

(No Model.)

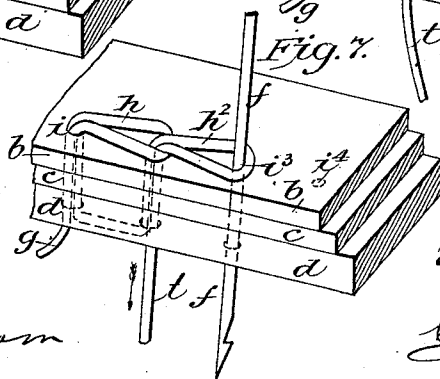
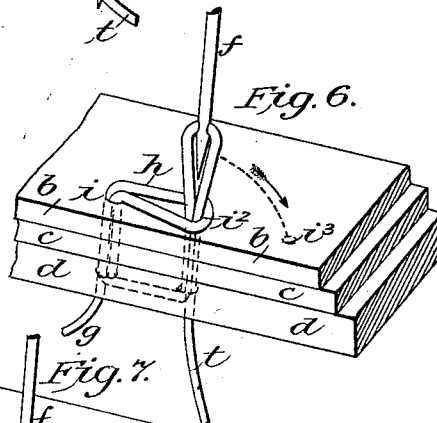
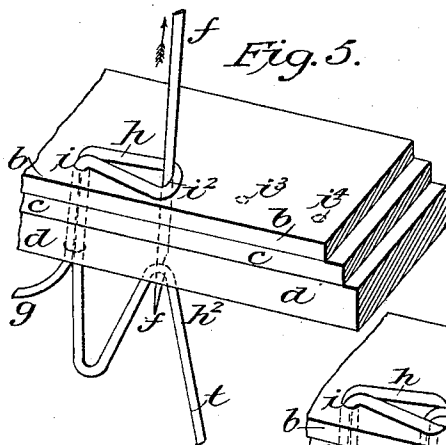
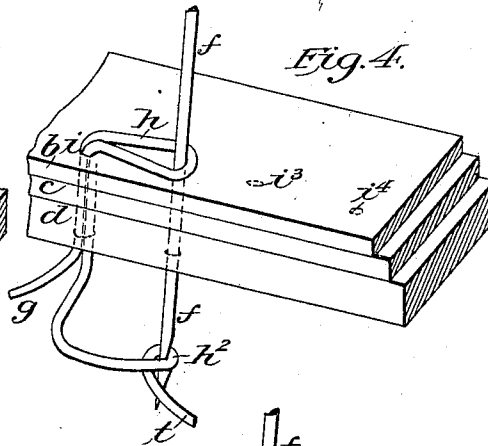
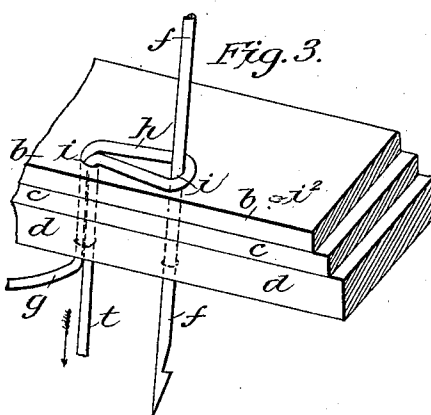
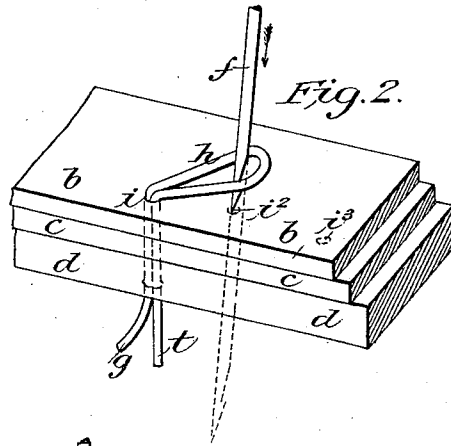
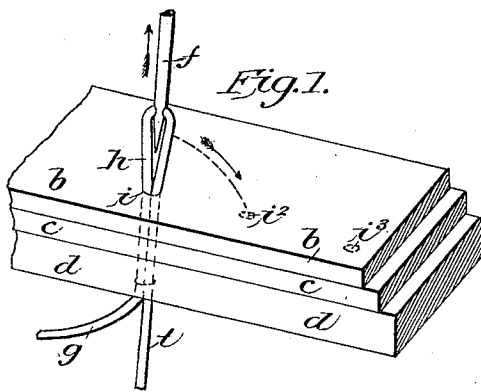
2 Sheets—Sheet 1.

H. BRIGGS.

METHOD OF FORMING CHAIN STITCHES.

No. 461,793.

Patented Oct. 20, 1891.



Witnesses.

Alvin M. Long.
Jack W. Graham.

Inventor.

Henry Briggs
C. Henry Rorie
Attorney

(No Model.)

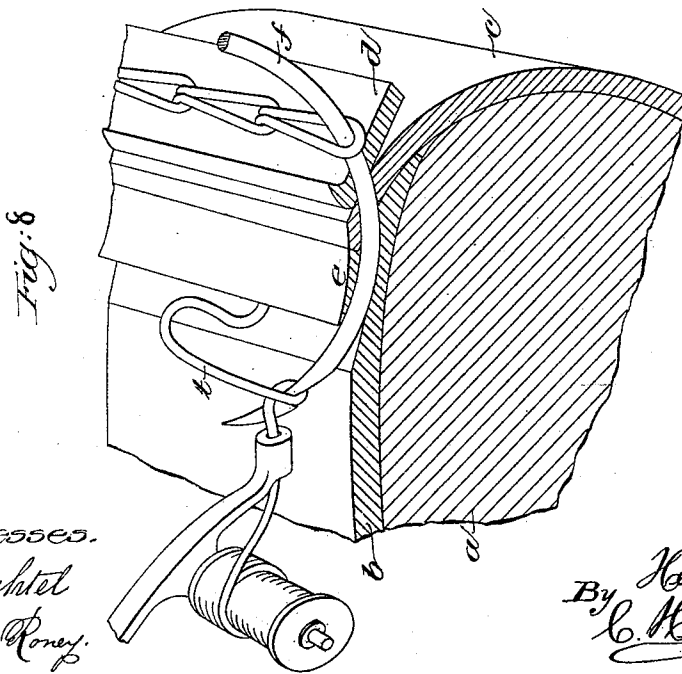
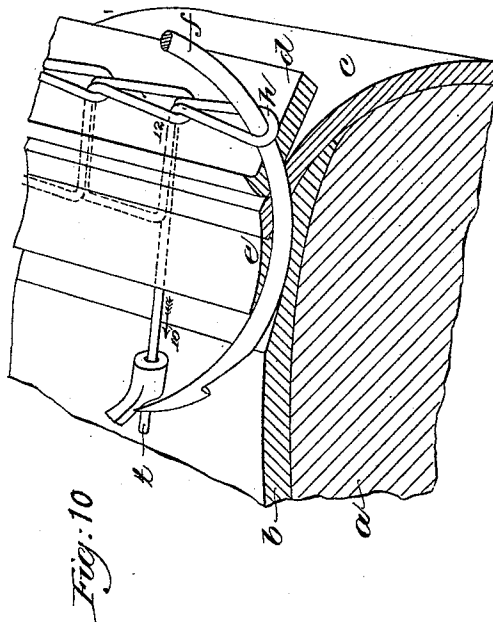
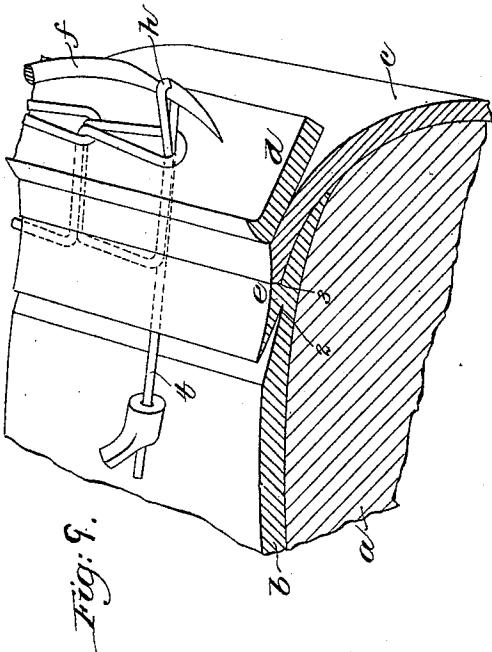
2 Sheets—Sheet 2.

H. BRIGGS.

METHOD OF FORMING CHAIN STITCHES.

No. 461,793.

Patented Oct. 20, 1891.



Witnesses.

A. Bechtel
H. B. Roney.

Inventor.

By Henry Briggs
C. Henry Roney
Attorney

UNITED STATES PATENT OFFICE.

HENRY BRIGGS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
THE GOODYEAR SHOE MACHINERY COMPANY, OF HARTFORD,
CONNECTICUT.

METHOD OF FORMING CHAIN-STITCHES.

SPECIFICATION forming part of Letters Patent No. 431,793, dated October 20, 1891.

Application filed July 19, 1888. Serial No. 280,380. (No model.)

To all whom it may concern:

Be it known that I, HENRY BRIGGS, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Methods of Forming Chain-Stitches; and I do 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention has for its object a novel method of forming and setting stitches with thread to connect pieces of leather or other materials. The resulting stitch is the well-known chain-stitch.

My improvement consists merely in the method of forming and setting it in the materials.

Prior to my invention the method of forming a chain-stitch consisted in passing through a hole in the materials to be sewed together a loop of thread from the thread-supply, passing another loop from the thread-supply through another hole in the materials at the point desired for the next stitch and through the first loop, which is now lying loosely on the surface of the material, then the second loop being drawn to its full height or length draws the first loop taut and tight around the thread of the second loop, which forms the bight or stop, which sets or completes the first stitch. The objectionable feature of this method is the "reeving" of the thread around the opposite side of the materials of the loop as the loop is being drawn down, while the second loop is reaching its full height or length, causing a greater tension on the single thread on the opposite side of the material or opposite side to that which the loops are on, which has a tendency to compress the materials toward the loop, which is objectionable in sewing the uppers to soles in turned or welted work in making boots or shoes or in any other materials which are required to be sewed tightly to one another without straining the original material, to which the other

materials are to be sewed. This strain is so great that the material is often cut through by the reeving of the thread across it.

The operation of setting the stitch was performed, if a needle was used, as was usual, while the needle was out of the materials, and the pull upon the loop was made by means of the needle itself, and in all methods prior to mine the stitch was set by a direct pull upon the thread at about a right angle to the surface of the materials. This method of setting the stitch is very objectionable, especially when the materials are of a spongy nature and liable to tear under this strain. Particularly in sewing the uppers to soles in turned and welted work has this method been found injurious, as will be hereinafter mentioned. To avoid this objectionable strain on the materials I pull the thread in my improved method to set the stitch while it is around an instrument held in the materials to be sewed, such instrument serving to hold the bight of a loop while the previous stitch is being set. The strain upon the materials, instead of being at a right angle, is longitudinal or in the direction of the line of stitching, and it has been demonstrated in practice that a strain in this direction is far less injurious to the materials than that which necessarily resulted from the former method.

My new and improved method of forming a chain-stitch consists in passing a loop of thread through a hole in the materials; inserting an instrument through the loop and holding the instrument in a second hole in the materials at the point desired for the next stitch; drawing on the supply end of the thread, thus drawing the loop that is now around the instrument against the material; forming another loop from the supply-thread on the opposite side of the materials, removing the instrument from the second hole in the materials and from the drawn-down loop, and passing the second loop made from the supply-thread through the second hole in the materials and through the drawn-loop down. These operations are repeated in forming the next stitch, and the supply end of the thread is drawn taut to draw the loop of this stitch down against the material. The instrument

must be withdrawn from the materials and taken out of the loop which has been drawn down and around it when the next loop formed from the thread-supply is passed through the drawn-down loop. The single thread between the two holes against the materials on the side opposite to the side on which the loops of the chain are formed does not reeve or chafe across and around the materials between the two holes, as occurred in the former method of forming the chain-stitch.

My improved method may be practiced by hand or by a properly-organized sewing-machine.

In Figs. 1, 2, 3, 4, 5, 6, and 7 of the drawings I have shown three thicknesses of materials *b c d* to be sewed, illustrating the practice of the method by hand. A hooked or barbed instrument *f* is shown as an illustration of a means for carrying the thread through the material and as the instrument to hold the bight of the successive loops as they are drawn taut and the previous stitches "set." The thread is represented by *g t h*. The end *g* is to be fastened or held by the hand of the operator until one or two stitches have been set. The end *t* communicates with a spool or other thread-supply.

Figure 1 shows the first step in the method completed—namely, the passing of a loop *h* of the supply-thread *t* through the material at *i* by means of the instrument *f*, *i*² showing the position desired for the second loop or stitch *h* at a distance from *i* equal to the length of stitch desired. Fig. 2 shows the next or second step in the method—namely, the position of the point of the instrument *f* when moved to *i*², the point desired for the second stitch *h*², the first loop *h* remaining loosely around the instrument *f*. Fig. 3 shows the instrument *f* pushed through the materials *b c d* at *i*², with the loop remaining about it and the supply-thread *t* pulled taut in the direction shown by the arrow, causing the loop *h* to be drawn tight around the instrument *f* and laid against the material *b*. Fig. 4 shows the instrument *f* in the same position as shown in Fig. 3, but with the supply thread *t* looped in the barb of the instrument *f*, leaving sufficient slack thread between the barb of the instrument *f* and the first stitch to pass through the materials *b c d* and form the next loop *h*², as in Figs. 5 and 6. Fig. 5 shows the thread *t* drawn up by the instrument *f* ready to enter the materials *b c d* to form the second loop *h*² and complete the chain. Fig. 6 shows the thread *t* from the thread-supply drawn through the materials *b c d* at *i*² and sufficiently far back to form the second loop *h*², as also shown in Fig. 1 in the first step in this method of forming a chain. Fig. 7 shows the instrument as having been again inserted in the materials at *i*², the second loop *h*² in the meantime remaining around it.

The supply-thread *t* is represented as pulled

taut in the direction of the arrow, the second loop *h*² as tightened around the instrument and laid against the material *b* and the first stitch *h* as set.

The method described with reference to the drawings is as follows: A loop of thread *h* from the thread-supply *t* is first drawn through the materials by the instrument *f*. The needle or instrument *f* is then pushed back through the materials at the point, as at *i*², where it is desired to form the second stitch, the loop *h* remaining loosely around the instrument. The supply-thread *t* is then to be pulled taut in the direction of the arrow, Fig. 3, whereby the loop *h* will be drawn tight about the instrument and laid against the surface of the material *b*. A second loop is then to be formed out of the supply-thread *t* and laid off in the hook of the instrument, as shown in Fig. 4. The second loop *h*² is then to be pulled through the materials and through the first loop *h*, as shown in Figs. 5 and 6. The instrument is then to be pushed through the materials at the point desired for the third stitch, as at *i*², the second loop remaining loosely about it, as shown at *h*² in Fig. 7. If now the supply-thread *t* be pulled taut in the direction of the arrow, as shown in Fig. 7, the loop *h*² will be drawn tight about the instrument and laid against the surface of the material *b* preparatory to forming the third stitch, and at the same time the first stitch will be set.

It will be seen from the description and the drawings that the stitch is set, not by pulling the thread taut by the hooked needle, as in former methods, but by pulling the supply-thread *t* while a loop is around the instrument, which resists the strain at one end, while at the other end the strain operates to tightly set the previous stitch.

In Figs. 8, 9, and 10 I have shown the method as it may be practiced in sewing the uppers of shoes to the soles by a properly-organized sewing-machine. In all the figures *a* represents the last; *b*, the sole thereon; *c*, the upper; *d*, a welt; and *e* the "between substance"—that is, the portion of the sole between the bottom of the channel *m* and the shoulder 3. I have also shown a hooked needle *f*, a looper, and a thread-supply spool, but no means for operating these parts. These means are well known to any one skilled in the construction of sewing-machines of this class.

The machine should contain feeding mechanism, a channel-guide, and mechanism for taking up or pulling taut the thread *t* at proper intervals. I make no claim to the construction of any machine to practice this method.

Fig. 8 shows a cross-section of a shoe as mounted on a last. The needle *f* is in the act of taking a loop of thread, the needle having been previously pushed through the materials, a loop remaining around its shank. The machine should then cause the needle to

be withdrawn through the materials, taking with it the freshly-formed loop and drawing it through the previous loop, as is shown in Fig. 9. The shoe should then be fed by any usual mechanism the distance of one stitch, and the needle caused to penetrate the materials again, the last loop *h* remaining around its shank. The thread *t* should then be pulled taut by any suitable take-up mechanism, when the loop *h* will be drawn tight around the shank of the needle and against the upper *d* preparatory for the next stitch, and the previous stitch will be set.

In practicing the prior methods the stitches have been set by a direct outward pull upon the thread substantially at a right angle to the surface of the upper, as if the stitch were to be set by the needle when in the position shown in Fig. 9. The strain of such pull was resisted chiefly by the between-substance *e*, which, in case spongy leather was used, was liable to give way. In carrying out my method the stitch is set by an inward pull toward the body of the shoe, as shown in Fig. 10, and the shank of the needle being used to hold the bight of the last-formed loop, the strain is made longitudinal and is borne equally by the welt, the upper, and the between-substance.

It is obvious that this method can be practiced equally well by hand in sewing shoes, as by a machine.

I have shown in the drawings a hooked needle with which to aid in carrying out my method, it being the best instrument I know of for the purpose.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

The method of forming a chain-stitch, which consists in passing a loop of thread through a hole in the materials, inserting an instrument through the loop and holding the instrument in a second hole in the materials at the point desired for the next stitch, drawing on the supply end of the thread, thus drawing the loop that is now around the instrument against the material, forming another loop from the supply-thread on the opposite side of the materials, removing the instrument from the second hole in the materials and from the drawn-down loop, and passing the second loop made from the supply-thread through the second hole in the materials and through the drawn-down loop, substantially as described.

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

HENRY BRIGGS. [L. S.]

Witnesses.

C. HENRY RONEY,
JOSEPH BROBSTON.