Feb. 7, 1967 G. F. ZUCKER 3,302,286

HAIRCUTTING MECHANISM

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Fig. 1.

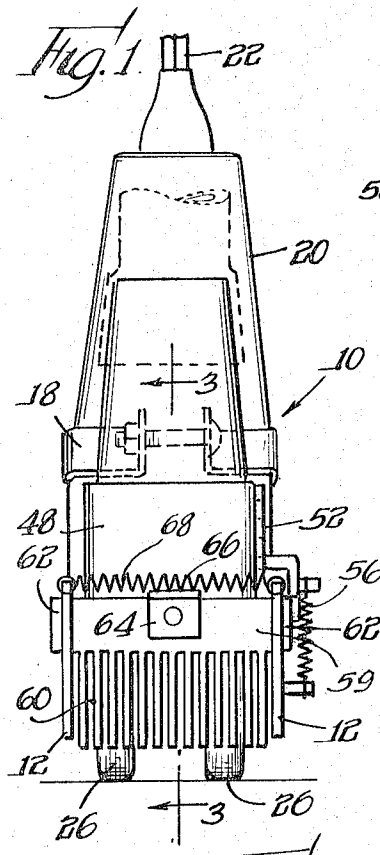


Fig. 2.

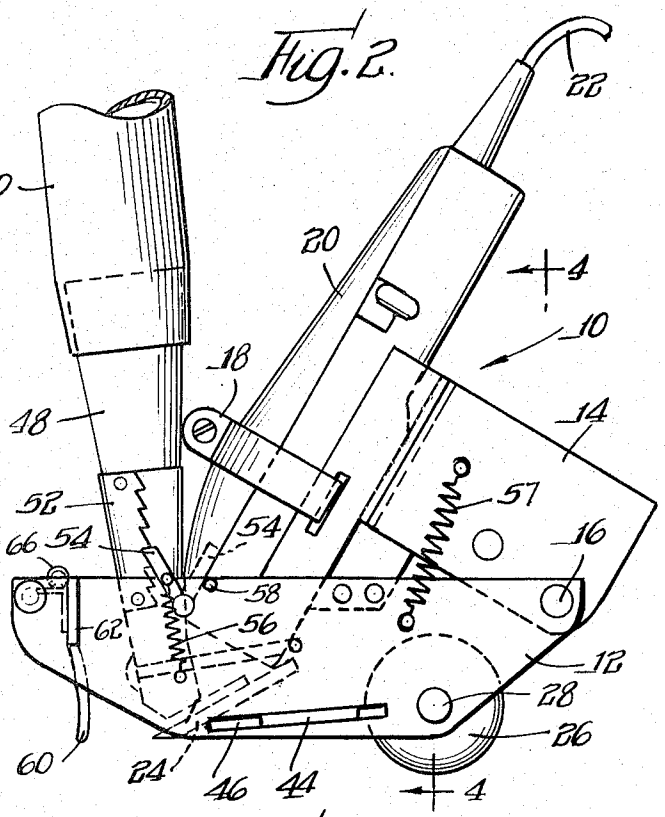


Fig. 3.

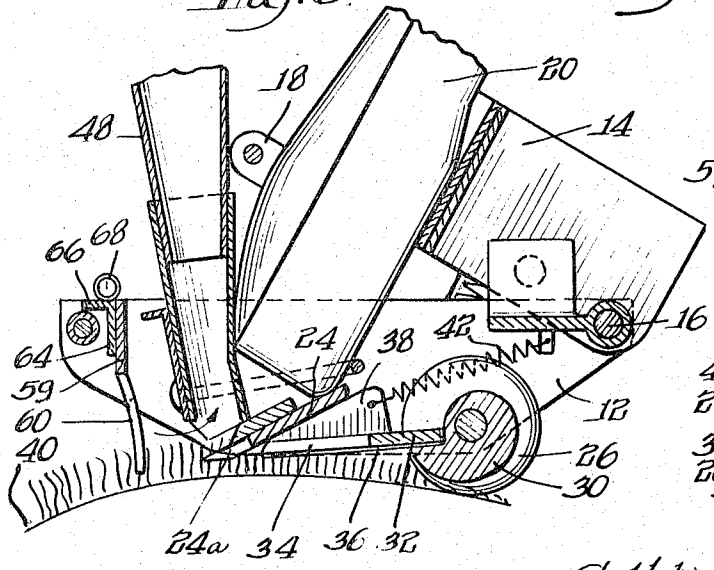
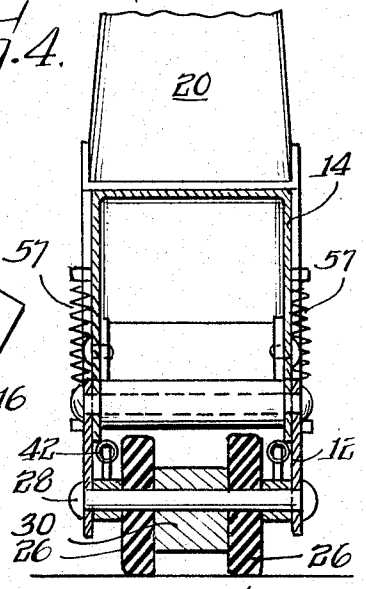


Fig. 4.



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HAIRCUTTING MECHANISM

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Fig. 5.

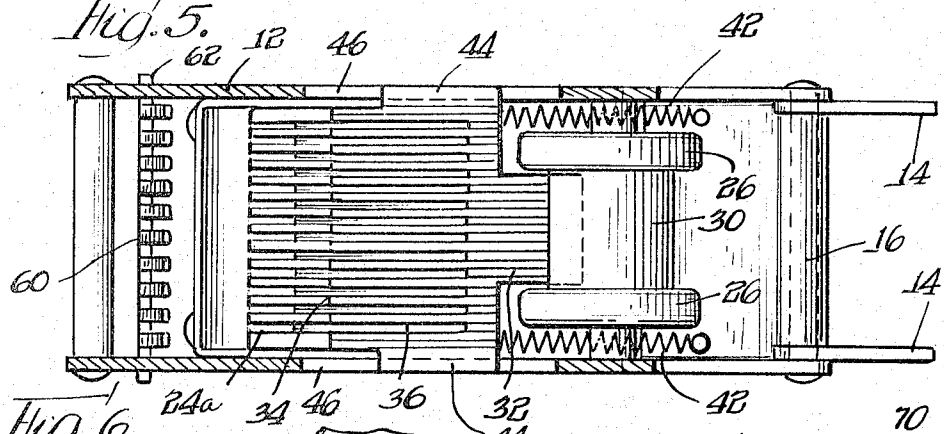


Fig. 6.

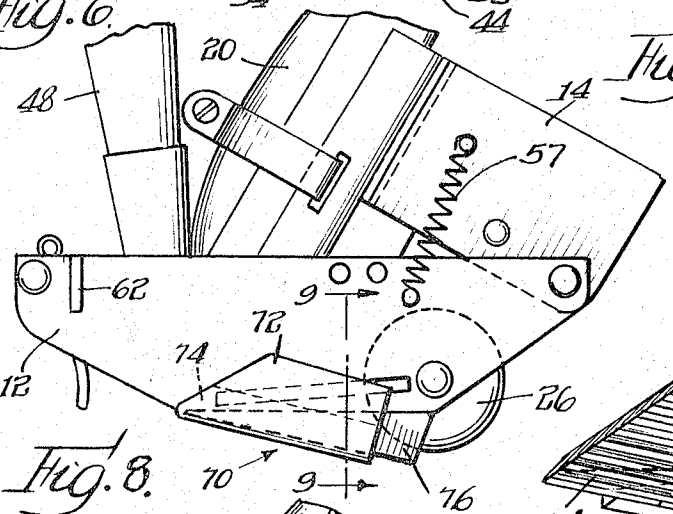


Fig. 7.

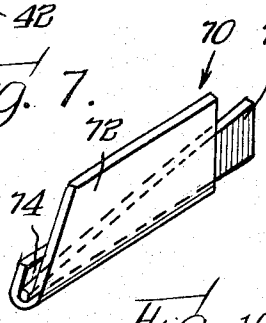


Fig. 10.

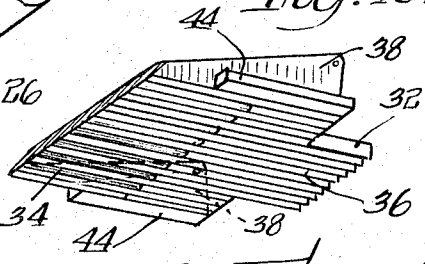


Fig. 8.

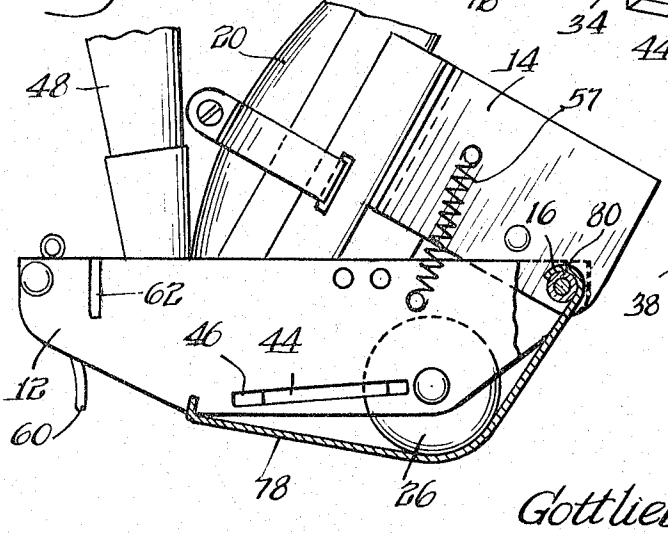
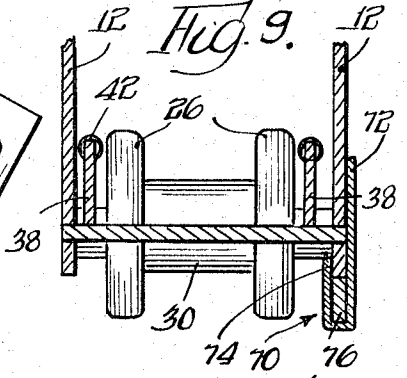


Fig. 9.



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HAIRCUTTING MECHANISM

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Filed Sept. 8, 1964, Ser. No. 394,782
7 Claims. (Cl. 30—133)

This invention relates to devices for cutting hair, and concerns particularly a mechanism so constituted and arranged that proper haircuts may be administered by relatively unskilled operators.

This application is an improvement on the mechanism set forth in my Patent No. 3,054,183, "Barbering Machine," dated September 18, 1962.

It is an object of the present invention to provide a haircutting mechanism or device of simplified construction, and improved operating characteristics, and which may be utilized by relatively unskilled operators to effect a satisfactory haircutting operation.

More specifically stated it is an object of the present invention to provide a haircutting device of the foregoing type wherein improved means is provided for lifting the haircutting clippers as an incident to the movement of the mechanism during the cutting operation.

A further object of the invention is to provide in a haircutting mechanism of the foregoing type, suction means which effects the dual function of properly raising the hair into cutting position, and also effecting the removal of the cut hair from the device and from the vicinity of the cutting operation.

A still further object of the invention is to provide a haircutting mechanism or device wherein the hair to be cut is properly moved into and held in position to facilitate the cutting operation, and wherein the cutting mechanism will be automatically positioned during movement of the mechanism and as it is used, so as to facilitate the cutting operation and permit the use of the mechanism by relatively unskilled operators.

Various other objects, advantages and features of the invention will be apparent from the following specification when taken in connection with the accompanying drawings, wherein a preferred embodiment of the invention is set forth for purposes of illustration.

In the drawings wherein like reference numerals refer to like parts throughout:

FIG. 1 is a front view of a haircutting device constructed in accordance with and embodying the principles of the present invention;

FIG. 2 is a side view of the structure shown in FIG. 1;

FIG. 3 is a partial side view of the structure, taken as indicated by the line 3—3 of FIG. 1;

FIG. 4 is a partial vertical sectional view, taken as indicated by the line 4—4 of FIG. 2;

FIG. 5 is a bottom view of the structure;

FIG. 6 is a partial illustrative view showing the application to the structure of a tilting member or wing utilized in certain of the haircutting operations;

FIG. 7 is a detail perspective view of the tilting or wing member;

FIG. 8 is a partial illustrative view showing the device when utilized with a shield member for shielding the wheels from rotation;

FIG. 9 is a partial sectional view of the structure of FIG. 6 taken as indicated by the line 9—9 thereof; and

FIG. 10 is a perspective view of the cam or wedge slide member.

Referring more particularly to the drawings, it will be seen that the haircutting mechanism or machine, generally indicated by the reference numeral **10**, comprises a main frame **12** and a cutter frame **14** pivotally interconnected by means of a pivot connection as indicated by the reference numeral **16**, FIG. 2. The cutter frame **14** is provided with a clamp or strap **18** by means of which a standard hair clipper or clipping device **20** may be secured to the cutter frame assembly. The clipper **20**, as will be understood, comprises an electric motor within the body supplied with electric current from a cord **22**, and arranged to carry conventional reciprocating clippers **24**, FIGS. 2 and 3, at the lower end of the body member.

In accordance with the present invention the main frame **12** carries a pair of wheels **26** mounted for rotation upon a pivot pin **28**. Mounted between the wheels is a cam **30**, FIGS. 3 and 4, the arrangement being such that the wheels **26** and cam **30** are integrally connected for rotation as a unit about the pivot pin **28**.

The cam **30** is arranged to actuate a wedge slide member **32** which slide member performs the dual function of properly holding the hair in position to be cut by the clipper, and also raising the clipper frame progressively during the forward rotation of the wheels **26**. To this end, as best shown in FIGS. 3 and 10, it will be seen that the slide member comprises a body portion **32** adapted for cooperation with the cam **26**, the forward portion, or leftward portion as seen in FIG. 3, being slotted as indicated at **34** for the projection of the hair therethrough. The lower portion of the body **32** is fluted as indicated at **36**, the flutes acting in the nature of a comb, as will be understood. The slide member is provided on its opposite sides with a pair of cams **38** adapted to engage the lower clippper portion **24** of the electric clipper device **20**, the arrangement thus being such that as the wheels **26** are operated along the scalp of the person whose hair is to be cut, as indicated by the reference numeral **40** in FIG. 3, the slide member will be projected forwardly by the cam **30**, thereby engaging the clipper face portion **24** of the electric clipper mechanism **20**, and raising the clipper frame **14** in respect to the main frame **12**, by movement about the pivot **16**. At the same time the slotted forward portion **34** of the slide member permits the hair properly to be engaged by the forward cutting portion **24***a* of the electric clipper device, as will be understood. A pair of springs **42**, FIGS. 3 and 5, maintain the slide member in proper engagement with the cam **30**, these springs serving to retract the slide member in maintained engagement wtih the cam as the traction wheels **26** are reversely rotated. As best shown in FIG. 5, the slide member is provided with projections **44** arranged for sliding guiding movement within slots **46** of the main frame **12**, as best shown in FIG. 2.

It will be seen that by reason of the foregoing structure, as the wheels **26** are rolled forwardly or to the left as seen in FIGS. 2 and 3 along the scalp, the cutter frame **14** which carries the clipper **20** will be raised progressively by the action of the cam **30**, while the main frame **12** remains in engagement with the scalp, whereby to apply a progressive taper to the hair during the cutting operation. The taper of the cam **30** is such that the tension of the springs **42** will not cause reverse rotation of the wheels **26** automatically if and when they are raised from the scalp, but upon reverse rotation of the wheels by reverse movement of the device along the scalp, the springs **42** will retract the slide **32** maintaining it in contact with the cam **30** at all times, whereby to effect the lowering of the cutter frame **14** in respect to the main frame **12** in proportion to the amount of reversed rotation imparted to the wheels **26**.

It will be seen that the action of the slide member **32** is such that the cam portions **38** thereof effect the lifting of the cutter frame **14**, whereas the slotted portion **34** permits the proper projection of the hair through the slide member for proper contact with the cutters **24***a*, whereas the ribbed engagement portion **36** of the slide member effects an aligning and combing action on the hair, whereby to facilitate the haircutting operation.

As shown in FIGS. 2 and 3, the structure includes a conduit connection or fitting **48** adapted for connection with the hose **50** of a household vacuum cleaner, whereby to produce an upward draft of air in the vicinity of the clippers **24***a*, as indicated by the arrow in FIG. 3. The fitting **48** is carried as a part of the cutter frame **14** and thus moves therewith at all times so that the fitting is at all times maintained in the same predetermined position with respect to the clipper **20** and its cutting portion **24***a*. The suction or air draft provided by the vacuum cleaner hose **50** removes the cut hair into the reservoir of the vacuum cleaner as will be understood, and at the same time the vacuum or air draft aids in maintaining the hair properly lifted or extended in the vicinity of the cutting operation.

The fitting **48** on one side carries a serrated plate **52**, FIG. 2, the teeth of which are adapted for cooperation with a detent **54** which when in the position shown in FIG. 2 is urged by a tension spring **56** into engagement with the ratchet teeth. However, the detent **54** may be manually moved in a clockwise direction to the dotted line position shown in FIG. 2, in engagement with a stop pin **58** whereby to be moved into a disabled position. When the detent **54** is in its counterclockwise or full-lined position, as shown in FIG. 2, the cutter frame **14** will be maintained in any elevated position into which it is moved, either by manual pivoting of the cutter frame in respect to the main frame about the pivot **16**, or by means of the action of the slide **32** and cam **30** as previously described. By this means, the clipper **20** may be maintained elevated in any predetermined fixed position in respect to the main frame **12** so that as the main frame is engaged with the scalp the cutting portion **24***a* of the clipper **20** will be maintained in a predetermined elevated position for cutting hair of a given length. Manual pivotal movement of the detent **54** into the dotted line position as shown in FIG. 2 disables the action of the detent whereby the cutter frame may be lowered, and in this connection the structure preferably includes a pair of tension springs **57**, FIG. 2, interconnecting the cutter frame and main frame for continuously urging the cutter frame **14** in a counterclockwise direction about the pivot **16** in respect to the main frame **12**.

To further aid in combing, lifting, and aligning the hair for proper cutting action by the clippers **24***a*, there is provided, as best shown in FIGS. 2 and 3, a comb plate **59**, provided with depending teeth **60**, which comb plate is floatingly mounted on the main frame **12** by means of a pair of wings or extensions **62**, FIG. 1, slidably mounted in slots provided in the opposite side plates of the main frame **12**. Secured to the comb plate **58** is a bracket **64** having, as best shown in FIG. 3, a forwardly projecting ledge portion **66** adapted to be engaged by a tension spring **68** secured at its opposite ends to the side plates of the main frame **12**. The arrangement is such that the tension spring **68** normally maintains the comb plate **59** in its lowered horizontal position as shown in FIG. 1; but when the main frame **12** is lowered into full engagement with the scalp, engagement of the comb portion **60** of the comb plate with the scalp will lift the plate against the action of the spring **68**, and furthermore by reason of the floating mounting of the wings **62** of the comb plate in the slots of the main frame the comb plate is permitted to tilt and thus follow the scalp contour. As stated, the comb plate, during the forward motion of the device, engages and lifts the hair and aligns it and thus properly brings it into cutting position into juxtaposition with the clippers **24***a*.

As best shown in FIGS. 6, 7 and 9, means is provided for imparting a fixed tilt to the main frame **12**, so as to facilitate tapered haircutting operations by longitudinal movement of the mechanism. Such means comprises a pair of removable shoe slide members **70**, one of which is shown in detail in FIG. 7. Referring to FIG. 7, it will be seen that each shoe member comprises a larger wing **72** arranged to engage on the outer side of the associated frame plate, and a smaller plate **74** arranged to fit on the inner side thereof, the two plates **72** and **74** being so spaced as to provide frictional gripping engagement with the associated frame plate, so as to permit the shoe member to be manually applied and removed. Each shoe member further comprises an intermediate wedge-shaped plate member **76** adapted to engage beneath the frame plate, as shown in FIG. 6 and in FIG. 9, whereby to provide a tilting support for the unit to facilitate tapered cutting by longitudinal movement of the device. As will be understood, the two shoe members **70** are mirrow images so that they may be applied respectively to the opposite sides of the frame structure. Only one is illustrated.

Referring to FIG. 8, it will be seen that the structure further includes a shield member **78** having a hooked portion **80** arranged to fit over the pivot pin **16**, and being of such a size that it may be frictionally pressed between the two side plates of the main frame **12**, so as to shield the wheels **26** from engagement with the scalp of the person whose hair is to be cut. By this means the wheels are disabled when the particular haircutting operation indicates that they should not be used.

It is obvious that various changes may be made in the specific embodiment of the invention set forth for purposes of illustration, without departing from the spirit thereof. Accordingly, the invention is not be limited to the particular embodiment shown and described, but only as indicated in the following claims.

The invention is hereby claimed as follows:

1. A haircutting machine comprising: a main frame adapted for engagement with a scalp of a person whose hair is being cut; a cutter frame carrying haircutting means thereon, said cutter frame being pivotally mounted on said main frame for movement relative to said main frame; a slidable member carried by said main frame with a cam surface of said slidable member positioned for sliding engagement with a surface of said haircutting means, said slidable member being movable from a first position to a second position for pivoting said cutter frame and haircutting means relative to said main frame to move said haircutting means from a location adjacent to an outer edge of said main frame when said slidable member is in said first position to a position spaced apart from the outer edge of said main frame when said slidable member is in said second position; and actuator means mounted on said main frame for engaging said slidable member to cause said slidable member to move from said first position to said second position as the haircutting means is moved relative to the scalp of a person whose hair is being cut.

2. A haircutting machine as set forth in claim **1** wherein: said actuator means includes a pair of spaced apart scalp engaging wheel means mounted for rotation relative to said main frame and a cam means mounted for rotation contemporaneously with said wheel means to move said slidable member relative to said main frame.

3. A haircutting machine as set forth in claim **1** wherein: said slidable member is wedge-shaped and is provided with a plurality of comb-like hair engaging teeth.

4. A haircutting machine as set forth in claim **1** further including: a shoe member detachably connected to said main frame to tilt the haircutting machine transversely relative to the scalp of the person whose hair is being cut to facilitate tapered cutting of hair by longitudinal movement of the haircutting machine.

5. A haircutting machine as set forth in claim **1** further including: vacuum means connected to said cutter frame at a location adjacent to said haircutting means for drawing hair to be cut into said haircutting means and for removing cut hair ends from the haircutting means.

6. A haircutting machine as set forth in claim 1 further including: comb means mounted on said main frame adjacent to said haircutting means, said comb means being held in a normal position by spring means to enable said comb means to be resiliently moved by engagement of said comb means with the scalp of a person whose hair is being cut.

7. A haircutting machine comprising: a main frame, said main frame including a pair of spaced apart substantially parallel side members for engaging a scalp of a person whose hair is being cut; a cutter frame pivotally mounted on said main frame, haircutting means mounted on said cutter frame and positioned intermediate said side members; wedge means mounted on said side members for sliding movement relative to both said cutter means and said main frame; a pair of wheel members rotatably mounted on said main frame; cam means mounted intermediate said wheel members for engagement with said wedge means to move said wedge means from a first position to a second position, said haircutting means being positioned a first relatively small distance from the scalp of a person whose hair is being cut when said wedge means is in said first position and said haircutting means being positioned a second relatively large distance from the scalp of a person whose hair is being cut when said wedge means is in said second position; vacuum nozzle

means mounted on said cutter frame adjacent to said haircutting means to enable hair which is to be cut to be pulled into the haircutting machine and to enable cut hair ends to be removed from the haircutting means, said cutter frame, haircutting means and vacuum nozzle means being pivoted outwardly relative to said main frame by movement of said wedge means from said first position to said second position; and comb means mounted on said side members forwardly of said haircutting means to engage the hair of the person whose hair is being cut, said comb means being resiliently movable by engagement with the scalp of the person whose hair is being cut.

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