May 28, 1940. V. GEE 2,202,146

DEVICE FOR PERMANENT HAIR WAVING

Filed June 30, 1939 2 Sheets-Sheet 1

Fig. 1

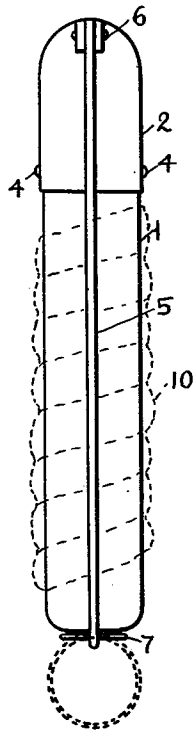


Fig. 2

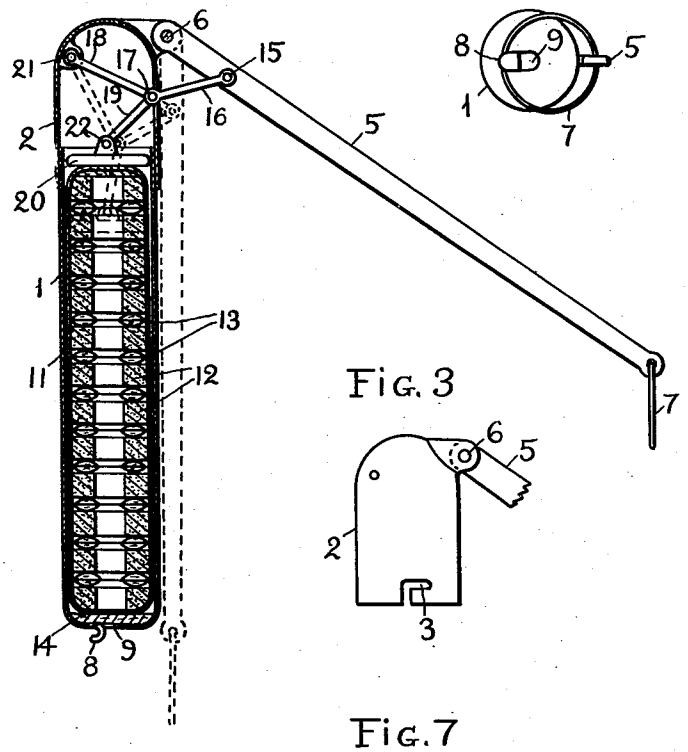


Fig. 4

Fig. 3

Fig. 5

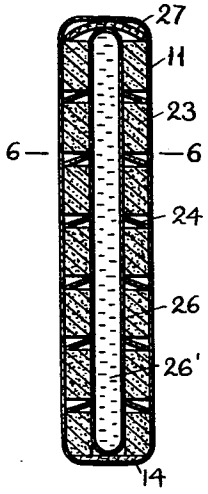


Fig. 6

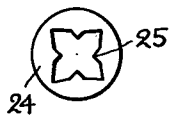
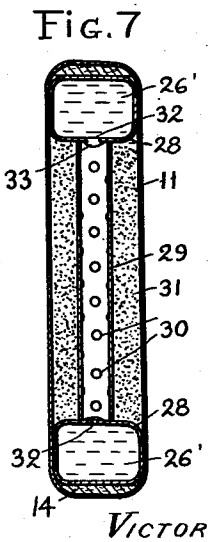


Fig. 7



VICTOR GEE

INVENTOR.

BY John P. McConow

ATTORNEY.

May 28, 1940. V. GEE 2,202,146

DEVICE FOR PERMANENT HAIR WAVING

Filed June 30, 1939 2 Sheets-Sheet 2

Fig. 8

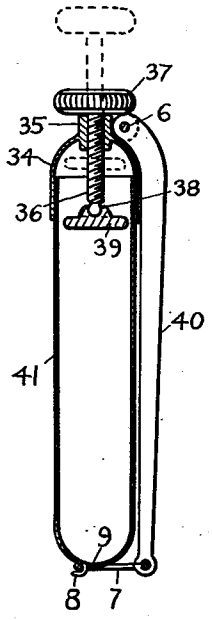


Fig. 9

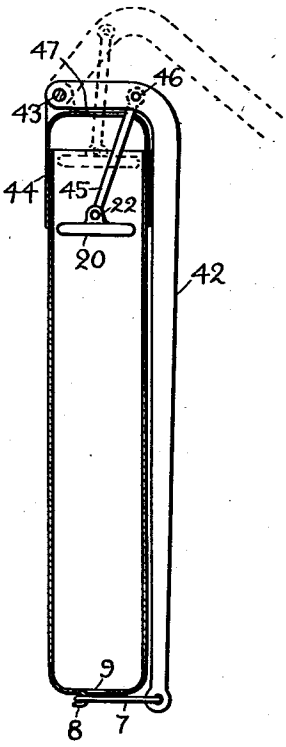


Fig. 10

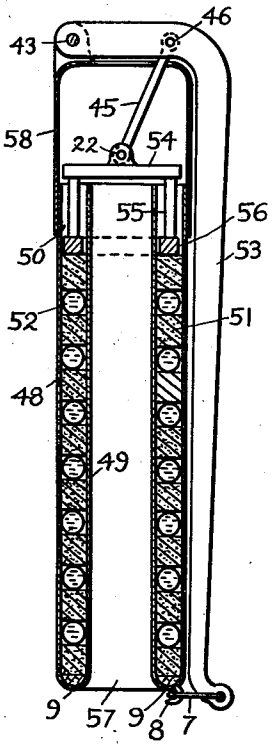


Fig. 11

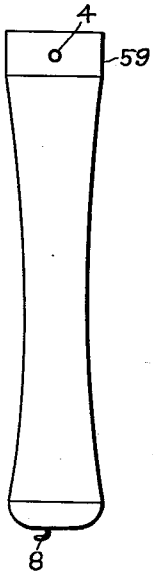
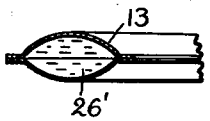


Fig. 12



VICTOR GEE

INVENTOR.

BY John P. Nikonow

ATTORNEY.

Patented May 28, 1940 2,202,146

UNITED STATES PATENT OFFICE

2,202,146

DEVICE FOR PERMANENT HAIR WAVING

Victor Gee, Whitestone, N. Y., assignor of sixty per cent to Dimitri Alavidze, New York, N. Y.

Application June 30, 1939, Serial No. 282,012

12 Claims. (Cl. 132—33)

My invention relates to hairdressing devices for permanent waves and has particular reference to devices for heating a tress of hair curled or wound in the form of a lock.

The so-called "permanent wave" is obtained by heating hair locks, preferably by special electric heaters. This method requires the use of expensive and complicated machines, in which a plurality of heaters are supported on insulated wires extending from a common head.

My invention has for its object to provide a simple and inexpensive portable heater for a single hair tress, the heater being adapted to hold the tress in a suitable manner and being further adapted to be supported in any convenient manner on a patient's head.

Another object of my invention is to provide means to heat the device. I use for this purpose heat developed as a result of a chemical reaction between chemicals introduced into a tubular container, which supports a lock of hair, the chemicals being kept separated, means being provided to mix the chemicals when it is desired to heat the lock of hair supported on the device.

In one embodiment of my invention I provide the chemicals in the form of ring-shaped pellets separated by capsules containing a reacting liquid, the capsules being adapted to break and to liberate the liquid when the column of the chemicals with the capsules is compressed. For compressing the column I prefer to use a mechanism operated by a clamping arm which is used for clamping the lock of hair against the container.

In another form of my invention I use a tubular container having double walls, the space between the walls being used for supporting chemicals. The hair can be placed on the outside of the container and clamped against it by a suitable arm, or it may be separately wound on a stem to form a lock and introduced into the space inside the container.

In another form of my invention I use a heating cartridge comprising a column of pellets with a central aperture in which a separate cartridge is placed containing a reacting liquid, means being provided to break the liquid-containing cartridge when pressure is applied to the column of pellets.

Another object of my invention is to provide means to protect the hair from contact with the chemicals in the cartridge, for which purpose I place the chemicals into a thin, flexible container or cartridge made of a material impervious to the chemicals used. I found that various cellulose derivatives can be used for this purpose, such as "Cellophane", "Pliofilm", "Celluloid", etc., the cartridge being sealed and inserted into my device when the latter is ready for use.

I have found that satisfactory results are obtained when water is used as a reacting fluid, the pellets being made of lime or other suitable compound.

Other advantages and features of my invention will be understood from the perusal of the accompanying specification, reference being made to drawings in which—

Fig. 1 is an outside view of my device, looking edgewise on the clamping arm;

Fig. 2 is a sectional view of the same, looking sidewise on the clamping arm which is shown in the open position;

Fig. 3 is an outside view of a cap for the device with an arm, the latter being shown broken off;

Fig. 4 is a bottom view of the device;

Fig. 5 is a sectional view of a modified cartridge;

Fig. 6 is a detail view of a water capsule piercing washer;

Fig. 7 is a sectional view of another modification of the cartridge;

Fig. 8 is a sectional view of a modified device with a hand screw for compressing the cartridge;

Fig. 9 is a sectional view of another modification in which a toggle mechanism is employed for compressing the cartridge;

Fig. 10 is a sectional view of a modified device made in the shape of a jacketed tube for placing it over a hair lock;

Fig. 11 is a view of a modified device of an hour glass shape, the cap being shown removed;

Fig. 12 is a detailed view of a capsule for liquid.

In one of the preferred forms of my invention as shown in Figs. 1 to 4 inclusive, my device consists of a tubular member or shell 1 closed at the bottom and provided with a removable cap 2 at the top. The cap has angular slots 3 (Fig. 3) engaging pins 4 on the member 1 for locking the cap in its position. A clamping arm 5 is pivotally connected to the cap at 6, the other end of the arm being provided with a resilient ring 7 which can engage a hook 8 at the bottom of the member 1. The hook can be conveniently made by stamping it out of the material of the member 1 as shown, leaving a hole 9 in the bottom. The shell 1 is used for supporting a tress or lock of hair

10 shown in dotted lines in Fig. 1. As is known, in order to obtain a permanent wave, the hair must be heated to a certain temperature. I employ for this purpose a chemical heating element in the form of a replaceable cartridge 11 made of a thin flexible material such as "Cellophane", "Pliofilm", or similar material having cellulose as a base, as well as rubberized or similarly impregnated fabric. The cartridge, while being pliable and flexible, is hermetically sealed in order to prevent the escape of any chemicals which may damage the device and the hair being treated.

The cartridge represents a tube closed at both ends and adapted to fit the space inside the container 1. The cartridge is filled with a chemical compound, preferably in the form of ring-shaped pellets 12. The pellets are separated from each other by capsules 13 containing a liquid which reacts with the chemicals in the pellets with liberation of heat. Any suitable combination of a liquid and dry chemicals can be used, provided the liquid enters into an exothermic reaction with the chemicals.

The amount of heat produced can be easily controlled by the quantity of the chemicals, their nature, and the total area of the container exposed to the chemicals. The capsules can be conveniently made of two semi-elliptical members 13 (Fig. 12), as, for instance, of a waxed paper, and cemented at the edges so as to form an annular hollow capsule. The liquid may be introduced into the capsule by any ordinary suitable method, as, for instance, by inserting a hollow needle into the capsule and injecting the liquid under pressure.

I have found that satisfactory results are obtained when water is used in capsules as a reacting liquid, the pellets being made of such materials, as lime, calcium oxide, etc.

A solid disc 14 is placed at the bottom of the shell or container 1, forming a rest for the bottom of the cartridge 11. The disc can be made of cardboard, its only object being to provide a solid base for the cartridge. The cartridge is inserted through the open end of the shell 1 and can be removed by inserting a suitable rod through the hole 9 and pressing against the disc 14. The cap 2 is then placed on the shell, guiding the slots 3 over the pins 4 and turning the cap so as to place the pins 4 into the inner ends of the slots. This locks the cap on the container 1. The arm 5 is held in the open position as shown in Fig. 2. It is pivotally connected at 15 to one end of a link 16 whose other end is connected at 17 to a hinged joint between two bars 18 and 19 forming a toggle mechanism for moving a pressure plate 20 which rests on top of the cartridge 11. The end of the bar 18 is pivoted at 21 to the cap 2, and the bar 19 is pivoted at 22 to the plate 20. The plate is fully raised when the arm 2 is in the open position. Closing of the arm 2 causes the plate to be moved downward or into the shell, compressing the cartridge.

The pressure gradually increases, because of the toggle mechanism, and is the greatest when the toggle joint is nearly straightened out. The pressure on the cartridge is transmitted to the capsules 13 through the pellets 12, causing the capsules to break and to free the liquid contained in the capsules. The liquid reacts with the chemicals of the pellets, producing heat which is communicated to the walls of the container 1, heating the hair lock 10.

Upon completion of the heating operation, the arm 5 is unhooked, the cap 2 removed by turning it sidewise until the pins 4 come out of the inner portions of the angular slots 3 when the cap can be pulled off, and then the spent cartridge is removed from the container by inserting a suitable pin into the hole 9 and pressing against the end disc 14.

A modified cartridge assembly is shown in Figs. 5 and 6. Pellets 23 are separated by convex washers 24 made of thin metal sheet, fiber or similar rigid sheet material. The washers have sharp points 25 inside bearing against a tubular capsule 26 containing a liquid 26' and placed in the tubular space formed inside the assembled ring-shaped pellets. The capsule can be made of any suitable collapsible or pliable thin material, such as waxed paper, cellulose product, rubberized cloth, rubber etc. Rigid discs 14 and 27 are placed at the ends of the cartridge for transmitting pressure against the pellets. When pressure is applied to the pellets, they compress the convex washers 24 and flatten them out, causing the sharp points 25 to pierce the walls of the capsule, tearing them further as the pellets move downward. The liquid thereby escapes from the pierced and torn capsule simultaneously at all points so that the reaction starts everywhere regardless of the position of the shell, whether vertical, horizontal or inclined.

Another type of cartridge is shown in Fig. 7. The cartridge 11 has capsules 28 at the ends for a liquid 26'. A tube 29 extends between the capsules and is provided with perforations 30 for admitting the liquid to a powdered chemical compound 31 placed in the annular space between the walls of the cartridge 11 and the tube 29. The capsules have openings 32 against the ends of the tube 29 closed and sealed by wax 33 or similar compound unaffected by the liquid in the capsules. The wax seal is broken when pressure is applied to the capsules permitting the liquid to escape into the central tube 29 and from there to the chemical 31 through the holes 30.

A modified device is shown in Fig. 8. The cap 34 has a central extension 35 threaded inside for a screw 36 having a thumb head 37 at the outer end and a swivel joint 38 at the inner end connecting it to a pressure plate 39. The arm 40 in this case does not operate the pressure plate, the latter being moved by turning the screw 36. The degree of compression of the cartridge in the shell 41 and therefore the amount of water freed from the capsules, or its rate of feed, can be thus regulated thereby regulating the amount of heat developed by the chemical reaction, as well as the rate at which the heat is being developed. This device is especially suitable for use with the cartridge shown in Fig. 7.

Another modification is shown in Fig. 9. The arm 42 is pivoted at 43 to a cap 44 and transmits pressure to the pressure plate 20 through a link 45 pivoted at 46 to the arm and moving in a slot 47 in the cap. The arm is shown in the closed position, the open position being indicated in dotted lines.

Another modification is shown in Fig. 10. The shell 48 is made in the form of a jacketed tube having inner wall 49, the outer and inner walls being spaced so as to form an annular chamber 50 for ring-shaped pellets 51 with capsules 52 therebetween.

The pressure is transmitted to the pellets from the arm 53 through a link 45 and pressure plate 54 connected by rods 55 with a pressure ring 56 which moves in the annular chamber 50. This

device is especially suitable for locks of a small diameter which are wound on a mandrel and inserted into the inner tubular space 57 for heating from the outside. A cap 58 is fitted in the shell 48.

Still another modification is shown in Fig. 11 which represents a shell 59 having the middle portion of a reduced diameter or of an hour glass shape. This form of my device is used for special purposes when it is desired to form locks of varying diameter.

It is understood, of course, that my device may be further modified in its various practical embodiments and applications within the scope.

I claim as my invention:

1. A device for hair waving comprising a tubular container closed at one end and adapted to support a lock of hair wound on the container, a removable cover for the other end of the container, the container being adapted to hold a plurality of pellets with chemicals and a plurality of capsules therebetween containing a liquid adapted to react with the chemicals, and a manually operable means to compress the pellets, thereby breaking the capsules and liberating the liquid for causing the chemical reaction and heating of the container.

2. A device for hair waving comprising a tubular container closed at one end and adapted to support a lock of hair wound on the container, a removable cover for the other end of the container, the container being adapted to hold a plurality of pellets with chemicals and a plurality of capsules therebetween containing a liquid adapted to react with the chemicals, an arm pivotally supported on the container and adapted in the closed position to clamp the hair lock against the container, and means to compress the pellets and to break the capsules by the clamping arm.

3. A device for hair waving comprising a tubular container closed at one end and adapted to support a lock of hair wound on the container, a removable cover for the other end of the container, the container being adapted to hold a plurality of ring-shaped pellets made of chemicals alternately with ring-shaped capsules containing a liquid adapted to react with the chemicals with liberation of heat, and a manually operable means to compress the pellets thereby breaking the capsules and liberating the liquid.

4. A device for hair waving comprising a tubular container closed at one end and adapted to support a lock of hair wound on the container, a removable cover for the other end of the container, the container being adapted to hold a plurality of ring-shaped pellets made of chemicals alternately with ring-shaped capsules containing a liquid adapted to react with the chemicals with liberation of heat, a manually operable means to compress the pellets thereby breaking the capsules and liberating the liquid, and a flexible enclosure for the pellets and capsules adapted to hold them in the form of a removable cartridge.

5. A device for hair waving comprising a tubular container closed at one end and adapted to support a lock of hair wound on the container, a removable cover for the other end of the container, the container being adapted to hold chemicals, means to hold a liquid in the container separately from the chemicals, the chemicals and the liquid being adapted to react with liberation of heat, and a manually operable means to eject the water from the holding means onto the chemicals.

6. A device for hair waving comprising a tubular container closed at one end and adapted to support a lock of hair wound on the container, a removable cover for the other end of the container, the container being adapted to hold a plurality of ring-shaped pellets made of chemicals alternately with ring-shaped capsules containing a liquid adapted to react with the chemicals with liberation of heat, a manually operable means to compress the pellets thereby breaking the capsules and liberating the liquid, and manually adjustable means to regulate the rate of heat production by compression of the cartridge.

7. A device for hair waving comprising a tubular container closed at one end and adapted to support a lock of hair wound on the container, a removable cover for the other end of the container, the container being adapted to hold a plurality of pellets with chemicals and a plurality of capsules therebetween containing a liquid adapted to react with the chemicals, an arm pivotally supported on the container and adapted in the closed position to clamp the hair lock against the container, means to compress the pellets and to break the capsules by the clamping arm, and means to transmit progressively increasing pressure on the pellets by the arm.

8. A device for permanent waving comprising a tubular container adapted to support a lock of hair, means to support in the container in a separated condition chemical substances adapted to develop heat when mixed together, a removable cap for the container, means to lock the cap on the container, an arm pivotally supported on the cap and adapted to clamp against the container a lock of hair wound thereon, and means in the cap for compressing the chemical substances when the arm is placed in the clamping position.

9. A device for permanent hair waving comprising a tubular container adapted to support a lock of hair, the container being adapted to hold chemical substances adapted to develop exothermic heat when mixed together and normally prevented from being mixed by separating walls, an arm pivotally mounted at one end on the container and adapted to clamp the hair against the container, and means on the container operatively connected with the arm for breaking down the separating wall, thereby allowing the substances to mix together when the arm is placed in the clamping position.

10. A device for permanent hair waving comprising a tubular container adapted to support a lock of hair, the container being adapted to hold chemical substances adapted to develop exothermic heat when mixed together and normally prevented from being mixed by separating walls, an arm pivotally mounted at one end on the container for clamping hair thereto, and means on the container operatively connected with the arm for compressing the chemicals thereby breaking down the separating wall and allowing the chemicals to mix together.

11. A device for permanent hair waving comprising a tubular container adapted to support a lock of hair, the container being adapted to hold chemical substances adapted to develop exothermic heat when mixed together and normally prevented from being mixed by separating walls, an arm pivotally mounted at one end on the container and adapted to clamp the hair against the container, means on the container operatively connected with the arm for breaking down the separating wall thereby allowing the substances

to mix together when the arm is placed in the clamping position, and yieldable means to retain the arm in the clamping position against the hair on the container.

12. A device for permanent hair waving comprising a tubular container adapted to support a lock of hair, the container being adapted to hold chemical substances adapted to develop exothermic heat when mixed together and normally prevented from being mixed by separating walls, a manually operable member on the container, and means on the container operatively connected with the member for breaking down the separating walls, thereby allowing the substances to mix together when the member is manually operated.

VICTOR GEE.