June 29, 1943. F. R. JENKINS 2,323,046

HAIR CLIPPER

Filed March 16, 1942

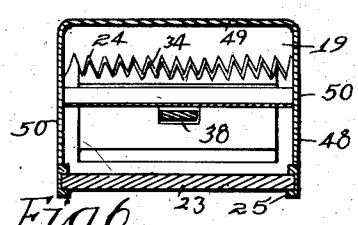


Fig. 6.

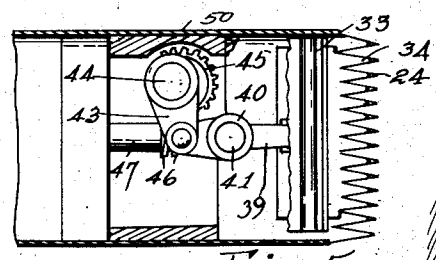


Fig. 5.

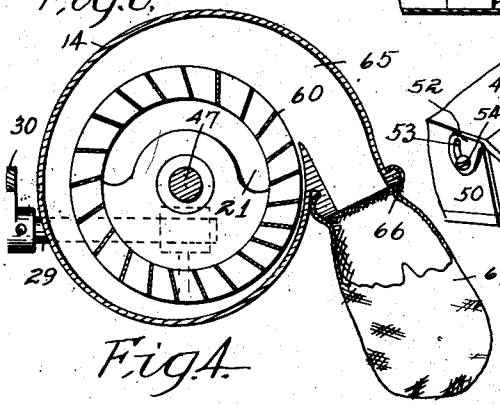


Fig. 4.

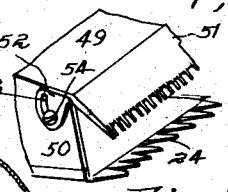


Fig. 7.

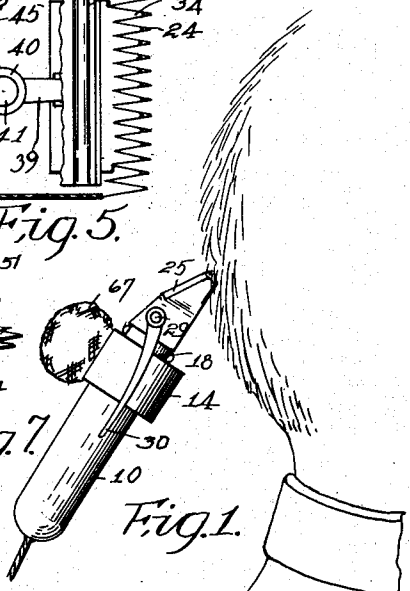


Fig. 1.

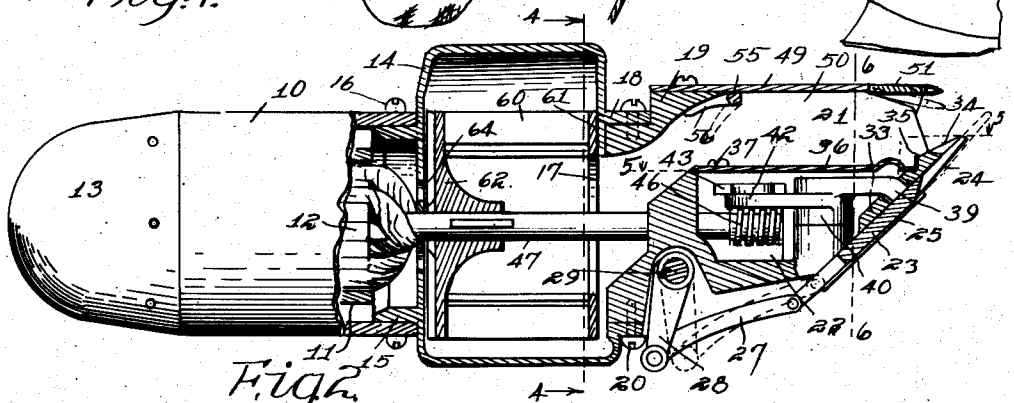


Fig. 2.

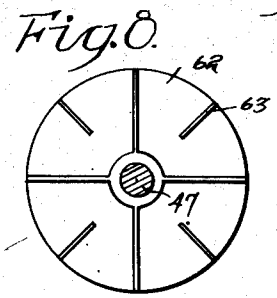


Fig. 8.

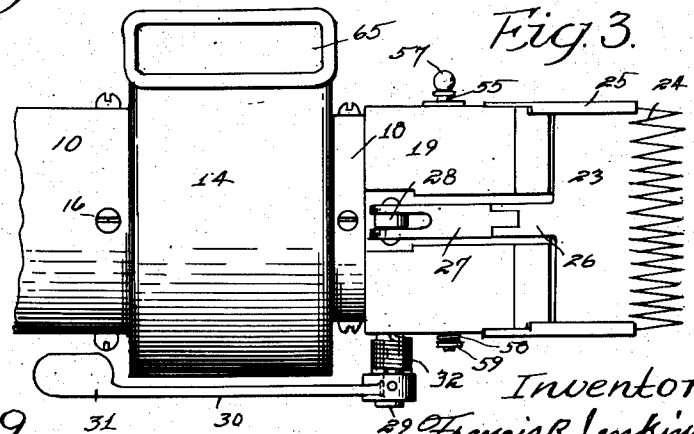


Fig. 3.

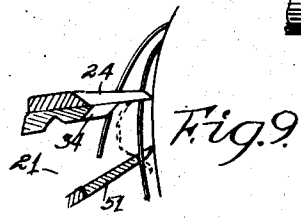


Fig. 9.

Inventor

Francis R. Jenkins

By Craig & Hagan Attys

Patented June 29, 1943 2,323,046

UNITED STATES PATENT OFFICE

2,323,046

HAIR CLIPPER

Francis R. Jenkins, Des Moines, Iowa

Application March 16, 1942, Serial No. 434,921

14 Claims. (Cl. 30—221)

The object of my invention is to provide an improved power-operated hair clipper of simple, durable and inexpensive construction of the type employing a small electric motor for operating the cutter blades, and employing vacuum-created air currents for removing the severed hairs and delivering them to a suitable container.

I am well aware that the idea of employing an electric motor for operating the cutter blades and producing the vacuum-created air currents for removing the severed hairs and delivering them to a suitable container is not new. Insofar as I am aware, however, the employment of vacuum in connection with an electric clipper is not in practical use. One reason for this is that devices for this purpose so far have been large and clumsy and inconvenient to operate. In order to make the use of a hair clipper employing a vacuum for removing the clipped hairs practical, the clipper should be so constructed and arranged that the complete hair cutting operation may be done with the clippers alone. Where the electric clipper is now used it is the usual practice to use the clippers for trimming up around the edges and then using the shears for the final finishing of the hair cut.

It is, therefore, an object of my invention to provide a compact, electrically-operated clipper including vacuum means for creating air currents for the removal of the severed hairs and delivering them to a very small container of such size as to collect the hair from a single hair cut, said sack to be so constructed that it may be easily and quickly removed and a new one placed in position.

A further object is to provide in a hair clipper of the type above described, a body to serve as a hand support for the clipper, including a small electric motor, a fan casing adjacent to the forward end of the body and a cutter head adjacent to the opposite end of the fan casing, the fan cutter mechanism being operated by the motor shaft wherein the air conduit leading from the cutter blades to the fan is comparatively short so as to eliminate unnecessary friction, and wherein a comparatively small amount of power is necessary for the operation of the fan.

A further object is to provide in a hair clipper employing power-operated blades, a vacuum device for creating air currents and a passage having its inlet adjacent to the clipper blades, and adjacent to the opposite side of the inlet of said passage a comb wherein the comb may be utilized for straightening out the hair and at the same time holding the hair from entering the teeth of the cutter blades until the free end of the hair has passed the comb, so that only predetermined lengths of the hair will be removed as the clipper is moved over the hair.

A further object is to provide in a clipper of the type above described, means for adjusting one of the cutter blades relative to the other to provide means whereby the length of the finished hair may be automatically provided for, and in connection therewith means for adjusting the angularity of the comb for increasing and decreasing the size of the inlet opening.

A further object is to provide in a hair clipper employing power-operated cutter blades, a means for creating air currents for removing the severed hairs and including an inlet passage and in said passage, means for regulating the flow of air through said passage.

My invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawing, in which:

Figure 1 is a side elevation of my improved clipper showing the manner in which it is applied while hair is being removed;

Figure 2 is a side elevation of my improved clipper with one end substantially in vertical central section;

Figure 3 is a bottom view of the same;

Figure 4 is a detail sectional view taken on the line 4—4 of Figure 2;

Figure 5 is a detail sectional view taken on the line 5—5 of Figure 2;

Figure 6 is a detail sectional view taken on the line 6—6 of Figure 2;

Figure 7 is a perspective view of a segmental portion of one corner of the clipper head to show the manner in which the comb is adjusted to various angular positions;

Figure 8 is an end view of the fan;

Figure 9 is a diagrammatical view showing the manner in which the hair is held out of the inlet opening of the air passage until after the free end of the hair is past the comb.

My improved clipper comprises a body 10, preferably of cylindrical formation and of such size as to be grasped in the operator's hand. The body 10 has a motor 11 mounted therein provided with an armature 12. An end member 13 is provided for closing one end of the body 10. A fan casing 14 has an annular flange 15 at one end entering the end of the body 10 and secured in position by screws 16. The opposite

end of the casing is provided with an opening 17 and an annular flange 18, said flange 18 being adapted to support the cutter head 19 by means of bolts 20. The cutter head 19 is provided with an air passage 21 having one end communicating with the opening 17 of the casing 14. The head 19 is also provided with a cavity 22 for receiving the clipper operating mechanism, the outer end of the head 19 being bevelled to receive a clipper blade 23 having comparatively long teeth 24, the said blade 23 being slidably mounted in guide plates 25 (see Fig. 6), the teeth 24 terminating at the inlet end of the passage 21, the inner end of the blade 23 being provided with an extension 26 to which is connected one end of a link 27, the other end of said link being carried by a rock arm 28 fixed to a rock shaft 29, one end of said shaft being provided with a lever 30 and a thumb piece 31. A spring 32 serves to yieldably retain the arm 28 at its rearward position of movement, and in turn, the cutter 23 in its rearward position of movement, as shown in solid lines in Fig. 2.

Slidably mounted on the upper surface of the cutter 23 is a cutter blade 33, having teeth 34 adapted to cooperate with the teeth 24, the blade 33 having a transverse notch 35 for receiving one end of a spring plate 36, said plate being attached to the head 19 and covering the recess 22, by means of screws 37, the free end of the plate 36 being yieldable and adapted to yieldably hold the cutter 33 in operative relation with the cutter 23, and at the same time to permit the cutter to move freely, the said cutter 33 having a recess 38 for receiving one end of an arm 39 supported on a hub 40, pivotally mounted on a pin 41 carried by the head 19, said hub 40 having a rearwardly extending arm 42 pivotally connected to a link 43 operated by an eccentric 44, said eccentric, including a gear 45 driven by a worm gear 46 fixed to a motor shaft 47 connected to the armature 12. Thus means is provided for reciprocating the blade 33.

The head 19 is provided with a detachable cap 48 having a top portion 49 and sides 50, the forward edge of the top 49 having a comb 51 pivotally attached thereto, one end of which is provided with a plate 52, said plate 52 having a slot 53 for receiving a set screw 54 by means of which the angle of the comb 51 may be adjusted relative to the cutters 23 and 33. The plate 49 serves to provide a cover for the discharge 21.

Pivotally mounted in the side members 50 is a shaft 55 having a damper 56, one end of the shaft 55 being provided with a knob 57 for rotating the shaft and for adjusting the angularity of the damper. A spring 58 is provided on the other end of the shaft 55, supported between the plate 50 and a collar 59 for yieldably retaining the damper in any of its adjusted positions.

The casing 14 is eccentrically mounted relative to a fan 60 carried by the shaft 47, said fan having an annular plate 61 communicating with the opening 17, and its opposite end provided with a closed plate 62 for supporting the fan blades. The back edges of the plate 62 is provided with radial fins 63 for drawing air through the motor casing and through openings 64 formed in the casing 14 for ventilating the motor casing, the casing 14 being provided with an outlet opening 65 having a bead 66 for detachably supporting a bag 67 formed of porous material of the nature of cheese cloth, of a somewhat finer weave, the back being detachably secured to said bead 66.

From the above description it will be seen that if the motor armature 12 is rotated, then the fan 60 will also be rotated and air drawn through the passage 21 between the free end of the comb 51 and the teeth of the cutters 23 and 33, into the fan casing and delivered into the bag 67, together with any severed pieces of hair, said hair being lodged in the bag so that the necessity of the barber providing an apron is eliminated and the necessity of cleaning up the hairs from the floor, as has heretofore been the practice. Furthermore, the customer is relieved of the nervous sensation created by small pieces of hair clinging to his neck, the entire unit being of compact form with a very short and comparatively large air passage so that a comparatively small amount of power is necessary for the maintenance of the necessary air velocity between the cutters and the comb to suck the air into the passage, so that the power means may be included within the body of the clipper. The sack 67 is adapted to be removed and thrown into the waste basket each time a customer's hair is cut, the bag being comparatively small and, therefore, very cheap, and eliminates the necessity of the operator cleaning the hair collected.

The hair clipper may be operated in the usual manner, with the clipper substantially in the position shown in Fig. 2, if so desired. This sometimes is an advantage in trimming up the edges. However, for removing the hair from the top, back and sides of the head, the clipper is rotated through an angle of about 180° to the position illustrated in Fig. 1, with the teeth of the comb 51 engaging the head and also the free ends of the teeth 24, the operator starting at the top of the head and moving the clipper downwardly from the top to the bottom edge. When this is done, the hairs are first drawn through the teeth of the comb 51, as illustrated in Fig. 9, the teeth 24 being extended to such position that the teeth 34 will not engage the hair until after the cutter has been moved downwardly to position where the free ends of the hair will be drawn into the air passage and into engagement with the cutter 34, at which time the ends will be severed and drawn into the said passage 21, the pieces of hair severed being of a length equal to the distance between the free end of the comb 51 and the cutter 34. By varying the angle of the comb it will be seen, as shown by dotted lines in Fig. 2, that the length of the severed pieces may be varied. This is sometimes necessary due to the fact that some hair is very coarse and heavy and will not be drawn into the passage 21 until after the free end of the hair has passed the comb 51, while sometimes with very light hair, suction will cause the hair to be bent inwardly, as shown in dotted lines in Fig. 9, in which case the severed pieces are longer than desired.

The damper 56 serves to regulate the flow of air through the passage 21 and provides further means whereby the operator has at his control means for handling hair having various characteristics.

Thus it will be seen that if the distance between the free end of the comb 51 and the cutter 34 is equal to the growth of the hair, say for a time of two weeks, then all the operator has to do is simply pull the cutter downwardly from the top of the head towards the bottom, and the two weeks' growth of hair will be automatically cut off from the ends of all the hair traversed by the comb, or, in other words, the clipper is so ar-

ranged that the amount of hair taken off is uniform and by this means of removing the hair the necessity of providing shears for finishing the operation is eliminated, so that the entire hair cutting operation may be accomplished by a power-operated clipper, including vacuum currents of air for removing the severed ends, wherein all of the hair removed from the head is collected into the bag, whereas, if the operator had to depend on shears for finishing part of the job, then the vacuum arrangement is of little avail, inasmuch as hairs from the shears would still be scattered all over the customer's clothes.

It will, therefore, be seen that I have provided a clipper of simple, compact and comparatively inexpensive construction, so arranged that the entire hair cutting operation may be easily and quickly accomplished and wherein a hair cut can be given by an operator of less skill than those using the present methods, inasmuch as the comb and the manner in which it is mounted provides means whereby it is comparatively easy to maintain an even cut.

I claim as my invention:

1. A hair clipper, comprising a body, including a fixed cutter blade having comparatively long cutting teeth, a movable blade mounted to reciprocate relative to and against the first blade and having shorter operating cutting teeth, a short-toothed comb supported opposite and spaced from said cutters, said body having an air passage one end terminating in the space between said comb and teeth, means for creating a partial vacuum in said passage wherein hair cut by said cutters will be drawn through the space between said cutter and comb, into said passage, the cutter and comb being so mounted and arranged that when the clipper is drawn over hair to be removed, a portion of the hair will be drawn through the comb and the outer ends of the fixed cutters without being cut until the end of the hair has been drawn through the comb into said air passage, and means for adjusting the cutter having long teeth, longitudinally of its teeth.

2. A hair clipper, comprising a body, including a fixed cutter blade, a movable blade mounted to reciprocate relative to and against the first blade, a comb supported opposite and spaced from said cutters, said body having an air passage one end terminating in the space between said comb and teeth, means for creating a partial vacuum in said passage wherein hair cut by said cutters will be drawn through the space between said cutter and comb, into said passage, the cutter and comb being so mounted and arranged that when the clipper is drawn over hair to be removed, a portion of the hair will be drawn through the comb and the outer ends of the fixed cutters abridging the outer end of said air passage without being cut until the end of the hair has been drawn through the comb into said air passage.

3. A hair clipper, including a body having an air passage, clipper blades adjacent to one side of one end of said passage, a comb adjacent to the opposite side of said air passage and opposite said cutter blades, means for creating a partial vacuum within said passage, power means for operating said cutter blades, and means for regulating the flow of air through said passage.

4. A hair clipper, including a body having an air passage, clipper blades adjacent to one side of one end of said passage, a comb adjacent to the opposite side of said air passage and opposite said cutter blades, means for creating a partial vacuum within said passage, and power means for operating said cutter blades.

5. A hair clipper, including a body having an air passage, a cutter blade having comparatively long teeth, a co-operating cutter blade having shorter teeth and adjacent to one side of the inlet end of said air passage, a comb supported adjacent to the opposite side of said inlet end of the air passage, means for adjusting the first cutter blade longitudinally of its teeth, means for adjusting the angularity of said comb relative to said cutter blade, and means for creating a suction in said air passage.

6. A hair clipper, including a body having an air passage, a cutter blade having comparatively long teeth, a co-operating cutter blade having shorter teeth and adjacent to one side of the inlet end of said air passage, a comb supported adjacent to the opposite side of said inlet end of the air passage, means for adjusting the first cutter blade longitudinally of its teeth, means for adjusting the angularity of said comb relative to said cutter blade, means for creating a suction in said air passage, and means for controlling the flow of air through said air passage, for the purpose stated.

7. A hair clipper, including a body having an air passage, a cutter blade having comparatively long teeth, a co-operating cutter blade having shorter teeth and adjacent to one side of the inlet end of said air passage, a comb supported adjacent to the opposite side of said inlet end of the air passage, means for adjusting the first cutter blade longitudinally of its teeth, means for adjusting said comb to increase or decrease the size of the inlet end of said air passage, and means for creating suction in said air passage, for the purpose stated.

8. A hair clipper, comprising a hollow elongated body adapted to be supported in the operator's hand, having a motor in one end, a fan casing adjacent to one end of the motor, a fan mounted within said casing, a cutter head adjacent to the opposite end of said fan casing, having an air passage communicating with said fan casing, cutters adjacent to the outer end of said passage, a motor shaft supporting said fan, means actuated by said motor shaft for operating one of said cutter blades, and a receptacle for receiving from said fan portions of hair removed by said cutters.

9. A hair clipper, comprising a hollow elongated body having one end adapted to support a clipper head and the other end an electric motor, a fan casing supported between said clipper head support and the end supporting said motor, the clipper head supporting end having an air passage longitudinally therethrough and connecting with said fan, said fan casing having an outlet passage and means for supporting an individual separating sack.

10. A hair clipper, including a hollow elongated body adapted to be supported in the operator's hand having a motor in one end and the other end adapted to support a clipper head, a fan casing between said motor and the clipper head support, a motor shaft extending through said fan casing and terminating near said clipper head support, and a short air passage leading from the front end of the clipper support to said fan casing, a fan within said casing and mounted on said shaft, said fan casing including an outlet passage and an individual hair collection bag for said outlet passage.

11. A hair clipper casing, including a motor

section adapted to be supported in an operator's hand, a section for supporting a clipper head, and a fan casing supported immediately between said first and second sections, the second section including an air passage leading from the outer end of the said section directly into said fan casing.

12. A hair clipper, including a body having an air passage, a cutter blade having comparatively long teeth, a co-operating cutter blade having shorter teeth and adjacent to one side of the inlet end of said air passage, a comb supported adjacent to the opposite side of said inlet end of the air passage, and means for creating a suction in said passage, the cutter and comb being so mounted and arranged that when the device is advanced over the hair to be shortened, with the comb in advance of the cutter teeth, with said long teeth and comb resting on the skin, so that the free end of the hair will be drawn into the comb by air currents and supported against entering the short cutter teeth until the ends of the hair have been drawn past said comb into said air passage, wherein the hair will enter said cutter and be severed into sections of lengths substantially equal to the distance between the comb and said cutter teeth.

13. A hair clipper, comprising a hollow elongated body having one end adapted to support a clipper head and the other end an electric motor, and a fan casing supported between said clipper head support and the end supporting said motor, the clipper head supporting end having an air passage longitudinally therethrough and connecting with said fan, said fan casing having an outlet passage.

14. A hair clipper, including a hollow elongated body adapted to be supported in the operator's hand having a motor in one end and the other end adapted to support a clipper head, a fan casing between said motor and the clipper head support, a motor shaft extending through said fan casing and terminating near said clipper head support, and a short air passage leading from the front end of the clipper support to said fan casing, and a fan within said casing and mounted on said shaft, said fan casing including an outlet passage.

FRANCIS R. JENKINS.