

S. COHN.

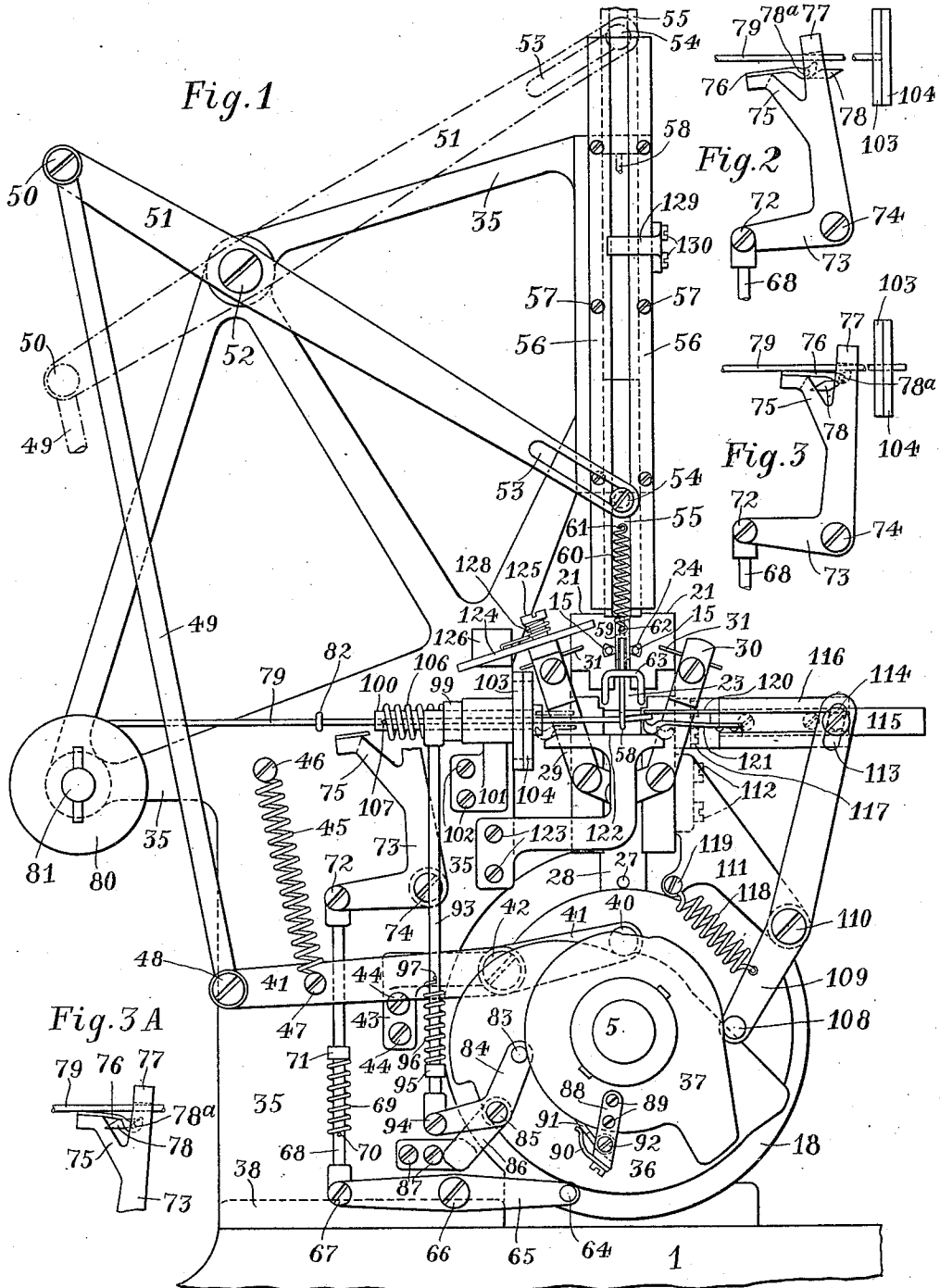
MANTLE SEWING MACHINE.

APPLICATION FILED JAN. 27, 1910.

1,046,269.

Patented Dec. 3, 1912.

4 SHEETS-SHEET 1.



WITNESSES

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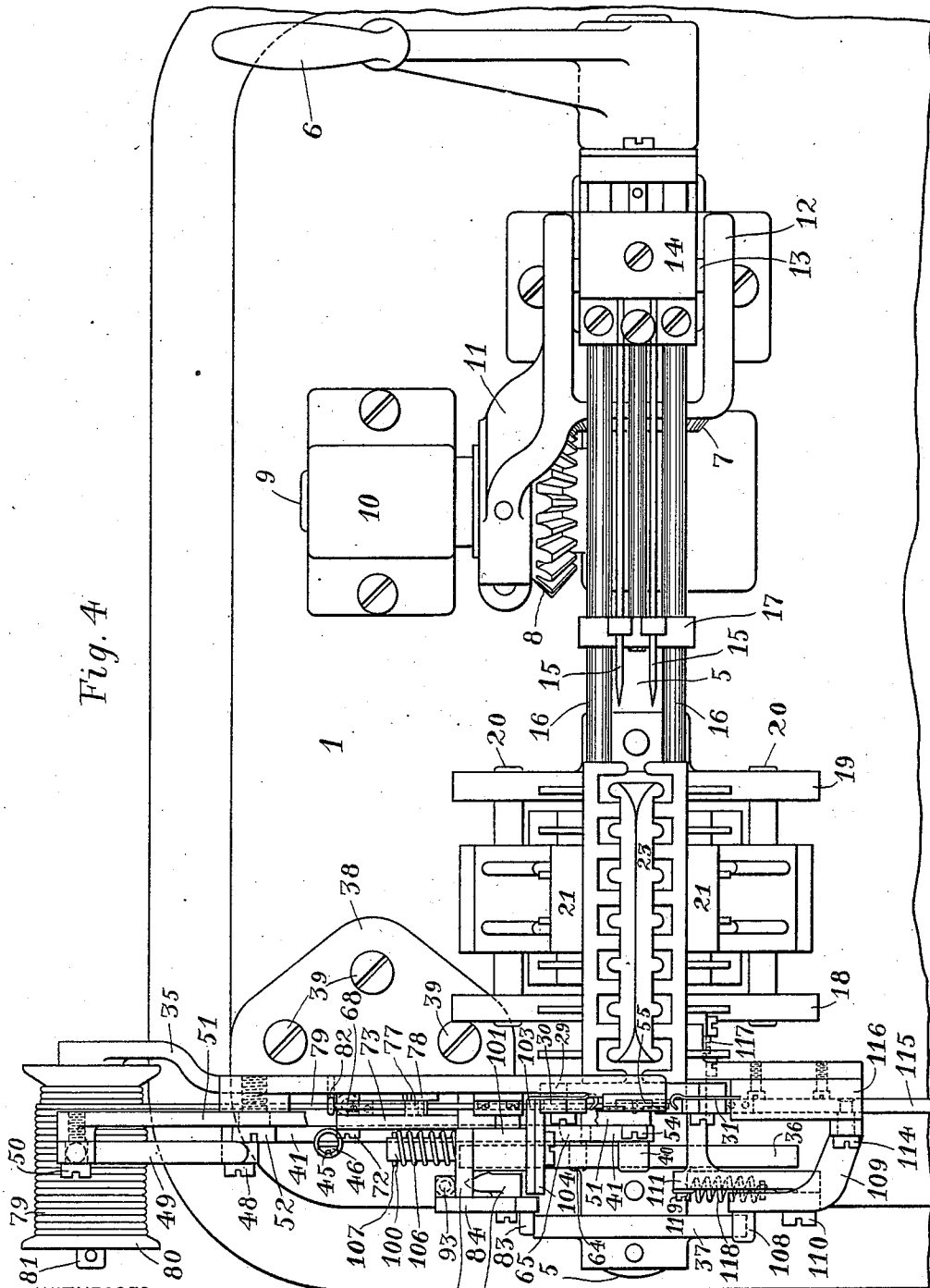


Fig. 4

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UNITED STATES PATENT OFFICE.

SAMUEL COHN, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO MANTLE MACHINERY AND PATENTS COMPANY, A CORPORATION OF NEW YORK.

MANTLE-SEWING MACHINE.

1,046,269.

Specification of Letters Patent.

Patented Dec. 3, 1912.

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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-Sewing Machines, of which the following is a specification.

Heretofore mantle sewing machines have been made and used by me for many years in which one end of a stocking is gathered in two sets of plaits and parallel needles are then run through the said plaits and when at the limit of their movements, threading devices pass through the eyes of the needles and engage the ends of the shirring string which are held by the hand of an operator. The threaders are then withdrawn and carry the ends of the string with them thereby threading the needles. The needles are then returned to their initial positions and in so doing draw the shirring string after them and the bight of the string engages a lug which causes it to be held fast and the string is then withdrawn from the needle eyes just before the needles reach their initial positions. From the foregoing brief description it is obvious that the shirring strings are each cut to their proper lengths before being used by the operator in the machine.

The object of my invention is to make the action of the machine entirely automatic as to the shirring string and I therefore apply an attachment to my said machine which is described below and it is used thereon with substantially no change in the mechanism of the machine except those incident to the new function.

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 rear end elevation of the machine provided with my improvements. Figs. 2, 3, and 3^a are detailed views showing parts of the gripping mechanism. Fig. 4 is a plan view of a machine provided with my improvement. Fig. 5 is a side elevation of my machine. Fig. 6 is a side elevation of my improvement. Figs. 7, 8, and 9 show the placing mechanism for putting the ends of the shirring string in a suitable position by being engaged by the threaders. Unnecessary details are omitted. Figs. 10 and

11 show the cutting mechanism. Figs. 12 and 13 show the looping mechanism in various positions.

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

The sewing machine to which my improvement is attached in the embodiment herein shown and described is the one generally used by me and covered in my United States Patent numbered 798,090 and other patents, so that only a general description thereof is necessary. The sewing machine is provided with a base 1 on which are placed a number of standards 2, 3, and 4 which carry the main shaft 5 of the machine. The machine derives its power from a lever 6 at the forward end of the shaft 5, and power is transmitted through an interrupted gear 7 which is fixed thereon to a second interrupted gear 8 which is secured to a stud shaft 9 journaled in a suitable pedestal 10. The gears 7 and 8 are bevel gears. The stud shaft 9 also carries an arm 11 which is bifurcated at its upper end and provided with slots 12, the walls of which engage a pin 13 on the needle block 14 which carries the needles 15 in the conventional manner. The needle block 14 runs on suitable guides 16 from the support 2 to the support 3. The needles 15 also run through a suitable guide 17 which is mounted on bars 16.

The shaft 5 carries two cams 18 and 19 placed in the front and rear of the uprights 3 and 4 and these cams are each engaged by pins 20 which run transversely of the side jaws 21, which are pivoted between the uprights 3 and 4 on suitable fulcrums 22. The side jaws intermesh with the fixed center jaw 23, and the center jaw 23 and side jaw 21 are each provided with suitable needle slots 24 through which the needles 15 are adapted to pass. The shaft 5 also carries a cam 26 which engages a pin 27 on a slide 28 which is pivotally connected to two levers 29 and 30 that carry the threaders 31.

The foregoing is a brief description of the old and well-known type of machine which I have used for some years, and this forms no part of the invention covered by this application. It is shown in detail only because my improvement, which is attached thereon, would be inoperative except in con-

nection with a machine of this type, and my improvements are so intimately connected that they cannot be understood except in connection with such a machine, although it is obvious that it could also be used on many other machines of the same type. This improvement is provided with a standard 35 which carries a greater part of the mechanism involved and the main driving shaft 5 is extended to carry two additional cams 36 and 37, respectively. Both the cams 36 and 37 are double cams, that is, each controls the operation of two levers so that four additional levers are driven by the shaft 5 through said cams. This is easily accomplished because the said lever oscillates through an angle of about 120 degrees, so that it is possible to arrange so that the movement of one lever does not in any way interfere with the movement of another.

The standard 35 may be of any suitable shape and is preferably mounted on a laterally extending base 38 which is secured to the base 1 by means of suitable screws 39. It is preferably located as shown, and is preferably made of substantially the outline indicated, although it may be varied in these respects, if desired.

One part of the cam 36 engages a pin 40 carried on a lever 41 which is fulcrumed at 42 on a bracket 43, secured by screws 44 to the upright 35. This lever 41 is kept in proper relation to the cam 36 by means of a coiled spring 45 secured at one end to a screw 46 fixed in the upright 35, and at its other end to a screw 47 fixed in the lever 41. This construction forces the pin 40 into continual contact with the proper part of the cam 36 which cam is shaped substantially as shown in Fig. 1. The free end of the lever 41 is provided with a suitable pivot 48 to which is pivotally connected a link 49 in the conventional manner. The upper end of this link 49 is similarly connected to a pin 50 mounted on a lever 51 fulcrumed at 52 in the upright 35 and slotted at its other end with a slot 53 to engage the screw or similar device 54 in a slide 55 that runs between suitable guides 56 which are secured to the upright 35 by means of screws 57 or in any other suitable manner.

The slide 55 has a hook 58 at its lower end, the point of which is turned toward the front of the machine, that is toward the lever 6, and slidably mounted on this slide and on this hook 58 is a detent 59 which is normally forced into engagement with the shirring string and the hook 58 by means of a coiled spring 60 mounted on the slide 55 and secured at one end to a pin 61 extending from said slide, and at its other end to a pin 62 running from said detent 59. At the lower end of its movement, the detent 59 is removed from the hook 58 by means of a bail 63 fixed in the center jaw 23 of the ma-

chine. The cam 36 also has a portion which engages a pin 64 on a lever 65 fulcrumed at 66 on a pivot secured to the upright 35. The other end of this lever 65 is pivotally connected to a pivot 67 that engages a vertical rod 68 with a pivotal connection. A coiled spring 69 rests against a pin 70 at its lower end and at its upper end against a guide 71 that is secured to the upright 35 and surrounds the rod 68 so that by the pressure of the spring 69, the pin 64 is kept against the cam 36. The upper end of the rod 68 is pivotally connected by a suitable pivot 72 to a bell-crank lever 73 fulcrumed on a pin 74 which is fixed in the upright 35. In Fig. 1 the upper end of the bell-crank lever 72 is broken away so as to more clearly reveal the structure but is completely shown in Figs. 2 and 3. As will be seen from this, the upper end of the lever 73 has a branch 75 on which is secured a smaller gripper 76 which is adapted to have its free end pressed against a projection running laterally from the other branch 77 when forced toward this projection by means of a pin 78* and a fixed cam 78 which is suitably mounted in the upright 35, the object being to cause the said projection and the spring 76 to grip an asbestos cord 79, that constitutes a shirring string, with a gentle pressure when the projecting end 77 is moved toward the needles and thereby give the cord 79 the requisite movement to enable it to be engaged by another gripper hereinafter described. The cord 79 is wound in any suitable length upon a spool 80 which turns on a suitable support 81 secured to the upright 35 and this cord 79 runs through suitable guides 82 which are also fixed in said upright 35. As many of these guides 82 may be employed as desired.

The cam 37 engages a pin 83 mounted on a bell crank lever 84 which is fulcrumed at 85 on a fulcrum that is fixed in a bracket 86 secured to the upright 35 by means of suitable screws 87. As the cam 37 moves clockwise the pin 83 is then actuated and not when moving anti-clockwise, a switch cam is employed. The rear face of the cam 37 is provided with a projection 88, secured by suitable screws 89, or other means. The outer end of the projection 88 is provided with a spring 90 which presses against a small and pivoted lifter 91 which is pivoted at 92 in said arm. When moving clockwise the lifter 91 raises the pin 83 but when moving anti-clockwise, the pin 83 gets under the lifter 91 and rises against the pressure of the spring 90 so that the pin 83 is raised only once for every complete throw of the lever 6. In other words, the lever 84 operates only half as often as the lever 6 above described.

The free end of the bell-crank lever 84 is pivotally connected with a vertically dis-

posed rod 93 by means of a suitable pivotal connection 94 and this rod 93 runs through a suitable guide 95 on which is a coiled spring 96 that surrounds said rod 93 and the upper end of the spring 96 presses against the pin 97 fixed in said rod 93 so that the pin 83 is always pressed into proper relation with the cam 37. The upper end of the rod 93 runs to a crank pin 98 on a crank 99 that runs from a shaft 100 to which it is secured. The shaft 100 is journaled in a suitable bracket 101 which is fixed to the upright 35 by means of suitable screws 102. This bracket 101 has fixed thereon a suitable disk 103 through which the shaft 100 is passed and the extreme end of this shaft 100 is provided with a second disk 104. Both the disks 103 and 104 are provided with registering slots 105 which are separated. These slots do not register at all times but do register always except when the pin 83 is lifted by the lifter 91, in the manner described above, so that the disk 104 has a movement with respect to the disk 103. The disks 103 and 104 might be regarded as shears which shear the cord 79 at the periodical intervals required from time to time. The disks 103 and 104 are held in proper relation by means of a coiled spring 106 mounted on the shaft 100 and pressing against the bearing 101 and also against the pin 107 fixed in said shaft 100. The cam 37 is also engaged by a suitable pin 108 carried by a bent lever 109 which is fulcrumed at 110 on a pin which is secured to a bracket 111 which is secured to the support for the center jaw 23 by suitable screws 112. The upper or free end of the lever 109 is slotted at 113 and engages a pin 114 fixed in a slide 115 that runs between suitable guides 116 which are secured to the support of the center jaw 23 by means of suitable screws 117.

The pin 108 is kept in proper contact with the cam 37 by means of a suitable coiled spring 118 that connects the lever 109 with a screw 119 fixed in the projection 111 as shown in Fig. 1. The slide 115 runs to and from the needles under the influence of the spring 118 and cam 37 and pin 108 and one limit of its movement is close to the disk 104 and the other limit is a little beyond that which is shown in Fig. 1. In Fig. 1 the mechanism as shown is placed with the lever 6 though about 30 degrees from its initial position. The end of the slide 115 next the needles is provided with a flat spring 120 on its upper edge and a spring dog 121 similar to the spring gripper 76. In its lower edge the spring 121 has its free end on a cam 122 which is fixed to the support 35 by means of suitable screws 123 or in any other suitable manner. When the lever 6 is in its initial position and the fingers 121 and 120 are in the position indicated by dotted lines in Fig. 1 the asbestos

cord 79 is first fed forward by the mechanism on the bell crank 73, above described, and it is then grasped by the said fingers 120 and 121 and drawn promptly across the machine so that the said thread will be engaged by the hook 58 as soon as the same descends to the level of the thread. When the hook 58 is at the right place it engages the thread 79 and withdraws still engaging said thread and continues to withdraw while engaging said thread until near the upper limit of its movement, when the slide 115 is withdrawn to its extreme limit and the cam 122 permits the separation of the fingers 120 and 121 and simultaneously with this separation the disks 104 and 103 cooperate together to sever the cord 79 which is then supported by the hook 58 alone and the gentle pressure of the detent 59 against said cord. The movements are so timed and the mechanism so proportioned that the cord will hang from said hook in equal lengths on each side and between the horizontally disposed and parallel portions of the bail 63 under which the cord is drawn when the hook 58 carries it for the first time.

The mechanism which causes the threaders 31 to engage the loose ends of the cords 79 after being separated as above described is as follows. The arm 29 at its upper end is provided with a lever 124 suitably fulcrumed on a suitable screw 125 and held in contact with a cam 126 fixed to the upright 35 by a screw 127 by means of a coiled spring 128 on said screw 125, one end of coiled spring pressing against said lever 124 and the other end against a portion of said screw so the rear end of lever 124 is kept in constant contact with the cam 126 or with the upright 35 adjacent to said cam. The purpose of this lever 124 is to force the ends of the cord 79 into a position where they will be engaged by the threader 31 after passing through the eyes of the needles 15. If desired the guides 56 may have a finger 129 secured thereon by means of suitable screws 130, as shown in Fig. 1 which finger engages the detent 59 at the upper limit of this movement and forces the same to positively and firmly press the cord 79 against the hook 58 whereby all movement of the cord 79 on the hook 58 is prevented.

Operation: From the foregoing the operation of my improved device will be readily understood: Assuming the machine to be in the condition in which it is shown in Fig. 4, the lever 6 is thrown over in the conventional manner. The needles 15 pass through the mantle while it is plaited between the center jaw 23 and the side jaws 21 and then the threaders 31 pass through the eyes of the needle in precisely the same manner as set forth in my said patent and in precisely the same manner that my machines have been working for several years. Hereto-

fore the operator has taken an asbestos string of the correct length and held the ends where the threaders 31 could engage them and draw them through the eyes of the needles. My improved device does automatically what has heretofore been done by hand. The cord 79 is unwound from the spool 80 as fast as desired and is engaged by the gripper 76 and shoved forward through the notches under the cutting shears to the gripper 121 where it is engaged and drawn sufficiently far to be engaged by the hook 58 when at the lower limit of its movement. The hook 58 is then withdrawn and the gripper 121 holds fast while the gripper 76 is loosened so that the hook 58, while rising, encounters no resistance of any consequence from the asbestos cord which moves freely through the guide 82 and the notches 105 of the shears 103-104. Finally the hook 58 rises to the upper limit of its movement and just before it reaches the same the detent 59 is engaged by the arm 129 and forced against a cord so as to hold the same on the hook 58. The gripper 121 then retires slightly and releases the end of the cord and simultaneously with this the shears act so as to sever the cord and it then hangs with equally long ends at each side of the hook 58 and from this hook. While so hanging the ends are engaged by the threaders 31 and these threaders draw the ends through their respective needles 15 precisely as was done in the old machines where the shirring string was held by the hand of the operator while its ends were acted upon by the threaders. After the threaders have returned through the eyes of the needles and drawn the cord with them, as above described, the needles retreat and draw the asbestos cord after them and thereby shirr the mantle. Simultaneously with the withdrawing of the needles 15 the hook 58 is lowered to a position slightly above that shown in Fig. 1 and sufficiently low to enable the shirring string to be withdrawn from the hook without interference when the mantle is returned from the center folder 23. A second mantle may be then placed in position and may be operated in the same manner and this operation may be repeated indefinitely. In this description of the operation nothing has been said of the cams 36 and 37 and the levers and other mechanism operated thereby. It is believed that such a description is unnecessary in view of the fact that the operation of each individual sub-combination has been described above and a repetition of this description would not elucidate the matter.

While I have shown and described one embodiment of my invention, applied in one type of my machine, it is not restricted to the form shown and described herein, nor to this one type of machine, but may be

used wherever applicable and is broad enough to cover all structures which come within the scope of the annexed claims.

What I claim is:

1. In a machine of the class described, means for folding a mantle, parallel needles, means for passing said parallel needles through the folds of said mantle, means for cutting off a predetermined length of a shirring string, and automatic means for passing the ends of said string respectively through the eyes of said needles.
2. In a machine of the class described, mantle folding means, needles, means for passing said needles through the folds of the mantles, means for feeding a shirring string, and means for severing the same into predetermined lengths, and means for automatically passing each end respectively of the severed portion in a longitudinal direction through the eye of one of said needles.
3. In a machine of the class described, means for folding a mantle, needles, and means for passing said needles through the folds of the mantle, threaders adapted to pass through the eyes of said needles, means for feeding an asbestos cord to a cutting mechanism, means for drawing said cord through said mechanism, a hook for engaging said cord while its end is held by said last mentioned gripping mechanism and means for elevating said hook, means for causing said cutting mechanism to operate to sever the cord, the means for causing the ends of the severed portion of said cord to engage said threaders and be drawn by the same through the eyes of the needles and means for causing said hook to descend.
4. In a machine of the class described, a hook and means for mounting the same so that it has a reciprocating movement, means for passing an asbestos cord at right angles to the direction of movement of said hook and so as to be engaged by said hook, means for severing said cord and means for pressing said cord against said hook.
5. In a machine of the class described, a hook and means for mounting the same so that it has a reciprocating movement, means for passing a cord at an angle to the direction of movement of said hook, so that said cord may be engaged by said hook, means for severing said cord, means for causing the ends of said cords to hang in a predetermined position, needles and means for supporting the same and mechanism adapted to pass through the eyes of said needles and engage the ends of said cord and draw the same through the eyes of said needles.
6. In a machine of the class described, a hook and means for mounting the same so that it has a reciprocating movement, means for passing a cord at an angle to the direction of movement of said hook and so that

it can be engaged by said hook, means for forcing said cord into engagement with said hook and means for severing said cord.

7. In a machine of the class described, 5
needle mechanism, means for mounting a cord, a severing device, one means for feeding said cord to said severing device, another means for drawing said cord from said severing device in the direction of its original movement, means for further moving said cord at right angles to the direction of its original movement to form a loop, and threading devices that engage the ends of the severed cord and thread the needle mechanism therewith. 10

8. In a machine of the class described, means for supporting the cord and means for severing said cord so that said cord will hang with its ends adjacent, threading 15
mechanism, and means for moving said ends of said cord into suitable positions to be engaged by said threading mechanism. 20

9. In a machine of the character described, the combination with a pair of needles having eyes, of means for automatically presenting both ends of a cord to the eyes of the needles and causing said ends to pass each in a longitudinal direction through one of said eyes only. 25

10. In a machine of the character set forth, the combination with a pair of needles having eyes, of means for severing a cord into lengths, and a pair of threading devices, one device operating through the eye of each needle and engaging one end only of each severed length to thread the same through such needle. 30

11. In a machine of the character described, the combination with a pair of needles having eyes, of threading means that pass through the needle eyes, and means for automatically presenting both ends of a cord to the threading means. 35

12. In a machine of the character described, the combination with a pair of needles having eyes, of threading devices that respectively pass through the needle eyes, means for severing a cord into successive lengths, and means for engaging 40
both ends of each length with the threading devices. 50

13. In a machine of the character described, the combination with needle mechanism, of mechanism for forming a cord into a loop, and mechanism other than the loop forming means for threading both ends of the loop after its formation in the needle mechanism. 55

14. In a machine of the character described, the combination with a pair of needles having eyes, of means for automatically forming a cord into a loop with the ends thereof respectively adjacent to the needle eyes, and means other than the loop 60
forming means for passing both of said

ends of said loop after its formation through said eyes.

15. In a machine of the character set forth, the combination with needles having eyes, of means for forming a loop in one end of a cord, means for severing the cord at the end of the loop, means for passing both ends of the cord through the needle eyes, and operating mechanism that first actuates the severing means and afterward 75
actuates the threading means.

16. In a machine of the character set forth, the combination with needle mechanism, of looping mechanism, means for engaging a cord with the looping mechanism and holding the same while the loop is being formed thereby and then releasing it, means for severing the cord, and means for threading the severed loop into the needle mechanism. 80

17. In a machine of the character set forth, the combination with needle mechanism, of looping mechanism, means for engaging a cord with the looping mechanism and holding the same while the loop is being formed thereby and then releasing it, means for severing the cord, means for threading the severed loop into the needle mechanism, and means for afterward moving the needle mechanism and looping 85
mechanism simultaneously. 90

18. In a machine of the character set forth, the combination with means for grasping the end of a cord, of means engaging the cord between its ends and being movable relatively to the cord grasping means for moving said cord to determine the length of a section thereof while the end is so grasped, means for severing the section from the cord, needle mechanism, and means for threading the needle mechanism with said section, and operating means for actuating first the severing mechanism and afterward the threading mechanism. 100

19. In a machine of the character set forth, the combination with means for grasping and holding the end of a cord, means engaging the cord between its ends and while so held, for forming a loop therein, means for severing the looped section, needles, means for threading the needles with the ends of the severed looped section, and operating mechanism for successively actuating the loop-forming means, the severing means and the threading means in the 105
order named. 110

20. In a machine of the character set forth, the combination with cord-holding means, of means for grasping and holding the end of a cord, means operating transversely of the cord for forming a loop in the same, while the end is so held, means for severing the loop from the cord, needles, means for threading the ends of the loop into the needles, and means for ad- 120
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vancing the severed end of the cord to the grasping and holding means.

21. In a machine of the character set forth, the combination with means for holding one end of a cord, of means operating transversely of the cord to form a section thereof into a loop, means for severing the other end of the loop from the cord, needles, means for simultaneously threading both needles with both ends of the cord after each severance, and operating mechanism for successively actuating the loop-forming means, the severing means and the threading means in the order named.

22. In a machine of the character set forth, the combination with means for feeding a cord longitudinally, of means for grasping and holding the end of the cord so fed, means for moving the cord transversely and forming the same into a loop, means for severing the loop, a pair of needles, threading devices that pass through the needle eyes, and means for engaging the ends of the cord with the threading devices.

23. In a machine of the character set forth, the combination with needles and threading mechanism therefor, of a cord holder, a pair of cord grasping devices, means for causing one of the devices to

grasp the cord, move it toward the other device and release it, means for causing said other device to grasp the cord so moved, means engaging the cord while held by the last device for forming a loop therein, means for severing the loop, and mechanism for causing the severed ends of the loop to be engaged with the threading mechanism.

24. In a machine of the character set forth, the combination with spaced needles, of means for presenting the ends of a cord to the needle eyes, and oppositely moving means for engaging and causing said ends to pass through the respective eyes in opposite directions.

25. In a machine of the character set forth, the combination with spaced needles, of means for presenting the ends of a cord between the needle eyes, and oppositely moving means for engaging and causing said ends to pass outwardly in opposite directions through the respective eyes.

Signed at the city, county and State of New York, this 24th day of January, 1910.

SAMUEL COHN.

Witnesses:

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H. RADZINSKY.