Aug. 30, 1932. C. FAYER ET AL 1,874,479

ELECTRICALLY OPERATED HAIR CURLER

Filed April 17, 1930

FIGURE 1

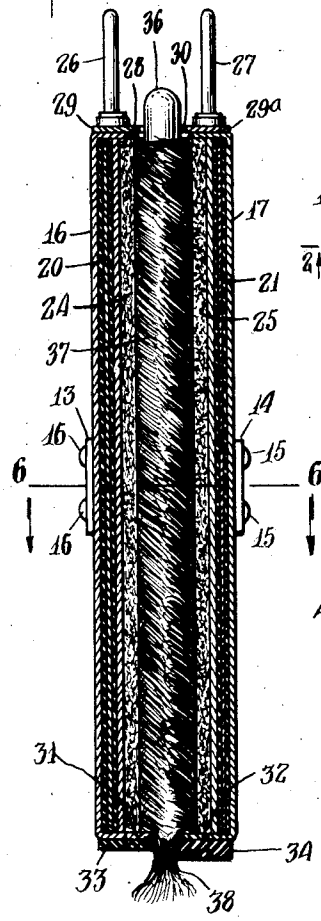



FIGURE 2

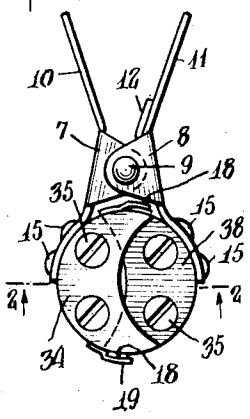



FIGURE 3

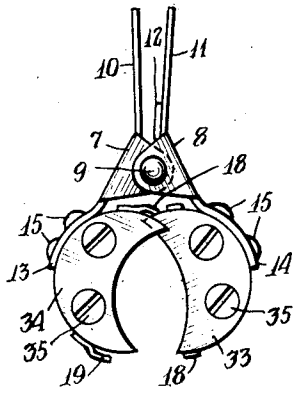



FIGURE 4

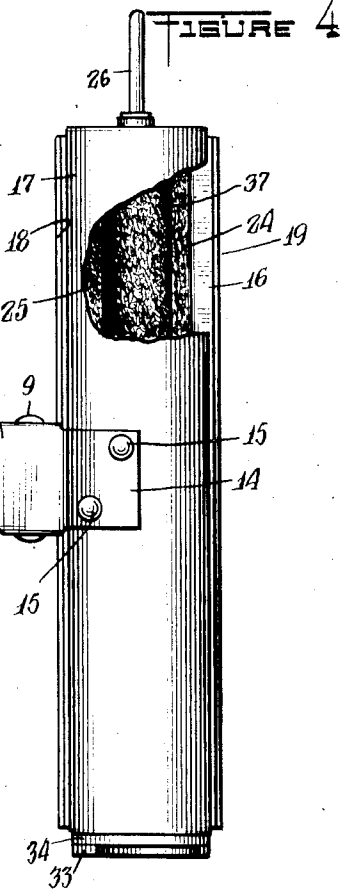



FIGURE 7

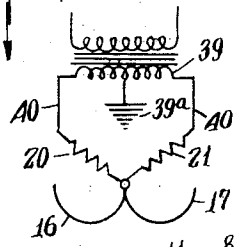



FIGURE 6

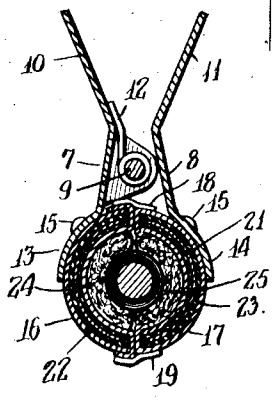
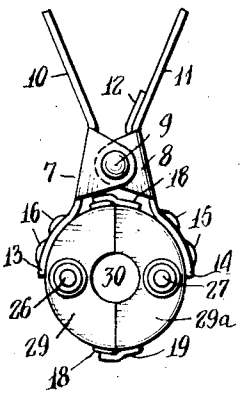



FIGURE 5

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# UNITED STATES PATENT OFFICE

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## ELECTRICALLY OPERATED HAIR CURLER

Application filed April 17, 1930. Serial No. 444,913.

Our invention relates to electrical hair curlers of the type in which a bunch of hair to be curled is wound upon a curling rod serving as a core, and therewith placed in a small electrical heater, and therein heated to a moderate temperature and thus given a so-called permanent wave or curl.

More particularly stated, our electrical hair curler embodies a number of improvements for the purpose of promoting safety in curling the hair, shortening the time required for the operation, and otherwise rendering the work more satisfactory and less expensive.

Heretofore in this art it has been customary, in curling human hair, to wind a small wisp of the hair, either wet or dry, around a suitable curling rod or core, impregnating this hair with suitable chemical substances, usually in liquid form, then covering the wisp of hair with a layer of cloth or equivalent material impregnated with chemicals, and finally enclosing the core, with the wisp of hair and other parts carried thereby, for a short period of time in a small electrically operated heater suitable for the purpose.

In treating hair in the manner just mentioned, it is customary to clamp or tie up the wisp of hair, at a point near the scalp, in order to localize the heat upon the wisp of hair and to prevent the transfer of heat and vapors, from the curling rod and parts carried thereby, to the scalp.

This treatment of hair upon the human scalp always consumes considerable time and requires great care; and ordinarily heretofore there has been danger of accident and of failure, as well as the possibility of substantial damage to the hair or to the scalp.

By our invention we seek to do away with a number of complications, and to use for treating the hair merely a self-contained unit, simple in form and safe in action, requiring but little time and ordinary care, and very effective in its work.

Our invention is intended to accomplish the following results, among others:

1. To give the hair curler such form and arrangement as to enable it to operate upon relatively small or large bunches of hair, and to enable these bunches of hair to be so grasped and held by the curler as to make a practically steam-tight connection therewith.

2. To avoid danger of scalding the scalp and at the same time to prevent needless waste of heat, by preventing or at least greatly checking the escape of heated vapors, and so confining them as to localize their effects upon the bunch of hair to be treated.

3. To so connect the hair curler with the low tension transformer used for energizing the same, and so ground the transformer, as to practically ground the metal casing of the hair curler, thus dispensing with all necessity for insulating the casing.

4. To so ground the aforesaid transformer and so connect it with the hair curler that with the mechanism in action the casing of the hair curler is maintained at ground potential, and the maximum voltage developed between any part of the hair curler and the ground or any object at ground potential is only one half of the voltage actually developed by the transformer.

Reference is made to the accompanying drawing forming a part of this specification, and in which like reference characters indicate like parts throughout the specification.

Figure 1 is a substantially central vertical section through our improved hair curler.

Figure 2 is an inverted plan or bottom end view of the hair curler, showing it as closed.

Figure 3 is an inverted plan or bottom end view of the device, showing it as open.

Figure 4 is a side elevation of our hair curler, with certain parts shown as broken away.

Figure 5 is a top plan view of our hair curler.

Figure 6 is a section on the line 6—6 of Figure 1, looking in the direction indicated by the arrows.

Figure 7 is a diagram of the wiring.

A pair of metallic levers 7, 8 are connected together by a pivot pin 9 and are movable relatively to each other, being for that purpose provided with expanding portions 10, 11, serving as handles.

The levers are provided with a spring 12, which encircles the pivot pin 9, and with

portions 13, 14, of substantially saddle-like form. These portions are by means of pins 15 secured to a pair of hollow metallic casing members 16, 17, the latter each having the form of a substantially solid cylinder, as may be understood from Figure 6.

The casing member 17 is provided with closure lips 18, 19, each extending nearly the entire length of the casings. Both closure lips 18 and 19 are carried by the casing member 17, and they overhang and project beyond the adjacent edges of that casing member.

By this arrangement whenever the casing members are brought together, or in other words whenever the casing is being closed by action of the spring 12, the closure lips of the casing member 17 are brought to overlap the adjacent edges of the casing member 16, and thus to practically close the casing a moment before the casing members are completely fitted together edge to edge. For this reason the casing is effectively closed even if the casing members are not completely brought together edge to edge, the overlapping flanges rendering the casing practically steam-tight, or at least preventing the vapors from escaping easily. Hence, large bunches of hair do not detract from the efficiency of their treatment.

The casing members carry a pair of heating elements 20, 21, each having a substantially semi-cylindrical form. These heating elements may be made of any suitable material conventionally used for heating, for instance carbon or any of the well known alloys employed as resistance material.

The heating elements 20, 21 are completely enclosed in pockets 22, 23 of refractory insulating material, such as asbestos, clay, earthenware, or any composition suitable for the purpose.

We provide a pair of enclosing members 24, 25, made of felt or analogous material, and each having a substantially cylindrical form.

These enclosing members 24, 25, fit neatly into the respective semi-cylindrical casing members 16, 17, as may be understood from Figure 6, and serve as linings therefor.

In order to supply currents to the heating members 20, 21, these members are connected with contact pins 26, 27, carried by the casing members.

The casing members at their upper ends are closed by flanges 28, 28*a*, and engaging the flanges are a pair of semi-disks 29, 29*a*, of the form shown in Figure 5. These are each of substantially semi-annular form, and together they are provided with an opening 30 of the form shown in Figure 5.

The metallic casing members 16, 17 are closed at their lower ends by end flanges 31, 32, shown at the bottom of Figure 1. The heating members are in direct conductive engagement with these end flanges and thus in direct metallic communication with the casing. Mounted upon the flanges 31 and 32 are a pair of clamping jaws 33, 34, each of substantially crescent form, as may be understood from Figures 2 and 4.

The clamping jaws 33, 34, are made of heat insulating material, and are held in position by screws 35. They may be removed and replaced as often as required.

As may be noted from Figures 2 and 3, the clamping jaw 34 overlaps the clamping jaw 33, and owing to the crescent form of each of these clamping jaws, a relatively large bunch of hair can be gripped between them. They so form the bunch of hair that it fits them neatly, leaving little or no vacant space around the bunch of hair. Thus the clamping jaws by their form tend to so engage the bunch of hair as to prevent the hot air and vapors from freely making their escape by passing out between the clamping jaws. In other words the bunch of hair acts to some extent like a packing; and the larger the bunch of hair, within limits defined by the size of the apparatus, the more effective becomes the packing.

The handles 10, 11 and parts carried thereby normally occupy the positions indicated for them in Figure 2. They are not insulated, because they are always at ground potential and there is no necessity for insulating them. The operator, by clasping the handles 10, 11 and forcing them toward each other, causes the movable parts to assume the positions indicated for them in Figure 3.

A curling rod is shown at 36, and is used as a core and when in use there is wound upon it a bunch of hair 37, as shown in Figure 1. This bunch of hair extends upwardly from the scalp of the person whose hair is to be treated, and includes a thick portion 38, usually near the scalp, which extends between the clamping jaws 33, 34, and is gripped securely thereby, as may be understood from Figure 1.

The operator opens the hair curler by simply grasping the handles 10, 11 and forcing them toward each other as above described; and then, by relaxing pressure upon these handles, the operator causes the curler to close automatically, under action of the spring 12.

In practice the bunch of hair 37 is first wound spirally around the curl rod 36. Next the hair curler is opened, and then the curling rod 36, carrying the bunch of hair, is inserted so as to leave the portion of hair 38 extending between the jaws 33 and 34; then the curler is closed, so that the portion 38 is clamped rather firmly between these jaws, as indicated more particularly at the bottom of Figure 1. For reasons above explained, the bunch of hair is preferably quite large.

The contact pins 26, 27 are used for the purpose of supplying current for heating the

members 20 and 21. From the latter the heat finds its way through the felt members 24 and 25, thus heating the bunch of hair 37, along with the curling rod 36.

The felt members 24 and 25, being porous, may be permeated from time to time with appropriate lotions or chemicals for treating the hair, and may be moistened as required. The bunch of hair 37 may first be left dry, or moistened, or separately treated with chemicals as required, before being inserted into the hair curler.

It will be noted that with the parts in position and the device in use as indicated in Figure 1, there is no layer of cloth or any partition or wall of any kind between the bunch of hair 37 and the enclosing members 24 and 25. This renders the device relatively simple, both as to structure and action, and increases its efficiency, because the bunch of hair to be treated is from start to finish in direct contact with the enclosing members which supply to the hair the lotion or chemical solution used in its treatment.

We find that no wrapper of any kind need be interposed between the bunch of hair 37 and the enclosing members of felt 24 and 25.

The clamping jaws 33 and 34, being made of heat insulating material, and of relatively simple form, serve to protect the hair. That is, they do not localize heat at the point where they engage the bunch of hair, and they hold the hair without injury thereto. They have no tendency to transfer heat downwardly toward the scalp of the person whose hair is being treated.

After the heat has been applied, no elaborate unwinding or untangling of the hair is necessary. The hair curler is simply placed in a basin of clean water, which automatically removes all excessive salts, thus rendering them ready either for drying or for their next successive use.

It is to be understood that a group of our hair curlers are mounted to hang downwardly from a chandelier or the like, and energized by means of a step-down transformer of low voltage.

We prefer to use for this purpose the low tension step-down transformer 39 and its connections shown diagrammatically in Figure 7.

The transformer secondary is grounded at its middle, the ground being shown at 39*a*. The terminals of the transformer are connected with conductors 40, 40, which may be in the form of a double cord, such as a lamp cord. These conductors lead to the heating members 20, 21 and for this purpose may be provided with an ordinary socket, not here illustrated because old and well known, for engagement with the contact pins 26, 27, shown at the top of Figure 1.

We find upon actual trial that by use of the small step-down transformer, connected as just described, the heating elements can be adequately energized with a maximum transformer and the hair curler as above set forth, no part of the curler mechanism need be subjected to a greater potential than five volts. This renders the use of our device perfectly safe as regards the possibilities of electric shock to the person whose hair is being treated, or to the operator.

We do not limit ourselves to the precise mechanism shown, as variations may be made therein without departing from our invention, the scope of which is commensurate with our claims.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is as follows:

1. An electrically shockproof hair curler comprising a pair of metallic levers connected together, a pair of casing members carried by said levers and each having a substantially semi-cylindrical form in order to enable said casing members to enclose a curling rod and a bunch of hair wound upon said curling rod, one of said casing members being provided with closure lips extending from it in order to overlap the adjacent portion of the other casing members, as said casing members are moved toward each other by said levers, and a low voltage electrically operated heating mechanism carried by said heating members.

2. An electrically shockproof hair curler comprising a pair of levers connected together, a pair of casing members carried by said levers and each having a substantially semi-cylindrical form, a pair of low voltage electrically operated heating members housed within said casing members, means for supporting within said casing members a bunch of hair to be heated, and closure lips carried by one of said casing members for the purpose of overlapping the adjacent edge portion of the other casing member in order to conserve the heat in instances where the bunch of hair is too large to permit the casing members to be completely brought together in closing.

3. The combination of a pair of levers, a pair of casing members mating each other and carried by said levers, each casing member being of substantially semi-cylindrical form in order to enable the casing members to enclose a curling rod and a bunch of hair curled upon said curling rod, a pair of heat insulating jaws each mounted upon one end of each casing member and having substantially a cresent form, said jaws mating each other for the purpose of clasping a bunch of hair extending in between said casing members and low voltage electrical means for heating said casing members.

4. The combination of a pair of enclosing members movable relatively to each other for the purpose of enclosing a bunch of hair

to be curled, means for actuating said enclosing members, low voltage electric mechanism carried by said enclosing members for heating them together with said bunch of hair, and a pair of heat insulating jaws carried by said enclosing members and each of substantially crescent shape, said jaws mating each other and being movable with said enclosing members for the purpose of clasping said bunch of hair.

Signed at Long Island City, in the county of Queens and State of New York, this 11 day of April, 1930.

CHARLES FAYER.
JOSEPH KREMER.