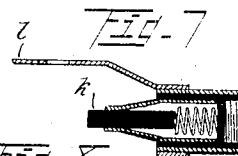
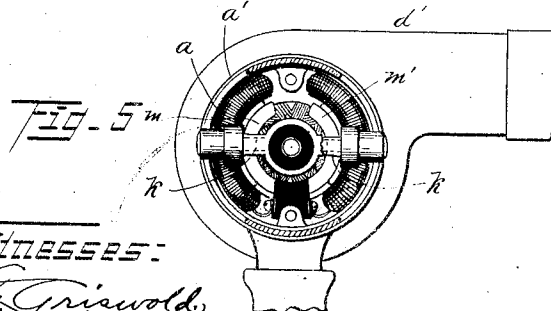
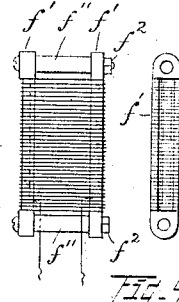
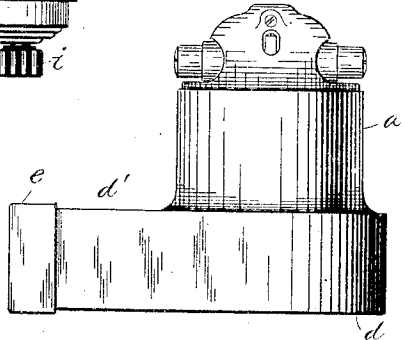
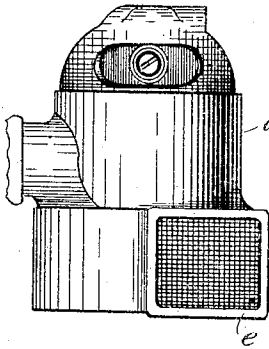
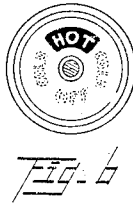
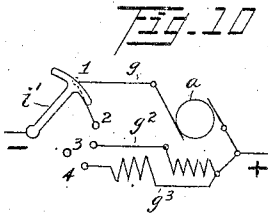
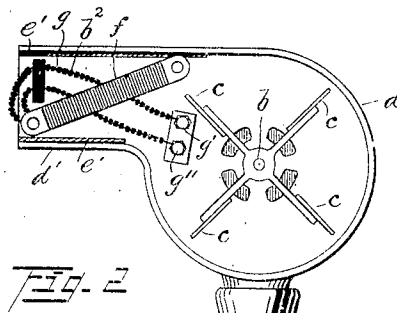
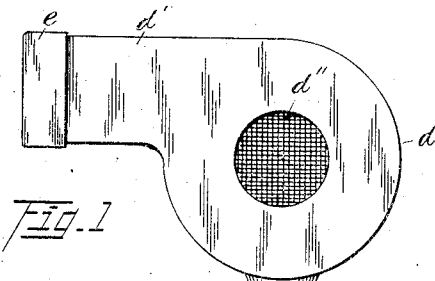


W. G. TRAUTMAN.
ELECTRIC HAIR DRIER.
APPLICATION FILED DEC. 20, 1911.

1,259,170.

Patented Mar. 12, 1918.



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UNITED STATES PATENT OFFICE.

WALTER G. TRAUTMAN, OF CLEVELAND, OHIO, ASSIGNOR TO THE P. A. GEYER COMPANY,
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ELECTRIC HAIR-DRIER.

1,259,170.

Specification of Letters Patent.

Patented Mar. 12, 1918.

Application filed December 20, 1911. Serial No. 686,959.

To all whom it may concern:

Be it known that I, WALTER G. TRAUTMAN, a subject of the Emperor of Germany, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Electric Hair-Driers, of which the following is a specification.

My invention relates to improvements in electric hair driers, and has for its object, the construction of a device of this class which will be more convenient, simple and easier to operate than prior devices of this character.

The specific improvements presented by the electric hair drier embodying my invention, are pointed out in the claims, and may be here briefly adverted to as consisting of the construction of a simple and efficient electrical heat-unit, in association with means for varying the heating effect thereof, preferably by regulating the speed of the electric motor. A single controlling switch is also provided which is adapted to start the fan-motor, connect or disconnect the associated electrical heat-unit or a section thereof, and finally disconnect the source of electrical energy therefrom. The speed regulation, preferably, is secured by advancing or retracting the position of the commutator-brushes, whereby outside switching mechanism and resistance coils commonly resorted to, are thus avoided.

Certain improved structural details will be further set forth in the specification; having reference to the accompanying sheet of drawings, illustrating my improved electric hair drier wherein:—

Figure 1 is a view in front elevation of the completely assembled device;

Fig. 2 is a similar view showing the side-casing removed to illustrate the position of the fan and heat-unit;

Fig. 3 is a fragmentary view at right angles thereto;

Fig. 4 is a top-view of said hair drier;

Fig. 5 is a fragmentary rear view, partly in section to show the motor and brush adjustment;

Fig. 6 is a detail, showing the controlling snap-switch;

Fig. 7 is a plan view of the heat-unit;

Fig. 8 is another detail, showing the construction of one of the adjustable brushes in section;

Fig. 9 is a detail, illustrating an insulating side-piece of the heat-unit, and

Fig. 10 is an electrical diagram of the respective circuits of a modified device containing subdivided resistance windings.

Throughout the several figures of the drawing, I have employed the same character of reference to indicate similar parts.

The electric motor *a* shown in Fig. 5, and contained in the casing *a'* at the rear of the appliance, may be of either direct or alternating-current type. Mounted directly upon the shaft *b* of said motor, will be found the fans *c* carried in the laterally positioned casing *d*, which terminates in an extension *d'* and has a central opening guarded by the screen *d''*. A screen-covered cap *e* is disposed over the mouth of said extension, while the interior of the extension is lined with asbestos board *e'*.

Positioned within the extension preferably at an angle with the axis thereof, there is provided one or more heat-units *f*. Owing to the physical demands made thereon, this heat-unit preferably is constructed of two side-pieces *f'*, formed of lava or other suitable heat-resisting insulator, suitably spaced by interposed sleeves *f''*. The side-pieces are transversely channeled to receive the resistance wire and longitudinally grooved as shown. The heat-unit is assembled by means of two transverse bolts and nuts, *f²*. Around the side-pieces, there is wound the desired resistance conductor *g* which is covered with insulating beads *b²* at its extremities, and terminates at the binding posts *g'*, *g''*, while the heat-unit is mounted in position within the appliance, as shown in Fig. 2.

The extension *d'* is somewhat elongated for the purpose of accommodating the heat-unit, at an angle therein, in order to deflect the air-currents supplied by the fan and afford the maximum length of resistance

conductor for heating the same. Accordingly, said resistance conductor is wound upon the heat-unit within the grooves provided within the side-pieces, in ladder-like arrangement. This provides the best and most efficient construction for a practically instantaneous heater for the air-currents. The heat unit or units of my improved device, preferably are positioned substantially in tangential relation to the rotary fan, within the orifice of the device. In this position, the air-currents are delivered directly against the heated sections of the conductor, and are broken up and delivered from said orifice in a uniformly heated condition.

Terminating the handle *h*, is a four-position snap-switch *i*, of ordinary construction, which is adapted to connect the motor in circuit or cut the heat-unit or a section thereof, into multiple relation therewith, so that the device is readily controllable to produce cold or hot air-currents of the desired temperature.

In order to make the electrical features more easily understood, I have shown in Fig. 10 a diagram wherein the motor *a* is adapted to be connected between the plus and minus sides of the energizing circuit, by means of the switch-arm *j* when it engages contact 1, or as the switch-arm is further turned to engage contacts 2 and 3, branch *g*² containing one section of the resistance conductor, is connected in multiple relation with the motor, and when contact 4 is also engaged, branch *g*³ containing another section of resistance conductor is likewise connected in circuit; assuming that a sub-divided or duplicated heat-unit is desired for the purpose of increasing the heating effect.

However, I ordinarily prefer to govern the heating effect and volume of air-currents produced by the simpler expedient of varying the speed of the motor in the manner in which I shall now explain. Upon referring again to Fig. 5, it will be seen that the brushes *k* are insulatively mounted upon a spring metal yoke *l*, which is carried by the armature shaft, while segmental contact-springs *m m'* of said brushes permit their rotation through approximately the quadrant of a circle, thereby advancing or retracting their position with respect to the commutator and field of the motor. The springs are sufficiently stiff as they bear against the respective brushes, frictionally to maintain them in their position of rotary adjustment. Accordingly, as the brushes are rotated reversely to the direction which the armature rotates, the speed of the latter will be materially increased in proportion to such adjustment of the brushes. Conversely, the reverse adjustment of the brushes will result in reducing the speed at which the armature is driven, depending upon the position in

which current is directed through the windings of the armature.

Accordingly, as the speed is increased, the volume of air is proportionately augmented, so that the heating effect may be very easily controlled with a constant energization of the heat-unit, afforded by the shunt circuit through the resistance conductor. Conversely, of course, the reduction in speed will reduce the amount of air delivered by the fan, which will take up the full amount of heat supplied by the heat-unit, and thus will be delivered through the screened orifice at a higher temperature. This, of course, is quite independent of the use of additional sections of heating conductor, if such are desired.

By reason of the described switching arrangement, whereby the resistance conductor is cut into circuit only after the fan motor is started, it will be seen that it is normally impossible to overheat the resistance conductor so that there might be danger of fire, or at least, injury to the hair drier. Inasmuch as the fan motor must first be started, there will be provided sufficient air-currents to conduct away the excessive heat at any desired speed, either with one or more sections or heat-units subsequently connected in circuit. With the provision of an additional exposure of resistance conductor, the device may be used for certain hot air treatments, while the speed regulation described, gives both a high and a low range for variable heating effect for the air currents.

Accordingly, the hair drier above described, is shown to be one which is very easily regulated and controlled in a novel manner, and I therefore claim and desire to secure the features thereof, as follows:—

1. In a device of the class described, the combination with an electrically-operated fan, of a laterally positioned nozzle therefor, a heat-insulating lining within the nozzle, and an electric heat-unit mounted tangentially at an angle within said nozzle, comprising two insulating heat-resisting side-pieces, similar spacing members therebetween, and a resistance conductor wound in double ladder-like arrangement transversely of said side pieces, substantially as set forth.

2. In a device of the class described, the combination with an electrically-actuated fan, of an associated electric heat-unit; the same comprising longitudinally grooved side-pieces formed from an insulating-heat resisting material, spacing-members of similar material therebetween, and a resistance-conductor wound in double ladder-like arrangement transversely of said side pieces and a nozzle wherein said heat unit is tangentially positioned with respect to the fan, substantially as set forth.

3. In an electric hair drier, the combination with an electric motor of a rotary fan adapted to be driven thereby, an electric heat-unit positioned at an angle within the delivery orifice of said fan, comprising two insulating heat-resisting side-pieces and similar spacing members connecting the same together, and a resistance conductor wound in double ladder-like arrangement

transversely of said side-pieces, substantially as set forth.

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

WALTER G. TRAUTMAN.

Witnesses:

FRANK J. GOTTRAN,

ALBERT LYNN LAWRENCE.