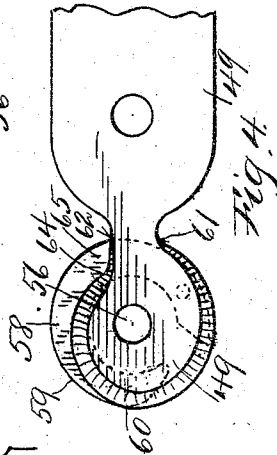
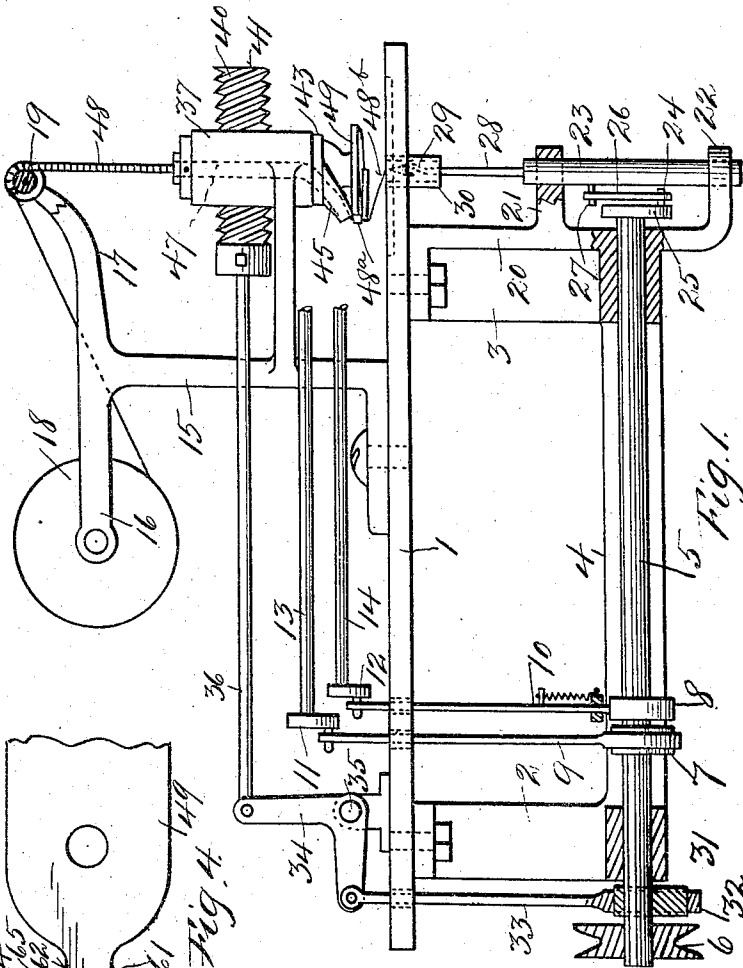
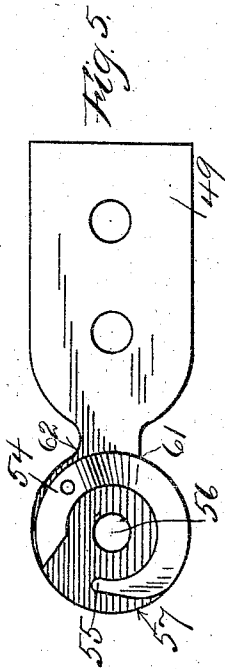
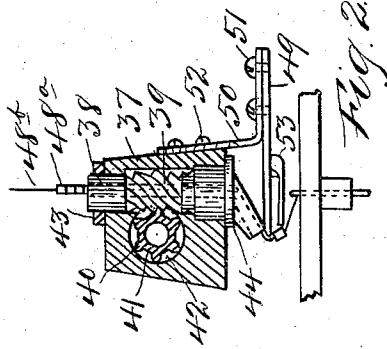
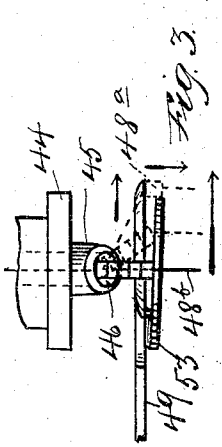


J. A. GROEBLI.
 BEAD SEWING MACHINE.
 APPLICATION FILED JULY 11, 1911.

1,041,780.

Patented Oct. 22, 1912.



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JOSEPH A. GROEBLI, OF NEW YORK, N. Y.

BEAD-SEWING MACHINE.

1,041,780.

Specification of Letters Patent.

Patented Oct. 22, 1912.

Application filed July 11, 1911. Serial No. 638,015.

To all whom it may concern:

Be it known that I, JOSEPH A. GROEBLI, a citizen of the United States, and a resident of the city, county, and State of New York, have invented a certain new and useful Bead-Sewing Machine, of which the following is a specification.

My invention relates to a new sewing machine adapted to attach small articles such as beads to a fabric. Heretofore, in attaching beads to fabric, the beads were first strung upon a thread and then a second thread was wound spirally around the beads and first thread, the purpose of the second thread being to space the beads apart. This simply prepared the string of beads for attachment and in this condition the string of beads was used in connection with a zig-zag sewing machine which latter secured the string to a fabric by forming stitches over the bead threads. There were other methods employed but I cite this as it is the best method used up to the time of my present invention. The fabric supplied with a beaded decoration in this manner was itself much inferior to the product made possible under my invention, because the beads were not very regularly spaced apart and owing to the various threads used they did not lie in a position to give the most desirable effect. And again the use of additional threads detracted from the appearance of the decoration. Aside from these inherent disadvantages, the cost of the decoration was naturally greater, because the beads not only had to be strung on the first or primary thread, but the second or spacing thread, has to be wound around the beads before they were ready to be attached to the fabric, and the attaching had to be done very carefully on a machine which, because of its peculiar operation was not a fast machine; and the thread of the machine tended to pass over the beads themselves, instead of around the holding string, between the beads.

The object of my present invention is to construct a machine which will produce a more artistic and pleasing product; reduce and simplify the operation, and increase speed of manufacturing as well as reduce the cost thereof. I accomplish these results in a novel manner by making the machine for applying the beads so that they may be at-

tached to the fabric by means of the thread on which they are originally strung, thereby avoiding the use of the second or spacing thread above referred to, as well as the separate sewing thread. At the same time I make it possible to manufacture a product of better appearance. I accomplish this by spacing the beads on their original thread, as they are attached by the machine; and in the full embodiment of my invention I not only space the beads, but I do so in such a way that the stitching mechanism of the machine will form a stitch between each bead, and a succeeding bead of the very thread on which the beads are strung. This eliminates two of the threads heretofore used. Furthermore, as the stitches are formed of the thread on which the beads are strung, and between the beads, the latter are properly and regularly spaced apart, and they are caused to lie in a very pleasing manner upon the fabric to give the most brilliant and desirable effect. There is no possibility of a thread coming over the surface of the bead. I preferably employ a simple spacing or separating device in connection with the stitching mechanism so that the beads will be fed in relation to the stitching operation upon their own thread, and I have shown in the present example of my invention, this separating device arranged where the looper of the stitching mechanism will cooperate with the separator, to feed the beads.

In the drawings forming a part of this application Figure 1, is an elevation, with parts shown in section, of a machine embodying my invention in the preferred form, Fig. 2, is a cross section showing the stitching and separating devices, Fig. 3, is an elevation of the looper and separator showing the parts in one position, and Figs. 4, and 5, are a plan and inverted plan respectively of the separator.

My improvements only affect a small part of the complete sewing machine, and can be utilized upon machines now in use, but I have shown herein a sewing machine constructed with more particular regard to the application thereto of my invention.

I have shown a sewing machine constructed on a frame 1, from which depends standards 2, 3, which are connected by a

longitudinal member 4. The standards and connection 4, form a support for an operating shaft, 5, which is shown journaled therein. The shaft 5, is preferably the main shaft of the machine, and it is provided with a pulley 6, by which it receives its operating force from any suitable source. I have shown an eccentric 7, and cam 8, on this shaft which operates the rod 9, and 10; and the latter turn the cranks 11, and 12, to operate the shafts 13 and 14. The latter are for operating the fabric feed of the stitching machine, but as the feed is well known in the art I have omitted the parts thereof, beyond the shafts 13, and 14, because by doing so, I can show my present invention more clearly. It will suffice to say that the feed may be of well known form and be disposed in the usual position relative to the stitching elements.

Upon a standard 15, I have provided the arms, 16, and 17, the former for supporting a reel 18, on which the string of beads is wound, and the latter for supporting a roller 19, over which the string of beads travels in feeding to the stitching mechanism.

I have shown the needle or hook disposed below the bed plate and the looper above, since I prefer to feed the beads from the looper side of the fabric. Depending from the frame 1, is a head 20, provided with lateral arms 21, and 22, which guide the reciprocating needle shaft 23. The movement is imparted to the needle shaft from the main shaft 5, through a pin 24, on a disk 25, which pin is connected by a link 26, with a pin 27, on the needle shaft. The needle shaft is therefore reciprocated in its bearings in the usual manner. The needle 28, or more correctly, in the present illustration the hook is secured to the needle shaft in any desired way, as by screw threading it therein. The particular manner of attaching the needle to the needle shaft can be varied, and it is well understood in the art. The needle itself is here shown as having a hook 29, on its upper end for engaging the thread, and it travels through a nipple 30, attached to the under side of the work support.

On the main shaft 5, I have shown an eccentric 31, operating upon a strap 32, to reciprocate a rod 33, and the latter in turn rocks a bell crank lever 34, which is shown mounted on a stud 35. To one arm of this bell crank lever is fulcrumed a rod 36, which operates the looper. The looper is arranged to oscillate inside a casing 37, which forms a bearing therefor and this casing is arranged to hold the looper above the needle. The body 38, of the looper is provided herein with threads 39, which are intended to move freely of the casing, but are engaged by the threads 40, of sleeve 41, which

is secured upon the end of the rod 36, and reciprocates with the latter. The block 41, reciprocates in a socket 42, in the casing 37, at right angles to the looper body, and the engagement of the threads 40, with the threads 39, on the body of the looper, causes the sleeve 41, to oscillate the looper. The particular character of device for operating the looper is not material to the present invention and I have simply shown this form as one well known in the art.

The looper is provided with a collar 43, which is secured thereto above the casing, and with an integral collar 44, near the bottom which collars secure the looper in its casing, but allows the looper to revolve freely. The looper itself may be variously formed, but I prefer to use the simplest construction and I have therefore shown a simple tube 45, extending off the center line of the looper body and running from the bottom of the latter. This tube has a bore 46, which communicates with the bore 47, through the middle of the looper body. The string of beads 48, passes from the reel 18, around the roller 19; passes through the bore of the looper body, emerging from the end of the tube 45, at some distance from the central line of the looper and from there to the fabric, preferably intermediate the looper and fabric I arrange a novel device for separating the beads upon their thread so that they feed in regular order along their thread and in certain relation to the stitching elements.

In Figs. 4 and 5, I have shown separate views of the device for this purpose, disconnected from the machine. It will be observed that there is a plate 49, which is preferably flat. This plate is to be secured preferably to the casing 37, by means of a bracket 50, which is secured to the plate 49, by the screws 51, and which is itself secured to the casing by means of screws 52. On the under side of the plate 49, I have provided a tongue 53, which inclines downwardly from the point 54, where it is attached to the plate 49, to its end 55. The plate 49, is preferably of circular formation upon its end, and is provided with an aperture 56, for the free passage of the needle therein. The tongue 53, is generally circular in its outer contour, which is the active part, and at one part it projects laterally beyond the plate 49, and then gradually recedes within the outer line of the plate 49, inclining downwardly from that part where it extends beyond the plate 49. The edge 57, of the plate 49, preferably, though not necessarily is nearly circular, and flat. At one portion here shown as 58, the tongue 53, projects beyond the edge of the plate 49, preferably about one half the diameter of the beads of the string 48. At the point 59, the tongue gradually recedes within the con-

tour of the plate, until at the point 60, it is within the lateral limits thereof, and the space, at the point 59, between the tongue 53, and plate 49, is preferably about the same as the length of the beads.

The beads 48^a, on the thread are in rather loose formation, and the thread may be drawn more or less through the beads, while the beads may be moved relative to their thread, and separated apart on their thread.

Let it be assumed that the looper is in the position shown to which it is brought when the rod 36, is in the left hand position in Fig. 1. The end of the tube 45, will then come near the neck of plate 49, on the side 61. In this position the thread of the beads will lie through the looper body, through the tube 45, over the edge thereof, and will pass around the edge of the plate 49, through the point where the needle has last formed a stitch down through the stitch plate to the hook which will be under the separator or feeder. The lowermost bead will then rest upon the edge of the plate 49, so that the thread 48^b, from the plate 49, to the fabric, will have no beads thereon, if the machine has just been placed in condition for starting. The beads will thus be held back by the edge of the plate 49. The reciprocation of the rod 36, caused by the operating connections described, to the right will partially revolve the looper. As the looper revolves, the end of the tube 45, will describe a partial circle around the axis of the looper; when the thread 48^b, will be caused to travel partially around the plate 49, and partially around the needle 28, which was previously passed through the fabric and through the aperture 56, in the plate 49. This is for the purpose of casting in the well known manner a loop around the needle whereby the latter in its descent, will carry a loop of the thread through the fabric. When the looper performed this movement, it carried the thread around the edge of the plate 49, until it came about to the point 62, of the plate. The distance of the edge of the plate 49, from the axis of the looper gradually decreases from about the point 60, to the point 64, where the thread is brought by the looper in making the movement described. When the thread travels around it leaves contact with the plate 49, at about the point 59, thereafter it travels in contact with the tongue 53, which here extends slightly beyond the plate and is preferably continued on the same circle as the other part of the edge of the plate. When in the last movement the thread is swung around the edge of the plate and it contacts with the tongue at 65, which is slightly below the plate the beads will be allowed to travel down because of the vertical space between the plate 49, and tongue. The lowermost bead will drop down until its lower edge rests on the upper,

surface of the tongue. The needle will have caught the loop cast by the looper, around it and upon its descent it will carry the loop down through the fabric. At about the same time the looper will be reversed in its movement and the tube 45, will describe a partial circle in a reverse direction to its first movement. The thread will therefore be carried around the edge of the tongue and plate. When so traveling the lowermost bead which dropped down into contact with the top surface of tongue will ride down slightly owing to the incline of the tongue, until the top edge of the bead finally works under the edge of the plate 49. As this takes place the edge of the plate 49, cuts in between the lowermost bead and the one above it. When the lowermost bead is carried around far enough so that the thread is engaged by the plate 49, and not by the tongue the lowermost bead will lose the support of the tongue, and as it is now below the edge of the plate, it will therefore drop down the thread and against the fabric near the stitch just formed by the needle. The bead which was next to the one thus spaced will be held up by the edge of the plate 49. We now have a stitch formed of the thread, and a bead between the looper and fabric. The fabric will now be fed forward in well known manner by a suitable feeding device.

The needle will now be again advanced through the fabric and the looper will be rotated as before to cast a loop around the needle. This time, as the tube 45, reaches the point 65, the bead which was resting on plate 49, now drops down onto the tongue. The needle recedes from the fabric, carrying a second loop therethrough to form a second stitch. This second stitch will be formed in the thread beyond the bead which was separated in the previous operation, so that that bead lies between two stitches and is firmly held upon the fabric. The return movement of the looper now carries the thread back around the tongue, and plate. As it does so the bead which dropped to the tongue will ride down thereon, and finally drop down to the fabric, leaving the ones above it held up by the plate 49. This spacing or feeding of the beads along their thread preferably takes place at each stitch. The above operations may be repeated very rapidly and the machine will have no extra burden thrown on it.

From the above it will be apparent that the machine is very simple in its operation. Much of the cost of the application of the beads, as well as their preparation, for the machine is avoided since the present machine, is adapted to utilize beads strung loosely on a single thread. The finished product is very pleasing because the beads are regularly spaced and firmly held in regular order, by the intermediate stitches with

no additional threads to cause them to lie irregularly and destroy the appearance of the decoration.

It will be apparent that though my invention in the form herein shown, is very simple and effective, nevertheless changes may be made without departing from the scope of the annexed claims.

It will be understood that spangles or any other small articles which can be strung on the sewing thread may be attached with a machine of this character.

Having described my invention what I claim is:

1. In a bead sewing machine a looper arranged to cast loops on one side of the fabric, a sewing hook adapted to pierce the fabric and to carry said loops through the fabric, and means operating between said looper and the fabric for separating beads on the thread which is cast by said looper, whereby the beads will be fed in regular rotation relatively to the stitching operations of said hook and looper.

2. In a bead sewing machine a sewing hook adapted to pierce the fabric, a looper arranged to cast a thread loop over the portion of said sewing hook which extends through the fabric whereby the loop will be drawn through the fabric upon the retraction of said hook, and means operating between the said looper and the fabric, and adapted to separate beads on the thread which is cast into loops by said looper, for the purpose of regularly feeding beads on said thread relative to the stitching operations of said hook and looper.

3. In a bead sewing machine a looper through which a string of beads is adapted to be fed, said looper being adapted to form loops of said bead string around a sewing hook, a sewing hook adapted to pierce the fabric and to engage the loops formed by said looper, and means for causing the beads of said string to feed along their thread in definite relation to the stitching operations of said sewing hook.

4. In a bead sewing machine, stitching mechanism, comprising a looper adapted to form loops of the sewing thread on one side of the fabric, a sewing hook arranged to pierce the fabric from the opposite side to that on which said loops are formed, and to engage said loops for the purpose of drawing them through the fabric and a separator acting on beads on the thread which is cast by said looper, to cause the beads to feed in regular order to the stitching mechanism and arranged whereby the relative movement of said looper and separator will cause the separation of the beads.

5. In a bead sewing machine, stitching mechanism, comprising a sewing hook arranged to pierce the fabric, an oscillating

looper arranged on the opposite side of the fabric from said sewing hook and adapted to cast loops around said hook when the latter is projected through the fabric and a separator adapted to act upon beads on the thread which is cast by said looper, and adapted to cause the separation of a bead on said thread from those beyond it, upon one of the oscillatory movements of said looper, and to feed the said separated bead upon the return oscillation of the looper, whereby said beads will be fed in regular order along the sewing thread relatively to the stitching operations.

6. A device of the character described, embodying a needle, and a looper for casting a loop over the needle and means interposed between the needle and looper comprising a plate, adapted to support beads on the sewing thread between the looper and fabric, having a tongue for supporting the lowermost bead while it is being separated from the beads succeeding, the said looper being adapted to move the thread relative to said plate, and tongue, during its loop casting movement, to cause the separation of a bead.

7. A device of the character described, embodying a needle, an oscillating looper, from which the thread is adapted to be fed, said looper being adapted to cast loops over the needle, a plate adapted to support beads on the sewing thread, and arranged between the looper and fabric, means for supporting the beads, on a plane below the supporting position of the plate, said looper being adapted to move the thread relative to said supports whereby the lower bead will move from its first to its second support and be separated from the succeeding beads by the said plate.

8. A device of the character described, embodying a needle, a plate above the fabric, having a tongue projecting laterally beyond the edge of the plate for a portion of the circumference of the latter, said tongue inclining downwardly, and an oscillating looper adapted to move the sewing thread back and forth around the edge of said plate whereby the sewing thread will engage the edge of said plate for a portion of its movement and engage said tongue during another portion of its movement, for the purpose set forth.

9. A device of the character described, embodying a needle arranged below the bed plate, an oscillating looper arranged above the bed plate, and having an aperture for the passage of a string of beads there-through, a plate, having a circular portion and curved inwardly therefrom, toward the axis of the looper, a tongue, depending below said plate, having an inclined edge extending beyond the edge of said plate, where the latter curves inwardly, the

edge of said tongue being substantially co-
extensive with the curve of the circular part
of said plate, the said looper being arranged
to carry the sewing thread back and forth
against the edge of said plate and tongue,
whereby beads on the sewing thread will be
supported during part of the movement by
the edge of the plate; then by the tongue,
and finally be separated from a succeeding

bead by the edge of the plate, and then dis- 10
charged from said tongue.

Signed at the city, county and State of
New York this 30th day of June 1911.

JOSEPH A. GROEBLI.

Witnesses:

WM. G. MILLER,
HENRY EGLI.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."