

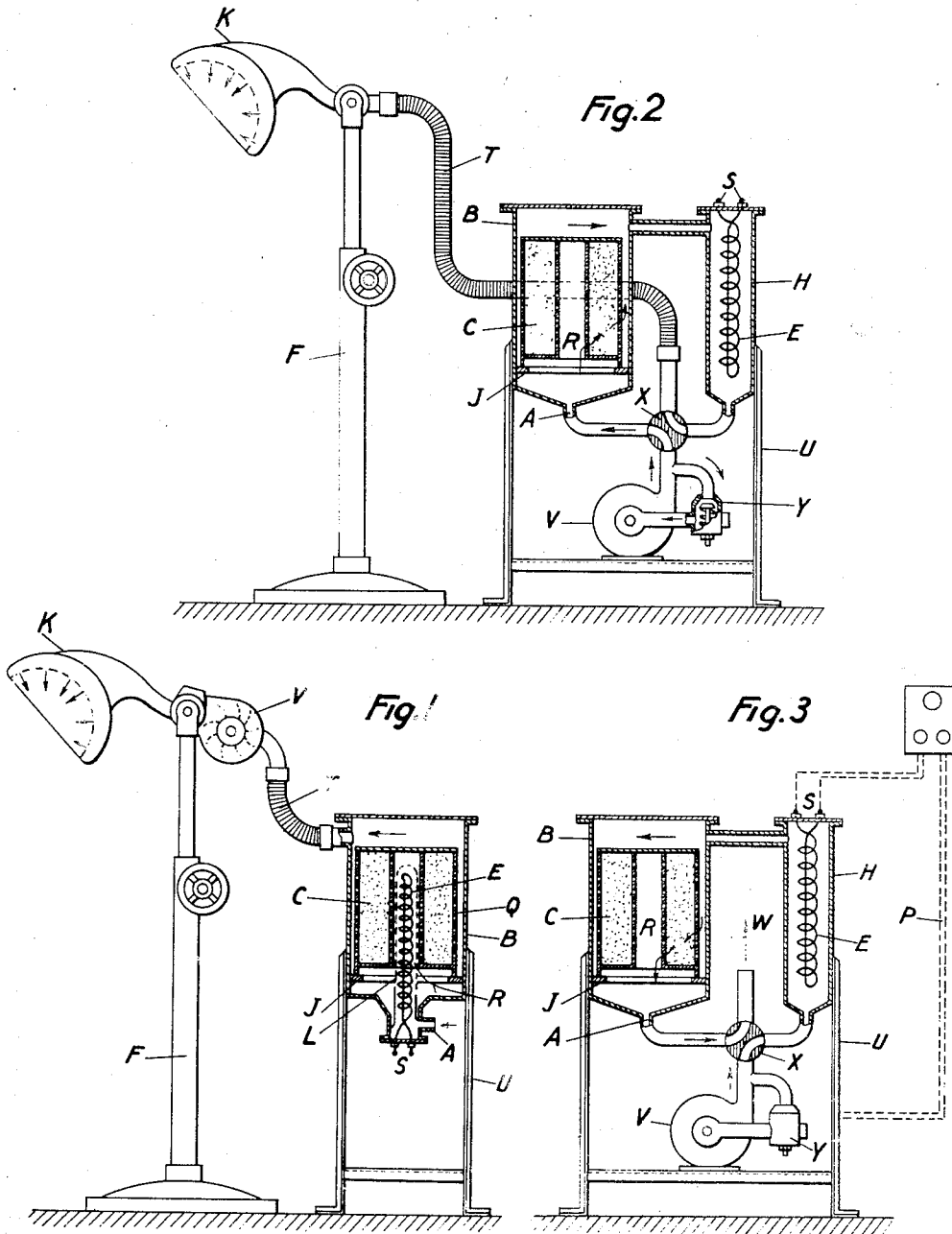
Aug. 7, 1955

G. F. JAUBERT
DEVICE FOR DRYING HAIR

2,563,042

Filed Feb. 13, 1948

2 Sheets-Sheet 1



INVENTOR

George Francois Jaubert

By John Q. Brady

ATTORNEY

Aug. 7, 1951

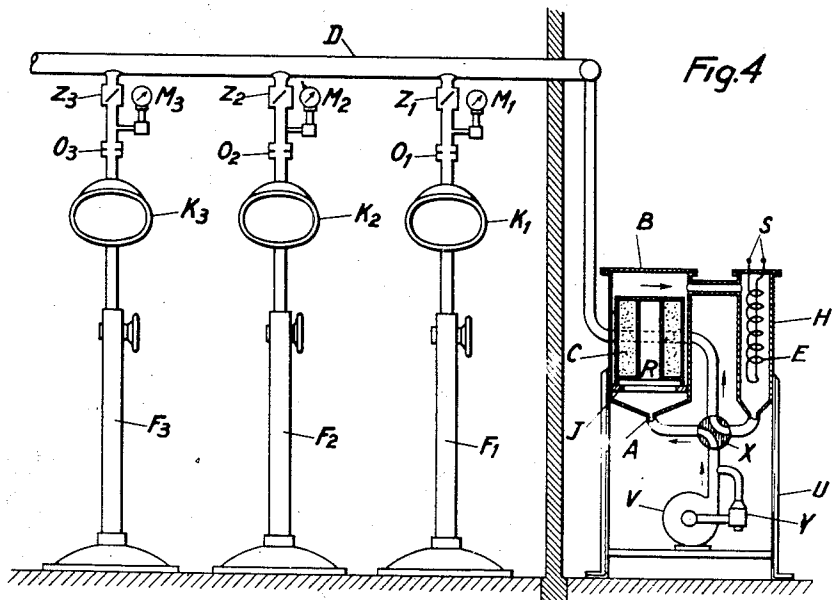
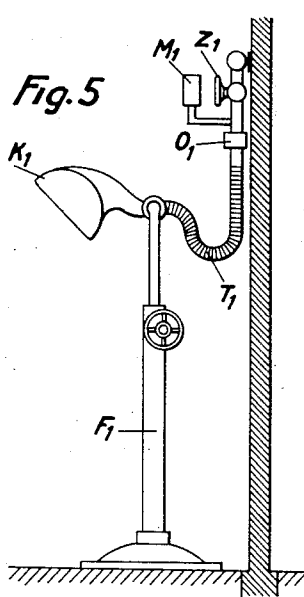
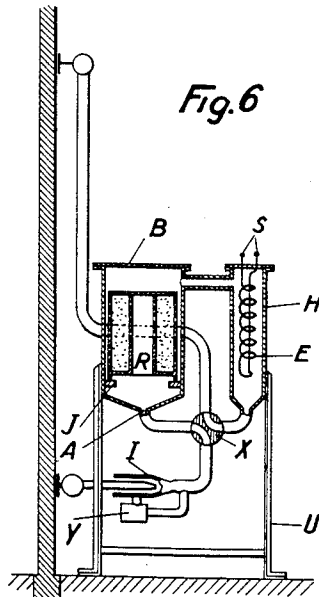
G. F. JAUBERT

2,563,042

DEVICE FOR DRYING HAIR

Filed Feb. 13, 1948

2 Sheets-Sheet 2



INVENTOR
George Francois Jaubert,

By John L. Brady
ATTORNEY

UNITED STATES PATENT OFFICE

2,563,042

DEVICE FOR DRYING HAIR

George F. Jaubert, Paris, France

Application February 13, 1948, Serial No. 8,196
In France March 1, 1947

5 Claims. (Cl. 34—80)

1

My invention relates to an improved process and to devices and apparatus for a quick and economical drying of female hair after washing.

In the practice of hair-dressing, one branch of which comprises hair-dyeing operations, washing has an important role; and the said dyeing and washing operations require of necessity subsequent drying.

To this end, various forms of apparatus have been designed, and those are used in hair-dressing salons; they usually comprise a kind of hood or helmet or head set which covers the customer's head; on top of this head set there is provided an electric fan or ventilator which draws in the outside air and forces it through the hair to be dried, this air being pre-heated by means of an electric resistor (generally accommodated within the head set).

In spite of the use of this contrivance, this procedure unfortunately requires a rather long time for drying the hair thoroughly, especially if the latter is full of curls or ringlets; this time can vary between 30 and 40 minutes.

One of the objects of my invention consists in an improvement in the already known methods for drying the hair, which is characterized by a preliminary dehydration of the air used for drying the hair, this dehydration being achieved, as thoroughly as possible, before the admission of the air into the utilization apparatus, preferably by means of a dehydrant which can be restored, that is to say, regenerated by heating at a relatively low temperature.

Other objects of my invention consists in devices which permit of putting this improvement into practice.

These devices substantially comprise a ventilator which sucks in the outside moist air and forces it through the dehydrant, transferring to the same any moisture it contained. This dry air, as it leaves the dehydrant, is already moderately warm (at about 40° C.) because of the release of heat due to the phenomenon of condensation of the water-vapor that was dissolved in the surrounding air. I have ascertained that this rise in temperature amounts to about 2.5° C. per gram of water contained in a cubic meter of dried air.

According to a modification of my invention, the ventilator which forms a part of every modern drier helmet employed in hair-drying is used as a means for propelling the air. In this latter case, the ventilator sucks in the air through a receptacle of any shape, which contains the dehydrant; this receptacle may be an integral part of the helmet, or is connected to the latter by way of a flexible pipe.

2

Just as it is, this dry, tepid air may be employed for drying hair, but as this air is completely dehydrated, it would bring about through the quick evaporation of the water permeating the hair, a fall in temperature of about 20° C., which could cause the customer to catch a chill (cold in the head, coryza, etc.); so it is preferable to warm up this air to about 50 or 60° C., its temperature being raised by 10 to 20° through any known means whatever.

As the hair becomes dry, damp air is rejected in the outside atmosphere.

Of dehydrants which can be regenerated at a low temperature, generally in situ, between 100 and 150° C., and which may be especially recommended for the particular application in view of my invention, one, called Carbagel, is well known; others are equally well suited as for instance silica gel, activated alumina, etc. These will have the advantage of being dry substances, in the form of grains having the size of a pea or hazel-nut, and offering hereby but a small loss of pressure to the passing of air blown or sucked in by the ventilator.

On the other hand, for their regeneration, when made electrically, they involve an important waste of energy, practically of the order of 2 to 3 kilowatt-hours per kilogram of water to be evaporated.

It is therefore essential to make use of their dehydrating properties only in the strict proportion of the need of the dehydrated air which is required for supplying with dry air the hair drier or hair driers in service as will be hereinafter described.

My invention will be better understood by means of the accompanying drawings and corresponding descriptions, illustrating, by way of non-limitative examples, several types of embodiment.

Figure 1 is a sectional drawing of the simplest possible equipment, employing the ventilator of a hair-drier of the usual type for sucking-in the outside air through the substance of the dehydrant, and ensuring also the subsequent regeneration in-situ of the latter;

Fig. 2 is a sectional drawing of an equipment comprising a ventilator separate from the hair-drier, insufflating the outside air through the dehydrant;

Fig. 3 shows how the latter equipment operates in the regeneration stage of the dehydrant;

Fig. 4 shows a central plant for dehydrating the air, supplying a bank of hair-driers by means of a ventilator;

Fig. 5 shows in profile one of the hair-driers of the said bank; and

Fig. 6 shows a modification of the central dehydrating plant which operates by means of compressed air furnished from a distribution pipe-work.

According to Fig. 1, an apparatus with one single drier helmet is constituted in the following manner. A certain quantity of dehydrating matter C is contained in a tank B in the form of a tight box, the bottom of which comprises an aperture A. This box is supported by a stand U. A basket-like container Q bearing on bars J is accommodated in the box B. The side walls of this container, which are not tight, let the air flow therethrough, whereas its upper and under walls are tight.

In the direction of the axis of the container, there is provided a cylindrical recess R whose walls are apertured in a like manner as are the side walls of the container. An electric resistor E for heating the air is placed in the interior of this recess; this heater E is connected to the terminals S and may be protected by a perforated flue L which is connected to the inlet A. The volume of the tank B left outside the container Q is connected by way of the flexible pipe T with the inlet tube of the ventilator V blowing air into the helmet K, the set being mounted on an adjustable stand F.

During a hair-dressing operation, outside air sucked in by aperture A flows through the substance C which takes off its moisture; then it passes by way of the piping T into ventilator V which blows it into helmet K through the patient's hair.

During a regeneration, resistor E is switched on; ventilator V sucks in the heated air charged with the water-vapor coming out from the absorbing substance that was permeated with water in the course of the drying operations, and this air is blown out in the outside atmosphere.

With the modification shown in Fig. 2, the ventilator is separate from the hair-drier proper; it is accommodated in the stand of the container containing the dehydrating matter. On the other hand, the heater E is accommodated in a receptacle arranged outside the said container at its outlet. In that figure, the same members are designated by the same reference characters as in Fig. 1, without being further described. The intake A of the container B is connected to the outlet of the ventilator V by the intermediary of a four-way cock X. The outlet of the container B is connected to the receptacle H enclosing the heater E, the other end of this receptacle being connected to the helmet K by the flexible pipe T through the cock X. Fig. 2 shows the device in working condition; the resistor E can then be used to warm up the dried air, as was already explained.

Fig. 3 shows the device in regenerating condition. Cock X has been turned on, which brings about a reversal of the air circulation, as indicated by the arrows, with respect to the circulation in Fig. 2.

It will be seen that the outside air sucked in by the ventilator is at first forced through the heater E powered by line P; this air warms up and is further forced into container B through the dehydrating matter, taking off the water that was fixed thereon; finally, the air charged with water vapor is blown out in the outside atmosphere through the cock X and exhaust W.

In Figs. 2 and 3, there is shown at Y a device for regulating the flow; it is a by-pass channel situated between the inlet and outlet of the ven-

tilator V, which is controlled by a valve provided with a calibrated spring. When pressure rises at the exhaust, that is to say when the utilization flow is being reduced, the valve Y is increasingly opened, and thus the volume of air admitted into the ventilator is more and more diverted from the exhaust, so as to reduce consumption in the same proportion.

In the case of a hair-dressing salon of a large scale, where several hair-drying helmets are available, instead of having one air-dehydrating device of the kind described for each helmet—which devices could be set to work according to the needs, i. e. the presence and number of customers—it is more convenient and also more economical, if one considers the costs involved by dehydration of damp air, to use but one dehydrating plant, that could be called the central plant; this plant supplies with dry air, by means of an appropriate piping, the several separate helmets installed in the salon.

If the separate helmets are each provided with a ventilator, it is only necessary to connect them to a main piping which is amply dimensioned and which ends in a big tank of the kind shown in Fig. 1, containing the dehydrant; each flexible pipe connects the main piping to a hair-drier provided with a valve permanently closed when the ventilator of the hair-drier is not running, so as to avoid any passage of damp air into the main piping.

On the contrary, if one ventilator only supplies the individual hair-driers, no one of them having its own ventilator, it is necessary, for using the restorable dehydrant in the most economical way, that this central plant for drying the air could deliver dry air only in proportion of the number of the helmets actually in service at a time, even if there were one of them only, the optimum pressure appropriate for a particular helmet being ensured in any case, as can be readily well conceived.

The device of Fig. 4 fulfills these requirements.

The installation, comprising the helmets K₁, K₂, K₃, etc. tapped on the main piping D, is supplied with air under pressure by means of an electric ventilator through a device which will be, in the general case considered, a device quite similar to the one of Fig. 2, comprising the same members designated by the same reference characters. The ventilator will be capable of delivering a quantity of air large enough for ensuring the service of the totality of the helmets K₁, K₂, K₃, etc. when they work all at the same time.

It is necessary to limit the flow of the ventilator to the normal value corresponding to the number of helmets in service, so as to properly use the restorable dehydrant.

To this end, there is introduced between the stop valve Z₁, Z₂, Z₃, etc. of each helmet K₁, K₂, K₃, etc. and the helmet itself an optical regulating device comprising a gauged aperture O and a sensitive manometer M indicating the pressure existing between the valve and the gauged hole, which pressure is adjusted at its optimum value once for all; this pressure is maintained in the course of a drying of hair by actuating the valve, whatever be the number of helmets in service, so as to ensure the appropriate flow of dry air in the helmet used.

Thus, the flow delivered by the ventilator is moderated, with the result that, although the ventilator runs at constant speed, there passes through the restorable dehydrant but the necessary fraction of the volume normally deliv-

5

ered by the ventilator when it blows air with a maximum of power, or, in other words, when it supplies simultaneously with dry air the whole bank of helmets.

It is also possible, while still maintaining the full flow of the ventilator, to make use of the regulating method of auto-pumping, meaning thereby the return to the ventilator intake of the air blow in excess, by means of the by-pass with the calibrated valve Y, the operation of which has already been explained in the foregoing.

According to a modification of my invention, (Fig. 6), instead of a ventilator, I employ compressed air distributed by a system of pipes, as exists in certain large cities equipped with a municipal system of distribution of compressed air.

With a view to reduce the expense of compressed air, the same is only used as motive power supplying an injector system I of a known type, which sucks in an important and gratuitous proportion of outside air. These two fluids, mixed together, then flow through the apparatus containing the dehydrant.

In this modification, adjustment for the number of helmets in service can be made either directly by the valve G regulating the admission of compressed air to the injector, or automatically by making use of the auto-pumping system Y as indicated in Figs. 2 to 4.

In other respects, the apparatus comprises the same members as in the foregoing embodiments, which are referred to by the same characters.

What I claim is:

1. Device for hair drying, comprising: at least one drier helmet having an air supply passage therein; a dehydrating apparatus containing as a dehydrating mass, grains of a material regenerable at a temperature between 100 and 150° C. by circulation of hot air between said grains, said apparatus having two openings; a heating system having two openings, one of which is connected to a corresponding one of the dehydrating apparatus; an apparatus for forcibly blowing air; a four-way cock, one way being connected to the exhaust opening of the air-blowing apparatus, another to the air supply passage of the said drier helmet and the two others to passages leading to said heating system and said dehydrating apparatus.

2. Device with several helmets, according to claim 1, in which the intake and exhaust openings of the air blowing apparatus are connected to gether by a by-pass having a valve with a calibrated spring, for automatically control-

6

ling the flow of the air blown to the number of helmets in service.

3. A device according to claim 1, in which the air blowing apparatus is a jet injector connected to a supply pipe distributing compressed air.

4. A device with several helmets, according to claim 1, including between the air supply passage and each helmet a visual adjustment system for the optimum flow of air, the said system being constituted by an adjustment valve, a constricted orifice arranged in the supply passage to each helmet, an extension pipe connected with said supply passage between said valve and said orifice, and a manometer connected with said extension pipe.

5. Device for hair drying, comprising: at least one drier helmet having an air supply passage therein, a dehydrating apparatus containing a dehydrating mass, grains of a material regenerable at a temperature between 100 and 150° C. by circulation of hot air between said grains, said apparatus having two openings, a heating system having two openings, one of which is connected to a corresponding one of the dehydrating apparatus, an apparatus for forcibly blowing air, a four-way cock, one way being connected to the exhaust opening of the air-blowing apparatus, another to the air supply passage of the said drier helmet and the two others to passages leading to said heating system and said dehydrating apparatus, and means for connecting the openings not interconnected of said dehydrating apparatus and of said heating system selectively on one hand to the air supply passage of said drier helmet and to the exhaust opening of the air blowing apparatus respectively, and on the other hand to said exhaust opening and to said air supply passage respectively.

GEORGE F. JAUBERT.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,924,255	Prat	Aug. 29, 1933
1,924,849	Fonda	Aug. 29, 1933
1,970,766	Pfahl	Aug. 21, 1934
2,066,847	McShea	Jan. 5, 1937
2,083,732	Moore et al.	June 15, 1937
2,125,646	Nessell	Aug. 2, 1938
2,127,121	Kelley	Aug. 16, 1938
2,190,168	Armistead	Feb. 13, 1940
2,278,854	Hunsicker	Apr. 7, 1942