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(54) Title: FLUID DISPENSING BRUSH

(57) Abstract: A dispensing brush for dispensing a predetermined fluid on a head of hair. The dispensing brush includes a reservoir located within the brush head for retention of the predetermined fluid. The reservoir is in fluid communication with openings located on the top surface of the brush. The openings are centrally aligned on the top surface of the brush, and are located among the bristles of the brush.



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## FLUID DISPENSING BRUSH

Background of the Invention

## 1. Field of the Invention

5 The present invention relates to a dispensing brush. More specifically, the present invention relates to a dispensing brush having a reservoir for retaining a predetermined fluid, such as a hair-coloring product. The predetermined fluid is dispensed through dispenser apertures.

## 10 2. Description of the Prior Art

The idea of applying a viscous liquid to the hair or scalp is not new. Many coloring products, hair gels, and conditioners are used to manage or style a head of hair. Dispersal of the product evenly over the hair is of concern during application to the hair. Many known applicator devices do not give the control necessary to evenly disperse a liquid while styling hair. Other devices may disperse liquid evenly, but do so in limited amounts such that multiple applications may be needed. Further, some devices are limited to dispersal of liquid having viscosity within a narrow range.

25 For example, Thirupathi (U.S. Patent No. 5,927,290) teaches dispersing liquids onto the hair by way of a spray pump and nozzle incorporated within a hairbrush. However spray nozzles, such as those

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disclosed therein, accommodate liquids of moderate viscosity, rather than more viscous fluids that may be needed in hair coloring, for example. Furthermore, a spray nozzle may cover an area larger than required, leading to excess use of the liquid, and a lack of control over dispersal.

Another dispensing brush is disclosed in Velardi (U.S. Patent No. 3,868,188). This disclosure suggests a toothbrush in which liquid is dispensed through bristles. However, the bristles of this design may become clogged, leading to uneven dispersal of the fluid. Also, since the fluid flow is manually controlled, this device does not easily lend itself to application of a hair product. While brushes may have been developed that dispense fluids, the shortcomings of uneven disbursement of the fluids and unnecessary manipulation of the brush by the user have not been adequately solved.

#### Summary of the Invention

To ameliorate the noted concerns of known dispenser brushes, it is an object of the present invention to provide a novel liquid dispensing hairbrush that is easy to use and control, and may be used with a variety of fluids. The brush includes a hollow, refillable reservoir for storing the fluid to be dispersed, and a plurality of dispersal openings communicating with the reservoir. The device of the present invention evenly disperses a predetermined fluid onto a head of hair or a scalp without need of manual regulation by the user. The hairbrush is designed to use gravity in the dispensing process rather than the pumps or controls seen in known devices.

A predetermined fluid, such as a hair colorant, is preferably added to the device through a fill aperture in one end of the brush. The fill aperture

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is in fluid communication with the brush reservoir. Once the reservoir is filled, the aperture may be closed with a plug or other stop means thereby retaining the fluid in the reservoir. The brush further includes a top surface and a bottom surface. The top surface preferably includes a plurality bristles extending normal to the top surface, and a plurality of dispenser openings. The dispenser openings being in fluid communication with the brush reservoir. The dimensions and alignment of the dispenser openings in the top of the brush allow the user to easily control even dispersal of fluid on a head of hair. The following description will explain the invention in more detail.

#### Description of the Drawings

FIGURE 1 is a perspective view of a dispensing brush according to the present invention.

FIGURE 2 is a top plain view of the dispensing brush seen in Figure 1.

FIGURE 3 is a partially exploded, longitudinal section of the dispensing brush seen in Figures 1 and 2, and taken along line 3 - 3 of Figure 2.

FIGURE 4 is an end view of the dispensing brush seen in Figures 1 - 3.

FIGURE 5 shows the dispensing brush of Figures 1 - 4 in use with on a head of hair.

FIGURE 6 shows the dispensing brush of figures 1 - 5 and a head of hair after application of fluid by the dispensing brush.

FIGURE 7 is a perspective view of an alternate embodiment of a dispensing brush according to the present invention.

#### Detailed Description

Although the disclosure hereof is detailed and exact to enable those skilled in the art to practice the invention, the physical embodiments herein disclosed

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merely exemplify the invention that may be embodied in other specific structure. While the preferred embodiment has been described, the details may be changed without departing from the invention, which is defined by the  
5 claims.

Referring to Figure 1, a perspective view of a fluid dispensing brush 10 is shown. The dispensing brush 10 includes a handle portion 12 and a head portion 14, and may be fabricated from any suitable material such as  
10 plastic, metal, wood, or other rigid material. The handle portion 12 may be of any shape that allows for easy manual gripping of the dispensing brush 10 and includes a proximal end 16 and a distal end 18. The head portion 14 of the dispensing brush 10 has a first end 15  
15 and a second end 17. The head portion 14 of the dispensing brush 10 is connected to the proximal end 16 of the handle portion 12 at the first end 15 of the head portion 14. The head portion 14 further includes at least a top surface 20 and a bottom surface 19, with the  
20 top surface 20 holding a plurality of bristles 22 and further including a plurality of dispenser openings 24. The handle portion 12 and the head portion 14 as shown are fabricated from one piece of material, but it is to be understood that the dispensing brush 10 may be  
25 fabricated from multiple parts, if desired.

As seen particularly in the view of Figure 4, a fill aperture 26 is preferably located at the second end 17 of head portion 14. A plug 28 removably engages the aperture 26, thereby allowing a predetermined fluid,  
30 such as a hair coloring fluid, to be placed and retained in a reservoir 30 (shown in Fig. 3) within the head portion 14. The reservoir 30 is preferably in fluid communication with the dispenser openings 24 and the fill aperture 26.

35 Figure 2 shows a top plan view of the

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dispensing brush 10. As seen, the dispenser openings 24 are preferably located on the top surface 20 of the head portion 14 and are centrally situated between multiple linear rows of bristles 22, with the linear rows of bristles 22 being aligned along the central, longitudinal axis of the dispensing brush 10. The dispenser openings 24 are preferably located centrally on the top surface 20 of the head portion 14, and between the linear rows of bristles 22 to thereby cause the bristles 22 to control the alignment of the hair before and after application of a fluid and cause even placement of fluid by the dispenser openings 24. The dispenser openings 24 are preferably aligned in a linear configuration to aid in even dispersal of a predetermined fluid 38. The dispenser openings 24 include an inner diameter 24A. The inner diameter 24A is preferably at least approximately 0.25 inches (0.635 cm) in diameter to allow the predetermined fluid to flow from the reservoir 30 and through the dispenser openings 24. The number of rows of the bristles 22 on either side of the dispenser openings 24 is not critical to the scope of the invention and may vary according to user preference.

In Figure 3, a section view of the dispensing brush 10 is shown as taken along a central, longitudinal axis. As seen, dispenser openings 24 are preferably in fluid communication with the reservoir 30. The fill aperture 26, which is also in fluid communication with the reservoir 30, includes a removable plug 28 for retention of fluid (not shown in this view) in the reservoir 30. While Fig. 3 illustrates the plug 28 as being threaded, any plug 28 that will removably engage and seal the aperture 26 will suffice, such as that having an interference fit.

As further shown particularly in Figure 3, the dispenser openings 24 each include a respective

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longitudinally extending collar portion 40, which is elevated above the top surface 20 of the head portion 14. While each of the dispenser openings 24 is shown having a collar portion 40, it is to be understood that the dispensing brush 10 may include at least one dispenser opening without the collar portion 40. The respective collar portions 40 of the dispenser openings 24 are preferably elevated a predetermined height above the top surface 20 of the head portion 14. The predetermined height is preferably approximately 0.125 inches (0.3175 cm), although it is to be understood that the present invention may be practiced using greater or lesser heights, depending on user preference. For example, the height of the collar portions 40 above the top surface 20 could be greater than 0.125 inches (0.3175 cm), but a less viscous fluid may not dispense evenly if the height is much less than 0.125 inches (0.3175 cm). The collar portions 40 function to inhibit uncontrolled liquid dispersal from the dispenser openings 24. Further, the entire height of the dispenser openings 24, from the reservoir 30 to the top of a respective collar portion 40 is preferably 0.25 inches (0.635 cm). This height allows adequate control of a predetermined fluid during passage from the reservoir 30, to exit onto a head of hair (See Figs. 5 and 6). Again, although 0.25 inches (0.635 cm) is preferable, the height may be decreased or increased according to the viscosity of the fluid used, or user preference.

Figure 4 shows an end view of the dispensing brush 10 viewed from the second end 17 of the head portion 14. As seen, the reservoir 30 is aligned with the dispenser openings 24 along the center of the dispensing brush 10. The dispenser openings 24 are symmetrically located between the rows of the multiple linear rows of the bristles 22. Likewise, the fill

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aperture 26 is also aligned with the reservoir 30 for facile filling with a predetermined fluid (not shown). As seen, the fill aperture 26 preferably includes a diameter 26A of at least approximately 0.25 inches (0.635  
5 cm) in diameter for a viscous fluid to properly enter the reservoir 30. The fill aperture diameter 26A may be more than approximately 0.25 inches (0.635 cm) in diameter, but it is not recommended for the aperture diameter 26A to be much less than approximately 0.25 inches (0.635 cm)  
10 in diameter for applicable flow of a viscous fluid.

Referring now to Figure 5 and Figure 6, the dispensing brush 10 is shown in use to apply a predetermined fluid 38 to a head of hair 36. The dispensing brush 10 is brought through the hair 36 with  
15 the bristles 22 facing towards the hair 36. As the bristles 22 of the dispensing brush 10 pass through the hair 36, the predetermined fluid 38 is dispensed through the dispenser openings 24 and onto the hair 36. After the dispensing brush 10 is pulled through the hair 36,  
20 the fluid 38 is left behind on the hair 36 (See Fig. 6). The design of the bristles 22 around the openings 24 and the height of the collar portions 40 above the top surface 20 allow the fluid 38 to be evenly dispersed over the head of hair 36, as is shown by the streaks of the  
25 fluid 38 in Fig. 6. The head of hair 36 is evenly treated with the fluid 38, with relative ease on the behalf of the user.

Figure 7 shows a perspective view of an alternative embodiment of the present invention wherein  
30 the fill aperture 26 is located on the bottom surface 19 of head portion 14. As in the previous embodiment, the plug 28 preferably removably engages the aperture 26 with the reservoir 30 in fluid communication with the dispenser openings 24 and the fill aperture 26.

35 While the above description is illustrative of

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the invention, numerous modifications to the invention may occur without changing the scope of the invention. For instance, the shape of the handle and head of the brush may be changed while still being within the bounds  
5 of the invention. Likewise, the length and width of the brush may be modified, and the number of bristles and openings, and the size of the fluid reservoir may be modified as deemed necessary.

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What is claimed is:

1. A dispensing brush comprising:
  - a handle portion, said handle portion including a proximal end and a distal end,
  - 5 a head portion, said head portion including a first end and an oppositely disposed second end, said first end of said head portion connected to said proximal end of said handle portion,
  - said head portion having a top surface and a
  - 10 bottom surface;
  - a plurality of bristles laterally extending from the top surface of said head portion,
  - a fluid reservoir, said fluid reservoir located in said head portion,
  - 15 a fill aperture, said aperture being in fluid communication with said reservoir,
  - a plug removably engaging said fill aperture, said top surface of said head portion including a plurality of dispenser openings, said
  - 20 dispenser openings being in fluid communication with said fluid reservoir.
2. The dispensing brush of claim 1 wherein said fill aperture is located in said second end of said head portion.
- 25 3. The dispensing brush of claim 1 wherein said fill aperture is located on said bottom surface of said head portion
4. The dispensing brush of claim 1 wherein said plurality of bristles is arranged in multiple linear
- 30 patterns.
5. The dispensing brush of claim 4, wherein said plurality of dispenser openings is longitudinally aligned along a central axis of said top surface of said head portion, said openings being centrally located
- 35 between said multiple linear patterns of bristles.

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6. The dispensing brush of claim 1, wherein said fill aperture has a diameter of at least 0.25 inches (0.635 cm).

5 7. The dispensing brush of claim 1 wherein at least one of said plurality of dispenser openings includes a surrounding collar, said collar elevated a predetermined height above said top surface of said head portion.

10 8. The dispensing brush of claim 7, wherein said predetermined height is at least 0.125 inches (0.3175 cm).

9. The dispensing brush of claim 4, wherein said reservoir is adapted to receive a fluid through said fill aperture.

15 10. The dispensing brush of claim 5, wherein said plurality of dispenser openings is adapted to dispense a fluid from said reservoir.

11. A method for applying a fluid to a head of hair consisting of the steps:

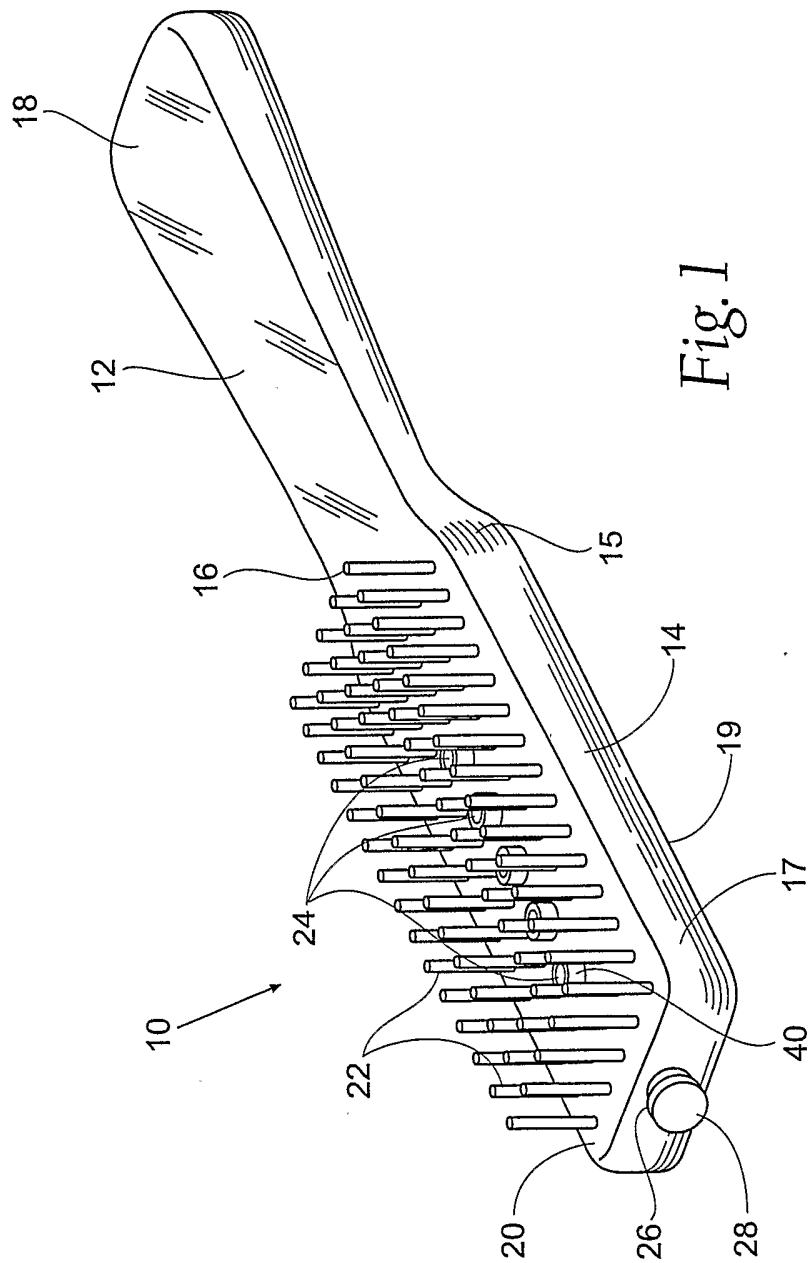
20 providing a head of hair;

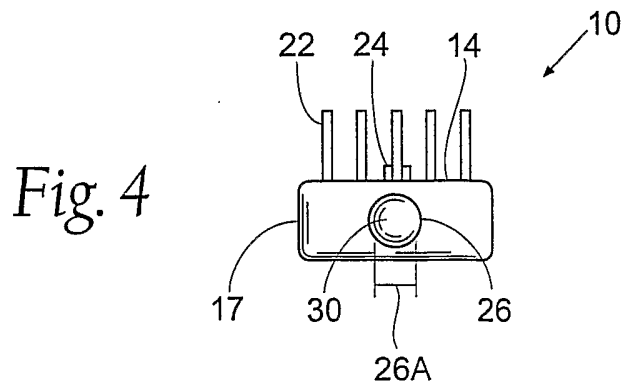
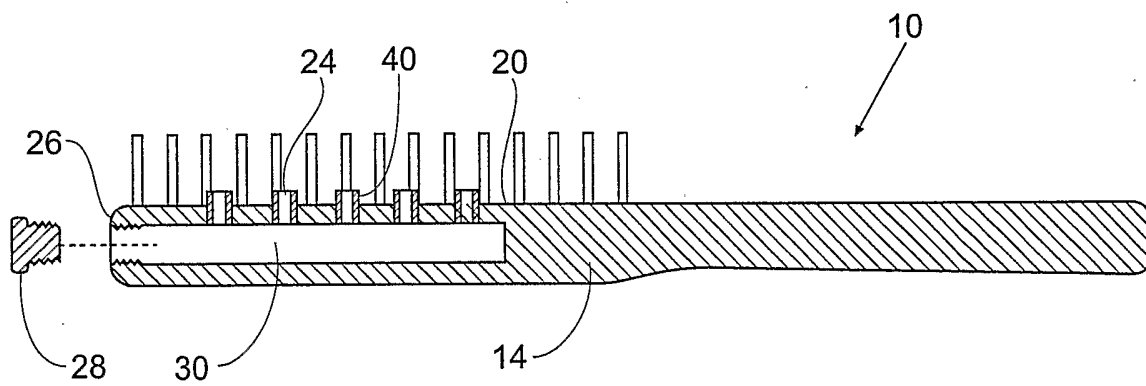
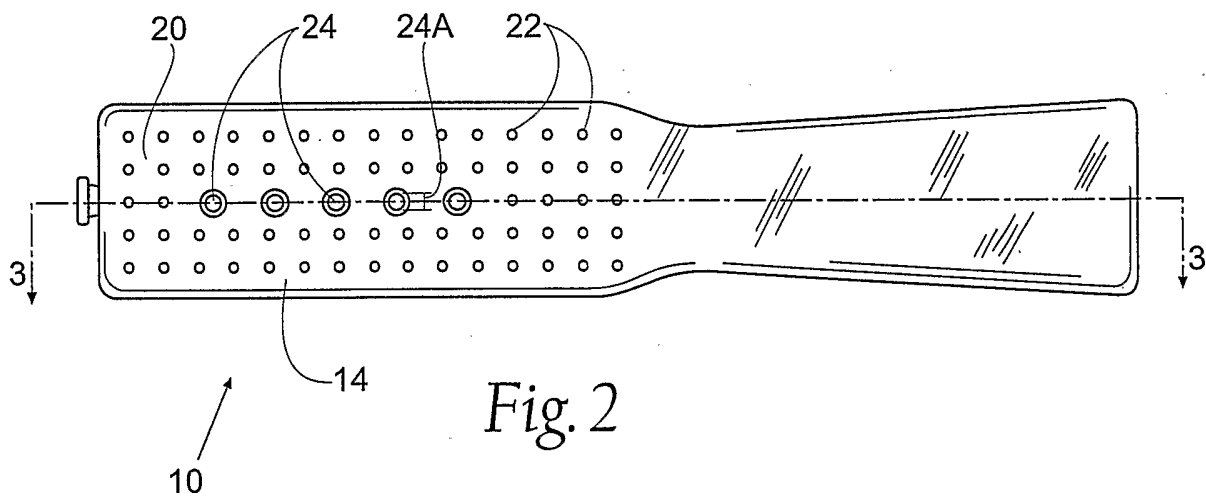
providing a dispenser brush, said brush including a handle portion and a head portion; said head portion including a first end and a second end; said first end of said head portion connected proximally to  
25 said handle portion; said head portion having a top surface and a bottom surface, a plurality of bristles laterally extending from said top surface, a fluid reservoir located in said head portion, and a fill aperture; said fill aperture being in fluid communication  
30 with said reservoir, a plug removably engaging said fill aperture, said top surface of said head including a plurality of openings, said openings being in fluid communication with said reservoir;

filling the reservoir of the dispensing brush  
35 with a predetermined fluid; and

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passing said bristles through said head of hair, thereby dispensing said predetermined fluid from the reservoir through said dispenser openings onto the head of hair.





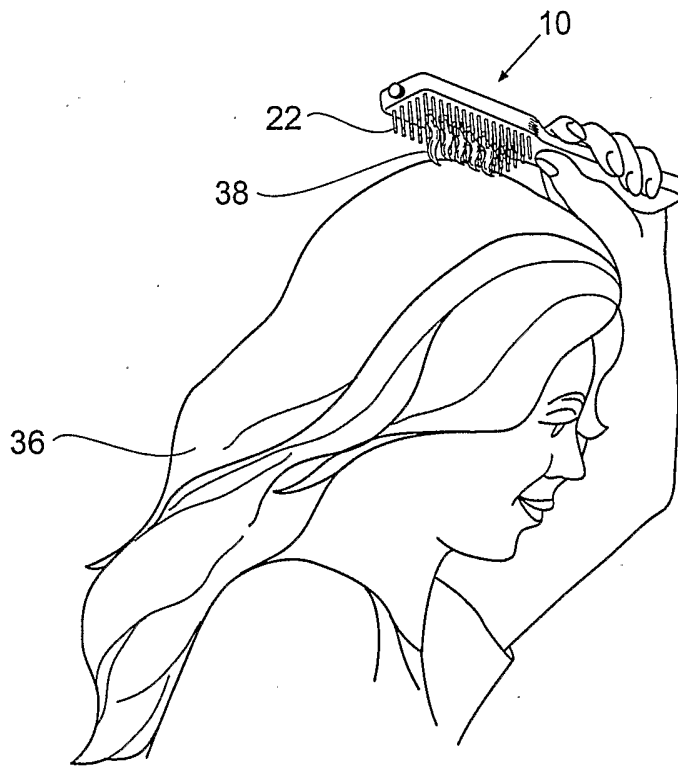


Fig. 5

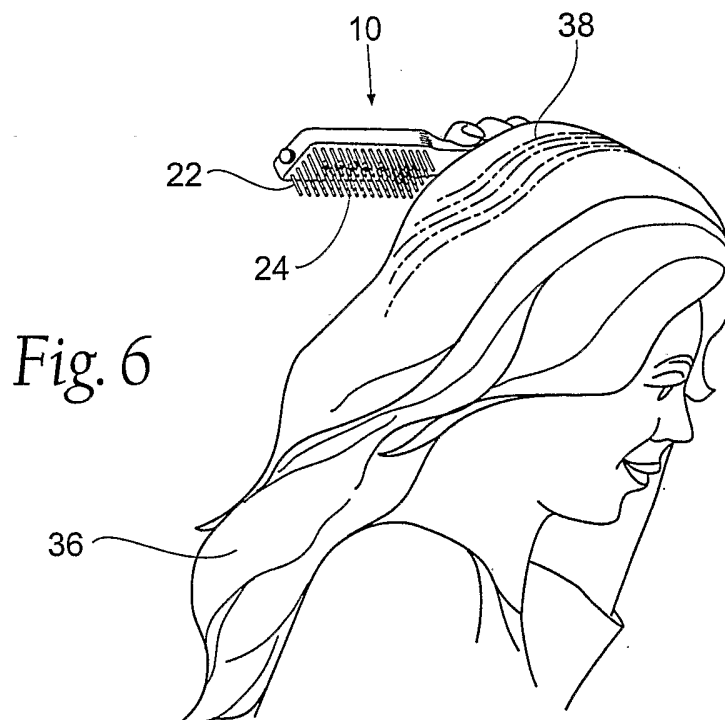


Fig. 6

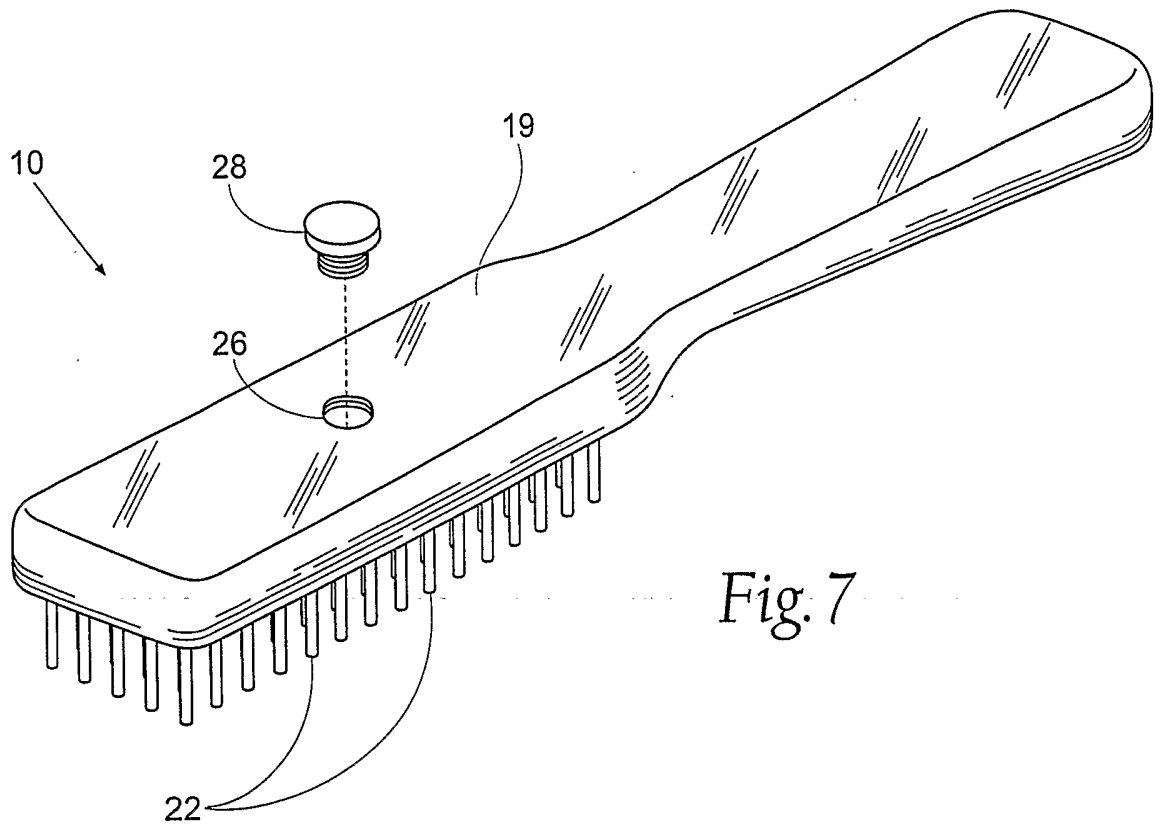


Fig. 7