(No Model.)

H. L. ARNOLD.

METHOD OF STITCHING BOOKS.

No. 401,676. Patented Apr. 16, 1889.

Fig. 1

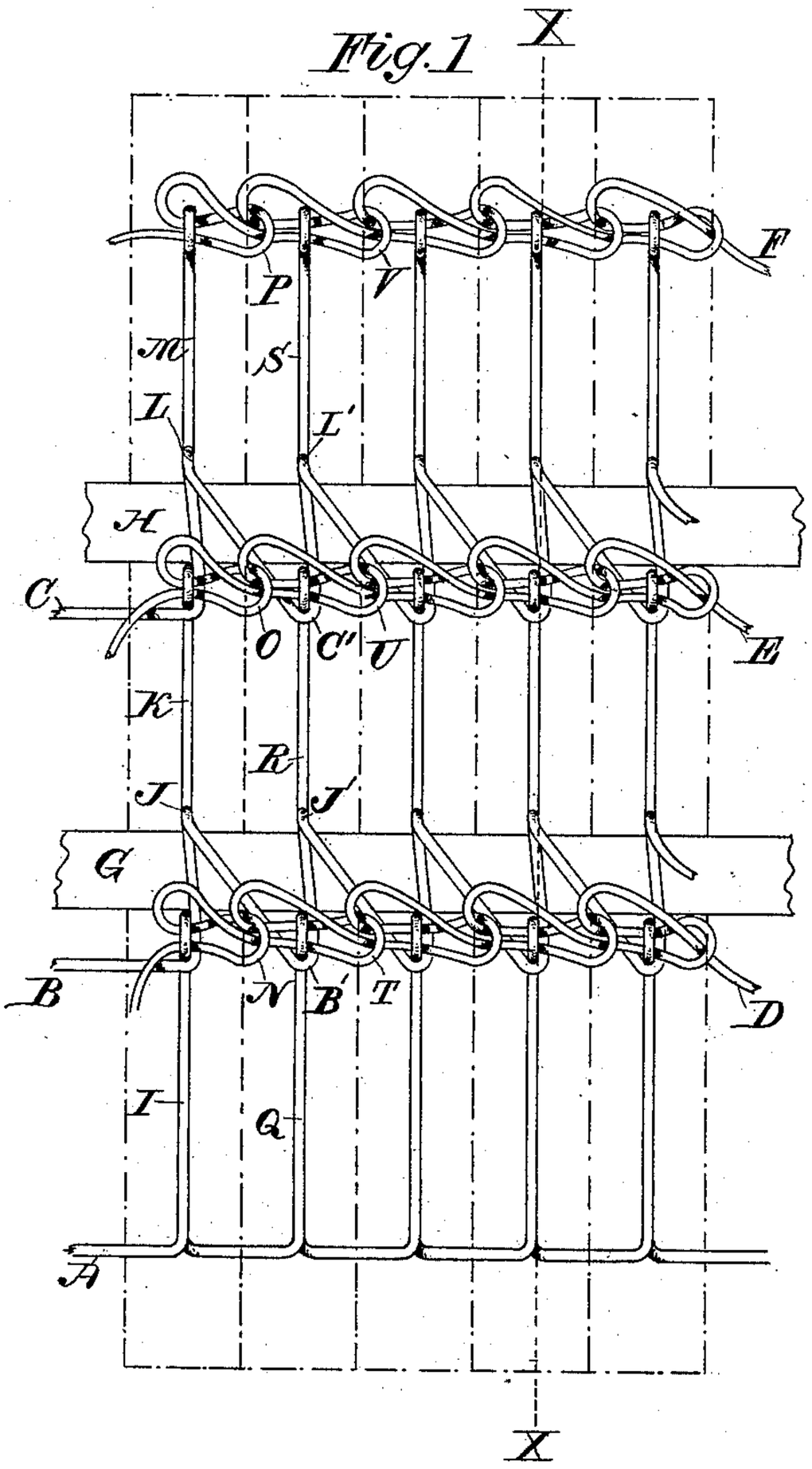
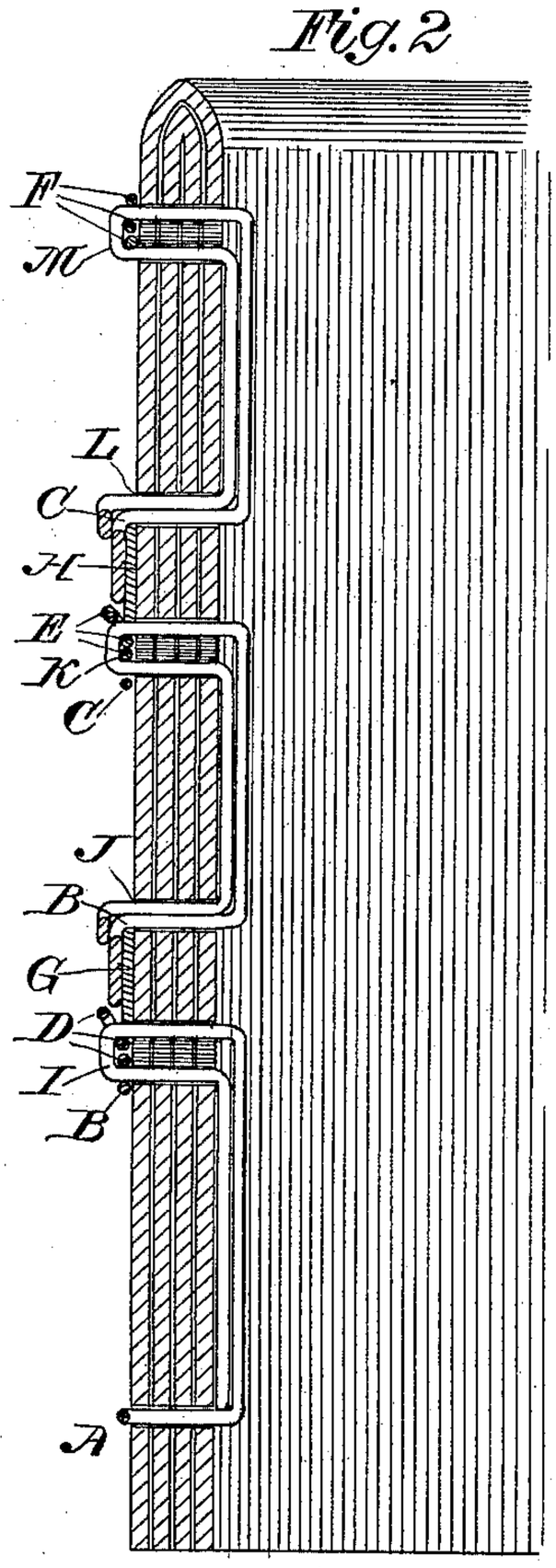


Fig. 2



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METHOD OF STITCHING BOOKS.

SPECIFICATION forming part of Letters Patent No. 401,676, dated April 16, 1889.

Application filed September 1, 1886. Serial No. 212,364. (No model.)

To all whom it may concern:

Be it known that I, HORACE L. ARNOLD, of Hartford, Connecticut, have invented an Improvement in the Art of Book-Stitching, of which the following description and claim constitute the specification, and which is illustrated in the accompanying sheet of drawings.

This invention consists of a new method or process of stitching together the leaves of a book.

Figure 1 is an enlarged view of six threads combined in my present method with five signatures of book-leaves held together by those threads, the spaces between the broken lines being intended to represent cross-sections of those signatures just within their backs. Fig. 2 is a section through the back of each of the signatures on a line like that which, as to one of them, is indicated by the dotted line X X of Fig. 1.

A, B, and C are longitudinal threads, while D, E, and F are cross-threads, used in my present method to unite the signatures of a book.

G and H are strips of tape, parchment, or canvas fastened to the backs of the signatures by being inclosed under the outer portions of the longitudinal reaches of threads B and C, respectively.

The method of stitching is as follows: Holes being preferably first cut or punched through the backs of the signatures of leaves, wherever thread is to be passed through them, the thread A is brought from the left of Fig. 1 and is carried through the back of the first signature from the outside thereof, at the lower hole therein, in such a manner as to form the loop I. That loop is then carried upward along the inner crease of the signature till the next hole is reached, when it is brought through that hole to the back of the signature. Then the thread B is brought from the left, and is carried around the end of the loop I, and thence through the back of the first signature at the hole J in such a manner as to form the loop K. That loop is then carried upward along the inner crease of the signature till the next hole is reached, when it is brought through that hole to the back of the signature. Then the thread C is brought from the left, and is carried around the end of the loop K, and thence through the back of the first signature at the hole L in such a manner as to form the loop M. That loop is then carried upward along the inner crease of the signature till the upper hole is reached, when it is brought through that hole to the back of the signature. Then the threads D, E, and F are separately brought from the left, so as to form the loops N, O, and P, respectively, and those loops are respectively carried through the ends of the loops I, K, and M. Then the threads B and C are brought diagonally down from the holes J and L, respectively, so as to form the loops B′ and C′, respectively, and to place the ends thereof over the second and fourth holes in the second signature. Then the thread A is brought from the left, and is carried through the back of the second signature at the lower hole therein in such a manner as to form the loop Q, and the thread B is carried through the back of the second signature at the hole J′, so as to form the loop R, and the thread C is carried through the back of the second signature at the hole L′, so as to form the loop S. Then the loops Q, R, and S are carried upward along the inner crease of the second signature till the nearest holes are respectively reached, when those threads are brought through those holes to the back of that signature, the ends of the loops Q and R passing also through the loops B′ and C′, respectively. Then the threads D, E, and F are separately brought from the left, so as to form the loops T, U, and V, respectively, and those loops are then, respectively, carried through the loops N, O, and P, and thence through the loops Q, R, and S, respectively. Thus the process continues till any desired number of signatures of leaves are united. The order of acts involved in stitching each signature may sometimes be other than that herein indicated, and indeed those acts may sometimes be nearly simultaneous.

The strips G and H may sometimes be dispensed with, and whether they are used or omitted the threads B and C may be positively prevented from tearing through the

backs of the signatures at the holes J and L in the first signature and the corresponding holes in the other signatures by means of two cross-threads, like the thread E, shown in Figs. 1 and 2 of my application, Serial No. 206,400, filed June 28, 1886, for a patent for another improvement in the art of book-stitching; and in any case the thread A may be positively prevented from tearing through the lower series of holes in the signatures by means of such a cross-thread. So, also, in some other cases, the threads C and F and the strip H may be omitted, thus producing only two series of longitudinal stitches, with the strip G inclosed under the outer portion of that series which begins with the loop K, and even in this last case the strip G may be left out and a new and useful improvement in the art be found to remain. That improvement consists of the threads A, B, D, and E in combination with a series of signatures of leaves, and in many cases nothing more need be used; but I propose to add the threads C and F in most instances, and in some instances to still further increase the number of longitudinal and cross threads. Where strips of tape, parchment, or canvas are used, their number will generally be one less than the number of the longitudinal threads.

For binding a very large and heavy book, I propose to employ as many as eight longitudinal threads and eight cross-threads, and seven strips of tape, parchment, or canvas, and also eight other threads like the thread E of my said application, Serial No. 206,400.

In order to plainly indicate the courses of the various threads less tension is indicated in the drawings than is proper in actual practice of the invention, and in actual practice that tension may be regulated to the requirements of particular cases. In some cases it may be judicious to put so much tension on the threads A, B, and C as to draw the inclosed reaches of the threads D, E, and F partly or entirely through the backs of the signatures.

This invention may be performed and made by hand; but I have planned and hope to perfect a machine for more rapidly performing the described process and more cheaply producing the described results.

I claim as my invention—

The process of stitching together a series of signatures, which consists in carrying a loop of one thread through the back of one signature from the outside thereof, and then bringing it out through the same back at another place, and then carrying a loop of a second thread around the end of the first loop of the first thread outside of the signature and thence through the back of the first signature from the outside thereof at a third place, and then bringing it out from the same back at a fourth place, and then carrying a loop of a third thread through the end of the first loop of the first thread outside of the signature and over the second thread, and also carrying a loop of a fourth thread through the end of the first loop of the second thread outside of the signature, and then carrying a second loop of the first thread through the back of another signature from the outside thereof, and then bringing it out through the same back at another place, and then carrying a second loop of the second thread around the end of the second loop of the first thread outside of the signature and thence through the back of that signature from the outside thereof at a third place, and then bringing it out through the same back at a fourth place, and then carrying a second loop of the third thread through the first loop of that thread and through the end of the second loop of the first thread and over the second thread, and also carrying a second loop of the fourth thread through the first loop of that thread, and then through the end of the second loop of the second thread, and then repeating the operation, if necessary, until all of the signatures in the series are stitched together, all substantially as described.

Hartford, Connecticut, July 30, 1886.

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