CARL NECKER, OF BERLIN, GERMANY, ASSIGNOR TO NECKER & CO., OF BERLIN, GERMANY, A FIRM.

OVERSEAM SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 768,906, dated August 30, 1904.

To all whom it may concern:

Be it known that I, CARL NECKER, a citizen of the Empire of Germany, residing in Berlin, in the Kingdom of Prussia, Germany, have invented certain new and useful Improvements in Overseam Sewing-Machines, of which the following is a specification.

The purpose of this invention is to provide a machine for sewing circular objects.

The drawings exhibit one embodiment of the invention as combined with an overseam sewing-machine for sewing together two circular pieces of fabric cut or folded into corresponding shape.

In Figure 1 the sewing-machine is shown in ground plan, the casing of the machine being cut on line C D of Fig. 2. Fig. 2 shows the upper part of the machine as seen from the section-line A B of Fig. 1. The looper is here shown in the position indicated in Fig. 9. Fig. 3 is a transverse section through the machine with a portion of the same broken away. Fig. 4 shows the motion-transmitting mechanism for the looper in side view. Fig. 5 is a front view of the shifting mechanism. Fig. 6 is a detail of the same, and Figs. 7 to 10 show the method of forming the stitch.

The base-plate 11 supports at one end the housing 12 of the sewing-machine, which contains the motion-transmitting mechanism for the individual elements of the sewing-machine. At the front of this housing 12, Figs. 1, 2, and 3, is a disk 14, supported rotatably in a suitable support or bracket 13. Opposite this disk 14 is arranged a second disk 15, supported from a suitable slide-piece 16. The disk 15 is attached to one end of a shaft 19, which is supported in suitable bearings 20 and 21 of posts rising from the slide-piece 16.

The slide 16 is capable of being shifted toward the housing by means of a suitable hand-lever 18, pivoted at 17, so that the disk 15 when shifted in action with the disk 14 as a press for the holding of the article placed between the disks. The disk 15 receives a step-by-step rotary movement by means of a suitable mechanism. In the drawings for this purpose an eccentric 23 is provided upon the shaft 22, Figs. 1 and 3, journaled in the housing 12, which, by means of the two-armed lever 24, actuates a clamping device, Figs. 1, 5, and 6. The lever 24 engages the arm 25 of the shifting-lever 28, the end 26 of which is clamped in the well-known manner on the rim of the disk 27. Upon the opposite side of the disk 27 is a lever 29, which is pivoted upon the shaft 19 and which is clamped fast upon the rim of the disk 27 in the same manner as the lever 28, Fig. 6. It serves for securing the shaft 19 in place when the lever 28 returns again after the shifting movement. The leverage of the lever 24 is capable of being altered at will by moving the supporting-plate 30 of the lever either forward or backward in the slotted supporting-plate 33. By this means an increase or decrease in the intermittent rotary movement of the shaft 19 and an alteration in the length of the stitches are obtained.

The disks 14 and 15 can be roughened on their inner faces, so that they will hold the interposed article fast. For the same purpose also special pins may be provided in either or both disks 14 and 15, as is shown in Figs. 1 and 2 in respect to the disk 14, in which the pins are numbered 31.

For the purpose of locating the article to be sewed centrally to the axis of the disks 14 and 15 a special centering device is provided. The same consists of the ring-shaped member 40, Figs. 1 and 3, which is secured to the machine exactly centered to the disks 14 and 15, though shiftable. The entrance-slot in the ring 45 is, as may be seen from Fig. 3, conically formed. As shown in the drawings, the ring 45 is attached to a slide 46, which latter is shiftable in keepers 47 upon the machine-housing. A projecting pin 48 limits the forward-and-backward movement at the proper points.

The press formed by the disks 14 and 15 is so arranged relatively to the needle 22 of the sewing-machine that the needle pierces the edges of the article to be sewed projecting from the press and by the step-by-step movement of the press lays the stitches in crossing lines. The needle receives with the needle-bar 33, in which is tightly clamped, for-
ward-and-return motion by means of the circular eccentric 34 upon the main shaft 22.

For forming the overseam-stitch there is employed, further, in the well-known manner a looper 35, which is seated in a lever 36. By means of the lever the looper receives in the present case a three-part movement—namely, one forward and backward, one downward and upward, and one sidewise movement. The lever 36 is for this purpose supported at 37 upon a lever pivoted at 38, so as to have a direct and a perpendicular movement. The lever 39 receives its movement through disk 40, provided with a side groove and located upon the shaft 22, and the forward-and-backward movement is thereby imparted to the looper 35. The lever 36 is, as shown in Fig. 1, provided at the under side with a roller 41, which runs in a groove of the disk 42. The groove is so formed that the looper receives a definite sidewise movement. Finally, the grooved disk 42 has the exterior form of an eccentric, and it rolls upon the eccentric, Figs. 1 and 4, which is arranged sidewise upon the lever 36. A reliable contact of the roller 43 with the eccentric grooved disk is secured by means of the flat spring 44, attached to the machine. The lever 36 is swung by means of the mechanism described to and fro and effects thereby the to-and-fro movement of the looper 35.

The operation of the machine is as follows: Assumimg two circular disks 49 and 50, Figs. 3, 7 to 10, of material to be sewed together, the centering device is shifted up into operating position—that is, opposite the disk 14. The ring 45 then covers the disk 14. The pieces 49 and 50 to be attached are now placed in the ring from the front, with the aid of pincers, if necessary, in case the pieces are of small diameter. Then the disk 15 is pressed up through the ring 45 toward the disk 14 by means of the hand-lever 18. The disk 15 thereby carries with it the pieces of material 49 and 50 in the ring 45. The same is true, therefore, in consequence of the conical form of the entrance-channel of the ring 45, concentrically toward the disk 14. Now the ring 45 is shifted back, as shown in dotted lines in Fig. 3, while the disk 15 remains pressed against the disk 14, the same being there held by the left hand of the operator, which is upon the lever 18. By aid of the hand-wheel 51 the sewing-machine is now set in motion, and the formation of the overseam-stitches takes place in the usual manner. For the better understanding of the same the chief parts of the formation of the stitch are shown in Figs. 7 to 10. In Fig. 7 the needle is shown in retracted position. The looper 35 has taken up a loop of the thread and has lifted the same above the pieces of material 49 and 50, also the disk 14. The looper assumes thereby such a position that the needle 32 upon its next forward movement enters the loop held by the looper and by further movement pierces through both pieces 49 and 50, Fig. 8. Now the looper 35 swings sidewise and then forward, so as to pass below the needle 32, as shown in Figs. 2 and 9. The needle begins then its return movement, so that the looper takes into a new loop of thread, Fig. 9. The looper 35 intermeshes with this loop, Fig. 10, and carries the same in a bow over the needle, also the disks 14 and 15 and the material 49 and 50, into the position shown in Fig. 7. In the same time the disk 15, by means of the shifting mechanism connected with the same, has moved for a distance corresponding to the length of a stitch and carried the pieces 49 and 50, also the disk 14, with the same, whereupon the described operations are repeated. The thread-loops tend to catch upon the edges of the pieces 49 and 50 and arrange themselves irregularly upon the circumference of these disks. For the purpose of avoiding this a loop-guide 52 is arranged above the disk 14, said 14 position being cooled fast by the housing, a pivoted rod operable by said eccentric, and means actuated by said rod for imparting intermittent rotary mo
tion to said slide-piece shaft and to said disks, substantially as described.

2. In a machine for sewing circular objects, the combination, with a press for holding the articles to be sewed, said press consisting of a disk on the machine-frame and a disk axially shiftable toward and from said first disk, of a needle, a looper, means actuating said needle and looper so as to form the stitches in a circle defined by the axis of the press, and a loop-guide arranged at the circumference of the frame-disk and overhanging the edge of the object to be sewed, for arranging the loops regularly and permitting the laying of the same close together, substantially as set forth.

3. In a machine for sewing circular objects, the combination, with a press for holding the articles to be sewed, said press consisting of a disk on the machine-frame and a disk axially shiftable toward and away from said first disk, of an annular guide member for the articles to be sewed, said member having a conical interior face tapering toward the frame-disk, means for supporting said guide in the path of the shiftable disk, and means for shifting said guide in axial alignment with said disks, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

CARL NECKER.

Witnesses:
PAUL SCHULZ,
HEINRICH VON HAKE.