

R. A. SCRANTON.
 NEEDLE THREADING ATTACHMENT FOR SEWING MACHINES.
 APPLICATION FILED APR. 11, 1912.

1,059,641.

Patented Apr. 22, 1913.

3 SHEETS—SHEET 1.

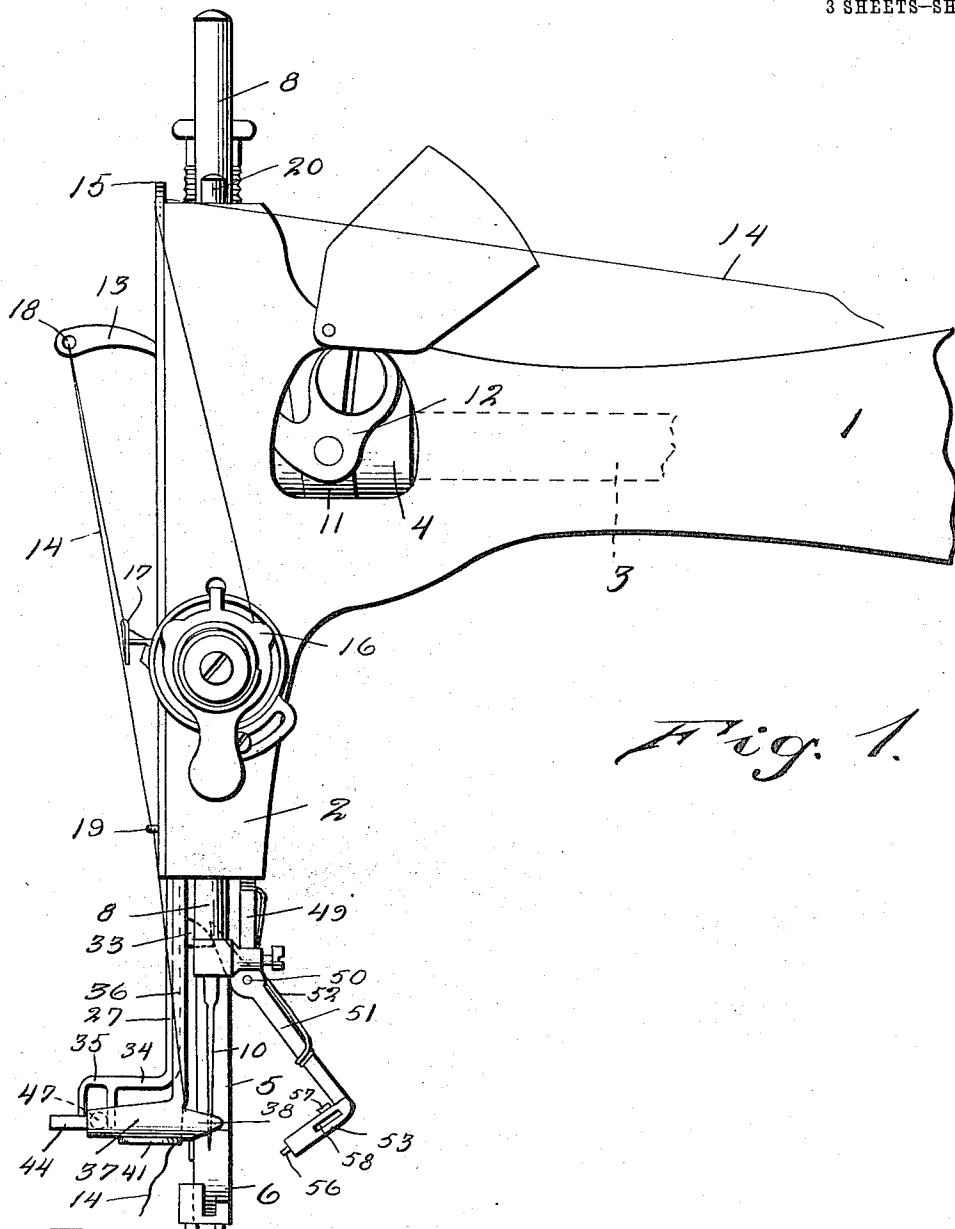


Fig. 1.

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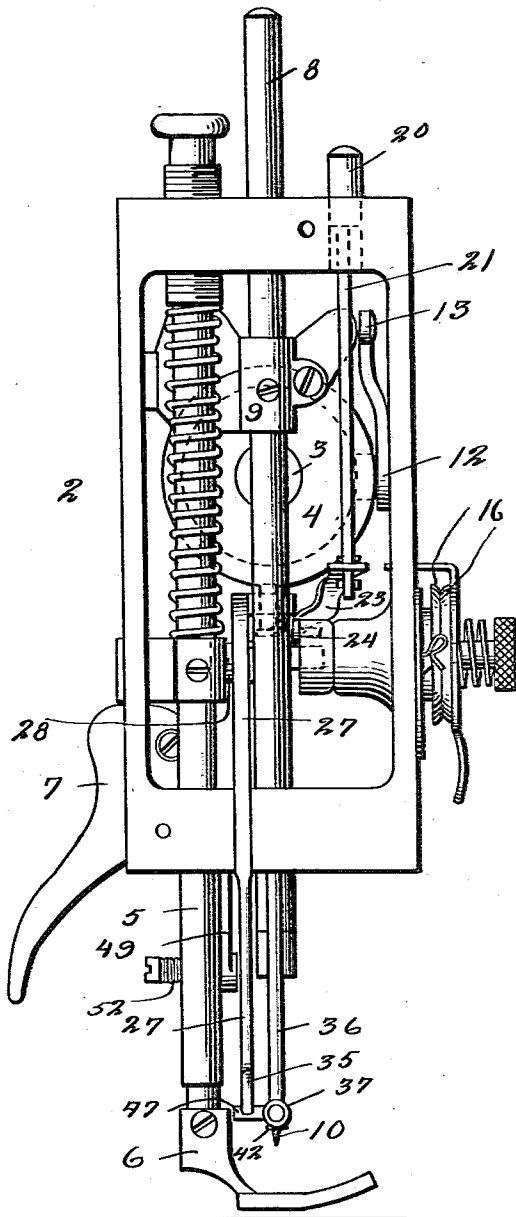


Fig. 2.

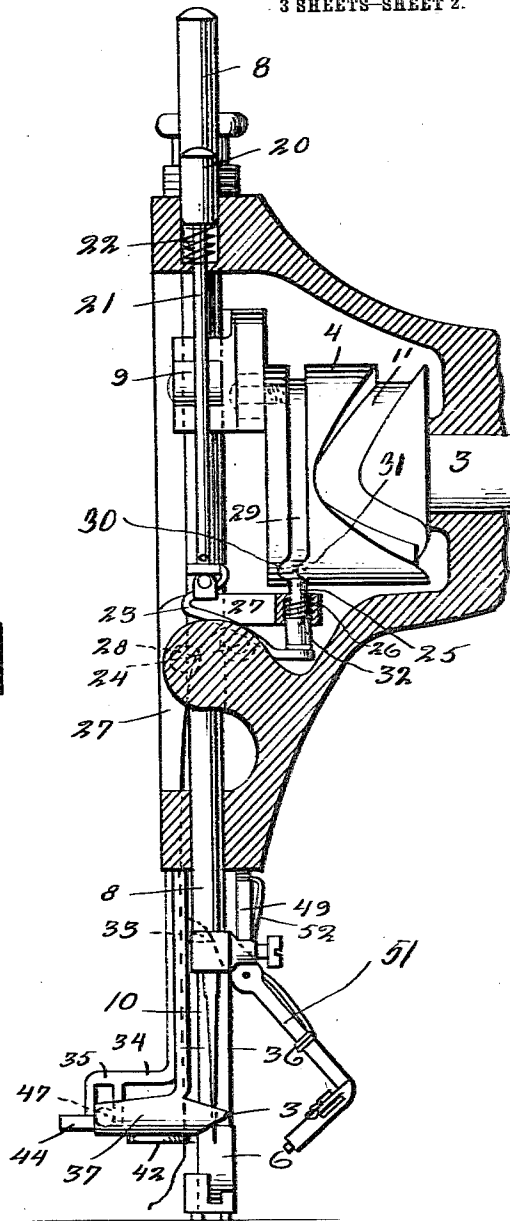


Fig. 3.

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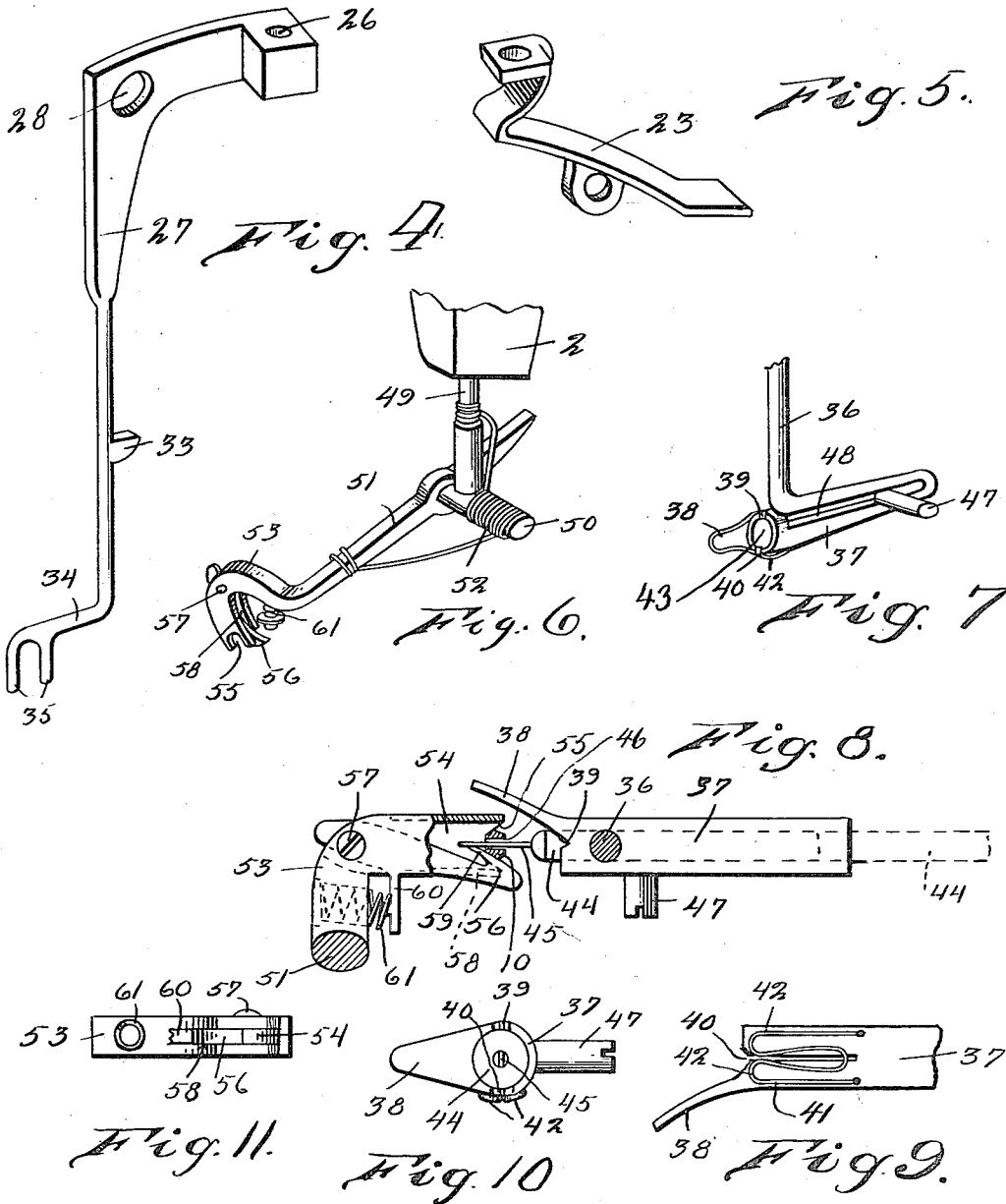
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3 SHEETS-SHEET 3.



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UNITED STATES PATENT OFFICE.

ROBERT A. SCRANTON, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO
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NEEDLE-THREADING ATTACHMENT FOR SEWING-MACHINES.

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To all whom it may concern:

Be it known that I, ROBERT A. SCRANTON, 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 Needle-Threading Attachments for Sewing-Machines, of which the following is a specification.

10 This invention relates to mechanically operated means for threading the needle of a sewing machine.

An important object of this invention is to provide means of the above mentioned character, which may be set into operation at any time without interfering with the operation of the sewing machine, and which will quickly thread the needle during the operation of the sewing machine.

20 A further object of the invention is to provide a needle threading device of the above mentioned character, which is simple in construction, inexpensive to manufacture, reliable in operation, and not liable to derangements.

A further object of the invention is to provide means of the above mentioned character, which are automatic in operation.

30 Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numerals are employed to designate like parts throughout the same, Figure 1 is a side elevation of the head of a sewing machine equipped with my improved needle threading device, Fig. 2 is a front end view of the same, the front plate of the head being removed, Fig. 3 is a vertical sectional view through the head of the sewing machine, showing the operating elements therein in elevation, Fig. 4 is a perspective view of an operating bell-crank lever, Fig. 5 is a similar view of an actuating lever, Fig. 6 is a similar view of the lower end of the head of the sewing machine showing one co-acting part of the needle threading means, Fig. 7 is a similar view of the other co-acting part of the needle threading means, Fig. 8 is an enlarged plan view of the two co-acting parts included in the needle threading means, Fig. 9 is a bottom plan view of the device or part shown in Fig. 7, Fig. 10 is a front end

view of the same, and, Fig. 11 is a front end view of the part shown in Fig. 6.

In the drawings wherein for the purpose of illustration, I have shown a preferred embodiment of my invention, the numeral 1 designates a bracket-arm of a sewing machine, carrying at its end a vertical head or frame 2, within which bracket-arm extends a horizontal operating shaft 3 having rigid connection with a cam 4. Extending vertically through the head 2 is a spring-pressed presser bar 5, carrying a presser foot 6 and elevated by a cam lever 7, as is customary.

The numeral 8 designates a reciprocatory needle bar, which is driven by the cam 4 through suitable driving connecting means 9. The needle bar 8 carries a needle 10, as shown.

The cam 4 is provided with a groove 11, for receiving the inner end of an element 12, carried by a pivoted lever or take-up 13.

The numeral 14 designates the thread which is passed through an apertured extension or guide 15, between spring pressed plates 16 of a tension device, a fixed guide 17 disposed near the tension device, upwardly through an opening 18 in the free end of the lever 13, a fixed guide 19 at the lower end of the head 2 and then through the eye of the needle.

At its upper end the head 2 has a vertical opening formed therein for receiving a push button 20, connected with a depending rod 21 and urged upwardly by a compressible coil spring 22. The lower end of the rod 21 engages one end of a swinging actuating lever 23, which is pivoted, as shown at 24. The opposite end of the actuating lever 23 engages a finger or pin 25, which is mounted to reciprocate within an opening 26 of an enlarged head, which is formed upon the short horizontal arm of an operating bell-crank lever 27. This operating bell-crank lever is pivoted as shown at 28. The actuating lever 23 is adapted to move the finger or pin 25 into a groove 29 formed upon the cam 4, such groove having a sharp laterally extending portion 30 adjacent to which is a shoulder 31, as shown. The finger or pin 25 is moved out of the groove 29 by a compressible coil spring 32. The operating bell-crank lever 27 has its long vertical arm provided between its ends with a lateral exten-

sion or lug 33 and the same has its lower portion bent horizontally, as shown at 34 and provided with a forked head 35, for a purpose to be explained.

5 Rigidly connected with the lower end of the head 2 near and forwardly of the needle bar 8 is a depending arm or rod 36, carrying at its lower end a preferably substantially horizontally arranged casing or shell 37, as shown. At its forward end the casing 37 is provided with a laterally curved thread guide 38, at the base of which are formed vertically alined beveled openings 39 and 40, as shown. Attached to the bottom face of the casing 37 is a thread engaging spring 10 41, preferably having the shape, as shown, and having its clamping portions 42 disposed adjacent the lower opening 40. The casing 37 is provided with an axial opening 15 43, for receiving a reciprocatory plunger 44, carrying at one end a needle plunger 45, which in turn has its free end forked to receive the thread therethrough. The needle plunger 45 is sufficiently small in diameter 20 to pass through the eye 46 of the needle 10, as shown in Fig. 8. Rigidly connected with the plunger 44 is a horizontal extension or pin 47, operating within a horizontal slot 48 formed in the casing 37, as shown. The 30 pin 47 prevents any turning of the plunger 44 in the casing 37. The forked head 35 of the operating bell-crank lever 27 straddles the extension or pin 47.

Rigidly connected with the lower end of 35 the head 2 and upon the opposite side of the needle bar 8 from the depending rod or arm 36, is a depending rod or post 49, carrying a horizontal shaft 50, to which is pivotally connected between its ends a vertically swinging lever 51. The lever 51 is 40 urged upwardly by a coil-spring 52 mounted upon the shaft 50 and having one end thereof engaging the lever 51 and the other end engaging the post 49, as shown. Formed 45 upon the lower end of the lever 51 is a substantially L-shaped horizontal shell or casing 53, having an axial opening 54 formed therein. The L-shaped casing 53 is provided at its free end with openings or recesses 55, to receive the needle 10. Disposed within the opening 54 of the casing 53 is a swinging thread engaging finger 56, pivoted as shown at 57, and operating through a longitudinal slot 58 in the casing 53. At its 50 free end the finger 56 is provided with a hook 59 for engagement with the thread. The finger 56 is provided with a lateral extension 60, engaged by a compressible coil-spring 61.

60 The operation of the device is as follows:—If the thread should break during the operation of the sewing machine, the machine is permitted to continue its operation and the free end of the thread is placed 65 in the beveled openings 39 and 40 of the

casing 37. This having been done the button 20 is pressed which brings the pin 25 into the groove 29, which is done when the needle is in the lower portion of its travel. When the needle reaches the upper portion 70 of its travel the pin 25 will engage in the laterally off-set portion 30 of the groove 29, whereby said pin will be quickly moved laterally when the needle 10 is in its uppermost position where it is at rest for a moment or so. When this takes place the 75 lower end of the operating lever 27 is swung toward the needle, causing the plunger 44 to move in this direction whereby the needle plunger 45 is passed through the eye 46 of 80 the needle, pushing the thread through such eye. When the operating lever 27 is thus swung toward the needle 10 the extension or lug 33 engages the upper end of the lever 51, causing it to swing toward the needle, where- 85 by the needle 10 will engage within the recess 55 of the casing 53, as shown in Fig. 8. As shown in Fig. 8 the hooked end of the arm 56 is disposed adjacent the free end of the needle plunger 45, which is in engagement 90 with the thread. It is thus seen that when the casing 53 is moved away from the needle, that the spring 61 will move the finger 56 inwardly so that its hooked end will engage the thread and further pull it 95 through the needle eye. It is obvious that upon further rotation of the cam 4 the operating lever 27 will be swung away from the needle and extension or lug 33 will disengage the upper end of lever 51, at which 100 time the spring 52 will quickly swing the lever 51 away from the needle, such lever 51 carrying the casing 53 with it, for the purpose above described. The button 20 is kept depressed until the operation is completed. 105

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same, and that certain changes in the shape, size, and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the sub- 110 joined claims.

Having thus described my invention, I claim:— 115

1. The combination with a sewing machine having an eyed needle, of a movable element to pass the thread through the needle eye, an operating lever to move the element, means operated by a movable part 120 of the sewing machine to move the operating lever, a device to engage the thread after it has passed through the needle eye, a spring to quickly move said device away from the needle, and means moved by the 125 operating lever to move said device in opposition to the spring toward said needle.

2. The combination with a sewing machine having an eyed needle, of a thread engaging device disposed near the needle, a 130

spring to quickly move the thread engaging device away from the needle, and means operated by a movable element of the sewing machine to pass the thread through the needle eye and move the thread engaging device toward the needle so that the same may engage the thread.

3. The combination with a sewing machine including an eyed needle and a rotatable cam provided with a groove having a laterally off-set portion, a device to pass the thread through the needle eye, a pivoted operating bell-crank lever to move the device, a pin slidably mounted in an opening formed through the bell-crank lever, a spring to oppose the movement of the pin into the groove, a pivoted actuating lever engaging the pin, and manually operated means including a push element to swing the actuating lever.

4. The combination with a sewing machine having an eyed needle, of a device to pass the thread through the needle eye, and a co-acting device to engage the thread after it is passed through the needle eye, said device comprising a casing, and a spring-pressed pivoted element having one end in the form of a hook, and means to simultaneously move the co-acting devices.

5. The combination with a sewing machine having an eyed needle, of a device to pass the thread through the needle eye, a co-acting device to engage the thread after it is past the needle eye, said co-acting device comprising a bodily movable supporting portion and a thread engaging element pivoted thereto, and means to move the co-acting devices.

6. The combination with a sewing machine having an eyed needle, of a device to pass the thread through the needle eye, a co-acting device to engage the thread after it is passed through the needle eye, said co-acting device comprising a bodily movable supporting portion and a finger pivoted therein and moved in one direction by a spring, means operated by a movable part of the sewing machine to operate the first named device, and means operable with said means to operate the said co-acting device.

7. The combination with a sewing machine having an eyed needle, of a device to

pass the thread through the needle eye, a thread engaging device disposed in cooperative relation to the needle, a spring to quickly move the thread engaging device as a whole in one direction away from the needle to impart a drawing movement to the thread, and means operated by a movable part of the sewing machine to move the thread engaging device in the opposite direction.

8. The combination with a sewing machine having an eyed needle, of a device to pass the thread through the needle eye, a movable lever operated by a movable part of the sewing machine and adapted to operate said device, a substantially vertically swinging lever having its pivot point disposed a considerable distance above said device, and adapted to be operated by said movable lever, automatic means to move said swinging lever in a direction opposite to that in which it is moved by said movable lever, and a thread engaging co-acting device carried by the swinging lever.

9. The combination with a sewing machine having an eyed needle, of a device to pass the thread through the needle eye, a co-acting device to engage the thread after it is passed through the needle eye including a tubular body portion adapted to receive a portion of the first named device and a thread-catching element movably mounted therein, and means to move said devices toward the needle.

10. The combination with a sewing machine having an eyed needle, of a device to pass the thread through the needle eye, a vertically swinging lever pivoted at its upper end a considerable distance above said device, automatic means to swing the lower end of the pivoted lever away from the needle, a co-acting thread engaging device carried by the lower portion of the pivoted lever, and means operated by a movable element of the sewing machine to move said devices toward the needle.

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

ROBERT A. SCRANTON.

Witnesses:

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AUSTIN DONOR.