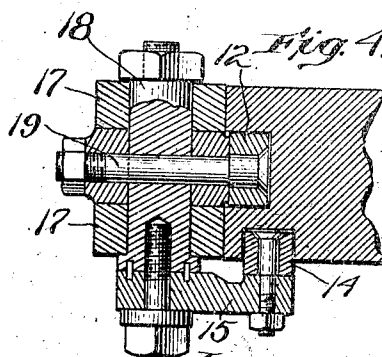
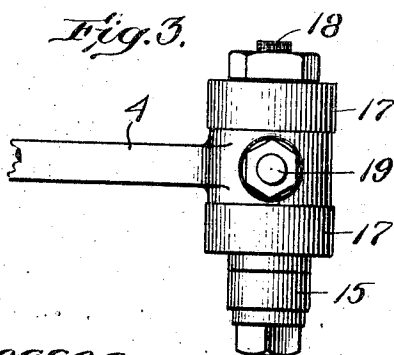
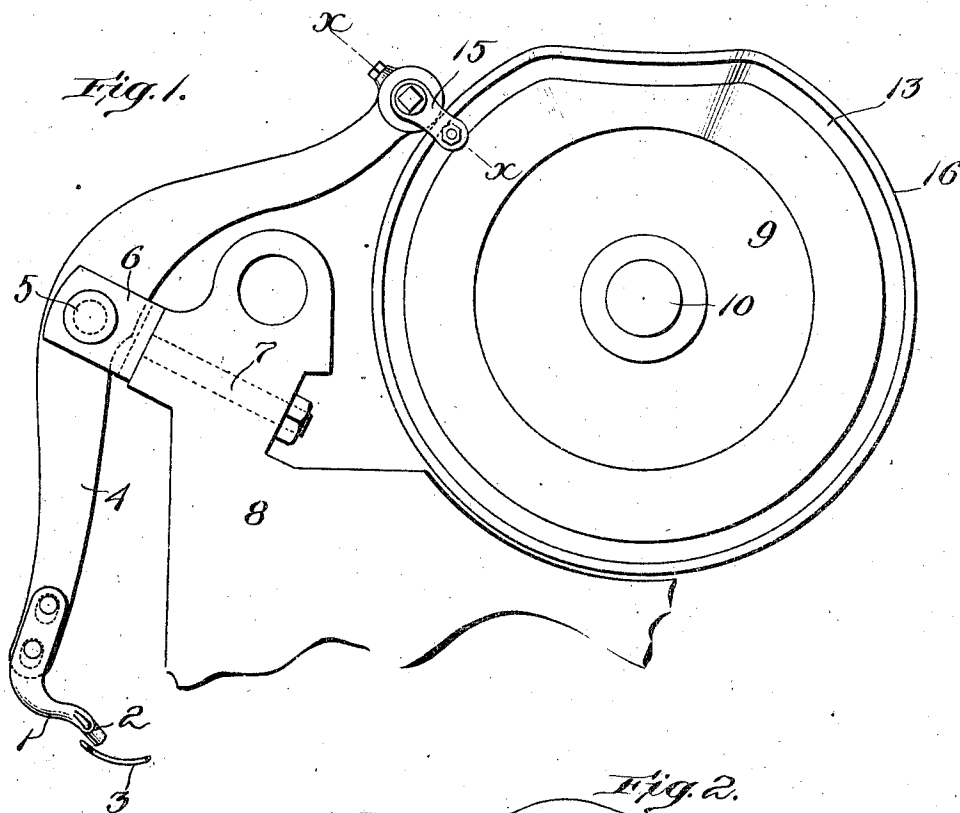


H. BRIGGS.
 LOOPER MECHANISM FOR SEWING MACHINES.
 APPLICATION FILED AUG. 5, 1905.

1,030,804.

Patented June 25, 1912.



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LOOPER MECHANISM FOR SEWING-MACHINES.

1,030,804.

Specification of Letters Patent.

Patented June 25, 1912.

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To all whom it may concern:

Be it known that I, HENRY BRIGGS, a citizen of the United States, residing at Hasbrouck Heights, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Looper Mechanism for 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 improvements in looper mechanisms for sewing machines.

In sewing machines of the type in which a hooked or barbed needle is employed the thread is delivered to the needle by a device called a looper, which performs at each stitch an oscillation or a rotary movement about the needle for this purpose. In machines of this type provided with a thread finger, the looper usually has a further movement to deliver thread to the thread

finger. In order to impart to the looper the movements above described, it is common, as, for example, in the well known Goodyear shoe sewing machine, to mount the looper on a lever, called a looper carrier, which is pivoted on a fulcrum permitting a universal oscillating movement of the looper carrier, and to actuate the looper carrier by a cam engaging cam rolls journaled on the looper carrier. The cam is provided with a peripheral groove which imparts lateral vibrations to the looper carrier and looper, and with a peripheral cam surface which imparts forward and backward oscillations to the looper carrier and looper, the times and amplitudes of the several oscillatory movements being so arranged as to produce in combination the proper movement of the looper about the needle.

The peripheral cam surface above described actuates the looper carrier positively in one direction, but to keep the cam rolls in contact with this surface and to actuate the looper carrier in the opposite direction it has been customary to use a spring, connected to the looper carrier and to a fixed part of the machine. This construction is defective for several reasons. The time in the cycle of operations of the machine assigned to the operation of the looper is

necessarily short, and consequently the parts of the cam paths producing the looping movements are rather abruptly curved, and when the machine is operated at high speed the cam rolls bearing on the peripheral cam surface tend to jump across the depressions therein unless the spring is of excessive strength, so that the movements of the looper are not properly performed and the cam mechanism is noisy and wears rapidly. Moreover, the use of a constantly acting spring imposes constant wear on the journals of the cam rolls and the cam, and causes waste of power in the machine.

The object of the present invention is to produce a looper mechanism in which the objections noted above are obviated, and to this end the invention consists in a looper mechanism in which a looper carrier mounted on a universal fulcrum in the manner above described is provided with the mechanism hereinafter described for positively actuating the looper carrier and looper in every direction, so that the action of the looper is rendered certain and positive.

In the drawings illustrating the preferred embodiment of the invention Figure 1 is a side elevation of the looper mechanism and part of a sewing machine in which the mechanism is embodied; Fig. 2 is a plan view of the cam for actuating the looper; Fig. 3 is a detail view of the end of the looper carrier, and the cam rolls thereon; and Fig. 4 is a section on line $x-x$ of Fig. 1.

The invention is illustrated as applied to a shoe sewing machine of the well-known Goodyear type, and as such machines are familiar to those skilled in the art only so much thereof is shown as is necessary for an understanding of the present invention.

The looper 1 (see Fig. 1) is provided with a thread-guiding eye 2 and is located in position to cooperate with the needle 3 of the sewing machine. The looper is secured to a lever or looper carrier 4 pivoted at 5 in a forked head 6 fixed to a stem 7 journaled in a portion of the frame 8 of the sewing machine. The pivot 5 and stem 7, being arranged perpendicular to one another, permit the looper carrier 4 to oscillate in every direction, and form what may be termed a universal fulcrum for the looper carrier.

The cam 9, by which the looper carrier and looper are actuated, is mounted upon

the main shaft 10 of the machine, and is rotated thereby. The cam is provided with a peripheral cam groove 11 engaged by a cam roll 12 (see Fig. 4) on the end of the looper carrier. The groove 11 and roll 12 impart lateral oscillations to the looper carrier and looper. The cam is provided also with a lateral cam groove 13 engaged by a cam roll 14 journaled on an arm 15 fixed to the end of the looper carrier, and the groove 13 and roll 14 impart forward and backward movements to the looper carrier and looper. The lateral surface of the cam in which the groove 13 is formed is arranged to conform laterally with the cam groove 11, and the peripheral surface 16 in which the groove 11 is formed, is arranged to conform radially with the cam groove 13, so that the cam rolls 12 and 14 maintain always their proper relation to the cam grooves throughout all the movements of the looper carrier. In addition to the cam roll 14 the looper carrier is provided with cam rolls 17 engaging the peripheral surface 16 of the cam, which serve to assist the cam roll 14 in moving the looper carrier in one direction. The cam rolls 17 are journaled on a stem 18 passing through the end of the looper carrier, and the arm 15 is fixed to the stem 18. The stem 18 and the arm 15 are prevented from turning by a stud 19 passing through the stem 18 and providing a journal for the cam roll 12.

Positively actuated looper mechanisms have previously been proposed, but in such devices the mechanism has been more complicated than the present invention, involving usually the employment of sliding movements or of other levers in addition to the single oscillating lever of the present invention. In the present invention the simplicity of the spring-controlled oscillating lever mechanism is retained, while the movements of the looper are made positive in every direction and the disadvantages incident to the use of a spring are avoided. The cam roll 14 is adequate to control the forward and backward movements of the looper without the addition of the cam rolls

17 and the latter may be omitted; it is preferable, however, to use the cam rolls 17 as they reduce the wear upon the cam roll 14.

While the present invention has been shown as applied to a shoe sewing machine of a particular type, it will be apparent that the improved looper mechanism may be applied to hook-needle sewing machines of other kinds; and while the invention has been described in connection with a particular embodiment thereof, it is not limited thereto but may be embodied in other forms broadly defined in the claims.

1. A looper mechanism for sewing machines, having, in combination, a looper carrier mounted upon a universal fulcrum, and mechanism for imparting a compound oscillating movement to the looper carrier comprising two closed cams for positively oscillating the looper carrier in different directions, and cam rolls carried by the looper carrier and engaging the cams, substantially as described.

2. A looper mechanism for sewing machines, having, in combination, a looper carrier mounted upon a universal fulcrum, a cam disk having a peripheral cam groove for oscillating the looper carrier in one direction and a lateral cam groove for oscillating the looper carrier in another direction, and cam rolls mounted on the looper carrier and engaging the cam grooves, substantially as described.

3. A looper mechanism for sewing machines, having, in combination, a looper carrier mounted on a universal fulcrum, a cam disk for actuating the looper carrier having a peripheral cam groove, a peripheral cam surface, and a lateral cam groove, and cam rolls mounted on the looper carrier and engaging the cam surface and the cam grooves, substantially as described.

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

HENRY BRIGGS.

Witnesses:

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