

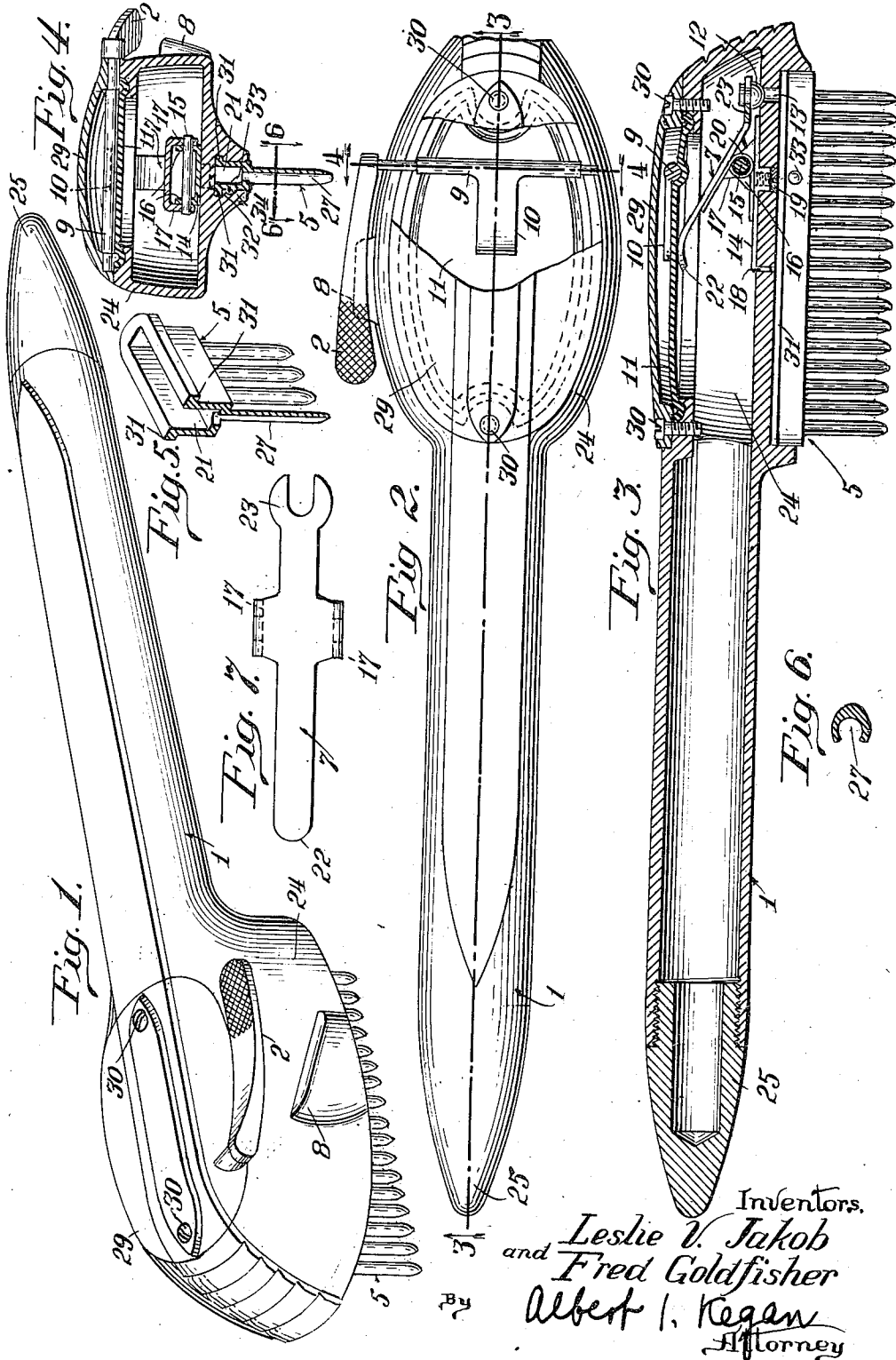
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FLUID APPLICATOR

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FLUID APPLICATOR

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The present invention relates to fluid applicators, and more particularly to fountain applicators adapted to apply fluids, including such viscous liquids as hair-waving preparations and the like, to the hair.

Various fountain combs have been suggested heretofore. None of them, however, have come into commercial use for cosmetic purposes. Since a definite need exists for an article of this type, it will be understood that the devices of the prior art have failed to obtain acceptance because they did not satisfactorily perform the functions for which they were intended. More particularly, they were awkward to handle, difficult or impossible to sterilize, incapable of applying fluid uniformly to the scalp and the entire thickness of the hair, leaky, subject to stoppage due to closure of ducts by drying out of the cosmetic fluid therein, and incapable of giving the operator positive control of the flow of fluid therefrom.

In beauty parlors it is customary to apply curling fluids, wave-setting fluids, and the like to the hair while the same is being arranged according to the style. On evaporation of the volatile portion of these preparations, a film is deposited around the individual hairs and serves to keep them in place according to the style of coiffure intended.

Our improved fluid applicator is specially adapted for use in beauty parlors. It is sanitary, simple in its construction and operation, and does not get out of order, even after prolonged use. Further, our device applies cosmetic fluids to the hair far more uniformly, economically, and effectively than has hitherto been possible.

Thus it will be seen that a principal object of our invention is to provide a fluid applicator of such construction that the portion which comes in contact with the hair may be detached with ease from the remainder of the device, sterilized effectively, and replaced with a minimum expenditure of time and effort.

Another object is to provide a fluid applicator having a detachable, reversible fluid-applying portion capable of insertion into the device with the fluid-discharge grooves in said fluid-applying portion facing either to the right or to the left, so that a single device may be used on both sides of the head, and operated with equal facility by right-handed or by left-handed operators.

Another object is to provide a cosmetic device which parts the hair and deposits fluid on the scalp between said parted hair in such a manner that said fluid moistens said hair after said hair

has returned to the position in which it is intended to be maintained by the action of said fluid.

Another object is to provide a device of the class named, the discharge grooves of which are not subject to clogging by the hair.

Another object is to provide a toothed fluid applicator in which each tooth moistens the entire layer of hair with which it makes contact.

Another object is to provide a device which moistens the hair uniformly while consuming a smaller quantity of fluid than has heretofore been the case, and thereby reduces the time necessary for the proper drying of the hair.

Another object is to provide a device which is positive in action, which retains without leakage fluid placed therein, and which unfailingly discharges said fluid in a quantity at the control of the operator.

Another object is to provide a cosmetic applicator which automatically returns the liquid in the fluid-applying means to the fluid reservoir whenever the thumb of the operator is removed from the feed lever, thereby eliminating dripping and dribbling, and effecting a substantial saving in the quantity of fluid consumed.

Another object is to provide a device of the class described which will function efficiently even when the fluid reservoir thereof is nearly empty.

Another object is to provide a fluid applicator every part of which may be cleaned thoroughly and with ease.

Another object is to provide an article that is simple to assemble and inexpensive to manufacture, and having parts which are easily replaced or repaired.

Further objects and advantages of the present invention will be apparent from the specification and the appended claims.

To attain the above objects or such further objects as may appear herein or be hereinafter pointed out, we make reference to the accompanying drawing for purposes of illustrating the structure of our new and improved fluid applicator, in which drawing—

Figure 1 is a perspective view of an embodiment of the present invention.

Figure 2 is a plan view of our improved device with a portion of the cover broken away to show the mechanism beneath.

Figure 3 is a longitudinal view in central vertical section on line 3—3 of Figure 2.

Figure 4 is a transverse view in vertical section taken substantially on line 4—4 of figure 2.

Figure 5 is a perspective view in transverse vertical section of the detachable comb-like fluid distributing element of our new article of manufacture.

Figure 6 is an enlarged transverse sectional view of one of the teeth of said comb-like element, taken substantially on line 6-6 of Figure 4.

Figure 7 is an enlarged plan view of the finger 7 shown in Figures 3 and 4, and which opens and closes the vent 13.

Like reference numerals designate the same part throughout the specification and the various views of the drawing.

Referring now to the drawing in detail, it will be seen at Figure 1 that our improved fluid applicator comprises a handle portion 1 and a fluid distributing portion 5, said handle portion 1 including a reservoir for the retention of fluid and manually controlled means for discharging fluid from said reservoir into said fluid distributing portion 5, said fluid distributing portion 5 being comb shaped and preferably being detachably connected with said handle portion 1.

The reservoir is filled by removing the cap 25. Fluid is discharged from the reservoir through the fluid distributing portion 5 by depressing the feed lever 2. If desired, a stop 8 may be provided to limit the maximum displacement of said feed lever 2.

As is shown in Figure 2, the feed lever 2, the shaft 9 and the pressor plate 10 constitute a single piece. The pressor plate 10 rests upon the removable elastic diaphragm 11. If desired, said diaphragm 11 may be cup shaped and placed with its convex surface facing upward. The diaphragm 11 is maintained in sealing contact with the walls of the reservoir 24 by the cover 29 and the screws 30.

As is more plainly shown in Figure 3, the finger 7 lies wholly within the reservoir 24. The rounded end 22 of said finger 7 is located immediately below the pressor plate 10, and is separated from said pressor plate 10 only by the diaphragm 11. The other end 23 of the finger 7 is forked and clasps the valve 12 which seals the vent 13. The finger 7 is rotatably mounted on the supporting base 14 by means of the pin 15, which passes through holes in a pair of ears 16 on the supporting base 14 and another pair of ears 17 (see Figure 4) on the finger 7. The base 14 is anchored into the floor of the handle portion 1 by the flange 18, and is held in place by the screw 19. The valve 12 is maintained in sealing relationship to the vent 13 by the helical spring 20. The vent 13 connects the reservoir 24 with the distributing channel 21 in the fluid-applying portion 5.

Figure 4 is a vertical sectional view on line 4-4 of Figure 2, and shows the construction of our new fluid applicator from another aspect.

Figure 5 is a perspective view in transverse vertical section of the comb-like fluid-applying portion 5, shown detached from the handle portion 1. The manner in which the feed grooves 27 in the teeth connect with the distributing channel 21 is plainly shown. It is to be noted that said teeth 6 are open at the bottoms, thus permitting the scalp as well as the entire layer of hair thereon to be moistened by the article of the instant invention.

The fluid applying portion 5 is symmetrical about the median vertical plane perpendicular to its longitudinal axis, and therefore may be removed from the handle portion 1, turned end for

end, and replaced in said handle portion. Thus the fluid applying portion 5 may be inserted in the handle portion 1 with the feed grooves 27 facing either to the left or to the right at the option of the user. The flanges 31 fit into the corresponding grooves 32 in the handle portion 1. The portion 5 makes a fluid-tight seal with the portion 1, and may be made to fit so snugly that no further mechanism is needed to hold it in place. In addition, however, one or more lugs 33 may be provided on the portion 5, and may engage a dimple 34 in the portion 1, for the purpose of locking said portion 5 into place to prevent end play in the groove 32.

Figure 6 is an enlarged transverse sectional view on line 6-6 of Figure 4, and shows the shape in cross-section of one of the teeth of the fluid-applying portion 5. It is to be noted that the tooth encloses somewhat more than a semi-cylinder, so that the orifice is somewhat narrower than the diameter of the groove. Thus capillarity retains fluid within the groove until said fluid is ejected by pressure applied by means of the feed lever 2. The shape of the teeth prevents a film of fluid from forming between the teeth.

Figure 7 is an enlarged plan view of the finger 7. The rounded end 22 makes contact with the under side of the diaphragm 11. The forked end 23 grasps the valve 12.

In using our new improved fluid applicator, the cap 25 is first removed and the fluid which is to be applied to the hair and scalp is poured into the reservoir 24, after which the cap is replaced. The flanges 31 on the fluid applying portion 5 are slipped into the grooves 32, and the comb-like element 5 is pushed in as far as it will go, whereupon one of the snap locks 33 engages the dimple 32, and the comb-like element 5 is thereby locked into place.

Our fluid applicator is held in the hand of the operator like an ordinary hair brush, and the fluid-applying portion 5 is combed through the hair in such a manner that the ungrooved faces of the teeth 6 face in the direction in which the comb is moving. When it is desired to moisten the hair, the feed lever 2 is depressed with the thumb, whereupon fluid jets from the grooves 27 in the teeth 6 and is deposited upon the hair and the scalp. The velocity with which the fluid is discharged is controlled by the force with which the feed lever 2 is depressed, and the quantity of fluid emitted depends upon the angle through which said lever is turned. The stop 8 prevents the lever 2 from being depressed further than is necessary. When the thumb is removed from the feed lever 2, said lever springs back to its rest position, and the flow of fluid from the article instantly ceases. Fluid within the fluid-applying portion 5 is automatically sucked back into the reservoir 24.

Having described the manner in which the present invention is to be used, we shall now explain the operation of the mechanism. Depressing the feed lever 2 causes the pressor plate 10 to depress the flexible elastic diaphragm 11 and thereby places pressure upon the air and liquid within the reservoir 24. Simultaneously the finger 7 rotates on the pin 15 and raises the valve 12 away from the vent 13. Since the fluid in the reservoir is under pressure whenever the vent is open, said fluid flows into the distributing channel 21 and is distributed to the grooved teeth 6 from whence it is ejected upon the scalp and hair. When the thumb of the operator is

removed from the feed lever 2, the elastic diaphragm 11 springs back to its original configuration and forces the feed lever 2 back to its rest position. If desired, an air vent may be placed in the cover 29 to prevent the air pocket between said cover 29 and the diaphragm 11 from interfering with the action of the device. The helical spring 20 brings the finger 7 back to its rest position and thereby causes the valve 12 to close the vent 13. The diaphragm 11, in springing back to its initial configuration, creates a partial vacuum in the reservoir 24 whereby the fluid in the fluid-applying portion 5 is drawn back into said reservoir.

Even when the quantity of liquid in the reservoir 24 is very small, our device operates efficiently. The liquid of course accumulates in the lower end of the reservoir in the vicinity of the vent 13. When the diaphragm is deformed by depressing the feed lever 2, the air in the reservoir is compressed and exerts sufficient pressure upon the liquid to cause it to flow into the comb portion 5 and squirt therefrom. Similarly, when the diaphragm 11 is allowed to spring back to its initial configuration, the partial vacuum in the reservoir sucks the fluid in the comb portion back into said reservoir.

It will be observed that no part of the mechanism pierces any wall of the reservoir; thus the possibility of leakage is entirely eliminated.

After our fluid applicator has been used on one person, the comb portion 5 is simply pulled out and set aside for subsequent sterilization. Since the vent 13 is sealed by the valve 12, and since no fluid remains in the comb portion 5, as explained in detail above, no leakage or dribbling is encountered when said comb portion 5 is merely slipped into place and the device is ready to be used on the next customer. In order to clean the entire instrument, the cap 25 is removed, the feed lever 2 is depressed, and a stream of water is flushed through the instrument.

Our improved fluid applicator may, of course, be made from a variety of materials. We have found it convenient to mold the handle portion 1 and the comb portion 5 of plastic, such as Bakelite, Tenite, Vinylite or the like. The diaphragm 11 may be molded of rubber or other resilient material. The button which functions as the valve 12 is preferably of soft rubber, but plastic, metal or other material may be used if desired. The remaining parts may be made of any suitable material, such as stainless steel or other metals, or synthetic materials.

It is to be understood that while we have described and illustrated a preferred embodiment of our invention, variations therefrom may be made without departing from the scope of our invention.

Thus it will be seen that we have fully disclosed a new fluid applicator and the construction, operation and advantages of the same, and have pointed out the manner in which our invention accomplishes the objects hereinabove set forth, as well as others which will be apparent from this specification and the appended claims. Having thus described our invention and illustrated its utility, we claim:

1. An applicator for cosmetic fluids comprising a hollow handle, an elastic diaphragm in sealing contact therewith, means for applying pressure to said diaphragm, a pivoted finger within said hollow handle and adapted to be rotated by said pressure-applying means, a stopper attached to said finger, a vent normally closed by said stopper,

spring means adapted normally to maintain said stopper in sealing contact with said vent, means on said handle adapted to retain a feeder comb detachably secured thereto in communication with said vent, and a feeder comb comprising a grooved rib and a plurality of grooved teeth projecting therefrom, said feeder comb being adapted to be slidably connected with said slot in said handle with the groove in said rib in communication with the vent in said handle, the groove in said rib communicating with the grooves in said teeth, the grooves in said teeth extending throughout the lengths thereof and piercing the ends thereof.

2. A fluid applicator comprising a hollow handle having an elastic wall portion, means for applying pressure to said elastic wall portion, a valve within said hollow handle and adapted to be opened by said pressure applying means, means for automatically returning said valve to closed position when pressure is removed therefrom, a vent normally closed by said valve, means adapted to retain a fluid applying element detachably secured to said handle and in communication with said vent, and a detachable reversible fluid applying element comprising a channeled symmetrical fluid distributor and a plurality of grooved teeth connected thereto, the channel in said fluid distributor being adapted to communicate with the vent in said hollow handle, the grooves in said teeth communicating with the channel in said fluid distributor, said grooves extending throughout the lengths of said teeth and piercing the ends thereof.

3. A fountain device for applying fluid to the hair and scalp including a hollow handle adapted to retain fluid therein, a detachable cap to facilitate filling said handle with fluid, a deformable, elastic diaphragm in sealing contact with said hollow handle, a pressor plate upon said diaphragm, a manually operated lever to depress said pressor plate, a pivoted finger within said hollow handle and adapted to be rotated by said pressor plate acting through said diaphragm, one end of said finger being in contact with the under side of said diaphragm and the other end of said finger being forked and grasping a stopper of relatively soft material, a vent normally closed by said stopper, a spring adapted to normally maintain said finger in shut-off position whereby said stopper is held in sealing contact with said vent and said diaphragm is retained in its initial configuration, an elongated slot in the under side of said hollow handle, said slot being substantially T-shaped in cross section, open at the bottom and one end, and in communication through the top thereof with said vent, and a feeder comb detachably connected with said handle, said comb comprising a longitudinally grooved rib with its edges flared outwardly and adapted to fit into said T-shaped slot, and a plurality of teeth projecting from said rib, said teeth being hollow and vertically slotted from said rib to the extreme tips of said teeth, the interior of said teeth being in communication with the groove in said rib.

4. A fountain device for applying fluid to the hair and scalp comprising a hollow handle adapted to retain fluid therein, a deformable, elastic diaphragm in sealing contact therewith, compressing means above said diaphragm, a pivoted finger within said hollow handle, a lever on said handle adapted to operate said compressing means and rotate said pivoted finger, a stopper attached to one end of said finger, a

vent normally closed by said stopper, a spring adapted normally to maintain said stopper in sealing contact with said vent, a slot in said handle adapted to retain a feeder comb detachably secured thereto and in communication with said vent, and a feeder comb comprising a grooved rib and a plurality of grooved teeth projecting therefrom, said grooved rib being adapted to be slidably inserted in said slot in said handle with the groove in said rib in communication with said vent, said rib having flanges thereon adapted to retain said comb in attachment with said handle, the groove in said rib communicating with the grooves in said teeth, the grooves in said teeth extending throughout the length of said teeth and piercing the tips thereof.

5. A fluid applicator comprising a hollow handle portion, an elastic membrane in sealing contact with said handle portion, means for applying pressure through said membrane to fluid within said handle portion, a valve adapted to be opened by said pressure applying means, means for automatically closing said valve, a vent controlled by said valve, means adapted to secure a fluid applying element to said handle portion, and a detachable fluid applying element comprising a plurality of grooved teeth and means for distributing fluid discharged from the vent in said handle portion to the grooves in said teeth.

6. In a fluid applicator as specified in claim 5, hollow teeth slotted throughout the lengths thereof and pierced at both ends, said slots all facing in the same direction.

7. A fountain applicator comprising a reservoir for fluids, a deformable, elastic diaphragm in sealing contact with said reservoir, a member positioned upon said reservoir for depressing said diaphragm, a valve connecting said reservoir with fluid distributing means, said fluid distributing means comprising a grooved rib and a plurality of grooved teeth connecting therewith, means within said reservoir adapted to open said valve and actuated by depressing said diaphragm, and

means adapted to close said valve and restore said diaphragm to its initial configuration whenever said diaphragm depressing member is released.

8. A fluid applicator comprising a reservoir for fluids, a portion of at least one wall of said reservoir being constructed of deformable elastic material, means for distorting inwardly said deformable portion, a lever wholly within said reservoir and actuated by said distorting means for opening a vent in said reservoir, and fluid distributing means connecting said reservoir with a plurality of grooved teeth.

9. In a fluid applicator, a comb portion comprising a plurality of grooved teeth and a channeled rib adapted to transmit fluid to the grooves in said teeth, said grooves extending from said channeled rib to the tips of said teeth and piercing the sides and bottoms of said teeth.

10. A detachable, reversible comb adapted to be used in fluid applicators and comprising a trough, a flanged rim completely surrounding said trough whereby said comb may be slidably attached to a fluid reservoir to form a fluid-tight seal therewith, said comb being rigidly supported throughout the length thereof by engagement of said flanged rim with said reservoir, and a plurality of slotted hollow teeth communicating with the interior of said trough, said teeth being substantially C-shaped in cross-section throughout the lengths thereof.

11. In fluid dispensing devices, the combination with a reservoir having a resilient diaphragm, and means for depressing said diaphragm, of a valve-operating lever positioned within said reservoir and operated by depressing said diaphragm, whereby depressing said diaphragm simultaneously opens a valve and applies pressure to fluid within said reservoir, thereby causing emission of said fluid.

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