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R. E. BEAUBIEN.
 APPARATUS FOR TREATING THE SCALP.
 APPLICATION FILED APR. 9, 1906.

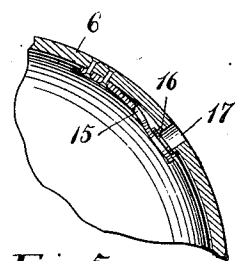
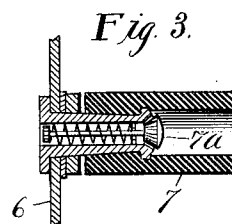
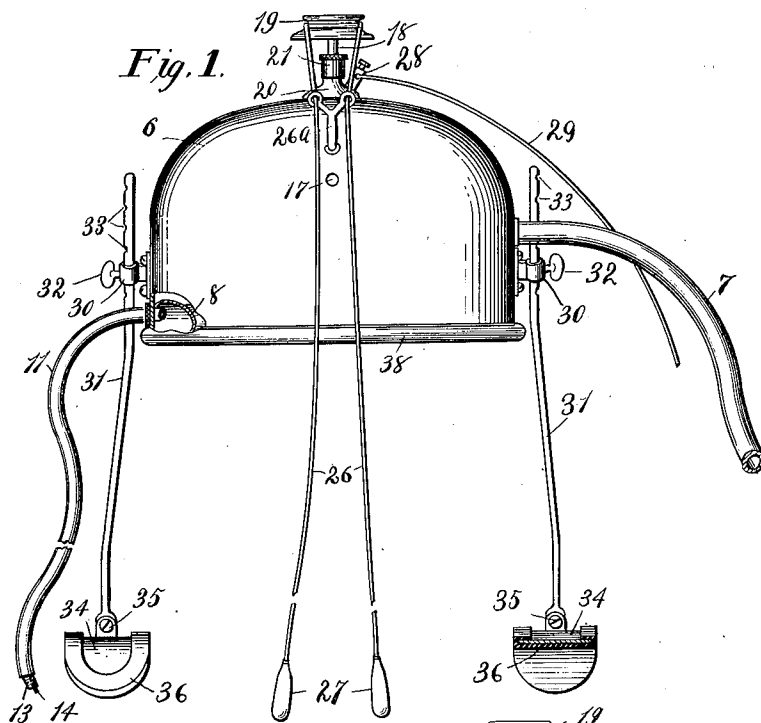
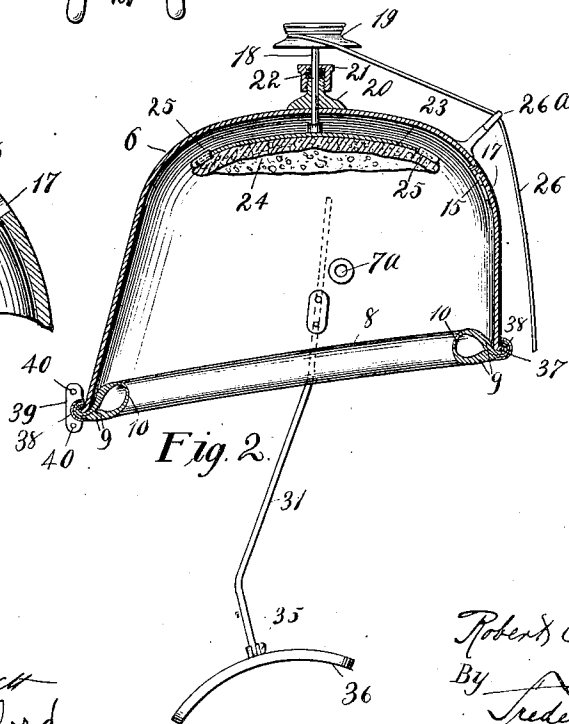
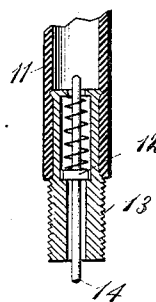


Fig. 4.



Witnesses:

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APPARATUS FOR TREATING THE SCALP.

No. 861,349.

Specification of Letters Patent.

Patented July 30, 1907.

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To all whom it may concern:

Be it known that I, ROBERT E. BEAUBIEN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Apparatus for Treating the Scalp, of which the following is a specification.

My invention relates to apparatus for promoting the growth of hair upon the human head and its general object is to provide means for applying simultaneously three well known and efficient agents for accomplishing the desired result, namely, cupping, massage and electricity.

The chief objects of my invention are:—to provide a more efficient pneumatic apparatus for producing active hyperæmia of the scalp than those in ordinary use; to provide a pneumatic apparatus to be applied to the head that will be more comfortable to the user; to provide a pneumatic contrivance adapted to be placed upon the head that shall have a more effective and comfortable means for producing pressure contact between the shell of the device and the user's head; to produce a pneumatic helmet having means for preventing an excessive degree of rarefaction; to provide a pneumatic device of the character stated having means by which the patient may determine when the requisite amount of pressure has been reached; to produce a pneumatic device provided with means for adjusting it to heads of different sizes without variation in the air pressure; to produce a pneumatic helmet having means by which it can be removed instantaneously and without discomfort to the patient; to produce a vacuum helmet having means for permitting the patient to move or walk about without interfering with the treatment; to produce an apparatus having means for applying medicated lotions to the scalp coincident with the increase in hyperæmia caused by the combined vacuum and electrical devices, thus insuring a more effective result; to produce an apparatus having means for applying massage to the scalp in the presence of rarefied air; to produce an apparatus having means for applying an electric current to the scalp *in vacuo*; to produce a combined apparatus of the character described provided with insulation by non-conductors thus forcing the electric current in a predetermined direction; to produce a combined vacuum, massage and electric apparatus for treating the scalp, of light weight and capable of being folded and packed into a small compass for transportation; to provide a combined vacuum, massage and electric appliance for treating the scalp that can be easily and readily put together when disassembled; to produce a combined pneumatic, massage and electrical appliance that can be readily adjusted and operated by the

patient himself while undergoing treatment. I accomplish these and other minor results by means of the apparatus shown in the accompanying drawing and forming a part of this application, in which:—

Figure 1 is a front elevation of my improved apparatus; Fig. 2 is a longitudinal sectional view of the same; Fig. 3 is a sectional view enlarged of the exhaust valve; Fig. 4 is a sectional view, enlarged, of the inflation valve; and Fig. 5 is a fragmentary sectional view, enlarged, showing the construction of the safety valve.

The main contention in the effort to stimulate the hair follicles which have become dormant is that active hyperæmia must be produced. This condition of hyperæmia or dilation of the minute capillaries and arterioles may be brought about in various ways. Thus the application of massage, friction, electric stimulation and the use of atmospheric pressure each have their advocates and are all applicable in the treatment of baldness. Heretofore these agents have been used singly and it is for the purpose of combining the advantages of all three of these forces, that the improved apparatus hereinafter described has been devised.

An objectionable feature found in the ordinary vacuum helmet is the method of suspension which is from the top of the helmet, or by an internal support resting upon the summit of the cranium. By the first method the patient is required to exert a downward force to prevent the head from being forced deeply within the cap. In the second method the whole force of the atmospheric pressure is brought to bear upon the cranial vertex, and no matter how carefully padded the circulation in that portion of the scalp will be interfered with, defeating the paramount object of the contrivance.

In the devices with which I am acquainted there is no provision made for preventing undue atmospheric pressure from over-exhaustion of the air, which, if carried to an extreme may result in rupture of blood vessels. Another source of untoward effects is the use of a heavy rubber band around the head to serve as a sort of packing between the head and the rim of the helmet to prevent leakage of air. This band will invariably interfere with the circulation of blood to and from the scalp, and the parts above this constriction will soon show signs of congestion.

It should be borne in mind that the important point is to produce an unimpeded flow of blood through the capillaries while in fact the appliance mentioned militates against the production of this most desirable condition. Unless the rarefaction of air is carried to a certain point, the resulting vacuum will not cause a proper

dilation of the blood vessels to produce a free circulation and if carried above a certain degree, rupture of capillaries will invariably take place as manifested by tiny pin points of red. In order to guard against this injurious result I have devised a safety valve which will maintain the proper relation between the external and internal air pressure on the helmet. As a still further precaution against excessive exhaustion of the air, as might happen should the safety valve become damaged, the patient's attention will be directed to the pressure of the supports upon the shoulder, which should not reach a point that will cause decided discomfort. Below this point no damage can ensue.

Instead of the heavy rubber band used in other vacuum appliances for the scalp which must be drawn very tight in order to exclude the air, and which causes such a constriction of the vessels as to effectually prevent the inflow and outflow of blood to the scalp, I apply a pneumatic tube or ring of special and peculiar construction. This tube is attached to the lower edge of the helmet shell by means of a clamp hereinafter described. On its outer aspect the walls of this tube are thickened while on the inner surface where it comes in contact with the scalp they are thin and soft. By inflating this tube it immediately closes around the head, conforming perfectly to the inequalities on the surface of the scalp, requiring a minimum pressure to exclude the air thus permitting a free circulation of blood to and from the scalp. My method of constructing this pneumatic ring permits the use of a much smaller tube than would otherwise be required, the distension being principally on the side next to the scalp, thus insuring the proper adjustment to heads of different sizes, the necessary pressure not being appreciably greater on a large head than a smaller one, if within the field of the appliance, and the adjustment is entirely under the control of the operator who can carry the inflation of the ring to just the right point for comfort, using the minimum pressure requisite for excluding the air. The air pump having been removed, the appliance can be instantly released from engagement with the head by pressing upon the valve stem which projects from the inflation valve thus deflating the ring.

The helmet is supported in the correct position by means of adjustable rods with which it can be secured at the proper height for long or short necks and no effort of the patient is required to maintain it in a proper position. The supporting rods run down to the shoulder where they are attached to shoulder rests which are self adjusting and fitted with rubber pads, answering the double purpose of cushions to prevent discomfort and, being non conductors of electricity, serve to insulate the helmet.

My massaging device is a very important part of the mechanism and consists of a soft flat sponge or pad held securely by a metallic spring backing, resting very lightly upon the scalp and conforming thereto and securely fastened to an upright shaft, extending through an air-tight bearing in the top of the helmet and surmounted by a flanged pulley operated by cords running through guides and dropping down in front of the patient within convenient reach of his hands. The sponge can be made to alternately rotate rapidly in op-

posite directions by means of the cord, the soft sponge or pad resting upon the scalp so lightly that it will not injure the scalp nor the tender hair shoots that, by rougher manipulation, may be injured or destroyed. The massage is applied at the time when the cells amid the network of capillaries are distended by the increased circulation of blood, aiding the accelerated flow to remove the dead cells. The lightest touch of the sponge under these conditions will move the cells around the hair follicles more effectively than the most vigorous massage with the helmet removed.

Antiseptic or medicated lotions may be applied to the scalp by saturating the sponge or pad therewith, the condition of hyperæmia being especially favorable for the absorption of such application, and should any solution remain upon the scalp when the helmet is removed it will be forced by atmospheric pressure into the pores.

Any desirable form of electrical battery or current may be used to apply that therapeutic agent. When the galvanic or faradic current is employed a cord from one pole of the battery, will be connected to the helmet and the other to a plate upon which one foot of the patient rests. By simply moistening the sponge inside the helmet with water or any medicated preparation it will immediately become an electrode and as it is rotated, an electric massage bath is distributed over the entire surface of the scalp. The rubber ring around the head and the rubber pads under the shoulder rests being non-conductors, the electricity is forced down the shaft to be diffused through the sponge.

Referring to the drawing, the numeral 6 indicates the cap or helmet provided with an exhaust tube 7 which may be attached to an air pump of any desired form and is provided with a check valve 7^a. Surrounding the inner margin of said helmet is a flexible tube 8, preferably of rubber, the outer walls 9 being formed of comparatively thick material, the inner wall 10 being thinner. An inflation tube 11 communicates with the interior of said tube 8 and is provided at its outer end with a check valve 12, of well known form having screw threads 13 for attachment to a suitable air pump.

The helmet is provided with a safety valve consisting of a flat spring 15, secured to the helmet wall and having a disk 16 of suitable material, secured thereto and serving as an obturator for a foramen 17 formed in the wall of the helmet. A shaft 18 bearing a flanged pulley 19 on its upper end penetrates the vertex of the helmet and is journaled in a boss 20 provided with a cap 21 which forms a stuffing box which is filled with suitable packing 22. To the lower end of said shaft is secured a curved flexible strip 23 to which a flat disk 24 of some porous material, preferably sponge, is removably attached by means of pockets 25 secured to the sponge with which the ends of the flexible strip 23 engage. The shaft 18 and its attachments have a vertical movement in its bearings and may be rotated by means of a cord 26 passing through guides 26^a secured to the helmet, and provided with handles 27.

To the boss 20 is fixed a binding post 28 to which an electric cord 29 is attached. Upon the exterior lateral faces of the helmet are secured sleeves 30, through which pass supporting rods 31 adjustably secured by

thumb screws 32 which engage notches 33 in said rods. The lower ends of the latter are provided with shoulder rests 34 secured to the rods by ginglymoid joints 35, and covered interiorly, and upon the margins by insulating material 36, preferably of soft rubber.

The lower margin of the helmet shell is turned outwardly to form a flange 37 over which is drawn the external portion of the flexible tube 8 and securely held thereon by means of an annular clamp 38, the ends of said clamp being firmly held in apposition by clips 39 provided with holes 40 for the insertion of screws or rivets.

It is obvious that many changes may be made in the devices of my invention as herein set forth, without departing from the spirit and scope thereof, and I do not, therefore, desire to be limited to the precise construction shown.

Having thus described my invention, what I claim is:—

1. In apparatus for the purpose specified including a cupping device, a revoluble electrode extending through the wall of the cupping device, means for connecting said electrode in circuit with an electric conductor, and means for revolving said electrode.

2. In apparatus for the purpose specified, including a cupping device, a revoluble electrode extending through the walls of the cupping device, an absorbent covering for the electrode, means for connecting the electrode in circuit with an electric conductor, and means for revolving said electrode.

3. An apparatus for the purpose specified including a cupping device, an electrode revolubly mounted in said device, a removable absorbent covering for the electrode, means for connecting said electrode in circuit with an electric conductor, means for revolving said electrode and means for preventing rarefaction of air in the interior of said cupping device beyond a predetermined degree.

4. An apparatus for the purpose specified including a cupping device for the head, an electrode adapted to engage the cranium, a removable absorbent covering for the electrode, means for connecting said electrode in circuit with an electric conductor, means for revolving said electrode and means for automatically preventing rarefaction of air in the interior of said cupping device beyond a predetermined degree.

5. An apparatus for the purpose specified including a compartment adapted to be applied to the head, means for producing rarefaction of the air in said compartment, means for automatically limiting the degree of said rarefaction, means for preventing the entrance of air between the head of the patient and the margin of the said compartment, an electrode adapted to engage the cranium, a removable absorbent covering for the electrode, means for connecting said electrode in circuit with an electric conductor, means for revolving said electrode and means for automatically preventing rarefaction of air in the interior of said cupping device beyond a predetermined degree.

6. An apparatus for the purpose specified including a compartment adapted to inclose the upper portion of the cranium, means for creating a partial vacuum in said compartment, means for applying friction to the inclosed integument, means for applying an electric current to the parts and means for supporting the appliance.

7. An apparatus for the purpose specified including a compartment adapted to inclose the upper portion of the head, means for creating a partial vacuum in said compartment, means for automatically limiting the rarefaction of air in the compartment, a revoluble electrode in circuit with an electric conductor, an absorbent covering for said electrode, and means for supporting the apparatus upon the body of the patient.

8. An apparatus for the purpose specified including a compartment adapted to inclose the upper portion of the

head, means for exhausting the air from said compartment, means for excluding the external atmosphere when the internal air becomes rarefied, means for preventing the production of rarefaction of air beyond a certain predetermined degree, a revoluble electrode in circuit with an electric conductor, an absorbent covering for said electrode, and means for supporting the apparatus upon the shoulders of the patient.

9. An apparatus for the purpose specified, including a vacuum helmet for the head, means for creating a partial vacuum in said helmet, means to prevent carrying the rarefaction beyond a certain predetermined limit, a revoluble electrode extending through the wall of the helmet, a removable absorbent covering for the electrode, means for revolving the electrode, an electric conductor in circuit with the said electrode and means for insulating the apparatus from the patient.

10. An apparatus for the purpose specified including a vacuum helmet applicable to the head, means for creating a partial vacuum in said helmet, means to prevent carrying the rarefaction of air beyond a certain predetermined limit, a revoluble electrode extending through the wall of the helmet, a removable absorbent covering attached to the said electrode, means for revolving said electrode, an electric conductor in circuit with the said electrode, means for insulating the apparatus from the patient, and adjustable supporting means for the helmet consisting of insulated shoulder pads pivotally connected to vertical rods having slidable engagement with sleeves attached to the helmet and means for locking the rods in adjusted position.

11. An apparatus for the purpose specified including a vacuum helmet adapted to cover the upper portion of the head, an exhaust tube communicating with the interior of said helmet, a foramen formed in the wall of the helmet, a yielding obturator for said foramen, a flexible tube surrounding the margin of said helmet, an inflation valve communicating with the interior of said flexible tube, means for attaching said inflation valve to an air-pump, a shaft piercing the vertex of said helmet carrying a pulley upon its external end and furnished with an absorbent pad upon its internal extremity, means for rotating said shaft, a plurality of sleeves secured to the external wall of the helmet, supporting rods adapted to engage said sleeves, means for adjusting said rods in the sleeves, shoulder-rests pivotally secured to the lower ends of said rods, insulating pads secured to said shoulder-rests and a binding post adapted to engage an electric conductor secured to the vertex of said helmet.

12. An apparatus for the purpose specified including a vacuum helmet adapted to engage the upper portion of the head, an exhaust tube communicating with the interior of said helmet, a check valve for said exhaust tube, a foramen formed in the wall of the helmet and furnished with a yielding obturator, a flexible tube removably surrounding the margin of said helmet, said flexible tube being formed with a comparatively thinner inner wall, an inflation tube communicating with the interior of said flexible tube, a check valve for said inflation tube, means for attaching the inflation tube to an air-pump, a shaft journaled in the vertex of said helmet, a packing box for said shaft, a pulley mounted upon the external end of the shaft, and a porous pad removably attached to the internal end, a flexible cord engaging said pulley and provided with handles fixed to its ends, a plurality of sleeves secured to the external wall of the helmet, supporting rods adapted to adjustably engage said sleeves, shoulder rests flexibly secured to the ends of said rods, insulating pads removably secured to said to said shoulder rests and a binding post secured to the vertex of said helmet and adapted to engage an electric conductor.

13. A helmet, means for exhausting the air from the helmet when in operative position, an inflatable tube secured to the rim of said helmet and extending within the latter, and means for inflating and deflating said tube.

14. A helmet adapted to be applied to the human head, means for exhausting the air from the interior of said helmet, a flexible tube interposed between the head of the user and the helmet, means for inflating said tube with air

and adjustable means for supporting said helmet consisting of shoulder pads having hinged connection with rods which are adjustable in sleeves attached to the helmet.

15. A helmet adapted to be applied to the human head
5 and adjustable means for supporting said helmet from the shoulders, said means consisting of shoulder pads having hinged connection with rods which are adjustable in sleeves attached to the helmet. .

16. A helmet adapted to be applied to the human head,
10 an inflatable tube arranged on the interior marginal wall

of the helmet, said tube having its walls of varying thickness, for the purpose set forth, and means for inflating and deflating said tube.

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT E. BEAUBIEN.

Witnesses:

F. BENJAMIN,
E. P. HANSON.