

H. JONSON.
 RUNNING STITCH SEWING MACHINE.
 APPLICATION FILED MAY 22, 1907.

1,023,427.

Patented Apr. 16, 1912.

2 SHEETS—SHEET 1.

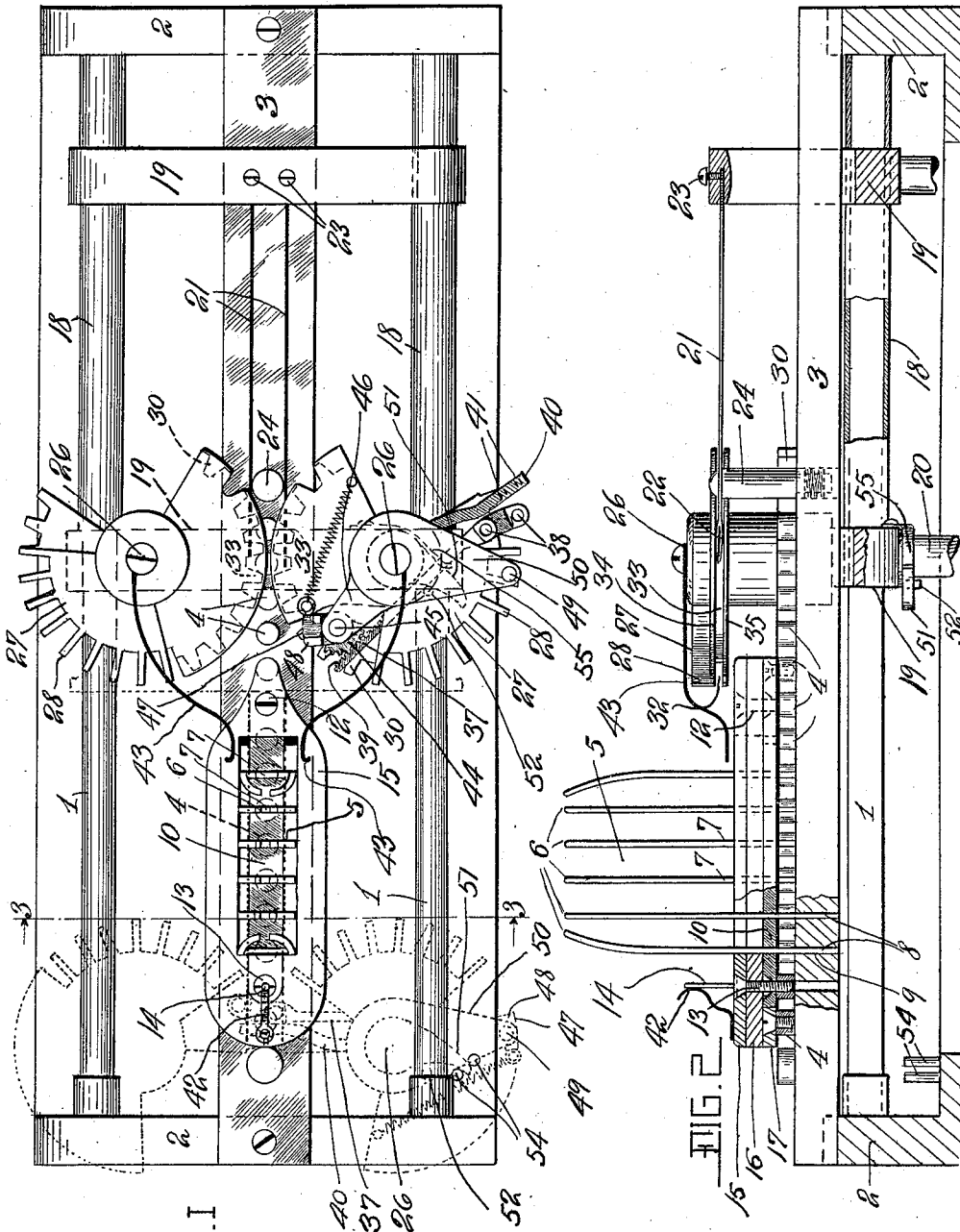


FIG. 1
 Witnesses:
 Edmund C. Dubocq.
 Geo. N. Kern

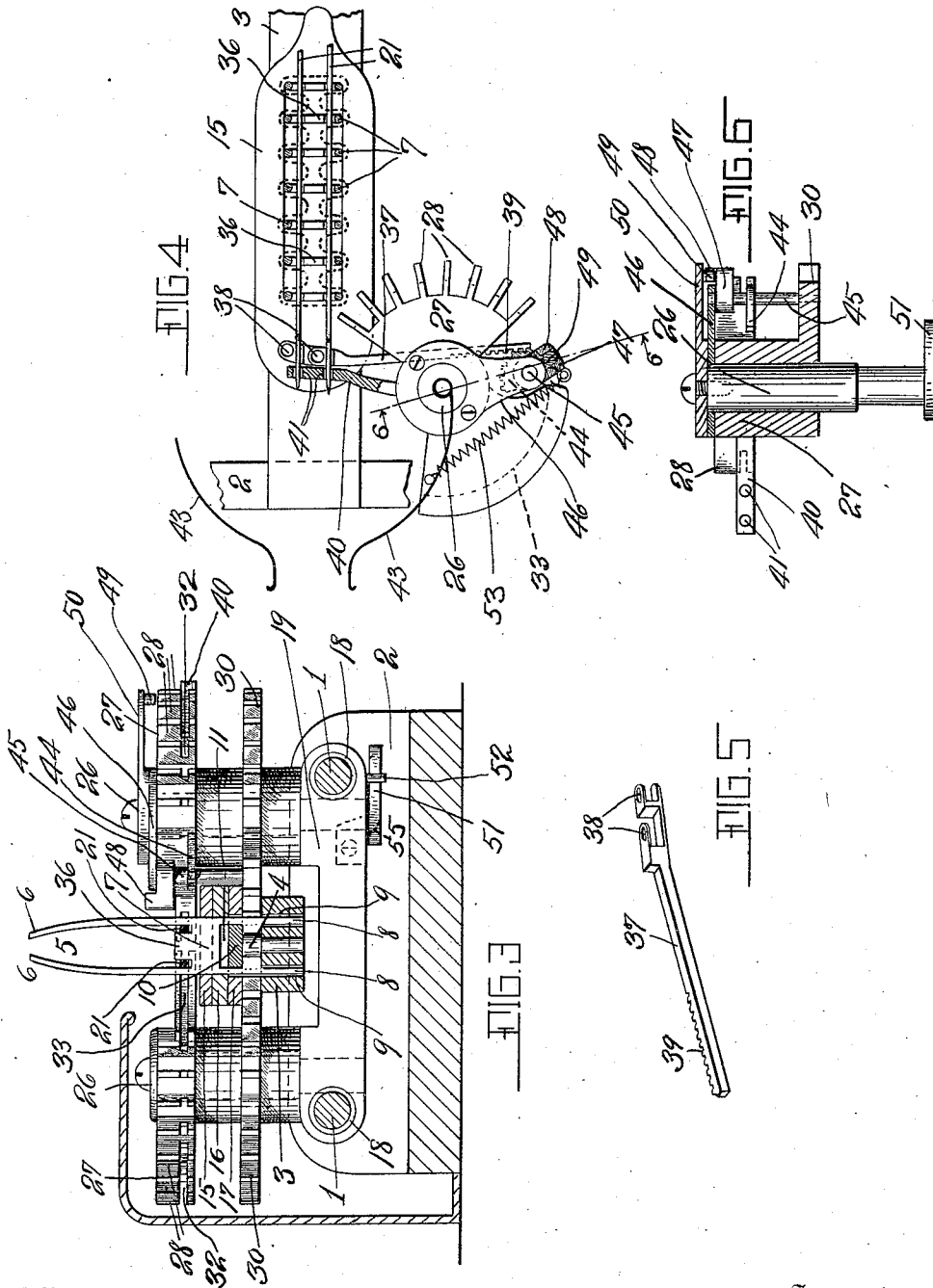
Inventor
 Herman Jonson
 By his Attorney
 Edwards, Sager & Wooster.

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Witnesses:
 Edmund O. Hubocz.
 Geo. H. Kerr.

Inventor
 Herman Jonson
 By his Attorneys
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UNITED STATES PATENT OFFICE.

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

RUNNING-STITCH-SEWING MACHINE.

1,023,427.

Specification of Letters Patent.

Patented Apr. 16, 1912.

Application filed May 22, 1907. Serial No. 375,182.

To all whom it may concern:

Be it known that I, HERMAN JONSON, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Running-Stitch-Sewing Machines, of which the following is a full, clear, and exact specification.

This invention relates to running stitch sewing machines, and has particular reference to machines for sewing mantles, bags and the like, wherein it is desired to run a thread into a piece of fabric for the purpose of gathering the end of the same.

The objects of the invention are generally to provide a sewing machine wherein the sewing may be quickly and accurately performed, and also to enable different sizes of blanks to be sewed on the same machine, or to enable a different number of plaits to be sewed in blanks of similar size.

In carrying out the invention, a machine is provided, comprising a mandrel or center-piece upon which a tubular fabric is placed, together with means whereby the plaits are formed and a needle run through, successively, from one end of the mandrel to the other, and on the return stroke the cord is drawn through the plaits while held by the plait forming devices.

A further feature of the invention comprises a needle threading mechanism operating to thread the needle so that upon the return of the needle the cord is drawn successively through the plaits as they are stripped from the needle.

Further features of the invention comprise an adjustable mandrel or centerpiece composed of interchangeable sections, together with means for varying the distance between the cord and the end of the fabric tube, so that the thread can be run into the tube at varying distances from the end, as may be desired.

The invention further comprises the form, combination and construction of parts, as will be more fully explained in connection with the accompanying drawings, wherein,

Figure 1 is a plan view of a machine embodying the invention; Fig. 2 a side elevation; Fig. 3 a sectional view on the line 3—3 of Fig. 1; Fig. 4 a detail view showing the operative position of the devices for threading the needle; Fig. 5 is a detail view

of the needle threader and needle support; Fig. 6 is a section on the line 6—6 of Fig. 4.

1, 1 and 2, 2 represent bars secured together and forming a frame or bed upon which the parts of the machine are mounted.

3 is a longitudinal bar and mounted on said bar 3 is a series of rack teeth 4 for operating the plaiting devices to be hereafter described, and a mandrel or centerpiece 5 on which the tubular blank is to be placed. The mandrel 5 comprises a series of frames having free ends 6 connected by a base portion 7 and with opposite extending free ends 8, 8, the base portions fitting loosely in sockets 9 in the bar 3.

Referring to Fig. 3, it will be seen that the frames straddle the heads of the pins 4, and above the pins 4 is provided a locking plate 10 passing through slots 11 in each frame 7 so as to hold all of the frames loosely in position, thereby permitting some movement to compensate for uneven fabric. This locking plate 10 rests directly on the heads of the pins 4 and is confined at each end by screws 12, 13. The screw 13, for convenience, has a pin 14 which engages the loop of the cord in a manner to be hereafter described. Surrounding the mandrel is a series of plates 15, 16, 17 which determine the distance from the end of the blank to the cord. If, for instance, the plate 16 be removed, the plate 15 will rest directly on plate 17, and thus lengthen the distance from the end of the tubular fabric to the perforations of the mantle, it being understood that the needles always move in the same plane, and the tubular blank is adjusted relatively to this plane of movement of the needles to regulate the distance of the cord from the end of the tube. These plates 16, 17, thus correspond to washers, and will be varied in number according to the character of the work, or removed entirely for the maximum distance of the cord from the end of the blank.

The needles and plait forming devices are mounted on a movable carrier or frame composed of tubes 18, 18 connected by bars 19, 19, sliding on the rods 1, and operated preferably from power through a rod 20 and connections not shown. 21, 21 are the needles, having eyes 22 and fastened in sockets in bar 19 by means of screws 23, or other means. The needles are separated by a spring pressed guide pin 24 mounted on bar 3 and held

from springing together thereby. The bar 19 rides over this pin at the end of the stroke. Mounted on pivots 26 carried by bar 19 are a pair of oppositely disposed rotatable plaiters 27 having teeth 28 which are spaced apart so as to pass into the spaces between the frames 7 of the mandrel. In order to rotate these plaiters, gears 30 are provided which engage the pins 4 as the frame on which the plaiters are mounted is moved back and forth, thus successively forming the plaits as the frame moves. The teeth 30 are thinner and fit loosely between the pins, after the plaiters have engaged the cloth, so as not to tear it. Each of the plaiting teeth 28 is provided with a slot 32 for the needle, and 33 is a cylindrical guide formed by shoulders 34, 35 for holding and guiding the needle against vertical movement. As the movable frame carrying the needles and the plaiters moves, the teeth 28 engage between the frames 7 and the needle is guided in the channel 33, the needle penetrating each fold as it is formed. It will be noted that the channels 33 are opposite the teeth 28, as will be seen from the position of parts in Fig. 2, since in this position the plaiters are out of operation and it is desirable to support the front ends of the needle. As the teeth successively come into operation, the needle passes into the slots 32 and is thus supported by the teeth in going through the folds of the cloth.

A tubular blank having been placed on the mandrel when the parts are in position shown in Fig. 1, the first operation is to move the frame to the left so as to run the needles through the blank, the needles being unthreaded during this operation. To prevent pulling all of the cloth into one plait, and to secure even plaits, curved pushers 43 bear resiliently on the opposite sides of the mandrel and push the cloth along, if there is any tendency for the first plaits to take up too much fabric. At the forward end of the stroke the needles have penetrated all of the folds, passing within the mandrel and being prevented from springing toward each other by the projections 36 on the frames 7. In the position shown in Fig. 4, the needles could be threaded by hand and then drawn back through the folds, but this operation would take too much time, and I have therefore provided a needle threading mechanism whereby the operation can be much more quickly accomplished. Mounted on one of the plaiters 27 is a bar 37 (Fig. 5), having two eyes 38, 38 and rack teeth 39. This threading bar 37 is mounted to reciprocate in one plaiter 27, and also revolves with it as the latter is turned by the engagement of the gear 30 with the rack teeth. The path of movement of the threading eyes 38 is thus like a cycloid during the penetration of the fold by the needles, and come into position

to pass through the needle eyes near the end of the stroke. Also mounted on one of the plaiters 27 is a guide bar 40 having two eyes 41, 41, one for each needle. At the end of the stroke, the guide bar 40 has swung around so that the eyes 41 come into the path of the points of the needles which pass through them (see Figs. 1 and 4). Just before the end of the stroke, a small gear sector 44 is turned so as to throw the bar 37 longitudinally into the position shown in Fig. 4 with the threading eyes 38 passed through the eyes 22 of the needles, which latter are made of such size as to permit this. The gear sector 44 is carried by a shaft 45 pivoted in a plate 46 carried by the plaiter 27, and at the other end in the plaiter itself. The shaft thus moves bodily with the plaiter, which latter is mounted to turn on the spindle 26.

In order to turn the shaft 45 and thereby throw the needle threader bar 37 at the proper time, the lug 47 carried by shaft 45 is provided with a small extension 48 which swings into the path of a pin 49 carried on arm 50 of spindle 26, thus revolving the shaft 45 and throwing the needle threaders through the eyes of the needles. In this connection it will be understood that the spindle 26 and arm 50 do not rotate with the plaiter 27. In order, however, to accelerate the movement of the needle threader, means is provided for slightly turning in a reverse direction the spindle 26, and thereby moving arm 50 and pin 49 to give a quicker movement of the threader bar 37. To this end the spindle 26 carries an arm 51 normally held by a spring 53 against pin 52, the arm 51 projecting so as to strike two pins 54, 54, at or near the end of the stroke and thereby turn the spindle 26 against the pressure of spring 53. This helps give the bar 37 a quicker movement in each direction through the needle eyes, while they are practically at rest at the end of the stroke. The timing is determined by the pins 4 and the gear teeth. While the machine is held in this position with the threading eyes 38 through the eyes of the needle, the ends of the loop of cord, usually asbestos, in the case of mantles, are passed through the eyes 38, until they strike the surfaces under the eyes. These prevent waste of cord in threading. To facilitate threading, conical thread guides disposed above the threading position of the eyes, may be used and slotted to allow the loop to draw through. On the return stroke the threading bar 37 will be first retracted before the carriage moves, thus drawing the ends of the loop through the eyes 22 of the needles.

42 is a clamp to hold the loop while being drawn through. The carriage is now moved backward and thus the asbestos cord drawn through the folds of the tubular

blank by the needles. In order to prevent drawing up the loop too close in threading mantles, it is caught over pin 14 and clamped by spring 42, and thus as the needles, having cleared all the loops pass farther backward, the ends of the cord will be drawn out of the needle eyes. The tubular blank is now threaded with sufficient free ends of loop to permit withdrawing through the open frames and knotting and tying in a well understood manner.

In case it is desired to form a less number of plaits or that a smaller blank be sewed, one or more of the intermediate frames 7 is removed, and the end frame moved up, this being done on the entering end of the mandrel. When the mandrel is thus shortened, the plaiters of course become effective somewhat later, but the mesh is maintained by the pins and gear teeth until the plaiters engage the mandrel and the pins become unnecessary. A further advantage of this mandrel construction is that in sewing mantles, the length of cord necessary to be used can be varied with the length of mandrel, thus involving a large saving in this material, which, being usually of asbestos, is expensive. In machines for this purpose heretofore known, this result has not been possible, and they have involved a considerable waste of cord for small sizes of mantles.

It will be understood that several of the features herein described are particularly to be used for sewing mantles, and may be dispensed with for other classes of work, for instance, the pin 14 is not necessary in sewing bags, and a single thread may be used instead of a looped thread, or two separate threads may be used.

While this description has been directed primarily to the use of the machine in threading mantles for incandescent light burners, it will be understood that the principles of the invention are applicable to other purposes, particularly bags, and it is not in any way to be restricted to any particular use, nor to the employment of a plurality of needles.

Furthermore, modifications and changes may be made in the specific instrumentalities for performing the various operations herein described without departing from the scope of the invention.

Having thus described my invention, I declare that what I claim as new and desire to secure by Letters Patent, is,—

1. The combination with a reciprocating needle and rotary shirring devices, of a thread-carrying device adapted to pass through the eye of the needle at a predetermined position thereof, and a needle support independent of the threading device and movable over the end of the needle substantially longitudinally thereto to engage said needle during the threading.

2. The combination with a plurality of reciprocating needles and shirring devices, of a bodily rotatable thread-carrying device moving therewith, and means for moving the thread-carrying device at each reciprocation of the needle in a direction transverse to its bodily movement through the eyes of the needles when at the end of the bodily movement.

3. In a running stitch sewing machine, in combination with shirring devices and a reciprocatory needle, of a thread-carrying device operating through the needle eye at each reciprocation, said thread-carrying device having an eye and a stop spaced from but located across the eye to limit the length of thread passed through the eye.

4. In a running stitch sewing machine, shirring mechanism and needles coöperating therewith, and a thread carrying device comprising two eyes mounted on a bar and separated from each other, said eyes projecting from a base portion forming a thread stop and being movable through the needle eyes.

5. In a running stitch sewing machine, the combination with a fabric support, of shirring mechanism coöperating therewith, a needle that passes through the shirrs, a needle threader having a rack, a gear engaging the rack, and means for automatically operating the gear to move the threader when the needle reaches a predetermined position.

6. In a running stitch sewing machine, the combination with a fabric support, of shirring mechanism coöperating therewith, a needle that passes through the shirrs, a needle threader that travels with the shirring mechanism and is capable of movement through the eye of the needle when the latter reaches a predetermined position and means movable with the shirring mechanism for automatically effecting said movement of the threader.

7. In a running stitch sewing machine, the combination with a fabric support, of rotatable shirring mechanism operating thereover, a needle movable with respect to the fabric support, a rotary and reciprocatory threader moving with the shirring mechanism, actuating means for reciprocating the threader, and a stop carried with the shirring mechanism and disposed in the path of the actuating means to automatically effect the reciprocation of the threader.

8. In a running stitch sewing machine, the combination with a fabric support, of a reciprocatory carrier located at one side of the same, rotary shirring devices journaled on the carrier, needles mounted on the carrier, a normally stationary post constituting a journal for one of the shirring devices, a reciprocatory threader mounted on one of the shirring devices and rotatable therewith, gearing engaged with the threader,

and a stop carried by the post and engaging the gearing to effect its movement when the carrier reaches a predetermined position.

9. In a running stitch sewing machine, the combination with a fabric support, of shirring means coöperating therewith, a needle, a threader for the needle, a movable actuating device for the threader, a movable stop that is normally stationary with respect to its support and is located in the path of said actuating device, being engaged thereby for moving said actuating device, and means for moving the stop at the time said stop is engaged by the actuating device.

10. In a running stitch sewing machine, the combination with a fabric support, of a movable carrier, needles mounted on the carrier, rotary shirring devices journaled on the carrier, a journal post for one of said shirring devices capable of a limited rotary movement, a threader rotatable with one of the shirring devices and capable of reciprocation thereon, gearing engaged with the threader, a stop carried by the post and located in the path of the gearing to effect the movement of the threader, and means for automatically effecting the rotation of the post when the same reaches a predetermined position.

11. In a running stitch sewing machine, the combination with relatively movable fabric supporting means and shirring mechanism, of means operating in advance of the shirring mechanism to smooth the fabric prior to its being shirred.

12. In a running stitch sewing machine, the combination with relatively movable fabric supporting means and shirring mechanism, of yielding means that frictionally passes over the fabric placed on the supporting means to smooth the fabric prior to its being shirred.

13. In a running stitch sewing machine, the combination with a fabric support, of shirring devices operating on opposite sides of the same, needles that pass through the shirrs, and spring devices operating on opposite sides of the support in advance of the shirring devices and needles.

14. In a running stitch sewing machine, the combination with a fabric support comprising sections, of rack elements associated therewith, common means for securing the sections and elements in position, rotatable shirring means coöperating with the fabric supporting sections, and actuating gearing for the shirring means operating on the rack elements.

15. In a running stitch sewing machine, the combination with a base, of a plurality

of fabric supporting sections mounted thereon and having openings therethrough, rack pins detachably mounted on the base, a securing bar passing through the openings of the sections and engaging the tops of the pins, rotary shirring means coöperating with the fabric supporting sections, and actuating gearing for the shirring means engaging the rack pins.

16. In a running stitch sewing machine, the combination with a fabric support, of shirring means and needle mechanism co-operating therewith, and a plurality of removable plates surrounding the support and constituting means for determining the distance of the line of stitches from the edge of the fabric.

17. In a running stitch sewing machine, the combination with shirring means and needle mechanism coöperating therewith, of needle threading means, means other than the threading means that detachably engage the needle mechanism for supporting the same during the threading operation, and mechanism for moving the supporting means into engagement with the needle mechanism and causing the needle threading means to pass through said needle mechanism, while the latter are so supported.

18. In a running stitch sewing machine, the combination with fabric supporting means, of shirring mechanism that traverses the same, needle mechanism that also traverses the supporting means, a needle support movable with the shirring mechanism and detachably engaging the points of the needle after the same traverse the shirrs, threading means, and automatic means for causing the threading means to pass through the needle mechanism when so supported.

19. In a running stitch sewing machine, the combination with a fabric supporting member, of a carrier movable toward and from the same, rotary shirring devices journaled on the carrier, needles mounted on the carrier and having eyes, threading means carried by one of the shirring devices and arranged to pass through the needle eyes, and a rotary needle support carried by one of the shirring devices and engaging the points of the needles when the threading means passes therethrough.

In testimony whereof I affix my signature, in presence of two witnesses.

HERMAN JONSON.

Witnesses:

JULIAN S. WOOSTER,
GEO. A. HOFFMAN.