

S. COHN.
MANTLE SEWING MACHINE.
APPLICATION FILED MAY 13, 1907.

956,943.

Patented May 3, 1910.

3 SHEETS—SHEET 1.

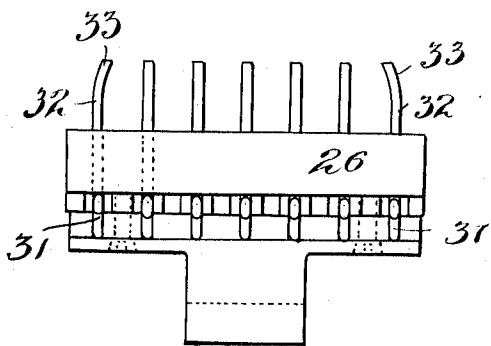
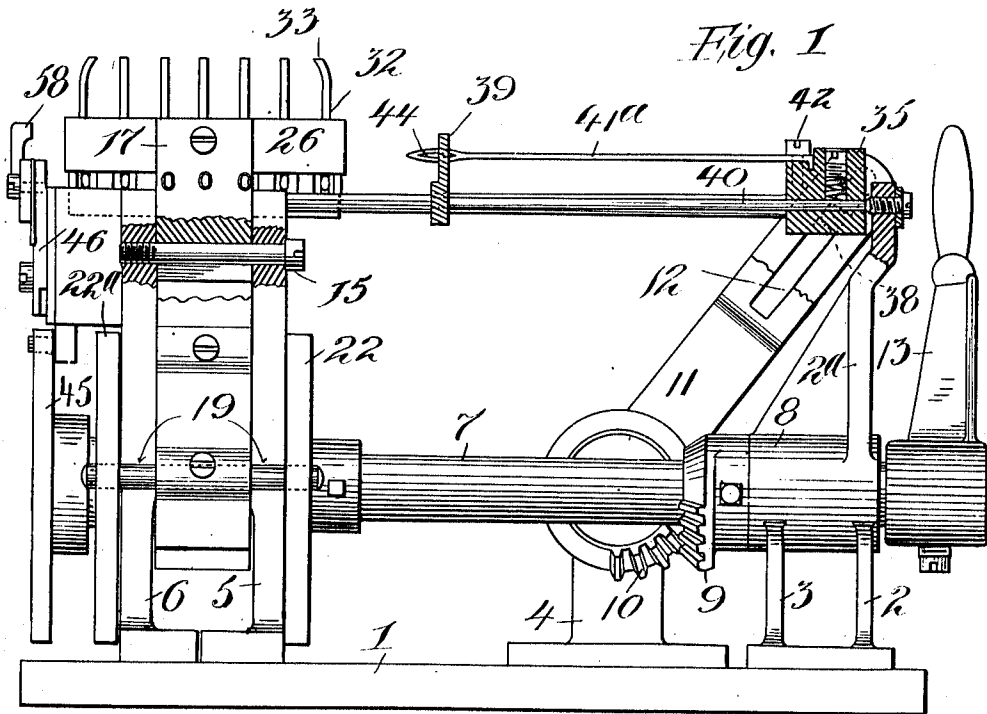


Fig. 7

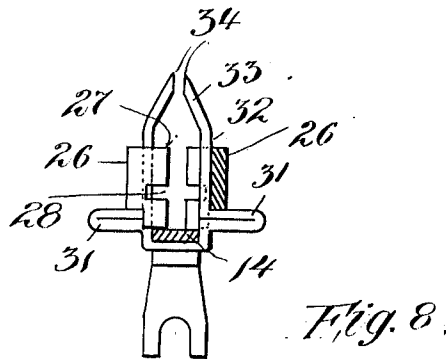


Fig. 8.

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3 SHEETS—SHEET 2.

Fig. 2.

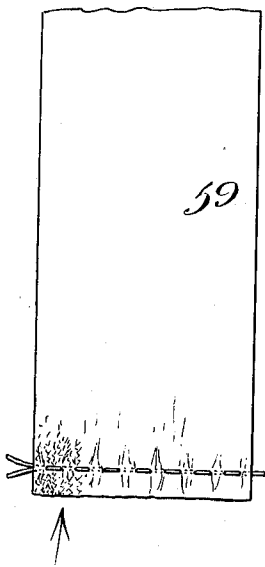
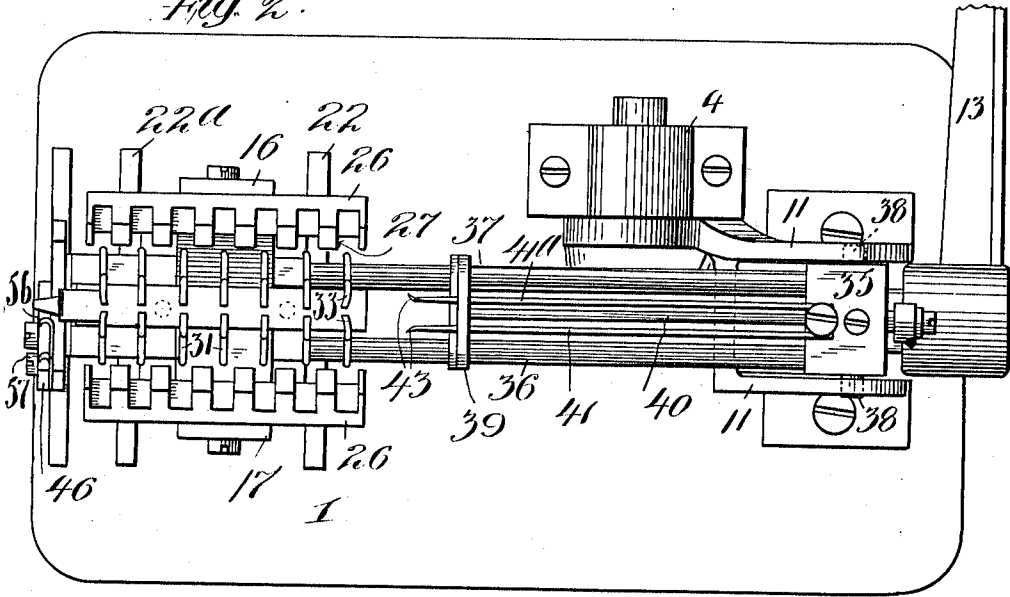


Fig. 11.

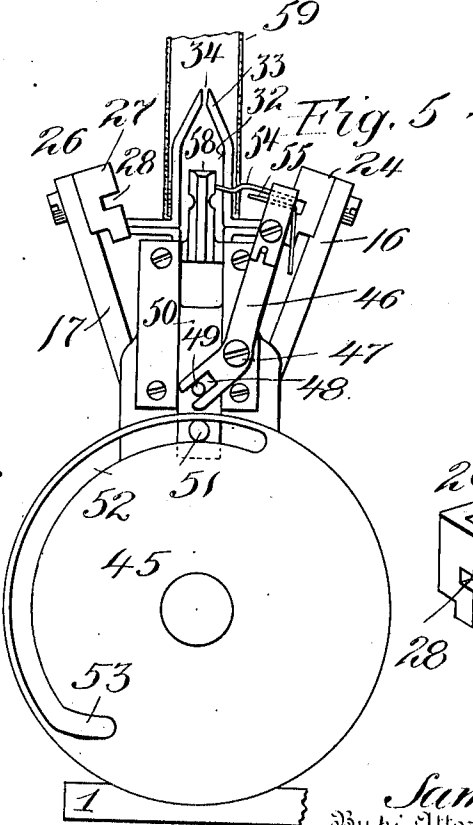


Fig. 5.

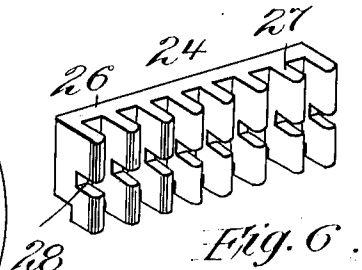


Fig. 6.

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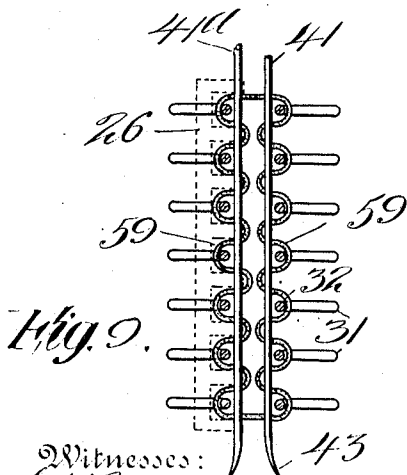
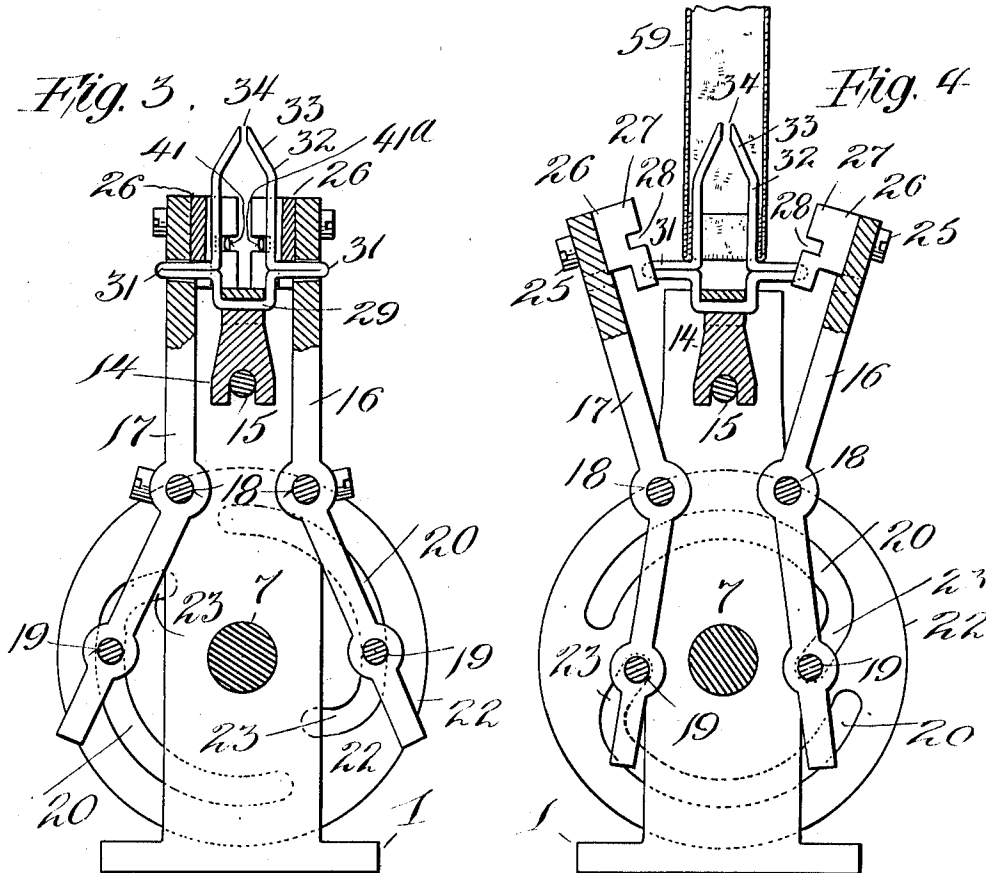
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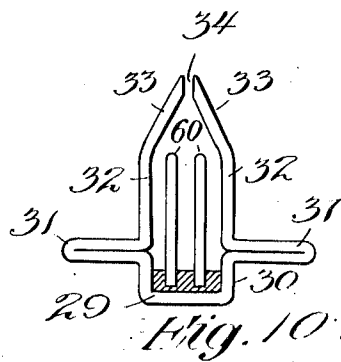
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE

SAMUEL COHN, OF NEW YORK, N. Y., ASSIGNOR TO THE MACHINE MANTLE SEWING COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

MANTLE-SEWING MACHINE.

956,943.

Specification of Letters Patent.

Patented May 3, 1910.

Application filed May 13, 1907. Serial No. 373,195.

To all whom it may concern:

Be it known that I, SAMUEL COHN, a citizen of the United States, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Mantle-Sewing Machines, of which the following is a specification.

My invention relates to machines for sewing the tops of incandescent gas mantles, and my object is to produce a more efficient machine for such purpose, which will be much cheaper to produce and in which various parts pertaining to sewing may be renewed at a very slight cost.

Various parts of the operating mechanism are described and claimed in patents issued to me, and the features which are new in this case will more fully appear from the description hereafter.

In the drawings forming part of this application, Figure 1 is a front elevation of a sewing machine made in accordance with my invention, with portions broken away to show various parts in cross section. Fig. 2 is a plan view thereof. Figs. 3 and 4 are end elevations partly in section, showing the parts in different positions, the mantle being omitted in Fig. 3. Fig. 5 is an end elevation showing the operation of the side crimpers and threading hooks. Fig. 6 is a perspective view of the side crimper. Fig. 7 is a front elevation of the center crimper. Fig. 8 is an elevation, partly in section, showing the relationship of the side crimpers and center crimper. Fig. 9 is a plan view showing the position of the mantle upon the crimpers. Fig. 10 is an elevation of the modified form of center crimper, and Fig. 11 is an elevation of a mantle after coming from the machine.

The machine is built upon a platform 1, from which extends various standards 2, 3, 4, 5, and 6, for the purpose of supporting the various operating parts of the machine. The longitudinal shaft 7 is journaled in a support 8 on the standards 2 and 3 and has a circumferential gear 9 angularly disposed so as to cause a miter connection with the gear 10 carried upon a lever 11, and arranged so that the gear 9 will remain idle during a portion of the rotation of the shaft. The lever 11 is journaled to the standard 4 and has at its upper bifurcated end slots 12 connecting with a needle carrier. The

end of the shaft 7 is provided with an operating handle 13 which, when revolved transmits action through the gears 9 and 10 and rocks the lever 11 on its fulcrum.

Secured to the upper part of the standards 5 and 6 is a supporting bed or plate 14 to which the center crimper is attached, the plate 14 being secured to the standards by the supporting rod 15.

I provide a plurality of oppositely disposed levers which are fulcrumed to the frame adapted to carry the side crimpers in and out of action with the center crimper and the levers are adapted to be operated from the same source as the needle carrier. These levers 16 and 17 are fulcrumed on pins 18 to the standards and diverge from the point of fulcrum near the lower end and rods 19 on the levers engage grooves 20 in revoluble cams 22, and 22^a fixed to the shaft 7 so as to move therewith. The grooves 20 are substantially annular and are turned toward the center of the cam at the points 23 so that during the greater portion of the revolving of the cam wheels 22, 22^a, the side operating arms 16 and 17 will remain in a certain position as will be seen hereinafter, till the inwardly projecting portion 23 of the grooves forces the rod 19 inwardly and rocks both of the levers simultaneously. The upper ends of the levers 16 and 17 are provided with side crimpers 24 which cooperate with the center crimper for the purpose of corrugating the mantle when it is placed upon the center crimper. The side crimpers are secured to the levers 16 and 17 by suitable screws 25, and these crimpers consist of a longitudinal plate 26 having lateral projections 27 which are slightly longer than the width of the plate 26. Each of the lateral projections 27 is provided with slots 28, the various slots in the projections being in alinement with each other for the purpose of receiving the sewing needle.

A center crimper which is secured to the supporting plate by screws or other suitable means, consists of a series of resilient members which are preferably formed of wire bent in such shape that the ends may be separated for the purposes set forth below, and which will be arched toward each other at the top. They are formed (see Fig. 10) with a flat portion 29 which is secured to the supporting plate 14, and extend vertically

at the point 30 a slight distance when they turn outwardly in the form of loops 31 so as to form a series of supports for the purpose of determining the position of the lower end of the mantle when it is placed upon the center crimper. From these loops, 31 the rods project upwardly at 32 and terminate in converging ends 33 which approach each other at the top and which are preferably chamfered on their ends 34 so that they will have a proper engaging surface when brought close together. These supporting and crimping arms are spaced apart up on the supporting bed, as will be seen in Fig. 9, so that the plate 26 of the side crimpers will come above the supports 31 and the lateral projections 27 will enter between the various rods 32 so that the mantle material will be crimped between the side and center crimpers, to form corrugations, as shown in Fig. 9. When clamped as shown in Fig. 3 the slots 28 in the side crimpers align within the rods 32.

The needle mechanism of my machine consists of a needle carrier 35 which travels on two longitudinal rods 36 and 37 which are supported by the frame of the machine. The block 35 is provided with pintles 38 which engage in the elongated slots 12 of the lever 11 so that if the lever is rocked, its engagement with the pintles 38 will cause the block 35 to travel upon the supporting rods 36 and 37 and the extreme end of the movement being determined by the vertical needle guide 39 which is also secured upon the supporting rods 36 and 37, and which comes against the ends of the side crimpers. The needle guide is held in its proper position by a longitudinal rod 40 which has an end adapted to abut against the standard 2^a. The needle guide 39 is provided with two apertures which are longitudinally disposed so the needles 41 and 41^a can travel therein. The needles are secured upon the carrying block 35 by the bolts 42. The form of this needle, as will be seen by the plan view, is different from the ordinary form of needle, and this forms a material part of my present invention. It is my intention to form these needles so that the points will be out of the axial line of the needle in reverse positions. That is, the point of one needle will be to the right and the other to the left of the center line of the machine. Broadly considered, the point of the needle is to one side of the center line of the needle but in the construction which I prefer to use the end of the needle is bent at 43 so that the points project beyond the lateral limits of the needles in reverse directions. In other words, the points of the two needles diverge.

The needles, as will be seen in Fig. 1, are provided with the usual eyes 44 for receiving the string. There is provided means for passing the ends of the tying string through

the needle eyes, and it may be seen by referring to Figs. 1, 2, and 5. It consists of a lever 46 which is fulcrumed to a support at the point 47. The lower end of this lever is provided with a slot 48 in which there is an engaging pin 49 carried by a vertical reciprocating plunger 50. The plunger 50 has a pintle 51 which engages in cam groove 52 of the cam 45. The cam 45 is secured on the shaft so as to be operated from the common operating source of the machine and the groove 52 which is annularly disposed for the greater portion of its length, turns inwardly at 53, similar to the grooves of the previously described cams.

The upper end of the lever 46 is provided with a plurality of hooks 54 and 55, the former being placed above the latter and having its end curved downwardly and projecting beyond the end of the hook 55. The loops 56 and 57 of these hooks are longitudinally disposed and are adapted to pass through the eyes of the needles when the latter are plunged forward. At the end of the machine and near the threading hooks, I provide a vertical post 58 so that the loop in the shirring string will engage over the post and resist the pulling of the string by the needles at the extreme end of their movement.

The operation of my machine is as follows:—The side crimpers and carrying arms are in the positions shown in Fig. 4, when the mantle is placed over the ends of the crimping rods 32 and the lower end rests upon the several supports 31. When placing the mantle in this position, the ends 34 of the crimping rods being curved inwardly will not interfere with the operation of the machine. When the side crimpers are in this position the needle carriage is also in the position shown in Fig. 1 or the extreme throw, and the pointed end of the needles are supported and guided by the guide 39. Also the lever 46 carrying the threading hooks will be thrown outwardly as is shown in Fig. 5. After placing the mantle upon the center crimper, the operator turns the operating handle 13 when the shaft 7 will be rotated and cause the various movements of the machine to take place, the gear 9 lying idle during the first action, of the shaft. The result will be as follows:—The revolving of the cams 22 and 22^a through the groove and rod connection of the levers 16 and 17, will cause the levers to be rocked on their fulcrum when the side crimpers will be thrown inwardly on opposite sides and will press the material of the mantle in corrugations between the several rods of the center crimper. The side-crimpers will be forced by this movement so that the rods 32 which are resilient, will be brought together at the upper ends when they will become more solid and resist further pressure.

The needles 41 and 41^a then pass forward through the slots 28 of the side crimpers, and within the center crimper, through the corrugations in the mantle material, until the carriage 35 reaches its extreme movement when the eyes of the needles will project beyond the last corrugation of the mantle material. Further action will then throw the lever 46 inwardly carrying the threading hooks when the loops of the latter will pass through the respective eyes of the needles, the hook 54 passing through the eye of the left needle, while the loop of the hook 55 passes through the eye of the right needle looking from the point as viewed in Fig. 5. The opposite ends of a tying string are then placed over the loops 56 and 57 of the hooks 54 and 55. The loop formed in the string is thrown outside of the engaging post 58. The action of the lever 13 is then reversed when the lever 46 will be rocked and the threading hooks will draw the ends of the tying string through the eyes of the needles and the needles will travel back to their former positions, carrying with them the opposite ends of the tying string when the loop formed at the opposite side of the mantle will engage over the post 58 so that an extended loop will be formed on one side of the mantle for the purpose of handling and for the purpose of manipulating the shirring along the tying string. The further movement of the shaft rocks the levers 16 and 17 and throws the side crimpers out of action leaving the resilient rods 32 to slightly separate at their upper ends. The mantle is then lifted off the center crimper when the tying string will pass between the ends of the rods 32 so that the mantle may be released from the center crimper. The tying string is then tied and cut. The needle guide 39 moves forward during the operation until it strikes the ends of the side crimpers. Upon its return the rod 40 strikes the standard 2^a and stops the guide 39 at the position shown in Fig. 1.

By making the center crimper of a series of bent rods, I am enabled to greatly cheapen the cost of my machine. Heretofore, it has been necessary to cut the center crimper out of a solid block of metal, requiring a great deal of machine work thereon. In this construction the bent wires are very cheaply formed and put together upon a support so that the cost of the center crimper is reduced to a minimum. If the center crimper or any of its parts should wear out, it may be readily replaced.

By forming the rods 32 so that their ends may come together at the top, they will resist the pressure of the side crimpers, and when released they will separate to allow the withdrawing of the tying string in the mantle as the string has been passed through the corrugations within the center crimper.

I prefer to form the vertical bars 32 and the longitudinal support 31 of single pieces of metal, as this is the cheapest construction.

By making the needle with the point slightly off the center line of the needle and especially by combining that needle in its relation with the other parts of my machine, I am enabled to procure a more efficient device.

As the needles pass through the material and between the rods of the center crimper, it is not absolutely necessary to provide any means between the needles for guiding them in their movement because the divergent points tend to draw the needles outwardly and the needles have a tendency to find the various corrugations of the mantle material. Furthermore, the divergent point of the needle has the advantage of passing through the mesh of the mantle rather than through the strands of the material which I have found to be a result of a divergent point needle. If, however, it is found necessary to provide a central guide for the needles, the rods 60 may be provided extending upwardly within the limits of the bars 32 and which will prevent the needles from projecting beyond certain limits.

Various changes may be made in the different elements of this machine and without departing from the spirit of my invention, and without departing from the scope of the following claims.

Having described my invention, what I claim is:—

1. In a mantle sewing machine, a center crimper comprising a double row of vertical rods having free upper ends, the upper ends of the rods of the several rows converging toward each other, means for crimping a mantle on said center crimper and means for passing a string through the mantle when crimped.

2. In a mantle sewing machine, a center crimper, comprising a double row of upright resilient rods, having free ends, means for crimping the mantle on the center crimper and adapted to force the ends of the rods of the several rows together, and means for passing a string through the mantle while crimped.

3. In a mantle sewing machine, a center crimper comprising a double row of upright resilient rods, having free and converging ends, means for crimping a mantle on the center crimper and adapted to force the converging ends of the rods of the several rows together, and means for passing a string through the mantle while crimped.

4. In a mantle sewing machine, a center crimper comprising a double row of upright resilient rods having free, chamfered, and converging upper ends, means for crimping a mantle on the center crimper and adapted to force the chamfered ends of the rods of the

several rows together, and means for passing a string through the mantle while crimped.

5. A center crimper composed of a series of laterally projecting supports, a series of upright rods having free and converging ends and means for holding said rods in proper relation to one another.

6. A center crimper for mantle sewing machines composed of a series of wires bent to form laterally projecting loops for supporting a mantle, a double row of upright rods having free and converging ends and means for holding said rods in proper relation to one another.

7. In a mantle sewing machine, means for corrugating the fabric of a mantle comprising suitable jaws and reciprocating needles, said needles being divergently bent and constructed to adjust themselves if displaced during reciprocation, and a threader adapted to supply the eyes of said needles with thread.

8. In a mantle sewing machine, means for corrugating the fabric of a mantle comprising suitable jaws and reciprocating needles, the points of said needles being bent divergently so as to be capable of adjustment in case of displacement.

9. In a mantle sewing machine, means for corrugating the mantle fabric, having passages therethrough, a reciprocating carrier carrying needles adapted to enter the passages in the corrugating means, the points of said needles diverging for the purpose of compensating for any displacement the needles may suffer in passing through the corrugating means.

10. In a mantle sewing machine, a center crimper comprising a double row of upright rods having free and converging ends, means for crimping a mantle on said rods, needles adapted to pass between the double row of upright rods and means between said needles and within the said double row of upright rods for guiding the said needles.

11. In a mantle sewing machine, means for crimping a mantle, a plurality of needles adapted to pass through the mantle fabric and means for threading said needles, com-

prising an arm carrying a plurality of hooks which pass through the eyes of the several needles to receive a string.

12. In a mantle sewing machine, means for crimping a mantle, a plurality of needles adapted to pass through the mantle fabric and means for threading said needles, comprising a lever fulcrumed to a support, and provided with superimposed hooks, one of which is bent to bring the loop in alinement with the loop of the under hook, the loops being adapted to pass through the eyes of the said needles, and means for rocking said threading lever.

13. In a mantle sewing machine, means for crimping a mantle, a plurality of needles adapted to pass through the fabric and means for threading said needles comprising a movable member, with superimposed hooks, one of which is bent to bring the loop in alinement with the loop, of the under hook, the loops being adapted to pass through the eyes of the said needles, and means for operating the needle carrying means.

14. A center crimper composed of a series of upright wires in two parallel rows having free and converging ends, and means for supporting said wires in an upright position.

15. The combination with a plurality of reciprocating needles, a shirring device with a thread-carrying device composed of an arm having two distinct parts adapted to pass through the eyes of the needles in the same direction at predetermined positions thereof, each of said parts passing through the eye of a different needle.

16. The combination of a plurality of reciprocating needles, a shirring device with a thread-carrying device having two hooks adapted to pass through the eyes of needles in the same direction, at predetermined positions thereof.

Signed this 9th day of May, 1907.

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Witnesses:

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