July 31, 1928. 1,678,891

A. E. WALSH

HAIR WAVER

Filed May 10, 1924 3 Sheets-Sheet 1

Fig. 1

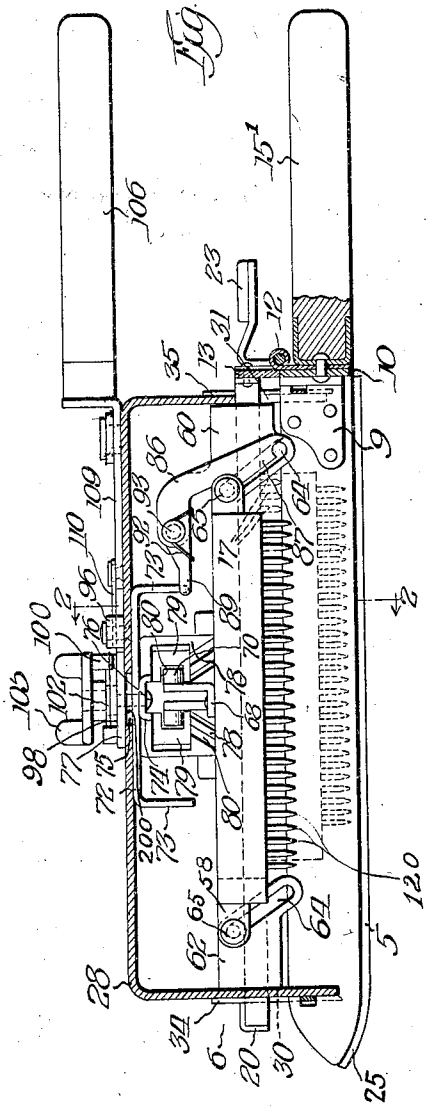
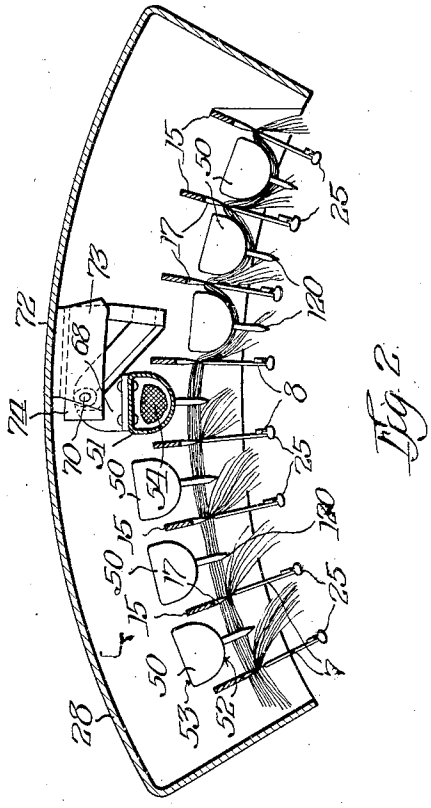


Fig. 2



Witness:
Fred. C. Dorsey

Inventor
Arthur E. Walsh
By Brown Bottelle & Dinner Attys

July 31, 1928. 1,678,891

A. E. WALSH

HAIR WAVER

Filed May 10, 1924 3 Sheets-Sheet 2

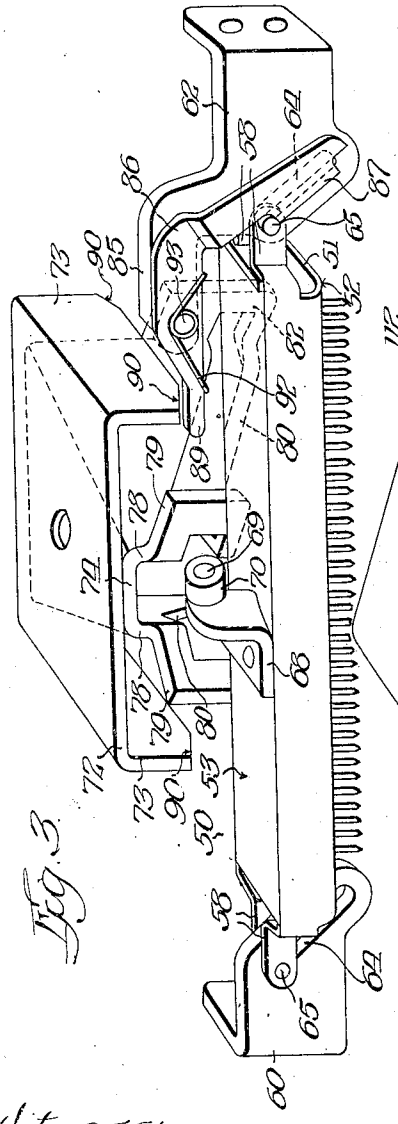


Fig. 3

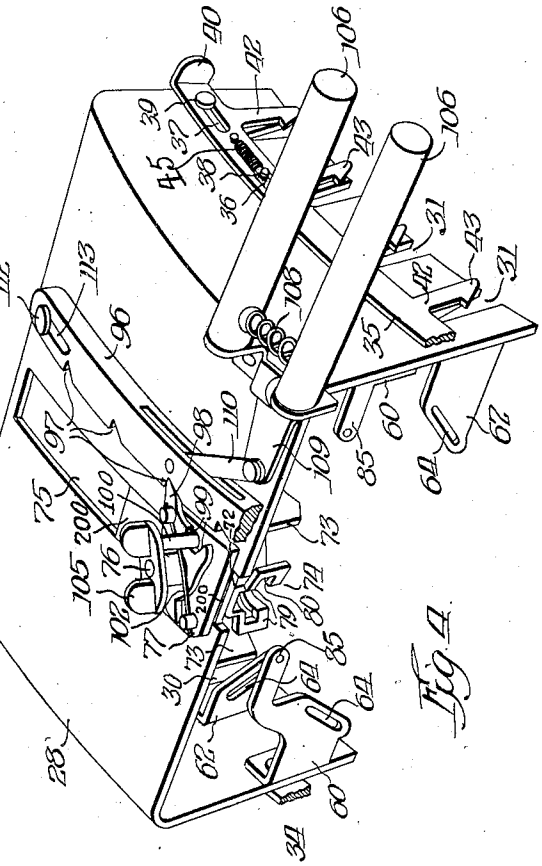


Fig. 4

Witness:
F. C. Davison

Inventor
Arthur E. Walsh
Brown Bottelier & Dienner

July 31, 1928. 1,678,891

A. E. WALSH

HAIR WAVER

Filed May 10, 1924 3 Sheets-Sheet 3

Fig. 5.

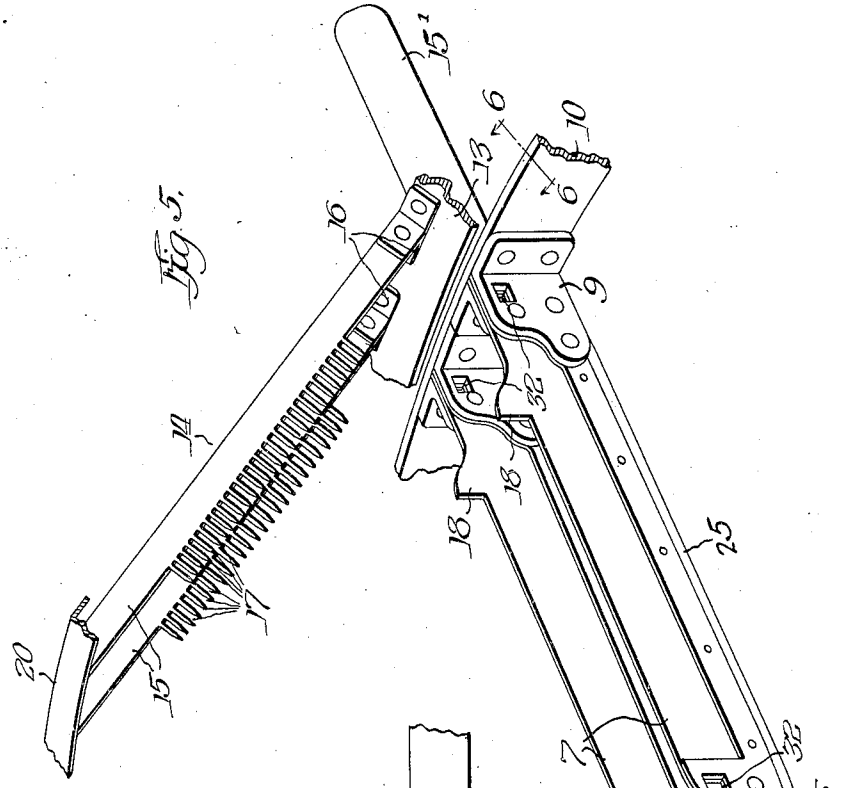
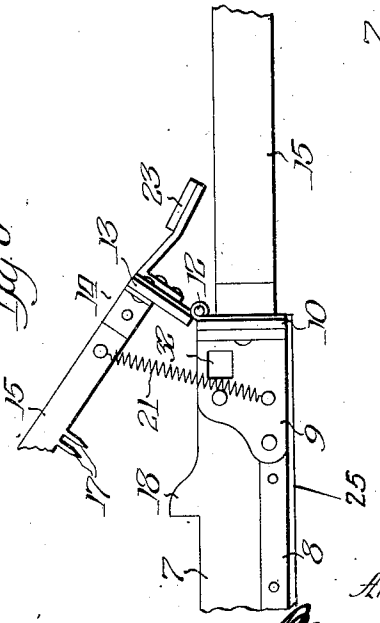


Fig. 6



Witness:
Fred C. Dorsey

Inventor
Arthur E. Walsh
By Brown Boettcher Dinner
Attys

Patented July 31, 1928. 1,678,891

UNITED STATES PATENT OFFICE.

ARTHUR E. WALSH, OF CHICAGO, ILLINOIS.

HAIR WAVER.

Application filed May 10, 1924. Serial No. 712,192.

This invention relates to hair wavers and more particularly to improvements in hair wavers of the type illustrated and described in my co-pending application, Serial No. 712,193, filed May 10, 1924.

The invention is illustrated in accompanying drawings in which;

Figure 1 is a vertical sectional view of an embodiment of the invention;

Fig. 2 is a vertical section on line 2—2 of Fig. 1;

Fig. 3 is an isometric view of one of the former and heating units showing its mounting, the means for operating it and the means for locking the unit in the positions into which it is moved;

Fig. 4 is an isometric view of the upper former shell or casing showing the mounting and operating means for the former and heating units and the latch means for the lower former blades and for the upper former operating means;

Fig. 5 is a fragmentary isometric view of the lower former member and retaining means showing the crest combs and blades swung apart into open position; and

Fig. 6 is a fragmentary elevational view of the hinged ends of one of the lower former blades and comb elements.

The device comprises a lower former and comb element designated generally at 5 and a cooperating upper former and heater designated generally at 6.

The former 5 comprises the spaced relatively thin metal blades 7 carried by blade frames 8 which are rigidly attached through angle brackets 9 to a back 10. The back 10 is of arcuate or curved formation and the attachment of the blades thereto is such that the blades lie radially in spaced relation to each other giving their lower edges an arcuate contour to conform generally to the shape of the head so that the device may be applied closely to the head with the lower edges of the blades in close proximity thereto. The back 10 is hinged at 12 to the back 13 of the crest comb element 14.

Comb element 14 comprises relatively thin flat combs 15 rigidly attached to back 13 by means of brackets 16 and provided along their lower edges with depending teeth 17. The combs 15 are spaced apart to lie superposed above blades 7 and parallel with and in the respective planes of said blades with the lower ends of teeth 17 upon the upper edges of blades 7 when the blades and combs 15 are closed with respect to each other. Integral lugs 18 on blades 7 are adapted to cooperate with the lower edges of combs 15 beyond the inner ends of teeth 17 to form bearings for the combs upon the blades at that point. An angle piece 20 extends across and connects the outer or free ends of combs 15. Rigidly attached to the back 10 with the lower leaf of hinge 12 is a handle 15′. Springs 21 connected between the blade and comb members normally hold said members yieldably closed. For swinging them away from one another to the open position of Figures 5 and 6 for the introduction of the strands of hair therebetween, the back 13 has a finger piece 23 rigidly attached thereto. Suitable insulating strips 25 preferably extend along the lower edges of each blade 7 as shown in Fig. 2, for the purpose of protecting the scalp from the heat of the device when it is applied closely thereto.

The upper former and heater has an open bottomed cover or casing 28, the opposite ends of which are slotted vertically from their lower edges as shown at 30 and 31 in Fig. 4 to fit down over the combs 15 and blades 17. The opposite ends of each blade have square apertures 32 therethrough and for locking the shell or cover 28 down upon the lower former and comb elements in the position shown in Fig. 1 latch bars 34 and 35 are slidably mounted upon the opposite end walls of the shell 28. Each latch bar has apertures 36 and 37 elongated in the direction of sliding movement of the bars and pins 38 and 39 secured to shell 28 extend through these slots and one or both of said pins may be headed at their outer ends as shown in Fig. 4. The pins 38 and 39 carry the arms 34 and 35 and form stop and guides therefor.

Each bar 34 and 35 has an end 40 turned out at right angles thereto and forming a finger piece for conveniently releasing the latch. Integral latch fingers 42 depend adjacent the positions assumed by the opposite ends of the blades 7 when the cover or shell 28 is positioned thereon and the lower ends of these latch fingers 42 have detents 43 which engage in the square apertures 32 of the blade members, and thereby clamp the blades 7 and combs 15 closed, and the cover of the upper former and heater firmly in place upon the lower former and comb elements. The latch bars 34 and 35 are normally yieldingly urged to their latch-

ing positions by springs 45 connected at one end to the latch bars and at their opposite ends to the pins 38 on the ends of the shell 28. To remove the shell 28 and upper former and heater from the lower part of the device the latch bars 34 and 35 are moved slidingly against the tension of springs 45 to their unlatched position and the upper and lower parts of the device are separated by relative movement in the vertical direction of slots 30 and 31.

The upper former proper comprises a plurality of independent former and heater units 50 each having a shell 51 (Fig. 2) of sheet metal or other suitable material having a rounded bottom 52 and a flat top 53. Housed within each shell 51 are suitable independent heating elements 54 which may be in the form of resistance coils or units having conductors for connection with the usual socket or outlet or with any other suitable source of current. Each former unit 50 is mounted and actuated separately or independently and the heating elements 54 are obviously independently mounted and housed. The opposite ends of each shell 51 have integral projecting ears or lugs 58 (see Fig. 3) turned inwardly and then outwardly in parallel spaced relation.

For supporting and imparting shifting movement to the units 50 alternately in opposite directions, as will hereinafter appear, the shell 28 has rigidly attached to one end wall adjacent one end of each unit 50 a bracket 60 and to the opposite end wall adjacent the opposite end of each unit a bracket 62. Each bracket 60 and 62 has a flange extending between the ends of lugs 58 and each of said flanges has inclined slots 64 through which pins 65 extend and are secured in ears 58. The slots 64 are inclined in opposite directions at the successive units 50 so that the successive units will be shifted in opposite directions as will hereinafter appear. The opposite inclination of the slots 64 at the respective units is shown in Fig. 4.

Mounted upon the upper flat surface 53 of each unit 50 substantially centrally between its ends is a bracket 68 having a pin 69 on which is rotatably journaled a roller 70. Mounted for rectilineal shifting movement or reciprocation on the upper wall of shell 28 is a plate 72 having depending marginal flanges 73 and carried by, for movement with, said plate 72, is a heater unit actuating cam member 74. The upper wall of shell 28 has an elongated opening 75 and a rivet 76 passes through the upper wall of cam member 74 and through plate 72 and opening 75 and projects upwardly therefrom. A plate 77 is secured upon pin 76 and overlies the upper wall of shell 28 and the cam member 74 and plate 72 are thereby mounted upon said wall. A bar 200 secured between the plates 72 and 77 fits slidingly in the opening 75 and guides the carriage in its movement therealong.

The cam member 74 has depending walls 78 provided at their forward ends with outwardly turned ears 79. Each wall 78 has an inclined cam slot 80 inclined upwardly to the forward ends of the cam member 74 and extending out into the ears 79. The rollers 70 on alternate units 50 face in opposite directions those facing in one direction being adapted to engage in the cam slot 80 in one wall 78 and the alternate rollers which face in the opposite direction being adapted to engage in the cam slot 80 in the opposite wall 78. The rear ends of walls 78 have ears 82 turned out at right angles thereto and the slots 80 extend out into said ears so that the rollers 70 will be freed from the cam member 74 at the rear end thereof. The depending walls 78 of the cam member 74 are not only inclined downwardly toward the rear lugs 82 but are spread outwardly toward said rear lugs. The downward inclination of the slots in these walls 78 depresses the members 50 and the outward spread allows for the shifting of members 50, which accompanies said depression.

From the foregoing it is now apparent that with the cam member 74 and plate 72 at the right-hand side (Fig. 4) of the shell 28, shifting of the cam member 74 will cause successive engagement of the slot 80 in one wall 78 with alternate rollers 70 with an accompanying successive engagement of the cam slot 80 in the other wall 78 with the rollers 70 on the devices between said first alternate devices and a resulting successive depression of units 50 into nested position between combs 7 as shown to the right in Fig. 2. Simultaneously with the successive depression of units 50 the engagement of pins 65 with the opposite inclined slots 64 imparts a longitudinal shifting movement to units 50 alternately in opposite directions. The rearward spreading of the walls 78 is to allow for the shifting movement of the former and heater units which accompanies their depression.

For the purpose of locking the units 50 in their depressed and raised positions the brackets 62 have offset from their upper ends inwardly projecting integral fingers 85. Pivoted on each finger 85 is a latch arm 86 in the form of a bell crank lever. Projecting from the inner edge of the depending arm of each of said levers 86 is a lug 87, the upper end of which is adapted to engage under pins 65 to lock the unit 50 in raised position as shown in Fig. 3 and when the unit is depressed the lower end of said lug 87 is adapted to engage over the pin 65 to lock the unit 50 in depressed position. The arms 89 of levers 86 project inwardly into

the path of movement of flanges 73 and the opposite ends of the lower edges of said flanges 73 are inclined at 90 to cam the levers 86 in a counter-clockwise direction (Fig. 3) as the plate 72 is shifted through the casing in its heater depressing and heater raising movement.

It is to be understood that the latch levers 86 are disposed alternately at opposite ends of the successive units 50. A latch spring 92 on the pivot 93 of each lever 86 normally swings the lever in a clockwise direction into the position shown in Fig. 3. Now as the plate 72 and cam member 74 are shifted to depress units 50 successively as already explained, the inclined forward cam edges 90 engage the arms 89 of levers 86 swinging said levers in a counter-clockwise direction against the tension of springs 92 and thereby releasing the upper ends of lugs 87 from pins 65 to permit the depressing and shifting movement of the former and heater units. As the former and heater units reach their depressed or shifted positions the flanges 73 travel past and release arms 89 permitting the levers 86 to be swung in a clockwise direction by the springs 92 so that the lower ends of lugs 87 will overlie pins 65 and thereby lock the units in their depressed shifted positions. Upon shifting movement of the plate 72 and cam 74 in the opposite direction the inclined cam edges 90 at the opposite ends of flanges 73 engage arms 89 and thereby release latch levers 86 and the cooperation of cam slots 80 with rollers 70 lifts the units 50 successively to their raised positions where the levers 86 are again released and spring into their positions, shown in Fig. 3, to lock the units 50 in raised position. The carriage comprising the plates 72 and 77 and the cam member 74 has a latch bar 96 provided along its edge adjacent the carriage with notches 97 in which notches a detent 98 on the carriage is adapted to engage to lock the carriage in its successive positions. The detent 98 is free on the pin 76 for example, and plays between shoulders 99 which cooperate with a post 100, the detent being normally urged to its latching position as shown in Fig. 4 by means of a spring arm 102. The carriage has a finger piece 105 mounted for example upon the upper end of pin 76.

Mounted upon the shell 28 are a pair of handles 106 normally held in the relative positions shown by a spring 108 interposed between them The handles 106 are adapted to be grasped and swung toward each other against the tension of spring 108 and the relative swinging motion between them is imparted through an arm 109 and a link 110 having pivotal connection at one end with arm 109 and at its opposite end with latch bar 96, to release the latch bar from its latching engagement with detent 98. By so releasing the latch bar 96 the cam carriage is freed for movement to the right in Fig. 4 movement to the left past notches 97 being permitted by the play between shoulders 99 of detent 98. A headed post 112 extends through an elongated opening or slot 113 in one end of latch bar 96 and is secured to cover 28 and it is upon this post 112 that the latch bar 96 is actuated in its latching and releasing movements.

With the cover 28 and upper former and heater elements mounted upon the lower blades and comb elements as shown in Fig. 1 the operation of the device is as follows:

The upper part is removed from the lower blades and combs by releasing the latch bars 34 and 35 and separating the two parts as already pointed out. Then by holding the lower blade and comb part by the handle 15 and depressing the finger piece 23 the blades 7 and combs 15 may be swung away from each other about hinge 12 into open position substantially as shown in Fig. 5.

The blades 7 are then arranged through the hair adjacent the head, or where the strands of hair are being waved at a distance outwardly from the head, the blades are arranged beneath said strands, and the hair is arranged over the blades. The free ends of the blades and blade frames are preferably tapered and rounded as shown at 115 to facilitate insertion through the hair. With the strands of hair distributed over the blades 7, the combs 15 are closed, whereupon the teeth of said combs 15 engage the strands of hair and prevent lateral displacement thereof. The cover 28 with the upper heater and former parts is then mounted upon the lower blades and combs and locked in place as already pointed out.

Then assuming that the cam carriage is at the right hand side of the device in Fig. 2, movement of said carriage through the opening 75 to the left will depress the heater and former units 50 successively into nested position between blades 7 and crest combs 15. The units 50 have depending combs 120 which, as the units 50 are depressed, are brought into cooperation with the strands of hair. The cooperation of the crest combs 15 with the blades 7 permits slipping of the strands of hair therebetween in the direction of the length of the strands and at the same time effectively prevents transverse displacement of the strands. Consequently the strands of hair at the crests of the waves longitudinally thereof are held relatively stationary in a lateral direction and the troughs of the strands by reason of their engagement with combs 120 are shifted rectilineally in opposite directions with the opposite directions of movement of the units 50.

This produces the lateral waves in the hair, the nesting of the units 50 between the blades and combs 7 and 15 producing the

waves at substantially right angles to said first waves up over the upper edges of blades 7 and down around the rounded bottoms of units 50 and thereby producing the compound or "Marcel" waving, as is well understood in the art. After the desired wave is produced, the carriage is moved in the opposite direction to raise the units 50 from their depressed waving positions whereupon the cover with the upper heater and former parts may be removed from the lower former member comprising the blades 7 and combs 14 and the device again applied to the unwaved portions of the hair and this is repeated until the desired extent of waving is produced.

It should be noted that as in my aforesaid copending application, the blades 7 instead of presenting a solid or continuous member over the entire waving area are adapted to lie edgewise to the head to present spaced openings through which the strands of hair may be arranged at various points of the waving area and up and between the former and heater units of the device, instead of the necessity of arranging all of the strands into the device from one end. This permits expeditious waving of the strands of hair close to the head and avoids the necessity of arranging the device endwise and the slow and complicated waving of the bases of the strands of hair as heretofore. Of course as the outer ends of the strands of hair are approached the strands may be arranged through the device entirely from one end, although even at these points the spaced openings between the blades may be again brought into use if desirable.

The separate operation of the upper former and heater units of the present device permits of the employment of as great a number of said units as desired without requiring powerful operating leverages or stresses which would be necessary if a great number of units were employed and it was desired to operate them simultaneously. The differences in structure, mounting of the various parts and the other accompanying distinguishing features over my aforesaid application are believed to be obvious from the foregoing description.

I claim:

1. In a device of the class described, the combination with a waving unit of a plurality of independent heating and waving units movable separately and successively into cooperation therewith.

2. In a device of the class described, the combination of a waving unit, comprising a series of combs cooperating blade members and supporting means therefor, a plurality of separate heating and waving units cooperable therewith, and means for moving said units successively into cooperation with said first unit.

3. In a device of the class described, the combination of a plurality of spaced blade members, a plurality of separate heating and waving units, means for moving said units successively into nested position between the blades, and means for shifting the units alternately in opposite directions with their movement into cooperation with the blades, said waving units having means for moving the strands of hair adjacent the waving unit therewith.

4. A Marcel waver including a plurality of longitudinally stationary comb members, a plurality of blade members separable from said comb members to receive strands of hair therebetween and hold same in said comb members, a plurality of former members cooperable with said blade members for producing waves in the strands of hair, and comb members extending longitudinally and centrally only along the under surfaces of the former members, said last comb members being movable longitudinally for producing waves in the strands of hair generally normal said first waves and the former members having bottom former surfaces extending laterally from the sides of said last comb members.

5. In a device of the class described, the combination of a plurality of spaced blades, comb means cooperable with said blades for holding the strands of hair against lateral displacement waving means comprising former members movable into nested position between the blades for waving the strands of hair, and comb means carried by said waving means and extending logitudinally and centrally only along the under surfaces of the former members and shiftable to produce lateral waves in the strands of hair said former members having bottom former surfaces extending laterally from the sides of said last comb members.

6. In a device of the class described, the combination of a plurality of spaced blade members, a plurality of separate heating and waving units, means for moving said units successively into nested position between the blades, means for shifting the units alternately in opposite directions with their movement into cooperation with the blades, and comb means carried by and shiftable with said units for producing lateral waves in the strands of hair.

7. In a device of the class described, the combination of a plurality of spaced blades, comb means cooperable with the blades for holding the strands of hair against lateral displacement along the blades, a plurality of separate heating and waving units, means for moving said units successively into nested position between the blades, means for shifting the units alternately in opposite directions with their movement into cooperation with the blades, and comb means car-

ried by the units and engageable with the strands of hair between said first comb means, said last comb means being shiftable alternately in opposite directions with the heating and waving units to draw the strands of hair into lateral waves on said first comb means.

8. In a Marcel waver, a former member having a smooth rounded former surface adapted to be pressed against the hair and a comb member extending longitudinally along the center only of said rounded former surface and depending therefrom, said former surface extending laterally from the sides of said comb member.

9. In a device of the class described, a pair of waving units, means operable to bring said units into and out of cooperation, means for locking said units in and out of cooperation, and means operable with the unit operating means for releasing said locking means.

10. In a device of the class described, a waving unit comprising a plurality of spaced blades a plurality of comb members pivoted to said blades and adapted for edgewise engagement therewith and means for waving the strands of hair between said blades and comb members.

11. In a device of the class described, a plurality of spaced blade members arranged radially and in arcuate order to conform edgewise to the head, comb members cooperable edgewise with said blade members for holding the strands of hair against lateral displacement along the blade members, a frame, and a plurality of heating and waving units mounted in arcuate order in said frame for alternate disposition with respect the blades and depressible radially into nested position between the blades.

12. In a device of the class described, the combination of a plurality of spaced waving units, shiftable cam means for depressing and raising said units, means for shifting the units alternately in opposite directions with said first movement, said units having means engaging in said cam means, said cam means being inclined to impart the desired depression and raising movement and spread to allow for the alternate shifting in opposite directions accompanying said first movement and means for supporting the strands of hair in position to be waved by said units.

13. In a device of the class described, the combination of a plurality of waving members, a cam member movable across said waving members, said cam member having side walls provided with inclined slots, rollers carried by said waving members and engaging alternately in the slots in opposite walls of said cam member for depressing and raising said units with the movement of the cam member thereacross and means for supporting the strands of hair in position to be waved by said waving members.

14. In a device of the class described, the combination of a plurality of waving members, a cam member movable across said waving members, said cam member having side walls provided with inclined slots, and rollers carried by said waving members engaging alternately in the slots in opposite walls of said cam member for depressing and raising said units with the movement of the cam member thereacross, means for shifting said waving units alternately in opposite directions with said depressing and raising movement, the slotted walls of the cam member being spread to allow for said shifting movement and means for supporting the strands of hair in position to be waved by said waving members.

15. In a device of the class described, the combination of a plurality of waving members, a cam member movable across said waving members, said cam member having side walls provided with inclined slots, and rollers carried by said waving members engaging alternately in the slots in opposite walls of said cam member for depressing and raising said units with the movement of the cam member thereacross, means for shifting said waving units alternately in opposite directions with said depressing and raising movement, the slotted walls of the cam member being spread to allow for said shifting movement, means for locking said units in their raised and depressed positions, means movable with said cam member for releasing said locking means with the waving unit operating movement of said cam member and means for supporting the strands of hair in position to be waved by said waving member.

16. In combination, a plurality of blade members, combs pivoted to said blade members and adapted for edgewise engagement therewith, a frame adapted to be mounted upon and for locking to said blades, a plurality of heating and waving members mounted in said frame for lowering into and raising from cooperation with said blades and for alternate shifting movement in opposite directions, and a carriage shiftable on the frame operating said heating and waving units.

17. In combination, a plurality of blade members, combs pivoted to said blade members and adapted for edgewise engagement therewith, a frame adapted to be mounted upon and for locking to said blades, a plurality of heating and waving members mounted in said frame for lowering into and raising from cooperation with said blades and for alternate shifting movement in opposite direction, a carriage shiftable on the frame for operating said heating and waving units,

latch means for preventing retraction of said carriage and means for releasing said latch means.

18. In a device of the class described, the combination of a pair of waving units, means operable to bring said units into and out of cooperation, a pivoted locking arm normally free of said operating means and cooperating with one of said units to lock the units in predetermined relation and means on said operating means and cooperable with the locking arm to release said arm by the operation of said operating means.

19. A Marcel waver, comprising a plurality of blade members, a plurality of longitudinally fixed comb members pivoted thereto and adapted to be separated to receive strands of hair between the blade and comb members, a plurality of former members cooperable with said blade members, comb members carried by said former members and engageable with the strands of hair between said first comb members and means for moving said former members into cooperation with said blade members to form waves in the strands of hair and for shifting said second comb members longitudinally with respect to said first comb members to form waves in the hair strands generally normal said first waves.

In witness whereof, I hereunto subscribe my name this 7th day of May, 1924.

ARTHUR E. WALSH.