July 12, 1938. H. M. HART 2,123,585

PERMANENT WAVE APPARATUS

Filed Aug. 12, 1935 2 Sheets-Sheet 1

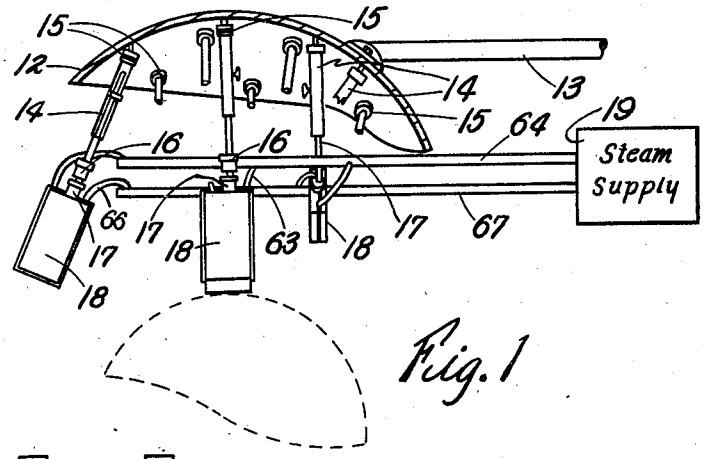

Fig. 1

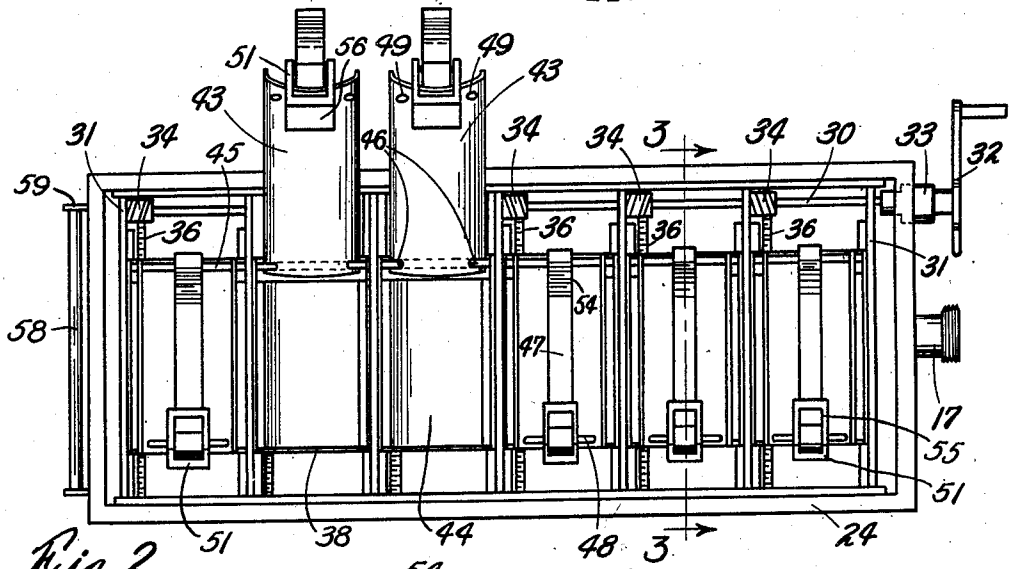

Fig. 2

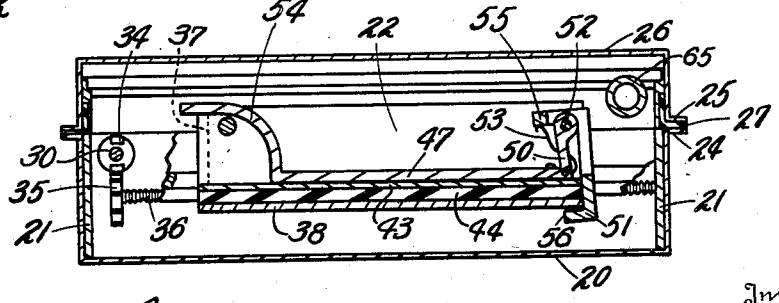

Fig. 3

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PERMANENT WAVE APPARATUS

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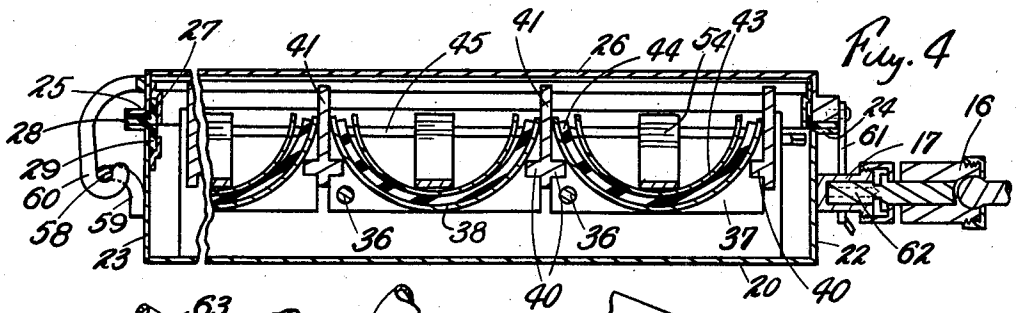

Fig. 4

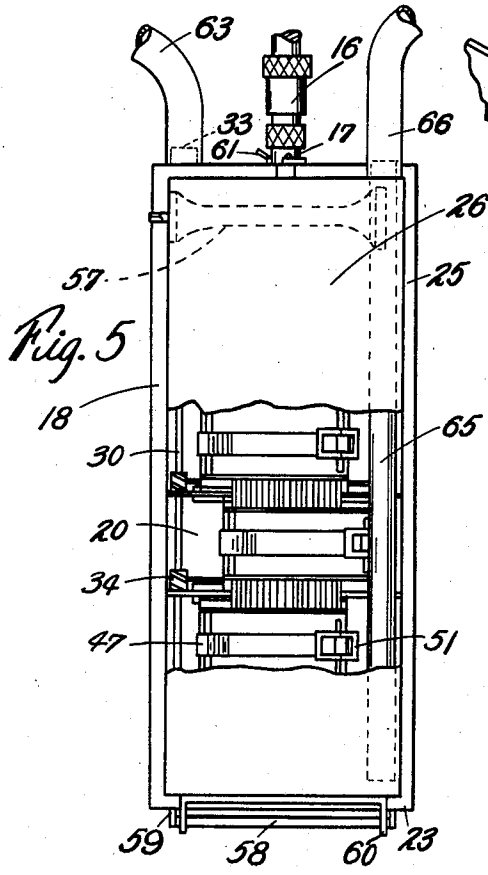

Fig. 5

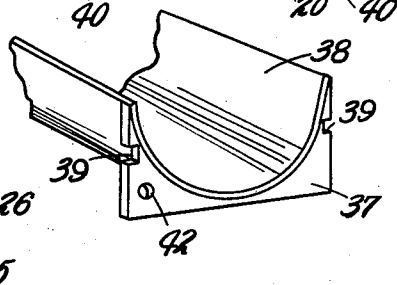

Fig 7

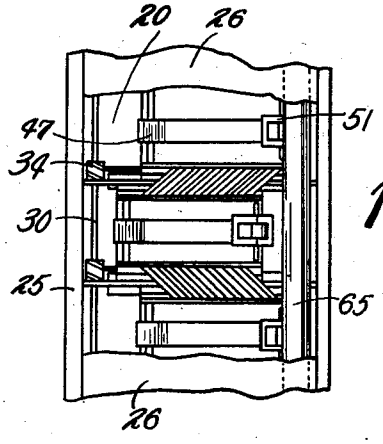

Fig. 6

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UNITED STATES PATENT OFFICE

2,123,585

PERMANENT WAVE APPARATUS

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Application August 12, 1935, Serial No. 35,757

9 Claims. (Cl. 132—36)

The present invention relates to permanent hair waving apparatus and has for an object the provision of a means that initially imparts the ultimately sought or desired wave to the hair, thereby eliminating the need of any subsequent "setting" of the waves.

Another object of the invention is to provide apparatus for the aforestated purpose which is easily and quickly operated, and in which the wave forming units have relatively larger capacity thereby reducing the number of operations required in waving a head of hair.

A further object of the invention is to provide apparatus of this kind that is well adapted, although not necessarily limited, to the use of steam as the heat supply for baking the hair waves.

These and other objects are attained by the means herein described and disclosed in the accompanying drawings, in which:

Fig. 1 is a somewhat diagrammatic vertical sectional view of the apparatus operatively positioned relative to a head, the latter being indicated in dotted lines.

Fig. 2 is a top plan view of a hair waving unit of the invention with the cover removed.

Fig. 3 is a view taken on line 3—3 of Fig. 2.

Fig. 4 is a longitudinal sectional view of a hair waving unit of the invention, part being broken away.

Fig. 5 is a top plan view of the hair waving unit, with part of the cover broken away showing the initial position of parts thereof, with hair clamped in place.

Fig. 6 is a fragmental view showing the parts exposed in Fig. 5 in adjusted position effecting the transverse curvature in the hair wave.

Fig. 7 is a fragmental perspective view of a part forming a detail of the invention.

Heretofore the so-called "permanent" waving of women's hair has consisted essentially in forming a multiplicity of coils of hair strands in tightly rolled coils or spirals upon suitable mandrels or winders and baking the hair to impart a frizzled or kinky condition to the hair which is then "set" in waves by a separate subsequent operation. This latter operation is repeated from time to time, particularly because the washing or shampooing of the hair makes it lose the former wave but allows the kink of the individual hairs to remain over a long period of time. The repeated "finger waving" or "setting" of the so-called permanently waved hair is a source of frequent expense and loss of time to the users of the coiffures of this kind.

The present invention avoids the necessity of having the hair "set" or finger waved by providing a novel means whereby the permanent wave operation initially imparts, substantially or in some cases exactly, the ultimately desired wave to the hair and this wave persists for at least as long a period of time as the kinks or undulation in the individual hairs as treated by the croquignole or other known "permanent" waving methods in use up to the present time.

The apparatus of the present invention comprises generally a support means adapted to detachably and adjustably support a suitable number of novel hair waving units and a suitable heat source for baking the waves of the hair in the units.

While in the preferred form illustrated, steam is used as the baking heat medium, it is to be understood that any other heating means such as electric heating units in the individual wavers may be employed.

The procedure for permanently waving hair of this invention consists in clamping previously softened, blocked off bunches of hairs, hereinafter referred to simply as strands of hair, at spaced intervals along the length thereof between clamping means or members that are adapted to impart curvature thereto in one direction, then longitudinally shifting adjacent clamping means longitudinally in opposite directions, then subjecting the hair, thus stretched into desired wave form, to a suitable baking operation. Each hair of each strand thus has the ultimate contour desired in relation to other hairs of the strand so that the head of hair thus treated may have the usual softening solution washed from it and then merely dried and combed whereupon the hair assumes the desired waved form.

Various styles of hair dressing may be obtained by the means of the invention.

The hereinafter described structure represents one embodiment of the invention that is easily and rapidly operable, requiring possibly less time to apply than heretofore used apparatus.

Referring now to Fig. 1 of the drawings, a plate 12 shaped somewhat like a shallow inverted dish or like a shallow helmet, and which may be slotted for ventilation, is mounted adjustably upon a rod 13 that is carried upon any convenient type of upright (not shown) so that the plate 12 may be conveniently and properly positioned above the customer's head. A suitable number of universally adjustable rods 14 are arranged in scattered relation for receiving and supporting the hair waving units in adjusted

positions. The rods 14 have swiveled friction connection at 15 with the plate 12 and these are made up as pairs of telescopically adjustable members, with a detachable swivel connector 16 at the end for ready attachment and detachment of the complementary end of stems 17 of the individual waving units 18. Any suitable steam supply may be used for example, as diagrammatically shown, a low pressure return flow system indicated generally at 19.

The hair waving units 18 of the invention are preferably made up of box-like casings each having a bottom 20, longitudinal side walls 21, top end wall 22, and bottom end wall 23. The castings may be of light-weight cast metal or of formed sheet metal and are provided along the free edge of the side and end walls with a continuous flange 24 which is adapted to receive between it and a complementary flange 25 on the cover 26, a portion of a compressible gasket 27 which may be L-shaped in cross section and secured interiorly of the cover as may be best seen in Fig. 3. Intermediate the opposite ends of the flanges along end wall 23, one or both of the flanges are cut away slightly to form a shallow way as at 28 where the gasket 27 seats upon a gasket 29 thereby forming a tight but yieldable clamping seal for the way and for clamping locks or tresses of hair therebetween without danger of cutting the hair when the cover is closed and clamped upon the casing.

Interiorly of the casing is a longitudinal shaft 30 journalled at or near its opposite ends in transverse partitions 31 and adapted to be rotated by a removable crank or winding key 32 which is insertable in a hollow tubular nipple 33. A series of short worms 34 are concentrically fixed on the shaft 30 and these mesh respectively with worm wheels or gears 35 which are secured on the ends of transversely extending adjusting screws 36 and which screws are journalled at at least one end, in one of the side walls 21 of the casing. The series of worms 34 are alternately equipped with left handed and right handed threads or teeth, respectively, so that the successive screws 36 are turned in opposite directions when shaft 30 is rotated in either direction by means of the winding key 32.

The winding structure just described has associated herewith a series of clamps, one for each of the screws 36. The lower half of each clamp comprises a pair of vertical walls 37 which may be substantially rectangular about three sides thereof and having an arcuate cut-away top edge in which is seated and secured an arcuate or trough-like plate 38. The end walls 37 are notched as at 39 so as to guidedly support the structure upon ribs 40 of partitions 41 that are disposed transversely intermediate the top and bottom of the casing. Each pair of walls 37 has concentric threaded bores 42 in which the screws 36 engage so that upon actuation of shaft 30, the bottom section of each hair clamping device is shifted transversely within limits between the side walls of the casing. The top or complementary section of each of the hair clamping members comprises a second arcuate plate 43 which is of shorter radius than the lower plate 38 so that when the two are pressed together either directly or upon an intermediate resilient pad, the clamping or pressure contact is greatest at the bottom of the trough or plate 38. A resilient or slightly yieldable pad which may be an arcuate pad of rubber 44 is normally seated on the lower arcuate plate 38. The upper clamp plate 43 in operation seats upon this pad and the interposed hair and clamps the hair in a transverse line, leaving that portion of the hair that is adjacent the free edges of the complementary curved plates sufficiently loose to permit of stretching and slight shifting of the hair between said edges of the complementary plates. The structure is preferably arranged as may be best seen in Figs. 2 and 3, so that the upper clamping plate has a hinged connection adjacent one end with the lower clamping plate and an adjustable latch is provided upon the free end of each of said upper clamping plates so that varying quantities of hair may be laid across the open clamps and subsequently clamped transversely while that portion of the hair intermediate the clamped portions may be free to be moved and stretched.

The hinge connection between plate 38 and plate 43 may be constituted in each instance by merely fixing the opposite ends of a pin 45 in the spaced walls of the curved plate 38 after passing said pin through perforations 46 in the plate 43. The latch means for clamping the free ends of plates 38 and 43 together consists of a latch bar 47 pivoted on a pin 48 which has its opposite ends fixed in and terminating as at 49 in the curved wall of plate 43, said latch bar 47 having an integral perforate finger 50 upon which a substantially U-shaped latch 51 is pivoted on a pin 52. A spring 53 associated with finger 50 urges the latch 51 about its pivotal mounting at 52. In manipulating the upper clamping plate 43 relative to its complementary plate 38, the curved end 54 of latch bar 47 is engaged by the fingers of the hand and pressure of the thumb at the same time is directed on the overhanging portion 55 of the latch to move the same about its pivotal mounting 52 against the resistance of springs 53. As soon as the lower offset 56 of latch 51 has been moved clear of the bottom edge of plate 38 and wall 37, lifting movement of the fingers will raise plate 43 to the inoperative position as illustrated in Fig. 2.

To insert the hair in the hair waving units, the entire series of clamping devices are unlatched and folded back in the position characteristically shown by the two clamps in Fig. 2 after actuating the shaft 30 until adjacent clamping devices have been moved to their respective opposite limits of movement in one direction. With the clamps open and in this extreme position, for example, as shown in Fig. 5, a large tress or series of adjacent tresses of hair that has been previously treated with a softening solution is progressively clamped in series of clamps in the unit by entering that portion of the hair which is closest the head across the open portion of the way 28 and then stretching the hair lightly across the first open clamp plate 38 on top of the resilient pad 44 and then folding the clamp plate 43 across this portion of hair and manipulating the latch so that the hair is clamped tightly in the bottom of the trough formed by the plate 38 and its resilient pad. The remainder of the hair is then stretched lightly across the succeeding open clamp which is then closed in the fashion just explained, thereby rather tightly stretching the hair between the two clamped places over the top of the intermediate partition 41. This operation is repeated either until the end of the hair is clamped or until all of the clamps in the unit have been filled, in which case any remaining length of hair may either be folded back over the closed clamps or wound upon a croquignole wind-

er 57 which is optionally made part of the waving unit of the invention in order to provide for the taking up and curling of excess length of hair and for the purpose of placing some additional tension on the clamped hair. In this position the tress or lock of hair operated on would extend longitudinally from end to end of the casing with a series of uniform dips therein. The winding key or crank 32 is now inserted through the hollow nipple 33 onto the angular end of shaft 30 whereupon the shaft 30 may be turned causing each of the clamping members to move transversely to its opposite limit of movement within the casing. The hair would then assume the position shown characteristically in Fig. 6, the hair between the clamped portions in the bottom of the clamping members being stretched and moved laterally or transversely so that the characteristic form or somewhat zigzag curvature that is attained by the so-called finger waving process is initially imparted to the entire tress or group of tresses within the hair waving unit Another hair waving unit would be applied in a like manner and in a corresponding position to an adjacent group of locks and so on until the desired amount of hair on the head of the subject has been clamped and stretched to the approximate form of the ultimately desired wave. As each waving unit is filled and the hair therein set to the position characteristically shown in Fig. 6, the cover 26 is applied. The cover fastening means may be constituted by a rod 58 mounted on offset lugs 59 on the bottom end wall 23 and a pair of hook lugs 60 on the cover 26 which together form a readily separable and readily engaged hinge. The cover is then folded snugly onto the casing with the gasket material 27 forming a tight seal between the flanges of the cover and casing whereupon a pivoted hook 61 carried by the cover is engaged about the interiorly fluted stem 17 on the casing. The end of the stem 17 may then be connected by inserting the fluted plug 62 of the swiveled clamping member 16 to the end of one of the telescoping rod members 14. The waving unit 18 is thus universally adjustable relative to plate 12. After the entire head of hair has been treated in the foregoing manner and all of the hair waving units 18 have been filled and connected with the plate 12, a branch steam supply tube 63 from steam supply line 64 of the source 19 is connected as by a tapered friction connection to the nipple 33 from which the crank 32 is removed. The cover 26 carries a tube 65 which terminates near the bottom end wall 23 of the casing so that a complete circulation of low pressure steam is assured and so that no excess amount of condensation can accumulate within the hair waving unit. Tube 65 projects beyond the cover and receives the detachable branch return tube 66 which is connected with the steam return pipe 67.

The steam is then circulated through the several supply and return tubes for a sufficient length of time that, in the opinion of the operator, is sufficient to bake the hair undergoing treatment whereupon the steam supply is shut off and the hair is removed successively from the several units by removing the cover and releasing the latches of the clamps, etc.

By the proper initial positioning of the several waving units, the hair which has been set and baked in adjacent units will naturally assume the desired relationship one lock to the other and this relationship of all of the treated blocks will persist until such time as the natural lengthening of the hair by growth makes it advisable or desirable to be again treated. Thus, it will be noted that the so called setting of a permanent wave that is characteristically required from time to time is entirely eliminated so that the person may repeatedly wash or shampoo the hair and merely comb it after drying in order to attain a perfect coiffure. A considerable saving in time and money is effected by the use of the herein described method and apparatus for permanent waving.

The devices of the invention are not to be considered as limited to the exact details of construction shown since these are readily subject to modification. The novel method of permanently waving hair in the form of the ultimately desired wave can be used for a wide variety of styles of hair dress and in the hands of experienced operators the character of the waves themselves may be modified and blended on the same head of hair so that it is possible to produce artistic creations for the individual or to reproduce an established style with great accuracy.

The operation of the device has been explained in connection with the description of the structure. The procedure for waving hair by the herein referred to apparatus consists in first blocking off or dividing the entire head of hair into suitable amounts that are to be inserted in the individual waving units, then placing a felt pad or other protective device about each block of tresses closely adjacent the scalp and then treating the tresses with a suitable softening solution, e. g., oil and ammonia. Sachets are not needed. After these preliminary steps the individual blocks of hair are now ready for the waving operation. This consists in first transversely clamping the straightened tresses at intervals beginning close to the scalp end thereof in such manner as to produce a longitudinal succession of dips, the tight transverse clamping being in the bottom of such dips while the hair intermediate the clamped portions is snugly stretched over an intermediate barrier. Any excess length of hair beyond the desired number of dips may either be left free or wound up into a roll or curl. The clamped portions of the hair are desirably disposed all in the same plane. These clamped portions are now shifted in alternate opposite directions thereby increasing the distance between adjacent clamped portions and thus imparting to the dips a transverse sinuous wave. The composite of the dips and waves in the tresses imparts to them the general character of wave that was heretofore attained by the so-called finger waving with the aid of a gummy, so-called "wave set" solution, as a subsequent operation after the previously known permanent waving of hair.

With the hair clamped and stretched to the ultimately desired form, the tresses are subjected to the "baking" operation which renders the waves permanent. This is the final step in the procedure. No "wave setting" operations or solutions need be used at any time during the normal life of the wave which is comparable in all respects with the duration of the relatively unorganized kinky or wavy condition of the individual hairs when waved by the heretofore permanent wave processes.

What is claimed is:

1. In a hair waving unit the combination of a casing, a removable cover for said casing, a series of parallel trough-like clamping plates shiftable transversely in said casing, complemen-

tary plates hinged to said clamping plates and movable therewith, latch means for holding said hingedly connected plates together at the free ends upon interposed tresses and means to shift the several adjacent clamping plates in opposite directions simultaneously and at uniform rate.

2. In a hair waving unit for initially effecting permanent waves of desired form comprising a series of parallel members adapted to clamp a tress of hair flatwise and transversely at spaced intervals along the length of said tress, means to shift said clamping members transversely of the tress and alternately in opposite directions for effecting a series of lateral undulations in the tress and a closable casing for enclosing said clamps and the tresses therein and adapted for heating interiorly of the casing whereby the tress may be baked.

3. In a hair waving unit for the permanent waving of hair, the combination of a series of complementary pairs of hair clamping members of arcuate cross section, a casing having parallel partitions between which said clamping members are slidably mounted, means actuatable from the exterior of the casing to simultaneously shift the clamps into staggered relation one to the other, means to tightly close said casing including a yieldable seal for the introduction of hair into said casing and means to introduce steam into said closed casing.

4. In combination an elongated casing, arcuate hair clamps adapted for positioning in staggered parallel relation within the casing and adapted to impart to a straight tress of hair a series of undulations in the direction of the depth of the casing when said clamps are closed upon the tress of hair, means for shifting the clamps to a reversely staggered relation in the casing whereby the successive clamped portions of the hair are shifted alternately in opposite directions for stretching the hair intermediate adjacent clamped portions and imparting to said hair a second series of undulations transversely of said first series, means to seal the casing with the hair in said stretched and doubly undulated condition and means to heat the interior of the casing for baking the hair in said predetermined wave form.

5. In a permanent waving device the combination of a casing, a series of clamps in the casing for imparting to an introduced tress of hair a series of undulations in the direction of the depth of the casing, means to shift said clamps whereby the hair is stretched and the undulations thereof are modified by a series of relatively transverse undulations, means to seal the casing and means to heat the interior of the casing for baking the tress in the stated undulating form.

6. In a permanent waving device the combination of a casing, a series of clamps in the casing for imparting to an introduced tress of hair a series of undulations in the direction of the depth of the casing, means to shift said clamps whereby the hair is stretched and the undulations thereof are modified by a series of relatively transverse undulations, means to seal the casing and means to introduce steam to the interior of the casing for baking the tress in the stated undulating form.

7. Permanent waving apparatus comprising a support plate for positioning above a head of hair to be waved, support rods telescopically and angularly adjustable on said plate, a potential heat source having outlets substantially corresponding in number to the number of rods, and a plurality of hair waving units for selective attachment to said rods each unit comprising a casing connectible to one of said rods and to said outlets, a series of shiftable clamps in the casing and means to shift the clamps into predetermined staggered relation, one to the other, within said casing.

8. In a hair waving unit the combination of a casing, transverse partitions in the casing, lower clamping plates of arcuate cross-section slidable between and in parallelism with the partitions, upper clamping plates hinged one on each lower clamping plate, a latch on each upper plate adapted to engage beneath the associated lower clamping plate, a yieldable pad between said plates, rotary means in the casing for effecting sliding movement of adjacent lower clamping plates in opposite directions, a removable crank for effecting movement of said rotary means, a removable rotatable mandrel at one end of the casing for winding up an excessive length of hair beyond the series of clamping plates, means to close the casing and means for interiorly heating the casing.

9. In a hair waving unit the combination of a pair of spaced partitions, a lower clamping member slidably guided for movement between and along said partitions, means comprising a threaded shaft engaging in threaded bores in said clamping member for effecting slidable movement of said clamping member, an upper clamping plate hingedly supported on the lower clamping plate and of an arcuate cross section such that it contacts said lower clamping member along a relatively narrow longitudinal section thereof, and a latch member on said upper clamping plate adapted to securely press the clamping plates together upon varying quantities of hair interposed between them.

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