April 8, 1930. G. GIRARD 1,753,652

HAIR CUTTING APPARATUS

Filed Feb. 25, 1928

Fig. 1.

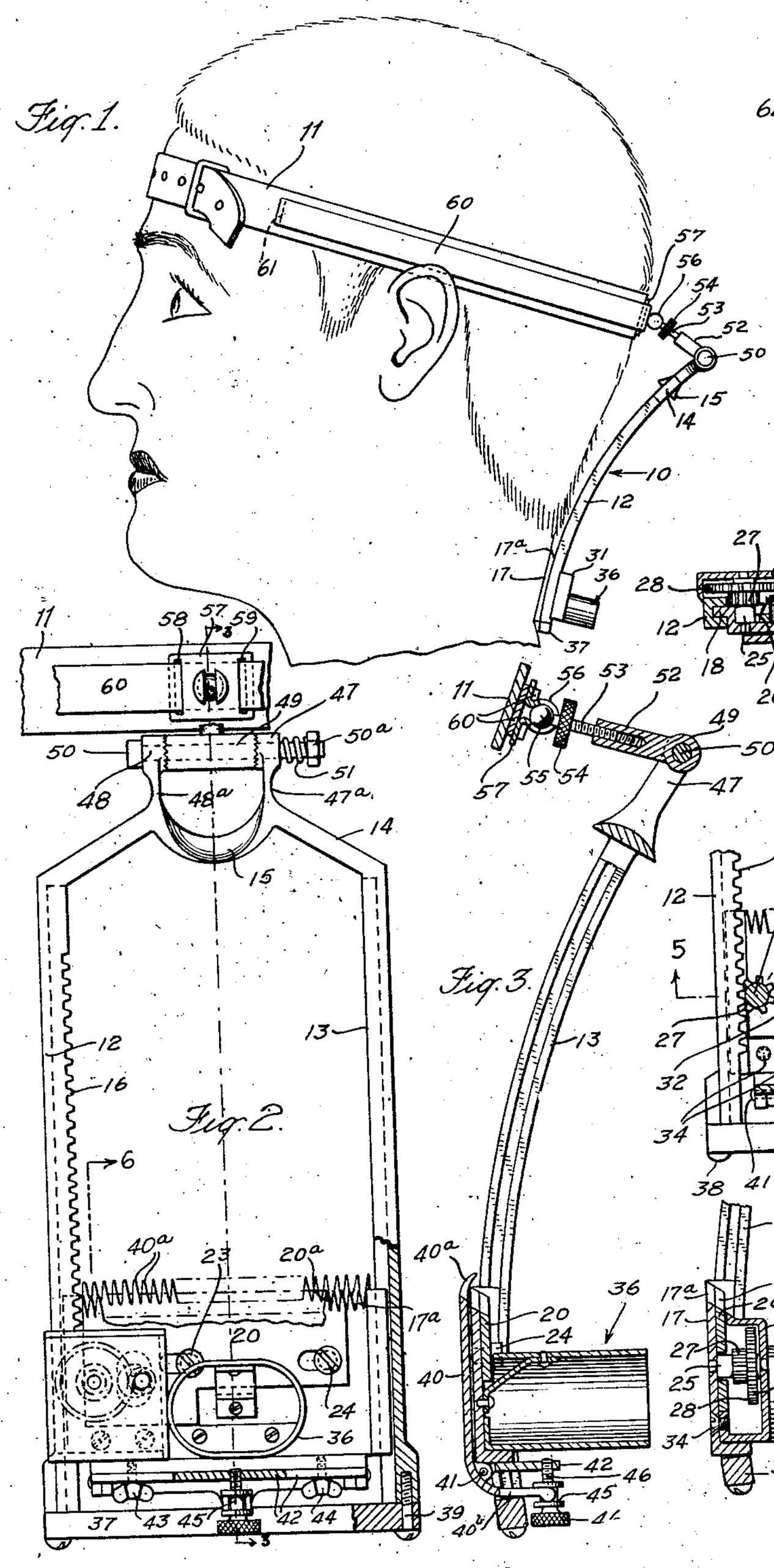


Fig. 2.

Fig. 3.

Fig. 4.

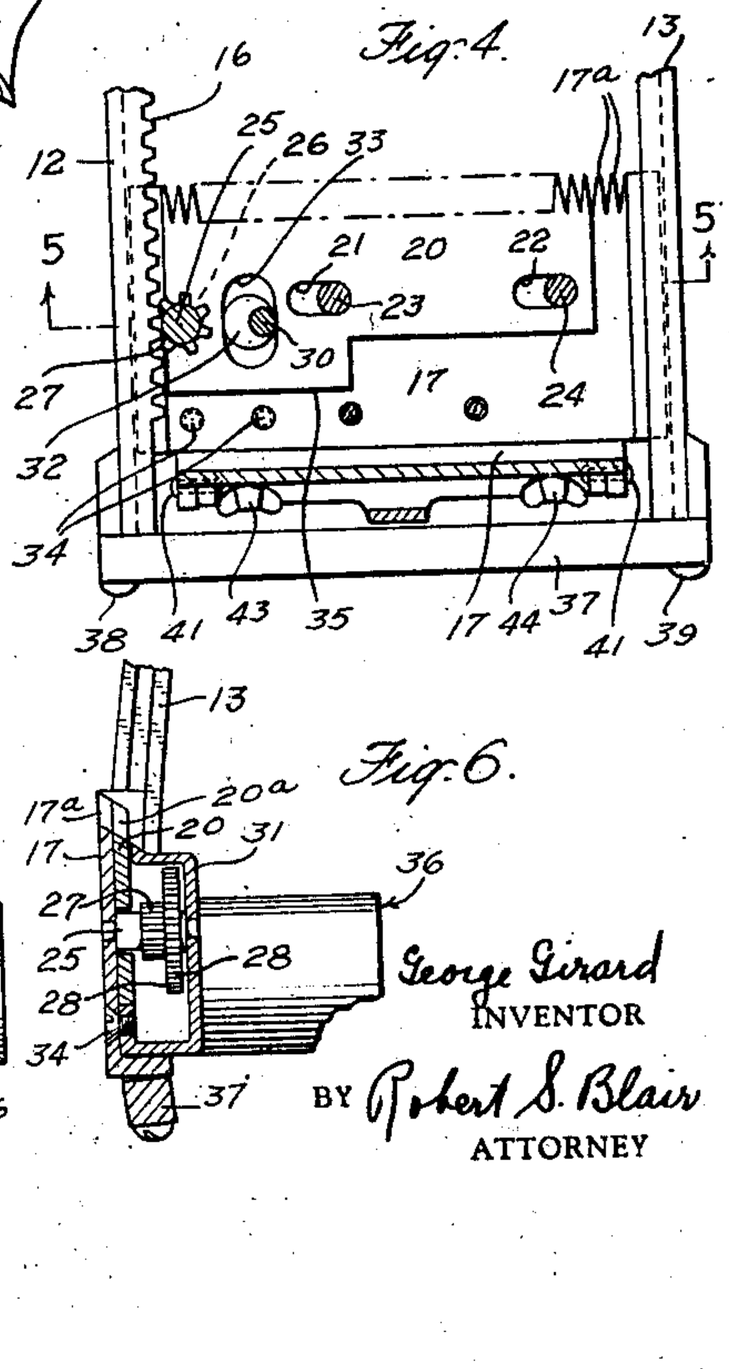


Fig. 6.

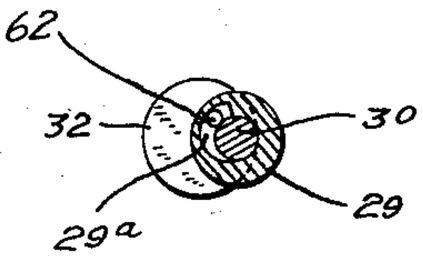


Fig. 5.

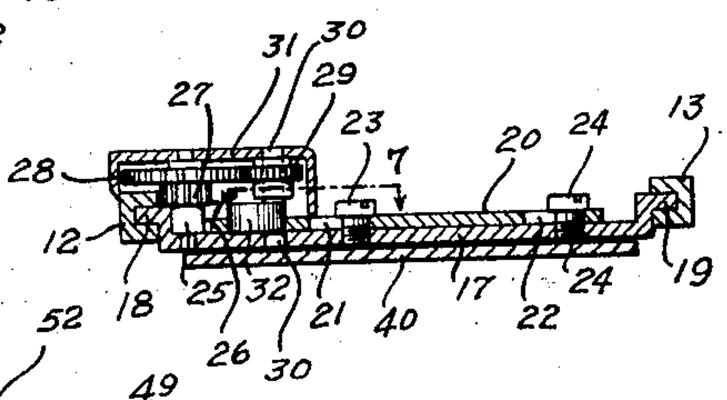


Fig. 7.

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UNITED STATES PATENT OFFICE

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HAIR-CUTTING APPARATUS

Application filed February 25, 1928. Serial No. 256,854.

This invention relates to hair cutting apparatus.

One of the objects of this invention is to provide a hair cutting apparatus of simple yet thoroughly practical construction, dependable action, and adapted to produce uniform results. Another object is to provide a hair cutting apparatus in which ease and simplicity of operation and control may be achieved. Another object is to provide a hair cutting apparatus capable of being dependably and reliably operated by the person whose hair it is intended to cut and, moreover, adapted thus to achieve uniformity of action and such a nicety of precision as is desired particularly in trimming the hair. Another object is to provide an apparatus of the above-mentioned character particularly adapted to trim the hair at the lower border portions of the scalp such as the regions adjacent the back of the neck, the side of the head and both in front and in back of the ear. Another object is to provide an apparatus of the above-mentioned character which will be of simple yet thoroughly practical and dependable construction, capable of convenient and rapid manipulation by the person whose hair is to be cut or trimmed, and well adapted to meet the varying tastes, styles and conditions of practical use. Another object is to provide a hair cutting apparatus of the above-mentioned nature that will be of rugged and durable and inexpensive construction and of thoroughly reliable action. Other objects will be in part obvious or in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements, and arrangements of parts as will be exemplified in the structure to be hereinafter described and the scope of the application of which will be indicated in the following claims.

In the accompanying drawing in which is shown a preferred embodiment of my invention,

Figure 1 is a side elevation showing the hair cutting apparatus as applied to the head and in readiness for use;

Figure 2 is a plan view of the apparatus, on an enlarged scale, certain parts being shown in section to show certain features of the construction more clearly;

Figure 3 is a vertical sectional view taken along the line 3—3 of Figure 2;

Figure 4 is a plan view of the lower portion of the apparatus as seen in Figure 2, certain parts being removed or broken away to show certain features more clearly;

Figure 5 is a sectional view as seen along the line 5—5 of Figure 4;

Figure 6 is a sectional view as seen along the line 6—6 of Figure 2, and

Figure 7 is a sectional view on an enlarged scale of a portion of the apparatus.

Similar reference characters refer to similar parts throughout the several views of the drawing.

As conducive to a clearer understanding of certain features of this invention, it might at this point be noted that, while it is frequently necessary to cut the hair because of excessive length of growth throughout the entire area of the scalp, yet it is much more frequently necessary, in order to maintain neatness of appearance, simply to trim the hair at such regions as the back of the neck, the sides of the head and to either side of the ears. One of the dominant aims of this invention is to provide a simple and thoroughly practical apparatus that may be operated by the individual whose hair is to be cut but which is particularly adapted to simply trim the hair throughout such regions as those noted above, and, moreover, to provide such an apparatus that will dependably cut the hair to a graduated length.

Referring now to the drawing and more particularly to Figure 1, the apparatus is generally designated at 10 and will be seen to be held adjacent its upper end in spaced relation from the head by means of a suitable supporting device which conveniently includes an adjustable band or strap 11 preferably, for example, of leather. The apparatus 10, referring now particularly to Figures 2 and 3, includes a frame member made up of two side rails 12 and 13 curved as is more clearly shown in Figure 3, and held in alined but spaced relation by means of an upper

bridging member 14 conveniently formed integrally with the rails 12 and 13; the bridging member 14 is provided with an intermediate portion 15 curved as shown in Figure 2 to provide a suitable finger rest.

The rails 12 and 13 are U-shaped in cross-section, as is shown in Figure 5; this cross-section might be given the rails by pressing or rolling sheet metal into this form or by cutting into a solid bar appropriate lengthwise-extending slots to form appropriate guiding ways. The side rail 12 (Figure 2) is toothed along its upper inner edge to form a rack indicated at 16. Slidably mounted in the facing slots or guideways in the rails 12 and 13 is the bottom cutter plate 17 provided with teeth 17ª along its upper edge, as seen in Figures 2 and 4; this cutter plate 17 is flanged as at 18 and 19 (see Figure 5) so that the flange portions 18 and 19 ride within the guideways of the rails 12 and 13 and so that the plane of the cutter plate 17 is adjacent to or substantially underneath the lower edges of the rails 12 and 13, as seen in Figure 5. Superimposed upon the cutter plate 17 is an upper and coacting cutter plate 20 provided with teeth 20ª along its upper edge and substantially above the teeth 17ª of the lower cutter plate 17. The cutter plate 20 is of less width than the lower cutter plate 17, as will be clear from Figures 2, 4 and 5, and is slotted as at 21 and 22; through these slots 21 and 22 are passed the studs 23 and 24 respectively, the studs being appropriately secured to the lower cutter plate 17 and being conveniently threaded thereinto. The studs 23 and 24 hold the cutter plate 20 in coacting relation to the cutter plate 17 while the slots 21 and 22 permit lateral movement of the upper cutter plate 20 relative to the lower cutter plate 17, so that the overlapping teeth of these two plates can coact in the cutting or severing of hair.

The lower cutter plate 17 has rigidly mounted therein a stud shaft 25 (see particularly Figure 5), the stud shaft extending upwardly through a horizontally extending slot 26 in the cutter plate 20, the slot 26 permitting free reciprocating movement of the cutter plate 20 and the stud shaft 25 assisting in guiding the cutter plate 20 relative to the cutter plate 17. Rotatably mounted upon the stud shaft 25 is a pinion 27 meshing and coacting with the rack 16 in the side rail 12; the pinion 27 has superimposed upon it and connected with it a relatively large gear 28 which is adapted to mesh with and drive a smaller gear 29 (and hence at a greater speed than that of the pinion 27). The gear 29 is fixed to a shaft 30 the upper end of which is rotatably supported in a suitable bearing provided in the casing 31 to be more clearly hereinafter described and the lower end of which is rotatably supported in the lower cutter plate 17 (see Figure 5). The shaft 30 carries an eccentric 32 which substantially fits in a slot 33 which extends vertically, as seen in Figure 4, in the upper cutter plate 20. The stud shaft 25 is also provided with a bearing in the casing 31, as is clearly shown in Figure 5. Thus, as the lower cutter plate 17 is moved along the guideways in the side rails 12 and 13 it carries the upper cutter plate 20 with it and at the same time the engagement between the rack 16 and pinion 21 effect a relatively high speed of rotation of the eccentric 32 and the latter thus effects a relatively high speed of reciprocating movement of the cutter plate 20 relative to the lower cutter plate 17.

The cutter plate 20 is cut away as at 35 (see Figure 4) so as to expose an appropriate portion of the lower cutter plate 17; upon this exposed portion of the latter there is secured, as by means of the screws 34, the casing member 31 hereinabove mentioned. The casing member 31 is preferably made of sheet metal, extends over the driving mechanism to provide suitable supports for the upper ends of the shafts 25 and 30 and, moreover, is flanged so as to overlap the driving mechanism and substantially encase the latter. Moreover, the screws 34 permit the casing 31 to be readily detached whereupon the driving mechanism may be quickly disassembled for repair or replacement.

Upon the lower exposed portion 35 of the lower cutter plate 17 there is mounted a finger piece 36 preferably of a generally tubular shape, as is clearly shown in Figures 2, 3 and 6, and otherwise appropriately shaped and curved to permit the ready insertion therein of a finger, preferably the thumb. The length of the apparatus is preferably such that, as viewed in Figures 2 and 3 for example, the thumb of one hand may be inserted into the tubular finger piece 36 and a finger of the same hand placed against the finger piece 15, the drawing of the thumb toward the finger effecting an upward movement of the apparatus along the guideways of the side rails 12 and 13, with the driving action of the cutter or clipping mechanism as above described. The lower ends of the side rails 12 and 13 are securely held in spaced relation by means of a cross-bar 37 secured thereto by screws 38 and 39, this cross-bar 37 being secured in position after the cutting mechanism has been assembled relative with the side rails 12 and 13 and acting to hold the parts in such assembled relation.

Coacting with the cutter plates 17—20 is a comb 40 preferably made of relatively thin sheet metal and extending underneath the cutter plate 17; this comb 40 has the forward portion of its teeth curved, as indicated at 40ª in Figure 3, in a direction toward and around the coacting teeth of the two cutter plates. The comb 40 is pivotally mounted

as at 41 to a plate member 42 which is detachably secured as by screws 43 and 44 to the lower upstanding portions of the casing 31 and the thumb piece 36, the plate member 42 thus extending against and along the lower edge of the cutter plate 17. The sheet metal of the comb 40 is bent and bifurcated at 40[b] so as to extend into and about the annular groove 45 on the shank of a thumb screw 46, the latter being threaded into the plate member 42. Thus by adjusting the thumb screw 46 relative to the plate 42 the comb 40 may be adjustably positioned about the axis of its pivot 41 and thus the spacing of the comb 40 from the cutter plates (see Figure 3) may be predetermined at will.

The upper end of the bridge member 14 (see Figure 2) is provided with two upwardly directed arms 47 and 48, preferably thinned as at 47[a] and 48[a] respectively to permit the arms 47 and 48 to yield. Received between the upper ends of the arms 47 and 48 is a member 49 held in place by means of a bolt 50 passing through the arms 47 and 48 as well as through the member 49, the adjacent contacting faces of the arm 47 and member 49 being toothed as indicated in Figure 2, while interposed between the nut 50[a] of the bolt 50 is a spring 51. The spring 51 is of sufficient strength to insure that the member 49 is gripped between the yieldable arms 47 and 48 and yet may yield to permit the member 49 to be manually adjusted or swung about the axis of the bolt 50, the interengaging teeth acting to hold the member 49 into whatever position it is thus adjusted. The member 49 (see Figure 3) is provided with a transversely extending and preferably integrally formed member 52 preferably of tubular shape and interiorly threaded throughout a substantial extent. The threaded member 52 is adapted to receive the threaded end of a member 53, the latter being provided with a knurled wheel 54 so that the member 53 can be manually rotated and provided further with a ball 55 adapted to be received within the socket portion 56 of a sheet metal member 57 so as to form substantially a ball and socket joint. The sheet metal member 57, more clearly shown in Figures 2 and 3, is provided with a pair of slots 58 and 59 through which a band 60, preferably of leather, is adapted to be passed. The band 60 is superimposed upon the main supporting or attaching band 11 but is of lesser width than the latter.

The auxiliary band 60 is a sufficient length to extend, when the band member 11 is applied to the head substantially as shown in Figure 1, from substantially the temple on one side of the head, then around the back of the head to substantially the temple on the other side of the head. At these side portions the auxiliary band 60 is sewed or otherwise secured at its ends to the main band 11, as is indicated at 61 in Figure 1. The plate member 57 may thus be adjusted along the auxiliary band 60 when the apparatus is in operative position, as shown in Figure 1, but it is to be noted that any sliding adjustment given the plate member 57 relative to the auxiliary band 60 may be accomplished without causing the plate member 57 to interfere with, catch, or disarrange the hair, since the main band 11 is interposed between the plate member 57 and the hair.

In the use of the apparatus the hair is first combed or brushed downwardly and the band member 11 with the apparatus attached thereto as hereinabove described is then attached to the head substantially as shown in Figure 1. The band 11 is preferably so positioned and adjusted that the cutting mechanism, when positioned at the lower ends of the side rails 12—13 rests well beneath the lower or extreme growth of hair, while a final adjustment to bring the cutting mechanism, when thus at the lower ends of the side rails 12—13, into the desired lowermost position, may be achieved by increasing the angle between the member 53 (see Figure 1) and the side rails 12—13, the connection between the member 49 and the arms 47 and 48 as hereinabove described, permitting this change in adjustment to be readily achieved while the band and socket joint 55—56 also assists in making this adjustment more readily accomplished. The side rails 12—13 will be seen to be curved so that the cutter plates will be guided along an appropriately curved path and thus effect a cutting of the hair in gradually increasing lengths as the cutting mechanism is moved upwardly along the rails 12—13. Moreover, the upper ends of the side rails 12—13 may be adjustably positioned toward or away from the back of the head as by lengthening or shortening the linkage formed by the members 53—52, the hand wheel 54 making possible a rapid achievement of this adjustment. The adjusting screw 46 (see particularly Figure 3) may be adjusted so that the comb 40 will take a position for example substantially flush against the underside of the lower cutting plate 16, but the upper curved ends 40[a] of the teeth of the comb 40 will be seen to curve around the relatively sharp edges of the two cutter plates and thus prevent the cutter teeth or the edges of the latter from digging into the scalp. The thumb of one hand is thereupon placed in the thumb piece 36 and a finger of the same hand then placed upon the finger piece 15. Thereupon the thumb is brought toward the finger and there is thus effected an upward movement of the cutting mechanism along the curved side rails 12—13, the driving mechanism hereinabove described causing an appropriately rapid reciprocation of the cutter plate 20 relative to the cutter plate 17 to effect a cut-

ting of the hair as this movement of translation is brought about. During this upward movement of the cutting mechanism the comb 40 acts to guide the hair into the coacting teeth of the cutter plates and acts in effect to substantially stand the hair up on end and thus bring the latter into the desired coacting relation to the cutter teeth. These latter actions may be achieved without the use of the comb 40, the teeth of the cutter plates themselves being relied upon to achieve this action. However, I prefer to use the comb 40 due to certain other advantages achievable thereby.

Moreover, as the cutting mechanism moves upwardly along the guide rails 12—13, it is brought progressively farther away from the scalp, as will be clear from Figure 1, so that the hair is cut with nicety and uniformity to gradually increasing lengths, permitting it to merge gradually into the length of the hair near the upper portions of the head where it need not be cut. Also, it is to be noted that the cutting mechanism is brought into action very close to the skin at the back of the neck so that the desired effect at those portions may be dependably achieved.

After the cutting mechanism has been moved upwardly preferably throughout the entire length of the guide rails 12—13, the close proximity of the thumb piece 36 to the finger piece 15 makes possible the secure gripping and manual control of the entire apparatus, whereupon it is given a slight sideways movement along the supporting bands 11—60 and preferably throughout a distance somewhat less than the width of the cutter plates so that upon the next upward traversing movement of the mechanism the latter will operate throughout a region immediately adjacent that region just cut. It will be understood, of course, that this sideways movement may be otherwise achieved than by holding the apparatus by means of the members 36 and 15.

The member 36 is preferably tubular so that a downward movement of the thumb will be effective to move the cutting mechanism downwardly along the guide rails 12—13 and bring the cutting mechanism to the lowermost ends of the guide rails and in readiness for a succeeding cutting traverse. During the downward movement of the cutting mechanism and in order to facilitate this downward movement, I prefer not to reciprocate the cutter plate 20 relative to the cutter plate 17. This I prefer to achieve by connecting the gear 29 (Figure 5) to the shaft 30 (which carries the eccentric 32) by means of a ratchet mechanism which may conveniently be of the form shown on a large scale in Figure 7. The latter figure shows in section the shaft 30 and the hub of the gear 29. The hub is cut away as at 29ª in such a way as to form at one end of the cut away portion 29ª a sufficient space to receive loosely a band or roller 62, the cut away portion 29ª gradually tapering toward its other end in a direction toward the shaft 30. As the gear 29 is thus rotated in clockwise direction as seen in both Figures 2 and 7, in response to its actuation by the rack 16 and intermediate mechanism, the ball or roller 62 is wedged between the hub of the gear 29 and the shaft 30 and the latter is thus brought into rotation but as the cutting mechanism is moved downwardly along the guide rails 12—13 the gear 29 will be rotated in counter-clockwise direction and the ball or roller 62 released from its wedging action so that the gear 29 may freely rotate relative to the shaft 30, the latter thus remaining stationary.

During the cutting action of the mechanism the casing 31 effectively encloses the driving mechanism and protects the latter against the cut hair. Also, I may adjust the comb 40 by means of the thumb screw 46 (see Figure 3) so as to interpose between the scalp and the cutters any desired distance and thus predetermine the minimum length to which the hair will be cut. This adjustment I find particularly advantageous in cutting the hair to either side of the ears where it is oftimes desired to avoid cropping the hair too closely to the scalp.

It will thus be seen that there has been provided in this invention an apparatus in which the several objects hereinabove noted, together with many thoroughly practical advantages, are effectively achieved. It will be seen that the apparatus is of simple but thoroughly practical construction, is easily and readily operated by the person whose hair it is desired to have cut and, moreover, is capable of thoroughly dependable and uniform results. Also, it will be seen that the apparatus is well adapted to meet the varying tests, styles and conditions of practical use.

As many possible embodiments may be made of the above invention and as many changes might be made in the embodiment above set forth, it is to be understood that all matter hereinbefore set forth or shown in the accompanying drawing is to be interpreted as illustrative and not in a limiting sense.

I claim:

1. In hair cutting apparatus, in combination, a hair cutting mechanism, guiding means for guiding said mechanism in the direction along which the mechanism is to be traversed for hair cutting and adapted to be applied to the head, said mechanism being movable along said guiding means, and means for holding said guiding means in operative relation to the head so that said guiding means is close to the scalp adjacent the lower border portions of the latter and

is spaced from the scalp at its upper end, whereby, upon movement of the cutting mechanism along said guiding means, said mechanism cuts the hair shorter at the lower border portions of the scalp than at the upper portions thereof.

2. In hair cutting apparatus, in combination, a hair cutting mechanism, guiding means therefor adapted to be applied to the head, means for holding said guiding means in operative relation to the head so that said guiding means is close to the scalp adjacent the lower border portions of the latter and is spaced from the scalp at its upper end, and means responsive to movement of said cutting mechanism along said guiding means for actuating the mechanism.

3. In hair cutting apparatus, in combination, a hair cutting mechanism, guiding means therefor adapted to be applied to the head, means for holding said guiding means in operative relation to the head so that said guiding means is close to the scalp adjacent the lower border portions of the latter and is spaced from the scalp at its upper end, said cutting mechanism comprising two cutter plates one of which is reciprocable relative to the other, and means responsive to movement of said cutting mechanism along said guiding means for reciprocating one cutter plate relative to the other.

4. In hair cutting apparatus, in combination, a hair cutting mechanism, guiding means therefor adapted to be applied to the head, means for holding said guiding means in operative relation to the head so that said guiding means is close to the scalp adjacent the lower border portions of the latter and is spaced from the scalp at its upper end, said cutting mechanism comprising two cutter plates one of which is reciprocable relative to the other, a rack associated with said guiding means, a gear carried by said cutting mechanism and coacting with said rack, and means driven by said gear for reciprocating one cutter plate relative to the other.

5. In hair cutting apparatus, in combination, a hair cutting mechanism, guiding means therefor adapted to be applied to the head, means for holding said guiding means in operative relation to the head so that said guiding means is close to the scalp adjacent the lower border portions of the latter and is spaced from the scalp at its upper end, said cutting mechanism comprising two cutter plates one of which is reciprocable relative to the other, a rack associated with said guiding means, a gear carried by said cutting mechanism and coacting with said rack, and an eccentric driven by said gear for reciprocating one cutter plate relative to the other.

6. In hair cutting apparatus, in combination, a hair cutting mechanism, guiding means therefor adapted to be applied to the head, means for holding said guiding means in operative relation to the head so that said guiding means is close to the scalp adjacent the lower border portions of the latter and is spaced from the scalp at its upper end, said cutting mechanism comprising two cutter plates one of which is reciprocable relative to the other, and means responsive to movement of said cutting mechanism along said guiding means in one direction for reciprocating one cutter plate relative to the other but adapted to prevent reciprocation thereof when said cutting mechanism is moved in reverse direction along said guiding means.

7. In hair cutting apparatus, in combination, a hair cutting mechanism, guiding means therefor adapted to be applied to the head, means for holding said guiding means in operative relation to the head so that said guiding means is close to the scalp adjacent the lower border portions of the latter and is spaced from the scalp at its upper end, said cutting mechanism comprising two cutter plates one of which is reciprocable relative to the other, mechanism including a rotatable member for reciprocating one cutter plate relative to the other and responsive to movement of said cutting mechanism along said guiding means, and means for preventing operation of said rotatable member when said cutting mechanism is moved in one direction along said guiding means.

8. In hair cutting apparatus, in combination, a hair cutting mechanism, guiding means therefor adapted to be applied to the head, means for holding said guiding means in operative relation to the head so that said guiding means is close to the scalp adjacent the lower border portions of the latter and is spaced from the scalp at its upper end, said cutting mechanism comprising two cutter plates one of which is reciprocable relative to the other, a rack associated with said guiding means, a gear carried by said cutting mechanism and rotatable by said rack as said mechanism is moved along said guiding means, and mechanism including a ratchet driven from said gear for reciprocating one cutter plate relative to the other.

9. In hair cutting apparatus, in combination, a hair cutting mechanism, guiding means therefor adapted to be applied to the head, means for holding said guiding means in operative relation to the head so that said guiding means is close to the scalp adjacent the lower border portions of the latter and is spaced from the scalp at its upper end, said cutting mechanism comprising two cutter plates one of which is reciprocable relative to the other, a rack associated with said guiding means, a gear carried by said cutting mechanism and rotatable by said rack as said mechanism is moved along said guiding means, an eccentric for reciprocating one cutter plate relative to the other, and

means including a ratchet for driving said eccentric from said gear.

10. In hair cutting apparatus, in combination, a hair cutting mechanism, guiding means for guiding said mechanism in the direction along which the mechanism is to be traversed for hair cutting and adapted to be applied to the head, means for holding said guiding means in operative relation to the head so that said guiding means is close to the scalp adjacent the lower border portions of the latter and is spaced from the scalp at its upper end, and means for varying at will the spacing of the upper end of said guiding means from the scalp.

11. In hair cutting apparatus, in combination, a hair cutting mechanism, guiding means for guiding said mechanism in the direction along which the mechanism is to be traversed for hair cutting and adapted to be applied to the head, means for holding said guiding means in operative relation to the head so that said guiding means is close to the scalp adjacent the lower border portions of the latter and is spaced from the scalp at its upper end, said cutting mechanism comprising two cutter plates one of which is reciprocable relative to the other, and means for preventing said cutting plates from digging into the scalp.

12. In hair cutting apparatus, in combination, a hair cutting mechanism, guiding means comprising a pair of spaced members along which said mechanism is moved and adapted to be applied to the head, means for holding said guiding means in operative relation to the head so that said guiding means is close to the scalp adjacent the lower border portions of the latter and is spaced from the scalp at its upper end, said cutting mechanism comprising two cutter plates one of which is reciprocable relative to the other, and a comb curved about the cutting teeth of said cutter plates, movable with said mechanism, and positioned on that side of said spaced members toward the head.

13. In hair cutting apparatus, in combination, means forming a supporting and guiding frame and provided with two spaced guide rails, said means being adapted to be applied to the head, cutting mechanism slidably guided by said guide rails and including two coacting cutting members one of which is movable relative to the other, a finger piece at the upper end of said frame, a thumb piece carried by said cutting mechanism, and means responsive to movement of said cutting mechanism along said guide rails for moving one of said cutting members relative to the other.

14. In hair cutting apparatus, in combination, a hair cutting mechanism, guiding means therefor and along which said cutting mechanism is moved, and means including a band adapted to be passed about the head for holding said guiding means in operative relation to the latter.

15. In hair cutting apparatus, in combination, a hair cutting mechanism, guiding means therefor and along which said cutting mechanism is moved, means including a band adapted to be passed about the head for holding said guiding means in operative relation to the latter, and means for predetermining at will the spacing of said guiding means from the head.

16. In hair cutting apparatus, in combination, a hair cutting mechanism, guiding means therefor and along which said cutting mechanism is moved, means including a band adapted to be passed about the head for holding said guiding means in operative relation to the latter, and an adjustable link connecting said guiding means to said band and adapted to permit predetermination of the spacing of said guiding means from the head.

17. In hair cutting apparatus, in combination, a cutting mechanism, guiding means therefor and along which said mechanism is movable, means for holding said guiding means in operative relation to the head including a band member adapted to be passed about the head and a connection between said guiding means and said band member adapted to permit the latter to be adjustably moved along said band member.

18. In hair cutting apparatus, in combination, a cutting mechanism, guiding means therefor and along which said mechanism is movable, means for holding said guiding means in operative relation to the head including a band member adapted to be passed about the head, a second band member superimposed upon the first band member, and a connection between said guiding means and said second band member adapted to permit said guiding means to be adjustably positioned along said band member.

In testimony whereof, I have signed my name to this specification this 23rd day of February, 1928.

GEORGE GIRARD.