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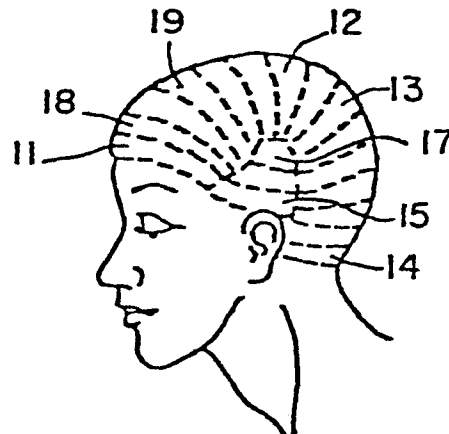
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Method of selective hair coloring and coloring comb for practicing method.

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A method of coloring selected hair shafts with a hair treating material, while leaving adjacent hair shafts untreated, in which hair treating material is laid down simultaneously onto a plurality of generally parallel spaced and non-overlapping areas (11-19) running along the lay of the hair; a method of touching up hair which has been so treated, after the roots have grown out; and a coloring comb (35) adapted to use in the methode, saide coloring comb having narrow dispensing gullets (75) separated by plural combing teeth (74).



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METHOD OF SELECTIVE HAIR COLORING AND COLORING  
COMB FOR PRACTICING METHOD

GLOSSARY

For the purpose of this disclosure, but  
consistant with the usage in the art, the following  
terms are defined:

5       Coloring: To lighten, as by bleach, or to  
darken, as by dye.

Strand: A bundle of individual hair shafts, all  
of which have roots in the same closed area of the scalp,  
with substantially every hair in that closed area included  
in the strand.

10       Laminar Sheaf: A special case of a strand in  
which the roots of the individual hair shafts are all  
located in a small and generally rectangular area of the  
scalp (1 to 5 centimeters wide by 6 to 12 centimeters long  
would be typical but not limiting) and in which all the  
15 hair of the laminar sheaf is combed out parallel and held  
under tension, as shown in Figures 3 and 4, so that the  
laminar sheaf along its length approximately retains its  
original width at the scalp but decreases in thickness from  
its original thickness at the scalp. The laminar sheaf is  
20 dense and not open; it substantially obstructs vision  
therethrough.

Parting: As a verb, the act of dividing the hair  
into portions constituting strands as defined herein. As a  
noun, often used in the art to describe a strand so formed.  
25 A parting can be a laminar sheaf, or it can be a coiled up  
bun, etc.

Face: The approximately planar exposed portions  
of the laminar sheaf. There is an inner face, which  
consists of those hair shafts which are normally closer to  
30 the scalp when the hair is in repose, and a corresponding  
outer face. Generally, when the hair stylist holds a sheaf  
from the lower part of the hair, the outer face is the  
nearer and visable one. But when holding up a sheaf of  
hear near the crown, the inner face may be the nearer and  
35 visable one. Either face may be the site of selective  
coloring.

Hair Treating Material: material which will color hair. It may be a solution, a viscous liquid, a thixotropic liquid or a gel.

BACKGROUND OF INVENTION

AND

SYNOPSIS

During our bicentennial year, about 43 million  
5 visits were made by clients to beauty shops in the United States. A substantial number of these visits involved changing the color of the client's hair.

Thus, the coloring of hair is an important volume business, and it is estimated that the hair dye industry  
10 grosses 280 million dollars a year.

While it is relatively easy to change the color of the hair, as a whole, by dyeing to make it darker, or by bleaching to lighten it, the result of only dyeing or only bleaching may be disappointing. The hair so treated tends  
15 to have an uninteresting uniform color. It is customary to follow dyeing or bleaching operation with another step, in which selected strands of hair are further treated so that their color will change and so that these selected strands will stand out against the background provided by the  
20 remainder of the hair. Similarly, selected strands of hair of a person's natural hair can be treated.

Treatment of selected strands of hair to change the color is called streaking if the selected strands are lightened, or reverse streaking if they are darkened.  
25 Other terms such as frosting and tipping are related and will be discussed below. Streaking can produce an appearance similar to that of highlights glistening on the hair, and is much desired. Reverse streaking can give an appearance of texture to dull hair. It can also be used  
30 when the client wishes to return to her or his own natural shade. In this case, as the roots grow out, the previously bleached hair can be reverse streaked to make less apparent the difference between the different portions of hair.

The task of coloring selected strands of hair is  
35 difficult for the hair stylist, since many strands of hair all over the head must be individually treated with

appropriate treating material, while guarding the general mass of hair from contact with the treating material, and it is arduous for the client because of the length of time involved.

5               Indeed, in the frosting cap method, the procedure is actually painful to the client. In this method the hair is first combed, then covered with a thin film of plastic and finally covered with a heavy rubber cap, which is provided with a large number of small holes. The hair  
10   stylist uses a smooth crochet hook to punch through the plastic film at each hole in the rubber cap, snares the hair which lies underneath the hole and fishes it out with the hook. Considerable force must be used to fish out the selected strands of hair because of the adjacency of other  
15   strands, and the confinement of the plastic film and rubber cap. After the selected strands are pulled out and exposed, outside of the rubber cap, they are treated with treating material, which is kept from reaching the scalp and the remaining hair by the tight fit of the rubber cap  
20   and plastic film.

              The frosting cap method is popular and has certain advantages. There is no contact of the scalp with the chemicals used, and the treated hair is well segregated from the hair which is not to be treated. However, besides  
25   the painful aspects mentioned above, there is much breakage of hair, the hair stylist has limited control of which particular strands of hair are pulled out, and the rubber cap must stay in place for the wearisome time of up to an hour.

30             Another method, the "Dixie Cup" method, utilizes cups. Selected strands of hair are pulled through a small hole in the bottom of the cup into the interior thereof, the selected strands are then treated and packed into the cup. The method permits greater control by the hair  
35   stylist of the choice of which particular strands of hair are to be treated than does the frosting cap method. However the size of the cups dictates that the different treated strands must be widely spaced, which is a disadvantage. This method is time consuming since each cup

must be individually handled. It is difficult to manipulate short hair into the cup. The Dixie Cup method has not gained great popularity.

5 In the foil method of coloring hair, the hair stylist isolates a strand of hair from the remaining hair, and lays it over a piece of foil which is butted up against the scalp, adjacent the roots of the isolated strand. The isolated strand is then treated with treating material and the foil is folded around it to act as a barrier against  
10 migration of the treating material. It is difficult for the hair stylist using this method to follow the progress of the treatment since the hair being treated is hidden. When streaking, some of the hair is sometimes overbleached.

Another method is the weaving comb method.  
15 Considering the manipulations required of the hair stylist, this method is closest in approach to, although distinct from, the instant invention.

The weaving comb method is well described in American Hairdresser Salon Owner, Volume 100, Number 3,  
20 March 1977, at page 76. Note particularly illustration 10. Briefly, the method uses a weaving comb, which has gullets to two depths between its teeth. When the comb is used, it acts like the headles of a loom to separate the hair being combed into an upper and lower flight, with a shed between,  
25 and with the upper flight flowing through the comb adjacent the spine of the comb and the lower flight flowing through the comb closer to the tips of the teeth. Treating material is placed on the spine of the comb, adjacent the teeth. When the hair is then combed with the weaving comb,  
30 some of the treating material transfers to the hair shafts of the upper flight while the hair shafts of the lower flight are not touched by the treating material because of the separation provided by the shed. This method has the advantage of applying the treating material to the hair  
35 being combed during a single stroke of the weaving comb. However, considerable time is taken to prepare a parting of hair for the weaving comb, and the comb must be reloaded with treating material for each stroke.

The instant invention differs from the other

methods of selectively applying treating material in that much less handling of the hair is required, as will be seen from the following synopsis.

5 The hair is initially divided into partings and each parting is sequentially treated. If desired, partings can be isolated from other partings by barrier material. There may be, typically, about twenty partings. Each parting is combed out into a laminar sheaf, as defined above. A special coloring comb is run through the laminar  
10 sheaf only once, to deposit the treating material in a controlled manner on spaced selected hair shafts of the outer face of said laminar sheaf, while the intercalated hair shafts of the outer face of said sheaf are not treated. The special coloring comb is so constructed as to  
15 clearly delineate the treated areas from the intercalated untreated areas.

The just described treatment of one parting proceeds, seriatim, in a systematic manner, as determined by the desired style, usually from the nape upward. If  
20 desired, each parting, when treated, may be separated with barrier material so that treating material does not transfer between adjacent partings.

Because the handling of each parting involves only three steps, namely conventional combing, one stroke  
25 with the special dispensing comb, and optional barrier application, each parting can be handled in less than a minute, and the entire head of hair can be treated in about twenty minutes. This compares very favorably with the amount of time required of the hair stylist by other  
30 methods.

#### BRIEF DESCRIPTION OF FIGURES OF THE DRAWING

Figure 1 shows the areas of the scalp, for a particular hair style, which are the origins of the hair partings for that style.

35 Figure 2 shows, in an "exploded" expository manner, some of the possible hair partings which correspond to the areas shown in Figure 1.

Figure 3, is a side view, showing how a particular parting of hair, as the back of the head, near

the occiput, is manipulated.

Figure 4 is a view from the side opposite that seen in Figure 3, showing how a parting on the side of the head above the ear is manipulated.

5        Figure 5 is a partly exploded view of one style of coloring comb adapted to be used in the invention, showing the container for the treating solution, the handle-pump, and the comb-head.

10       Figure 6 is a cross section of the handle-pump portion of the coloring comb of Figure 5, taken on the section 6-6.

Figure 7 is a cross section of the handle-pump portion of the coloring comb of Figure 5, taken on the section 7-7.

15       Figure 8 is a cross section of the handle-pump portion of the coloring comb of Figure 5, taken on the section 8-8.

Figure 9 is an end view of one of the duck-bill valves used in the pump.

#### DETAILED DESCRIPTION

20       As a preliminary step it is necessary to determine, by discussion between the client and the hair stylist, what style of hair is to be achieved, for the coloring must be applied in a manner dependent on the style. The hair will be brushed and draped in different  
25       directions for different styles, and the color must be applied so as to show properly when the hair is brushed in the particular direction dictated by the chosen style.

      The desired hair style determines the partings which will be made in order to color the hair. The  
30       partings can be visualized by reference to Figure 1, which illustrates the areas of the skull corresponding to one possible scheme of partings. A series of fifteen generally parallel areas run from the brow, at 11, past the crown at 12 and the occiput at 13 to the nape of 14. The area above  
35       the ear is divided into areas 15 to 17. The areas shown in Figure 1 can be described as arranged generally horizontally. Another hair style might require areas which are arranged generally vertically, with the areas proceeding

around the skull from one side around the back to the other side.

Figure 2 illustrates how hair partings relate to the areas of Figure 1. Some of these hair partings, namely, 21, 24A, 24B and 26 are depicted in a striped manner to indicate the individual hair shafts of a parting, while the other hair partings are depicted only by their outlines, in order to avoid confusion. It will be seen that the area 11 corresponds to the single partings 21, the area 18 corresponds to two partings 22A and 22B and the area 19 corresponds to the three partings 23A, 23B and 23C. The partings of Figure 2 are not intended to accurately reflect actual partings, but are intended to be expository. The reason why an area such as 19 corresponds to three partings rather than to one paring will be apparent by considering how the partings are manipulated. This is illustrated in Figures 3 and 4.

Figure 3 illustrates how a parting, which corresponds approximately to parting 24A of Figure 2, is drawn out into a laminar sheaf 31 running between the scalp and the hair stylist's left hand and fingers 32. In order to obtain access to the hair of laminar sheaf 31, the normally overlying hair has been piled up atop the head into a bun 33 and the bun is held in place temporarily by clips 34. Just before the moment depicted in Figure 3, the hair stylist had selected the parting and combed it out with a conventional comb so that the hair shafts became parallel, to form the laminar sheaf 31. The thickness of this sheaf at the hair stylists hands and fingers is very slight, while the thickness increases toward the scalp to a value which would typically be between 1 and 5 centimeters. The width of the laminar sheaf is limited by the length of the hair stylists fingers, unless the hair stylist uses a clamping tool which has a clamping face longer than the fingers, and is limited by the length of the coloring comb head, which will be described below. A typical width would be between 6 and 12 centimeters.

As illustrated in Figure 3, the hair stylist has the previously combed laminar sheaf 31 in a state of



tension and is drawing the coloring comb 35 in the direction 36 through the hair for a single stroke. During this stroke the coloring comb 35 lays down on the top face of laminar sheaf 31 a series of spaced deposits of hair treating material, running along the length and lay of the hair, said deposits being separated by spaces whereat no treating material is deposited.

The hair treating material deposited on the upper face of laminar sheaf 31 is compounded so as to lighten or darken the hair, and is also compounded so that it sinks locally into the hair and acts thereon without migrating away sufficiently to close up or intrude on the desired spaces between the deposits. A preferred way to accomplish this result is to incorporate into the hair treating material a thixotropic agent, which will permit the hair treating material to act for a few seconds as a liquid, after it has been subjected to high sheering forces while being deposited, and then, when the sheering forces are removed, permits the hair treating material, which by that time has penetrated locally into the hair, to solidify and stay put.

If the hair treating material is put down so as to color tiny isolated strands of hair uniformly all over the head, the process is called frosting. If the hair treating material is put down so as to color wide strands of hair, the process is called streaking or reverse streaking. If the hair treating material is put down so that only a portion of the strands, terminating at the tip, are colored, the strands being either tiny or wide, the process is called tipping.

The widths of the treated areas of hair and the spacing between these areas is determined by the construction of the coloring comb, which will be explained below. On the other hand, the portions of the laminar sheaf, with respect to the direction along the length of the hair shaft, which are treated, are determined by the way the hair stylist manipulates the coloring comb.

If the coloring comb is moved in the direction 36 all the way from the scalp to the tips of the hair, the

full length of some of the hair shafts will be treated. If the coloring comb is inserted into the laminar sheaf at a point spaced from the scalp and then drawn all the way to the tips of the hair shafts, a different effect, called tipping, is achieved. The coloring comb can be inserted into the laminar sheaf as in tipping, and drawn only partway to the tips of the hair to achieve a yet different effect.

Figure 4 depicts a view of the hair stylist manipulating a laminar sheaf 45A, 45B, which corresponds roughly with the area 17 above the ear in Figure 1. The coloring comb 35 consists of a reservoir section 43, in which the hair treating material is stored, a handle-pump section 42, by which the coloring comb is grasped, and which, when squeezed, pumps hair treating material to the comb-head 41. While the laminar sheaf is held under tension, the comb is drawn through the hair in the direction 46, while pressing downward on the sheaf. It will be recognized that hair is straightened out and arranged in parallel laminar arrangement more perfectly with successive combines. Thus, the portion of laminar sheaf 45 A is depicted as being in better array than the portion 45B. This is an important advantage of the coloring comb - it is self guiding and corrects small misarrays of the laminar sheaf. Since the coloring comb is self guiding, it is possible for the hair stylist to work rapidly. The downward pressure of comb-head 41 produces a dihedral angle between portion 45A and 45B of the laminar sheaf. This downward pressure ensures that the particular hair shafts which are to be treated are pressed to the bottoms of the gullets between the teeth of comb-head 41, at which bottoms the hair treating material is dispensed so as to deposit on the particular strands being treated.

The coloring comb 35 is shown in Figure 5 in a partly disassembled and exploded and partly cross sectioned view. The reservoir section 43 includes a polymeric bottle 51 having an external screw thread 52 at the opening and markings 53 to indicate volume. This bottle is similar to the squeeze bottles utilized by hair stylists,

but has a body of distorted or "sagged" shape so as to render it easier for the tube 54 to pick up the hair treating material contained in the bottle 51. In order to held the tube 54 pick up as much as possible when the bottle is nearly empty, the end of the tube 54 is provided with a sinker 55.

Tube 54 is made of a soft elastomeric material which will collapse if squeezed by moderate pressure applied at opposite sides of the tube. However, the wall of tube 54 is thick enough so that the tube will not collapse by application of any reasonable suction pressure.

Tube 54 extends through handle-pump 42 to washer 54A, which is unitary with the tube 54. Two elastomeric duck-bill valves 56A and 56B are pushed into the bore of the tube 54 and are cemented into place. An end view of one of the duck-bill valves is seen in Figure 9. The duck-bill valves have a heavy body portion which somewhat expands the tube 54 and a thin-lip portion which performs the valving function. Because of the particular contours of the duck-bill balves, as shown in Figure 5, the functioning of the thin lip portion is not affect by stresses in or strains of the body portion.

The tube 54 is clipped into pump-handle 42 by being threaded through from the left end of housing 58 until the washer 54A abuts against retainer 59, which secures captive nut 60. Then the elastomeric collar-washer 57 is threaded over the right end of tube 54 until the collar-washer 57 abuts against retainer 61. It will be noted that the elastomeric collar-washer 57 fits tightly on elastomeric tube 54, so that the joint between them is leak-tight. This joint be cemented, if desired.

Tube 54 is contained within housing 58, as best seen in Figure 6, and the opening at the bottom of the housing is closed by closure 63. The closure contains a slot which receives an elongated push button 64. When push button 64 is pressed in the direction indicated by arrow 65, the abutting surface 66 collapses the tube 54, as shown by the dotted line 66A in Figure 6, thereby reducing the volume of the tube 54 between duck-bill valves 56A and 56B.

When the push button 64 is released, the resilience of elastomeric tube 54 pushes push button 64 down and the said volume is restored. The alternate reduction and expansion of said volume, in combination with the one-way check valve operation of the two duck-bill valves 56A and 56B, results in a pumping action from right to left.

Closure 63 and retainers 59 and 61 are cemented to housing 58.

The captive nut 62 mates with the screw threads 52 and clamps reservoir section 43 firmly in place in a leak-tight manner against collar-washer 57. The reservoir can be clamped into place in any desired orientation with respect to the handle, since the captive nut 62 will tighten the joint between collar-washer 57 and the mouth of bottle 51 at any desired orientation.

The captive nut 60 mates with screw thread 71 of comb-head 41. Since the captive nut 60 can be swiveled in any direction, it follows that the comb-head can be clamped against washer 56 in any orientation. This is advantageous since some hair stylists prefer to press the push button 64 with the balls of their fingers, while other prefer to press the push button 64 with the gripping portion of their fingers closer to the palm.

The comb-head 41 includes the spine 70 which supports the teeth 74. Between teeth are gullets 75. The spine 70 has a large main bore 72 and a plurality of small branch bores 73, which lead to selected ones of the gullets 75. As shown in Figure 5, there is a small branch bore 73 for every third gullet. Thus, using this comb-head, approximately one third of the hair shafts forming the outer surface of a laminar sheaf would be treated. The small bores 73 lead directly to the bottoms of the gullets 75, as seen in Figure 7, so that only the hair which is wiping past the delivery end of the small bores 73 would receive any hair treating material.

The large main bore 72 is of such size that there is substantially no pressure difference at the entrances of the different small branch bores 73. Furthermore, the small branch bores 73 are of such small size that

substantially all of the pressure drop takes place therein, and this pressure drop is high enough to limit the advance of push button 64 as it is squeezed by the hair stylist. As a result, the amount of hair treating material dispensed per unit time at each of the gullets 75 whereat a small branch bore 73 terminates will depend on the pressure exerted on the push button 64 by the hair stylists. With the application of uniform pressure, the push button 64 necessarily moves uniformly. It is much easier for the hair stylist to exert uniform pressure in the disclosed system than it would be to achieve uniform movement of the push button of a similar system having no pressure drop in the small branch bores. Furthermore, the feel of the handle-pump in the disclosed system is better, as the slowly collapsing back resistance of push button 64 furnishes a feed-back signal to the hair stylist.

The inner diameter of tube 54 is determined by the fact that the tube, when fully collapsed between duck-bill valves 56A and 56B, must have expelled enough hair treating material for one full stroke of the coloring comb 35.

The use of a disassembleable joint between the handle-pump 42 and the comb-head 42 is necessitated by the requirement that the comb-head be sterilized between uses. It is to be noted that it is impossible for the hair treating material to back up from the comb-head 41 into the handle-pump 42, both because there is no appreciable back pressure at the branch bores 73 and because there are two duck-bill valves 56A and 56B in series in the handle-pump 42. thus, it is not necessary to sterilize the handle-pump 42 between uses.

It is to be further noted that the complete plumbing of the coloring comb 35 and construction is simple. All parts can be readily flushed out with liquid detergent, water or anticeptic material.

Some of the chemicals used in hair treating material are corrosive to metals and are harmful to the skin. The construction of the coloring comb 35 is such that only chemically resistant polymeric materials and

chemically resistant plastic materials are used. The fact that the tube 54 is continuous without a seam through the handle-pump 42 ensures that there will be no leakage of hair treating material.

5 A series of differing comb heads can be provided to leave deposits on the upper face of a laminar sheaf which are suited to the different styles desired. For example, there could be combs with small branch bores at every second, fourth or fifth gullet. Furthermore, the  
10 teeth could be arranged in a pitch either finer or coarser than that shown. Finally, the pattern may be small branch bores at three adjacent gullets, spaced by two ordinary gullets, etc.

Because of the way the herein disclosed coloring  
15 comb is used to deposit a series of stripes of hair treating material along the lay of the hair on one face of a laminar sheaf, and because the hair treating material will not run from where it is deposited, it follows that each parting of hair acts as a barrier with respect to an  
20 underlying parting. By the time the next overlying parting is laid down, the previously applied treating material will have sunk into and been absorbed by the hair, so that it will not off-set to the overlying parting. In view of this, the use of elaborate separator precautions is not an  
25 absolute necessity and can be dispensed with, in many instances.

Furthermore, almost all of the treating material is deposited on the hair and substantially none reaches the scalp. When the coloring comb is adjacent the scalp, the  
30 spine of the comb acts as a spacer to keep a separation between the treating material and the scalp. Hence, it is not necessary to use barrier materials to protect the clients scalp.

The herein disclosed coloring comb is useful for  
35 an operation known as color retouch. Human hair grows about a centimeter or more a month. Therefore, a month after a client has had a hair coloring treatment in accordance with the instant invention, there will be new hair at the roots which will have the full natural

pigmentation. This situation makes it necessary, from time to time, to color the new growth so that uniform color is achieved from the root to the demarcation line on the hair from the previous color treatment. The coloring comb can  
 5 be used for this retouch process. The hair stylist first isolates the original laminar sheaf of the previous treatment. This is relatively easily done, since it involves merely probing with the rat tail comb to establish the original separation, with the previously treated hair  
 10 shafts being the guide-post indicators. Next, the hair stylist matches the previously created pattern, such as streaking or frosting,, with the particular comb-head which created the pattern. Finally the hair stylist uses that particular comb-head to treat only the grown out portion of  
 15 the laminar sheaf, carefully inserting the comb-head into the laminar sheaf, adjacent the scalp, so that the small branch bores are in alignment with the previously treated areas.

It will be seen from what has been described  
 20 above that a great advantage of the invention is that the hair, as a whole, is not obscured while it is being worked on, in distinction with other methods. Thus, the hair stylist is at all times aware of what is happening to the hair, has visual control of th application of the hair  
 25 treating material, and had a greater freedom to create. The client can also see what is going on, and can furnish some input into the coloring process.

The manipulations involved in the use of the coloring comb 35 are similar to those involved in the use  
 30 of an ordinary comb, and skill in handling the coloring comb is easy to acquire. A simple rule is followed: The coloring comb 35 combs the laminar sheaf in the same direction as that in which the hair will be styled.

This disclosure is pointed toward use with the  
 35 human subject. The method and apparatus can also be used on hairpieces of human hair. The chemicals that are used on human subjects are compatable with human hairpieces such as wigs, toupees, wiglets falls, etc. The hairpiece is mounted on a wig form and is manipulated and treated much

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as if it were hair on a person's head, as will be apparent to those skilled in the art.

5       The comb-head 41 is preferably made of  
transparent material, so that it is easier to line up the  
small branch bores with the particular hair shafts which it  
is desired to color. If made of opaque material, the spine  
70 can be provided with indicia to show at which gullets  
the hair treating material is delivered. A transparent  
comb head simplifies flushing out and detection of  
10 clogging.



THE CLAIMS

1. The method of treating hair which comprises the steps of:

combing the hair to cause the hair shafts to lie in a natural parallel relationship;

5 defining a hair parting zone, consisting of the length of all the shafts of hair which have their roots within a closed, contiguous and corresponding area of the person's scalp;

said area having a generally rectangular shape;

10 said hair parting zone being defined by combing away any overlying hair not belonging to said hair parting zone;

subjecting the hair in said hair parting zone to tension so as to shape said hair into a laminar sheaf between the scalp and the place whereat tension is applied  
15 to said hair;

said laminar sheaf being unitary and presenting an exterior face formed by adjacent exposed hair shafts, which exterior face is freely accessible to treatment;

20 simultaneously applying treating material to the exterior face of said hair treatment zone only in a plurality of generally parallel spaced treated areas running along the lay of said hair;

said spaced treated areas being separated by untreated areas running along the lay of said hair;

25 said simultaneous application of said treating material initially and simultaneously being made to the exterior face of said hair treatment zone at the portion thereof closer to the scalp and finally and simultaneously being made to the portion thereof more remote from the  
30 scalp;

said simultaneous application of said treating material being made continuously during successively spaced intervals of time between the time of said simultaneous application initially and the time of said simultaneous  
35 application finally;

while the locus of said simultaneous application continuously and correspondingly moves from said portion thereof closer to the scalp to said portion hereof more

remote from the scalp.

2. The method of claim 1 in which said application of the treating material to the exterior face of the laminar sheaf extends from substantially the roots to the tips of the hair shafts.

3. The method of claim 1 in which said application of the treating material to the exterior face of the laminar sheaf extends from a region between the roots and the tips of the hair shafts substantially to the tips of said hair shafts.

4. The method of retouching the roots of hair which have been treated by the method of claim 1, and in which the roots have grown out, which comprises the steps of combing the hair to cause the strands to lie in a natural overlapping parallel relationship;

identifying the hair of said hair parting zone of claim 1 by its appearance;

combing away from said identified hair parting zone any overlying hair not belonging to said identified hair parting zone;

subjecting the hair in said hair parting zone to tension so as to shape said hair into a laminar sheaf between the scalp and the place whereat tension is applied to the hair;

said laminar sheaf being unitary and presenting an exterior face formed by adjacent exposed hair shafts, which exterior face is freely accessible to treatment; touching up selected roots of the hair of said hair parting zone by simultaneously applying treating material to the exterior face of said laminar sheaf, as in claim 1, only in matched portions of the grown-out roots which are in alignment with the treated areas left from the method of claim 1.

5. The method of treating a person's hair in accordance with claim 1 which consists of, seriatim, repeating the steps of claim 1 for a plurality of different hair parting zones of the person's hair.

6. The method of claim 5 in which the plurality of hair parting zones includes a portion only of the



a comb-head section having a comb, bores in the spine of said comb for delivering hair treating material in said bores to the base of selected gullets between the teeth of said comb;

5           there being unselected gullets, located between said selected gullets, having no bores and to which no hair treating material is delivered;

          means to detachably affix said reservoir section to the suction end of said handle-pump in operative  
10 relationship, whereby said pump means can suck hair treating material from said reservoir section;

          means to detachably affix said comb-head to said delivery end of said handle-pump in operative relationship, whereby said pump means can deliver hair treating material  
15 sucked from said reservoir through the handle-pump to the bores in said spine and to said elected gullets.

13. The coloring comb of claim 12 in which said means to detachably affix said reservoir will affix said reservoir in any desired orientation with respect to  
20 said handle-pump.

14. The coloring comb of claim 12 in which said means to detachably affix said comb-head will affix said comb-head in any desired orientation with respect to said handle-pump.

25           15. The coloring comb of claim 12 in which said comb-head has narrow teeth which are spaced by gullets which are approximately as thick as said teeth.

          16. The coloring comb of claim 12 in which said comb-head has a large main bore running through a major  
30 proportion of the spine of the comb and has plural small branch bores, each of which connect said main bore to a gullet between teeth of the comb.

          17. The coloring comb of claim 16 in which the main bore has such a large cross section that it  
35 presents no substantial hydraulic resistance to the flow of hair treating material; and

          the small branch bores each have such a small cross section as to present a substantial hydraulic resistance to the flow of hair treating material;

said substantial resistance being approximately equal for each small branch bore;

whereby the amount of hair treating material dispensed from each branch bore to the corresponding gullet is approximately equal.

18. The coloring comb of claim 12 in which each gullet which is the recipient of hair treating material from individual ones of said small bores is separated from the next such gullet by at least two gullets which are not the recipients of hair treating material.

19. The coloring comb of claim 12 in which said handle-pump section comprises:

a main body;

an elastomeric peristaltic pump tube running through the interior length of said main body;

means cooperating with said main body for enabling an operator to squeeze said elastomeric peristaltic pump tube while the operator grasps said main body;

two duckbill valves located within the bore of said elastomeric peristaltic pump tube and oriented in the same direction, one located adjacent each end of said main body, to act as one-way check valves permitting flow only from said reservoir section towards said comb-head section; said elastomeric peristaltic pump tube extending into said reservoir section and to said comb-head section and being integral throughout;

integral radial disk-shaped protrusions forming part of said elastomeric peristaltic pump tube and located at the two ends of said handle-pump section and constituting gasket compression seals between the handle-pump section and, respectively, the reservoir section and the comb-head section;

whereby when said cooperating means is actuated by said operator, said handle-pump will pump hair treating material from said reservoir section to said comb-head section; and

whereby the comb-head section is fed with hair treating material from said reservoir section and whereby the integral continuity of said elastomeric peristaltic

5 tube through the handle-pump section between said two  
integral gasket compression seals ensures that there will  
be no leakage of hair treating material from the said  
elastomeric peristaltic pump tube at said handle-pump  
section.

20. The coloring comb of claim 19 in which each  
of said duckbill valves comprises:

10 a body portion in the form of a thick walled tube of a  
size which fits tightly within the said elastomeric  
peristaltic pump tube;

means constituting a duckbill valve portion, mounted  
coaxially on one end of said body portion, and extending  
outwardly therefrom to act as a one-way check valve for the  
bore through said body portion;

15 said means constituting a duckbill valve portion being  
of such size as to be clear of the interior wall of said  
elastomeric pump tube;

20 whereby, as the elastomeric peristaltic pump tube is  
flexed during operation, the action of the means  
constituting the duckbill valve portion is not affected by  
the flexing.

21. The coloring comb of claim 12 in which each  
gullet which is the recipient of hair treating material  
from individual ones of said small bores is separated from  
25 the next such gullet by one gullet which is not the  
recipient of hair treating material.

22. For use in hair coloring, wherein the hair is  
gathered into a laminar sheaf and hair treating material is  
applied to said sheaf only in selected portions thereof,  
30 parallel to the lay of the hair, with other portions of  
said sheaf between said selected portions being untreated,  
a comb-head, such comb-head comprising:

a longitudinal spine;

35 a plurality of aligned teeth projecting from said  
spine and defining gullets between successive teeth;

a longitudinal main bore extending along the length of  
said spine;

a plurality of branch bores extending from said  
longitudinal main bore to selected ones only of said

gullets;

said branch bores being completely open to said longitudinal bore;

5 said selected gullets and the unselected gullets being arranged in a repeating sequence;

means on said spine adapted to receive hair treating material for passage into said longitudinal main bore and said plurality of branch bores;

10 said longitudinal main bore having a large cross section which presents no substantial hydraulic resistance to the flow of hair treating material;

the branch bores each have a small cross section which presents a substantial hydraulic resistance to the flow of hair treating material;

15 said substantial resistance being approximately equal for each branch bore;

whereby, when the hair treating material in said longitudinal bore is pressurized, the amount of hair treating material dispensed from each branch bore to the  
20 corresponding gullet is approximately equal;

whereby when said comb-head is stroked through said laminar sheaf, said selected gullets act as reservoirs of hair treating material and isolators of those strands of hair held in said selected gullets, so that those strands  
25 of hair are treated; and

whereby other strands of hair, isolated in unselected gullets, remain untreated.

23. The subject matter of claim 22 in which each selected gullet which is the recipient of hair treating material from individual ones of said branch bores is  
30 separated from the next such gullet by at least two gullets which are not the recipients of hair treatment material.

24. The subject matter of claim 22 in which each selected gullet which is the recipient of hair treating material from individual ones of said branch bores is  
35 separated from the next such gullet by one gullet which is not the recipient of hair treating material.

25. The subject matter of claim 22 in which said selected portions of said laminar sheaf have a common

predetermined width and are spaced to have a common predetermined pitch; and

5       said selected and non-selected gullets are selected to be located in a repeating sequence which corresponds to said predetermined width and said predetermined pitch.

26. For use in:

10       a method of treating a laminar sheaf of hair, while said laminar sheaf of hair is held extended under tension, by applying hair treating material onto the face of said laminar sheaf in a series of spaced parallel regions, running parallel to the lay of said laminar sheaf, without applying hair treatment material to the regions intercalated between said series of spaced parallel regions;

15       a comb-head, said comb-head having:

      a longitudinal spine;

      a plurality of aligned teeth projecting from said spine and defining a series of gullets between successive teeth;

20       a longitudinal main bore extending along the length of said spine;

      a plurality of branch bores extending from said longitudinal main bore to selected ones only of said gullets;

25       said selected gullets and the unselected gullets being arranged in a repeating sequence;

      means on said spine adapted to receive hair treating material for passage into said longitudinal main bore and said plurality of branch bores;

30       whereby, when said comb-head is stroked through a laminar sheaf, said spine is adapted to slide along said face of said laminar sheaf, said plurality of aligned teeth are adapted to guide said comb-head along the lay of said laminar sheaf; and

35       said selected gullets act as reservoirs of hair treating material and isolators of those strands of hair held in said selected gullets, so that those strands of hair are treated; and

      whereby other strands of hair, isolated in unselected



gullets, remain untreated.

27. The subject matter of claim 26 in which each selected gullet which is the recipient of hair treating material from individual ones of said branch bores is  
5 separated from the next such gullet by at least two gullets which are not the recipients of hair treatment material.

28. The subject matter of claim 26 in which said aligned teeth have a selected sequence of selected gullets and unselected gullets which corresponds to the sequence,  
10 spacing and width of the said parallel regions which are treated and the said regions intercalated therebetween, respectively.

29. For use in:

a method of treating a laminar sheaf of hair,  
15 by applying hair treating material onto the face of said laminar sheaf in a series of spaced parallel regions, running parallel to the lay of said laminar sheaf, without applying hair treatment material to the regions intercalated between said series of spaced parallel regions;  
20 the combination of a comb-head and a handle therefor; said comb-head comprising:

a longitudinal spine;  
a plurality of aligned teeth projection from said spine and defining series of gullets between successive  
25 teeth;

a longitudinal main bore extending along the length of said spine;

a plurality of branch bores extending from said longitudinal main bore to selected ones only of said  
30 gullets there being unselected gullets which have no associated branch bores;

said selected and the unselected gullets being arranged in a repeating sequence;

means on said spine adapted to receive hair treating  
35 material for passage into said longitudinal main bore and said plurality of branch bores;

said handle comprising:

means for supplying hair treating material and means for delivering said hair treating material to said means on

said spine adapted to receive hair treating material;

manually actuatable means for controlling the amount and rate of delivery of the hair treating material to said comb-head;

5           whereby, when said comb-head is stroked through a laminar sheaf, said spine is adapted to slide along said face of said laminar sheaf, said plurality of aligned teeth are adapted to guide said comb-head along the lay of said laminar sheaf; and

10           said selected gullets act as reservoirs of hair treating material and isolators of those strands of hair held in said selected gullets, so that those strands of hair are treated; and

          whereby other strands of hair, isolated in unselected  
15           gullets, remain untreated.

          whereby, further, the amount and the rate of application of hair treating material applied to said those strands of hair held in said selected gullets is manually controllable during the time the comb-head is stroked  
20           through the laminar sheaf.

30. The subject matter of claim 29 in which the comb-head is fastened to the handle by means of a readily detachable coupling.

31. The subject matter of claim 30 in which the  
25           readily detachable coupling is adjustable to permit fastening of comb-head in any desired orientation.

32. The subject matter of claim 30 in which the said longitudinal main bore has such a large cross section that it presents no substantial hydraulic  
30           resistance to the flow of hair treating material; and

          the plurality of branch bores each have such a small cross section as to present a substantial hydraulic resistance to the flow of hair treating material.

          said substantial resistance being approximately equal  
35           for each small branch bore;

          whereby the amount of hair treating material dispensed from each branch bore to the corresponding selected gullet is approximately equal.

33. The subject matter of claim 29 in which each

selected gullet which is the recipient of hair treating material from individual ones of said branch bores is separated from the next such gullet by at least two gullets which are not the recipients of hair treatment material.

5           34. The subject matter of claim 29 in which each selected gullet which is the recipient of hair treating material from individual ones of said branch bores is separated from the next such gullet by one gullet which is not the recipient of hair treating material.

10           35. The subject matter of claim 29 in which  
said aligned teeth have a selected sequence of  
selected gullets and unselected gullets which corresponds  
to the sequence, spacing and width of the said parallel  
regions which are treated and the said regions intercalated  
15 therebetween, respectively.

FIG. 1.

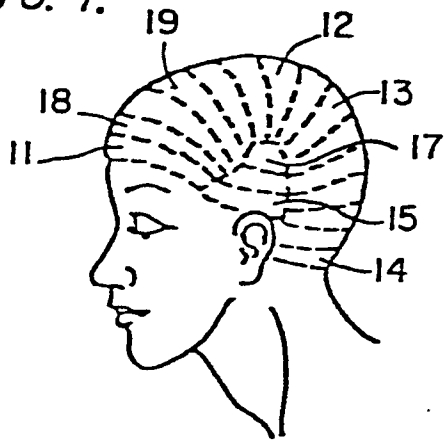


FIG. 2.

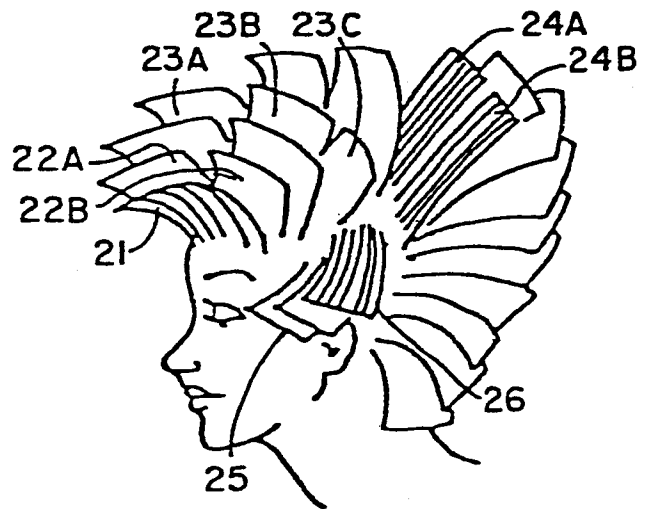
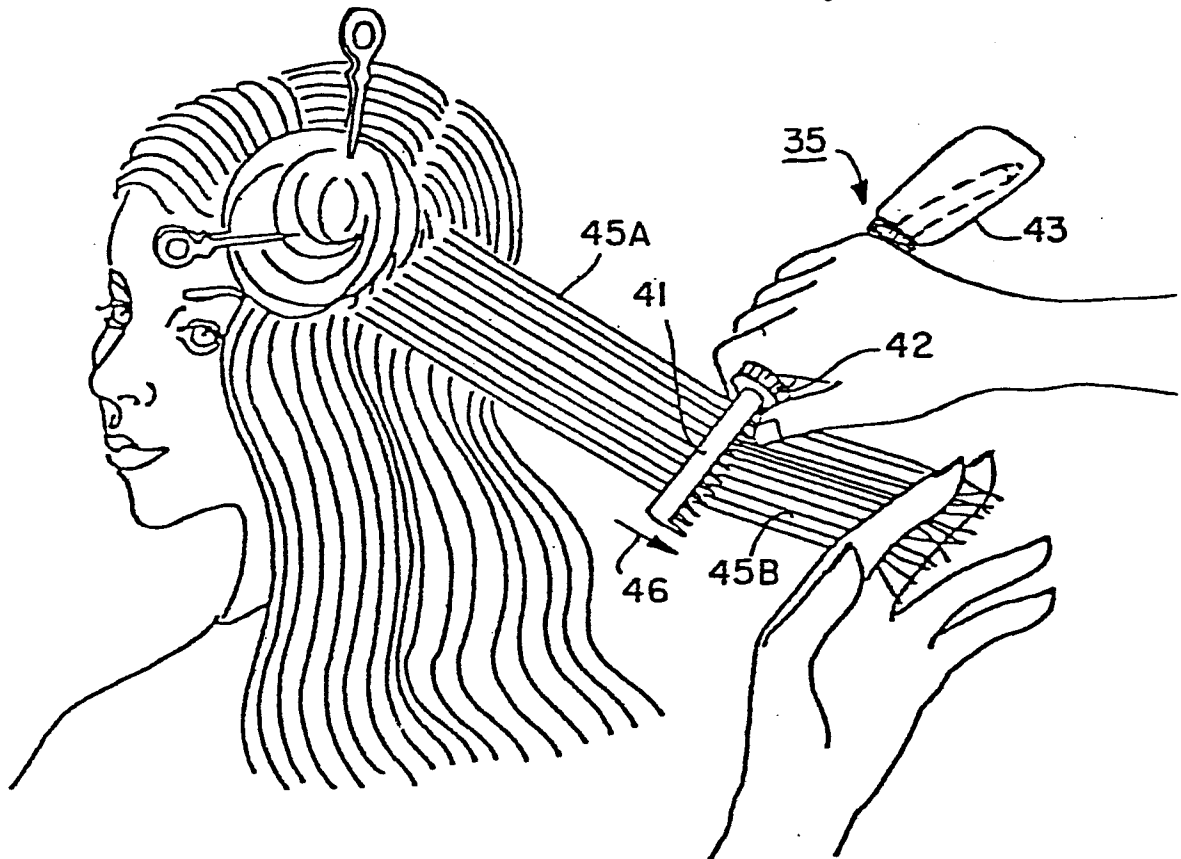


FIG. 4.



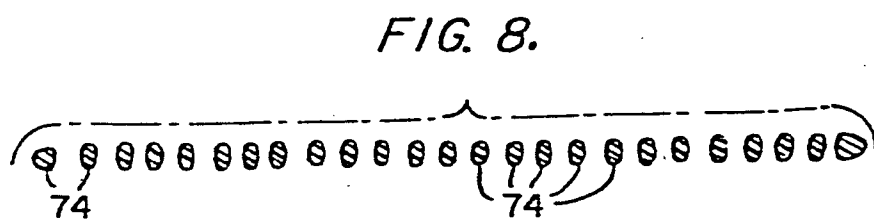
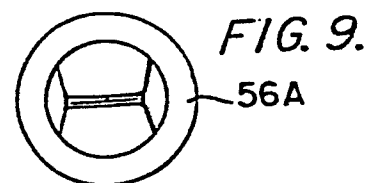
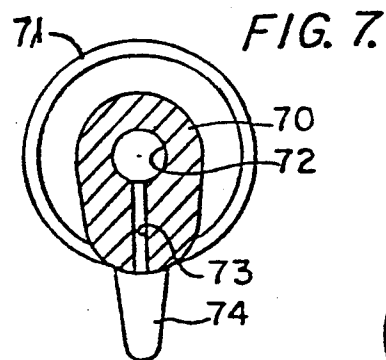
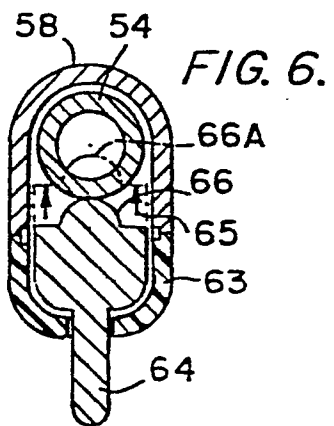
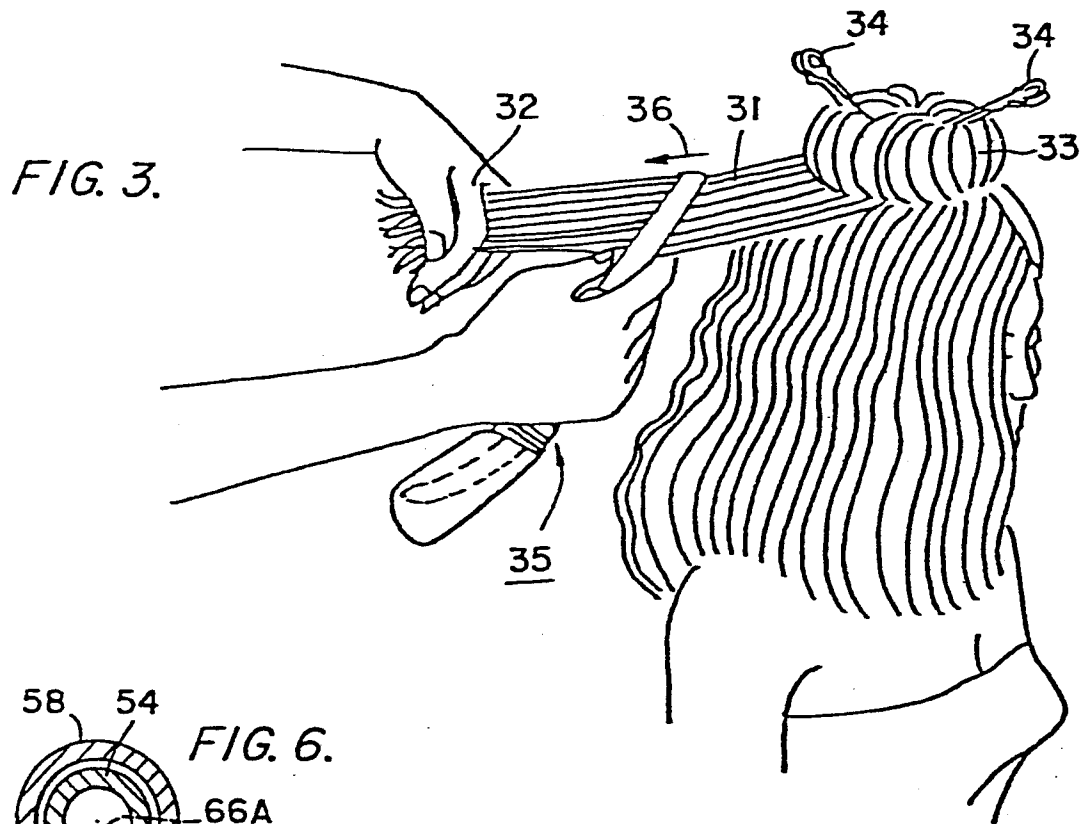
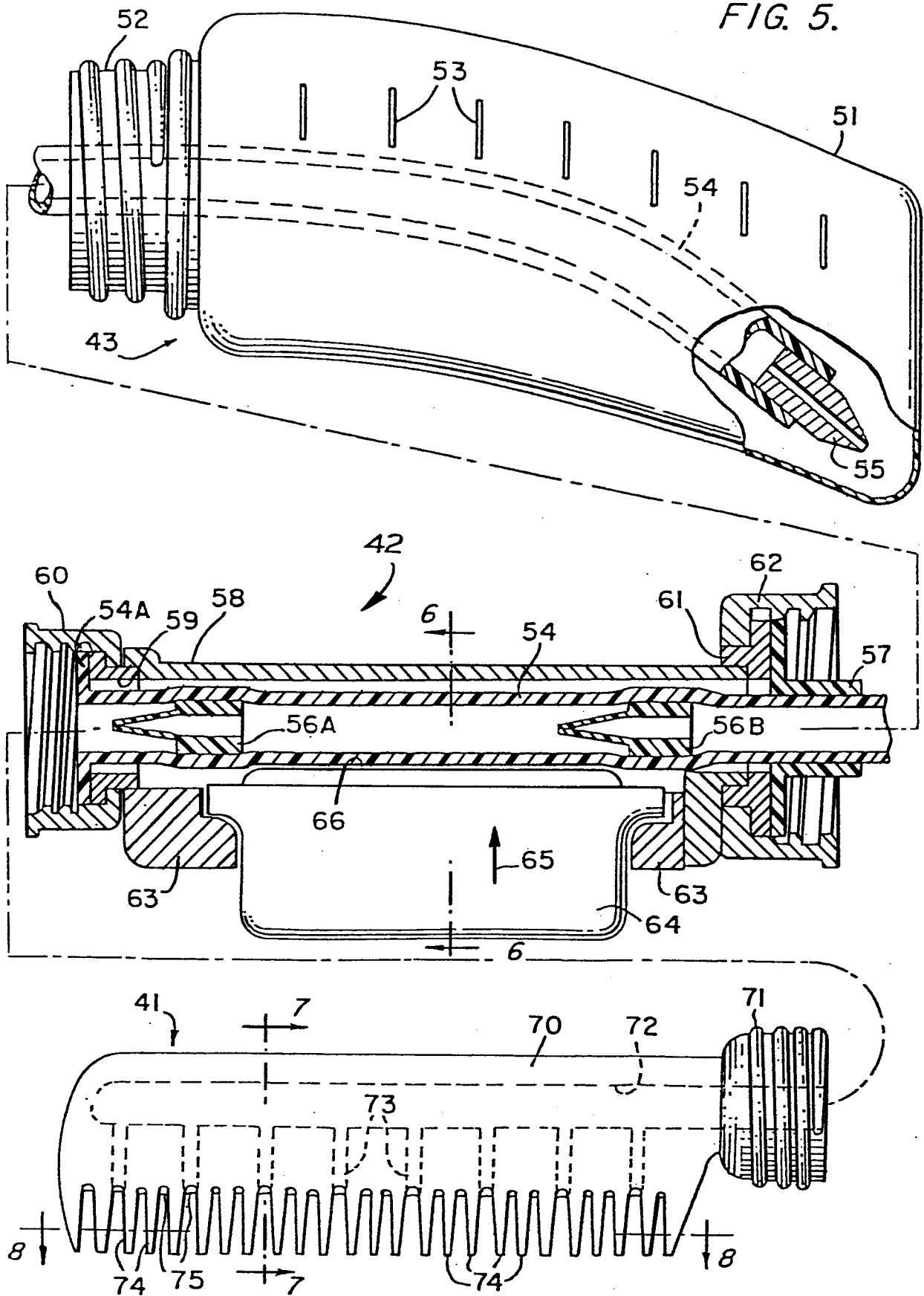


FIG. 5.





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# EUROPEAN SEARCH REPORT

0150651

Application number

EP 84 42 0017

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. <sup>3</sup> )
A	US-A-3 349 781 (POOLE) * whole document *	1-3, 5-11	A 45 D 19/02 A 45 D 24/24
A	FR-A-2 475 374 (PEDONE) * whole document *	1, 18, 21, 23, 24, 27, 28, 34, 35	
A	US-A-2 235 637 (HICKEY) * whole document *	1, 12, 15-18, 26-29, 30-35	
A	US-A-2 222 176 (HICKEY) * whole document *	1, 12, 15-18, 26-29, 30-35	TECHNICAL FIELDS SEARCHED (Int. Cl. <sup>3</sup> )  A 45 D A 46 B
A	FR-A-2 357 204 (DELOCHE) * page 2, lines 18-35; figure 2 *	12-20	
A	DE-C- 673 744 (BECKER) * whole document *	12, 19, 20	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 26-09-1984	Examiner SIGWALT C.
<p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons</p> <p>&amp; : member of the same patent family, corresponding document</p>			



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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)
A	US-A-2 743 042 (BURGIN)  * column 2, line 15 - column 3, line 17; figures 1-6 *	12, 19 20	
A	--- US-A-3 400 996 (VANDERGRIFF)  * whole document *	12, 19 20	
A	--- GB-A- 425 162 (ORENTREICH)		
A	--- FR-A-2 485 349 (ZOUARI)  -----		
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int. Cl. 3)
Place of search THE HAGUE		Date of completion of the search 26-09-1984	Examiner SIGWALT C.
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X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			