F. E. SCHMITZ.

BOOK-BINDING.

No. 188,544. Patented March 20, 1877.

Fig. 3. B.

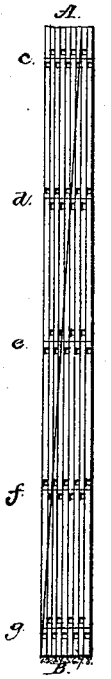


Fig. 3. A.

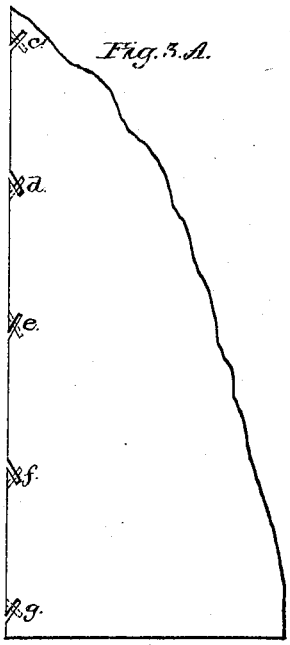


Fig. 1.

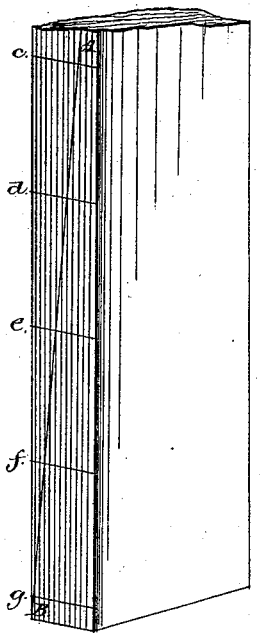


Fig. 2.

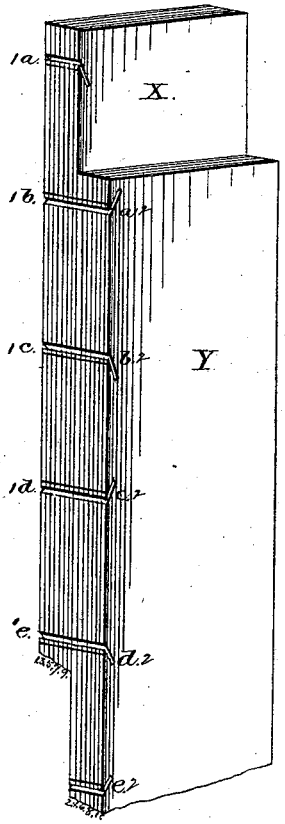


Fig. 5.

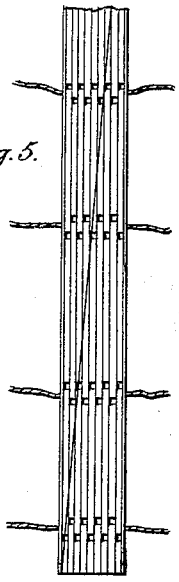
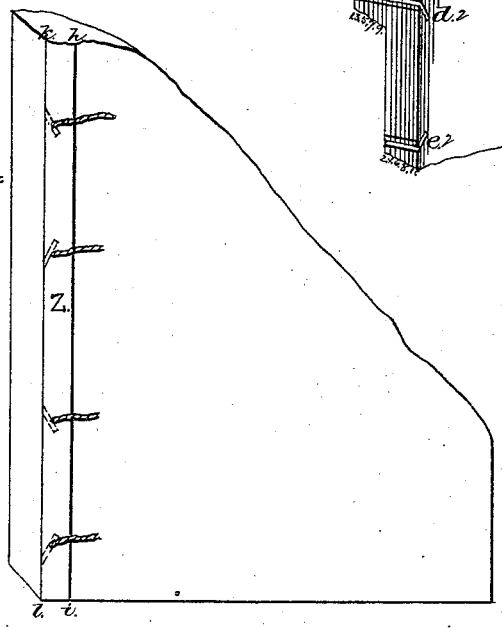


Fig. 4.



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UNITED STATES PATENT OFFICE.

FLORENZ E. SCHMITZ, OF MIDDLETOWN, NEW YORK.

IMPROVEMENT IN BOOK-BINDING.

Specification forming part of Letters Patent No. **188,544**, dated March 20, 1877; application filed August 9, 1876.

To all whom it may concern:

Be it known that I, FLORENZ E. SCHMITZ, of the village of Middletown, county of Orange and State of New York, have invented a new and useful Improvement in the art of Binding Books, which art is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a view of a book cut square, marked with horizontal lines across the back for beveled saw-cuts at *c d e f g*, and a diagonal line, A B, as a guide for the binder in compiling the sections of the book, and also to show, in the further process of binding, that no sections are misplaced.

Fig. 2 is a view of the book divided into sections 1, 3, 5, 7, 9, and 2, 4, 6, 8, 10, &c., and then divided into two piles, X Y, so that one pile contains imaginary odd numbers or signatures 1, 3, 5, 7, 9, the other pile containing even numbers or signatures 2, 4, 6, 8, 10. The two piles are placed as shown, for the purpose of making the beveled saw-cuts hereafter described.

Fig. 3^B shows the sections, after cutting, placed together in their original order, 1, 2, 3, 4, 5, 6, 7, 8, &c., the unbroken diagonal A B line proving that the collation of the sections is correct.

Fig 3^A shows the side of the book at the same stage of the process as when in Fig. 3^B the back is shown. The beveled saw-cuts are shown at *c d e f g*.

Fig. 4 shows a strip of white paper-muslin pasted around the back edges of the first and last sections, extending one-quarter of an inch to the sides, as at *h i k l*.

Fig. 5 shows the twines for uniting the sections inserted. The ends of the twines are used in fastening the pasteboards of the cover.

The object of my invention is to furnish a neat and secure means of binding all classes of books without stitching, as follows:

In binding a book by my method, as soon as the sheets are put in the hands of the binder they are folded and placed in their consecutive order, according to the printer's signatures.

The complete book is then placed in the cutting-machine, and the front and bottom edges are trimmed, merely to obtain two straight edges, which are needed to gage the cutting of the top and back, which must be perfectly square. The backs of the sheets are then cut off, transforming them to single leaves.

Horizontal lines are now marked with a pencil across the back of the book at equal distances for the beveled saw-cuts, as shown in Fig. 1, at points *c d e f g*. A diagonal line is also drawn from top to bottom of the back with a pencil, as shown in Fig. 1, A to B.

A thin coat of glue is then applied to the back over the above-described lines.

When the glue is dry the book is divided into sections of from four to eight leaves, (without counting them,) entirely disregarding the printer's signatures, but placing the sheets in their original order while doing this.

The binder now places the first section of the book at his left side, the second section at his right side, the third at his left, the fourth at his right side, and so on throughout the book, causing the left-hand pile to comprise the imaginary odd signatures, and the right-hand pile the imaginary even signatures, or numbers.

Each pile is then straightened separately for sawing, or they may be placed together, as in Fig. 2, for convenience in cutting. In the latter case the beveled saw-cuts are made by commencing the cutting at the head of that portion of the sections containing the imaginary odd numbers, starting the cut one-sixteenth ($\frac{1}{16}$) of an inch above the line 1^a, Fig. 2, cutting at an angle or bevel of about forty-five (45) degrees, making the saw-cut one-eighth ($\frac{1}{8}$) of an inch deep, to a point one-sixteenth ($\frac{1}{16}$) of an inch below the line 1^a, Fig. 2.

At 1^b the saw-cut is started one-sixteenth of an inch below the line 1^b a^2, at an angle or bevel of forty-five degrees, and the cut is made through the entire book to a point one-sixteenth ($\frac{1}{16}$) of an inch above the line 1^b a^2.

The third saw-cut, as made at 1^c b^2, must be made in the same direction as the first cut, but through the entire book. The fourth cut is made in a similar manner to the second cut, and this plan is followed for as many twines as may be required by the size of the book, the last cut, however, being made through that portion of the book containing the imaginary even numbers only, as at c^2, Fig. 2.

The two portions of the book can be cut to-

gether, as described above; or, when the book is very thick, each portion may be cut separately, conforming to the same system.

The sections of each pile are now returned to their regular order, according to the printer's signatures. Should a section have been misplaced in dividing or uniting the sections, as above, the diagonal line A B, Fig. 3^B, will be broken, and will show that something is wrong. When the sections have been properly collated the diagonal line A B, Fig. 3^B, will be unbroken or perfect, and the beveled saw-cuts will form dovetails, as seen in Figs. 3^A and 3^B, at *c d e f g*.

Half-inch strips of white paper-muslin Z are now pasted around the back edges of the first and last sections, extending one-quarter ($\frac{1}{4}$) of an inch over their sides, as in Fig. 4, *h k i l*. This is done to strengthen the hold of the twines in the back of the book, the first and last sections necessarily bearing the whole strain of the covers.

Twine is to be used corresponding in size to the holes made by the coincidence of the beveled saw-cuts. This twine is to be passed by a blunt-pointed darning-needle through the holes, in this way dovetailing the back, as seen in Figs. 4 and 5.

The fly-leaves or lining are now pasted in in the usual manner at the beginning and end of the book, and the book is finished in the usual method as known to book-binders.

The points of superiority in this process or manner over the old are as follows:

First, the edges will always remain smooth, and the leaves will keep their places, because each and every leaf is fastened in the back with glue and a dovetail.

Second, the book will not be too thick in the back, as is often the case with very thick books, because there is no stitching used.

Third, single-leaved books, as music, check, receipt, and all single-leaved books bound by my process, instead of by whipstitching, will open with greater freedom, and are extremely enduring, and capable of bearing very hard usage.

Fourth, plates, maps, and cuts of all kinds need only to be put in their proper places in books without pasting, and can then be cut and securely fastened with the rest of the book.

Fifth, stitching is entirely dispensed with.

Sixth, by this process a great saving of time in the execution of the labor of book-binding is effected.

Seventh, less hands are needed, as no stitchers are required by my process.

I claim as my invention—

1. As as new article of manufacture, a book composed of single leaves united by means of binding-threads passed through orifices formed by the crossing of opposite diagonal cuts in the alternate sections of leaves.

2. The method of binding books consisting in uniting the leaves by passing the binding-threads through the opposite diagonal cuts in the alternate sections, whereby the threads are securely held within the orifices or cuts by means of the alternately-projecting corners made by the cuts, substantially as described.

FLORENZ E. SCHMITZ.

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