

935,726.

This technical drawing illustrates a mechanical assembly, possibly a pump or engine component. The drawing is a line drawing with various parts labeled with letters and numbers. The main components include:

- A large circular component on the right, possibly a flywheel or a pump head, with a central hub and a large outer rim.
- A complex assembly of levers, springs, and other mechanical parts on the left, connected to the main assembly.
- A cylindrical component at the bottom, possibly a piston or a valve, with a flange and a central shaft.
- Various labels indicating specific parts: **T** (top left), **t** (small part on the left), **F** (bottom left), **L** (bottom left), **N** (bottom left), **2** (bottom center), and **1** (bottom right).

The drawing shows the intricate details of the mechanical components, including bolts, springs, and various linkages, suggesting a complex and precise mechanism.

Fig. 1.

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Frederick L. Alley
by his attorneys
Phillips Kane & Frost

935,726.

Patented Oct. 5, 1909.
2 SHEETS—SHEET 2.

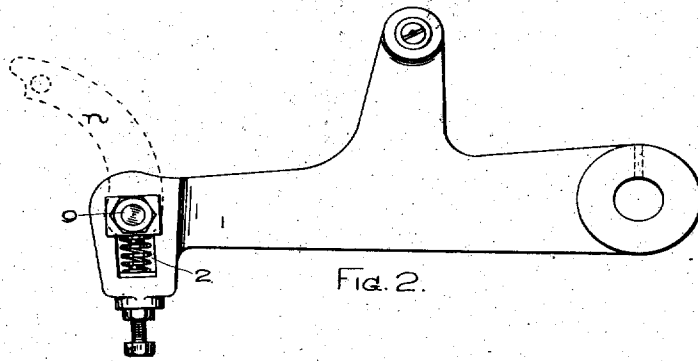


Fig. 2.

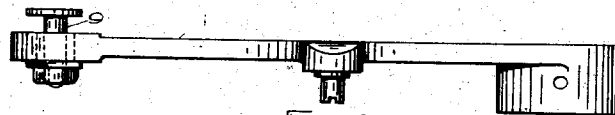


Fig. 3.

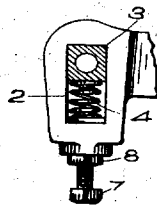


Fig. 4.

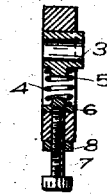


Fig. 5.

WITNESSES
Edwin F. Samuels
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INVENTOR
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UNITED STATES PATENT OFFICE.

FREDERICK LYMAN ALLEY, OF LYNN, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

SEWING-MACHINE.

935,726.

Specification of Letters Patent.

Patented Oct. 5, 1909.

Application filed January 31, 1903. Serial No. 141,290.

To all whom it may concern:

Be it known that I, FREDERICK LYMAN ALLEY, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in 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.

The present invention relates to sewing machines and more particularly to sewing machines of the curved hooked needle chain stitch type such as are commonly used for sewing turned shoes and for inseaming welted shoes. In this class of machines it is of the greatest importance to reduce to a minimum all outward strains on the thread, that is to say, all strains which tend to draw the thread outward from the median line of the shoe, also to reduce to a minimum the rendering of the thread under tension through the hook of the needle. Outward strains on the thread are resisted principally by the between substance which is commonly soft and spongy and if such strains are excessive the between substance is liable to be torn or cut out by the pull of the thread or so stretched and distorted as to weaken the shoe and impair its appearance. This is particularly objectionable where the pull of the thread is brought on the between substance with a sudden twitch or jerk. The rendering of the thread through the hook of the needle under strain tends to fray or break the thread, and this is, of course, the more injurious to the thread if such strain is brought on the thread with a sudden jerk. The machine in which these difficulties have been to the greatest extent remedied is the well-known Goodyear welt and turn machine, but even in this machine while the stitch setting strain is inward, that is, from the outside of the shoe toward its median line, the stitch tightening strain is outward, that is, from the median line of the shoe outward, and during the tightening of the stitch the thread is brought with a sudden jerk against the between substance under a heavy strain, and renders slightly under such heavy strain through the hook of the needle. It may be desirable to state in this connection that the term "tightening the stitch" as used in this specification refers to the tightening of the

preceding loop around the loop which is being drawn out by the needle commonly called the standing thread, while the term "setting the stitch" refers to the drawing of the concatenation of thread which enters into the stitch into the position which it is to occupy in the finished seam. In said Goodyear machine the take-up, which also acts as a pull-off, and the thread finger enable the needle to draw a loop of thread through the between substance without rendering through the hook of the needle, and the needle is, moreover, supplied with thread freed from the tension strain until it has almost completed its loop-drawing stroke, at which time, to insure the taking up of the slack in the preceding loop (due to the fact that the shank of the needle is larger in circumference than the standing thread) and the tightening of the stitch, the needle, in pulling out the loop, is made to encounter the full tension resistance together with such further resistance as the thread itself offers to slipping in the hook of the needle, which resistance is by no means inconsiderable as the waxed thread in the loop has been previously drawn through the between substance and almost to the limit of the stroke of the needle without any rendering. It will be seen from the foregoing by those skilled in the art that in said Goodyear machine during the stitch tightening operation the thread will be brought with a sudden jerk or twitch against the between substance and caused to render severally, though not for a considerable length, through the hook of the needle.

The object of the present invention is to reduce the sudden outward strain above described to a minimum and to relieve as far as practical the between substance and thread therefrom.

To the above end the present invention consists in providing a curved hook needle chain-stitch sewing machine with yielding means on the needle side of the work acting during the tightening of the stitch to exert a yielding strain on the thread, and further in the devices and combinations of devices hereinafter more specifically set forth and claimed.

While I believe that the present invention can be used to the best advantage and will give the best results if embodied in a machine in which the stitch is tightened by the needle and set by the take-up such, for

example, as the Goodyear machine, I do not consider that my invention is limited to its application to this type of machine, since, as to its generic features, it is applicable to machines not employing a take-up and also to machines in which the stitch is tightened by some instrumentality other than the needle.

In the accompanying drawings, Figure 1 is a side elevation of a Goodyear welt and turn machine embodying the present invention, certain parts being omitted for clearness, such parts being, among others, the welt guide, channel guide, channel guide lever, awl, awl lever, feed slide, needle cam and feed cam; Fig. 2 is a side elevation of the needle lever, Fig. 3 is a plan of the same; Fig. 4 is an elevation of the forward end of the needle lever showing a section of the sliding block carried thereby; and Fig. 5 is a vertical transverse section of the forward end of the needle lever showing the parts carried thereby.

The machine of the drawings is provided with the looper L, the thread finger F, the take-up T, the auxiliary take-up *t*, the channel guide (not shown), and the awl or feed point (not shown), all being constructed and operating substantially as in the machine of the patent to French and Meyer, No. 412,704 to which reference may be had for further description thereof. The needle N, needle segment S and needle link *n* are also constructed substantially as described in said patent. The needle lever 1 is constructed and arranged as described in said patent, except that at its forward end it is provided with a vertical slot 2 in which the block 3 is slidably fitted. The block 3 is normally supported by the helical compression spring 4 which at its upper end embraces the projection 5 on the under side of the block 3, and at its lower end embraces a similar projection from the spring cap 6. The spring cap 6 is adjustable vertically, to vary the force exerted by the spring on the sliding block, by means of the adjusting screw 7 which is screw threaded through the lower side of the lever 1 and engages a recess in the under side of the spring cap 6. A lock nut 8 is provided by means of which the adjusting screw 7 may be locked in an adjusted position. The sliding block 3 is perforated and receives the bolt 9 which extends through the adjacent end of the needle link *n* shown in dotted lines in Fig. 2.

The operation of the illustrated embodiment of my invention is substantially the same as the operation of the Goodyear welt and turn machine as disclosed in said patent to French and Meyer, except that while the needle is making its retracting stroke it is controlled by the spring 5 so that the stitch tightening pull upon the thread instead of being rigidly applied thereto is yieldingly

applied, thereby relieving the thread and between substance of the sudden twitch or jerk which occurs in said Goodyear machine. When the needle lever 1 is depressed to advance the needle the sliding block 3 will be brought in contact with the upper end of the slot 2, forcing the needle positively forward, thus insuring certainty in the puncturing of the material and accuracy of presentation to the looper.

Having thus described my invention, I claim as new and desire to secure by Letters Patent.

1. A chain stitch shoe sewing machine, having, in combination, a looper, a curved hook needle, and actuating mechanism for the needle having provision for yieldingly controlling said needle during its loop-drawing stroke, substantially as described.

2. A chain stitch shoe sewing machine, having, in combination, a looper, a curved hook needle, and means for actuating the needle having provision for positively controlling the same during its work piercing stroke and yieldingly controlling the same during its loop-drawing stroke, substantially as described.

3. A chain stitch shoe sewing machine, having, in combination, a looper, a curved hook needle acting to exert a yielding pull on the thread to tighten the stitch, and a stitch setting take-up, substantially as described.

4. A chain stitch shoe sewing machine, having, in combination, a looper, a curved hook needle, a take-up, and actuating mechanism for the needle comprising a spring acting to cause the needle to exert a yielding pull on the thread during its loop-drawing stroke, substantially as described.

5. A chain stitch shoe sewing machine, having, in combination, a looper, a curved hook needle, and a spring acting during the tightening of the stitch to exert a yielding strain on the thread on the needle side of the work, substantially as described.

6. A chain stitch shoe sewing machine, having, in combination, a looper, a curved hook needle, a needle lever, connections between the needle lever and the needle including a sliding block, and a spring, substantially as described.

7. A chain stitch shoe sewing machine, having, in combination, a looper, a curved hook needle, a needle segment, a needle link, a needle lever, the needle lever being provided with a slot in its end, a sliding block arranged in said slot, a pin connecting said sliding block and the needle link, and a spring normally acting upon the sliding block to hold it at one end in the slot in the needle lever, substantially as described.

8. A chain stitch shoe sewing machine, having, in combination, a looper, a curved hook needle, actuating mechanism for the

needle including a yielding connection between the parts permitting the needle to yield under the strain incident to drawing a loop of thread through the materials, substantially as described.

9. A chain stitch sewing machine, having, in combination, a looper, a hook needle, and actuating mechanism for the needle having provision for yieldingly controlling said needle during its loop drawing stroke, substantially as described.

10. A chain stitch sewing machine, having, in combination, a looper, a hook needle, actuating mechanism for the needle having provision for yieldingly controlling the needle during its loop drawing stroke, and means independent of the needle for setting the stitch, substantially as described.

11. A sewing machine, having, in combination, a needle, and yielding actuating mechanism for the needle including a block-and-slot connection, substantially as described.

12. A chain stitch shoe sewing machine, having, in combination, suitable stitch forming instrumentalities, including a hook needle, and yieldingly actuated means for imparting the final pull to the needle loop to tighten the stitch, substantially as described.

13. A chain stitch shoe sewing machine, having, in combination, suitable stitch forming instrumentalities, including a hook needle and yielding actuating means for im-

parting a final pull to the needle loop after it has been drawn through the material to tighten the stitch, substantially as described.

14. A chain stitch shoe sewing machine, having, in combination, a looper, a curved hook needle, and means for actuating the needle having provision for actuating it through the medium of a spring during the latter part of the loop drawing stroke.

15. A chain stitch shoe sewing machine, having, in combination, a curved hook needle and means for actuating the needle comprising a cam and intermediate connections including a slotted member, a pin movable in the slot and a spring for normally holding the pin at one end of the slot.

16. A shoe sewing machine, having in combination, a needle and means for yieldingly actuating the needle including a cam and a resilient intermediate connection.

17. A chain stitch shoe sewing machine having in combination, a needle segment with a needle thereon, a link connecting said segment with a lever, a lever and a spring operatively connecting said lever and link for yieldingly actuating the segment in a direction to draw thread through the material.

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

FREDERICK LYMAN ALLEY

Witnesses:

ORLANDO H. BAKER,
M. E. DE LANGE.

Correction in Letters Patent No. 935,726.

It is hereby certified that in Letters Patent No. 935,726, granted October 5, 1909, upon the application of Frederick Lyman Alley, of Lynn, Massachusetts, for an improvement in "Sewing-Machines," an error appears requiring correction as follows: Page 1, line 90, the word "severally" should read *severely*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 2nd day of November, A. D., 1909.

[SEAL.]

C. C. BILLINGS,

Acting Commissioner of Patents.

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