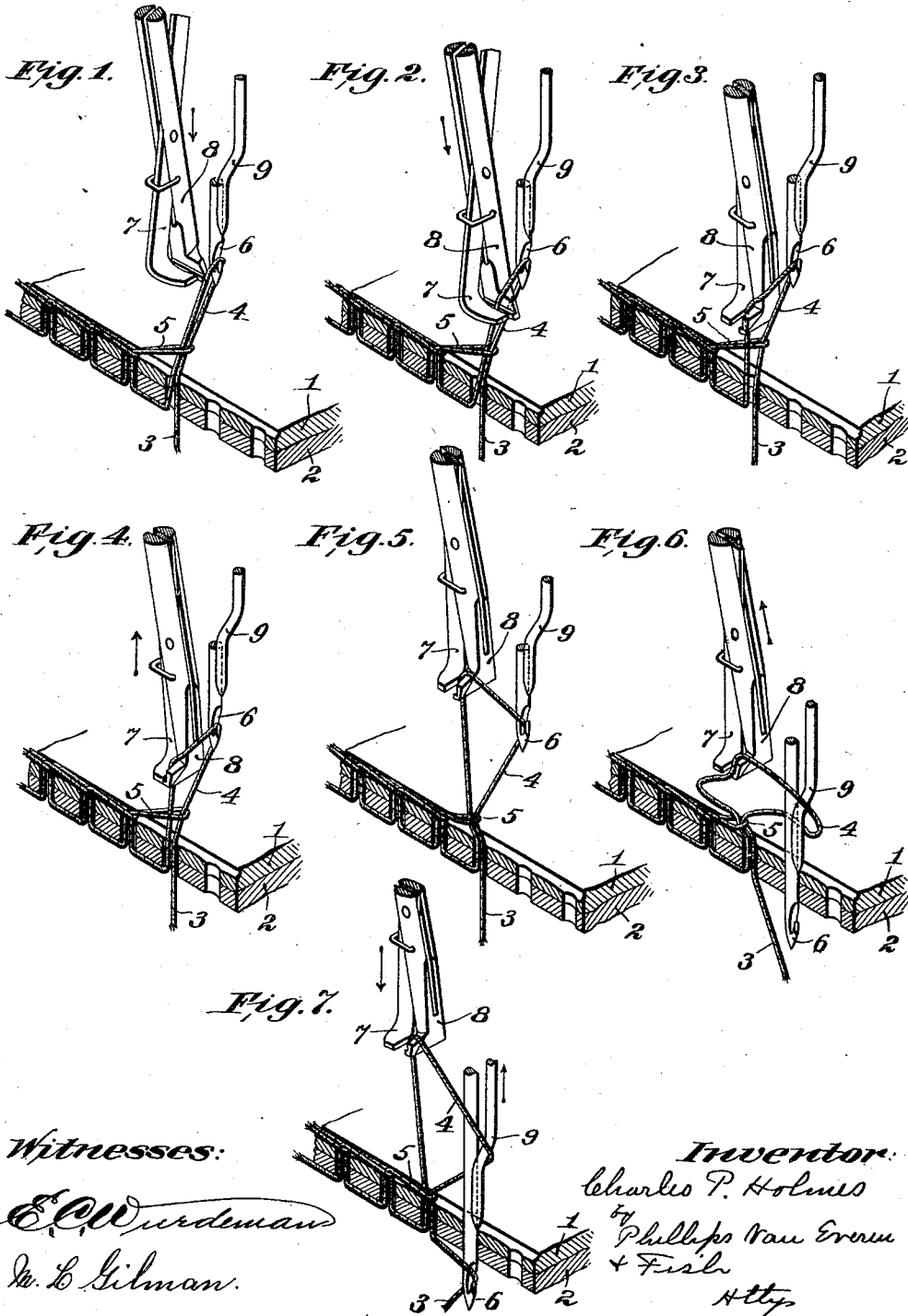


C. P. HOLMES.
METHOD OF FORMING CHAIN STITCHES.
APPLICATION FILED AUG. 13, 1908.

1,030,813.

Patented June 25, 1912.



UNITED STATES PATENT OFFICE.

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METHOD OF FORMING CHAIN-STITCHES.

1,030,813.

Specification of Letters Patent.

Patented June 25, 1912.

Application filed August 13, 1908. Serial No. 448,294.

To all whom it may concern:

Be it known that I, CHARLES P. HOLMES, 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 Methods of Forming Chain-Stitches; 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 an improved method of forming chain stitches especially adapted for use in sewing shoes.

The object of the invention is to improve the manner in which the thread is manipulated in forming the stitches and particularly the manner in which slack thread is removed from the loops forming the chain and the manner in which the stitches are set.

By the use of the present invention, a chain stitch seam can be formed, the stitches of which will contain no loose thread and which will permanently hold the layers of material tightly together without any liability of working loose during changes in the condition of the stock or during the wearing of the shoe containing the seam.

The present invention will be clearly understood from an inspection of the accompanying drawing which illustrates somewhat diagrammatically the successive operations which are preferably performed upon the thread in practising the method of the present invention. As illustrated in the drawing, the several operations are performed upon the thread by thread handling devices which may be embodied in a shoe sewing machine such as is illustrated in applicant's prior application filed July 23, 1906, Serial No. 327256. It will be obvious, however, that the operations indicated in the drawing might be performed by hand without the use of thread handling devices or might be performed by hand with the assistance of devices similar to those illustrated in the drawing or other suitable devices which can be manipulated by hand to act in the desired manner on the thread.

Referring to the drawing, Figure 1 illustrates the operation of drawing a loop of thread through the materials and through a previously formed loop. Figs. 2, 3, 4 and

5 illustrate the operation of pulling on the loop of thread last drawn through the material to shorten the preceding loop. Fig. 6 illustrates the operation of inserting a needle in the work after the previously formed loop has been shortened, and Fig. 7 illustrates the operation of exerting a stitch setting strain on the seam.

In the drawing, the outer and inner sole of a shoe are indicated at 1 and 2 and the thread which is being manipulated to form a series of chain stitches uniting the two layers of material is indicated at 3. In forming the chain stitches, a loop 4 of thread is drawn through the layers of material 1 and 2 and through the previously formed loop 5, as indicated in Fig. 1. This may be conveniently done by means of a hook needle such as is indicated at 6. After the loop 4 is drawn through the layers of material and through the previously formed loop 5, the loop 5 is shortened by gripping and pulling upon that portion of the thread which extends from the end of loop 4 to the preceding loop. For convenience the side of the loop 4 which leads to the preceding loop may be termed the work side of the loop and the other side of the loop may be termed the supply side. As illustrated in the drawing, a pull is exerted on the thread extending to the preceding loop by a pair of gripping jaws 7 and 8 which grip the work side of the loop 4. After the loop 4 is drawn up to the position indicated in Fig. 1, the gripping jaws are moved into engagement with the work side of the loop 4. The jaws are then closed upon the thread, are turned through an angle of approximately 90° and are then raised obliquely from the work in the direction of the finished portion of the seam, which direction may be conveniently termed the direction of the feed since it is the direction in which the work will be fed when the seam is formed by the thread handling devices of a shoe sewing machine. The successive positions which the gripping jaws assume in grasping and pulling upon the work side of the loop 4 are indicated in Figs. 2, 3, 4 and 5. By gripping and pulling on the portion of thread which extends from the end of loop 4 to the preceding loop, the preceding loop 5 can be shortened accurately the desired amount and to such an extent

that it is drawn back of the needle hole so that when it is drawn forward in completing the stitch it will be stretched taut. A tight seam can thus be produced, the stitches of which will contain no slack thread and there will be no liability of the stitches becoming loose when the shoe is worn or when the condition of the stock changes by the evaporation of moisture therefrom. The next step in the process of forming the chain stitches consists in drawing forward the loop 5 and stretching it taut. This is done by pulling upon the thread forming the loop 4 in such manner and to such an extent as to exert a stitch setting strain on the seam. Preferably and as illustrated in Figs. 6 and 7, after the loop 5 has been shortened, as indicated in Fig. 5, the gripping jaws 7 and 8 are moved toward the work to slacken the loop 4, and the needle is passed through the loop and through the materials. At this time if a cast-off is employed, as indicated at 9 in the drawings, the cast-off also passes through the loop 4 and rests upon the materials. A pull is now exerted upon the loop 4 by an upward movement of the jaws 7 and 8, the loop 4 extending between the jaws which are at this time open and over the jaw 8 and around the needle and cast-off. The supply side of the loop, as will be apparent from an inspection of Fig. 7, extends forwardly from the preceding needle hole around the needle and cast-off and thus the effective pull on the loop 4 is in the direction of the seam and in the opposite direction to the feed, so that the preceding loop 5 is drawn out taut and down against the work. The loop 4 is now released by the gripping jaw 8 and the needle draws another loop of thread through the materials and through the loop 4.

The operations which are performed upon the thread as above described and as illustrated in the drawing are those which are preferred in practising the present invention. It is to be understood, however, that, except as defined in the claims, the invention is not limited to the precise manner illustrated and described of shortening the loop 5, or the precise manner of setting the stitches. It is also to be understood that the steps of shortening the preceding loop and of exerting a stitch setting strain on the seam, in the manner described, constitute features of the present invention which are not necessarily limited to use in connection with each other.

The invention having thus been described, what is claimed is:—

1. That improvement in the art of forming chain stitches which consists in drawing a loop of thread through the materials to be sewed and through a previously formed loop, pulling on one side only of the last formed loop to shorten the pre-

vious loop and pulling said previously formed loop forward to exert a stitch setting strain on the seam.

2. That improvement in the art of forming chain stitches which consists in drawing a loop of thread through the materials to be sewed and through a previously formed loop, pulling on one side only of the last formed loop to shorten the preceding loop, and then pulling on both sides of the last formed loop to exert a stitch setting strain on the seam.

3. That improvement in the art of forming chain stitches which consists in drawing a loop of thread through the materials to be sewed and through a previously formed loop, pulling on the last formed loop to shorten the preceding loop, passing an instrument through the last formed loop and through the materials at the point where the next loop is to be drawn, and engaging and pulling on the last formed loop while the instrument is in the work to exert a stitch setting strain on the seam.

4. That improvement in the art of forming chain stitches which consists in drawing a loop of thread through the materials to be sewed and through a preceding loop, gripping the last formed loop and exerting a pull thereon to shorten the preceding loop, and thereafter setting the stitch of which the preceding loop forms a part.

5. That improvement in the art of forming chain stitches which consists in drawing a loop of thread through the materials to be sewed and through a previously formed loop, gripping the thread between the end of the last formed loop and the preceding loop and exerting a pull thereon to shorten said preceding loop, and thereafter setting the stitch of which the preceding loop forms a part.

6. That improvement in the art of forming chain stitches which consists in drawing a loop of thread through the materials to be sewed and through a previously formed loop, gripping the last formed loop and exerting a pull thereon in the direction of feed to shorten the preceding loop, and thereafter setting the stitch of which the preceding loop forms a part.

7. That improvement in the art of forming chain stitches which consists in drawing a loop of thread through the materials to be sewed and through a previously formed loop, passing an instrument through the last formed loop and through the materials at the point where the next loop is to be drawn, and engaging and pulling on the last formed loop while the instrument is in the work to exert a stitch setting strain on the seam.

8. That improvement in the art of forming chain stitches which consists in passing an instrument through a previously formed

loop and through the material at the point
where the next loop is to be drawn, with-
drawing the instrument with a loop of
thread through the materials and through
5 the previously formed loop, engaging the
last formed loop with another instrument
and pulling on the loop with said instru-
ment so as to exert a pull on the last formed

loop in the direction of the seam and away
from the previously formed stitches. 10

In testimony whereof I affix my signa-
ture, in presence of two witnesses.

CHARLES P. HOLMES.

Witnesses:

WARREN G. OGDEN,
ANNIE C. RICHARDSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."