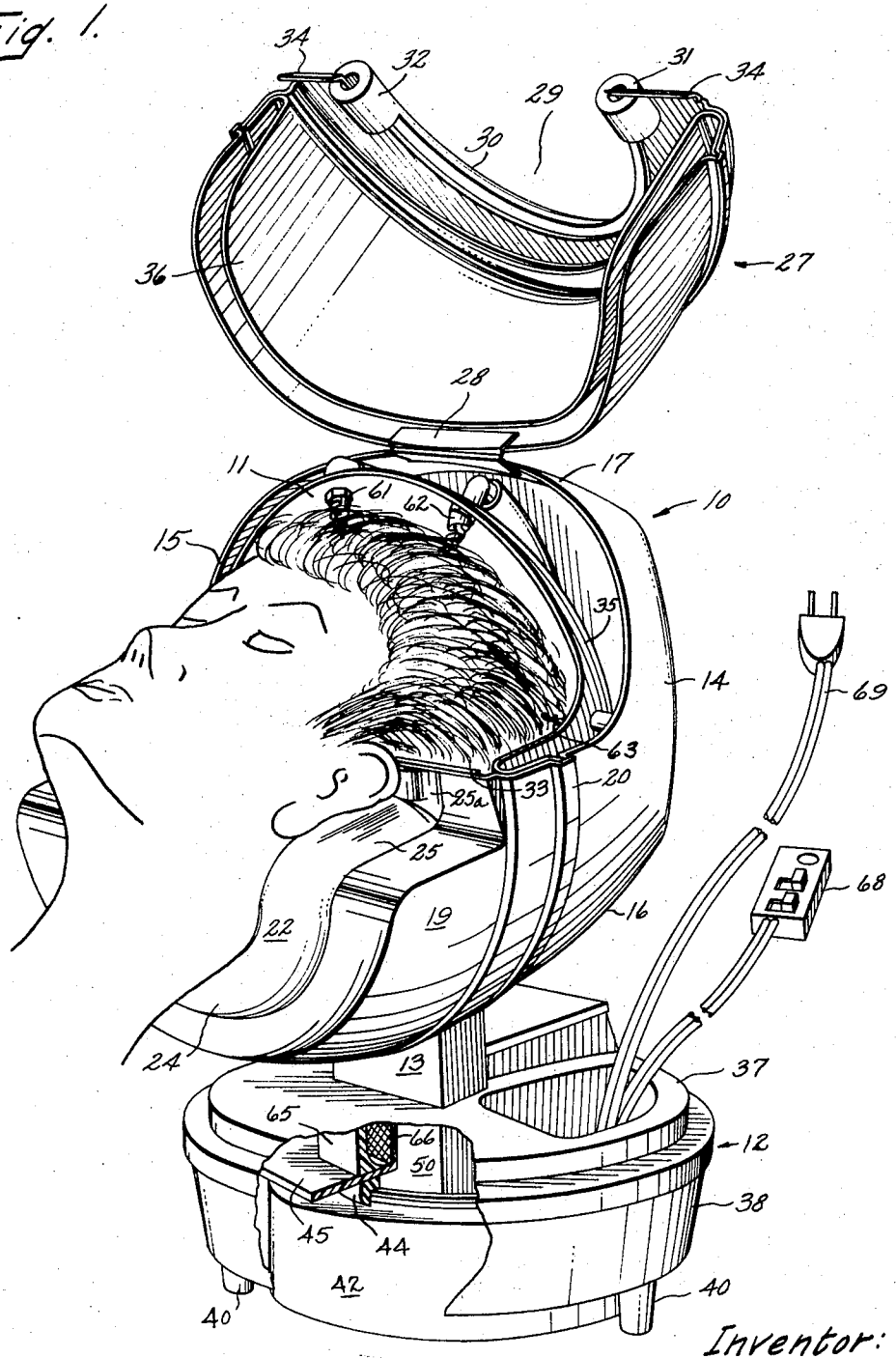
Oct. 28, 1969 T. F. NELSON 3,474,794

HEAD SUPPORTING AND SEALING MEANS FOR HAIR TREATING APPARATUS

Filed Nov. 14, 1966 4 Sheets-Sheet 1

Fig. 1.



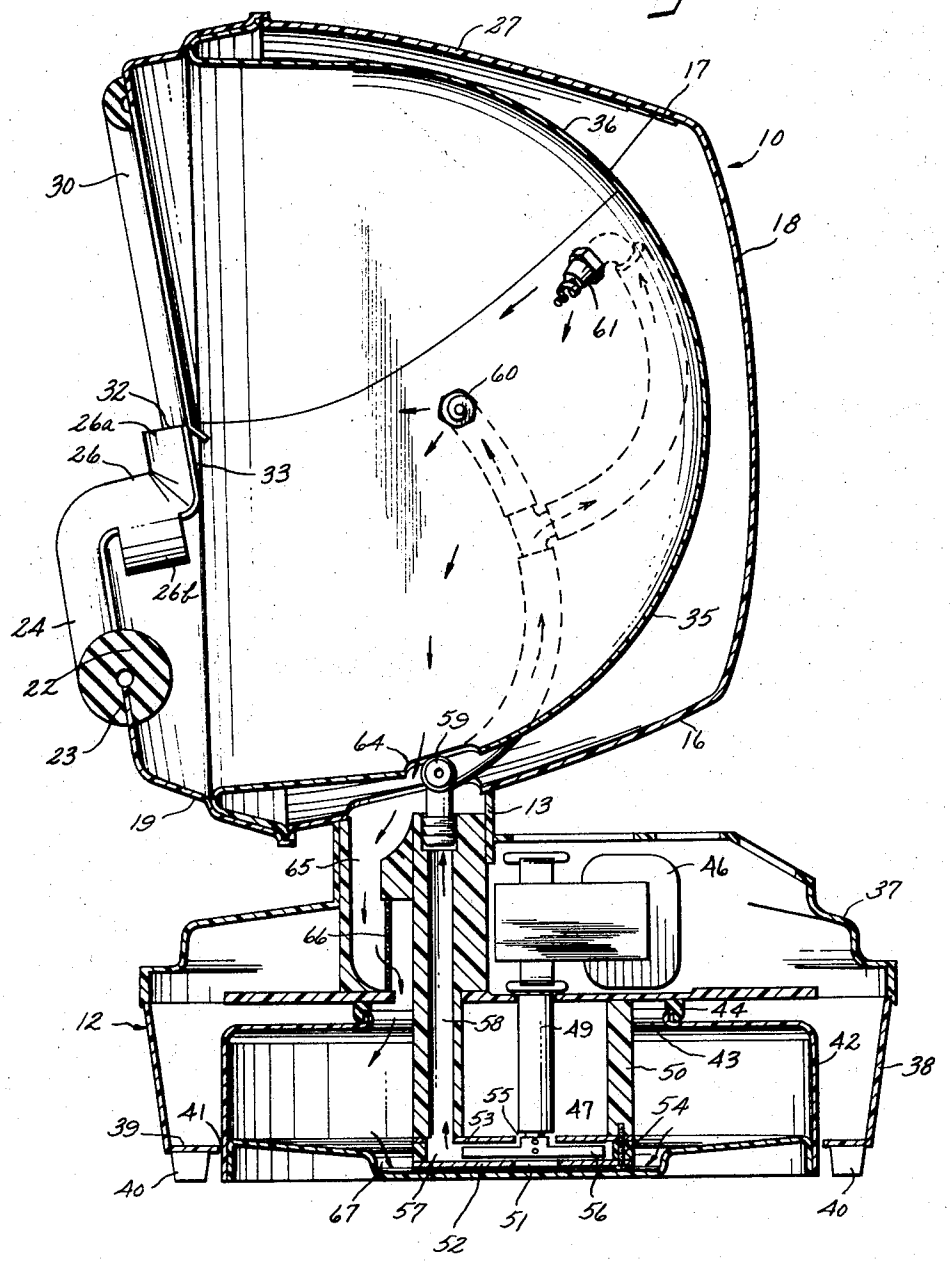
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HEAD SUPPORTING AND SEALING MEANS FOR HAIR TREATING APPARATUS

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Fig. 2.



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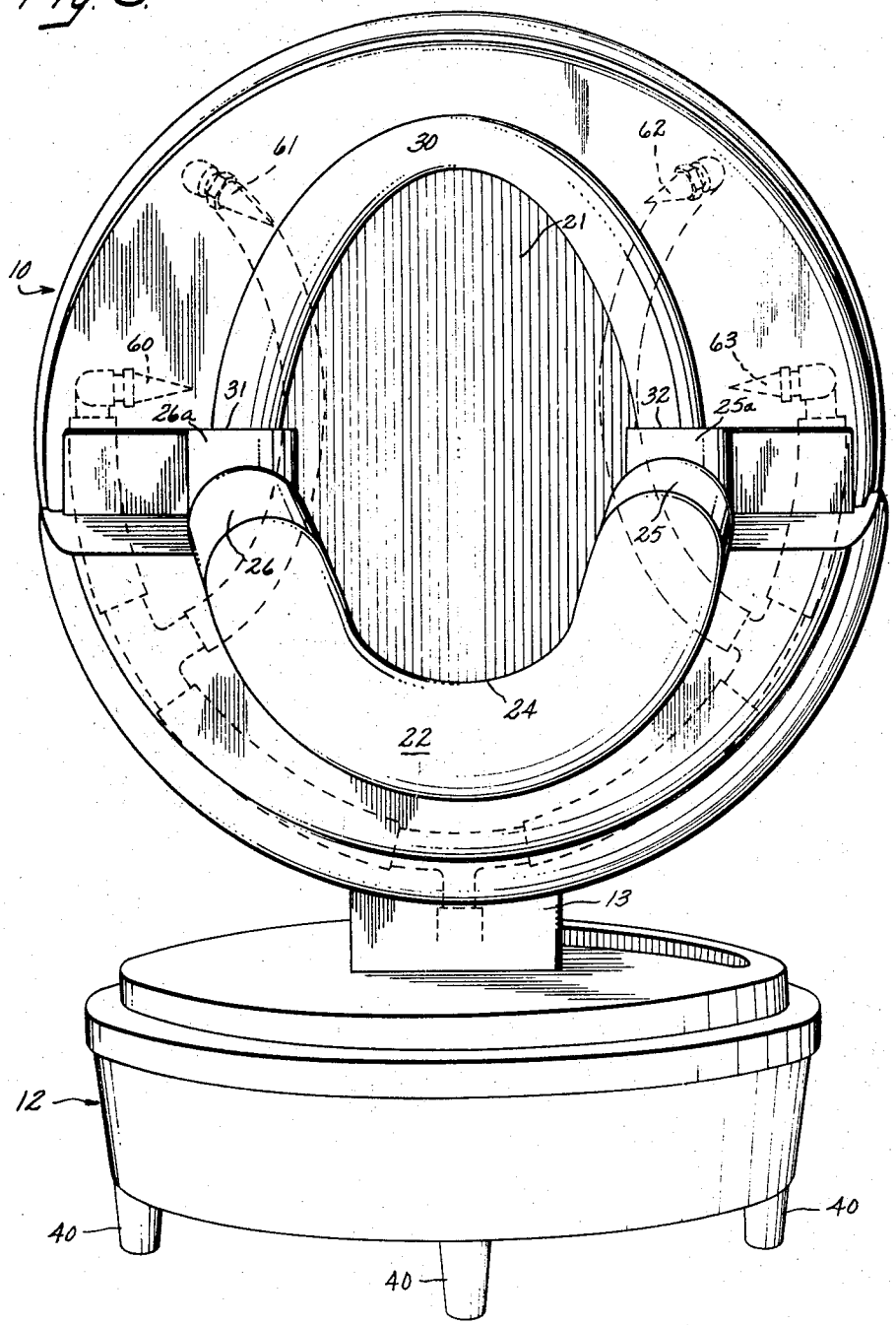
John O. Reep
Attorney

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HEAD SUPPORTING AND SEALING MEANS FOR HAIR TREATING APPARATUS

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Fig. 3



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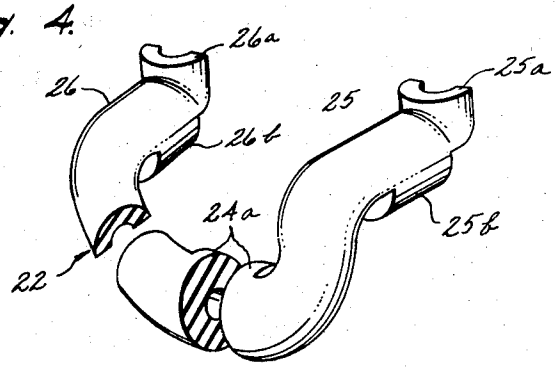
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HEAD SUPPORTING AND SEALING MEANS FOR HAIR TREATING APPARATUS

Filed Nov. 14, 1966 4 Sheets-Sheet 4

Fig. 4.



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HEAD SUPPORTING AND SEALING MEANS FOR HAIR TREATING APPARATUS

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Int. Cl. A45d 8/00
U.S. Cl. 132—9 6 Claims

ABSTRACT OF THE DISCLOSURE

This disclosure concerns a human head supporting and sealing means used in hair washing apparatus. The supporting and sealing means includes a first portion extending around the back of a user's neck and second portions formed as continuations of the first portion extending at an angle with respect to the first portion to engage the head of the user behind the ears. The first and second portions cooperate to support the head and together with a third portion, which is pivotally mounted on a cover member, also provide a complete head seal for retaining fluid within the hair washing apparatus.

The present invention relates to apparatus for treating the human head with a treating fluid; and, more particularly, to improved means for supporting the head and sealing the hair and scalp within a treating chamber with the face of the user located exteriorly of the chamber.

Devices for applying a treating fluid such as water or water and shampoo for cleaning purposes to the hair and scalp of a human head have long been known in the prior art. Often these devices have included a chamber for receiving the hair and scalp, means to seal the hair and scalp within the chamber and fluid distributing means for applying the fluid to the hair and scalp within the chamber. One of the principal problems which have been encountered in the design of a suitable device is in providing an adequate seal so that the fluid does not leak from the chamber. If the apparatus is of a type wherein the head is received in the treating chamber in a "face up" or supine position there must be provided, in addition to adequate sealing means, means to adequately support the head. In devices heretofore known, this supporting function has generally been accomplished by positioning a support interiorly of the chamber upon which the back of the head rests. While a support within the chamber may provide adequate support, this interior support tends to crush the hair against the back of the head and may perhaps interfere with positive assurance that the treating fluid will reach all of the hair within the chamber in an effective manner.

It is therefore a primary object of the present invention to provide a head support and sealing means for use in a hair treating apparatus wherein not only is the hair and scalp portion of the head effectively sealed in a treating chamber, but the head is also supported and held in proper position by the sealing means without the necessity of using any additional head supporting structure interiorly of the treating chamber.

Briefly stated, in accordance with one aspect of the present invention, there is provided a head support and sealing means formed of flexible, resilient material and defining an opening leading into the treating chamber of a hair treating apparatus. The supporting and sealing means includes a first portion which extends in supporting and sealing relationship around the back of a user's neck when a head is positioned in the chamber. Second portions formed as continuations of the first portion extend at an angle with respect to the first portion toward the chamber and these second portions engage opposite sides

of the head between the ears of the user and the back of the head. Therefore, the sealing line formed along the contact line between the first and second portions and the head of the user also forms an elongated support line which precludes inadvertent tilting of the head into the chamber once the head has been properly positioned. A third sealing portion movable with respect to the first and second portions cooperates with the first and second portions to complete the seal around the hair and scalp within the chamber when it is desired to use the device for its intended purpose.

While the specification concludes with claims particularly pointing out and distinctly claiming the subject matter which I regard as my invention, it is believed the invention will be better understood from the following description taken in connection with the accompanying drawings in which:

FIG. 1 is a perspective view illustrating the position of a user's head on portions of the head supporting and sealing means of the present invention;

FIG. 2 is a sectional side elevational view of the apparatus;

FIG. 3 is a front elevational view of the apparatus; and

FIG. 4 is a broken away perspective view of a preferred supporting and sealing gasket used in the apparatus.

Now turning to the drawing, there is illustrated an apparatus including an upper portion **10** defining a chamber **11** for receiving the hair and scalp of a user. A hollow supporting base **12** is integrally connected to this upper portion through the medium of a hollow column **13**. The upper portion includes outer side walls **14** and **15**, bottom wall **16**, top wall **17** and a rear wall **18**. A frontwardly extending projection **19** is connected to the front edges of the side and bottom walls along a seam **20** although this projection could, if desired, be formed integral with the other walls defining the chamber. This projection is provided centrally with a cut-away portion which provides the bottom half of an opening **21** into the chamber. In order to provide a supporting and sealing means for engaging the head of the user, a flexible, resilient gasket **22** is attached around the edges of the opening such as by inserting these edges into a longitudinal slit **23** in the gasket as is clear from FIGS. 1 and 2. The gasket has a first generally arcuate portion **24** which is dimensioned appropriately to receive the back of the neck of the user when the user's head is positioned therein in the manner illustrated at FIG. 1 with the face of the user facing generally upwardly. Second portions **25** and **26** formed as continuations of the first portion extend at an angle with respect to the first portion toward the interior of the chamber, and ends **25***a* and **26***a* of the second portions extend generally vertically adjacent the top of the user's ears toward the forehead.

Because the material forming the first and second portions will be slightly compressed when the user's head is inserted within the device, these portions form an effective fluid seal extending in a line around the back of the neck of the user generally toward the ear lobes and then beneath each ear to a point adjacent the top of the ear. It is also important to note that what might be referred to as three effective points of support are used to support the user's head and prevent it from inadvertent tilting from the proper position of FIG. 1 a greater distance rearwardly into the chamber. The three effective support points are the central upper surface of the first portion **24** which engages the back of the neck, and surface areas on the second portions **25** and **26** located immediately beneath the ears between the ears and the back of the head. These supporting points are in spaced vertical planes which, of course, precludes this undesirable tilting action just mentioned should the user relax his neck muscles once the head has been properly positioned in the device.

Reference may now be made to FIG. 4 in order to better understand the function of a preferred form of a supporting and sealing gasket 22 which has been used in an effective manner. It is clearly seen that the central part 24*a* of arcuate portion 24 is generally circular in cross-section. There are also parts 25*b* and 26*b* of portions 25 and 26 which are generally circular in cross-section. The remaining length of the gasket is generally semi-circular in cross-section. An important feature to be noted with regard to this construction is the fact that the parts 24*a*, 25*b* and 26*b* are relatively firmer than the remainder of the gasket between these parts. The firmness is contributed due to the fact that the increased quantity of material at the circular portion permits less compressibility than the relatively soft and more easily compressible semi-circular portions. In use, and when a head is positioned properly on gasket 22, the parts 24*a*, 25*b* and 26*b* will be only slightly compressed so that while an effective seal is accomplished, these relatively firm parts provide excellent support and assure proper positioning of the head. The proper positioning is important because, as will hereinafter be described, a second gasket which is movable with respect to gasket 22 acts in conjunction with the first gasket to complete the seal. Meanwhile, the relatively soft portions of gasket 22 between the relatively firm portions are more easily compressed so as to be able to accommodate, in an effective manner, different neck contours. The gasket 22 may be made by first forming, by extrusion or otherwise, the entire length of the gasket of suitable material in generally circular cross-section. Then, the parts of the gasket between the parts 24*a*, 25*b* and 26*b* may be cut away longitudinally to provide the generally semi-circular relatively soft or more easily compressible areas.

In order to initially permit the user to easily position his head in the chamber, and then to complete the seal around the hair and scalp, a cover member 27 is pivotally connected to the top wall 17 through the medium of a flexible plastic hinge plate 28. After the user's head has been properly positioned as illustrated at FIG. 1, the cover member is pivoted to the position of FIG. 2. The front end of the cover includes means defining an opening 29 which is complementary to the opening in the frontwardly extending projection 19. This cover opening is lined with a flexible, resilient material forming a third sealing portion or gasket 30 which, when the cover is closed, extends around the forehead of the user toward the user's temples. The ends 31 and 32 of this latter portion mate respectively with ends 25*a* and 26*a* of the second supporting and sealing portions 25 and 26 to complete the seal around the hair and scalp. As an alternate construction, the ends 31 and 32 could extend behind and spaced from the ends 25*a* and 26*a* and, in the nature of a shingle, prevent fluid from escaping. This, for present purposes, would also provide a fluid seal because the fluid never reaches such a level in the chamber that it could escape between the ends 31 and 32 and respective ends 25*a* and 26*a*. When the seal has been accomplished, the face and ears of the user are located externally of the chamber.

With the arrangement just described the head is effectively sealed and supported on the device so that no additional supporting means for the head located inside of the chamber is necessary. A suitable material for forming the gaskets 22 and 30 is closed cell polyurethane, but any suitable flexible, resilient sealing material may be used.

Flexible sealing strips 33 located on the inner surface of the projection cooperate with inturned flanges 34 carried by the cover to further assure that the chamber will be sealed from the exterior when the cover is closed.

A dome-shape inner liner 35 is secured interiorly of the device along the seam 20 to conceal fluid distribution conduits and to also lend rigidity to the device. This liner is not used, however, to provide any support for portions of the user's head within the chamber. A continuation of the liner 35 is indicated by the numeral 36 in the cover.

The principal features of the present invention, that is the head supporting and sealing means have already been described. While any suitable fluid distribution system may be utilized to distribute a fluid to the hair and scalp positioned in the chamber, a preferred specific distribution system will now be described along with the remainder of the apparatus.

As indicated above, a hollow supporting base 12 is integrally connected to bottom wall 16 through the medium of a hollow column 13. This supporting base includes a top wall 37, a generally circular side wall 38 and a bottom wall 39. The bottom wall has foot portions 40 extending therefrom to support the base from a level supporting surface. An opening 41 through the bottom wall is sufficiently large to receive a container 42 of hair treating fluid. The container has an opening 43 in the top wall thereof surrounded by a gasket 44.

A relatively rigid supporting ledge 45 is integrally connected to and extends between the side walls of the base. This supporting ledge provides means to secure a motor 46, pump 47 and other parts of a fluid distribution system within the base. The motor is secured on the top surface of the ledge and includes a shaft 49 which extends downwardly through the ledge and through a generally rectangular hollow post 50 to the pump located at the bottom of the post. A preferred pump is of the centrifugal type having an inlet 51 along the surface of a bottom plate 52. The pump further includes a top plate 53 and a center plate 54. The shaft 49 from the motor is connected through an opening 55 in the top plate to an impeller blade 56 located in the pump chamber in the center plate. When the impeller is rotated, hair treating fluid is forced centrifugally from the inlet opening 51 to the pump outlet 57.

The pump outlet leads to a hollow duct 58 which extends interiorly through the column 13. A fluid distribution T-coupling 59 is connected to the outlet of the duct at the top of the column 13. From the coupling 59 a plurality of fluid conducting pipes and other couplings provide fluid flow paths to a plurality of outlet nozzles 60–63 located within the chamber and spaced from the scalp of the user.

An opening 64 in the bottom of liner 35 leads into a conduit 65 disposed within the column 13. This conduit is external of the duct 58 leading from the pump outlet 57 to the T-connection 59. As seen clearly at FIG. 2 the exit of conduit 65 has a suitable filter 66 disposed therein, and from the filter the fluid returns to the container 42.

In operation, a fluid container 42 is removed from a storage position and placed on a level supporting surface such as a table top. Then the remainder of the apparatus is transported as a unit to the vicinity of the container, and the supporting base 12 is placed over the container in a manner whereby the side walls of the supporting base surround the container, and the pump 47 extends through the opening 43 in the top of the container to a sump 67 forming a part of the container's bottom wall. Now the sealing gasket 44 along the top edge of the container opening bears against the supporting ledge 45. The cover 27 is pivoted to the position of FIG. 1, and the user may then sit in a chair adjacent the front of the device and place her head into the device in the manner illustrated at FIG. 1. Now the cover may be closed to the position of FIG. 2 so as to seal the hair and scalp within the chamber. It is to be noted that when the cover is closed from the position of FIG. 1 to the position of FIG. 2 the free ends 31 and 32 of the top gasket wipe across the face immediately above the ears and thereby carry any portions of hair along the top of the ear rearwardly into the chamber.

When the motor 46 is turned on through the medium of any suitable switch 68 associated with power cord 69, the pump begins pumping fluid from the container 42 and through the fluid distribution path to the nozzles 60–63. Fluid emerging from the nozzles contacts the hair and scalp and then this fluid drops from the hair by gravity through opening 64, conduit 65 and filter screen 66 back into the container.

While the device just described may be used with any suitable hair treating fluid, it might be mentioned at this point that one fluid which has been found particularly effective for cleaning human hair is a liquid identified as 1,1,2 - trichloro-1,2,2, - trifluoroethane. The component parts of the apparatus may be formed of any suitable material so long as this material is not adversely affected by the treating fluid which is to be used.

The foregoing is a description of an illustrative embodiment of the invention, and it is applicant's intention in the appended claims to cover all forms which fall within the scope of the invention.

I claim:

1. A human head support and sealing means for use in an apparatus including walls defining a chamber having an opening for receiving hair and scalp of a user and means for distributing a treating fluid to the portion of the user's head within the chamber, said support and sealing means being formed of a flexible, resilient material defining said opening and comprising:

(a) a first generally arcuate portion positioned on said apparatus to receive the neck of the user with the face of the user facing generally upwardly, said first portion extending around the back of the neck of the user;

(b) second portions extending at an angle with respect to said first portion toward the interior of the chamber, said second portions engaging opposite sides of the head between the ears and back of the head when the user's head is positioned in said chamber;

(c) a third fluid sealing portion extending over the forehead toward the temples of the user, said third portion being movable with respect to said first and second portions;

(d) said first portion and second portions cooperating to essentially solely support the user's head, and

said first, second and third portions cooperating to form a fluid seal extending around the head with the face of the user located exteriorly of the chamber.

2. The apparatus as set forth in claim **1** wherein the ends of said second portions extend generally vertically adjacent the top of the user's ears toward the forehead of the user when the head is placed in the chamber.

3. The apparatus as set forth in claim **1** wherein said third portion is carried by a top wall of said chamber, said top wall being pivotally mounted with respect to the other walls defining said chamber.

4. The apparatus as set forth in claim **2** wherein said third portion has ends which mate with the ends of said second portion in fluid sealing relationship.

5. The apparatus as set forth in claim **1** wherein the means for distributing a treating fluid includes nozzles disposed within said chamber and spaced from the scalp of the user when the user's head is positioned in said chamber.

6. The apparatus as set forth in claim **1** wherein said first portion includes a central area which is relatively firmer than the remaining area of said first portion, and said second portions each include an area which is relatively firmer than the remaining areas of said second portions; said relatively firm areas contributing good support to the head of the user at three spaced points.

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