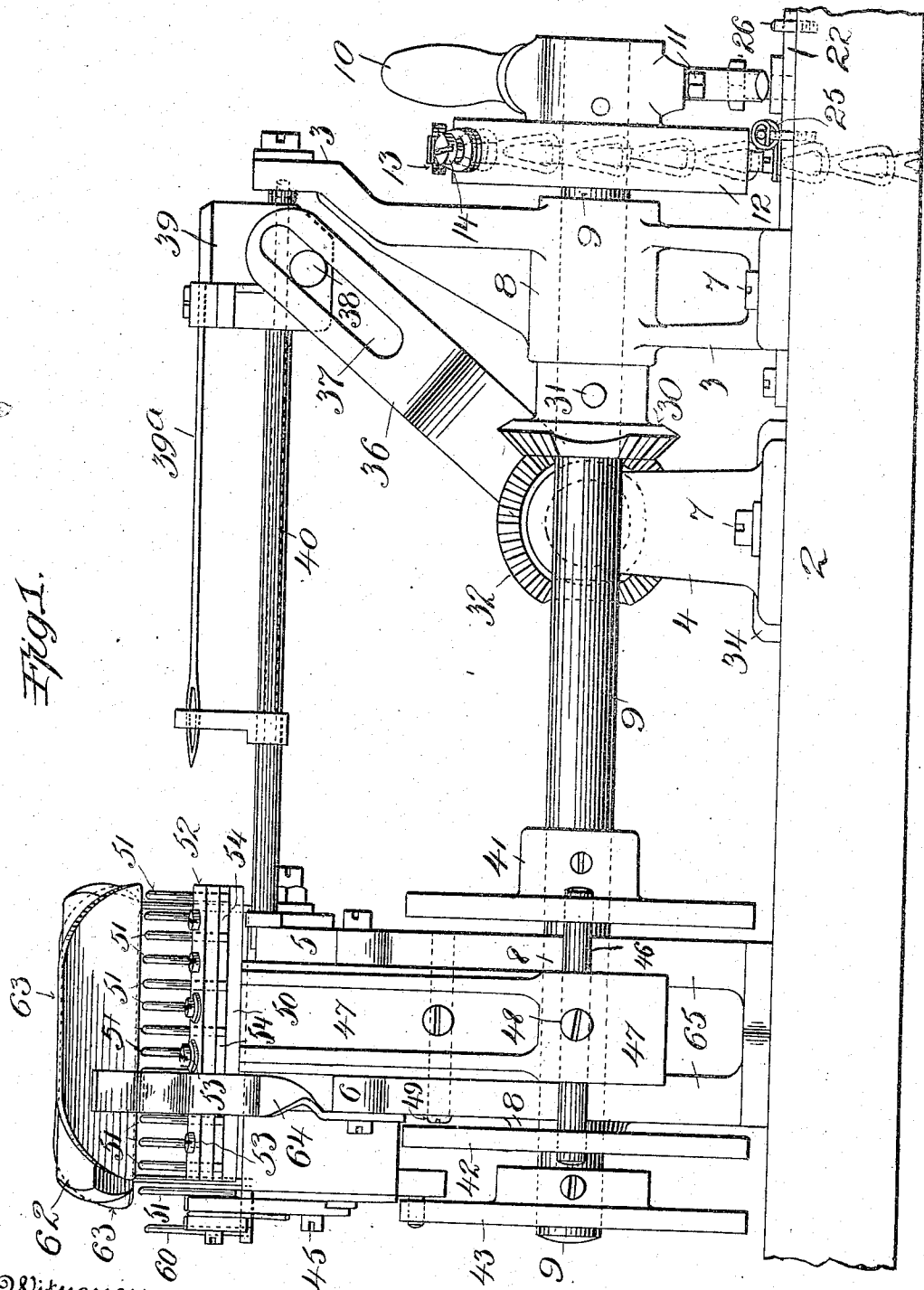


937,511.

S. COHN.
MANTLE SHIRRING MACHINE.
APPLICATION FILED DEC. 16, 1908.

Patented Oct. 19, 1909.
4 SHEETS—SHEET 1.

Fig. 1.



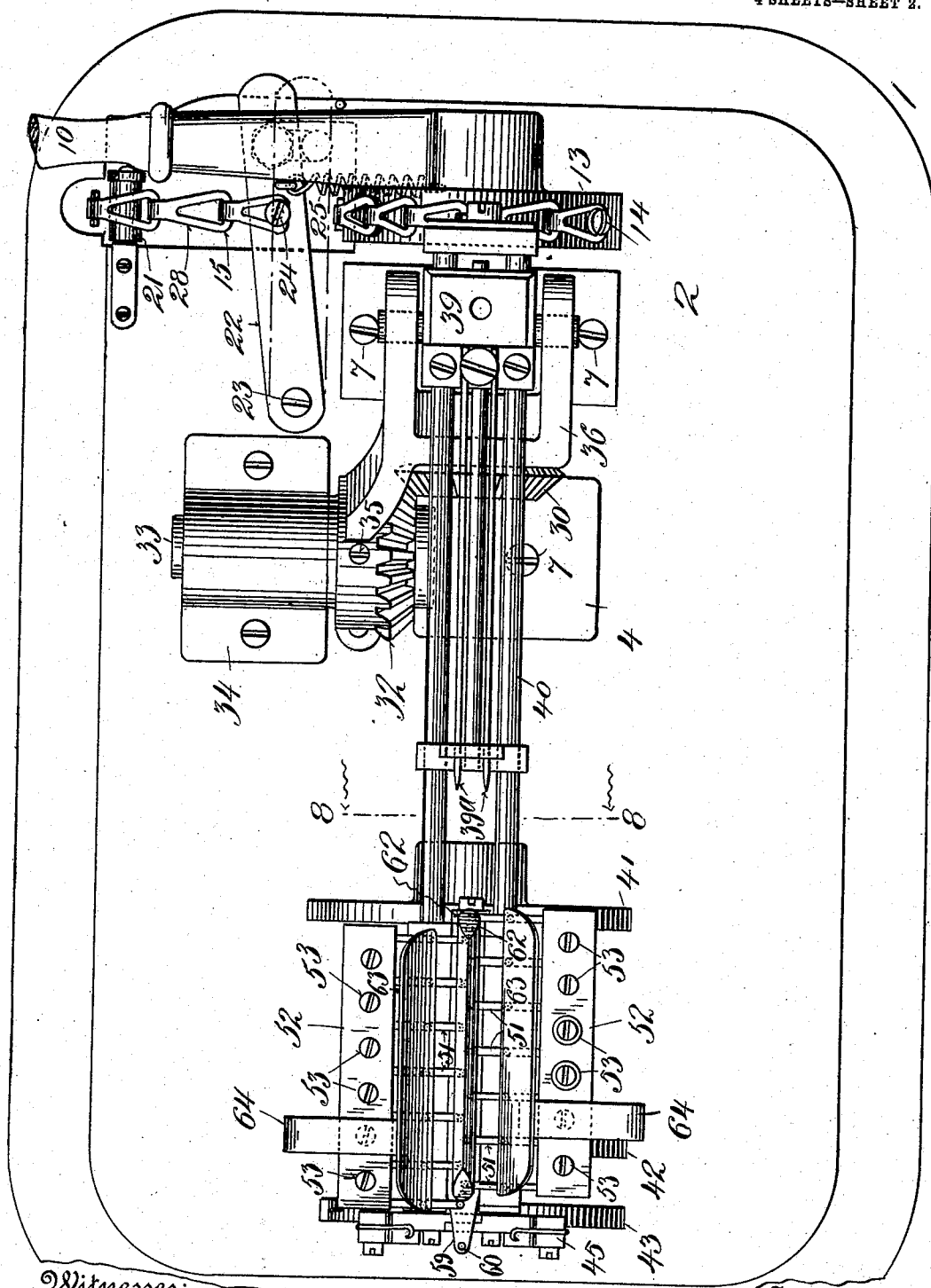
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Fig. 2.

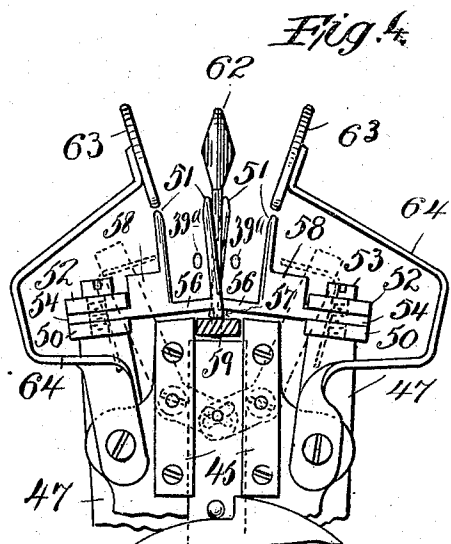
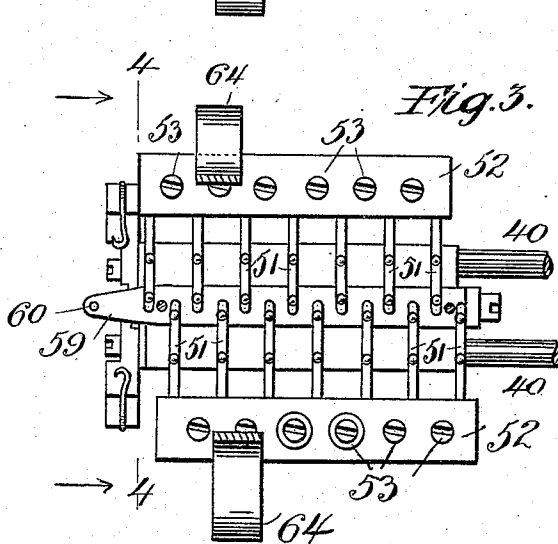
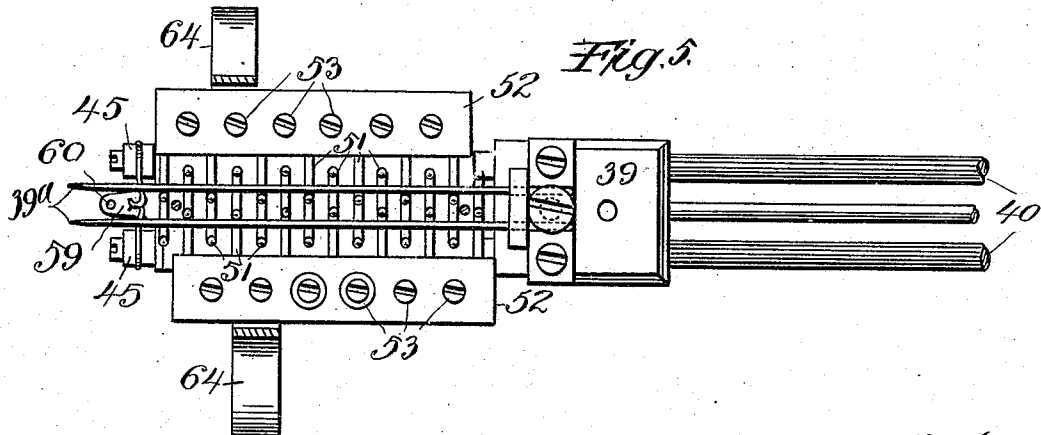
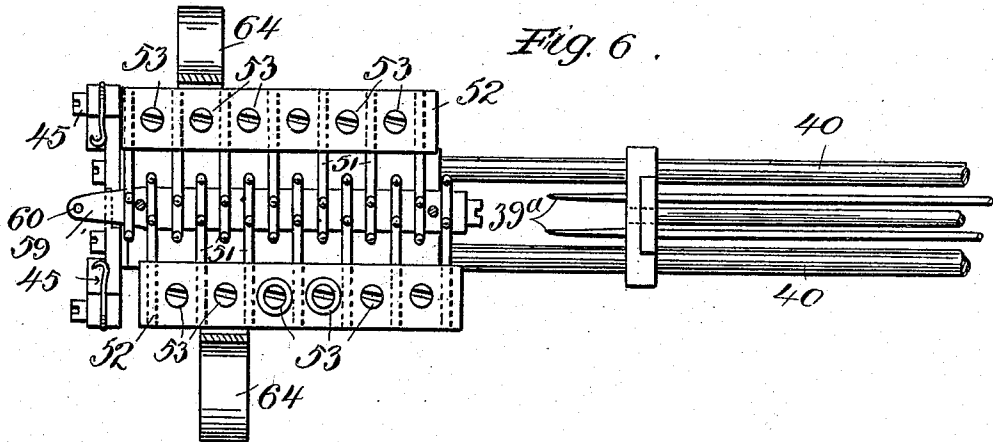
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4 SHEETS—SHEET 3.



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MANTLE SHIRRING MACHINE.
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Fig. 7.

Fig. 8.

Fig. 9.

Fig. 10.

Fig. 11.

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UNITED STATES PATENT OFFICE.

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MANTLE-SHIRRING MACHINE.

937,511.

Specification of Letters Patent.

Patented Oct. 19, 1909.

Application filed December 16, 1908. Serial No. 467,760.

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 a new and useful Improvement in Mantle-Shirring Machines, of which the following is a specification.

The object of my invention is to provide a machine of this class in which a stocking for a mantle will be held in sinuous lines, and while stretched a pair of parallel needles are then passed through in one direction and then in the opposite direction, the second time drawing a shirring string through the perforations just made in the stocking. This object is accomplished by my invention, one embodiment of which is described below.

For a more particular description of my invention, reference is to be had to the accompanying drawings forming a part hereof, in which:

Figure 1 is a side elevation of my improved machine. Fig. 2 is a plan view of the same. Fig. 3 is a plan view of the fingers which hold the stocking in sinuous lines, the fingers being shown in the position they occupy when receiving the stocking. Fig. 4 is a sectional view taken on the line 4—4 of Fig. 3, looking in the direction of the arrows. Fig. 5 is similar to Fig. 3, except that the fingers are shown in the position they occupy just after the needles have passed through the stocking and the threaders have passed through the eyes of the needles. Fig. 6 is similar to Fig. 5, except that it shows the fingers and needles in the positions they occupy when the stocking is withdrawn from the apparatus. Fig. 7 is a rear elevation of the machine showing the position of the actuating lever when the mechanism is in the position it occupies as shown in Fig. 6. Fig. 8 is a sectional view taken on the line 8—8 of Fig. 2, looking in the direction of the arrows. Fig. 9 shows the fingers in the position occupied in Fig. 3, with a stocking in place. Fig. 10 is similar to Fig. 5 except that a stocking is shown bent in sinuous lines by the fingers and the needles and needle-block are shown in dotted lines. Fig. 11 is a perspective view of a pair of fingers made integral with a common base. Fig. 12 is a perspective view of a portion of a stocking

after the shirring string has been passed therethrough by the machine shown in the other illustrations above referred to. Fig. 13 is a sectional view taken on the line 13—13 of Fig. 12, looking in the direction of the arrows.

Throughout the various views of the drawings, similar reference characters designate similar parts.

My improved machine 1 is provided with a base 2 on which are standards or uprights 3, 4, 5 and 6 respectively. Each of these uprights is secured to the base 2 by means of suitable cap screws 7 or other suitable means. The uprights 3, 5 and 6 are provided with suitable bearings 8 for the main shaft 9 which oscillates therein. At its rear end the main shaft 9 is provided with a lever or handle 10 fixed thereto by set screw 11 or in any other suitable manner. This lever 10 forms a handle by means of which the machine is operated. Next to the lever 10 and also fixed on the shaft 9 is a disk 12 on which runs a chain 13 secured by a screw 14 or other suitable means, as shown. This chain 13 passes through a suitable opening 15 in the base 2 and then runs downwardly to a second chain 16 which is connected to a treadle 17 on the floor 18. This treadle 17 may be secured to the floor 18 in any suitable manner, as by a hinge 19. A third chain 20 runs from the upper end of the chain 16 through the opening 15* over a small pulley 21 to a latch 22 pivoted at 23 on the top of the base 2. The chain 20 is secured to the latch 22 by means of a screw 24 or in any other suitable manner. Near the rear end of the latch 22 is a spring 25 which normally draws the latch 22 to a pin 26 which acts as a stop secured in the base 2. The latch 22 carries a suitable cap screw 27 on which is a lock nut 28 so that it may be adjusted for height and be impinged by a lug 29 secured to and projecting from the lever 10. For a purpose that will appear below, this latch 22 is so mounted that it may be drawn by the chain 20 from under the lug 29 whereby the lever 10 is shifted to the position shown in dotted lines in Fig. 7. On the other side of the upright 3, that is, the forward side, the shaft 9 is provided with an interrupted bevel gear 30 which is

fixed thereto in any suitable manner as by a pin 31 passing through the shaft and a portion of the gear. The gear 30 meshes with a smaller gear 32 set on a shaft 33 mounted at right angles to the main shaft 9 and journaled in the upright 4 and also in the upright 34 next to the upright 4. The bevel gear 32 is preferably fixed to the shaft 33 by a screw 35 or by other suitable means, and extending upwardly from the gear 32, and preferably fixed thereto, is the arm 36. The arm 36 is bifurcated at its upper end and each of the bifurcations is provided with a slot 37 to receive a pin 38 passing through the needle block 39 which slides on suitable guides 40 mounted at their rear ends in the upright 3 and at their forward ends in the upright 5. As the needle block 39, needles 39^a, the guides 40, the arm 36, gears 32 and 30 and their mountings and parts incident thereto are the same as shown in my Patent No. 798090, dated August 29th, 1905, a more detailed description is unnecessary. It is sufficient to say that the needles shown in this case have the same identical structure and movement as described in my patent aforesaid.

The main shaft 9 also carries cams 41, 42 and 43, which cams are fixed to said shaft and mounted the same in all respects and made in the same identical form as shown in my said patent. The slots 44 in the cams 41 and 42 are exactly the same as shown in the said patent and are concentric with the axis of the main shaft 9 except at one end of each where a sharp turn is made toward the axis. The cam 43 actuates the needle-threading mechanism 45 which is identically the same as shown and described in said patent, so that a further description of it is unnecessary. The slots 44 of the cams 41 and 42 engage suitable pins 46 fixed near the lower ends of the levers 47 by set screws 48. The levers 47 are fulcrumed by pins 49 journaled in the uprights 5 and 6 so that they are vertically disposed and between said uprights or partially between them. To the upper ends of the levers 47 are secured laterally extending plates 50 on which are clamped the fingers 51 by a second clamping plate 52 and suitable screws 53. These fingers are so disposed as to present a plurality thereof disposed in alinement transversely of the length of the stocking. If desired, the fingers 51 may be separated by suitable spacing blocks 54 which are held in place by suitable screws 53, and this is the preferred construction. As shown in Fig. 11, the fingers 51 are formed integral with the laterally extending base 56 and below this base extends a short lug 57 and above it another lug 58 which is adapted to rest snug against the plate 52. As shown in Figs. 3, 5, 6, 9 and 10, and in some of the other figures, the fingers 51 mounted on the same plate 50 are

set between the fingers 51 mounted on the opposite plate 50 for the reason that, as will appear below, the shirring machine embodying my invention herein described gives the stocking a sinuous contour before the needles are passed through, with two sets of fingers which are movable in opposite directions. There is no fixed center member that has anything to do with the manipulation of the stocking into the sinuous form.

The uprights 5 and 6 also carry a laterally extending and horizontal plate 59 on which is a pin 60 to aid in tying, as described in my previous patent above referred to, and this plate 59 also has uprights 61 which carry a central guide 62 for a purpose that will appear below. On each side of the center guide are side guides 63 mounted at the upper ends of bent arms 64 fixed to the upright 6 at their lower ends. These arms 64 are bent as shown so as not to interfere with the plates 50 and the parts secured thereto on the levers 47. The guides 62 and 63 are so arranged and disposed that when the stocking 65 is inserted in the apparatus the fingers 51 will not interfere with it until it is properly in place. Except for this function the guides can be omitted entirely and the machine would operate perfectly without them. The guides merely simplify the placing of a stocking in the machine.

The operation of my improved machine is as follows: Assuming the parts to be as shown in Fig. 7, the treadle 17 is depressed thereby withdrawing the latch 22 from under the lug 29 and causing the lever 10 to assume the position shown in dotted lines in Fig. 7. The fingers 51 then occupy the position shown in Fig. 4. The stocking 65 is then inserted with its lower end folded in the usual manner, and is slid over the center guide 62 and along the fingers 51 until it rests on the bases 56. The handle 10 is then thrown over in an anti-clockwise direction, thereby throwing the fingers on the opposite plates 50 between each other, and flexing the stocking as shown in Fig. 10. It will be observed that the stocking 65 is flexed so that the needles in passing through pass between fingers on opposite plates and when the shirring string 66 is drawn through it also passes between the same fingers on opposite plates. When the fingers are in the position indicated in Fig. 10 and the stocking is correspondingly flexed between them, the needles pass through the stocking, the shirring string is passed through the needle-eyes by the threaders and then the needles withdraw the shirring string on the return movement. If the latch 22 and the parts connected therewith were not used the lever 10 would return to the position indicated in dotted lines in Fig. 7. This would cause the fingers 51 farthest from each plate 50 to which they are secured to become entangled

in the shirring string and would prevent the stocking from being withdrawn. This difficulty is entirely overcome by the latch 22 and the parts connected therewith. The spring 25 keeps the latch 22 normally under the projection 29 with the result that, when the lever 10 is thrown over toward its initial position, it is stopped as shown in Fig. 7 by the lug 29 impinging against the cap screw 27, when the fingers will be held in almost but not quite, the position they occupy while the needles are passing through the stocking, with the result that the stocking may be withdrawn without difficulty and without in any way interfering with the fingers. Pressure on the treadle then withdraws the latch 22, as above described, and pulls the lever 10 into the position indicated by dotted lines in Fig. 7, when the machine is ready for another mantle or stocking. This operation may be repeated indefinitely and as often as desired.

While I have shown and described one embodiment of my invention, it is obvious that it is not restricted thereto, but is broad enough to cover all structures that come within the scope of the annexed claims.

What I claim is:—

1. In a machine of the class described, the combination of a plurality of vertically disposed fingers arranged in parallel rows, each row having a staggered relationship to the other, means for moving one row of fingers through the spaces between the other rows and past each of them to flex the stocking, and means for giving the fingers movement after a stocking has been withdrawn from therebetween.

2. In a machine of the class described, the combination of a plurality of vertically disposed fingers arranged in the plane of their line of movement and arranged in parallel rows having a staggered relation, means moving one row of fingers through the spaces between two other rows and past each other to flex the stocking, and means for giving the fingers movement after a stocking is withdrawn from therebetween.

3. In a machine of the class described, a pair of plates and means for mounting the same so that said plates may be moved to and from each other, vertically disposed fingers mounted on each plate in parallel rows between said plates and staggered so that the fingers on one plate pass between fingers on the other plate and flex the stocking when said plates are moved toward each other, means for giving said fingers movement after a stocking is withdrawn from between them.

4. In a machine of the class described, two parallel plates vertically disposed fingers mounted on said parallel plates, means for guiding a stocking between said fingers,

means for moving said plates to and from each other, said fingers being arranged on said plates so that the fingers on the same plate will pass between the fingers on the opposite plate and flex the stocking, and means for drawing a shirring string through a stocking held by said fingers.

5. In a machine of the class described, fingers and means for mounting the same in parallel rows with the fingers disposed vertically in alinement transversely of the length of the stocking, means for moving one row of said fingers between the fingers of another row, means for giving the fingers movement after a stocking is withdrawn from therebetween, and means for drawing a shirring string through the stocking while held by said fingers.

6. In a machine of the class described, oppositely disposed plates, vertically disposed fingers arranged in parallel rows and supported by said opposite plates, means for moving said plates toward and away from each other so that a stocking may be held by said fingers in sinuous lines, means for passing a shirring string through said stocking while so held, and means for giving the fingers a limited movement after the withdrawal of the needles.

7. In a machine of the class described, oppositely movable plates, vertically disposed fingers arranged in parallel rows in the direction of their line of movement and mounted on said opposite plates, means for causing the fingers on opposite plates to pass between each other to flex a stocking, means for passing a pair of needles between the fingers on opposite plates and means for giving the fingers a limited movement after the withdrawal of the needles.

8. In a machine of the class described, fingers held in parallel rows and plates for supporting said fingers, means for moving said plates to and from each other, means for passing needles between fingers supported by opposite plates, means for giving said fingers a limited movement after the withdrawal of said needles, means for giving said fingers a further movement after a stocking is withdrawn from between said fingers.

9. In a machine of the class described, means for holding a stocking in sinuous lines, means for drawing a shirring string through said stocking while so held, a main driving shaft for driving said means, a lever fixed to said shaft, means for limiting the return movement of the lever so that a mantle may be withdrawn from the machine and means for withdrawing said limiting means so that said lever may be thrown farther after the mantle is withdrawn and the machine will then be ready to receive another mantle.

10. In a machine of the class described,
upright levers and means for supporting the
same, means for rocking said levers, plates
at the tops of said levers, fingers secured to
said plates, each of said fingers being mount-
ed in parallel pairs on a common base, said
fingers being so arranged and disposed that
those secured to one plate will pass between

those secured to the other plate when the
machine is operated.

Signed at the city, county and State of 10
New York, this 9th day of December, 1908.
SAMUEL COHN.

Witnesses:

GUS. I. ARONOW,
HARRY RADZINSKY.