(No Model.) 2 Sheets—Sheet 1.

J. D. METS.

FLAT OPENING BOOK.

No. 453,123. Patented May 26, 1891.

Fig 1.

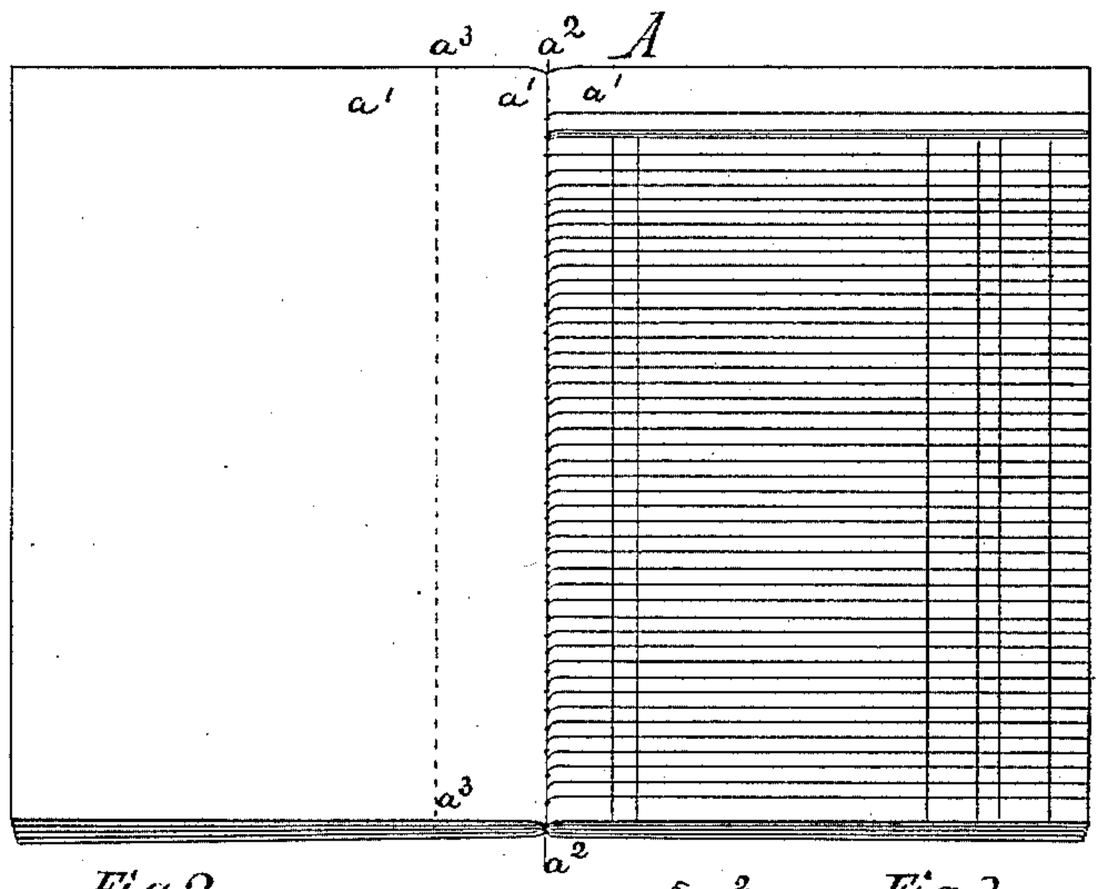


Fig 2.

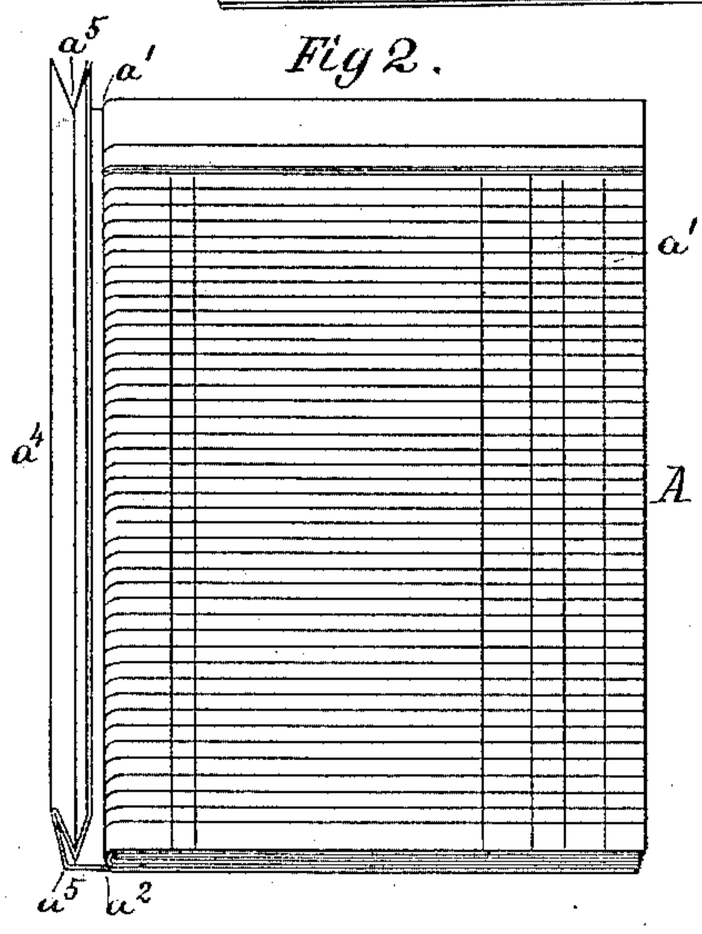


Fig 3.

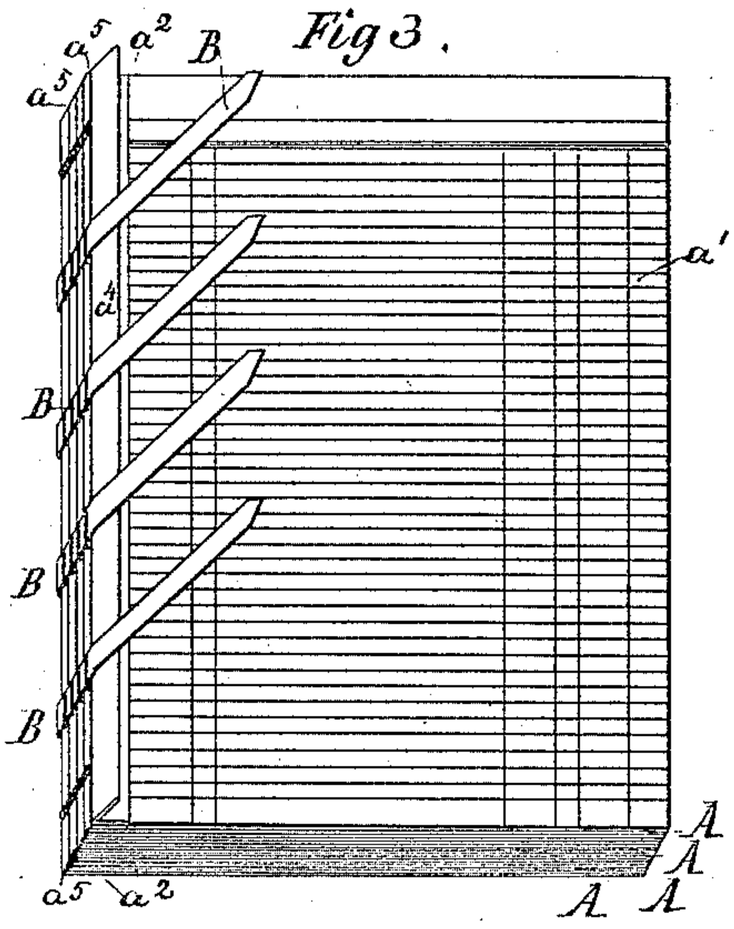
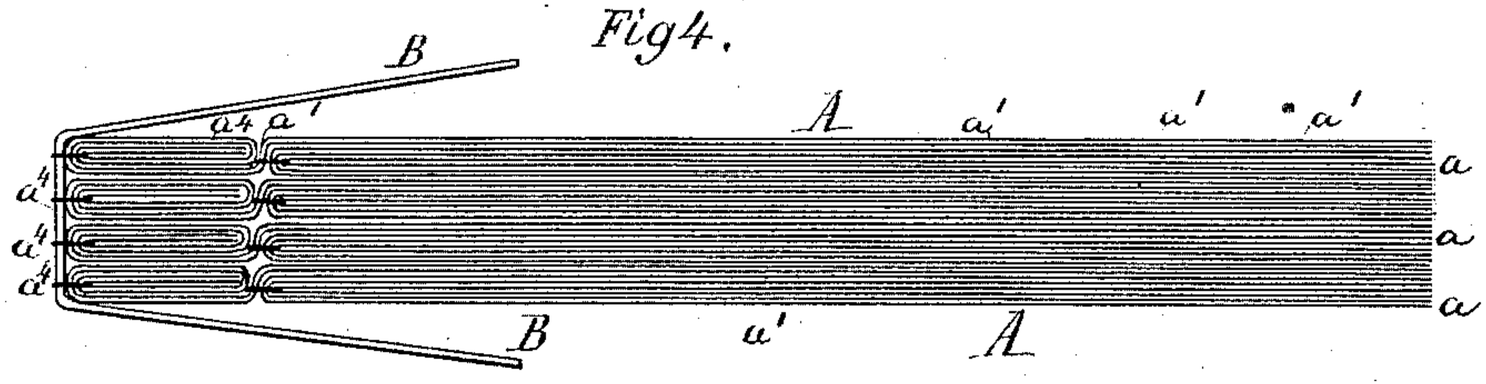


Fig 4.



Witnesses:
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Inventor:
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by his Attorneys
Mason, Fennick & Lawrence

(No Model.) 2 Sheets—Sheet 2.

J. D. METS.

FLAT OPENING BOOK.

No. 453,123. Patented May 26, 1891.

Fig 5.

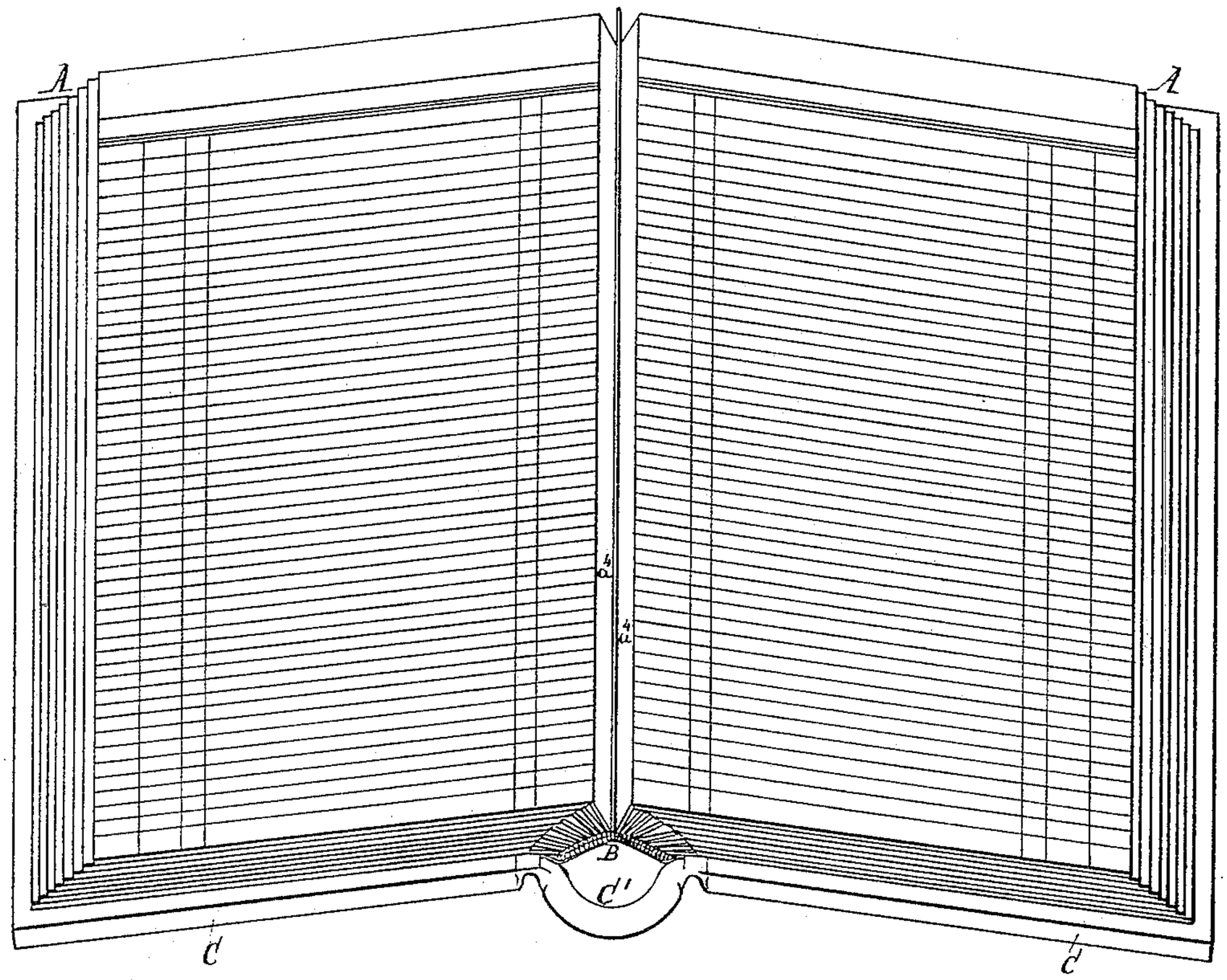
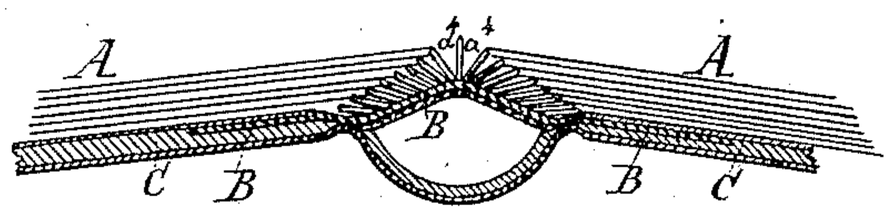


Fig 6.



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UNITED STATES PATENT OFFICE.

JOHN D. METS, OF DUBUQUE, IOWA.

FLAT-OPENING BOOK.

SPECIFICATION forming part of Letters Patent No. 453,123, dated May 26, 1891.

Application filed November 4, 1890. Serial No. 370,337. (No model.)

To all whom it may concern:

Be it known that I, JOHN D. METS, a citizen of the United States, residing at Dubuque, in the county of Dubuque and State of Iowa, have invented certain new and useful Improvements in Flat-Opening Blank and other Books; and I do hereby 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.

My invention relates especially to blank-books (but it is not limited thereto) which when opened hold the exposed leaves straight and flat; and it consists in a book having its sections of leaves sewed or stitched together and provided with integral projections beyond the line of stitching, which serve as guards or connecting-links between the sections and bands of the book, as will be hereinafter described.

In the accompanying drawings, Figure 1 is a view of one of my improved sections as it appears before its guard is formed thereon. Fig. 2 is a view of the said section with the guard formed on it. Fig. 3 is a perspective view of a series of sections, having guards which are sewed or stitched to the bands which hold them united. Fig. 4 is a transverse section through one of the uniting-bands, and a series of sections formed of sheets with guards. Fig. 5 is a perspective view of a book of my improved construction. Fig. 6 is a transverse section through the middle portion of a book and in the line of one of the uniting-bands.

The letter A in the drawings represents a section of my improved construction; B, a uniting-band; C, side portions of book-cover, and C′ back portion of book-cover. The side cover portions C and back portion C′ may be of any known construction, and to these the bands B may be glued or suitably connected in any well-known way. To the bands B a series of sections, as *a*, are fastened by sewing or stitching. The respective sections comprise a number of sheets *a* and *a′*, the sheets *a* being ruled on both sides, so that when folded they present four completely-ruled pages, while the sheets *a′* are ruled from the center or folding-line to one of the edges of the sheet, thus leaving one-half of each of the sheets unruled. In order to make one of my sections, I take, by preference, three ruled sheets *a* and two half-ruled sheets *a′*, place the latter upon the former and sew them together at the folding-line, as shown in Fig. 1. I then fold the said sheets on the folding-line a^2 a^2, leaving the two sheets *a′* unfolded. I then cut the blank portions of the sheets *a′*—say on the line a^3 a^3—and fold the remaining stubs over twice, so as to double the same, as seen in Fig. 2, and thus formed into guards a^4 I sew them on their common folding-line a^5 a^5 to the bands B, as shown in Fig. 3, and give the sections so united the proper shape by subjecting them to pressure between the platens of a book-binder's press, whence they are removed in finished shape, as shown in Fig. 4. They are now ready to be affixed to the book side cover portions C and back cover portion C′ in the usual way. The blank portions of paper cut away on the line a^3 are preserved for use, as may be found most advantageous; but when large orders for given sizes and kinds of books have to be filled the sheets *a′* will at once be made of paper cut to the proper sizes before they are ruled and sewed together with the sheets *a*, and this will prove the most economical way of employing my invention. I have, as shown, arranged the sheets *a* and *a′* in such numbers that after the folding of the ruled sheets and guards a^4 there will be eight thicknesses of paper in each of the two portions of the sections. By this construction the finished book will be of uniform thickness, and it will so remain as long as it is kept in use, for the reason that the guards and sheets are respectively of like material and thickness, and in use will wear equally. For large and heavy books the outside sheet of each section may be re-enforced along the folding-line by a strip of fine cloth or silk to prevent the possibility of the paper breaking by continuous use.

In making a book of, say, six hundred and forty pages out of sections constructed in accordance with my invention I have found the following to be a good mode of procedure: Select two hundred sheets of paper, of which one hundred and twenty may be ruled completely on both sides, as sheets *a*, and eighty ruled on both sides from the line of stitching, as sheets *a′*. Then arrange the sheets in sec-

tions, as described, and construct the book as shown. While this is a good mode of procedure, other analogous modes may be adopted, whereby guards contiguous to the sheets and of the same thickness are provided without departing from my invention. For instance, four sheets, as a', and six sheets, as a, may be adopted in a section, in which case sixteen leaves will be in a section comprising sheets and guards. The guards a^4 may be glued together after they are sewed to the bands B, if desired; but if left unglued the appearance of the book will not be marred nor its durability lessened, while its increased flexibility over ordinary books will be retained.

I am aware that flexible joints or guards, to which the sheets of a blank-book are stitched, have heretofore been devised; but such guards do not form integral parts of some of the sheets, as in my invention, but are made of separate pieces or different material, and when such sheets and guards are to be united into sections by sewing it must be done by the slow and tedious "whip" stitch, whereas with my invention this can be done with the ordinary and speedy "running" stitch, and thus it will be readily seen that my improved construction of sections for books has the advantage of being very easily and cheaply made, besides such sections are very perfect in their operation.

What I claim as my invention is—

1. A flat-opening book having its sections of leaves sewed or stitched together and provided with integral projections on some of the leaves of the respective sections beyond the line of stitching, which projections serve as guards or connecting-links between the several sections and bands of the book, the said sections and their guards occupying positions relatively to one another which permit the book to open and close flat, substantially as described.

2. A flat-opening book having its sections of leaves sewed or stitched together and provided with integral projections beyond the line of stitching, which projections serve as guards or connecting-links between the several sections and the bands of the book, the said sections and their guards occupying positions relatively to one another which permit the book to open and close flat, and each section having a folded guard formed of a portion of the sheets comprising it (the section) and the sheet or sheets forming the guard extending from the bottom of the guard to and over the top of the section, substantially as described.

3. A section for a flat-opening book having the within-described folded integral guard formed on a portion of the sheet comprising the section and adapted, in the manner described, for use in a book formed of a plurality of similar sections, substantially as described.

4. A section for a flat-opening book having a folded integral guard, said section being formed of a number of sheets folded and ruled in the ordinary way, and a smaller number of the sheets sewed together within said folded number and ruled in one direction from the stitching-line and in the other direction into the folded guard, the said section and guard being adapted for use in a book formed of a plurality of similar sections, substantially as described.

5. A book combining ordinary side cover portions C and back cover portion C', bands D, and flat-opening sections having integral folded guards, said sections and guards being formed of sheets a a', the latter a' forming the folded guards a^4, which are integral portions of some of the sheets of the sections of the book, substantially as described.

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

JOHN D. METS.

Witnesses:

MONROE M. CADY,

FRED W. WODRICH.