T. H. SEELY.

WAX THREAD SEWING MACHINE.

APPLICATION FILED MAR. 18, 1915.

1,216,736.

Patented Feb. 20, 1917.

3 SHEETS—SHEET 1.

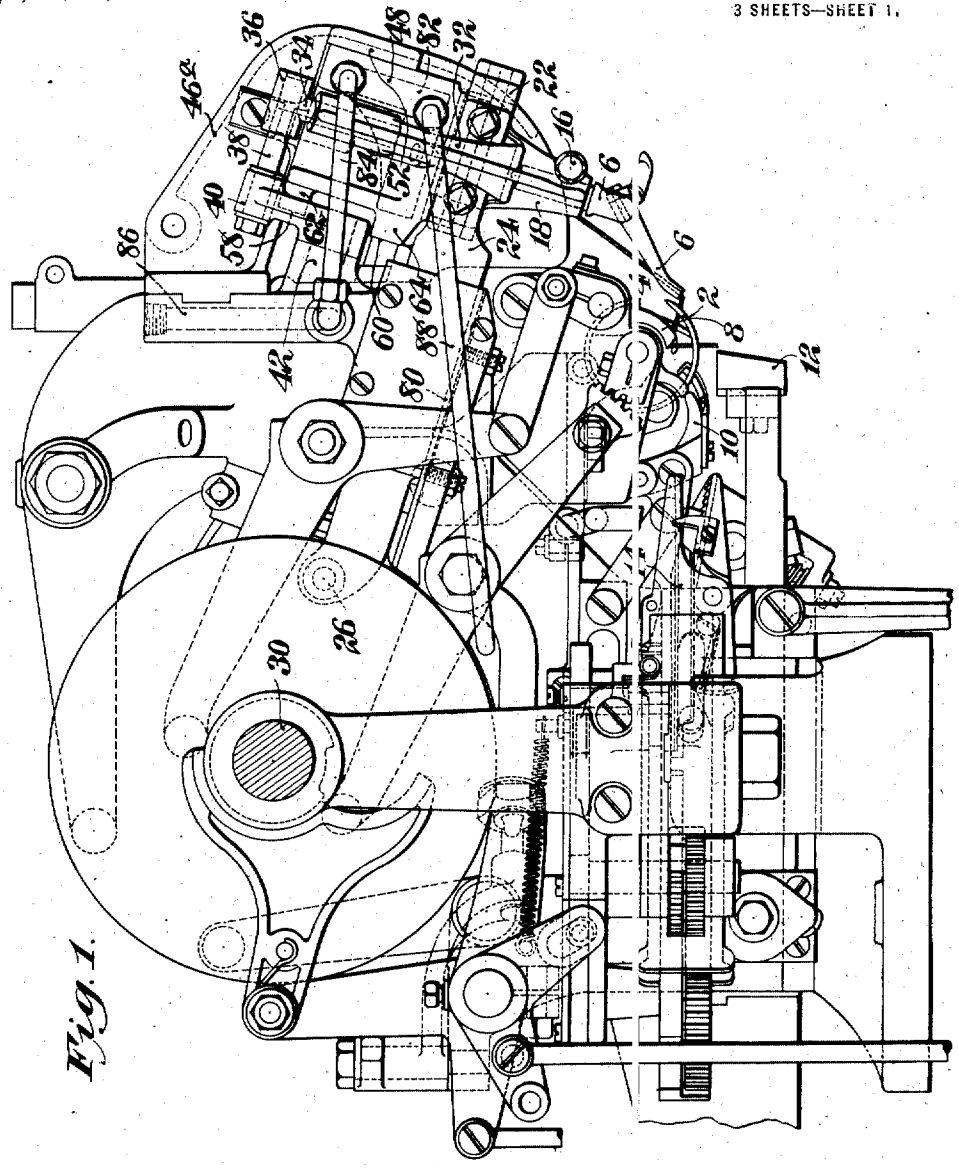


Fig. 1.

Witness
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3 SHEETS—SHEET 2.

Fig. 2.

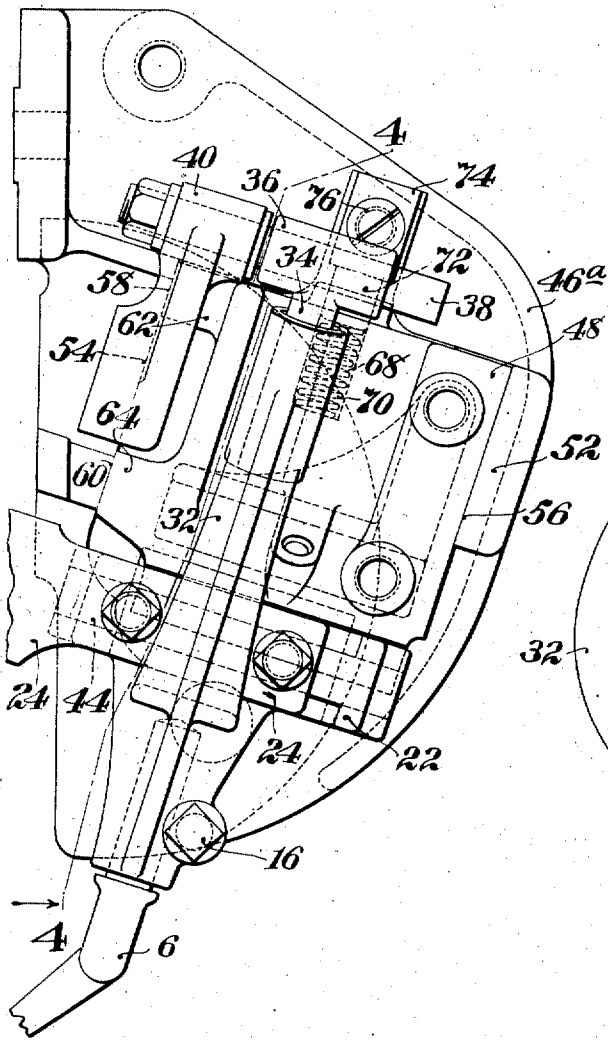
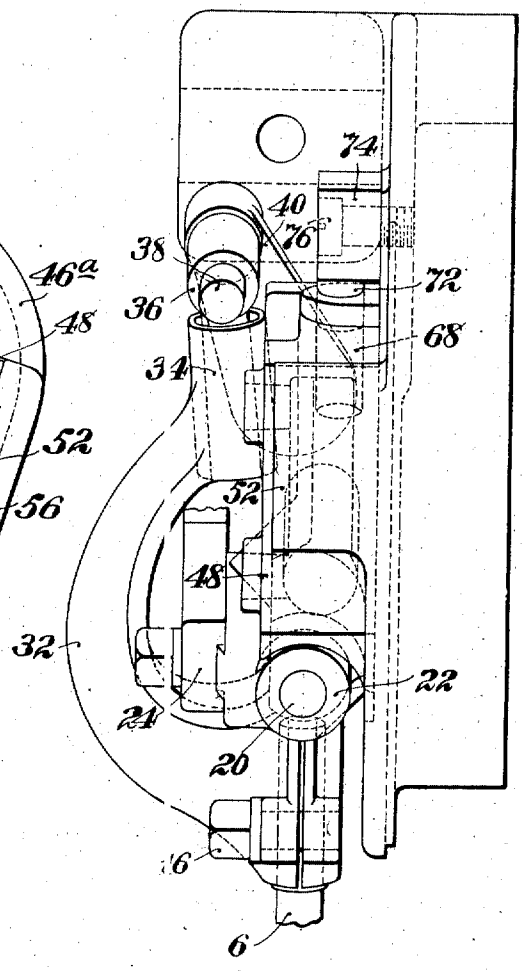


Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 6.

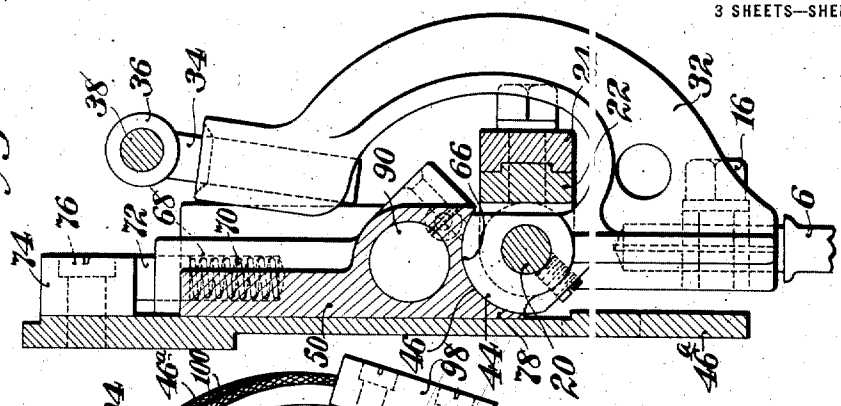


Fig. 5.

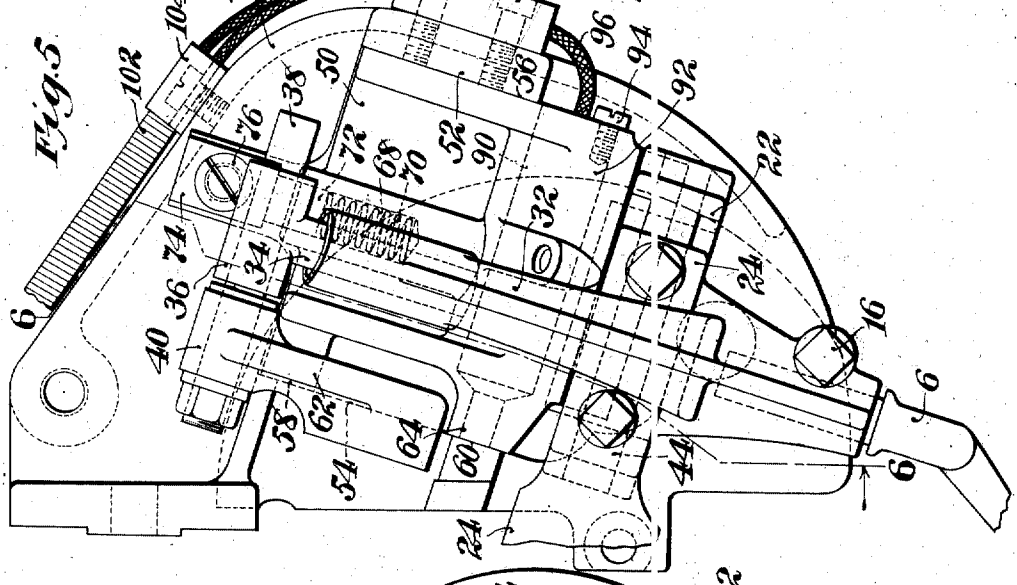
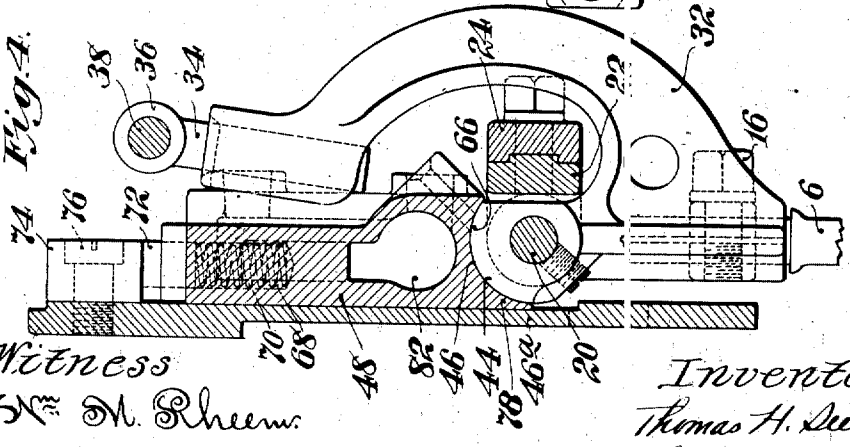


Fig. 4.



Witness

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UNITED STATES PATENT OFFICE.

THOMAS H. SEELY, OF MALDEN, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

WAX-THREAD SEWING-MACHINE.

1,216,736. Specification of Letters Patent. Patented Feb. 20, 1917.

Application filed March 18, 1915. Serial No. 15,225.

To all whom it may concern:

Be it known that I, THOMAS H. SEELY, a citizen of the United States, residing at Malden, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Wax-Thread Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to curved hook needle wax thread sewing machines and, more particularly, to heating devices for such machines.

In sewing machines employing a waxed thread, the needle thread between the thread supply and the work is usually passed through a receptacle containing melted wax to impregnate the thread with wax before it is incorporated in the seam. The wax receptacle is usually located at a point relatively remote from the work and, in order to keep the waxed thread in a proper condition until it reaches the work, machines of this class are ordinarily provided with a system of heating devices arranged to heat up the parts of the machine adjacent to and engaged by the thread as it passes from the wax receptacle to the work. In curved hook needle wax thread machines the thread is laid in the hook of the needle by a looping device or looper which has a compound motion to carry the thread about the needle and it is desirable that the looping device should be heated to prevent the chilling of the thread as it passes from the take-up through the eye of the looping device on its way to the work. It has heretofore been a difficult matter in wax thread machines of this class to keep the looping device in a properly heated condition on account of the manner in which this device is mounted and operated.

The primary object of the present invention is to provide curved hook needle, wax thread sewing machines with an improved looper heating device which will act efficiently and reliably to keep the looper in a properly heated condition.

Different heating mediums are employed in different factories and under different conditions to heat the parts of wax thread sewing machines and it is another object of the present invention to produce a curved hook needle, wax thread sewing machine having improved means for heating the looper constructed for use with any one of two or more heating mediums which may be employed to heat the machine.

With these objects in view, the invention consists in certain novel and improved constructions, arrangements and combinations of parts hereinafter described and particularly pointed out in the claims, the advantages of which will be obvious to those skilled in the art.

The features of the invention will be readily understood from the accompanying drawings illustrating a machine embodying the invention in its preferred form and the following detailed description of the same.

In the drawings, Figure 1 is a view in side elevation of an inseam shoe sewing machine embodying the invention; Fig. 2 is a detail view in side elevation illustrating particularly the looper mechanism and the heating devices therefor employed when the machine is fitted with a steam-heating system; Fig. 3 is a view in front elevation of the mechanism illustrated in Fig. 2; Fig. 4 is a detail sectional view taken substantially on the line 4—4 of Fig. 2; Fig. 5 is a detail view in side elevation illustrating particularly the looper mechanism and the heating devices therefor employed when the machine is fitted with an electrical heating system and Fig. 6 is a detail sectional view taken substantially on the line 6—6 of Fig. 5.

The invention as illustrated in the drawings is embodied in a wax thread curved hook needle sewing machine for sewing inseams of boots and shoes. This machine comprises a curved hook needle 2, an awl or feed-pointer 4, a looper 6, a thread finger 8, a welt guide 10 and a back rest 12, all of which parts have substantially the same construction, arrangement and mode of operation as the corresponding parts of the machine illustrated in the patent to Eppler, No. 1,108,560 dated August 25, 1914, except that the looper lever is somewhat modified in construction. The welt cutting and hold-

ing mechanism of the machine illustrated, indicated generally by the reference numeral 14, has substantially the same construction, arrangement and mode of operation as the mechanism illustrated in the patent to Eppler, No. 1,076,878 dated October 28, 1913.

The looper is secured by a clamping screw 16 in a socket in the lower end of the looper arm or lever 18, which is pivoted upon a short shaft 20 fixed in the arms of a block 22 secured to the forward end of the looper slide 24. Forward and rearward movements in a plane parallel with the plane of the needle are imparted to the looper by the reciprocation of the slide 24 and movements are imparted to the looper in a plane perpendicular to the plane of the needle by the oscillation of the looper lever on the shaft 20, these movements occurring in proper timed relation to each other to carry the looper about the needle. The slide 24 is provided with a cam roll 26 which engages a cam groove in a cam disk attached to the main shaft 30 of the machine. The looper lever is provided with an arm 32 which extends laterally from the body of the looper lever beneath the forward end of the slide 24 and then extends upwardly in a curve about the forward end of the slide as shown in Figs. 4 and 6, the upper end of this arm having a bearing in which slides the rod 34. This rod carries a sleeve 36 which forms a bearing for the rod 38 fixed to an arm 40 mounted on the forward end of the cam actuated rock shaft 42. By this mechanism the looper lever is oscillated on the shaft 20 in timed relation to the movements of the slide 24 to give the proper movements to the looper.

The illustrated construction of the looper lever enables the looper heating devices to be applied to the hub of the lever so as to heat the lever efficiently. The hub of the lever or the portion thereof through which the shaft 20 passes, indicated at 44, is constructed with a cylindrical upper surface 46 to form a bearing for the looper heater.

The looper heater consists of a plate or block mounted in guides on the forwardly projecting frame plate 46^a and arranged to engage the hub of the looper lever so as to transmit heat to the looper lever chiefly by conduction, the looper heater itself being heated by the application of the heating medium thereto. To enable the looper to be heated with equal efficiency when either of two different heating mediums is employed to heat the machine, the machine is provided with interchangeable looper heaters, each especially constructed for the use of a particular one of the heating mediums which may be employed. These looper heaters are constructed to be fitted alternatively to the machine at the same point on the machine and to operate in the same manner to transmit heat to the looper lever. In the present embodiment of the invention two interchangeable looper heaters are provided; one constructed for the use of electricity as a heating medium and the other for the use of steam. When the machine is fitted with a steam heating system, the looper heater 48, shown in detail in Figs. 2, 3 and 4, is employed. When the machine is to be heated by electricity the looper heater 50, shown in detail in Fig. 6 is applied to the machine. The forwardly projecting frame plate 46^a is formed with parallel guides 52 and 54 to receive either of the looper heaters. The looper heaters 48 and 50 are each formed with a guide-engaging face 56 and with alined guide-engaging faces 58 and 60 formed respectively on the projections 62 and 64, the faces 58 and 60 being spaced from the face 56 so that the heaters may be interchangeably fitted between the guides 52 and 54 as shown respectively in Figs. 2, 3 and 4 and in Figs. 5 and 6. When thus applied to the frame of the machine, the lower end of the heater is engaged with the hub of the looper lever so as to transmit heat to the lever through conduction. To give an extended area of contact between the looper and the hub of the looper lever, each of the heaters is formed with a concaved cylindrical surface 66 having substantially the same radius of curvature as the cylindrical surface 46 so that it will fit closely at all points to the cylindrical surface 46 formed on the hub of the looper lever. In order to maintain a good heat conducting contact between the heating device and the hub of the looper lever as the lever moves forwardly and rearwardly with the slide 24 and oscillates on the shaft 20, means is provided for yieldingly engaging the looper heater with the hub of the lever. In the construction illustrated each of the looper heaters is provided with a cylindrical bore or pocket 68 and when the heater is applied to the machine a coiled spring 70 is seated in this pocket and a pin 72 is engaged in the upper end of the bore to form an abutment for the upper end of the spring, this pin being formed on a block 74 secured by a screw 76 to the frame plate 46^a. The looper heaters are each adapted to be held in position when fitted to the machine by the engagement of the projection 78 thereon between the hub of the looper lever and the frame plate 46^a and by the engagement of the pin 72 in the upper end of the bore or pocket 68. With this construction of looper heater a good heat conducting contact over a considerable area is maintained between the looper heater and the looper lever throughout the movements of the lever so as to transmit the heat from the heater to the looper lever rapidly and efficiently, the

looper itself being kept at a high temperature by the conduction of the heat through the looper lever. This construction and arrangement of the looper heater also enables the slide 24 to be adjusted vertically by the gib 80 to take up wear.

The looper heater 48 is provided with a steam chamber 82 adapted to receive a supply of steam through suitable connections with the steam heating system. In the steam heating system illustrated in Fig. 1, the steam chamber 82 is connected with the forward end of a steam supply pipe 84 leading from a steam chamber 86 formed in the frame of the machine. The exhaust steam from the steam chamber 82 is conducted from the chamber through an exhaust pipe 88 connected at its forward end with said chamber and leading therefrom toward the rear of the machine.

The looper heater 50 is formed with a cylindrical chamber 90 to receive an electrical heating unit 92 which is inserted in said chamber and held therein by means of a screw 94, the head of which overlaps the end of the chamber. The electrical heating unit 92 consists of a series of heating coils embedded in insulating material and having terminals 96 which may be connected in any suitable manner with the main circuit terminals. It has been considered unnecessary in this application to illustrate the complete electrical heating system for the machine. In the construction illustrated in Fig. 5 the terminals of the heating unit 92 are connected at the junction plate 98 with the secondary circuit wires 100 leading from the front of the machine through an insulating shield or cable 102 to the terminals in a suitable junction box. The forward end of the shield 102 is held in place upon the frame plate 46^a by means of a clamp 104.

Having explained the nature and object of the invention and having specifically described a machine embodying the invention in its preferred form, what is claimed is:

1. A wax thread sewing machine, having, in combination, stitch-forming devices including a curved hook needle, a looper, looper supporting and actuating mechanism comprising a series of moving parts and a fixed looper heater mounted in guides and having a continuous yielding heat conducting contact with one of the moving parts.

2. A wax thread sewing machine, having, in combination, stitch-forming devices including a curved hook needle, a looper, a looper actuating slide, devices for supporting the looper mounted on the slide to reciprocate therewith, comprising a pivoted looper lever and a looper heater mounted in guides and having a continuous yielding heat conducting contact with one of said looper supporting devices.

3. A wax thread sewing machine having, in combination, stitch forming devices, including a curved hook needle and a looper, a looper carrier, a looper heater having a heat conducting contact with the looper carrier and a spring to maintain the heater in close contact with the looper carrier.

4. A wax thread sewing machine having, in combination, stitch forming devices, including a curved hook needle and a looper, a looper lever a looper heater arranged to bear upon the hub of the looper lever and a spring to maintain the heater in close contact with the hub of the looper lever.

5. A wax thread sewing machine having, in combination, stitch forming devices, including a curved hook needle and a looper, a looper lever having a cylindrical surface formed on its hub, a looper heater mounted in guides on the frame and having a cylindrical surface arranged to engage the cylindrical surface on the hub of the looper lever and a spring for maintaining the heating device in contact with the hub of the looper lever.

6. A wax thread sewing machine having, in combination, stitch forming devices, including a curved hook needle and a looper, and interchangeable looper heaters constructed for the use of different heating mediums adapted to be fitted alternatively at the same point on the machine.

7. A wax thread sewing machine having, in combination, stitch forming devices, including a curved hook needle and a looper, and a series of looper heaters constructed for the use of different heating mediums and formed to fit alternatively at the same point of the machine which is complemental to all of the looper heaters.

8. A wax thread sewing machine having, in combination, stitch forming devices, including a curved hook needle and a looper, a looper lever, a series of interchangeable looper heaters constructed for the use of different heating mediums and formed to fit alternatively at substantially the same point of the machine which is complemental to all of the looper heaters and means for securing said heaters alternatively in position.

9. A wax thread sewing machine having, in combination, stitch forming devices, including a curved hook needle and a looper, a looper carrier and interchangeable looper heaters arranged to be alternatively applied to the machine and to have a heat conducting contact with the looper-carrier.

10. A shoe sewing machine having, in combination, stitch forming devices, including a curved hook needle and a looper, mechanism for actuating the looper comprising a slide mounted to reciprocate in a right line in a plane parallel to that of the needle, a looper lever pivotally mounted upon the forward end of the slide to oscillate in a plane perpendicular to the plane of the needle,

means for reciprocating the slide to move the free end of the looper across the path of the needle, means for oscillating the lever to move the free end of the looper across the plane of the needle, a looper heating device mounted in guides on the frame and arranged to engage the hub of the looper lever and means for maintaining a yielding engagement between the looper heating device and the looper lever.

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Witnesses:
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E. MARION BLACK.