No. 854,105. PATENTED MAY 21, 1907.

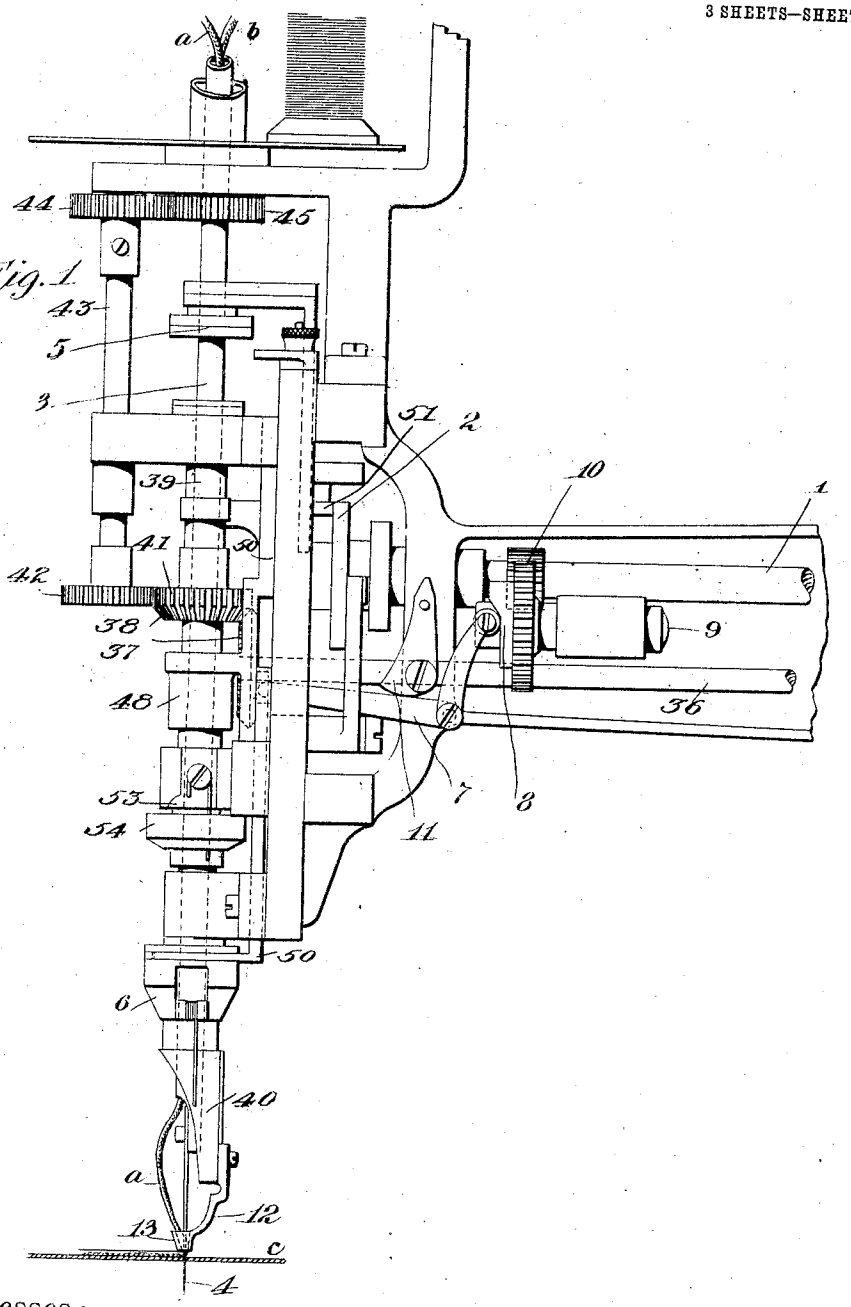
T. O'NEILL.

SEWING AND EMBROIDERING MACHINE.

APPLICATION FILED OCT. 15, 1906.

3 SHEETS—SHEET 1.

Fig. 1.



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Inventor

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3 SHEETS—SHEET 2.

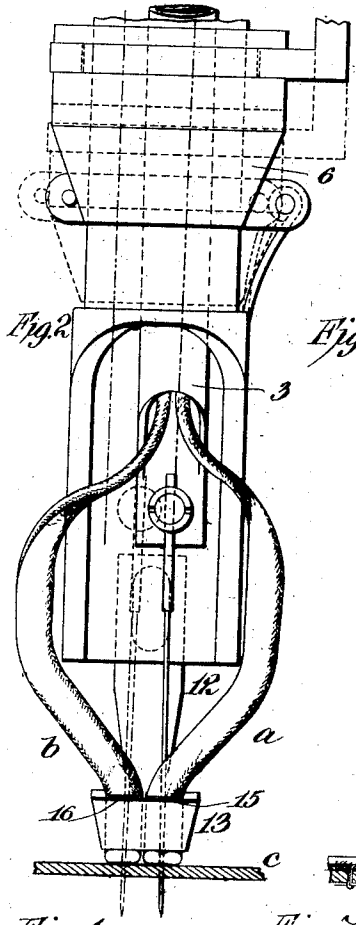


Fig. 2

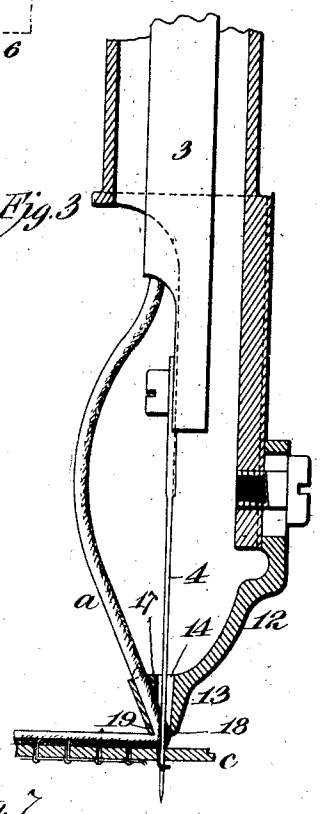


Fig. 3

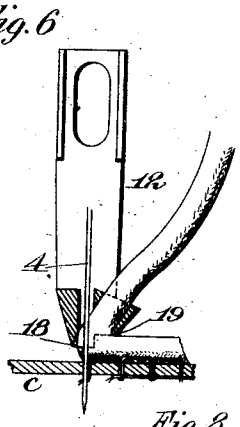


Fig. 6

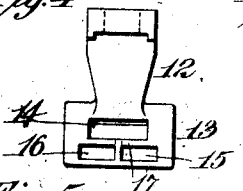


Fig. 4

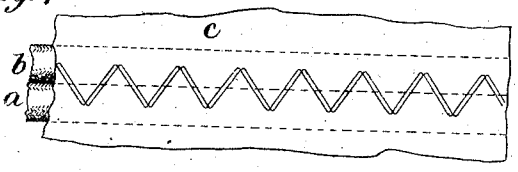


Fig. 7

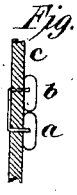


Fig. 8

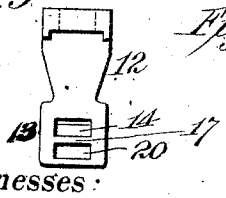


Fig. 5

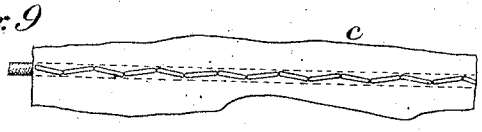


Fig. 9

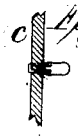


Fig. 10

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No. 854,105. PATENTED MAY 21, 1907.

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APPLICATION FILED OCT. 15, 1906.

3 SHEETS—SHEET 3.

Fig. 11

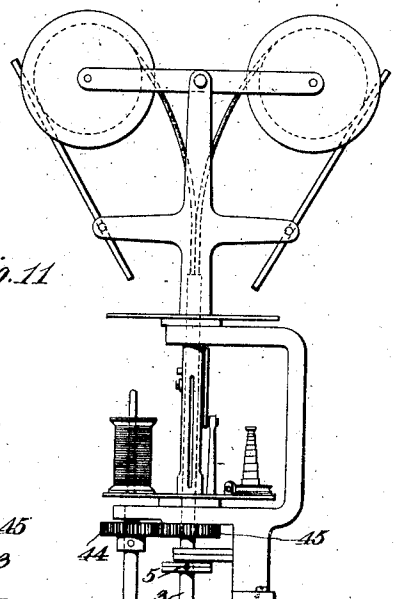


Fig. 13

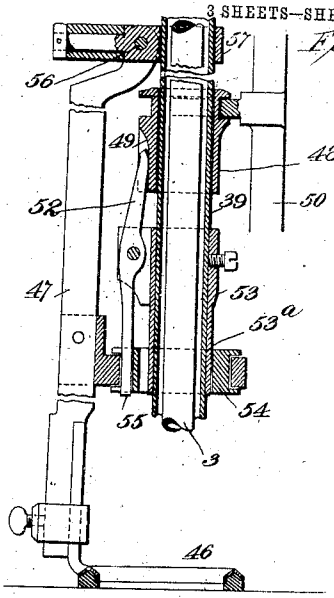
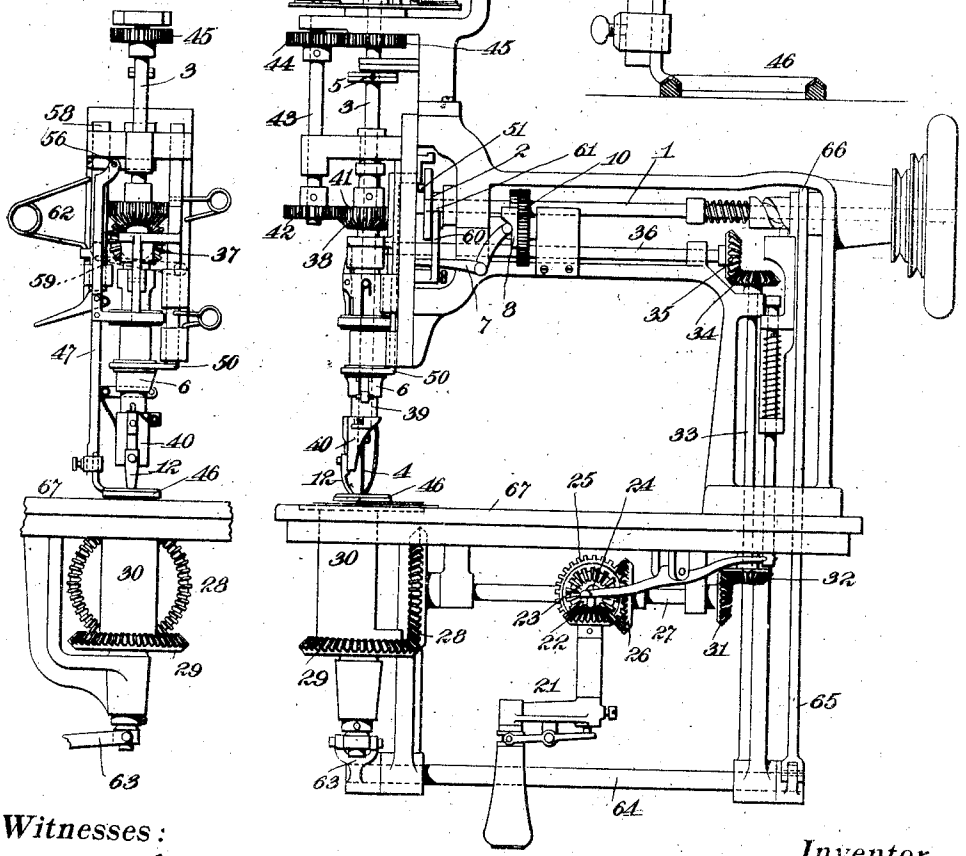


Fig. 12



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UNITED STATES PATENT OFFICE.

THOMAS O'NEILL, OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-HALF TO ROYAL EMBROIDERY WORKS, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

SEWING AND EMBROIDERING MACHINE.

No. 854,105. Specification of Letters Patent. Patented May 21, 1907.

Application filed October 15, 1906. Serial No. 338,919.

To all whom it may concern:

Be it known that I, THOMAS O'NEILL, a citizen of the United States of America, residing in the borough of Brooklyn, county of Kings, and State of New York, have invented an Improvement in Sewing and Embroidering Machines, of which the following is a specification.

The object I have in view is the production of a machine for sewing on embroidery, braid, chenille, cord, tape, gold braid, gold cord, appliqué, and ornamentation in general, with an invisible or blind stitch, which will be superior to those heretofore constructed.

My invention also relates to means for sewing on embroidery of all kinds in a plurality of rows, with the rows stitched together in addition to being stitched at the backing.

My invention further relates to means for sewing on embroidery, braid and the like on its edge and in one or more rows.

In the accompanying drawing, I show a mechanism for carrying out my invention, and in which

Figure 1 is an elevation of the head of a Stein No. 1 universal sewing machine, showing one form of my invention applied thereto, Fig. 2 is a front view of the lower end of the needle bar, with the invention applied, Fig. 3 is a section thereof taken at right angles to Fig. 2, Fig. 4 is a top view of the nipple shown in Figs. 2 and 3, Fig. 5 is a top view of a modified form of the nipple shown in Fig. 4, Fig. 6 is a sectional view of the nipple and work, showing another form of the invention, Figs. 7 and 8 are detail views of the work as done with the nipple shown in Fig. 4, Figs. 9 and 10 are detail views of the work done with the nipple shown in Fig. 6. Fig. 11 is a side elevation of the complete machine which is partially illustrated in Fig. 1. Fig. 12 is a front view of a portion of the structure shown in Fig. 11, and Fig. 13 is a detailed sectional view of part of the mechanism shown in Figs. 11 and 12.

In all of the views, like parts are designated by the same reference characters.

In carrying out my invention, I provide a sewing machine with an attachment for sewing embroidery, braid and the like, on cloth with an invisible or blind zigzag stitch. The blind stitching is secured by bending the embroidery or other material which is to be attached to the cloth, and passing the needle through the bent portion in a manner similar to that shown in the ordinary form of tailors' blind stitch sewing machines, such as have been on the market for many years, or as indicated in the patent of Robert Cornely, No. 798,878, dated September 5, 1905.

The needle is arranged to make a zigzag stitch through the embroidery or other material which is to be attached to the cloth. This stitch is obtained preferably by oscillating the needle and needle support so that the stitching may be made alternately upon one side and the other of the center line. Where a plurality of rows of material is to be attached to the cloth, they may be arranged side by side with a single row of stitching alternately engaging with one row, and the other and the cloth, whereby the two rows will be not only secured to the cloth but to each other. Where more than two rows are used, the stitch must be made so as to go from one row to the adjacent row, and then so on back and forth from the outer rows, so that all of the rows will be joined together as well as to the cloth on which they are sewed.

In the drawings, Figs. 1, 11, 12 and 13 show the head of a No. 1 Stein universal sewing machine which works on the same principle as that shown in the patent to Adolphe V. Deshayes 462,858, dated November 10, 1891, but with my improvement applied thereto. In such a machine, without my attachment, a zigzag stitch is made entirely through the embroidery or other material to be sewed to the cloth, so that the stitch shows and is not invisible.

In Fig. 1, the driving shaft 1, through the agency of the cam 2, reciprocates the needle-bar 3, which carries the needle 4. The needle bar is provided with a universal joint 5, and is oscillated in the usual manner by means of a cam 6, which is actuated by the bell-crank lever 7, which engages with the cam 8, on the counter-shaft 9, which is rotated through gearing 10 from the driving shaft 1. A cam block 11 restricts the movement of the bell crank lever 7 and correspondingly limits the extent of oscillation of the needle-bar and needle. By changing the relation of the gears 10 and the cam 8, the oscillation of the needle-bar can be such that three or more

rows of applied material may be sewed simultaneously, the stitch passing from one row of braid to the adjacent one and back and forth from the outside rows. The nipple 12 is so supported upon the head of the machine that it is elevated at the proper time to permit the feed of the cloth.

The usual cloth feeding mechanism is employed, to feed the cloth *c* upon the table or plate 67. This mechanism operates as follows, it being understood that this description is applied to the old and well known No. 1 Stein universal sewing machine: A crank 21, arranged so as to be conveniently actuated by the operator, turns a miter gear 22 which meshes with a miter gear 23 carried by the shaft 24. This shaft 24 has a miter gear 25 which meshes with a fourth miter gear 26 on a shaft 27. One end of this shaft 27 is provided with a miter gear 28, which intermeshes with a miter gear 29, which revolves the usual shuttle around the needle; the shuttle is mounted in the casing 30. The shuttle is not shown, for its construction is too well known to need specific illustration. A miter gear 31 on the other end of the shaft 27 engages with a miter gear 32, which is carried by the lower end of a vertical shaft 33. A miter gear 34 on the upper end of the shaft 33 intermeshes with the miter gear 35, which is carried upon one end of a horizontal shaft 36. The other end of this shaft is provided with a miter gear 37, which gear intermeshes with a miter gear 38, which is mounted upon the vertical tubular shaft 39. Within this tubular shaft the needle shaft 3 reciprocates a fitting 40 for the shank of the nipple 12. A spur gear 41 is connected to turn with the miter gear 38, and is in engagement with a spur gear 42 on the lower end of a shaft 43 which carries a spur gear 44 on its upper end. This spur gear 44 meshes with a spur gear 45 carried by the needle shaft 3. The presser-foot 46 is secured to the lower end of an oscillating arm 47. The shaft 39 has loosely mounted upon it a sleeve 48. This sleeve is provided with a cam 49, said sleeve and cam being vertically reciprocated by being carried on a slide 50, which is reciprocated by the same mechanism which reciprocates with the needle bar. This mechanism includes a crank pin 51 on the disk 2 which engages with the cam 49. A lever 52 is pivoted in a sleeve 53. This sleeve is rigidly secured to the shaft 39 and has a squared portion 53^a, which passes through an elongated rectangular opening in a collar 54. The lower end 55 of the lever 52 engages with the collar 54, which collar is connected to the oscillating arm 47. This arm 47 is pivoted at 56, and a guide 57 surrounds the tubular shaft 39 and is pivoted to the slide 58. One arm 59 of a bell crank lever which is acted upon by the shaft 1 engages with the slide 58. The other arm 60 of the bell crank lever is acted on by a cam 61, carried on the end of the shaft 1. This mechanism raises the presser-foot. A spring 62 lowers the presser-foot. The lever 63, mounted upon the shaft 64 is reciprocated by a link 65, and eccentric 66 on the shaft 1 serves to rotate the shuttle about its own axis in the usual manner.

By manipulating the crank 21 the direction of feed may be varied as desired, simultaneously turning the shuttle casing 30, the presser-foot 46, and the nipple 12.

The shape of the nipple will be varied according to the character of the work to be performed. As shown in Figs. 2, 3 and 4, two rows of braid, *a*, *b* are simultaneously sewed upon the cloth *c*. The nipple 12 has a foot 13 containing a passage 14 for the needle, and slots 15, 16 for the braid or embroidery *a*, *b*. Instead of the two slots 15, 16, the separating partition may be removed and a single longer slot provided, but this is not desirable as the two rows of braid should be separately guided within the nipple, to secure the best results. The passage 14 is shown as perfectly vertical with its walls parallel to the needle. The slots 15 and 16 are inclined, as shown in Fig. 3. A separating partition 17 is located between the passage 14 and the slots 15 and 16, but does not extend throughout the depth of the slots. The width of the slots 15 and 16 is such as to make a snug fit with the embroidery or braid or other material which is being applied to the cloth. It will be noticed from Fig. 3, that the slots 15 and 16 connect with the passage 14 intermediate the ends of the latter, and that the width of the passage 14 at the bottom is the same as the width of the slots 15 and 16 at the top. Accordingly the braid or embroidery *a* and *b* passing through the slots 15 and 16 will pass out at the bottom through the passage 14 which will be of such size as to make a snug fit therefor. The needle 4 being caused to oscillate as it is alternately raised and lowered will make alternate stitches in the rows of braid *a* and *b*, such stitch being of the zigzag shape shown in Figs. 7 and 8. The needle will pass longitudinally through the braid, where the latter is bent around the lower edge of the nipple so that the stitching will be concealed and will not be apparent on the right side of the goods.

The rear wall 18 of the passage 14 extends down to the same level as the front wall 19, so that the material which is being attached to the cloth will be confined at both the front and rear. There will, therefore, be no possibility of the applied material being fed in so far as to cause the needle to pass entirely through the material and thereby expose the stitch on the upper surface thereof, or pucker up the material and render the work valueless. The applied material *a* and *b* entering the nipple at the top, permits it to be fed with a minimum amount of friction, which

would be impossible were the material to enter at the side, which would put another bend in it above the place where it bends around the edge 19.

The invention may be modified in many ways for attaching materials in different manners. In Fig. 5, a single opening 20 is provided in the nipple for a single row of material to be applied to the cloth. In this case, the needle will alternately engage with the underside of the material adjacent to its edges. In Fig. 6, is shown a modified form of nipple for applying the material to the cloth so that it will stand up on one edge, as shown in Figs. 9 and 10. Here the amount of oscillation of the needle is reduced very much so that the zigzag is not so pronounced as before. It may be sufficiently great, however, to alternately engage with the under side of the applied material close to opposite edges. In this nipple the edge 19 must be cut away in order to permit the applied material to pass freely out of the nipple. The edge 18, however, is not removed so that a guide is formed for the bend of the material, in order to prevent it ever getting out of the path of the needle.

My invention may be employed in connection with all forms or ornamentation of cloth for applying embroidery, appliqué, braid, strips of the same goods or different goods, or anything in fact, to cloth. Where two or more rows are used, they will be stitched together, and it is possible with this machine to stitch the rows of embroidery much closer together and in a much more neat manner than is possible by hand or by the ordinary sewing machine.

In accordance with the provisions of the patent statutes, I have described the principle of my invention, together with the apparatus which I now consider to represent the best embodiment thereof; but I desire to have it understood that the apparatus shown is merely illustrative and that the invention can be carried out in other ways.

Having now particularly described and ascertained the nature of my invention, and in what manner the same is to be performed, I declare that what I claim and desire to secure by Letters Patent is:

1. A sewing machine having means for reciprocating the needle, means for oscillating the needle and means for maintaining a plurality of rows of material to be applied upon the cloth within the sphere of action of the needle, and means for maintaining the material in a bent backward position so that the needle passes through the bent portion of the material and a blind zigzag stitch is produced.

2. In an embroidering machine, the combination of means for attaching material to a backing with a blind zig-zag stitch feeding mechanism, and means for varying the direction of feed of the machine at the will of the operator.

3. In an embroidering machine, the combination of means for attaching a plurality of rows of material to a backing with a blind zigzag stitch feeding mechanism, and means for varying the direction of feed of the machine at the will of the operator.

4. An improved nipple for a sewing machine having a passage for the needle and an inclined slot for the material to be applied to the cloth, the front wall of the needle passage extending down to a level with its back wall.

5. In a sewing machine, the combination with a nipple having a passage therethrough, of a needle, and means for reciprocating and oscillating the needle, the said nipple also having a slot for the material to be applied to the cloth, the said passage being inclined and open at its upper end and communicating at its lower end with the needle passage, the width of the needle passage being such that the material to be applied to the cloth may be freely but snugly inclosed therein.

This specification signed and witnessed this 8th day of October, 1906.

THOMAS O'NEILL.

Witnesses:
LEONARD H. DYER,
JOHN S. LOTSCH.