

**Feb. 9, 1937.**

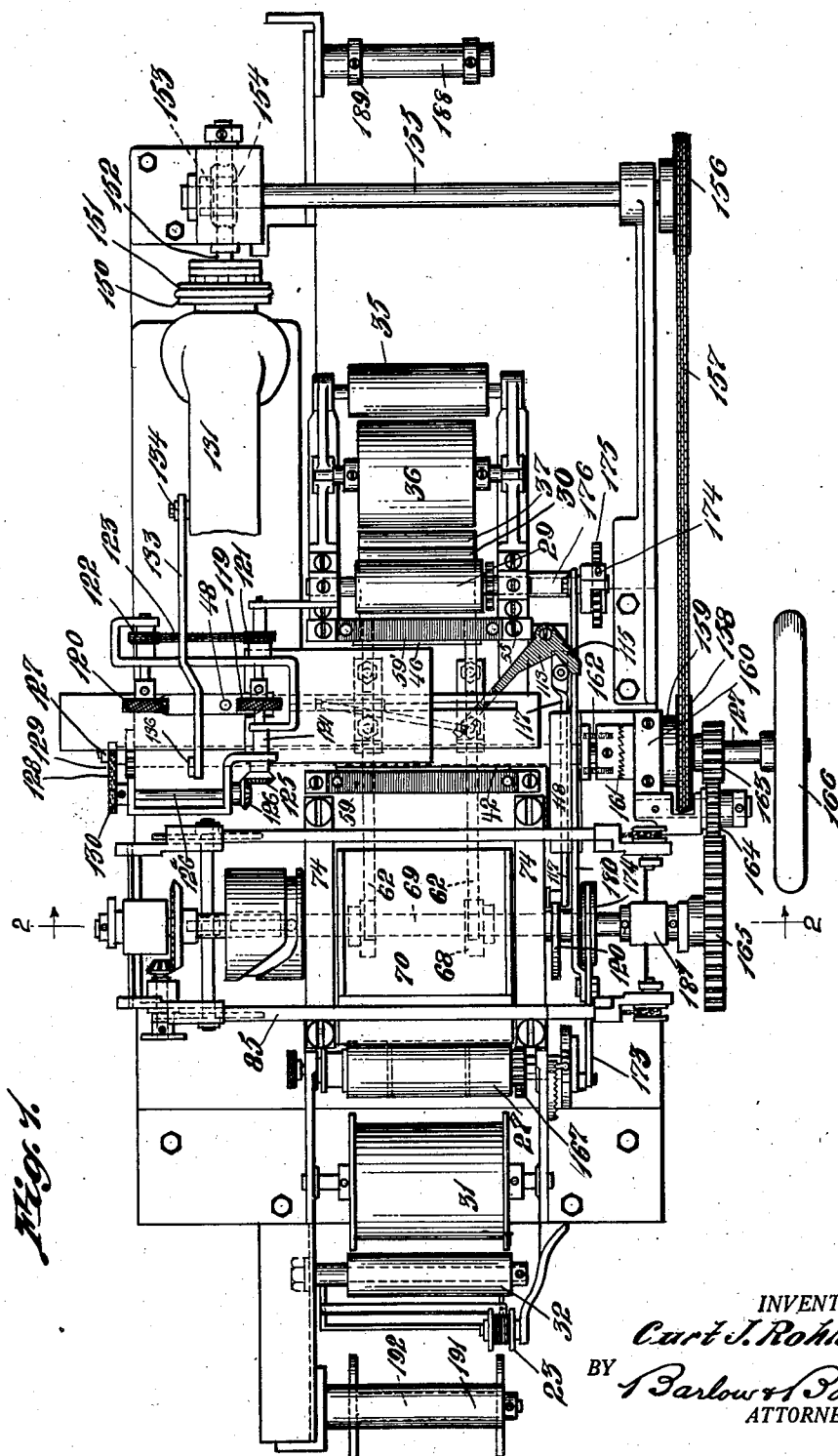
C. J. ROHLAND

**2,069,776**

# MACHINE AND PROCESS FOR MAKING HAIR WAVING PADS

Filed June 29, 1933

5 Sheets-Sheet 1



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# MACHINE AND PROCESS FOR MAKING HAIR WAVING PADS

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5 Sheets-Sheet 2

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MACHINE AND PROCESS FOR MAKING HAIR WAVING PADS

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5 Sheets-Sheet 3

*Fig. 5.*

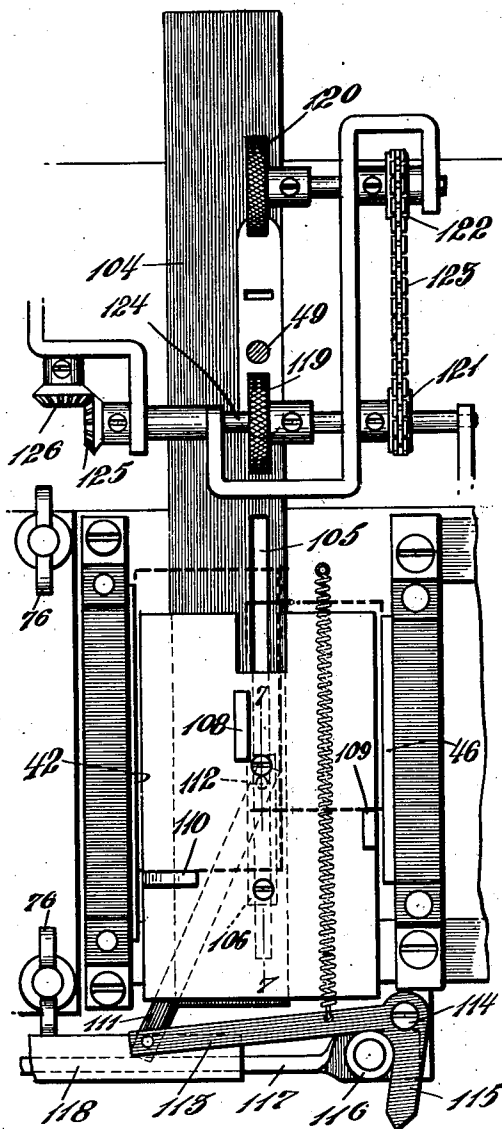


*Fig. 6.*

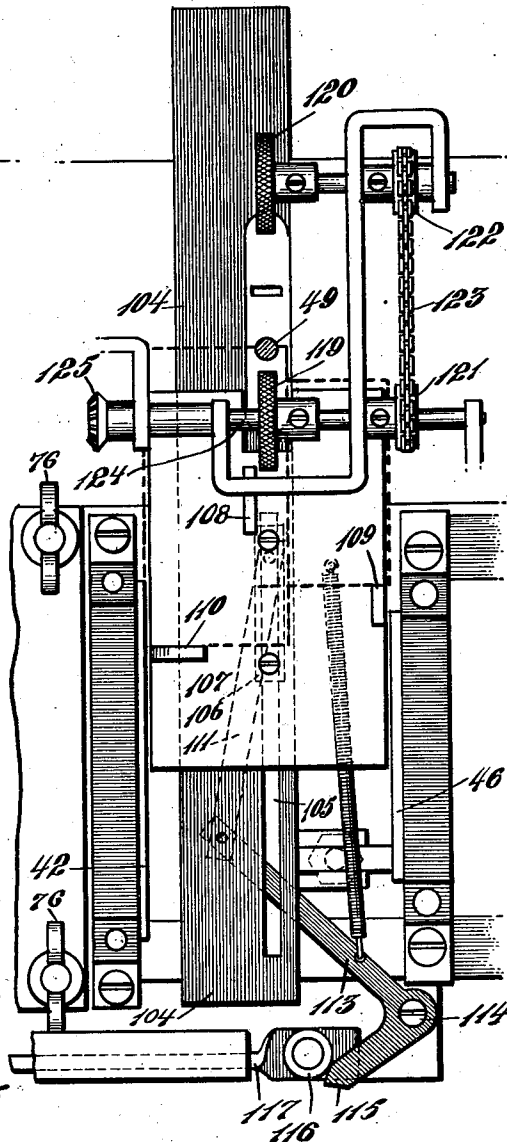


*Fig. 7.*

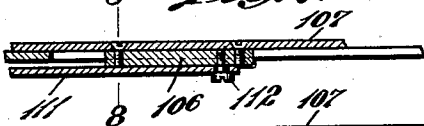


*Fig. 8.*



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Fig. 9.

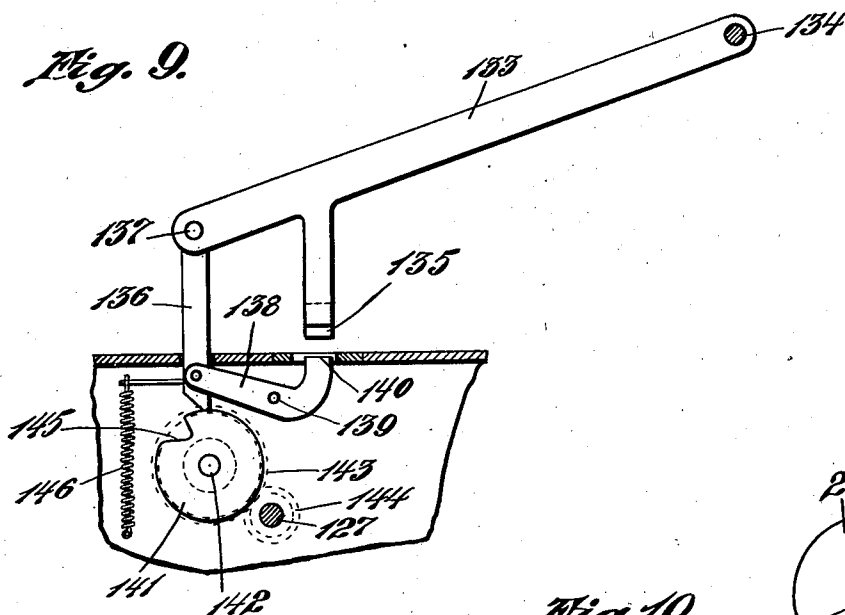


Fig. 10.

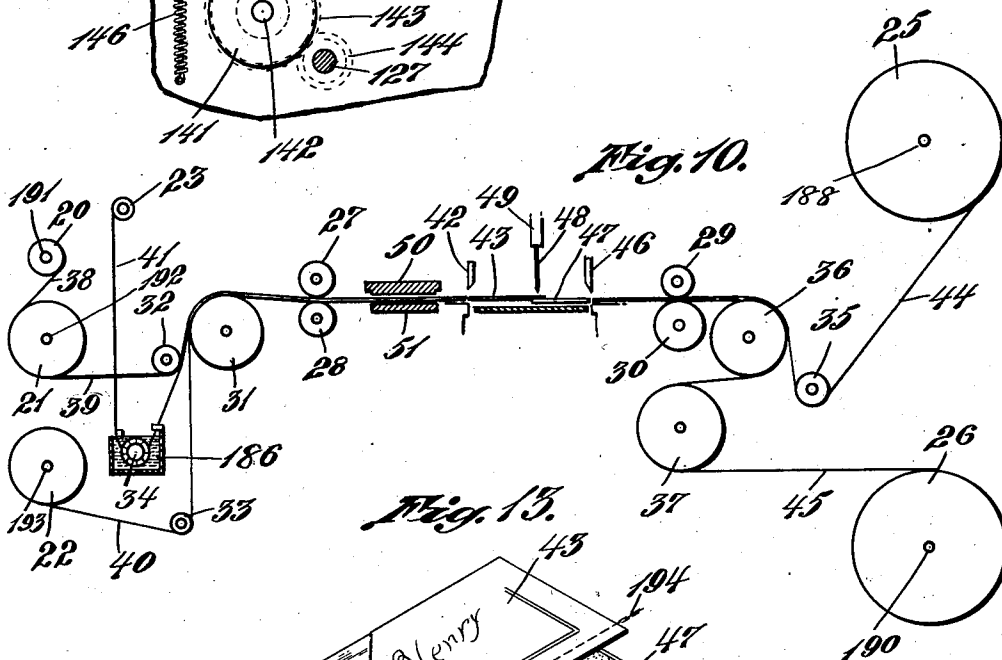


Fig. 13.

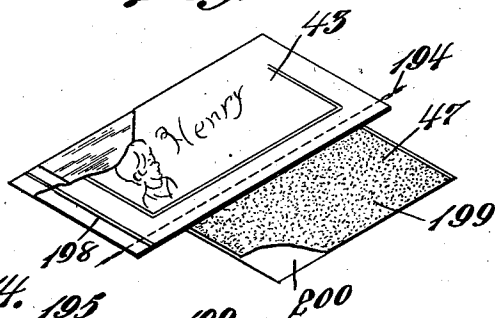
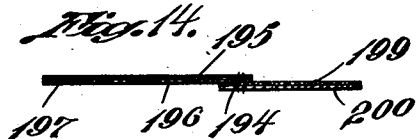


Fig. 14.



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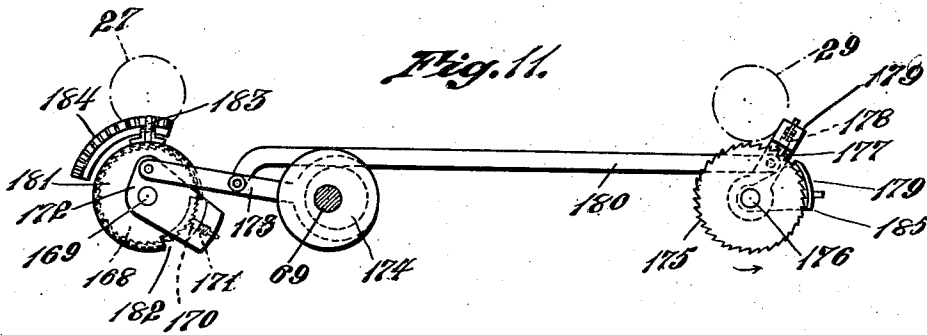
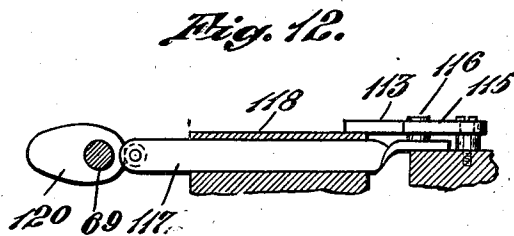
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MACHINE AND PROCESS FOR MAKING HAIR WAVING PADS

Filed June 29, 1933

5 Sheets-Sheet 5



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## UNITED STATES PATENT OFFICE

2,069,776

MACHINE AND PROCESS FOR MAKING HAIR  
WAVING PADSCurt J. Rohland, Seekonk, Mass., assignor, by  
mesne assignments, to The Nestle-Lemur Com-  
pany, New York, N. Y., a corporation of Ohio

Application June 29, 1933, Serial No. 678,162

14 Claims. (Cl. 112-2)

This invention relates to a machine for assembling sheet material, and has for one of its objects the mechanical formation without hand operations of pads such as are used for permanent hair waving.

Another object of the invention is the provision of an arrangement whereby a plurality of different webs of material may be assembled with a wire or some deformable member for maintaining the parts in position when in use.

Another object of the invention is the provision of the assembly of such web material and at the same time printing advertising matter or the like upon the outermost web, which will be conspicuous at the time of use.

Another object of the invention is the mechanical cutting of different plies of sheet material and sewing the plies together in partial overlapping relation.

Another object of the invention is the correlation of the different movements of the material that the desired operation and assembly of the plies of material may be performed thereon in a continuous and automatic manner.

A further object of the invention is to secure a proper partial overlapping of the different parts of the pad in order that the proper securing operation may be performed therein.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings:

Fig. 1 is a top plan view of the machine with the printing arrangement removed and with a part of the sewing apparatus broken away to better illustrate the operative movements of other parts of the machine.

Fig. 2 is a section on line 2-2 with the printing attachment in position.

Fig. 3 is a sectional view through a portion at the center of the machine illustrating the means for moving the cutter and on substantially line 3-3 of Fig. 4 with the carriage omitted.

Fig. 4 is a section on line 4-4 of Fig. 3.

Fig. 5 is a plan view of a portion of the machine on a larger scale than shown in Fig. 1 and illustrating the mechanism for feeding the work beneath the sewing apparatus.

Fig. 6 is a view similar to Fig. 5 showing the parts in a different position.

Fig. 7 is a section on line 7-7 of Fig. 5.

Fig. 8 is a section on line 8-8 of Fig. 7.

Fig. 9 is a fragmental view through the table

and showing the mechanism for operating the shearer for severing the thread.

Fig. 10 is a diagrammatic view illustrating the operating movement of the work.

Fig. 11 shows the manner in which the movement is given to the feed rolls.

Fig. 12 is a fragmental detailed view showing the transmission of power to the reciprocating slide or carriage which transmits the work for the sewing operation.

Fig. 13 is a perspective view of the finished article illustrating a design printed thereon.

Fig. 14 is a central sectional view thru the finished article.

In the formation of assembled sheets of material such as are used for pads for permanent hair waving or the like, it has been usual to use hand operation to a large extent in assembling these pads in the desired manner, and in order that this may be done completely mechanically or automatically without the need of hand operations, I have provided a machine which will assemble and print the entire pad automatically and count the same, and the following is a more detailed description of the present embodiment of this invention for accomplishing this result.

Referring to Fig. 10 which illustrates diagrammatically the use of my invention for assembling flannel, tinfoil, and a covering of paper therefor, as a hair waving pad and also a wire for maintaining the pad in the desired position on the hair, I have shown a roll of a web of tinfoil 20, a roll of a web of paper 21, another roll of paper 22 and a reel of wire 23, all on one side of the machine for feeding in one direction, while there is roll of a web of flannel 25 and a roll of web of absorbent paper 26 at the other side of the machine for feeding in the opposite direction. Each of these rolls or reel is suitably supported for rotation to be pulled by feed rolls designated 27 and 28 operating in one direction for the webs on one side of the machine and 29 and 30 operating in the opposite direction for the webs on the other side of the machine. There are also suitable guide roll or idler pulleys 31 and 32, 33 and 34 for the webs and wire which are fed in one direction and guide rolls or idler pulleys 35, 36 and 37 for the webs of flannel and paper which are fed in the other direction. The foil 38 is drawn between the papers 39 and 40 while a length of wire 41 is also drawn between the same papers as they are fed about the roll 31 and between the feed rolls 27 and 28. This assembly of sheets and wire is cut off by the cutter 42 to leave a severed portion 43 consisting of a plurality of plies of web

material. From the opposite end of the machine the flannel 44 and paper 45 are drawn between the feed rolls 29 and 30 and advanced beneath the cutter 46 where they are severed leaving a portion 47 consisting of two plies of material. The two severed portions 43 and 47 are then fed laterally of the travel of the webs and sewed together by a needle 48 secured in a suitable holder 49 for reciprocating the same. After the sewing operation is performed the stitches are severed and the pads are accumulated in a suitable container.

If it is desired, the web of paper 39 may be printed by a printing press 50 which may be operated upon the reciprocation of the cutters. A suitable bed 51 is provided beneath the platten of the printing press for supporting the web when the platen descends.

With this general view of the plan of procedure I will describe in more detail the mechanism for accomplishing these results.

The feed is by intermittent operation so that at the time the cutters descend or the printing takes place the work is stationary. It will, of course, be understood that a roll may be used for printing and by a rearrangement of the cutters and direction of feed the work may be fed continuously through the machine as disclosed in a separate application.

#### Operation of the cutters

Referring to Figs. 3 and 4 for the operation of the cutters, 42, and 46, 52 designates the bed of the machine upon which supports 53 are mounted to which a bracket 54 is attached by some suitable means such as a bolt 55. This bracket carries the stationary cutting blade 56 and is provided with two bores 57 to slidably receive the guide rods 58 secured together by a head 59 to which the movable cutter blade 42 is attached. These rods at their lower ends are secured together by a strap 60 which is engaged by the ends of the levers 62 pivoted at 62a and operated by cam 68 on shaft 69 to move the cutter 42 downwardly. The other cutter 46 is similarly mounted, the parts being correspondingly designated with the addition of a prime, and is operated in unison with the cutter 42 by reason of arm 61 engaging the strap 60', through the adjusting set screw 61a, said arm 61 being pivoted at 63 and connected to lever 66 through a projection 64 fitting in the bifurcated end 65 of this lever 66 which lever is pivoted at 67 and operated by the strap 60 upon depression of the same. The pivots 63 and 67 are mounted in a channel-shaped portion 69a secured to the bed 52 of the machine. The strap members 60 and 60' are in engagement with resilient rubber members 70 and 70' which may be compressed to permit the cutters to be forced downwardly after which they will expand to force the cutters upwardly. In some cases the resilient means 70' is sufficient for this purpose and may be anything of an elastic nature.

#### Printing mechanism

There is also operated from the shaft 69 a printing press which is illustrated in Fig. 2, although omitted from Fig. 1. The work table 70a is suitably supported (by means not shown) from the bed 52 of the machine in position for the traveling webs to pass over. Guide posts 71 are mounted upon the bed 52, each having an axial bore 72 which receives guide rods 73 of a carriage 74, which has a frame shaped portion 79 with the shaft 69 passing therethrough. This carriage 75 has the printing platten 75 bolted thereon by

means of wing nuts 76 engaging bolts 77 of the carriage, and is held in suitable spaced relation by collars 78. The frame portion 79 of this carriage embraces a cam 80 on the shaft 69 to move the carriage downwardly so that the platten will engage with the work, while this same cam, by engagement with the upper part of the carriage will move the carriage upwardly for inking and the presentation of a fresh portion of work.

In order to ink the surface 82 of the printing platten inking rolls 83 are mounted on a carriage 84 which is reciprocated in opposite channel guides 85 by a sprocket chain 86 connected to opposite sides of the guide and extending over guide pulleys 87, 88 and 89 and driven by sprocket gear 90 which in turn is rotated by the pinion gear 91 operated by rack 92. This rack 92 is moved by the cam follower 93 engaging the cam groove 94 in the drum 95 which is mounted upon the shaft 69.

The ink is transmitted to the rollers 83 from a suitable ink reservoir 95 by a train of rollers 96, 97 and 98, the latter of which engages the inking rolls 83. The entire train of rolls is driven through sprocket 99 by a sprocket chain 100 from the sprocket gear 101 which is driven through the beveled gears 102 and 103 the latter being secured to the shaft 69.

#### Sewing

Referring to the carriage device for moving the severed portions of web 43 and 47 into the sewing device for attaching them together I will refer particularly to Figs. 5 and 6 in which there is a table portion 104 suitably supported above the bed of the machine. A slot or guideway 105 is provided in this table portion in which a slide member 106 is mounted which is secured to the plate 107 which receives the work indicated by dotted lines as engaging the abutments 108, 109 and 110 to position the work properly upon the plate for its movement laterally of the movement of the traveling webs. The feed rolls 29 and 30 operate to feed the portion 47 of the work to position faster than the feed of the material from the opposite direction so that this portion 47 is positioned prior to the positioning of the portion 43, which portion is raised by the abutment 108 so that it will have its marginal edge overlap the marginal edge of the portion 47.

This slide member 106 is reciprocated by means of a link 111 pivotally secured as at 112 to the slide 106, which link is connected to the bell crank lever 113 pivoted as at 114 and with the arm 115 engaging the roll 116, which roll is mounted upon the end of a link 117 reciprocally mounted in a guideway 118 and operated by the cam 120 mounted upon the shaft 69, (see Fig. 1). This plate 107 is shown in Fig. 5 in the position in which it receives the portions 43 and 47 of the web which are severed after which the cam operates to force this plate 107 laterally to position the work beneath the roll 119 to feed the same beneath the sewing needle and thence beneath the feed roll 120 and from the machine. The feed rolls 119 and 120 are rotated in unison from the sprocket gears 121 and 122 by a sprocket chain 123, the roll 119 being secured to shaft 124 which is driven by beveled gears 125 and 126, the latter of which receives its power from the shaft 127 through sprocket chain 128 and sprocket gears 129 and 130, gears 126 and 130 being secured to shaft 126a. In Figs. 5 and 6, I have omitted the sewing machine which is of the regular type of construc-

tion, the needle carrying head 49 of which is illustrated in section in these figures.

#### Severing of thread

5 The upright and a portion of the overarm of this sewing machine is illustrated in Fig. 1 at 131 and mounted upon the upright portion of this machine there is a thread severing device which is more particularly illustrated in Fig. 9, which 10 illustrates a lever 133 pivoted at 134 upon the upright of the sewing machine and which has provided thereon a cutter blade 135. This lever 133 is also provided with an operating arm 136 pivoted thereto as at 137, which arm is also connected to 15 the lower jaw 138 of the severing device. This lower jaw is pivoted at 139 and is provided with a cutting edge 140 which is so arranged as to cooperate with the cutter 135 for severing the thread which sews the portions 43 and 47 of the web material together. The arm 136 rests upon a cam 141 mounted upon a shaft 142 which is driven from the shaft 127 by suitable intermeshing gears 143 and 144.

As the cam 141 rotates it permits the arm 136 25 to drop into a cut out portion 145 by reason of the spring 146 tending to pull the arm down whereupon the cutter 135 descends and the cutter 140 rises to nicely shear and sever the thread from the pad.

#### Power transmission

In order to understand the general operation of the machine the drives of the different parts will be now described.

30 Power is supplied from a motor located generally below the sewing standard 131 (but not shown) through belt 150 to pulley 151 which drives the sewing machine. A shaft 152 is also driven from this pulley 151 and upon which there is mounted a worm 153 which drives a worm gear 154 mounted upon a main shaft 155. This shaft has a sprocket gear 156 mounted at one end which drives the sprocket chain 157 and sprocket gear 158 formed as a part of the drum 159 which drum is freely rotatable about shaft 127 and itself, rotatably 40 supported in the bearing 160, and provided with ratchet teeth forming one face of a clutch. The other member of which clutch is slidably secured to the shaft 127 and forced into engagement with the part 161 by springs 162. This shaft 127 45 in turn drives the shaft 69 through a train of gears 163, 164 and 165, the latter of which is secured to shaft 69.

A hand wheel 166 is mounted upon the shaft 127 for convenient manual operation of the machine 55 for positioning the parts for starting the machine or other manipulation. The clutch 161 is so designed that it will transmit motion in one direction by slip of the clutch to permit the sewing machine to remain stationary, it being understood that the sewing machine which has a worm gear and worm connection between the hand wheel and it cannot be so driven or moved.

#### Feeding mechanism

65 Motion is transmitted from the shaft 69 to the feed rolls 27, 28, 29 and 30 intermittently. The rolls 27 and 28 are geared together as at 167 and operated by a ratchet 168 (see Fig. 11) mounted upon the shaft 169 to which the lower roll 28 is 70 secured, which ratchet is operated thru a pawl 170 held in position by a spring 171, both being mounted upon a rockable member 172 which is reciprocated by an arm 173 by means of an eccentric 174 fixed upon the shaft 69. The feed rolls 75 29 and 30 are also fed by ratchet mechanism thru

a ratchet wheel 175 fixed upon a shaft 176 which has the roll 30 secured thereto. This ratchet wheel 175 is moved by a pawl 177 forced into engagement with the teeth thereof by a spring 178 both mounted on the rockable member 179 which 5 is swingable about the shaft 176 and which member is oscillated by a link 180 connected to arm 173. Thus as this eccentric operates both feed rolls are simultaneously rotated for feeding the webs toward each other to the cutters. 10

The amount of movement imparted to each roll may be varied. In Fig. 11, I have shown a casing 181 enveloping the ratchet wheel, which casing is cut away as at 182, to permit the pawl to engage the ratchet wheel and which may be adjusted and 15 held in position by means of a dog 183 engaging a rack 184 fixed to some suitable portion of the machine. This casing may be adjusted so that the pawl will be moved out of engagement with some of the teeth by its riding upon the edge of 20 the casing so that by its position the effective throw will be governed. In the same manner a shield 185 is adjustably mounted for controlling the effective throw of pawl 177.

The wire 41 in its passage from the reel 23 25 extends thru a reservoir of adhesive 186 and is drawn into position between the webs 39 and 40 by the feed rolls 27 and 28 that it may be more securely held in place in the work.

Thus the feed rollers 29 and 30 will draw in 30 the webs of material as 44 from the reel 25 suitably mounted upon the spindle 188 and held between stops or abutments 189 and guided about the pulleys 35 and 36, as illustrated in Figs. 1 and 10 and will also draw in the web of material 35 26 from spindle 190 vertically below the spindle 188. At the opposite side of the machine the web of tinfoil 39 will have its reel mounted upon a spindle 191 while the web material 39 will have its reel 21 mounted upon a spindle 192 vertically 40 below it and the material 40 will have its reel 22 mounted on the spindle 193, also in vertical alignment with the spindles 191 and 192, all of which together with the wire 41 will be drawn into the machine by the feed rolls 27 and 28 to be oper- 45 ated upon by the mechanism as above described so as to cut off several plies of material designated 43 and 47 and pass these beneath the sewing machine for attaching them together by a line of switching 194, as illustrated in the finished 50 pad shown in Fig. 13, thus a pad is provided which has an upper layer of paraffine paper 195, a lower ply of paraffine paper 196 and a layer of tinfoil 197 between them with a strip of wire 198 extending along one side of the pad. The other portion of 55 the pad consists of a piece of felt 199 and a piece of absorbent paper 200, which portions are joined together by stitchings 194 as above mentioned, all formed in an automatic manner as will be apparent from the above description. 60

Counters (not shown) may be suitably mounted upon a bearing 187 for counting a number of rotations of the device from which the number of pieces formed may be calculated. Various other counting devices (not shown) may be operated such as from the reciprocation of the severing mechanism illustrated in Fig. 9, to count the number of pieces formed. This counting mechanism may also cause the machine to be stopped upon any given number of pieces having been 70 formed that packaging of the work may be more conveniently had.

The foregoing description is directed solely towards the construction illustrated, but I desire it to be understood that I reserve the privilege of 75

resorting to all the mechanical changes to which the device is susceptible, the invention being defined and limited only by the terms of the appended claims.

5 The present application is continued in part in applications Serial No. 683,613 filed August 4, 1933, and Serial No. 37,285 filed August 22, 1935.

The present application is adapted for making hair waving pads both for spiral and Croquignole hair waving.

10 It is to be understood, however, that all these variations and alterations as well as any other changes or modifications within the scope of the invention are all to be included herein and the invention is not to be limited to the specific embodiment above illustratively set forth.

I claim:

1. In a machine for making hair waving pads of the type which will assemble together a plurality of sheet materials including a sheet of an absorbent material, a sheet of a nonabsorbent material and a sheet of metal foil by sewing them together along one of their respective edges, said machine being provided with holders for continuous rolls of said absorbent sheet material, said paper sheet material and said metal foil sheet material, and runways for receiving said sheet materials when they are taken off said rollers during assembly, sewing together, separation and imprinting of said hair waving pads; the combination in said machine of means for feeding a plurality of sheets of material in different directions, means for severing portions from said sheets of material, and means for attaching said severed portions together, said attaching means including a sewing machine construction for moving said pads away from said aforementioned means while sewing said severed sheet materials together to form said hair waving pad.

2. In a machine for making hair waving pads of the type which will assemble together a plurality of sheet materials including a sheet of an absorbent material, a sheet of a nonabsorbent material and a sheet of metal foil by sewing them together along one of their respective edges, said machine being provided with holders for continuous rolls of said absorbent sheet material, said paper sheet material and said metal foil sheet material, and runways for receiving said sheet materials when they are taken off said rollers during assembly, sewing together, separation and imprinting of said hair waving pads; the combination in said machine of means for feeding a plurality of sheets of material, means for severing portions from said sheets of material, means for positioning said severed portions so that some of said sheets partially overlap other sheets, and means for attaching the overlapping parts of said severed portions together, said attaching means including a sewing machine construction for moving said pads away from said aforementioned means while sewing said severed sheet materials together to form said hair waving pad.

3. In a machine for making hair waving pads of the type which will assemble together a plurality of sheet materials including a sheet of an absorbent material, a sheet of a nonabsorbent material and a sheet of metal foil by sewing them together along one of their respective edges, said machine being provided with holders for continuous rolls of said absorbent sheet material, said paper sheet material and said metal foil sheet material, and runways for receiving said

sheet materials when they are taken off said rollers during assembly, sewing together, separation and imprinting of said hair waving pads; the combination in said machine of a plurality of webs of material, means for feeding said webs in different directions, means for positioning said webs with portions of one web overlapping portions of another web, means for severing portions from a plurality of said webs, and means for attaching said overlapping portions together, said attaching means including a sewing machine construction for moving said pads away from said aforementioned means while sewing said severed sheet materials together to form said hair waving pad.

4. In a machine for making hair waving pads of the type which will assemble together a plurality of sheet materials including a sheet of an absorbent material, a sheet of a nonabsorbent material and a sheet of metal foil by sewing them together along one of their respective edges, said machine being provided with holders for continuous rolls of said absorbent sheet material, said paper sheet material and said metal foil sheet material, and runways for receiving said sheet materials when they are taken off said rollers during assembly, sewing together, separation and imprinting of said hair waving pads; the combination in said machine of a plurality of webs of material, means for feeding said webs in different directions, means for severing portions from each of said plurality of webs, attaching means located at one side of the travel of said webs, and means for transferring the severed portions of said webs to said attaching means, said attaching means including a sewing machine construction for moving said pads away from said aforementioned means while sewing said severed sheet materials together to form said hair waving pad.

5. In a machine for making hair waving pads of the type which will assemble together a plurality of sheet materials including a sheet of an absorbent material, a sheet of a nonabsorbent material and a sheet of metal foil by sewing them together along one of their respective edges, said machine being provided with holders for continuous rolls of said absorbent sheet material, said paper sheet material and said metal foil sheet material, runways for receiving said sheet materials when they are taken off said rollers during assembly, sewing together, separation and imprinting of said hair waving pads; the combination in said machine of means for feeding webs of material in opposite directions toward each other, means for severing the webs when in adjacency, and means for attaching the severed portions together, said attaching means including a sewing machine construction for moving said pads away from said aforementioned means while sewing said severed sheet materials together to form said hair waving pad.

6. In a machine for making hair waving pads of the type which will assemble together a plurality of sheet materials including a sheet of an absorbent material, a sheet of a nonabsorbent material and a sheet of metal foil by sewing them together along one of their respective edges, said machine being provided with holders for continuous rolls of said absorbent sheet material, said paper sheet material and said metal foil sheet material, runways for receiving said sheet materials when they are taken off said rollers during assembly, sewing together, separation and imprinting of said hair waving pad; the combina-

tion in said machine of means for feeding webs of material in opposite directions toward each other, means for severing the webs when in adjacency, and means for stitching the severed portions together including means to move said severed portions out of the path of movement in which they have been previously fed.

7. In a machine for making hair waving pads of the type which will assemble together a plurality of sheet materials including a sheet of an absorbent material, a sheet of a nonabsorbent material and a sheet of metal foil by sewing them together along one of their respective edges, said machine being provided with holders for continuous rolls of said absorbent sheet material, said paper sheet material and said metal foil sheet material, runways for receiving said sheet materials when they are taken off said rollers during assembly, sewing together, separation and imprinting of said hair waving pads; the combination in said machine of means for feeding webs of material in opposite directions toward each other, means for severing the webs when in adjacency, and means for stitching the severed portions together including means to move said severed portions at right angles to the movement in which they have been previously fed.

8. In a machine for making hair waving pads of the type which will assemble together a plurality of sheet materials including a sheet of an absorbent material, a sheet of a nonabsorbent material and a sheet of metal foil by sewing them together along one of their respective edges, said machine being provided with holders for continuous rolls of said absorbent sheet material, said paper sheet material and said metal foil sheet material, runways for receiving said sheet materials when they are taken off said rollers during assembly, sewing together, separation and imprinting of said hair waving pads; the combination in said machine of means for feeding a plurality of webs of material from each side of the machine in opposite directions toward each other, means for severing each of the pluralities of webs when the opposite webs are in adjacency, and means for attaching the severed portions together.

9. In a machine for making hair waving pads of the type which will assemble together a plurality of sheet materials including a sheet of an absorbent material, a sheet of a nonabsorbent material and a sheet of metal foil by sewing them together along one of their respective edges, said machine being provided with holders for continuous rolls of said absorbent sheet material, said paper sheet material and said metal foil sheet material, runways for receiving said sheet materials when they are taken off said rollers during assembly, sewing together, separation and imprinting of said hair waving pads; the combination in said machine of means for feeding a plurality of webs of material from each side of the machine in opposite directions toward each other and also a wire from one side of said machine, said wire to be positioned between two of said webs; means for severing each of the pluralities of webs when the opposite webs are in adjacency, and means for attaching the severed portions of the pluralities of webs together so that a wire may be inserted in one of the pluralities of webs.

10. In a machine for making hair waving pads composed of a sheet of a non-permeable wrapper and an attached sheet of an absorbent material, the latter to receive liquid and to be placed next

to the hair and to be covered and wrapped by said non-permeable wrapper, said machine including a holder for a roll of a continuous strip of the wrapper material and a holder for a roll of a continuous strip of the absorbent material, a sewing machine device with a reciprocating needle, drawing and assembly means to draw the strips of the wrapper and absorbent materials off the rolls and to assemble them in superimposed position where they may be sewed together by said sewing machine along one edge thereof, cutter means to cut the strips of said wrapper and absorbent materials to form pieces of the desired length to make up said pad, and synchronizing means to synchronize said drawing and assembling means, and said cutting means, said holders being positioned at opposite sides of said machine and said drawing and assembly means including means for advancing said strips from said holders toward each other in a horizontal plane and at an angle of 180° to each other until they overlap, means to operate said cutter means to sever the overlapped strip ends, and means to remove said overlapped and severed pieces at an angle of 90° to the direction of advance to said sewing machine.

11. In a machine for making hair waving pads composed of a sheet of a non-permeable wrapper and an attached sheet of an absorbent material, the latter to receive liquid and to be placed next to the hair and to be covered and wrapped by said non-permeable wrapper, said machine including a holder for a roll of a continuous strip of the wrapper material, a holder for a roll of a continuous strip of the absorbent material and a holder for a supply of wire, a sewing machine device with a reciprocating needle, drawing and assembly means to draw the strips of the wrapper absorbent materials and wire off the rolls and to assemble them in superimposed position where they may be sewed together by said sewing machine along one edge thereof, cutter means to cut the strips of said wrapper, absorbent materials and wire to form pieces of the desired length to make up said pad, and synchronizing means to synchronize said drawing and assembling means, and said cutting means, and means for adhesively attaching the wire to said wrapper strip.

12. In a machine for making hair waving pads composed of a sheet of a non-permeable wrapper and an attached sheet of an absorbent material, the latter to receive liquid and to be placed next to the hair and to be covered and wrapped by said non-permeable wrapper, said machine including a holder for a roll of a continuous strip of the wrapper material, and a holder for a roll of a continuous strip of the absorbent material, a sewing machine device with a reciprocating needle, drawing and assembly means to draw the strips of the wrapper and absorbent materials off the rolls and to assemble them in superimposed position where they may be sewed together by said sewing machine along one edge thereof, cutter means to cut the strips of said wrapper and absorbent materials to form pieces of the desired length to make up said pad, and synchronizing means to synchronize said drawing and assembling means, and said cutting means, said drawing and assembly means including a central table movable transversely to the direction of said strips, means to actuate said cutter means to cut said strips after said strips have been advanced to superimposed position upon said table, and means to move said table out of the direction of advance

of said strips to carry said cut pieces to the sewing machine.

13. In a machine for making hair waving pads composed of a sheet of a non-permeable wrapper and an attached sheet of an absorbent material, the latter to receive liquid and to be placed next to the hair and to be covered and wrapped by said non-permeable wrapper, said machine including a holder for a roll of a continuous strip of the wrapper material, and a holder for a roll of a continuous strip of the absorbent material, a sewing machine device with a reciprocating needle, drawing and assembly means to draw the strips of the wrapper and absorbent materials off the rolls and to assemble them in superimposed position where they may be sewed together by said sewing machine along one edge thereof, cutter means to cut the strips of said wrapper and absorbent materials to form pieces of the desired length to make up said pad, and synchronizing means to synchronize said drawing and assembling means, and said cutting means, and a carrier to receive the cut pieces and to carry them

transversely away from the direction of advance of the strips to the sewing machine.

14. A process of making hair waving pads from continuous strips of wrapper and absorbent materials which comprises feeding the strips in substantially a horizontal plane toward each other, advancing the strips until their end portions are in overlapping relationship, severing the adjacent portions of both strips to form two overlapping severed strip sections, carrying the overlapping severed sections away from the line of feed of the strips, so that the severed ends of the strips may again be advanced to said overlapping relationship, sewing the overlapped severed portions together after they have been carried substantially away from the line of feed of the strips toward each other and advancing the severed strip ends again to overlapping position while said sewing operation takes place on the previously severed overlapping sections, said strips being fed toward each other at an angle of  $180^\circ$  and being carried away at an angle of  $90^\circ$ .

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