Dec. 18, 1956 S. M. BERG 2,774,095

APPARATUS FOR TREATING HAIR WITH LIQUIDS

Filed March 23, 1953

Fig. 1

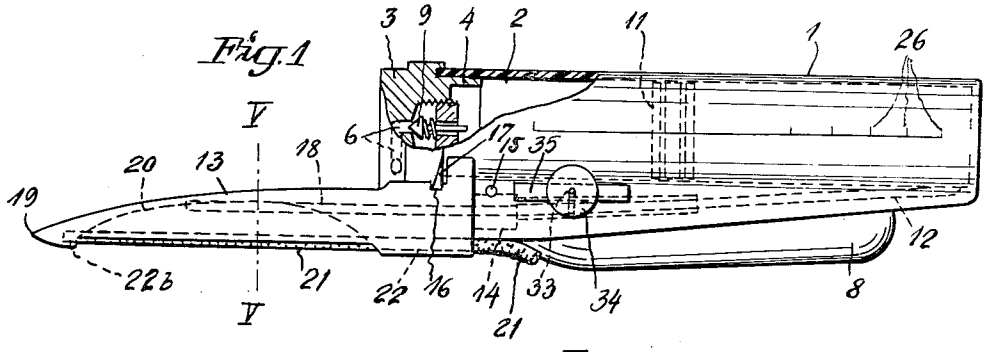


Fig. 2

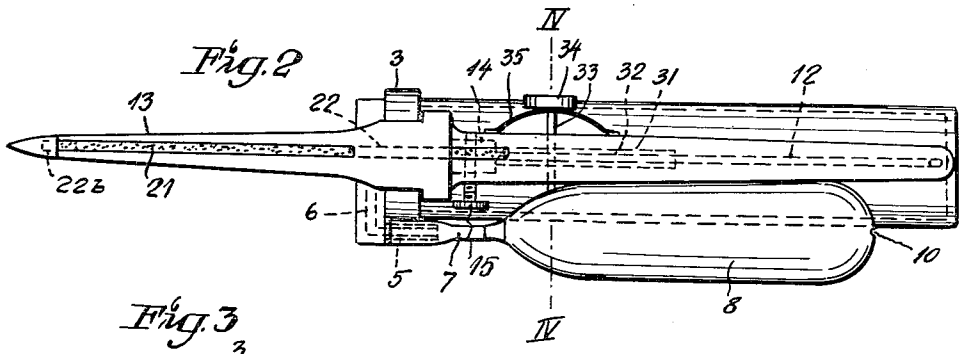


Fig. 3

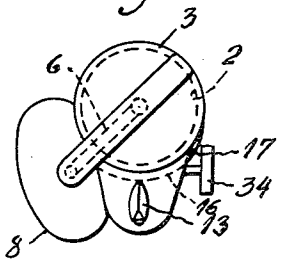


Fig. 5

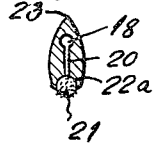


Fig. 6

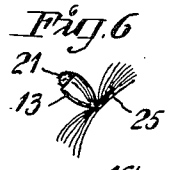


Fig. 7

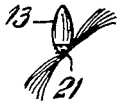


Fig. 4

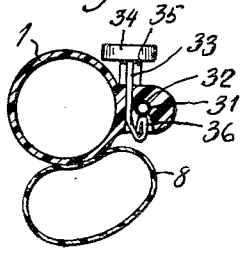


Fig. 9

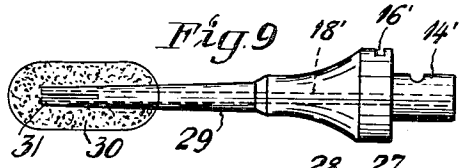


Fig. 8



INVENTOR.
Sven Martin Berg
BY
Pierce, Scheffler & Parker
attys

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APPARATUS FOR TREATING HAIR WITH LIQUIDS

Sven Martin Berg, Lidingo, Sweden

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2 Claims. (Cl. 15—137)

This invention refers to an apparatus for treating hair with liquids and has particular reference to apparatus of that general character having a casing from a stiff material, in which is arranged a cylinder serving as a liquid container and a plunger or piston displaceable in this container, said plunger acting upon the liquid contained in the cylinder and by means of which plunger the liquid is pressed out through a nozzle. According to my invention the plunger is of the floating type and displaceable in the cylinder by compressed air acting upon the side of the plunger opposite to that of the liquid and generated from an air hand-pump, such as bellows or an elastic bladder, disposed laterally of the cylinder, in a manner such as to permit an actuation of the air pump by the hand holding the casing of the apparatus.

My invention also comprises the details of construction and arrangements of parts which are hereinafter more particularly described and claimed, reference being had to an example of embodiment illustrated in the accompanying drawing.

Figs. 1 and 2 show the apparatus in elevation and in a lower plan view, respectively. Fig. 3 shows the same in an endwise view. Fig. 4 shows a section on line IV—IV in Fig. 2. Fig. 5 shows a section on line V—V in Fig. 1. Figs. 6 and 7 illustrate the use of the apparatus. Figs. 8 and 9 show a modified arrangement for applying dye or other treating liquid to the hair, Fig. 8 showing a spool for cold-waving the hair, to a state of permanence, and Fig. 9 shows an applicator finger for the apparatus intended for cooperation with the spool.

The apparatus consists of an elongated essentially cylindrical casing 1 made for instance from transparent plastic, said casing forming a handle member having a cylindrical reservoir 2 for the liquid, such as a dye solution, formed therein. Arranged at one end of the casing is a cover 3 protruding into the reservoir 2 by a cylindrical tightening plug 4. Arranged in the cover 3 is a channel 6 connected to the reservoir 2 through a non-return valve 9 opening toward the reservoir. The channel 6 is connected over a socket 5 to a pipe 7 leading to a rubber bladder 8. The rubber bladder is provided in known manner with a narrow opening 10 to the external air. Moreover as seen clearly from the drawing, bladder 8 is elongated and lies along the side of casing 1 so that when the casing is held in the palm of the right hand the fingers partially encircle the bladder and hence are in the proper and a natural position to press in upon the bladder.

Arranged in the reservoir 2 which serves also as a pump cylinder is a freely slidable floating plunger or piston 11 acted upon, on the side facing the cover 3, by the compressed air generated by the bladder. From the end of the cylinder opposed to that of the cover 3 extends a channel 12, through which the liquid located at the lower side of the plunger may be pressed out, when the rubber bladder is compressed by the fingers of the hand holding the apparatus, so that the air from the bladder will press upon the liquid via the plunger.

The plunger 11 may be secured to the cover 3 by means

of a chain or the like (not shown) of greater length than the distance between the cover and the plunger when being situated near the far end of the cylinder opposite plug 3.

A measuring scale 26 may be provided on the transparent cylinder wall to permit the cylinder to be used at the same time as a measuring glass in the preparation of the dye mixture.

Exchangeably secured in the handle member 1 adjacent to the cover 3 is a distributing finger 13 projecting in parallel with the longitudinal axis of the pump cylinder 2 but laterally of the same. The finger has a plug-like extension 14 entering the handle member and is retained by a stop screw 15. Provided in the finger 13 is a groove 16 receiving a radial cam 17 arranged on the cover 3. The cover is secured by being turned so that the cam is caused to enter the groove 16.

In the finger 13, which may also consist of a transparent material, there is arranged a longitudinally extending bore 18 forming a continuation of the liquid passage 12.

The distributing finger 13 is of an elongated shape and terminates in a point 19. In cross section (Fig. 5), it is preferably of an elongated configuration, and is provided, along a portion of the one long side, with an elongated groove 20 having the liquid passage 18 opening into the same. The inner portion of the groove 20 is preferably of a considerably smaller width than the diameter of the channel 18, and the channel terminates at a distance from the outer end of the groove 20 adjacent to the point 19. Through the formation of the channel 18 and the groove 20 a very uniform distribution of the liquid will be obtained for the whole length of the groove, inasmuch as the entire groove is filled with dye fluid. The pressure will be approximately the same in the whole of this mass of dye.

The outer portion of the groove 20, Fig. 5, is widened so as to form a seat for a dye-absorbing distributing member 21 in the form of an elongated wick. This outer portion of the groove may preferably be formed by a longitudinal bore 22 extending through the inner portion of the finger 13 being caused to continue along the groove 20 while being surrounded by the material of the finger for somewhat more than the half of the circumference thereof. The distributing member will then remain safely in the groove with a portion thereof projecting outside the longitudinal side of the finger.

The distributing member 21 may be advantageously constructed as a plaited pipe cleaner, that is to say, it may consist of a wire frame having liquid-absorbing yarn plaited into the same. It is easy to insert and to pull out the distributing member by the fact that it moves through the bore 22 and the opening portion 22*a* of the groove 20. Near the point of the finger 13 the bore 22, 22*a* has a termination 22*b* receiving the outer end of the distributing member 21 to safely retain the latter.

In the use of the apparatus, the operator's hand grasps over the handle member 1 with the fingers over the rubber bladder 8. Through a slight pressure of the fingers on the rubber bladder air will be pressed in on the left side of the plunger 11 in Fig. 1, so that the plunger is displaced to the right, thus forcing a corresponding quantity of liquid out to the distributing finger. This liquid is absorbed by the distributing member, which is rubbed against the portion of the hair to be dyed. The function of the apparatus is not altered in different positions of the same. It functions just as well, whether the point 13 is turned upwardly or downwardly. As soon as the pressure on the rubber bladder ceases, the supply of dye is interrupted, and the apparatus may then be put away in any position, without any dye flowing out.

To prevent an escape of liquid to the distributing finger 13 at an unintentional pressure on the bladder 8, it will

be found suitable to provide a valve in the channel 12, said valve normally keeping the channel 12 closed, while permitting of being actuated through a pressure by the hand holding the apparatus simultaneously with the actuation of the bladder 8 by the fingers of the same hand. In the example of embodiment illustrated in the drawing, a tube 32 of elastic material, such as rubber or plastic, is inserted with a tight fit into a bore 31, the channel of said tube forming a continuation of the channel 12. Laterally of the tube 32 there is arranged a transversely extending rod 33 having a button 34 secured thereon, by means of which the rod may be displaced against the action of a spring 35. Normally, the spring keeps the lower bent portion 36 of the rod 33 pressed against the elastic tube 32, so that the latter is compressed so as to prevent liquid from flowing through the channel 12 to the distributing finger 13. When the button 34 is depressed, the passage through the tube 32 is opened. As is clear from Fig. 4, the valve control button 34 and bladder 8 lie on opposite sides of a horizontal longitudinal plane through the axis of the cylindrical casing 1 thus adapting button 34 for actuation by the thumb of the hand in which the applicator is held, and manipulation of the bladder by the fingers of that same hand.

The distributing finger 13 is formed in a special manner to facilitate the work. The point 19 facilitates the parting of the hair, and the cross-sectional elongated shape (Fig. 5) is of certain importance. The side 23 of the distributing finger opposite to that of the distributing member 21 is tapering and almost pointed at the outer portion thereof while becoming more and more rounded further backward on the finger.

The use of the finger is illustrated in Figs. 6 and 7. In Fig. 6, the hair 25 has been parted by the finger 13, such parting being effected with the rear of the finger, so that the dye-distributing member 21 is turned outwardly from the scalp. In Fig. 7, the dyeing is effected with the distributing member 21 turned toward the hair. During this part of the work dye is being pressed to the distributing member, which, on the other hand, is not the case in the position according to Fig. 6.

Fig. 8 shows an example of a spool 27, onto which the hair is wound when subjected to permanent cold-waving. The spool is provided with a longitudinal bore 26 terminating at a distance from one end of the spool. Extending crosswise through the spool is a slot 28, through which liquid supplied to the bore 26 may be brought to the hair wound onto the spool. Fig. 9 shows a distributing finger 29, which may be secured on the casing 1 of Fig. 1 in the same manner as finger 13. The distributing finger 29 is of a conical configuration and has the passage 18' extending therethrough. Finger 29 is provided at its inner end with a plug-like extension 14' adapted to enter the body of casing 1 and a groove 16' adapted to receive the radial cam 17 on cover 3 as the latter is rotated. At its outer end the finger has a slit 31 extending transversely through the same.

In cold-waving the hair for permanence, permanent wave liquid is poured into the reservoir 2, whereupon the finger 29 is introduced into the bore 26 in the spool 27. By a pressure exerted on the rubber bladder 8, the liquid will be pressed out to the finger 29 and into the spool and through the slit 28 out into the hair wound

onto the spool. After that, the finger 29 is pulled out, and a distributing member 30 of liquid-absorbing material is thrust onto the outer end thereof. After that, fresh permanent wave liquid is pressed out of the container so that the member 30 becomes moistened. The outside of the hair wound onto the spool 27 is then rubbed with the distributing member.

After that, the liquid in the reservoir 2 is replaced by a neutralizing liquid for the permanent wave liquid, and the cycle of operations above described is repeated with the new liquid, which stabilizes the undulations of the hair created by the waving liquid.

What I claim is:

1. Apparatus for treating hair with liquids comprising an elongated casing of rigid material, said casing enclosing a cylindrical space extending longitudinally of the casing adapted to serve both as a reservoir for the liquid and a pump cylinder, a piston slidable in said cylinder, an inlet for air to one end portion of said cylinder at one side of said piston, an outlet for liquid from the opposite end portion of said cylinder at the other side of said piston, an elongated bladder extending along the side of said casing constituting an air pump and adapted to be actuated by the fingers of the hand in which the apparatus is held, an air channel between the compressed air outlet of said bladder and the air inlet to said cylinder, a liquid distributing finger extending from one end of said casing, said finger being provided with a channel for distributing the liquid, a liquid channel extending between the liquid outlet from said pump cylinder and said channel in said finger, valve means in said liquid channel between said liquid outlet from said pump cylinder and said channel in said finger, and means adapted to be actuated by the thumb of the hand in which the apparatus is held for controlling operation of said valve means, said thumb actuated valve controlling means and said bladder being disposed on opposite sides respectively of a longitudinal plane through the axis of said pump cylinder.

2. Apparatus for treating hair with liquid as defined in claim 1 wherein said liquid distributing finger which extends from one end of said casing is arranged parallel with the longitudinal axis of said pump cylinder but offset laterally from such axis, said distributing finger being of elongated configuration in cross section having a liquid outlet at one of the narrow sides thereof, said outlet comprising a narrow groove extending longitudinally of said finger and communicating with said channel in said finger and a liquid applicator member of absorbent material retained in said groove.

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