

(No Model.)

C. A. STURTEVANT.  
BOOK SEWING.

No. 549,753.

Patented Nov. 12, 1895.

Fig. 1.

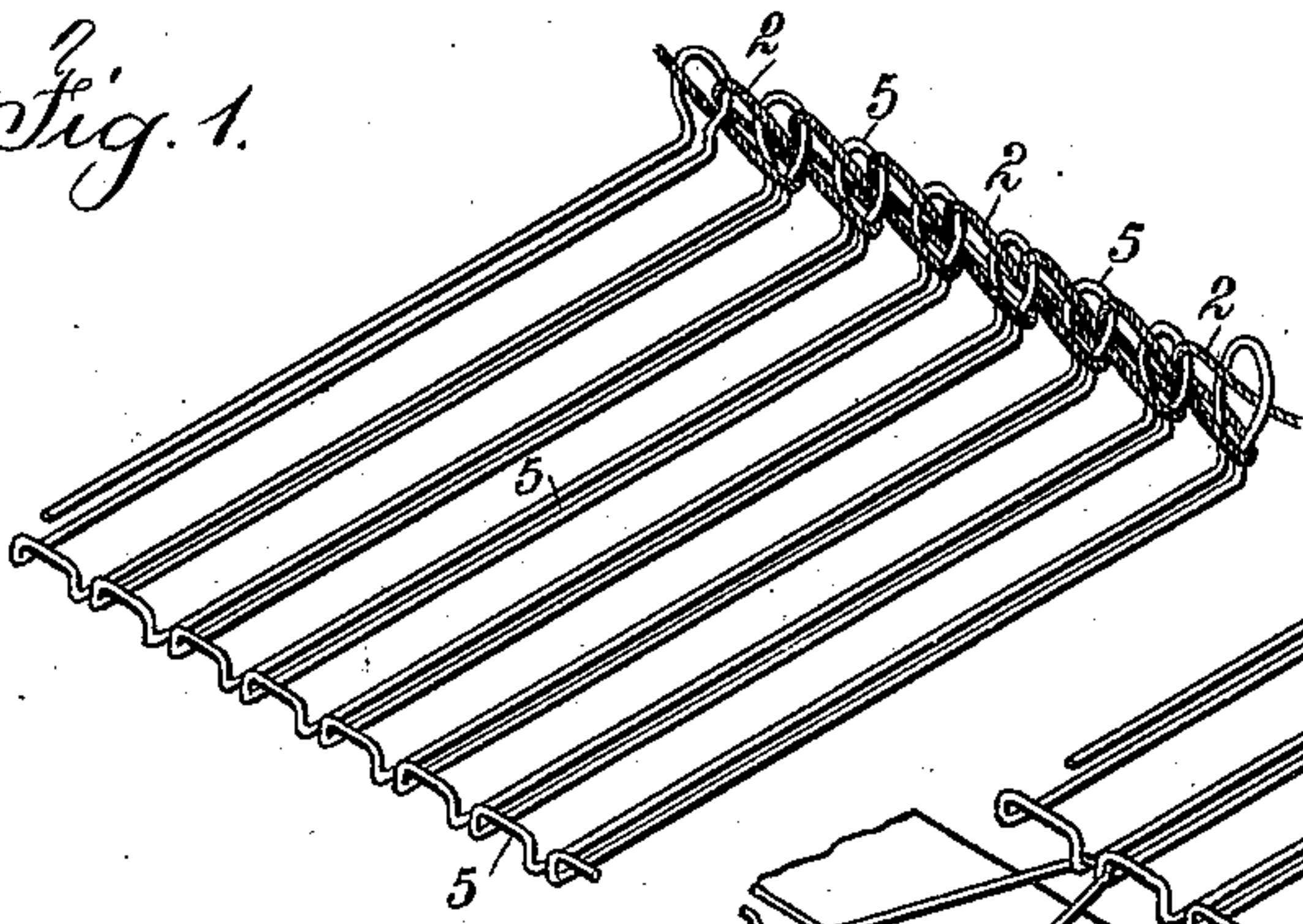


Fig. 3.

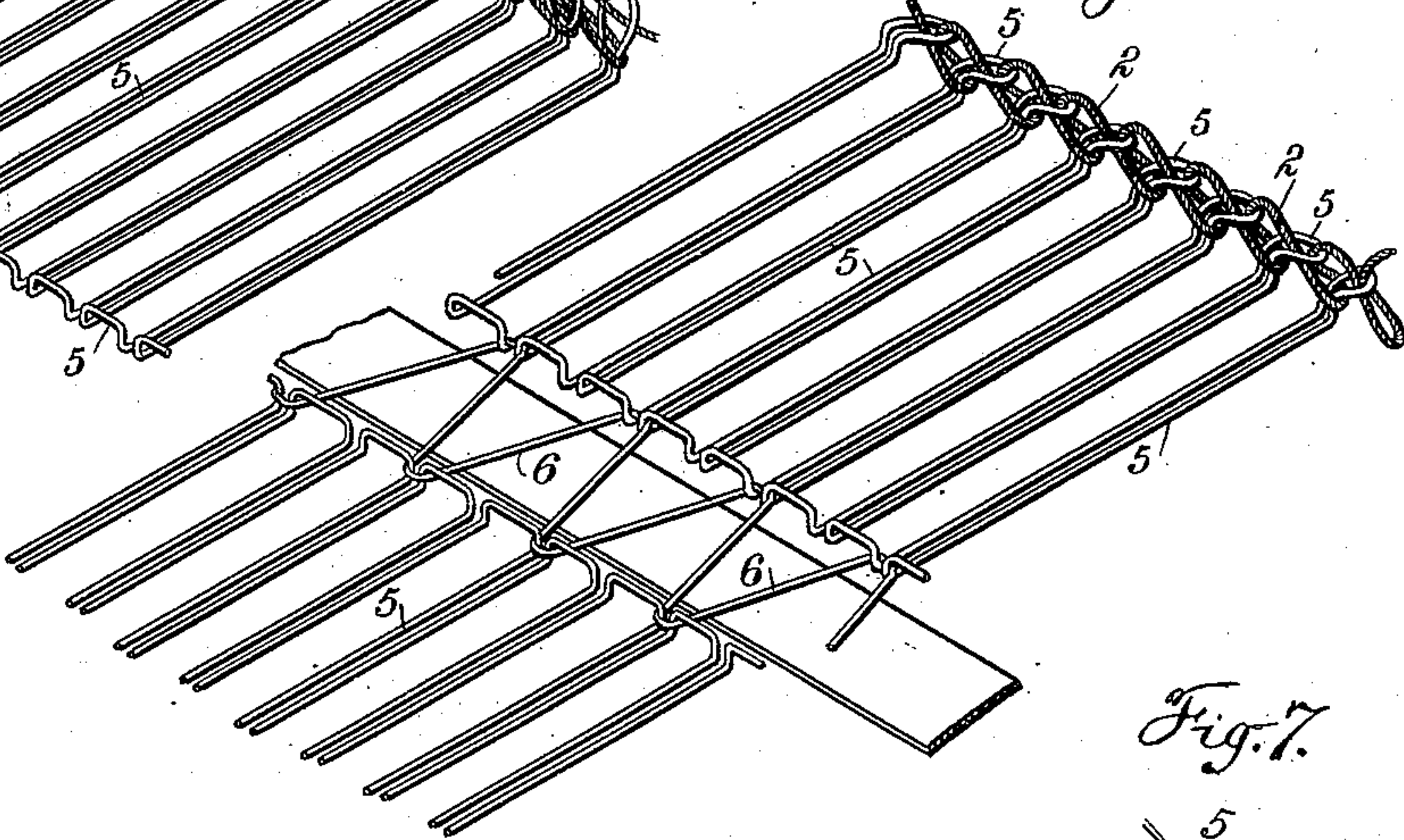


Fig. 7.

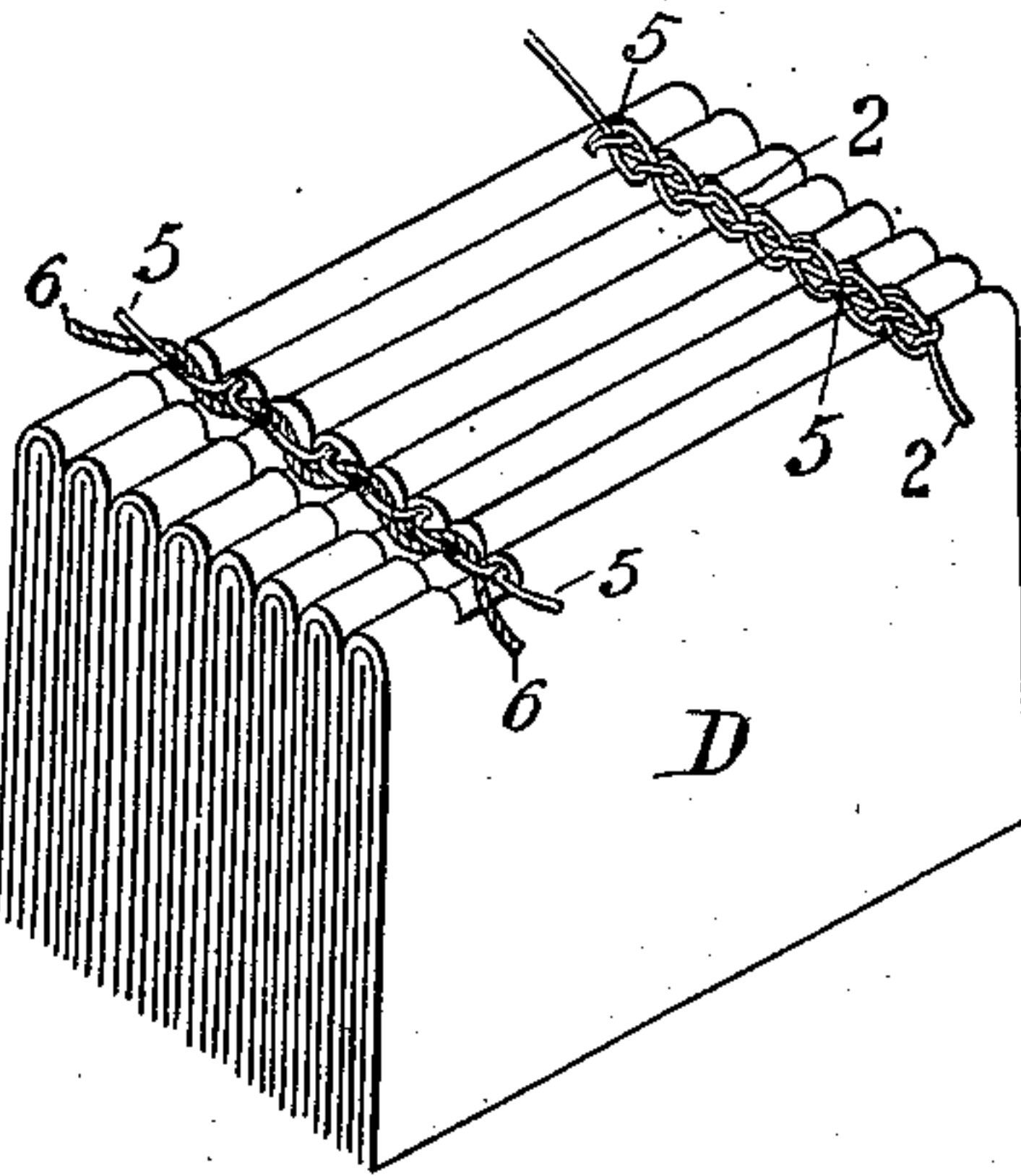


Fig. 2.

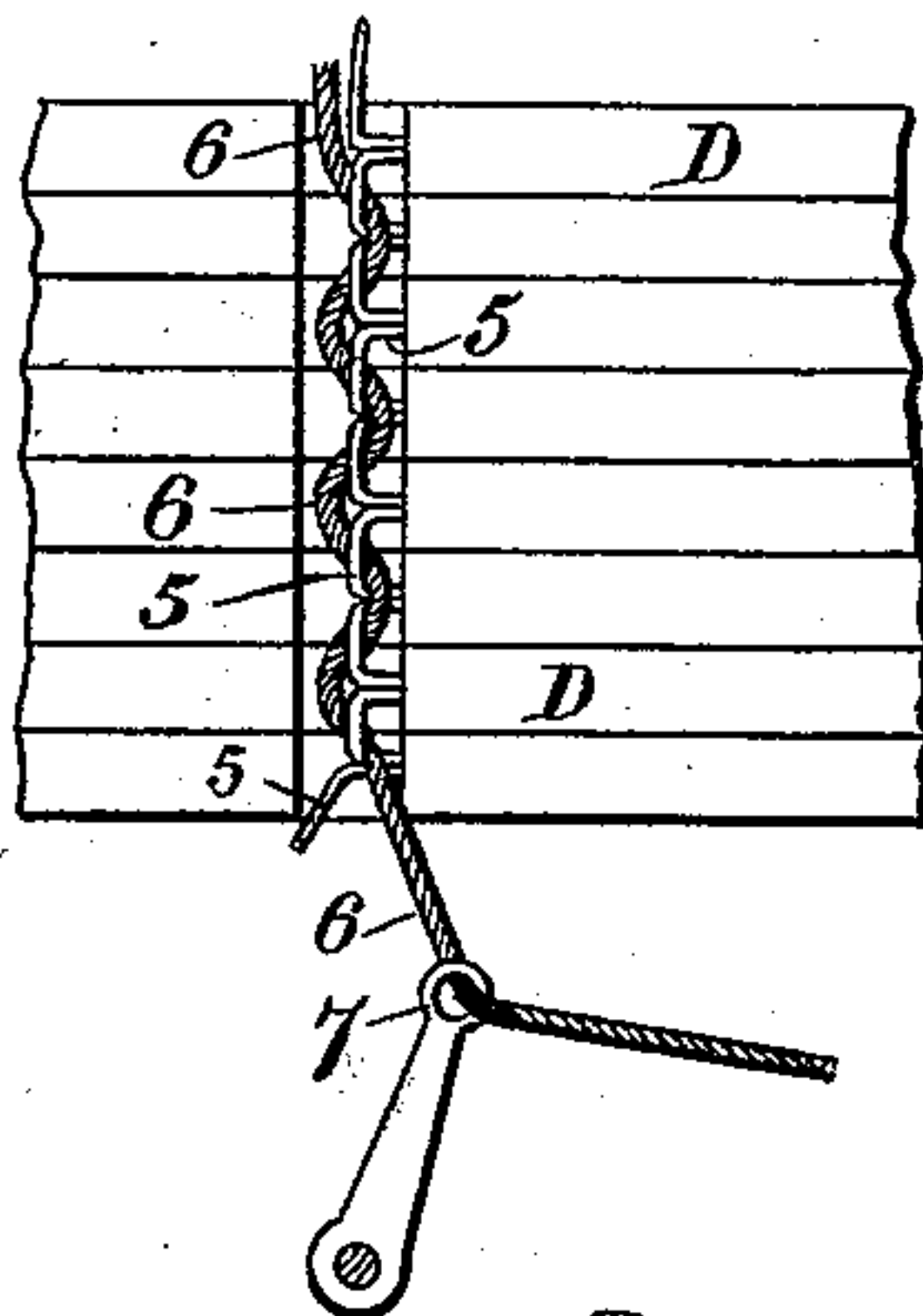


Fig. 4.

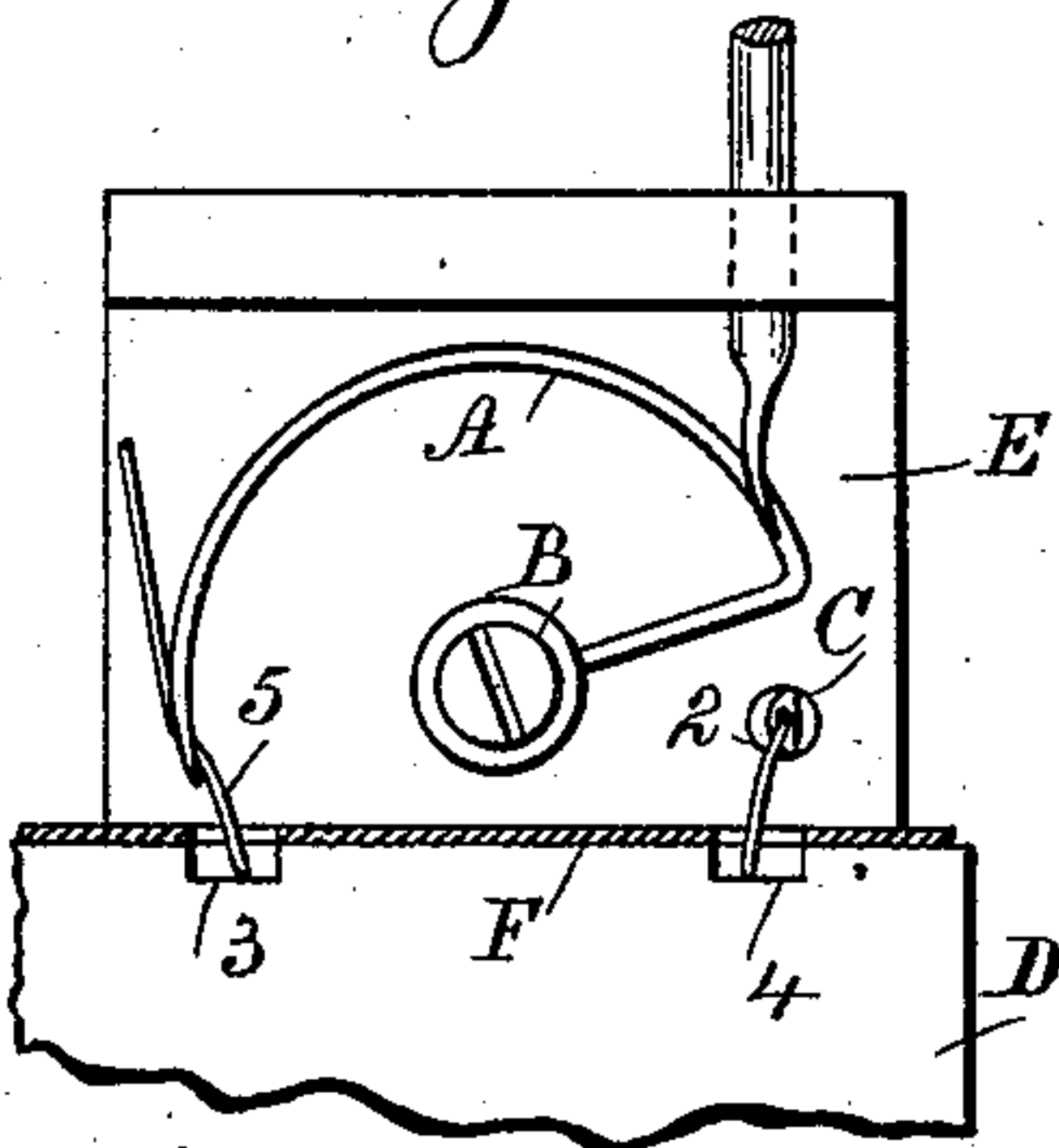


Fig. 5.

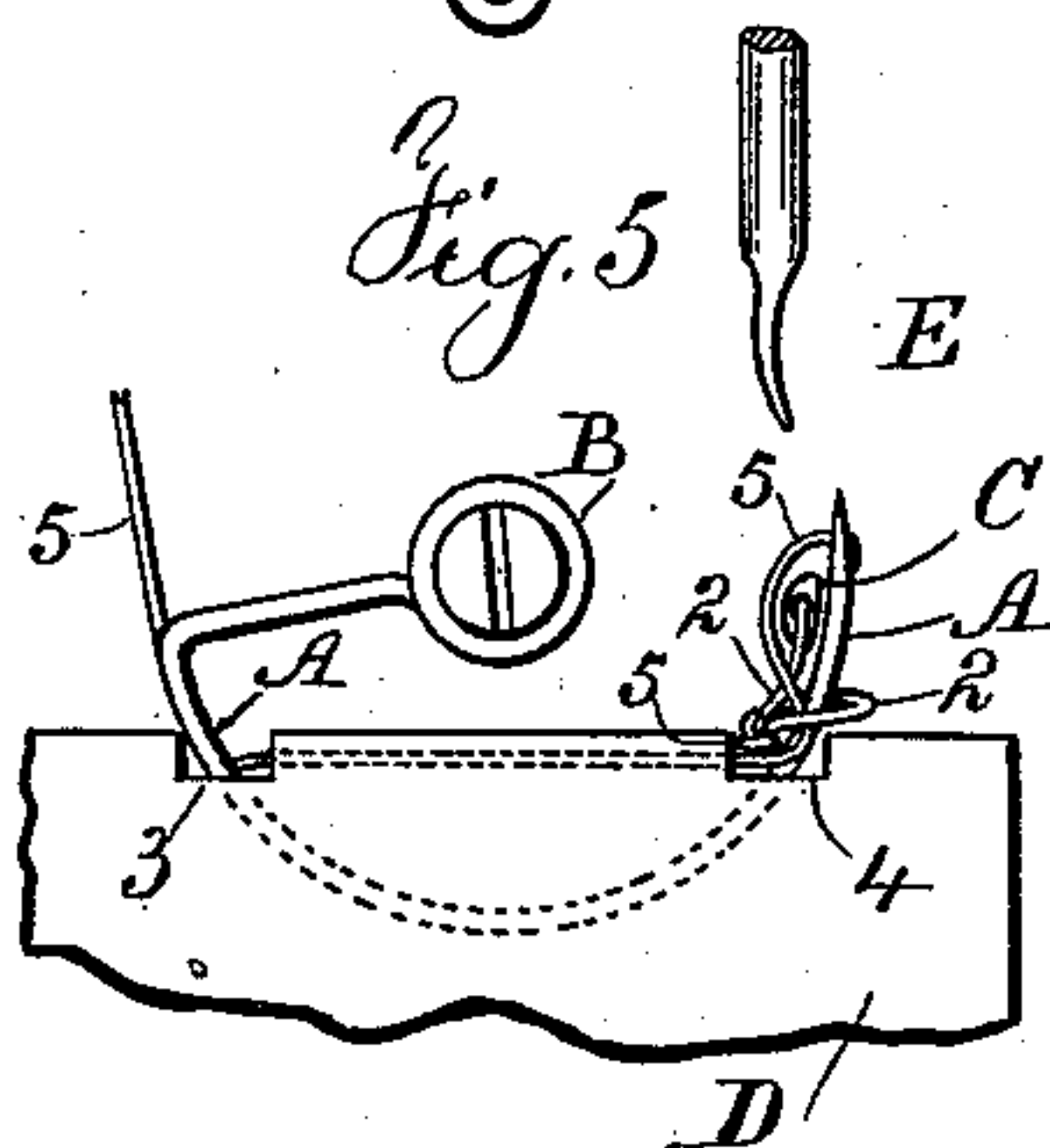
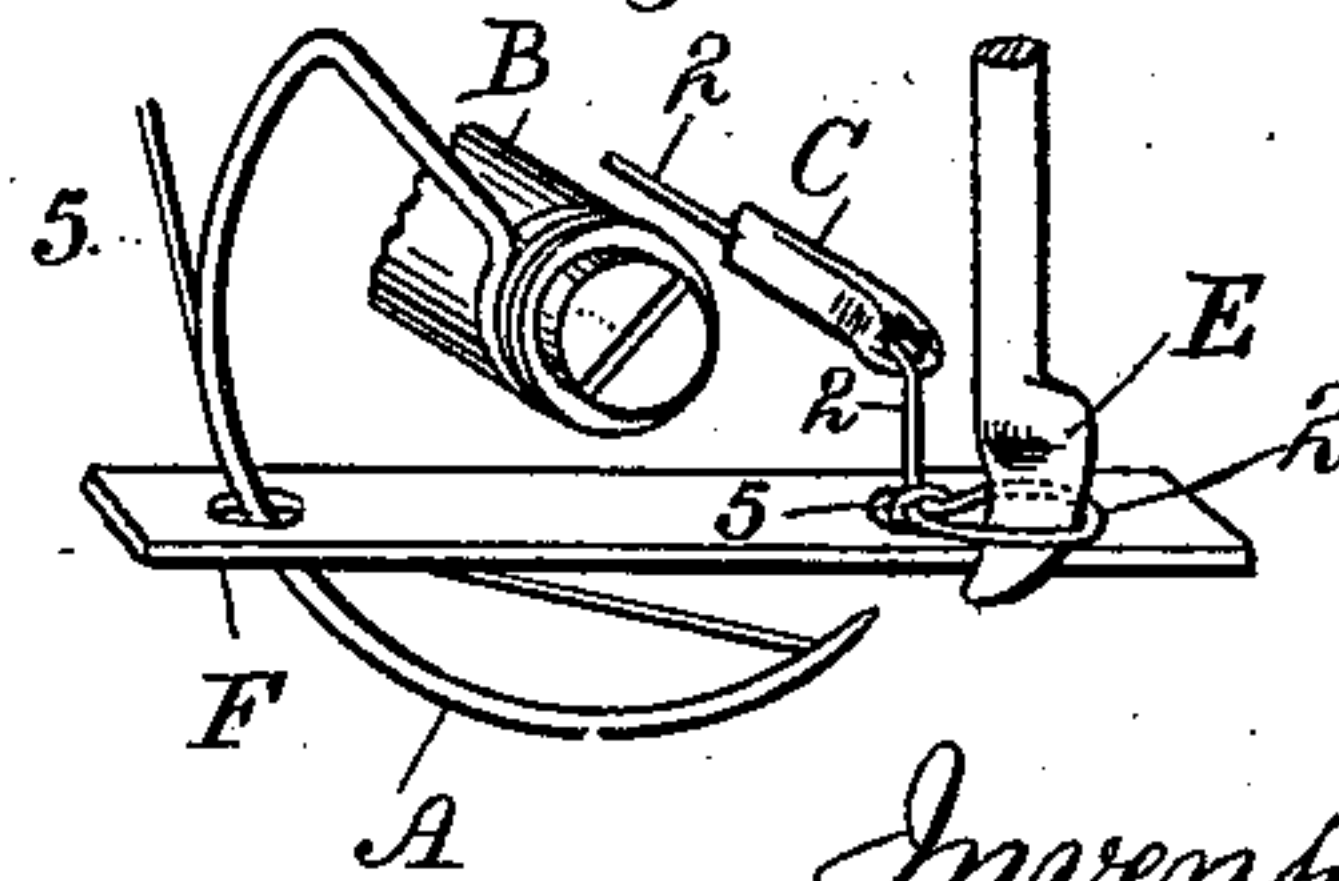


Fig. 6.



Witnesses

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Inventor  
Charles A. Sturtevant  
per  
Lemuel W. Merrill  
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# UNITED STATES PATENT OFFICE.

CHARLES A. STURTEVANT, OF PLAINFIELD, NEW JERSEY.

## BOOK-SEWING.

SPECIFICATION forming part of Letters Patent No. 549,753, dated November 12, 1895.

Application filed October 4, 1894. Serial No. 524,859. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES A. STURTEVANT, a citizen of the United States, residing at Plainfield, in the county of Union and State of New Jersey, have invented an Improvement in Book-Sewing, of which the following is a specification.

In sewing books machines have heretofore been employed in which both curved and straight eye pointed needles have been made use of, such needles carrying threads into the folds of the signatures, and loops of such threads have been brought out at the backs of the signatures and interlooped with the threads of the adjacent signatures. In this style of sewing the ranges of loops passing from one signature to the next are sometimes liable to pull out and become separated where a thread may break.

The object of the present invention is to introduce a second thread and interloop it with the loops of the first thread passing from one signature to the other, so that the loops of thread are so tied together and held by the second thread as to prevent the risk of unraveling, especially before the back is finished in cases where a thread may break or be injured, and at the same time the line of interlocked loops is sufficiently elastic to allow the binding to be performed in the usual manner.

In sewing ordinary fabrics a reciprocating eye-pointed needle has been made use of, passing through the fabric, and the loops of needle-thread have been interlocked with the second thread below the fabric by the action of a looping instrument in the manner usually known as the "Grover & Baker" stitch.

In my present improvements the interlocking of the loops of second thread are similar to those performed in the Grover & Baker sewing, the same being applied in connection with the thread that passes into the signatures at one point and out at the back of the signatures at another point, so as to leave within the folds of the signatures the double thread, the interlocked loops being at one line of loops of the double thread as they lie in the signatures and the thread passes from one signature to the next across the backs of the signatures.

In the drawings, Figure 1 is a diagram

illustrating the stitch made use of. Fig. 2 is a similar diagram representing an interlocked transverse cord. Fig. 3 illustrates my improved sewing with an interlaced thread passing across a tape or strip of parchment or similar material. Fig. 4 is an elevation of a mechanism adapted to perform the sewing when the parts are out of the signature. Fig. 5 shows the same parts with the curved needle passing into and out of the signature and the looper as having taken a loop of needle-thread. Fig. 6 illustrates the same parts with the second thread distended by a spreader ready for the curved needle to pass through its loop, and Fig. 7 is a perspective view of the signatures as sewed together.

The needle is semicircular, or nearly so, with an eye near the point through which the thread passes, and such needle is upon an arbor B, provided with a pinion or other mechanism by which such semicircular needle is reciprocated at the proper time, as in book-sewing machines heretofore constructed. The second thread 2 passes through the eye of a looper C, and this looper C is reciprocated by the action of a cam or other device properly shaped and timed to give the required movement. Where these two instrumentalities only are made use of, the needle A is moved so as to pass into the notch 3 in the signature D and out at the notch 4, and the point of the needle passes between the thread 2 and the looper C, and the looper C is drawn back to leave a loop of its thread around the eye-pointed needle A, and as the needle A commences to draw back, so that a loop of the thread 5 is thrown out, the looper C passes through said loop, leaving a loop of the thread 5 around the looper C, and the loop of the thread 2, that has been drawn off around the needle A, is shed off the needle A as such needle recedes and such loop is drawn up by the movement of the parts, and then the needle A passes through the next signature and takes the loop of second thread 2 from the looper C as such looper C draws back, the previous loop of thread 5 that has been over the looper C is slipped off the looper, and the looper goes forward and takes another loop of thread 5 from the needle A, as before, thus interlacing the respective loops in a line across the back of the signature. I, however, prefer to make use of a



loop-spreader E, having a hook-shaped point and a lateral extension at one side, and when this loop-spreader E is used, in addition to the parts before mentioned, the respective parts receive their motion by suitable mechanism, so as to act as follows: The needle A passes into the notch 3 and out of the notch 4 of the signature and rises sufficiently high for the looper C to pass through the loop of thread from the needle A, and the needle A draws back, leaving a loop of its thread around the looper C, and this looper C goes forward sufficiently far for the loop-spreader E to pass down between the looper C and the second thread 2, taking a loop of such second thread over the point of the spreader E. The looper C is now drawn back, casting off the loop of thread 5 around the loop of second thread 2 as such second thread is held by the spreader E, and such spreader E then receives a quarter-rotation as it passes downwardly and adjacent to the throat-plate F, against which the back edge of the folded signature is held. The signatures are then moved backwardly out of the way, another signature introduced, and the needle A passes through the same, as before, and passes up through the loop of second thread 2 as it is spread by the loop-spreader E. This loop-spreader E then rises and drops its loop around the needle A and the looper C comes forward and takes the loop of second thread 5 from the needle A, and the operations are repeated, as before described.

Where the needle A passes simply into and out of the notch 3 and then into the corresponding notch of the next signature, the needle-thread 5 will simply pass out from one signature into the next. I, however, generally find it advantageous to wrap the thread 5 around a cord 6, which is accomplished by supplying such cord 6 through an eye 7 and moving such eye 7 first one way and then the other way, so that the needle A, as it passes into one signature, may pass at one side of the cord, and when it passes into the next signature it passes into the other side of the cord 6, thereby substantially wrapping the thread around the cord, and such cord is drawn into the groove cut in the backs of the signatures and strengthens the sewing.

In some instances the needles A work in opposite directions, so that the notches 3 are adjacent to each other, and a tape or strip of parchment is introduced across the back of

the book between the notches 3, and in this instance the eye 7 receives a movement sufficient to carry the thread or cord 6 across the space between the notches 3 and pass such cord 6 around the threads 5 as they pass into the notch 3 in one signature and then around the threads as they pass into the other notch 3 in the next signature, so as to lace such cord or thread 6 across the strip or tape at the back of the signatures, as has heretofore been accomplished in book-sewing.

I claim as my invention—

1. The combination with the book signatures of two threads interlooped, there being a loop of one thread passing into and along and out of the back of one signature and through a loop of the second thread and a loop of the second thread passing through the end portion of the said loop of the first thread, and a second loop of first thread passing into, along and out of the next signature and through the said loop of second thread and the loops of thread pulled up into one line across the back of the book so that one loop of second thread closely surrounds each loop of first thread, and another loop of second thread passes directly through the end of the adjacent loop of first thread, substantially as specified.

2. The combination with the book signatures of three threads interlooped as specified with a loop of one thread passing into and along and out of the back of one signature and through a loop of a second thread and a loop of the second thread passing through the end portion of the said loop of the first thread, and a second loop of first thread passing into, along and out of the next signature and through the said loop of second thread and the loops of thread pulled up into one line across the back of the book so that one loop of second thread closely surrounds each loop of first thread, and another loop of second thread passes directly through the end of the adjacent loop of first thread, and the third thread passes across the signatures and is retained by the first threads where they pass out of one signature into the next substantially as specified.

Signed by me this 1st day of October, 1894.

CHAS. A. STURTEVANT.

Witnesses:

GEO. T. PINCKNEY,  
A. M. OLIVER.