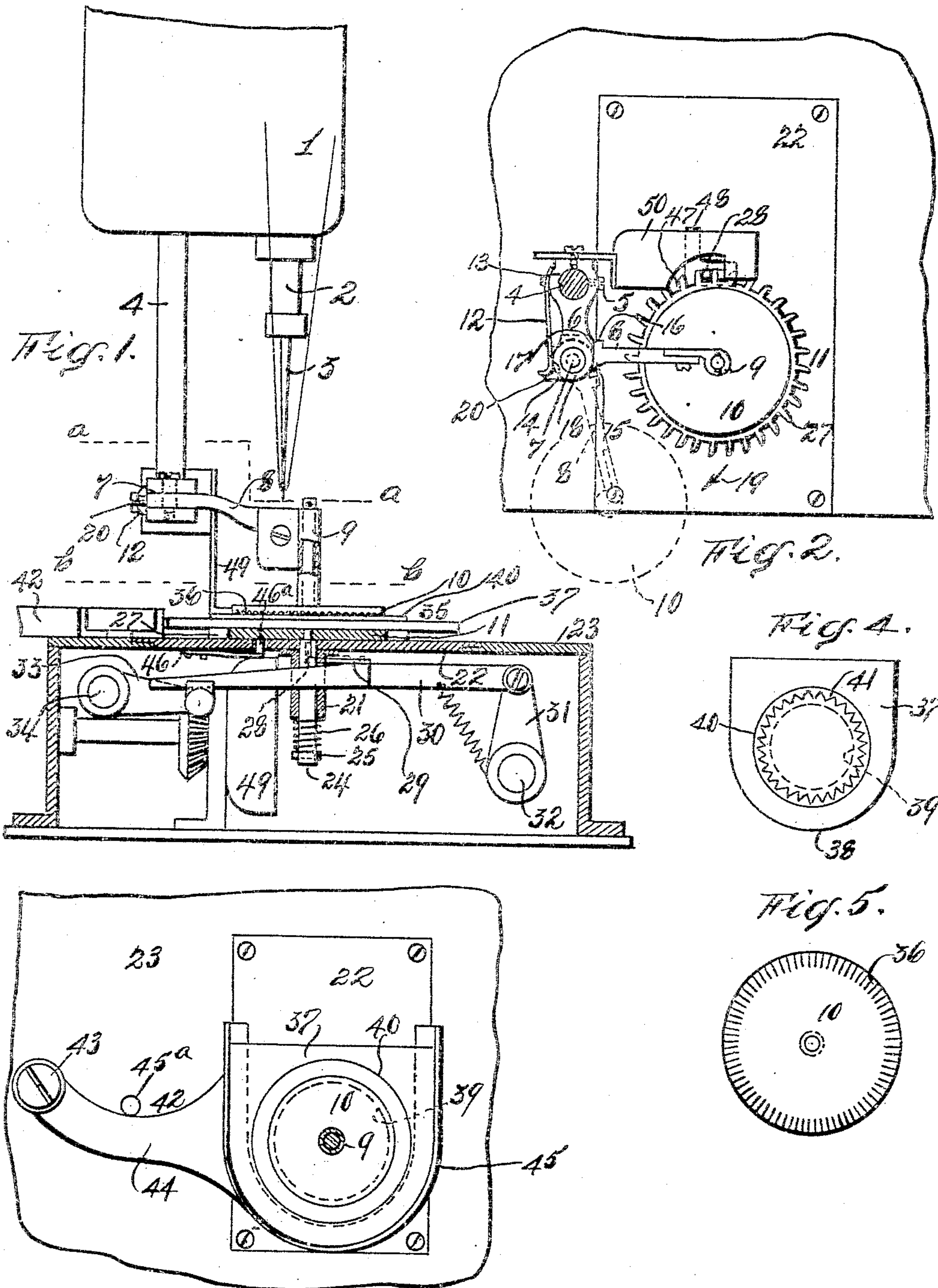


S. L. COHEN.
SEWING MACHINE.
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956,888.

Patented May 3, 1910.



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UNITED STATES PATENT OFFICE.

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SEWING-MACHINE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, SAM L. COHEN, a citizen of the United States, residing at Manhattan borough, city, county, and State of New York, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a clear, full, and exact description.

This invention relates to an improvement in sewing machines, but more particularly to that class of sewing machines which is known in the trade as a zig-zag machine.

While my invention relates in a general way to an improvement in zig-zag sewing machines, the chief object of my invention is to adapt such sewing machines to apply the zig-zag stitch to material of circular outline. To adapt the sewing machine to apply the zig-zag stitch in circular outline, I provide a rotatable feed-dog and a rotatable presser-foot, between which the material to be sewed is placed.

I have herein illustrated my improved device as applied to a Wheeler & Wilson zig-zag sewing machine, and as such machine and the operation thereof is well known in the art, I have omitted all parts of said machine excepting those which are necessary to illustrate the adaptation of my improvement.

I will now proceed to describe my invention, the novel features of which I will finally claim, reference being had to the accompanying drawing, forming part hereof, wherein:

Figure 1 is a front elevation, partly in section, of a Wheeler & Wilson zig-zag sewing machine; having my improvement applied thereto, certain parts not necessary to illustrate my improvement being omitted; Fig. 2 is a sectional plan view, taken on a line *a—a* in Fig. 1; Fig. 3 is a similar view taken on a line *b—b* in Fig. 1, and showing the work locator which forms a part of my invention; Fig. 4 is a plan view of one form of work for which my improved device is adapted; and Fig. 5 is a bottom plan view of the presser-foot of my improved device, showing the teeth thereon, the said teeth being for the purpose of advancing the material.

Referring now to the drawing, the numeral 1 indicates the head of the sewing

machine, while 2 indicates the needle-bar supporting a needle 3, the ordinary longitudinally movable presser-foot bar being indicated by 4. By referring to Fig. 2, it will be seen that the presser-foot bar 4, at the lower end thereof, has secured thereto, by means of a set-screw 5, an arm 6, to the outer end of which I pivotally secure, as at 7, a frame 8, the outer end of said frame having removably secured thereto, a tubular support 9, which in turn rotatably supports a presser-foot 10.

As illustrated in Fig. 2, the presser-foot 10 is located in its operative position; or in other words, located so as to adapt it for rotation by a rotatable feed-dog 11 (see Fig. 1). In order to hold the presser-foot 10 in the above named position, I provide a spring 12, one end of which is secured to the hub 13 of the arm 6, the outer end of said spring being adapted to contact a flattened portion 14 on the hub 15, of the frame 8, there being a stop 16 also on the hub 15 of the frame 8, which is adapted to contact the flattened portion 17 on the hub 18 of the arm 6. The tension of the spring 12 keeps the presser-foot 10 in an operative position with respect to the needle 3 and feed-dog 11. Should I desire to swing the presser-foot 10 away from the operative position above referred to, I pull the said presser-foot outwardly in direction of the arrow 19, whereby the spring 12 will be forced outwardly by the lug 20 on the hub 15 of the frame 8 (see dotted lines Fig. 2).

By referring to Fig. 1 it will be seen that the feed-dog 11 is rotatably supported in a tube 21, the said tube being supported by a removable auxiliary plate 22, which is in turn carried by the needle-plate 23 of the machine. In order to keep the feed-dog 11 in contact with the plate 22, I provide the lower end of the spindle 24 of the said feed-dog with a pin 25, between which and the lower end of the tube 21 I position a spring 26.

By referring to Fig. 2, it will be seen that the feed-dog 11 is provided with teeth 27 with which a pin 28 is adapted to engage. By referring to Fig. 1 it will be seen that the pin 28 is a part of the bracket 29, which I have, in this instance, secured to the reciprocating bar 30, the said bar 30 being the

bar which operates the feed-dog of the sewing machine when arranged for producing zig-zag stitch in the form of a straight line. The bar 30 is a well known element in a Wheeler & Wilson sewing machine and is reciprocated by an arm 31 on the shaft 32, the said shaft being oscillated by a mechanism at the rear of the sewing machine. To cause the feed-dog to rise and fall at the proper time, a reciprocating arm 33 is provided, which in turn is carried by an oscillating shaft 34, the said shaft being also operated by a mechanism at the rear of the machine. The brief description of the operation of the bar 30 to operate the feed-dog refers to straight line stitching. As the operation of my improvement is not dependent upon the ordinary feed-dog of the sewing machine, it has been omitted.

The object of placing the bracket 29, which carries the feed-dog operating pin 28, upon the bar 30, is to advance the said feed-dog step by step as the said bar 30 is reciprocated, the said bar 30 being caused to rise and fall, in order that the pin 28 will advance the feed-dog, by the arm 33. The pin 28 is caused to operate in the same manner as the ordinary feed-dog, but instead of advancing the material, the pin 28 rotates the feed-dog 11, which, by the aid of the presser-foot 10, causes the material 35 (see Fig. 1) to rotate. In order that the presser-foot 10 will grip the material and not slip, I provide the under side thereof with serrations or teeth 36 (see Fig. 5).

As an illustration of the object of my improvement, I have shown a piece of fabric 37 rounded at one end as at 38, the said fabric being provided with an opening 39, over which I have, in this instance, indicated a circular piece of celluloid, for instance, 40, the said celluloid being secured to the fabric 39 by the zig-zag stitching 41.

Another feature of my improvement comprises a locator 42 which is pivoted to the needle-plate 23 as at 43, (see Fig. 3). The locator 42 comprises an arm 44, said arm supporting a frame 45, the said frame being adapted to receive the material 37 and so formed as to bring the celluloid piece 40 in the proper position between the presser-foot 10 and feed-dog 11 when the presser-foot has been raised. In other words, the frame 45 is designed to bring the celluloid 40 concentric with the presser-foot 10 and feed-dog 11, at which time the said presser foot will be lowered to contact with the said celluloid.

To determine the position at which the locator 42 will stop in order to bring the celluloid piece 40 to the concentric position referred to, I have provided, in this instance, a stop pin 45^a. It will, of course, be understood that the locator 42 is removably as

well as pivotally supported by the needle-plate 23 and adapted to be swung out of operative relationship with the feed-dog, after the material to be sewed has been located. Should I desire to secure celluloid, or any other material, to a piece of fabric of a different formation from that indicated in Fig. 4, I simply substitute a locator, the frame of which conforms to the shape and size of the material to be operated upon.

During the operation of the machine to apply the zig-zag stitch 41, the needle 3 will pass downwardly through the spaces 47 between the teeth 27 of the feed-dog 11, and through the slot 48 in the plate 22, the thread in said needle being caught by the looper 49 in the usual manner.

It is thought that the operation of my improvement will be understood by those skilled in the art, but to render the same clearer, it may be here stated that as the bar 30 is reciprocated, the feed-dog 11 will be rotated and, as the presser-foot 10 bears upon the material 35, (which comprises the fabric 39 and, in this instance, the celluloid piece 40), the said presser-foot will also be rotated as well as the material 35. The rotation of the feed-dog, presser-foot and material retained thereby will be intermittent or advanced step by step by the bar 30 and pin 28. When the presser-foot, feed-dog and the material retained thereby come to rest, the needle 3 will pass down the space 47 between the teeth 27 on the feed-dog 11, through the slot 48 to the looper 49. As the material or article to be sewed is held between the presser-foot and feed-dog, the needle 3 will, of course, pass therethrough. When the needle is again drawn upwardly the feed-dog 11 and cooperating members will advance one tooth and when brought to rest the needle 3 will again descend, but owing to the mechanism of the zig-zag sewing machine, out of alinement with the stitch previously made. To hold that part of the work which is not held between the presser-foot and feed-dog, I provide an auxiliary presser-foot 50. To prevent the feed-dog 11 from moving too easily, and also to prevent it from overreaching when rotated, I provide a tension spring 46, having a pin 46^a, the said pin being kept in contact with the feed-dog by the tension of the spring (see Fig. 1).

Having now described my invention, what I claim and desire to secure by Letters Patent is:—

In a sewing machine, a needle-plate, a sewing needle, a rotary presser-foot adapted to keep the material to be sewed in contact with said feed-dog, a locator comprising a frame pivoted to said needle-plate adapted to receive the material to be sewed, the said frame being semi-circular at one end thereof

and open at the other end thereof, the center of curvature of said semi-circular end being coincident with the center of said rotary presser-foot, when said frame has been
5 moved to locate the article therein under said presser-foot, and means adapted to rotate said presser-foot.

Signed at New York city, N. Y., on this
31st day of July, 1909.

SAM L. COHEN.

Witnesses:

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