

997,005.

Patented July 4, 1911.

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J. C. Appleman,
O. N. Greer.

Edwin B. Pierce,
By H.W. Stevenson,
Attorney

UNITED STATES PATENT OFFICE.

EDWIN B. PIERCE, OF NEW BRIGHTON, PENNSYLVANIA.

BOOK-SEWING.

997,005.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, EDWIN B. PIERCE, citizen of the United States, residing at New Brighton, in the county of Beaver and State of Pennsylvania, have invented certain new and useful Improvements in Book-Sewing, of which the following is a specification.

My invention relates to the sewing together of book signatures, preparatory to the subsequent binding process, and consists essentially of a series, or several series, of stitches, which bind together the leaves of each signature, and also holds together the several units or signatures which go to make up the book during the process of binding. The stitches are so formed that should a thread be cut or broken, between any two of the signatures, the stitch will not slip out; thus preventing the leaves of a signature from separating.

Another advantage of my improved stitch will be the possibility of severing and removing an individual or group of signatures from the remaining sewed signatures without disturbing or raveling the stitch.

In the method of sewing book signatures hereinafter described each stitch, except the first, in a series terminates in a loop, which is tied in a knot around the terminal loop of the preceding stitch, and is then carried forward to be in turn tied into a knot formed in a terminal loop of the following stitch.

In Figure 1 of the accompanying drawing I have illustrated a plurality of signatures sewed together, the thread forming the stitches being of exaggerated size, and in open formation, to more clearly show the different interlocking loops. In Fig. 2 is presented a diagram of my improved stitch greatly enlarged, while in Fig. 3 is another diagrammatical view showing the present known and common form of stitch.

In the drawing the respective signatures, commencing with the first or front signature to be sewed, are designated as 1, 2, and 3, each signature made up of a plurality of leaves, and through the folded back edge of each signature are suitable holes, either cut or punched, for the free admission in and out of the thread to form the stitch.

The main strand and continuous supply of thread to form the stitches, which comes from the spool or suitable retainer, not shown, is designated by 4, while the free end of said thread, which is held in secured

position during the sewing process by any suitable means, not shown, is designated by 4'; 5 is the terminal loop in the first stitch of a series; 6 the primary branch of the bifurcated portion of each loop, except the first; and 7 the secondary branch of the bifurcated portion of each loop, except the first in a series.

The process of forming the stitch is as follows: The signature 1 being placed in position for sewing, and having the prearranged holes formed therein, a bight or loop in the thread 4 is carried through the first hole 1^a, and drawn along between the inner leaves of the signature, and out through the second hole 1^b, forming the loop 5; which is held in proper position by a hook or any other suitable device, not shown. The signature 2 is next placed in position and a bight of the thread taken between the signature 1 and the spool or thread container, not shown, and drawn through the hole 2^a in the signature 2, along through the inner leaves of this second signature and out of the hole 2^b. The end of the loop thus formed is then bifurcated, forming two short loops 6 and 7, the first or primary terminal loop 6 being passed through the said loop 5, which is then released and drawn tight, pulling back the bail 8, that crosses from 1 to 2, the excess of thread in said bail 8, which comes from tightening the loop 5, being drawn through into the said loop 6. The third loop 7 is then drawn through the loop 6, and retained while said loop 6 is released and tightened, so as to form a knot embracing the loop 5. This tightening is accomplished by further drawing out the loop 7, which is then held in readiness for the next succeeding stitch. The third signature is next placed in position, and the process of forming the knotted stitch, above described, is repeated, and so on throughout the entire series.

In actual practice of sewing the process is continuous, the signatures, that go to form a plurality of books, being sewed together either by a single series of stitches, or a plurality of series, depending on the size of the book, and the books are afterward separated by cutting the thread between the outer signatures of adjacent books.

In the method of sewing, illustrated in the diagram, Fig. 3, which has been, and still continues to be, the most commonly used in sewing books by machinery, if the thread were cut, or accidentally broken between

stitches, as on a line A—B of said figure, the loop 12 would be released, and would in turn release the loop 11, and this process of raveling might continue indefinitely. To avoid this it has been the custom to only cut the bale of the stitch, as at 14, and then to draw out the strand 13' and loop 13, so as not to release the loop 12. There is then only a single strand of the thread in the stitch between 12 and 13, and this is not secured at the end. A further precaution has been found necessary, which consists in pasting the back edges of the first and last signatures of each book, so they will adhere to the adjacent signatures of the same book.

With my method of sewing herein described the thread may be cut between any two signatures, as on the line C—D of Fig. 2, completely severing the said signatures, while the knot formed by the loops prevents any raveling or weakening of the other stitches.

The breaking of the thread, after a stitch has been formed, is of frequent occurrence, with the present known methods, but when the form of stitch illustrated, and herein described, is used the thread is not subject to breaking strain until after the knot has been formed, and drawn comparatively tight. The point where a break would be most likely to occur is in the secondary loop 7, and in this case the stitch would not be injured, and the process of sewing would be uninterrupted; the next succeeding stitch being formed in the same manner as the first stitch of a series.

In Fig. 1 is shown a securing tape or strip 9, which is of common usage in the making of books, held in position by means of an auxiliary thread 10, interlaced in alternate relationship with the bails 8 of the main securing thread 4. No novelty is claimed for this construction but is merely shown as a possible combination with my improved knotted stitch.

What I claim as my invention is:

1. The combination with the book signatures, of a stitch involving a knotted portion formed by first drawing the thread through one signature, along between the leaves thereof and out, forming a loop; then taking

a bight of the thread, carrying it into, along through, and out of the next succeeding signature, and through the first mentioned loop; then forming a third loop from part of the thread comprising the second loop, passing said third loop through the second loop, drawing said second loop tight, and forming a knot embracing said first loop.

2. The combination with the book signatures, of a plurality of threads simultaneously formed into stitches each involving a knotted portion formed by first drawing each thread through one signature, along between the leaves thereof and out, forming a loop; then taking a bight of each thread, carrying it into, along through, and out of the next succeeding signature, and through the first mentioned loop; then forming a third loop from part of the thread comprising the second loop, passing said third loop through the second loop, drawing said second loop tight and forming a succession of knots each one embracing the adjacent first mentioned loop, the third loop acting as the primary loop for the next succeeding stitch.

3. The combination with the book signatures, binding tape, and auxiliary lacing thread, of a stitch involving a knotted portion formed by first drawing the thread through one signature, along between the leaves thereof and out, forming a loop 5; then taking a bight of the thread drawn from the main supply, carrying it into, along through, and out of the next succeeding signature forming a second loop 6 which is passed through the first mentioned loop; then forming a third loop 7 from part of the thread comprising the second loop, passing said third loop through the second loop; then drawing said third loop out to form the primary loop for the next succeeding stitch and by so doing bring the second loop into knotted formation embracing the said first loop.

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

EDWIN B. PIERCE.

Witnesses:

FREDERICK WEBSTER,
ALMA PAULSON.