No. 770,799. PATENTED SEPT. 27, 1904.

H. H. DUCHESNE.

SHOE SEWING MACHINE.

APPLICATION FILED JUNE 20, 1903.

NO MODEL.

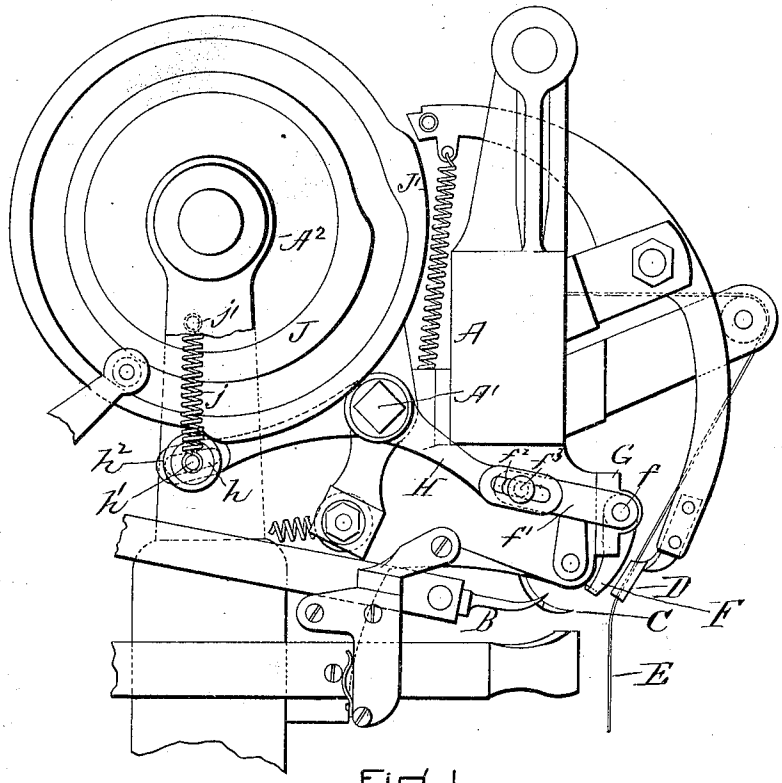

Fig. 1.

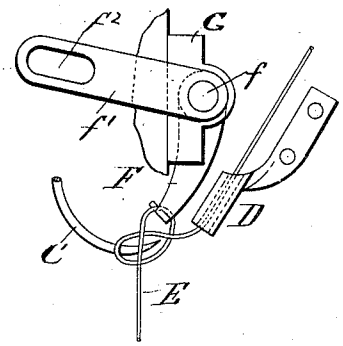

Fig. 2.

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No. 770,799. Patented September 27, 1904.

UNITED STATES PATENT OFFICE.

HENRY H. DUCHESNE, OF MELROSE, MASSACHUSETTS.

SHOE-SEWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 770,799, dated September 27, 1904.

Application filed June 20, 1903. Serial No. 162,333. (No model.)

To all whom it may concern:

Be it known that I, HENRY H. DUCHESNE, of Melrose, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Shoe-Sewing Machines, of which the following is a specification.

In Letters Patent No. 696,871, dated April 1, 1902, and granted to Joseph L. Kieffer, is shown and described a sewing-machine of the class used in sewing boots and shoes by a single waxed-thread chain-stitch.

My invention relates to an improvement adapted to be used upon a machine of such character, and especially adapted for use upon that machine. For that reason I have shown in the drawings only so much of the machine of that patent as is necessary to indicate the application of my invention thereto, referring to the said patent for such other details as to the construction and operation of the machine as may be necessary to understand these drawings.

In waxed-thread sewing-machines there is a part well known as a "thread-arm," which part operates between the last stitch and the needle or looper in order to insure sufficient slack to enable the needle to draw the thread through the stock to make the next stitch without its reeving about the needle. So far as I am aware such a thread-arm has always been given a throw of a positive length, and no machine of which I am aware has provided any means whereby either the length of throw by which the amount of desired slack is determined or the exact time of the throw with relation to the movement of the needle and other parts could be adjusted. For this reason it has been practically necessary for every large shoe-shop in which sewing-machines are used having this thread-arm to have a comparatively large number of machines, each of which is constructed to do work upon a particular kind of stock only, and the machine is used for that kind of stock only. For other stock other machines are used. My invention is designed to overcome this trouble by giving to the thread-arm a movement which may be adjusted and timed according to the requirements of the work to be done upon the machine and the adjustment and timing of which may be altered according to the requirements of the situation. As the machine to which I have designed to apply this thread-arm mechanism is fully shown in the Letters Patent above referred to, I have only indicated in the drawings the mode of attachment of my invention thereto.

Figure 1 of the drawings is a side view corresponding to Fig. 1 of the said Letters Patent; and Fig. 2 a side detail showing more clearly the relation of the needle, thread-arm, and looper when these parts are in different position from that in which they are shown in Fig. 1.

A is the frame of the machine. B is the presser-foot. C is the needle. D is the looper. E is the thread, and F is the thread-arm. These parts, with the exception of the thread-arm, are and operate in all respects like the corresponding parts of the machine of the said Letters Patent.

The thread-arm F is mounted on the end of a rock-shaft f, carried in a bearing on the block G, f' being a rocker-arm on the opposite end of said rock-shaft from the thread-arm and slotted, as shown at f^2, Fig. 2. A lever H, fulcrumed on a pin A', mounted on the frame A, is pivotally connected to the rocker-arm f' by means of a bolt and nut f^3, the other end of this lever H being provided with a slot h, in which is mounted the axis h' of a cam-roll h^2, which cam-roll bears upon the periphery of the surface cam J. A spring j, one end of which hangs from a pin j' on a portion of the cam-shaft bearing A^2 and the other end of which is connected to a shaft of the cam-roll h^2, holds the cam-roll against the surface cam. It will be noted that the shaft of the cam-roll passes through the slot h in the end of the lever H, and it is clamped thereto by a suitable set-nut, and that its position in the slot h may be adjusted according to circumstances, so as to control the distance of the cam-roll from fulcrum A', and consequently the instant when the cam will throw the thread-arm.

It will not be necessary to indicate the details of stitch-making where a thread-arm is

used in connection with the looper-needle and presser-foot of the said Letters Patent. It will only be necessary to further say in describing this mechanism that when constructed as shown in the drawings the thread-arm will be given a certain length of throw by the rocking of the rock-shaft and that in order to change the length of that throw it is only necessary to change the position of the bolt f^3 in the slot f^2, whereas if it is necessary to retime in any way this throw the change of location of the cam-roll h' in the slot h with relation to the fulcrum A′ of the lever H will cause the projection J′ upon the surface cam J to strike the cam-roll h^2 a little earlier or a little later, as the case may be. The result of this construction is that the amount of slack thread lying between the last stitch and the needle in the making of the next stitch may be so adjusted that where the between substance is spongy and weak a little more slack may be allowed and where the stock is firm and strong, so that it will stand the strain, a little less thread will be used even though the stitches are of the same length. The same machine may thus be rendered available for sewing not only upon good and poor stock, but also for the same reason upon heavy and light stock.

It is well known that heretofore one difficulty with the use of sewing-machines of this class has been that a great deal of time has to be spent by operatives in repairing what is known as "crippled" shoes—that is, shoes where the thread has torn through the between substance. This time is saved by the use of my invention, which has already proved itself of value when used.

What I claim as my invention is—

1. In a sewing-machine, in combination with a stitch-making mechanism having a looper, and means for operating the said looper, a thread-arm and means for operating said thread-arm, and means whereby the time of operation of said thread-arm may be adjusted, as and for the purposes set forth.

2. In a sewing-machine, in combination with a stitch-making mechanism, comprising a needle, a looper, and a thread-arm, and means for operating the same, means whereby the length of movement and time of operation of said thread-arm may be independently adjusted.

3. In a sewing-machine, a stitching mechanism, a thread-arm and means whereby said thread-arm is oscillated comprising a cam-lever, one end of which is connected to said thread-arm, its other end carrying a cam-roll, the location of which is adapted to be adjusted with relation to the end of said lever, as described.

4. In a sewing-machine in combination with a stitch-making mechanism, a thread-arm mechanism comprising two rocker-arms mounted on a rock-shaft, one of said rocker-arms forming a thread-arm, a cam-lever, one end of which is adjustably connected to the other of said rocker-arms, the other end of said lever carrying a cam-roll adjustably connected thereto, as described.

In testimony whereof I hereunto set my name this 27th day of April, 1903.

HENRY H. DUCHESNE.

Witnesses:
GEORGE O. G. COALE,
M. E. FLAHERTY.