Jan. 5, 1937. E. A. CLARK 2,067,075

VARIABLE SHEAR HAIR CLIPPER

Filed Oct. 14, 1935 2 Sheets-Sheet 1

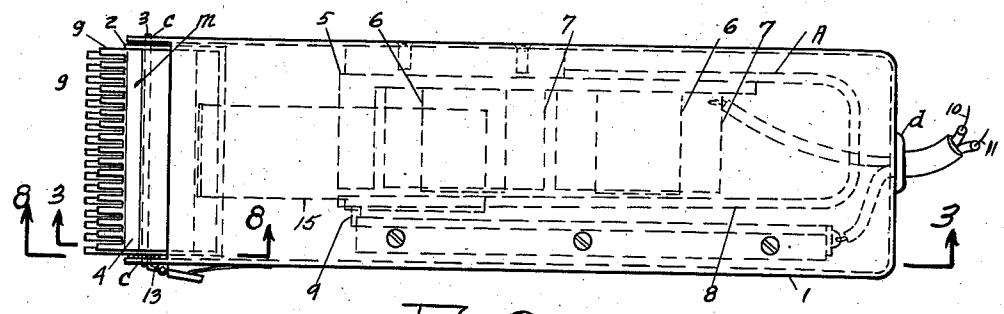


Fig 2

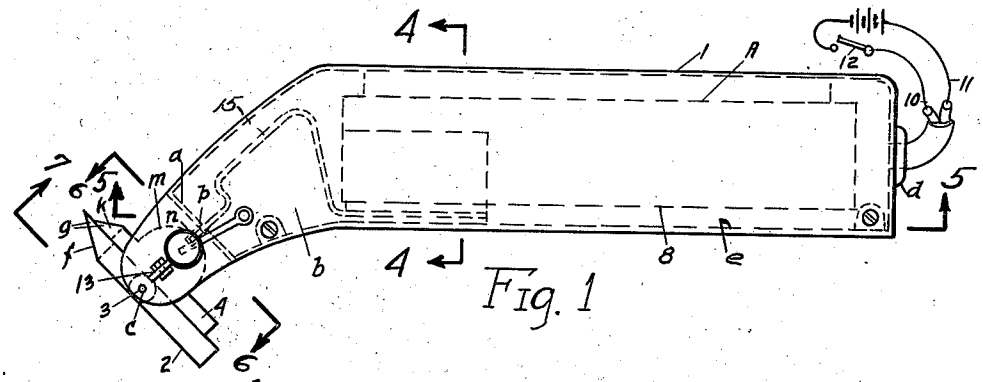


Fig. 1

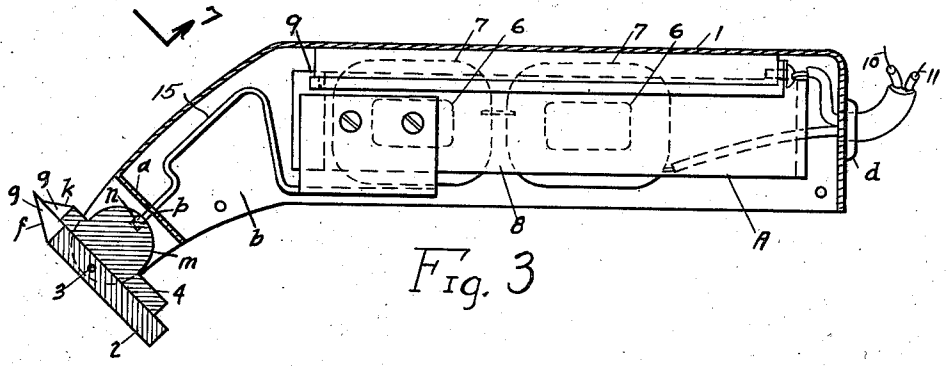


Fig. 3

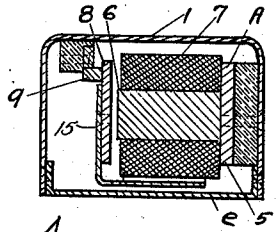


Fig. 4

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VARIABLE SHEAR HAIR CLIPPER

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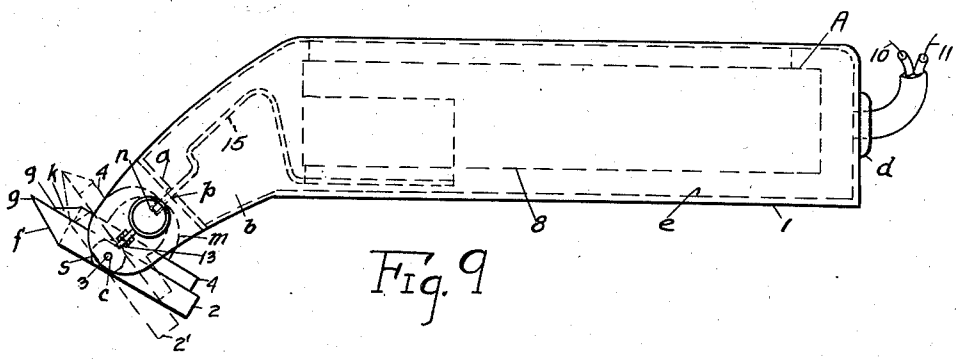


Fig. 9

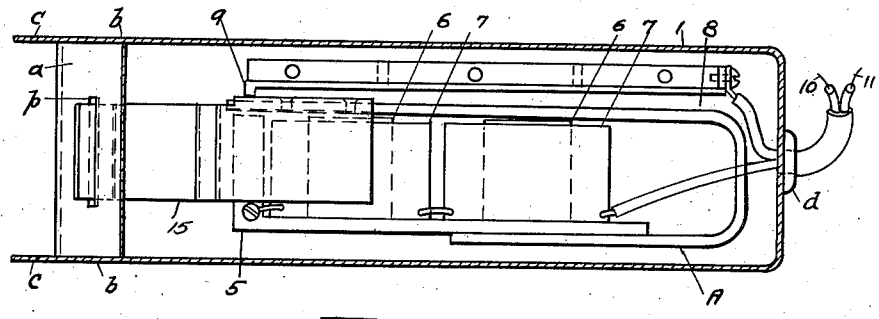


Fig. 5

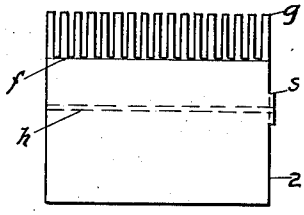


Fig 7

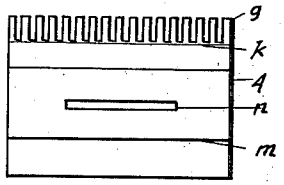


Fig. 6

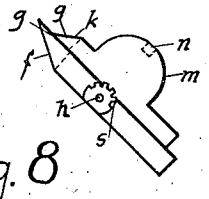


Fig. 8

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UNITED STATES PATENT OFFICE

2,067,075

VARIABLE SHEAR HAIR CLIPPER

Edward A. Clark, Saline, Mich.

Application October 14, 1935, Serial No. 44,851

5 Claims. (Cl. 30—1)

The object of my invention is to produce a variable shear hair clipper adapted for cutting hair, and at varying lengths changing uniformly from minimum to maximum lengths.

Another object is to produce a variable hair clipper that may be set for cutting hair at any desired pre-determined length.

A further object is to produce a variable hair clipper that will automatically adjust at a uniform rate from its minimum to maximum positions.

A still further object is to produce a variable shear hair clipper adaptable to various types of clipper construction and still retain its automatic variable feature.

Another object is to produce a variable shear hair clipper that is simple in construction, easily and efficiently operated and that can be manufactured at a very low cost.

These several objects are attained in the preferred form by the construction and arrangement of parts more fully hereinafter set forth.

Similar parts on all drawings are marked by similar numerals or letters.

Fig. 1 is a side view of an assembled clipper showing the variable head blades or shears, and means for locking same in any chosen position.

Fig. 2 is a top view of the clipper showing the relative position of the variable head sections and body mounting.

Fig. 3 is a sectional view lengthwise through the assembled clipper body taken on the line **3—3** of the Fig. 2 showing the general arrangement of the operating parts.

Fig. 4 is a cross-sectional view taken on the line **4—4** of the Fig. 1, showing the operating parts of the power vibrating unit.

Fig. 5 is a bottom view of the assembled clipper with the bottom wall plate removed as taken on the line **5—5** of Fig. 1 and with the clipper blades removed showing the position of the power unit and attached shear vibrator arm.

Fig. 6 is a cross-sectional view taken on the line **6—6** of Fig. 1 showing the wall structure of the inner cutting blade and teeth formed thereon.

Fig. 7 is an end view taken on the line **7—7** of the Fig. 1 showing the general construction of the outer comb plate and teeth formed thereon.

Fig. 8 is an assembled view of the clipper shear blades taken on the line **8—8** of Fig. 2 showing the pivot mounting and comb locking means formed thereon.

Fig. 9 is a side view of an assembled clipper unit illustrating the extreme positions to which the variable clipper shear blades may be adjusted.

My invention resides specifically in the variable clipper head, it being adapted to any ordinary type of power vibrator clipper.

In general, my invention comprises a pair of clipper blades of the ordinary toothed construction and assembled with their flat cutting surfaces together, and the blades or shears so mounted within a handle casing that each may rotate about a different center causing a sliding movement of one blade over the other as the clipper head is tilted to various positions.

I will now describe more fully the detailed construction of my device, referring to the drawings and the marks thereon.

I have herein illustrated my invention as applied to the magnet vibrating type of hair clipper, although the type of blade vibrating means is not material to my invention, as this variable clipper head is adapted to any type of power clipper capable of producing the vibrating or oscillating motion for the cutting shear.

The casing **1** may be made of sheet metal or any other suitable rigid material, and is formed in an elongated hollow handle member, preferably rectangular in cross-section, although any other desired shape may also be used. The head end of the casing **1** is formed with a closing end wall *a* and with extended curved side walls *b*, preferably positioned at an angle with the casing axis, herein illustrated at about 45° therewith, and each projected side is provided with an end pivot bearing *c* therein, positioned directly opposite each other. The opposite casing end is closed, and preferably provided with an insulating terminal wire collar *d* mounted therein. The bottom side of the casing is provided with a detachable wall plate *e* fixedly mounted thereon, forming a complete casing inclosure with hinge mountings at one end thereof. Between the extended casing side wall ends *b* is mounted a clipper comb or shear plate **2**, hingedly attached to the bearings *c* by a hinge pin **3**, and capable of being rocked to various positions thereon. The comb plate **2** is made a rectangular steel plate section with one beveled edge *f* formed with a series of cutting teeth *g* thereon. The teeth *g* are of the ordinary hair clipper tooth design and arrangement. The pivot bearing *h* is formed approximately through the center of the comb plate section and parallel to the teeth *g*. The comb plate **2** is mounted within the pivot bearings *c*, positioned with its beveled edge at the outer side as shown in Fig. 1 of the drawings. Mounted directly above the comb plate **2** and adjacent thereto, is a cutting blade **4**, also designed

as a flat plate section with one beveled edge *k*, and formed with a mounting rib *m* positioned centrally and lengthwise on the interior face thereof. A series of cutting teeth *g* are also formed along the beveled edge *k*, the same as on the contacting comb plate **2**. The cutting blade **4** is positioned between the handle and the comb with its flat side in face to face engagement with the inner surface of the comb plate **2**, and is slidable thereon in both transverse and longitudinal directions. The mounting rib *m* is formed with a special drive recess *n* lengthwise thereof, positioned parallel to the series of teeth *g*, and with both rib *m* and recess *n* extended to a position near the center casing wall end *a*, but having forming contact therewith. Within the handle casing **1** is fixedly mounted an electric vibrating power unit A, of any standard or special design, but herein illustrated as comprising an L-shaped metal base block **5** and provided with two suitable magnet iron cores **6** mounted thereon, each core being inclosed by an electro-magnetic coil **7** in the ordinary manner of electro-magnets. A U-shaped spring magnet bar **8** is mounted on the base block **5** having one end fixedly attached thereto, and positioned with the opposite end near the comb **2** and blade **4** and adjacent the open magnet pole ends, but not forming a contact therewith. Adjacent the spring magnet bar **8** is mounted an electrical contact terminal arm **9**, but completely insulated therefrom. When the magnet bar **8** is in its open position as the coils **7** are de-energized, it then forms an electric contact with the terminal arm **9** as a means for closing an electric circuit therethrough. The electro-magnetic coils **7** are connected within an electric circuit, in series, by the circuit wires **10** and **11** and the intervening circuit switch **12**, said electric circuit leading through the terminal contact arm **9**, effective when the switch **12** is closed. As the coils **7** are energized electrically, the spring magnet bar **8** is drawn toward the pole ends **6**, breaking the electric circuit between the magnet bar **8** and terminal contact arm **9**, resulting in de-energizing the coils **7** again until the spring arm **8** returns to the terminal arm end **9** and repeats the operation, resulting in a continuous vibration of the magnet bar **8** between the poles **6** and terminal arm **9**. Through the center of the casing end wall *a* is formed a lateral slide bearing *p*, positioned parallel with and directly opposite the recess *n* of the cutting blade **4**. Fixedly mounted on the free end of the spring magnet bar **8** is a blade vibrating bar **15** preferably of sheet spring material, and which vibrates therewith. The vibrating bar **15** is extended and curved to pass through the casing end slide bearing *p* and to engage the recess *n* of the shear cutter **4**, and is designed to exert a slight spring pressure thereon. The slide bearing *p* is made slightly longer than the width of the inclosed vibrating bar **15**, to allow for lateral vibration movement thereof, said vibrating bar being capable of oscillating the connected cutting blade **4** back and forth over the contacting comb plate **2** as the connected power unit A is vibrated under electrical reactions. The spring pressure of the vibrating bar **15** tends to retain the assembled shear blades in a normal position approximately at right angles thereto when unrestrained, and as illustrated in Figs. 1 and 2, the cutting blade edge being receded on the supporting comb plate **2**. Should the comb plate be rotated upward about the supporting pivot pin **3**, to a position as indicated by the dotted lines **2'**, as shown in Fig. 9, the cutting blade **4** as fulcrumed about the end of the engaged vibrating bar **15**, will slide forward to a position with the points of the teeth *g* on both blades coinciding. Any intermediate position will readjust the teeth of the cutting shear proportionally.

When the comb plate **2** and the cutting blade **4** are in their normal position as shown in Figs. 1 and 9, the assembled clipper head blades will cut hair longer than when the blades are tilted upward to the dotted position where the cutting points meet, this being due to the increased thickness of the advancing bevel on the comb plate as the cutting blade **4** recedes thereon. The length of the uncut hair is the thickness of the blade bevel under the cutter points. The relative position of the cutting shear points may be uniformly varied from its minimum to maximum position of the cutting shear points may be uni- operator, by the radial movement of the handle casing **1** effected by the natural swinging of the wrist movement when first properly tilted, and which will allow the cutting blade teeth to gradually recede back on the comb plate, and gradually vary the length of the hair to a longer length at each upward cutting stroke by the operator.

The comb plate **2** is formed with toothed formations *s* along one end thereof, as shown in the Fig. 8, designed for engaging the toothed end of a spring pawl **13** pivotally mounted on the casing side, and provides means for setting and retaining the cutting blade **4** in any desired pre-determined position angularly with respect to the handle, should it be desired to cut the hair at some uniform length throughout. The pawl **13** may be released by any desired convenient means. The type or kind of engaging pawl is not material to my invention.

Having fully described my variable shear hair clipper, what I claim as my invention and desire to secure by Letters Patent is:

1. A clipper of the class described comprising a casing forming handle and head portions and having spaced side walls, a comb plate having a toothed edge, means pivotally connecting said plate to said side walls adjacent the head about an axis passing through said plate and parallel with said toothed edge, a cutting blade having face to face engagement with said plate, said blade being positioned between the handle and said plate and pivoted about an axis parallel to and spaced from said first mentioned axis, and means for oscillating said blade longitudinally of said plate.

2. A clipper of the class described comprising a casing forming handle and head portions and having spaced side walls, a comb plate having a toothed edge, means pivotally connecting said plate to said side walls about an axis passing through said plate and parallel with said toothed edge, a cutting blade having face to face engagement with said plate, said blade being positioned between the handle and said plate and having a longitudinal recess parallel with and spaced from said axis on its interior face, means engageable with said recess to form a fulcrum for said blade, and means for oscillating said blade longitudinally of said plate.

3. A clipper of the class described comprising a casing forming handle and head portions and having spaced side walls, a comb plate having a toothed edge, means pivotally connecting said plate to said side walls about an axis passing through said plate and parallel with said toothed edge, a cutting blade positioned between the han-

dle and said plate and having face to face engagement with said plate, said blade having a longitudinal recess parallel with and spaced from said axis on its interior face, a vibrator arm engageable with said recess whereby said blade is fulcrumed about said arm, and means for oscillating the arm and blade longitudinally of said plate.

4. A clipper of the class described comprising a casing forming handle and head portions and having spaced side walls, a comb plate having a toothed edge, means pivotally connecting said plate to said side walls about an axis passing through said plate and parallel with said toothed edge, a cutting blade positioned between the handle and said plate and having face to face engagement with said plate, said blade having a longitudinal recess parallel with and spaced from said axis on its interior face, resilient means engageable with said recess to maintain said blade in engaging relation with said plate, said blade being rockable about an axis coincident with said recess, and means for oscillating said blade longitudinally of said axes.

5. A clipper of the class described comprising a casing forming handle and head portions and having spaced side walls, a comb plate having a toothed edge, means pivotally connecting said plate to said side walls about an axis passing through said plate and parallel with said toothed edge, a cutting blade positioned between the handle and said plate and having face to face engagement with said plate, said blade being pivoted about an axis parallel to and spaced from said first mentioned axis, means for holding said plate in any one of a plurality of positions angularly with respect to the handle, and means for oscillating said blade longitudinally of said plate.

EDWARD A. CLARK.