United States Patent [19]

Baker

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[54] **DETANGLING DRYER**

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[52] **U.S. Cl.** ..... **132/9,** 132/11 A

[51] **Int. Cl.** **A45d 1/00**

[58] **Field of Search** 132/9, 157, 126, 137, 142; 34/91; 74/55

[56] **References Cited**

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Attorney, Agent, or Firm—John F. Cullen; George R. Powers; Leonard J. Platt

[57] **ABSTRACT**

The invention is a detangling dryer comprising a housing with a supporting handle and fan to move air through the housing and heat it, and power means provides rapid reciprocating movement. A support on the housing exit has a frame carrying a pair of spaced outer comb means straddling a separate comb means in the frame, the frame being latched to the exit and the separate comb reciprocating and having teeth longer than the straddling spaced comb means and designed to avoid squeezing, pinching, or shearing of the hair. The comb carrying frame means is latched to the dryer which has a transmission for the reciprocating comb which transmission is automatically engaged and the comb is self-aligning when the frame is attached. Slots are provided to direct dryer air through and along the length of the comb means on both sides. Switching means selects the rate of air flow, air temperature, and actuation of the separate comb means so that temperature controlled air is directed through the combs to provide a shaking and detangling action only to the hair while drying it.

8 Claims, 2 Drawing Figures

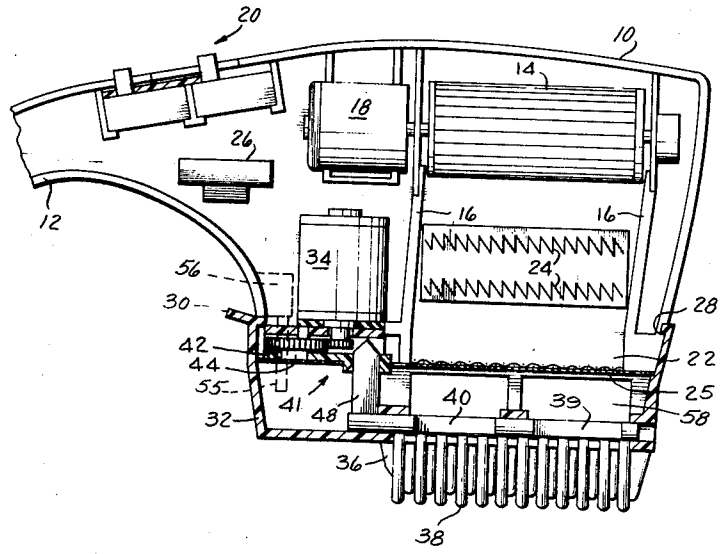


FIG. 1.

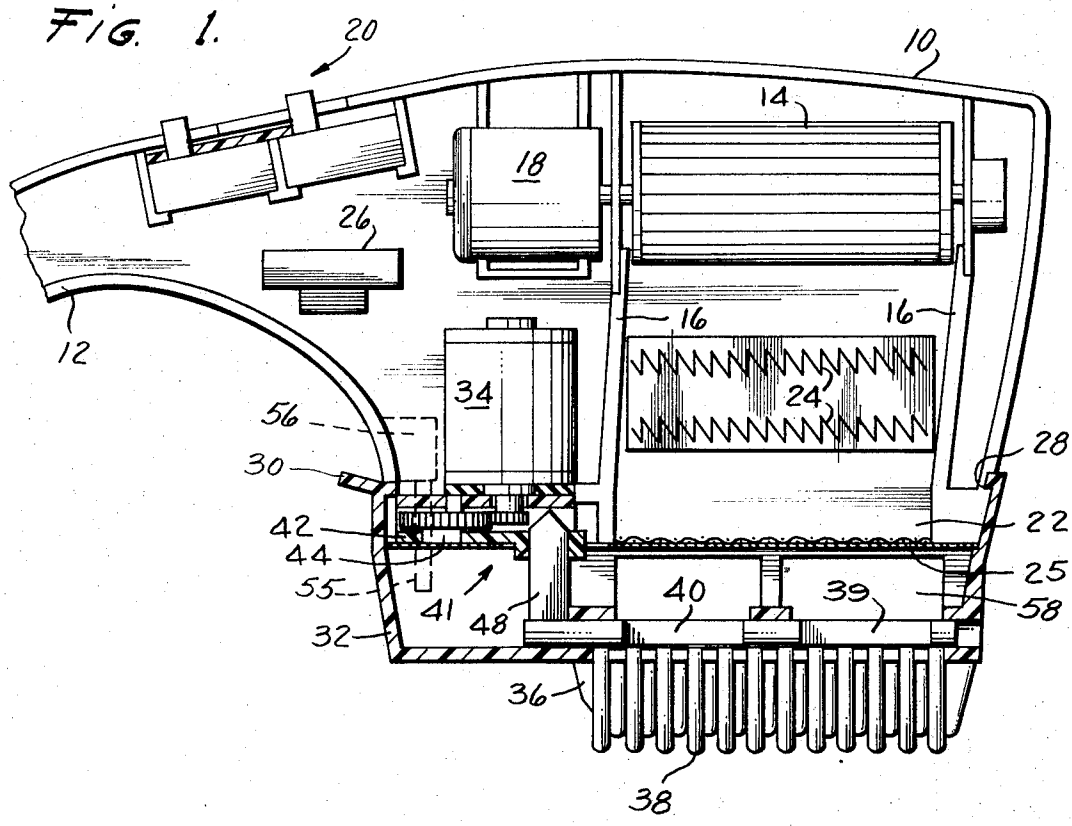
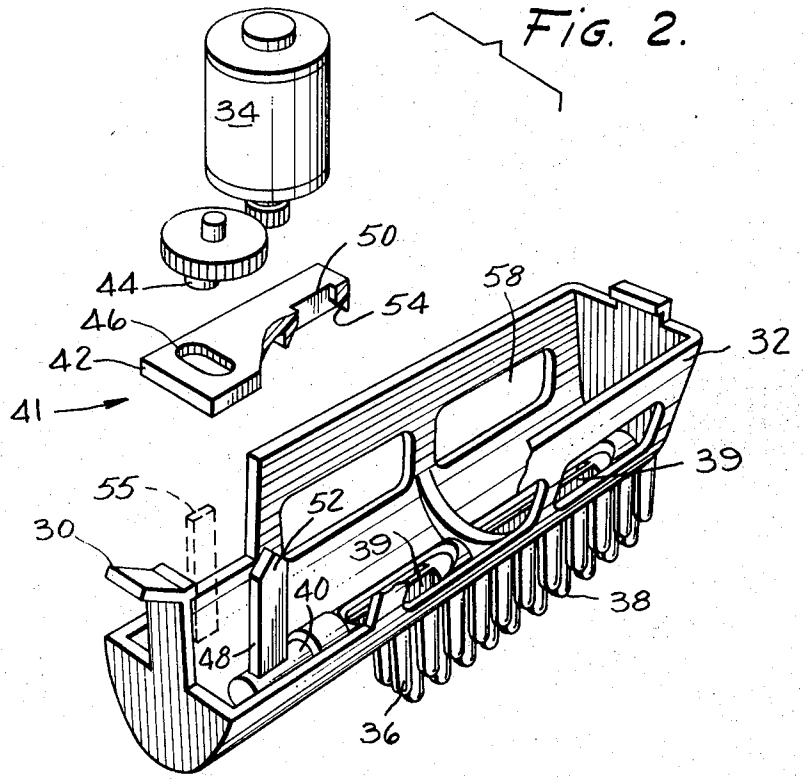

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FIG. 2.


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DETANGLING DRYER

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention is directed to an improved detangling comb arrangement in combination with a dryer for rapid reciprocation of one comb with respect to a fixed spaced straddling comb and with specifically oriented teeth to avoid squeezing, pinching, or shearing of the hair with temperature-controlled air directed along the combs to provide shaking and detangling movement only to the hair while drying it.

2. Description of the Prior Art

Tangled hair is a daily problem for most women and some men. It has been found that a pair of parallel combs reciprocating with respect to each other, much like the blades of an electric knife, is a great aid in untangling hair. The action seems to be one of rapidly and lightly shaking the hair while pulling the comb through it causing potential knots to slip through and become untangled rather than to tighten. Generally, present detanglers provide comb movement much like the electric knife using adjacent single or double combs with the same length teeth and this requires careful placement to avoid scratching the scalp, and results in a squeezing action on the hair. Early curling irons used adjacent reciprocable combs to put a curl or wave into the hair by squeezing it into a waved position under the influence of fluids or heat, or both. It has been found desirable to improve the present electric knife-type of motion of two adjacent sets of reciprocating teeth which result in harsh, uncomfortable action to the user as well as shearing-like and curling and squeezing action on the hair. Co-pending U.S. Pat. application Ser. No. 345,451 filed Mar. 27, 1973 of common assignment is directed to a hair detangling power device which uses specific comb means to obtain effective detangling action.

Additionally, electric dryers of the small hand-held variety have come into vogue for both men and women and these customarily supply air at different temperatures and rates of flow, usually by a cross-flow fan, for effective drying and there are various attachments such as fixed combs available to assist the drying action. It has been found desirable to combine the best features of the dryer and detangler in a common device in a way that uses fewer parts and provides a different action on the hair than either device alone to permit the user to obtain a combined result for faster drying and a different detangling action.

SUMMARY OF THE INVENTION

Briefly described, the invention is directed to a detangling dryer that comprises a housing with a supporting handle and fan means in the housing to move air through it and exit one end and means is provided to heat the air as it passes through the housing. Power means in the housing provides a rapid reciprocating movement and a specifically designed pair of spaced outer comb means straddling a separate reciprocable inner comb means is mountd in a frame that is latch-connected to a support means on the housing exit. The reciprocating comb means has teeth longer than the straddling spaced comb means and the teeth are designed to avoid pinching, squeezing, or shearing of the hair. The reciprocable comb means may be connected

to a separate motor within the housing and is designed to be self-aligning by a transmission that accepts the separate comb means no matter how it is placed in position. The frame and comb means contain slot means to direct the air from the dryer along substantially the length of both spaced combs and through the combs. Suitable switching means is operable to select the rate of air flow, the air temperature, and actuation of the separate comb means whereby the shaking and detangling movement only on the hair may also be in an environment of temperature-controlled air for a different detangling action on the hair. Thus, the main object of the invention is to provide a detangling dryer that provides only a shaking and detangling movement to the hair, is not irritating to the scalp, and which detangling action may take place in an environment of warm air acting on all parts of the hair for faster drying as it is detangled.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a partial cross-sectional view of the detangling dryer showing the general parts of the appliance; and

FIG. 2 is an exploded perspective, partially broken, illustrating the transmission mechanism and air guiding frame.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. 1, there is shown a hair dryer of the broad general type presently on the market, and sold by Applicant's assignee as Model SD–1 Styling Dryer, and comprising a housing **10** with a supporting handle **12** and containing an internal, usually cross flow, fan **14.** A modified handle is the gripping portion on the common "purse" type dryers and "handle" is intended to cover such equivalent form. Internal partitions **16** form guides for the passage of air. The fan may be driven by motor **18** under the control of switching means generally indicated at **20** and air is drawn in through suitable known louvers in the housing **10,** through fan **14,** and exits out one end **22** of the housing.

In order to obtain heated air, it is customary to provide suitable heating means **24** in the housing — usually resistance wiring over which the air passes and is heated as it leaves the dryer flowing through exit **25.** The motor **18** may be a low voltage DC motor operated through rectifier **26** and operable at different speeds by switching resistance heating means **24** in and out of the circuit to change the voltage to the motor **18** and also to provide different levels of heating on means **24** so that the temperature of the air exiting the dryer can be controlled at different levels. The well-known circuitry and switching mechanism for this may take many forms and the details form no part of the present invention. Drying in such a device is customarily enhanced by a fixed comb attachment that is snapped on support means **28** at the end of the dryer by a flexible latch **30** that engages and attaches to the housing to removably mount the entire comb supporting frame **32** thereto.

The structure thus far described is generally conventional and available in the market place today. To this basic structure the invention produces a new device by adding a unique detangler mechanism which, acting in conjunction with the dryer, provides a new shaking action to the hair to decrease the drying time while performing effective detangling action thereon. A power

means is provided in the housing for operating the detangler mechanism and this may be a single power means to also drive the fan with suitable cross linkage mechanism or, as shown, may comprise a separate motor **34** that may be connected to switching means **20** so that it may be operated separately or together with motor **18.** Thus, suitable circuitry may be controlled by switching means **20** to provide detangling with low air flow and low heat or with high air flow and high heat. Also, the detangler structure may be switched off under both low and high heat conditions so that four modes of operation are available to the user.

The power means, such as motor **34,** is designed to provide rapid reciprocating movement in the 2,000–4,000 strokes per minute range and this is what is meant by rapid reciprocating movement as used herein. To provide a detangling and unsnarling action on the hair, there is provided a removable spaced outer comb means **36** that is supported directly on frame **32** to extend longitudinally thereof and is fixed relative to the frame. The outer comb means is formed of a pair of combs as shown in FIG. **2** designed to straddle an inner separate comb means **38** depending from common member **40** and reciprocable lengthwise of frame **32** as seen in FIG. **2.** Also, the comb means are formed to provide additional openings **39** along the length of both spaced comb means. Thus, both comb means **36** and **38** are mounted in frame **32** with the separate comb **38** reciprocable in the frame and spaced comb means **36** being fixed to the frame with the teeth of both comb means spaced transversely and longitudinally aligned as shown to avoid rubbing one another and prevent any shearing action on the hair by also having the movable teeth preferably have a slight overlap with the fixed teeth at all points in the stroke so that no hair can be caught therebetween and be subjected to shear. A desirable detangling action has separate comb means **38** reciprocating at about 3,000 strokes per minute.

For the right motion and best detangling action, it has been found desirable that the separate comb means **38** be provided with teeth longer than the straddling spaced comb means **36** as shown. If the teeth are the same length and the device is tilted slightly the outer teeth will engage some hair in the fixed teeth that is not being engaged by the moving teeth and it is possible to catch a tangle in one of the outer teeth where it will hang up on the fixed tooth and never see the reciprocating comb to shake it free. By having the center reciprocating comb teeth longer as shown, all of the hair that is engaged by the comb will be contacting the longer center teeth and will therefore be agitated and detangled. This, with the interrelation between the reciprocating and fixed teeth to preferably provide a continuous overlap with no rubbing between the comb teeth, results in substantially no shearing on the hair so that only a shaking and detangling motion is applied to all the hair engaged because of the long center teeth and the preferable overlap between the reciprocating and fixed teeth. This shaking occurs whether the comb is tilted or not and in all hair-engaging positions and tends to untangle any snarls in the hair more effectively. This desirable agitating or shaking in conjunction with the air flow, removes dried hair spray or other particles, thus cleaning the hair.

In order to obtain this rapid reciprocating and detangling action, suitable transmission mechanism generally indicated at **41,** between motor **34** and common member **40** to connect the member through the housing to the motor, may consist of bar means **42** that is suitably supported for longitudinal linear reciprocation and that may be driven by an eccentric **44** engaging groove **46** in a well-known mechanical movement. This reciprocating motion of bar **42** is transmitted to separate comb means **38** and member **40** by means of arm **48** that extends from the common member **40** and engages slot **50** in bar **42.** Since the position of slot **50** may not always be in alignment when the detangler is latched onto the support means, the arm **48** is formed with a substantially pointed end **52** which meshes with cooperating sides **54** in slot **60** so that the arm will engage the slot in any longitudinal or reciprocal position of the slot or the freely sliding member **40,** whereby the separate comb means **38** is self-aligning when the detangler is attached. If desired, a suitable lever **55** on the frame means **32** may engage a switch **56** to actuate motor **34** only when the frame carrying the detangler structure is attached.

It is desired that the detangling action be subjected to the hot air from the dryer mechanism for faster drying and detangling. To this end, frame **32** is provided with a plurality of slotted openings **58** that, operating in conjunction with the general taper of frame **32** and openings **39** are also aligned longitudinally to direct warm air along the length of the comb means on both sides whereby warm air may be passed through and over all combs along substantially the entire length thereof to promote faster drying.

The combination of this specific detangler structure with the dryer results in effective detangling in the manner of the co-pending application or different action under the influence of warm air directed along the combs to decrease the drying time and improve the detangling. Thus, the dryer serves as a support for the detangler which effectively utilizes the warm air by directing it into the detangler to provide a different drying and detangling action.

While there has been described a preferred form of the invention, obvious equivalent variations are possible in light of the above teachings. It is therefore to be understood that, within the scope of the appended claims, the invention may be practised otherwise than as specifically described, and the claims are intended to cover such equivalent variations.

I claim:

1. A hair detangling dryer comprising,

a housing with supporting handle,

fan means supported to move air through said housing and exit one end thereof,

means in said housing to heat the air therethrough.

a removable support frame with latch structure means for attachment to said housing exit,

power means in the housing providing rapid reciprocating movement,

a pair of spaced outer comb means carried by said support frame,

separate comb means attached to said reciprocating means and reciprocable in said frame by transmission means connecting said separate comb means through the housing to said power means,

said separate comb means disposed to be straddled by said spaced comb means and having teeth longer than said straddling spaced comb means,

the teeth of said separate comb means being transversely spaced and longitudinally aligned to substantially avoid pinching, squeezing, or shearing of the hair, and

switching means operable to select the rate of air flow, air temperature, and actuation of said separate comb means,

whereby air flow may be directed through the combs to provide shaking and detangling movement only to the air in all hair-engaging positions of the comb means while passing temperature-controlled air therethrough.

2. Apparatus as described in claim **2** wherein said fan and separate comb means have separate motors to respectively supply power thereto, and

said spaced outer comb means are fixed to said frame.

3. Apparatus as described in claim **1** wherein said transmission means includes,

bar means reciprocally driven by an eccentric from said separate comb motor, and

an arm extending from said separate comb means into engagement with said bar to impart reciprocation to said separate comb means in the frame.

4. Apparatus as described in claim **3** wherein said bar has a slot therein, and

said arm is formed with a substantially pointed end thereon to engage said slot in any reciprocal position of said slot and comb to slide said comb into self-aligning position.

5. Apparatus as described in claim **4** wherein said frame has a plurality of openings.

said openings being aligned to direct air along substantially the length of said comb means.

6. Apparatus as described in claim **5** wherein said openings are disposed on both sides of said frame to direct air along substantially the length of both spaced combs.

7. Apparatus as described in claim **5** wherein additional openings are also provided between said outer and separate comb means to direct air therethrough.

8. Apparatus as described in claim **7** wherein said additional openings and said frame openings are both provided along said comb means to direct air through and over all combs substantially along the entire length thereof.

* * * * *

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,840,030 Dated October 8, 1974

Inventor(s) Fred E. Baker

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

In The Claims:

Claim 2 should be dependent on claim 1 and claim 3 should be dependent on claim 2.

Signed and sealed this 17th day of December 1974.

(SEAL)
Attest:

McCOY M. GIBSON JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents

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UNITED STATES PATENT OFFICE
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FORM PO-1050 (10-69)

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