] FIG. 2 is a side view of the hairbrush with a regulation valve on the handle.

[0009] FIGS. 3A-3C are cross sections of the hairbrush handle showing the fluid reservoir and hoses connecting to the valve system.

[0010] FIG. 4 is an exploded cross section of the hairbrush handle showing a more detailed view of the valve system.

[0011] FIG. 5A is a cross section of the hairbrush showing a more detailed view of the second hose leading to the opening in the head.

[0012] FIG. 5B is a cross section of the hairbrush showing a more detailed view of the connection of the first and second hoses to the valve system and the second hose leading to the openings in the head.

DETAILED DESCRIPTION OF THE INVENTION

[0013] FIG. 1 shows a hairbrush 100 with a fluid regulation valve disclosed that is configured for dispensing fluids or hair products of varying viscosity levels through the at least three openings 109, 110, 111 in the head 107 of the hairbrush 100 onto a user's hair and/or scalp in a drizzling manner. While fluids of low viscosity levels, i.e. watery fluids, may be used with the hairbrush 100, such as leave-in conditioners, use of higher viscosity level fluids, i.e. thicker fluids, such as hair gels, mousse, or thicker conditioners is also contemplated. Once the fluid is dispersed, the user can spread the fluid using the bristles 108 of the hairbrush 100 in a brushing motion.

[0014] Use of the hairbrush 100 prevents a user from unwanted contact on a user's hands with fluids. Many hair products can be sticky or cause dry skin on a user's hands, and in some cases, a user's skin may become irritated by a hair product that may not irritate the user's scalp. Further, use of a fluid dispensing hairbrush can expedite one's hair preparation routine substantially by eliminating steps of dispensing hair product or fluid onto hands, transferring fluid from hands to hair, disseminating fluid throughout hair and/or scalp with hands or hairbrush bristles, then rinsing hands and drying hands.

[0015] Referring to the drawings, FIG. 1 shows an exemplary embodiment of the hairbrush 100 with a handle 101 having a removable base 102 for filling a fluid reservoir (not shown) with fluid located inside the handle 101. A loop or ring 103 at the base 102 of the hairbrush 100 is configured for hanging the hairbrush 100. A valve knob 104 on the handle 101 is useful for regulating the release of fluid, such as for various viscosity levels and amounts of fluids, released through a first opening 109, second opening 110, and third opening 111 consecutively. It is understood that the hairbrush 100 can have more or less than three openings.
Said openings 109, 110, 111 are located on the head 107 of the hairbrush 100 among the bristles 108. A trigger 105 activates the loading of fluid from the fluid reservoir to a fluid loading chamber located at region 106 of the handle 101. Subsequent activation of the trigger 105 pushes fluid from the fluid loading chamber out through the openings 109, 110, 111 in the head 107.

FIG. 2 shows a side view of a preferred embodiment of the hairbrush 100 with a handle 101 having a removable base 102 and a loop or ring 103 at the tip of the base 102. Also located on the handle 101 is a valve knob 104 and a trigger 105. It is understood that the hairbrush 100 can be various colors, sizes, and made of various materials, such as plastic, rubber, wood, or aluminum or the like. Once the trigger 105 is activated by a user, fluid is loaded into the fluid loading chamber for subsequent release through the first opening 109, second opening 110, and third opening 111 located on the head 107 of the hairbrush 100. Bristles 108 are located around the openings 109, 110, 111 on the head 107 of the hairbrush 100.

A preferred embodiment of the hairbrush operates by a user unscrewing the removable base 102, filling a fluid reservoir with a hair product or fluid, and screwing the removable base 102 back into the handle 101. Then the user presses and releases the trigger 105 once to pull the fluid into the fluid loading chamber. Upon the release of the first trigger 105 press, fluid is drawn into the fluid loading chamber. When the trigger 105 is pressed again, and for subsequent trigger presses until the fluid reservoir is empty, the fluid is pushed from the fluid loading chamber 106 out through the openings 109, 110, 111 in the head 107 of the hairbrush 100 via hoses while fluid continues to load from the fluid reservoir into the fluid loading chamber, described in greater detail hereafter.

FIGS. 3A-3C are cross sections of the hairbrush handle 101 of an exemplary embodiment with a removable base 102 having threading 302 for screwing/unscrewing the base 102. The fluid reservoir 301 is held in place in the hairbrush handle 101 between the base 102 and the gasket 327 when the base 102 is screwed on. A first hose 303 pulls fluid from a fluid reservoir 301 to a fluid loading chamber 406 when a trigger is pressed. A retaining cap 339 may be provided to keep a plunger 402 in place. A valve knob 104 is used to regulate an opening in a second hose 304, which is useful when dispensing fluids of various viscosity levels, as well as controlling the amount of fluid dispensed. The valve knob 104 connects to a flat unidirectional valve 306 with a wishbone shaped cutout to fit a fluid regulation post 308. Adjustment of the valve knob 104 manipulates the fluid passages to create a larger or smaller fluid passage as described below. A second flat unidirectional valve 306 is located at an end of a spring 307 opposite the handle end of the hairbrush 100. The spring 307 is compressed by the plunger 402 when the trigger is pressed. When the trigger is released the spring pushes the plunger 402 back to its original location and this movement back acts so as to pull fluid through a first hose 303 into the fluid loading chamber 406. Air is not released into the fluid reservoir 301 during the fluid loading process or the fluid pumping process due to the second flat unidirectional valve 306. Rather air is pushed out of the fluid loading chamber 406 through port 315 into the valve region and then out the second hose 304. Also, fluid is not released back into the fluid reservoir 301 during the fluid loading or fluid pumping processes.

FIG. 4 is an exploded cross section view of the hairbrush handle 101 of an exemplary embodiment wherein the mechanics of the valve system of the hairbrush 100 are more clearly illustrated. As seen from FIGS. 3A-3C and 4, pushing a trigger 105 causes a plunger 402 to press into a first end of a fluid loading chamber 406 (the spring 307 being compressed during this action). When the trigger 105 is released, fluid is drawn from a fluid reservoir (not shown) through a first hose 303 into a first end of a fluid loading chamber 406. Fluid is loaded into a fluid loading chamber 406 as the spring 307 expands and plunger 402 moves back to its original position. The second flat unidirectional valve 306 is located at the first end of the fluid loading chamber 406. The second flat unidirectional valve 306 allows fluid to pass from the fluid reservoir 301 into the fluid loading chamber 406. Subsequent pushes of the trigger 105 force fluid from the fluid loading chamber 406 through the first flat unidirectional valve 305 into the valve and then out a second hose 304 which leads to the openings in the head (not shown).

A valve knob 104 connects with a valve housing 403. At the bottom of the valve housing an o-ring 401 and the first flat unidirectional valve 305 are provided. A fluid passage 337 is provided within the valve housing 403. The fluid regulation post 308 is formed as part of the exterior of the fluid loading chamber 406 as shown. The fluid regulation post 308 extends upward from the fluid loading chamber 406 through the first flat unidirectional valve 305 into the fluid passage 337 of the valve housing 403. In operation, when the valve knob 104 is turned, the valve housing 403 also turns and the fluid regulation post 308 (which remains stationary) decreases or increases the inlet area of the fluid passage 337 of the valve housing 403. For more viscous fluids and/or releasing larger amounts, a larger inlet area of the fluid passage 337 is desirable, and for less viscous fluids and/or releasing smaller amounts of fluid, a smaller inlet area is optimum. Exemplary applications of the hair brush is for use with the dispensing of more viscous fluids, such as hair gels, mousse, or thick conditioner, etc. and less viscous fluids such leave-in conditioners, other water hair products, etc. The valve knob 104 is configured for turning to any angle desired by user to thus provide a continuously variable adjustment of the fluid flow, and does not have precut bores or grooves. In an exemplary embodiment, a minimum fluid flow may always be provided even when the valve knob is completely turned and in an alternative embodiment the valve passage and regulation post may be configured to block all fluid flow when the valve knob is completely turned. Releasing various fluids of varying levels of viscosity, such as gel, mousse, thick conditioners, as well as more watery leave-in conditioners, and the like is difficult without a regulation valve having a variable adjustment mechanism. Thus the valve knob that allows variable adjustment depending on fluid viscosity level, i.e. the valve would create a larger opening for a thicker fluid, and a smaller opening could be set via the valve for a more watery fluid is advantageous as compared to systems with preset bores or grooves. Dispensing a certain amount of fluid is also difficult without a regulation valve that allows a variable adjustment based on the amount of fluid desired.

FIG. 5A is a cross section of a preferred embodiment of the hairbrush 100, and particularly the hairbrush head 107, showing a first opening 109, second opening 110, and third opening 111 having branches from the second hose 304 leading to said openings 109, 110, and 111 for dispens-
ing fluid. It is understood that the hairbrush 100 can have more or less than three openings having corresponding hose branches for dispensing fluid from head 107. Adjustments are made via a valve knob depending upon the viscosity level of the fluid and/or the amount of fluid a user desires to dispense. As seen in FIG. 5A, the main portion 501 of the second hose 304 has a small first branch 502 leading to the first opening 109, a second branch 503 leading to the second opening 110, and a third branch 504 leading to the third opening 111. When fluid reaches these branches 502, 503, 504, it is dispensed through the openings 109, 110, 111 in a drizzling manner. The bristles 108 on the head 107 of the hairbrush 100 can be used to spread the fluid on the scalp and/or hair. Alternatively, single hose could traverse the head region having only one opening or having more than one opening.

[0022] FIG. 5B is a cross section of the hairbrush 100, illustrating the hose system of an exemplary embodiment of the hairbrush 100. The removable base 102 on the handle 101 for use in filling a fluid reservoir with fluid is shown. The base 102 has a ring 103 for use in hanging the hairbrush 100, which can be used for leverage when unscrewing/scREWing the base 102. When a trigger 105 is pushed, fluid is drawn from the fluid reservoir through a first hose 303 to a second hose 304. Fluid is directed to the main portion of the second hose 501 located in the head 107 before being dispensed through openings 109, 110, 111 via branches 502, 503, 504 in the second hose. While three openings and three branches of the second hose 304 are shown in FIG. 5B, it is understood that the hairbrush can comprise more or less than three openings and more or less than three branches of hose.

[0023] The hairbrush handle 101 of the hairbrush 100 may be constructed of two exterior housing pieces that snap together around the various pump mechanisms described above. Additionally one or more screws may be provided so as to further secure the exterior housing pieces.

[0024] Further modifications and alternative embodiments of this invention will be apparent to those skilled in the art in view of this description. It will be recognized, therefore, that the present invention is not limited by these example arrangements. Accordingly, this description is to be construed as illustrative only and is for the purpose of teaching those skilled in the art the manner of carrying out the invention. It is to be understood that the forms of the invention herein shown and described are to be taken as the presently preferred embodiments. Various changes may be made in the implementations and architectures. For example, equivalent elements may be substituted for those illustrated and described herein, and certain features of the invention may be utilized independently of the use of other features, all as would be apparent to one skilled in the art after having the benefit of this description of the invention.

What is claimed is:

1. A fluid dispensing hairbrush, comprising:
   a handle attached to a head having bristles, wherein the handle has a removable base;
   a plurality of openings on a face of the head;
   a fluid reservoir within the handle;
   a fluid regulation valve knob on the hairbrush configured to regulate variable release of fluid within a range of rotation of the knob from a slightly open position to a fully open position; and
   a trigger on the handle configured to activate loading of fluid from the fluid reservoir to a fluid loading chamber in the handle,
   wherein activation of the trigger pushes fluid from the fluid loading chamber through the openings on the head when activated with a loaded fluid loading chamber.
2. The hairbrush of claim 1, wherein the valve knob is rotatable through a plurality of degrees to adjust an inlet area of a fluid passage.
3. The hairbrush of claim 1, wherein the trigger is activated in a sliding movement.
4. The hairbrush of claim 1, wherein the trigger is activated in a direction parallel with the handle.
5. The hairbrush of claim 3, further comprising a ring at the base of the handle configured to hang the hairbrush.
6. The hairbrush of claim 3, wherein the valve knob is configured to allow variable release of fluids having a consistency similar to hair gel.
7. The hairbrush of claim 3, wherein the valve knob is configured to allow variable release of fluids having a consistency similar to hair mouse.
8. The hairbrush of claim 3, wherein the valve knob is configured to allow variable release of fluids having a consistency similar to hair conditioner.
9. The hairbrush of claim 3, wherein the valve knob is configured to allow variable release of fluids having a consistency similar to hair spray.
10. The hairbrush of claim 3, wherein the removable base has threading configured for screwing and unscrewing the removable base.
11. The hairbrush of claim 10, wherein the fluid reservoir is held in place in the handle between the removable base and a gasket when the base is screwed on.
12. The hairbrush of claim 11, further comprising a first hose configured to pull fluid from the fluid reservoir to the fluid loading chamber when the trigger is activated.
13. The hairbrush of claim 12, further comprising a retaining cap to keep a plunger in place.
14. The hairbrush of claim 13, further comprising a second hose attached to the fluid regulation valve.
15. The hairbrush of claim 14, wherein the fluid regulation valve knob fluid is coupled to a fluid regulation valve which comprises a first flat unidirectional valve having a wishbone shaped cut out to house a regulation post.
16. The hairbrush of claim 15, further comprising a second flat unidirectional valve at an end of a spring opposite the handle end of the hairbrush, wherein the spring is compressed by the plunger when the trigger is pressed.
17. The hairbrush of claim 16, wherein the spring pushes the plunger to its original location to pull fluid through a first hose into the fluid loading chamber when the trigger is released, pushing air out of the fluid loading chamber through a port into a valve region and out of a second hose with branches leading to the openings in the head.
18. A fluid dispensing hairbrush, comprising:
   a handle with a head having a face with bristles;
   at least one opening on the face;
   a fluid regulation valve system configured to variably regulate release of fluid from a slightly open position to a fully open position, having a valve housing;
   an O-ring at a bottom of the valve housing connected to a first flat unidirectional valve with a wishbone shaped cut out for fitting a fluid regulation post;
a second flat unidirectional valve located at an end of a spring opposite the handle end of the hairbrush;
a fluid passage within the valve housing; and
a fluid regulation post attached to a fluid regulation valve knob extending upward from a fluid loading chamber
through the first flat unidirectional valve in a fluid passage of the valve housing, the valve housing configured to turn as the valve knob is turned.

19. The hairbrush of claim 18, wherein the fluid regulation post remains stationary when the valve knob is rotated.

20. The hairbrush of claim 19, wherein the first flat unidirectional valve rotates when the valve knob is rotated
decreasing or increasing an inlet area of a fluid passage of the valve housing.

21. A fluid dispensing hairbrush, comprising:
a handle attached to a head having bristles;
at least one opening on a face of the head;
a fluid regulation valve knob on the handle configured to regulate variable release of fluid within a range of rotation of the knob from a slightly open position to a fully open position; and
a trigger on the handle configured to manually activate loading of fluid;
wherein the trigger pushes loaded fluid through the at least one opening on the head when the trigger is activated.

22. The hairbrush of claim 21, wherein the handle has a removable base and a fluid reservoir.

23. The hairbrush of claim 22, wherein activating the trigger loads fluid from the fluid reservoir to a fluid loading chamber in the handle.

24. The hairbrush of claim 23, wherein activating the trigger with a loaded fluid loading chamber pushes loaded fluid through the at least one opening on the head.

25. The hairbrush of claim 24, wherein the fluid regulation valve knob is coupled to a fluid regulation valve system which comprises a first flat unidirectional valve having a wishbone shaped cut out to house a regulation post.

26. The hairbrush of claim 25, further comprising a second flat unidirectional valve at an end of a spring opposite the handle end of the hairbrush, wherein the spring is compressed by a plunger when the trigger is pressed.

27. The hairbrush of claim 26, wherein the spring pushes the plunger to its original location to pull fluid through a first hose into the fluid loading chamber when the trigger is released, pushing air out of the fluid loading chamber through a port into a valve region and out of a second hose.

28. The hairbrush of claim 27, further comprising a plurality of the openings, wherein the second hose has hose branches leading to the openings in the head.