

Sept. 20, 1966

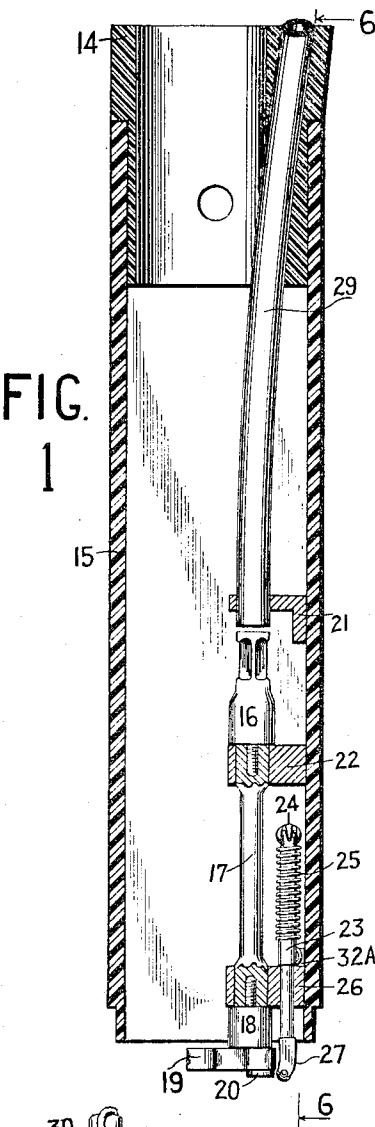
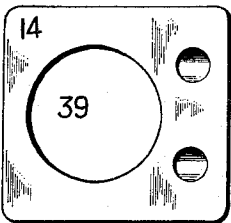
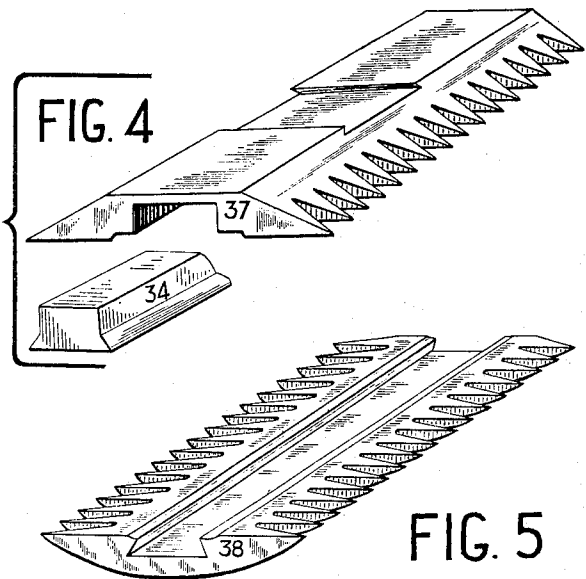
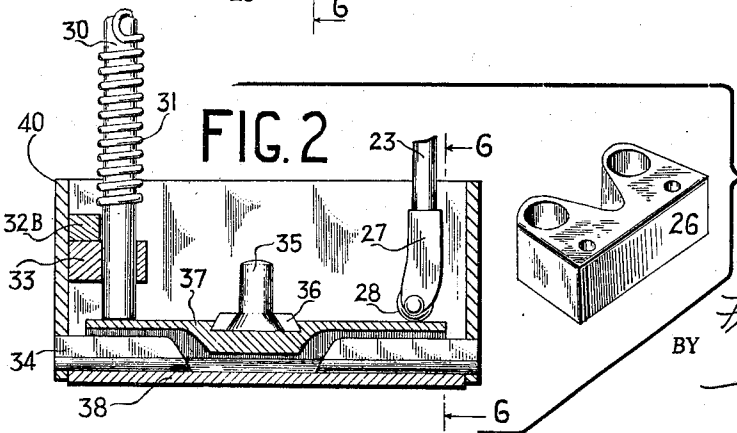
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3,273,237

VACUUM AIDED AND CABLE DRIVEN HAIR CLIPPER

Filed April 24, 1964

2 Sheets-Sheet 1



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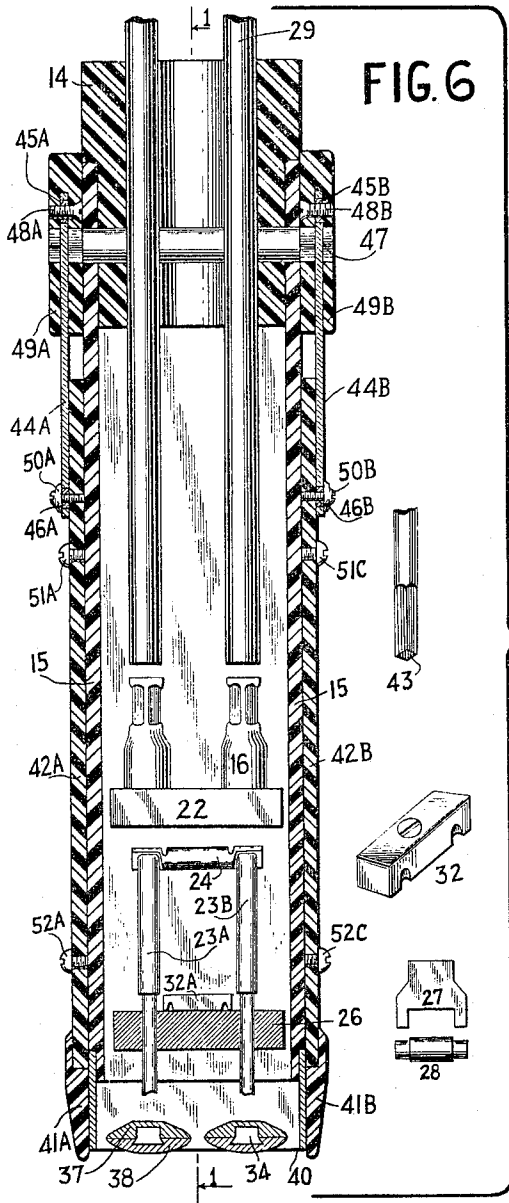
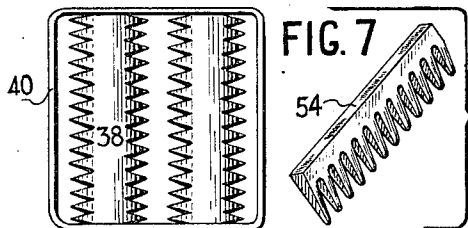
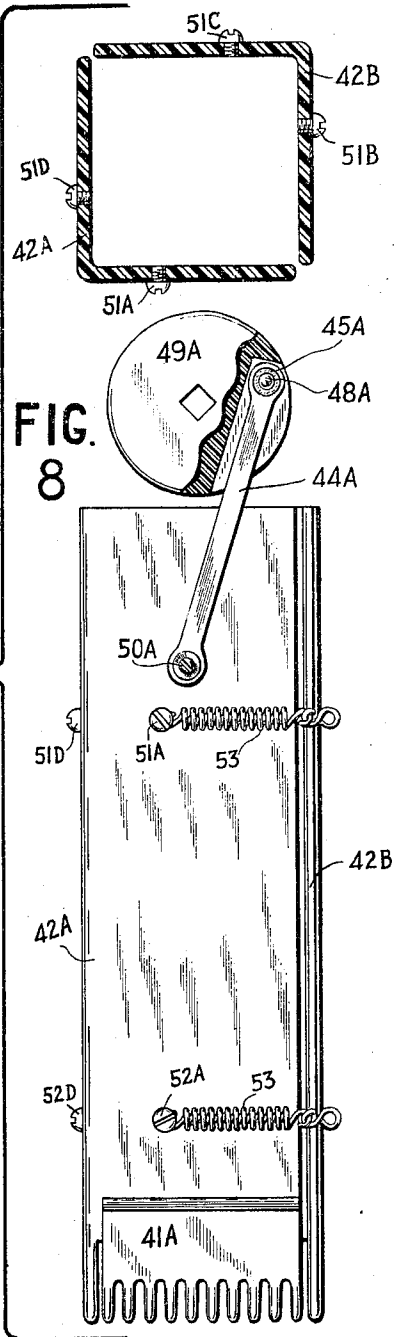
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VACUUM AIDED AND CABLE DRIVEN HAIR CLIPPER

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2 Sheets-Sheet 2



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1

VACUUM AIDED AND CABLE DRIVEN HAIR CLIPPER

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2 Claims. (Cl. 30—133)

My invention is a new and useful type of hair cutting implement. One object of this invention is to provide a trouble free hair clipper which is connected to a vacuum cleaner or other air suction pump that draws the hair in through the cutting blades. The top movable shearing blade will be oscillated by a lengthy flexible cable connected to a distant power unit, with cable then transmitting into a transmission shafting assembly located in the main body of the clipper thus affecting oscillating. The advantage is to eliminate harmful noise such as the irritating, unpleasant whine that develops in turbine clippers. Another object is to provide a clipper driven by flexible cable thereby eliminating wires and electric motor in the body of the clipper itself. This type machine has the advantage of being able to be immersed in a solution of suitable anti-septic, which in some cases would be beneficial when used on either humans or animals thereby preventing the transfer of certain types of skin disease. In commercial use regarding human hair, sterilization would be an advantage after having used the comb-like ends found on the adjustable casing. The object when using the comb-like ends is to have a raking effect that works the hair ends into movement of air suction thereby eliminating any unsightly clippings that sometimes appear after having used clippers with no air suction.

Another object of this clipper in relation to the design of the blades and cable affecting them was the construction set-up whereby these type blades can be made to operate even at very low speeds if necessary, for a stronger, slower power unit turning the cables would be advantageous in the larger models. In most models a slower speed would mean reduced wear on moving parts and heat accumulation from moving parts would be nil. A slower, powerful oscillation suits this type clipper when making the wider swath of cut with oblongish blade for the object would be to evenly clip a great amount of hair at one time.

The function of this invention in regard to lengthy travels in space has been taken into considerable, for in prolonged trips, hair growth will be a vital problem possibly necessitating a military type hair cut to prevent various problems which could arise by unkempt, long hair. The object of this type clipper is to give a very fast hair cut and also pick up any flakes of skin or dandruff which are part of the normal body function and should there be a scarcity of water for shaving, then this type clipper would potentially keep the male beard at a reasonable or comfortable level.

Another advantage of this type clipper is that it traps all loose hair ends and does not leave any minute particles circulating to possibility contaminate the various instruments of precision which may be exposed in the space capsule, the object being to trap these particles which would float freely because of the absence of gravity.

Another object is to give the sliding adjustable casing desired movement and gage control merely by rotating the dial-like control knobs. The turning of either knob for right or left hand use gives the advantage of sliding the complete casing so gage can be dialed by eye judgment or dial-like markings placed in conjunction with the knobs and casing.

The mechanical operating procedure of this type of clipper basically remains the same, however there are many different models that can be built by substitution of

2

different lengths of blade and numbers of blades as yet another advantage. With different length blades designed to range anywhere between rectangular and oblong, there is the advantage of making a wide swath of cut. Another object in design of this type clipper is that blades, either concave or convex when viewed from the bottom, can be used to advantage if so desired, as an example, the concavo-convexo type stationary bottom blade would be found to take its position across the opening of the inlet passage whereby the incurvation could be utilized to make a more even cut on a rounded surface such as a human head or an animals back.

The advantage using this type clipper, even when perspiring in hot sweltering weather would tend to encourage hair cuts due to the intruding cool air.

With these and other objects and advantages in view, the invention consists of the new and novel combination, construction, and arrangement of parts as hereinafter more fully described, set forth in the claims appended hereto, and disclosed in the accompanying drawings forming part hereof, wherein:

FIGURE 1 is a side elevational view, partly in section, of the second and third sections of housings, transmission shafting assembly and cable housing, taken along line 1—1 of FIGURE 6.

FIGURE 2 is taken along line 1—1 of FIGURE 6 and is partly in section. This view is twice enlarged to show ease of assembly with FIGURE 1, as they together make up the main idea of the invention. FIGURE 2 contains the shearing blades shown in views of FIGURES 4 and 5. Spring pressure points are shown and dovetailed, key type bearings play an important role in positioning and control of the blades. The large journal holes in 26 are shown and also the smaller holes for positioning of shafts 23a and 23b.

FIGURE 3 is a top view of FIGURE 1 showing the larger hole for the vacuum tube to be inserted and the smaller holes for cable housings to be transfixed.

FIGURE 4 is the top movable shearing blade which has been greatly enlarged, for it is the central working feature of the invention. The precise movement of 37 must depend upon the bearing-like fit of 34.

FIGURE 5 is the bottom stationary blade which has been greatly enlarged and also makes up the central working feature of the invention.

FIGURE 6 is a back view, partly in section, taken approximately along line 6—6 of FIGURE 1. The added features of the sliding adjustable case are shown.

FIGURE 7 is a bottom view of FIGURE 6 and shows the position of the bottom stationary blades with the approximate air movement up through the blades. Part 54 would be positioned vertically between the blades.

FIGURE 8 shows how the movable casing becomes activated by rotation of the dial-like knobs, thus allowing the operator to gage any reasonable length of cut.

Referring to the top of FIGURE 1, we find that 14 is a suitably formed section of synthetic making up a portion of housing. Note that FIGURE 3 is a top view of 14. The type of synthetic used shall have a slightly flexible quality for properly grasping an escape tube that is inserted into the larger hole 39 and the insertion of a cable housing into the smaller vertical hole.

In the process of assembly, the two small holes shown in FIGURE 3 will snugly grasp cable housings 29. Both FIGURE 3 and part 14 are referred to as the third section housing and this, with the cable housings will be inserted into the second section housing 15, then anchored by horizontal shaft 47. Modifications affecting 14 could vary according to the model being engineered.

The lengthy synthetical tubing, viewed as cable housing 29, is purposely shown cut off, however, the idea is

for it to parallel the vacuum escape tube to a convenient distance, then connect to a suitable power unit which will rotate the inclosed flexible cable 43. Any variance in size concerning the heavier models would also call for a heavier flexible cable with the more durable metal cable housing possibly being used. The purpose of 21 is to stabilize the lower ends of each cable housing 29 directly over the vertical squared hole in part 16 of the transmission shafting assembly, whereby cable 43 would center in 16 after having been inserted down through 29 starting from the area of the driving power unit to which it shall eventually be connected.

Certain parts, such as 21 in drawing views of this cutting implement are shown as metal, and made of metal in the original model, however, synthetic parts in some instances will operate just as efficiently, whereby substitution may cut costs of production and still give very efficient operation due to the wonder synthetics of this modern day and age.

Referring to second section housing 15 in FIGURE 1, with shaft 17 journaled to rotate in holes of 22 and 26, the view shows this shaft partly in section to explain how parts 16 and 18 have threaded ends thereby trapping shaft 17 to become journaled in the larger holes of 22 and 26. Part 22 greatly resembles 26, but for omission of the two very small vertical holes. Modifications made concerning shortening or lengthening of shaft 17 could thereby have an effect upon the placement of the journals, 22 and 26. Modifications affecting this critical area will not be meant to depart from the true spirit and scope of the invention. Part 18 will rotate to activate drive shaft 19 which is held in position by bearing screw 20, this in turning keeps said 19 in constant working with stud shaft 35 which is positioned on the movable top shearing blade 37. Retainer 36 locks stud shaft 35 into position by being forced into the dovetail slot in FIGURE 4. In positioning 35, an advantage would be to have this done by stud welding wherever convenient, in order to cut down machining time. Elimination of stud 35 can also be accomplished by modifying drive shaft 19, thereby eliminating the smaller hole and machining a downward projecting stud as part of the drive shaft which will fit into a hole found in blade 37, with said hole in the blade at the approximate position where 35 and 36 have been eliminated. The combination comprising parts numbers 16, 17, 18, 19, 20, 22, and 26, and referred to as a transmission shafting assembly, shall be found positioned on the inside wall of second section housing 15, with modifications whereby shaft 17 can be machined thereby eliminating the threading in either one end or the other. A suitable method would call for 18 to be directly machined to 17, thereby eliminating both these threadings.

Referring now to FIGURE 2 which has been twice enlarged for more clarity, was seen 40 as the first section housing which is precisely formed to fit over, and be connected to the bottom of second section housing 15, as shown in FIGURE 1. The view of FIGURE 7 shows the shape of 40 and how it shall fit up onto 15, then both sections shall be connected together by screws, however, this could also snap together by use of male and female stamping additions to either housing. The first section housing 40, shown in FIGURE 2 contains the central working feature of the invention, namely the two main blades as shown greatly enlarged in the views of FIGURE 4 and FIGURE 5. In assembly, the positive stationary positioning of 38 requires the dovetail slot in said 38 to accept the beveled edges of 34 tightly. Housing 40 contains suitably formed holes through which each 34 will be inserted to anchor bottom blade 38. There are two 34's required to position each bottom blade 38, however, their being almost identical causes each said 34 to list with the same numeral.

In the view of FIGURE 6, there is shown the position blade 37 and blade 38 assume. The lock bearing 34 also is shown and its obvious use becomes more clear

when comparing the views of FIGURE 4 and FIGURE 5 with lock bearing 34. In FIGURE 2, both blade 37 and 38 appear partly in section and can be understood to be also positioned in housing 40 of FIGURE 7, page 1. This view can be clear by realizing blade 38 has been locked into firm position by driving 34 through holes in casing 40. The movement of blade 37 means it should be suitably shorter than blade 38 and kept tight against blade 38 by pressure points, 28 and 30 exerting the required force upon both ends of blade 37. Note while viewing FIGURE 4 and FIGURE 5 that locking bearing 34 implies this part shall lock 38 in position thereby utilizing the two side surfaces of said 34 as bearing surfaces to keep blade 37 in a true horizontal cutting position, eliminating any drift from side to side. FIGURE 2 has been twice enlarged in comparison to FIGURE 1, and must be fitted precisely and joined onto the trimmed shoulders and sides of the base of FIGURE 1, thus allowing the spring 31 and shaft 30 to project upward into casing 15 of FIGURE 1. Note the joining in FIGURE 6 is in true perspective. Said spring 31 and shaft 30 shall be suitably mounted on the inside wall of casing 40. Part 33 takes a faint overall resemblance to part 26 in regard to the larger holes. Part 32 has been greatly enlarged and its use as an anchor for the springs 25 and 31 makes up its role. Let 32 be understood to generally resemble either 32a or 32b. Part 32a in FIGURE 1 is almost identical to 32b in FIGURE 2. Spring 31 is similarly looped at each end and in assembly the top loop of said 31 is to be hooked into a notch cut in top of 30, thereby causing pressure on blade 37. Also shown in FIGURE 1 and FIGURE 6, shafts 23a and 23b extend down through the smaller holes in 26. Note that 23 shall be understood to refer to either 23a or 23b. The tops of 23a and 23b contain notches to accept horizontal shaft 24, with said 24 also containing notches to retain the top loops of springs 25 as shown in FIGURE 6. In the view of FIGURE 6, the spring 25, as shown in FIGURE 1 have been purposely omitted, mainly to show the position of shafts 23 more clearly. In viewing FIGURE 6 note that 23a and 23b are shown with the bottoms of said shafts cut off and 27 and 28 are omitted purposely, but shown in FIGURE 1, so by referring to the greatly enlarged 27 and 28 it becomes obvious how this assembly, by the reason of spring tension, presses down for the required pressure on blade 37 as seen from a side view of FIGURES 1 and 2. Roller bearing 28 can be lightly clinked into position by bending the lower tines on 27. Assembling 27 onto 23 is done by forcing 23 into a tight fitting vertical hole in the top center of said 27. There may be instances where welding said 27 could be to greater advantage. The purpose of roller 28 is to make the backward and forward motion of 37 more friction free while working under this pressure from spring 25. In some models this type of assembly could be used to advantage on shaft 30.

Referring to part 33 in FIGURE 2, I find it much resembles 26, though smaller. Shaft 30 keeps a continuous pressure on blade 37 by spring tension 31. Spring 31 is looped at each end similar to spring 25. Said spring 31 is kept secure in notched end of 30, while 32b securely anchors the lower loop of said 31. FIGURE 2 contains a side view in section of the blades 37 and 38 and their position in casing 40. Part 34 locks bottom blade 38 into position by being fitted into the dovetail opening as viewed in FIGURE 5. Part 34 must also fit into suitable holes in casing 40. These suitable holes greatly resemble an end view of 34 as shown in FIGURE 6.

The sectional views of 37 and 38 in FIGURE 2 are taken as though you had cut FIGURES 4 and 5 exactly in half, lengthwise. Referring to the view of FIGURE 6, which is a back view of FIGURE 1 and taken approximately along line 6—6 of FIGURE 1 and partly in section, I find an end view of the position blades 37 and 38 assume. This view of FIGURE 6 shows the approxi-

mate spacing of the blades 37 and 38 and mention is made to part 54, which is an optional addition that can be inserted and secured into position between the blades 37 and 38 on line 1—1 of FIGURE 6 and FIGURE 7. The purpose of optional part 54 is to keep the hair or skin from being drawn too tightly against the blades 38, in this dual-bladed model. Part 54 would preferably be synthetic, however, metal could also be used. In 54, a lengthwise taper could prove advantageous.

Cable housings 29, as shown in FIGURE 6, are shown cut off at the upper end but can be understood to continue upward to the power unit which shall drive the cables 43 that are to be turning inside said 29. Cable 43 is shown cut off in the enlarged view contained in FIGURE 6. Said cable 43 can also be understood to continue upward and inside 29 until it reaches the power unit to which it shall become connected. The enlarged squared end of cable 43 shall be understood to emerge downward from cable housing 29 into the suitably squared vertical hole which will be found formed in the topmost portion of 16.

Referring to the view of FIGURE 6, which is taken approximately along line 6—6 of FIGURE 1, I see the added feature of the sliding adjustable casing, partly in section, that covers the joined views of FIGURE 1 and FIGURE 2. This sliding casing is moved up and down by the dial-like movement of 49a and 49b. The advantage of this construction permits the turning of either dial to obtain the adjustment. Dials 49a and 49b, although being right and left, greatly resemble each other and each is properly fitted to the ends of shaft 47 after said 47 has been positioned through horizontal holes in 14 and 15. Dials 49a and 49b are shown at their topmost position which causes the fiber or hair to be cut very short. By turning either 49a or 49b you would force the adjustable casings 42a and 42b downward, thus allowing the cutting teeth to leave a longer fiber or hair. The view of FIGURE 8 shows that dial knobs 49a and 49b each contain a slotted cut to accommodate the top of each 44a and 44b with said 44a and 44b being attached to 48a and 48b. Screw 48a will act as a shaft, then 45a will act a spacer and a bearing onto which the top hole of 44a would fit. The lower hole of 44a and 44b will be mounted on spacer-bearings 46a and 46b then screws 50a and 50b will act as shafts. Modifications will be made concerning the various sliding casing parts wherever it becomes necessary to adapt to any of the different models of cutters being engineered. The purpose of the two-piece sliding casing allows for flexibility, while control by spring tension causes the casing to have a snug gripping action over the main clipper housings. Securing the springs to the casings 42a and 42b is done by screws, however, it can be understood that consideration has been given to obtain the desired result merely by fusing nubs to properly anchor the springs. The main idea of the springs, whether it be one longer spring or two short springs joined together, becomes more clear while viewing the topmost section of FIGURE 8. This shows the top view of the two-piece sliding casing with the anchor screws in position. All springs 53 are identical and shall be understood to obtain the desired results by being anchored properly from 51a to 51b. The next anchor is from 51c to 51d. At the lower joining, I find 52a and 52b anchoring another spring, then 52c and 52d will anchor the final spring. Parts 41a and 41b are comb-like attachments positioned onto casings 42a and 42b. This permits the hair and air to be drawn into the cutting blades and also has a raking effect to stand the hair on end. These comb-like attachments could have a lengthwise taper whereby this would taper the hair as it is being clipped.

From the above description of construction and advantages of my invention, it is thought to be readily apparent to those skilled in the art, that I have invented a

hair clipping device. The basic design shown in the views almost perfectly copies the original model. It will, of course, be understood that I intend to stay within the true spirit and scope of my invention even though various changes may be made in the form, details, arrangement, and proportions of the various parts as referred to in the appended claims.

I have provided a hair clipping device whose formation is based around two main cutting blades, 37 and 38. The two blades are disposed across the inlet of their air duct housings, with said housings having a means whereby an air suction may be attached to draw the hair through the blades while being clipped, meanwhile said housings have been covered with another sliding, adjustable casing to aid in obtaining varying lengths of cut. By referring to only two blades, be not misled, for I see that a device can be formed with any number of pairs of blades merely by correct formations of the housings and transmission shafting assemblies and still stay within the true spirit and scope of the invention. Regarding formation of housings and blades: the basic formation of the blades remains the same, although their general overall appearance can range from reasonably rectangular to become quite oblongish, thus affecting the formation of the encasing tubular housings, thus the perimeter of the encasing tubular housings will range between quadrangular and quadrilateral in order to properly encase the disposed blades as required by each different type of model being engineered, yet still stay within the true spirit and scope of the invention. I intend to convey the thought that this device primarily pertains to clipping hair, however, it should become obvious that larger, heavier models could be used for clipping many miscellaneous forms of fur, bristles, synthetic fibers, or what have you. Due to the unforeseen use in industry, I shall not try to elaborate but just inject this thought here to show that I do not limit its cutting potential to hair only.

What I claim as new and desire to secure by Letters Patent is:

1. A clipping device comprising quadrangular portions of tubing joined to form an elongated housing having a base portion at one end defining an inlet, with two or more stationary shear plate blades disposed horizontally across said inlet, a slidably movable shear blade mounted against each of said stationary blades and cooperating therewith, spring elements exerting tension upon inter-mediums to thereby maintain suitable pressure upon each of said movable blades, a transmission assembly comprising two or more precisioned shafts rotably journaled to lie parallel to and within the central-most portion of housing, means connecting each said transmission assembly to each said movable blade, a plurality of flexible driving cables entering the uppermost end of said housing and drivingly engaging said shafts, an enterjoining portion of housing defining an exit, with said portion of housing acting as mounting means for vacuum escape tube plus said flexible cables, a sliding adjustable casing comprising two sheets of synthetic material, each of said sheets being bent approximately ninety degrees and fitted to encase the quadrangular tubing in which the shear blades and transmission assembly are disposed, resilient means securing the two sheets of said casing together, a shaft transfixing through said uppermost end of said housing and rotably mounting a pair of dial-like knobs, means connecting said dial-like knobs to said casing whereby rotation of said knobs causes sliding movement of said casing, a plurality of comb-like members formed at the inlet end of said casing and projecting beyond said shear blades positioned in said inlet.

2. A clipping device comprising quadrangular portions of tubing joined to form an elongated housing having a base portion at one end defining an inlet, with one stationary shear plate blade disposed horizontally across said inlet, a slidably movable shear blade mounted against said stationary blade and cooperating therewith, spring ele-

7

ments exerting tension upon intermediums to thereby maintain suitable pressure upon said movable blade, a transmission assembly comprising one precisioned shaft rotably journaled to lie parallel to and within the central-most portion of housing, means connecting said transmission assembly to said movable blade, a flexible driving cable entering the uppermost end of said housing and drivingly engaging said shaft, an enterjoining portion of housing defining an exit, with said portion of housing acting as mounting means for vacuum escape tube plus said flexible cable, a sliding adjustable casing comprising two sheets of synthetic material, each of said sheets being bent approximately ninety degrees and fitted to encase the quadrangular tubing in which the shear blades and transmission assembly are disposed, resilient means securing the two sheets of said casing together, a shaft trans- 10 fixed through said uppermost end of said housing and rotably mounting a pair of dial-like knobs, means con-

8

necting said dial-like knobs to said casing whereby rotation of said knobs causes sliding movement of said casing, a plurality of comb-like members formed at the inlet end of said casing and projecting beyond said shear blades 5 positioned in said inlet.

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