

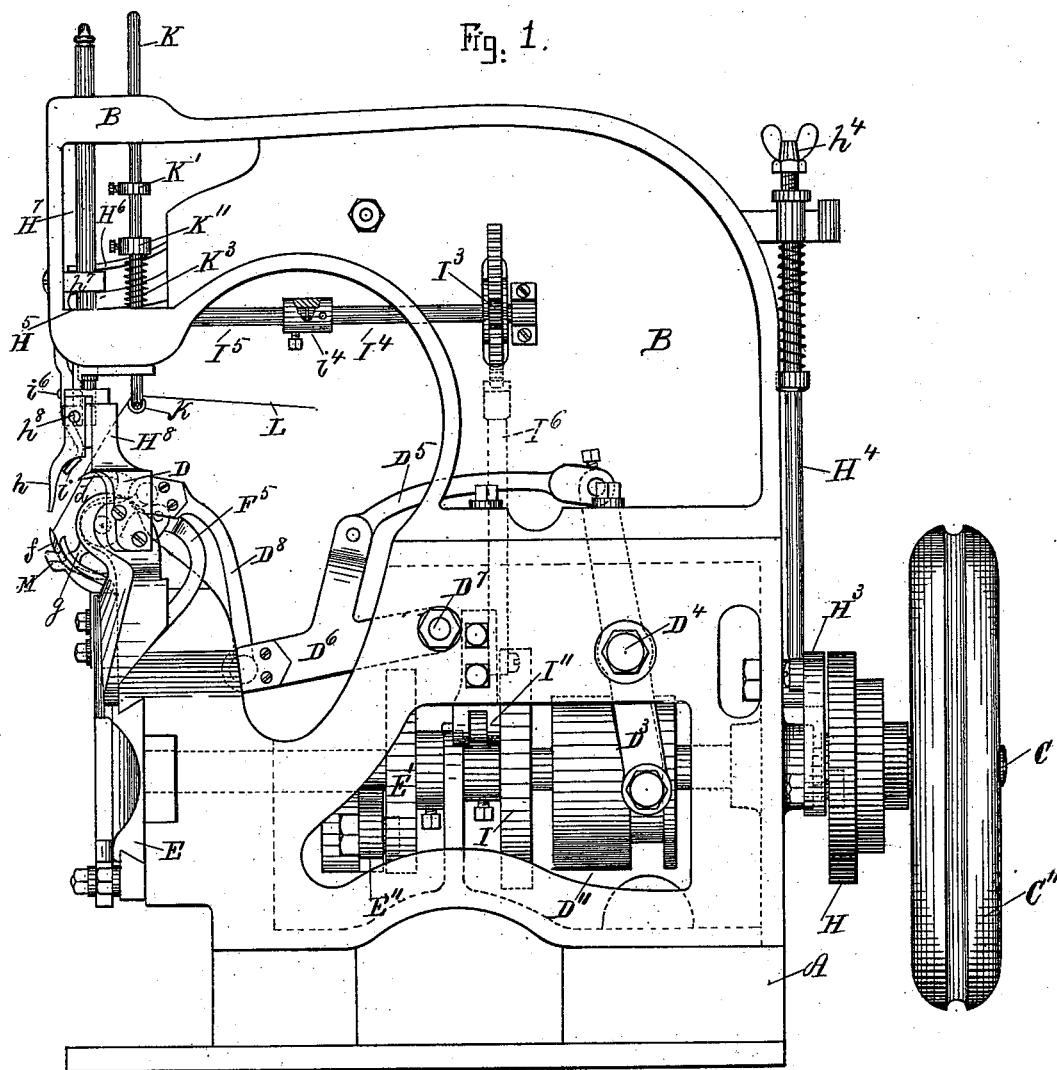
(No Model.)

4 Sheets—Sheet 1.

H. F. NASON.  
SEWING MACHINE.

No. 523,589.

Patented July 24, 1894.



Witnesses.

Lauritz W. Möller.  
Alice A. Perkins.

# Inventor

Horace F. Nason  
by Wm. Andrien  
his atty.

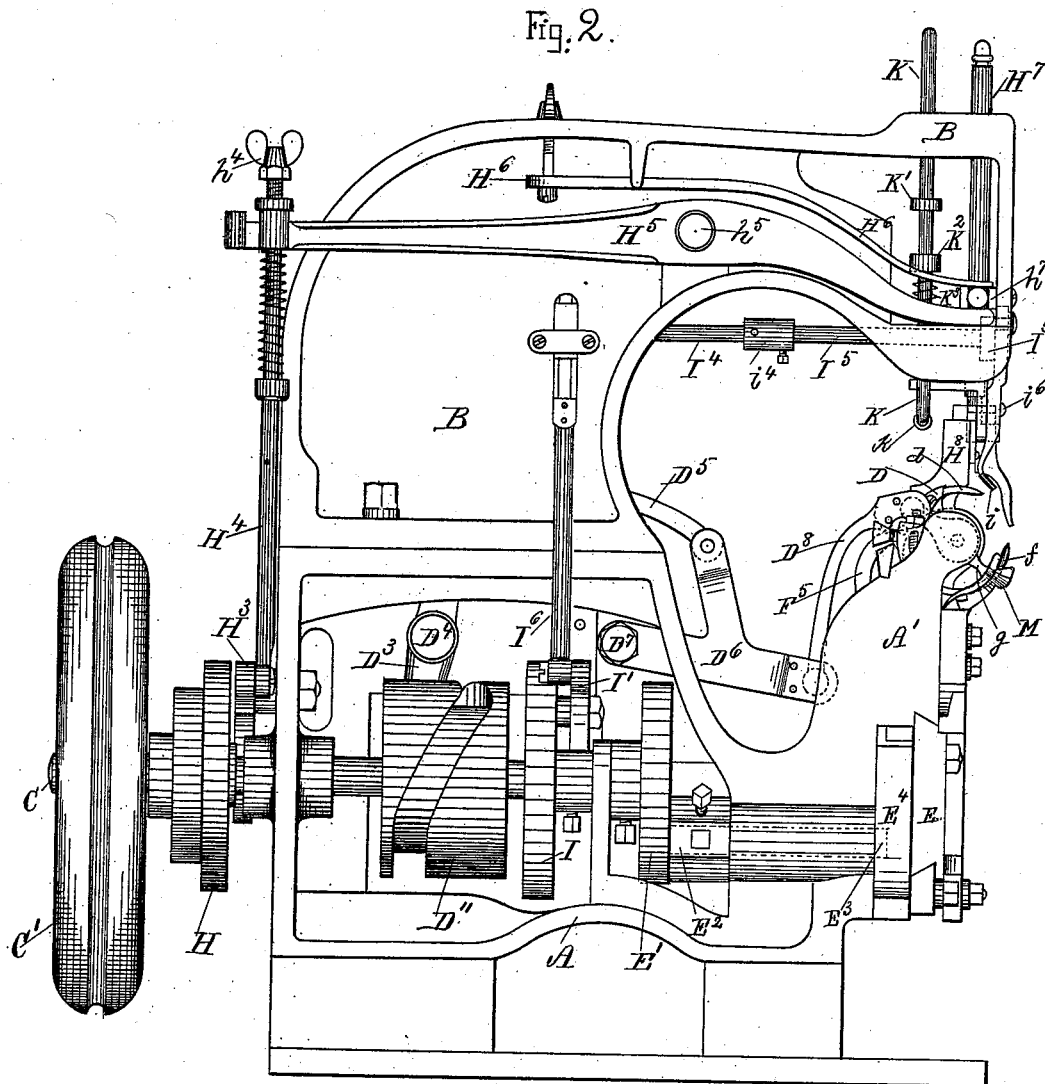
(No Model.)

4 Sheets—Sheet 2.

H. F. NASON.  
SEWING MACHINE.

No. 523,589.

Patented July 24, 1894.



Witnesses

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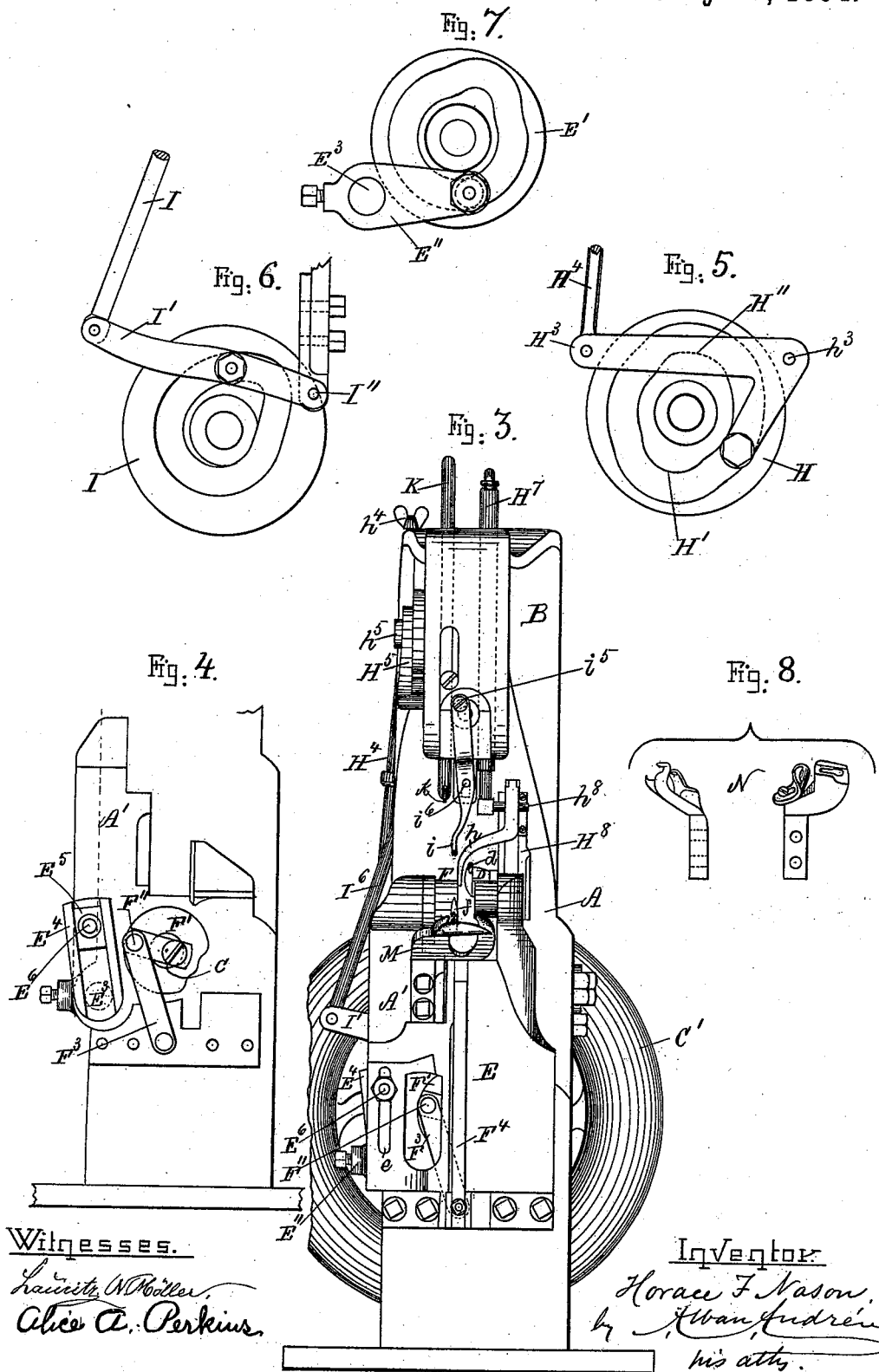
(No Model.)

4 Sheets—Sheet 3.

H. F. NASON.  
SEWING MACHINE.

No. 523,589.

Patented July 24, 1894.



Witnesses.

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H. F. NASON.  
SEWING MACHINE

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Fig. 9.

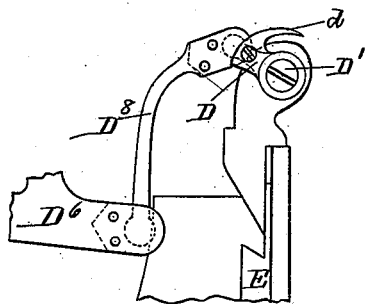


Fig. 10.

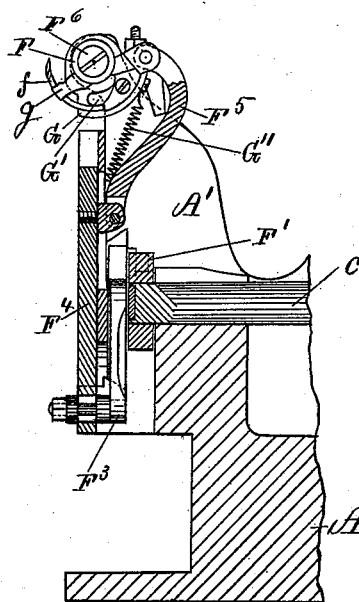


Fig. 11.

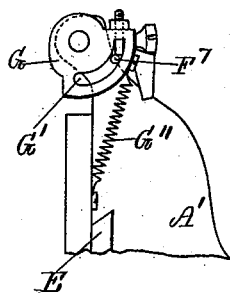


Fig. 13.

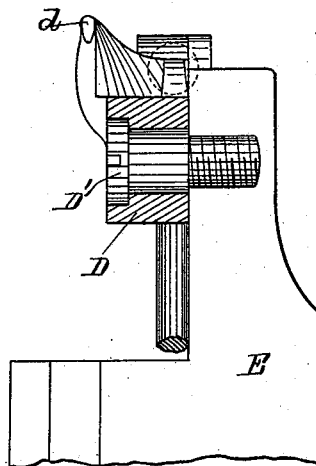
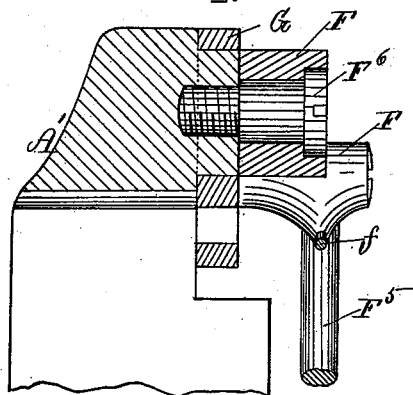


Fig. 12.



Witnesses.

*Lauritz N. Noller*  
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Inventor

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# UNITED STATES PATENT OFFICE.

HORACE F. NASON, OF NATICK, ASSIGNOR OF TWO-THIRDS TO CHARLES WHITTEMORE AND JOHN Q. A. WHITTEMORE, OF BOSTON, MASSACHUSETTS.

## SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 523,589, dated July 24, 1894.

Application filed March 13, 1893. Serial No. 465,805. (No model.)

*To all whom it may concern:*

Be it known that I, HORACE F. NASON, a citizen of the United States, and a resident of Natick, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Wax-Thread Sewing-Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

This invention relates to improvements in wax thread sewing machines and is particularly designed for the purpose of sewing soles to the uppers of boots and shoes, for sewing the welt and upper together as well as for sewing and uniting other articles of leather as will hereinafter be more fully shown and described reference being had to the accompanying drawings, wherein—

Figure 1 represents a front elevation of the improved sewing machine; and Fig. 2 represents a rear elevation of the same. Fig. 3 represents an end elevation of the machine. Fig. 4 represents a detail end view showing a portion of the mechanism for operating the needle and a part of the awl feed mechanism. Fig. 5 represents a detail view of the cam and bell crank lever for raising the presser foot during the feed of the work. Fig. 6 represents a detail view of the cam and lever for actuating the thread guide. Fig. 7 represents a detail view of the cam and lever for actuating the feed of the awl. Fig. 8 represents front and rear views of the welt guide work support. Fig. 9 represents a detail view of the mechanism for imparting a rocking motion to the awl. Fig. 10 represents a vertical section showing the mechanism for imparting a rocking motion to the hooked needle. Fig. 11 represents a detail view of the needle brace disk. Fig. 12 represents a vertical section of the said needle brace disk and needle carrier; and Fig. 13 represents a vertical section of the awl carrier.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

In the drawings A is the frame of the machine to which is preferably bolted or otherwise secured the goose neck B as usual.

C is the rotary driving shaft having belt

pulley and balance wheel C' secured to its rear end as is common in machines of this kind.

The machine is what is termed an awl feed machine and in its construction are used the following elements and means for their operations, namely: A curved awl having a rocking motion imparted to it for the purpose of penetrating the work previous to the passing of the needle through said work; and in addition to said rocking motion of the awl, a lateral motion is imparted to it while it is in the work for the purpose of feeding. A rocking needle carrier provided with a curved and hooked needle, and a rocking needle brace adapted to slide on said needle during the sewing operation. A vertically and laterally movable presser foot having a lateral motion imparted to it by the awl carrier support. A looper adapted to move in a circular path around the needle when the latter is in its highest position for the purpose of laying the thread in the hooked needle preparatory to the forming of the stitch; and means for adjusting the position of the looper relative to the needle. A slack-thread controlling mechanism and means for adjusting the length of the loop during the sewing operation; and a stationary work support with or without a welt guide according to the nature of the work to be done.

The mechanism for operating the awl *d* is constructed as follows: The curved awl *d* is attached to the awl carrier D which is journaled on a pin or stud D' (Fig. 13) secured to the upper end of the feed carriage E which is guided in lateral grooves in the front portion of the frame A.

A rocking motion is imparted to the awl and its carrier by the following mechanism: On the rotary shaft C is secured a grooved cylinder cam D'' which imparts a rock motion to a lever D<sup>3</sup> pivoted at D<sup>4</sup> to the machine frame and connected in its upper end to a link D<sup>5</sup> the forward end of which is connected to a bell crank lever D<sup>6</sup> pivoted at D<sup>7</sup> to the machine frame and universally connected at its forward end to the awl carrier D by means of a ball and socket link D<sup>8</sup> as fully shown in Fig. 1.

The lateral feed motion is imparted to the awl and its feed carriage E as follows: On the driving shaft C is secured a grooved face cam E' which imparts a rocking motion to the lever E'' (Fig. 7) which is attached to a shaft E<sup>3</sup> journaled in a bearing in the frame A and provided at its forward end with a grooved lever E<sup>4</sup> in which is arranged a sliding block E<sup>5</sup> (Fig. 4) journaled on a screw bolt E<sup>6</sup> adjustably connected in a slot e on the feed carriage E as shown in Fig. 3. By adjusting the position of the bolt E<sup>6</sup> in the slot e, the feed of the awl and consequent length of stitch is adjusted.

The mechanism for imparting a rocking motion to the curved hooked needle f is constructed as follows: On the driving shaft C is secured a disk F' (Fig. 4) provided with an adjustable crank F'' to which is pivoted a link F<sup>3</sup> the lower end of which is adjustably connected to a sliding bar F<sup>4</sup> (Figs. 3 and 10) guided in a groove in the stationary front portion A' of the frame of the machine. The upper end of said sliding bar F<sup>4</sup> is pivoted to a curved link F<sup>5</sup> the upper end of which is connected to the needle carrier F, which is journaled on a stud F<sup>6</sup> (Fig. 12) secured to the stationary frame portion A'. The curved hooked needle f is secured in a suitable manner to said needle carrier F. On said stud F<sup>6</sup> or a hub concentric thereto on the frame portion A' (Fig. 12), is pivoted the rocking needle brace carrier G having the needle brace g through which the needle is guided and supported; said needle brace carrier being rocked in one direction by a stud or projection F<sup>7</sup> (Fig. 11) on the needle carrier going through a curved slot G' on the needle brace carrier G, and in any opposite direction by means of spring G'' attached in one end to said needle brace carrier G and in the opposite end to the stationary part A' of the frame of the machine.

The mechanism for operating the presser foot h is constructed as follows: On the driving shaft C is secured a grooved face cam H (Fig. 5) having two projections H', H'', so as to cause the presser foot to be raised above the work during the feed of the latter and to cause it to descend on the work while the stitch is being made and to raise said presser foot while it is being returned to its original position. The said grooved cam H imparts a rocking motion to a bell crank lever H<sup>3</sup> pivoted at h<sup>3</sup> to the machine frame and having its free end connected to a link H<sup>4</sup> the upper end of which passes loosely through the rear end of the foot lifter lever H<sup>5</sup> and is provided with an adjustable nut h<sup>4</sup> by means of which the lift of the presser foot is regulated.

The lifter lever H<sup>5</sup> is pivoted at h<sup>5</sup> to the goose neck B and its forward end is pressed downward (when liberated by the cam H) by the influence of an adjustable spring H<sup>6</sup> the forward end of which presses against a projection h<sup>7</sup> on the presser foot bar H<sup>7</sup>. The forward end of the lifter lever H<sup>5</sup> extends below

the foot bar projection h<sup>7</sup> causing the said foot bar and its presser foot to be raised by the action of the cam projection H', H'', during the time above specified.

The presser foot bar H<sup>7</sup> is guided in vertical bearings in the front part of the goose neck B, and its lower end has a lateral pin or stud h<sup>8</sup> passing loosely through the upper portion of the presser foot h which is guided vertically in a bracket H<sup>8</sup> which is attached to the upper part of the carriage E, and by this arrangement the presser foot is caused to follow the lateral movement of said carriage E and the awl mounted in the upper end thereof during its vertical motion to and from the work that is being stitched.

The mechanism for guiding the lower end of the looper i in a circular path around the needle when the latter is in its highest position for the purpose of laying the thread in the hooked needle preparatory to the forming of the stitch is constructed as follows: To the driving shaft C is secured a grooved face cam I (Fig. 6) which imparts a rocking motion to a lever I' pivoted at I'' to the machine frame; to the free end of the lever I' is connected a rack bar I<sup>6</sup>, the upper end of which is suitably guided in the goose neck portion B and having its teeth meshing in the teeth of a pinion I<sup>5</sup> secured to a horizontal shaft I<sup>4</sup> the forward end of which is adjustably secured to a shaft I<sup>5</sup> by means of a coupling i<sup>4</sup> or equivalent device for the purpose of properly adjusting the position of the looper relative to the position of the needle. The forward end of the shaft I<sup>5</sup> has a crank i<sup>5</sup> on which the upper end of the looper i is hung, its middle portion having a projection or pin i<sup>6</sup> suitably guided in the goose neck so as to cause a circular motion to be imparted to the lower end of said looper during the oscillatory movement of the shaft I<sup>4</sup>, I<sup>5</sup>, for the purpose stated.

The slack thread controlling mechanism consists of a vertically movable rod K located in bearings in the goose neck B, and having a guide roller k in its lower end over which the thread L (Fig. 1) is carried.

On the rod K is arranged a pair of adjustable collars K' and K'', and between the latter and lower portion of the goose neck B is arranged on the rod K, a preferably spiral spring K<sup>3</sup> against the influence of which the rod K is drawn downward during the downward passage of the needle to form the loop the tension on the thread being adjusted by the position of the collar K'' on the rod K.

The upper adjustable collar K' serves to limit the upward motion of the rod K for adjusting the length of loop during the sewing operation, which is accomplished by said collar coming in contact with the upper part of the goose neck by the action of the spring K<sup>3</sup>.

The work support M shown in Figs. 1, 2 and 3 is stationary and secured to the front portion A' of the machine frame and is of the usual kind adapted for sewing turned shoes.

For sewing welted shoes a combined work support and welt guide N of the kind shown in Fig. 8 is substituted for the one shown in Figs. 1, 2 and 3 as is common in machines of this kind.

The machine is to be provided with the usual tension and wax heating devices but as such form no part of my present invention, they are not represented in the drawings.

10 The operation of the machine is as follows: The presser foot is first raised as usual by depressing the lifter lever; the work is then placed on the work support, and presser foot located in the channel of the shoe; the awl enters and penetrates the work and feeds while in the work; during the feed, the presser foot is raised; when the awl recedes from the work it is in position directly above the needle. After the awl has passed out of the work the hooked needle ascends through the hole made by the awl and when the needle is in its upper position it receives the thread from the thread guide after which the needle, carrying the looped thread, is drawn through the work at the same time as the awl is returned to its original position, as is also the presser foot which is raised during the downward motion of the needle. The awl again enters and feeds the work and the needle ascends and forms a chain stitch as usual.

Having thus fully described the nature, construction, and operation of my invention, I wish to secure by Letters Patent and claim—

35 1. In a wax-thread sewing-machine, the combination with a curved needle and a looper, of a feed-carriage E, a grooved face-cam E' mounted on the drive-shaft, a rock-shaft E<sup>3</sup> operated by said cam and having rigidly secured to its forward end a grooved lever E<sup>4</sup>, a sliding-block E<sup>5</sup> arranged to slide in said grooved lever and journaled on a screw-bolt E<sup>6</sup> adjustably connected in a slot e formed in the carriage E, the awl-carrier D carrying the awl d and journaled on the feed-carriage, a

cam D'' mounted on the drive-shaft, a pivoted lever D<sup>3</sup> at one end engaging said cam and at its opposite end connected to a bell-crank D<sup>6</sup> by a link D<sup>5</sup>, and an upright arm D<sup>8</sup> universally connected at one end to said crank and at its opposite end connected to the awl-carrier, substantially as described. 50

2. In a wax-thread sewing-machine, the combination with a curved rocking-awl, of an oscillating needle-carrier F journaled on a stud F<sup>6</sup> fixed on the stationary frame portion A' and carrying a curved hooked needle, the disk F' mounted on the drive-shaft and provided with an adjustable crank F'', a pitman F<sup>3</sup> secured at one end to said crank and at its other end connected to a sliding-bar F<sup>4</sup> sliding in a straight vertical groove in the stationary front portion of the frame of the machine, and the curved link F<sup>5</sup> pivoted at one end to the rear face of the bar F<sup>4</sup> and at its other end to the needle-carrier, substantially as described. 55 60 65

3. In a wax thread sewing machine, the combination of the driving shaft, the cam I mounted thereon, the pivoted lever I' oscillated by said cam, the rack bar I<sup>6</sup> connected at one end to the lever I' and at its other end engaging a pinion I<sup>3</sup> secured to a horizontal two-part shaft I<sup>5</sup>, I<sup>4</sup>, adjustably secured together by a coupling i<sup>4</sup>, a crank i<sup>5</sup> secured to the forward end of the shaft I<sup>5</sup>, and a thread guide i connected at its upper end to the crank i<sup>5</sup> and intermediate its ends provided with a projecting pin i<sup>6</sup> suitably guided in the goose neck of the machine, substantially as described. 70 75 80

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 24th day of February, A. D. 1893.

HORACE F. NASON.

Witnesses:

ALBAN ANDRÉN,  
LAURITZ N. MÖLLER.