S. J. HARBAUGH.

ART OF BOOKBINDING.

APPLICATION FILED JUNE 16, 1913.

Patented Feb. 10, 1914.

1,086,768.

2 SHEETS—SHEET 1.

Fig. 1.

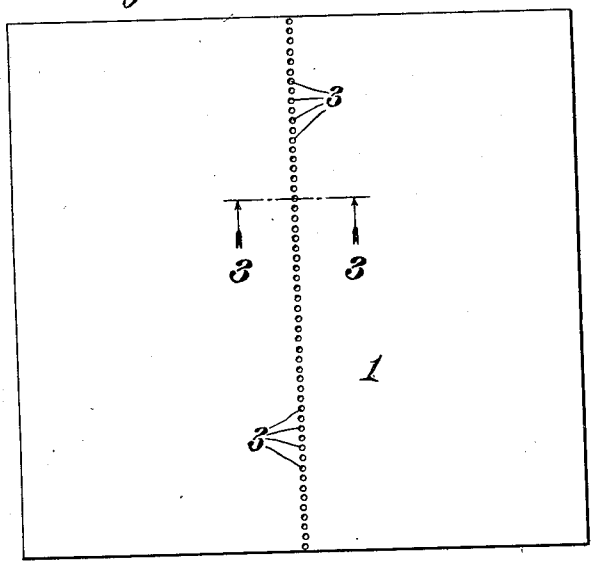



Fig. 2.

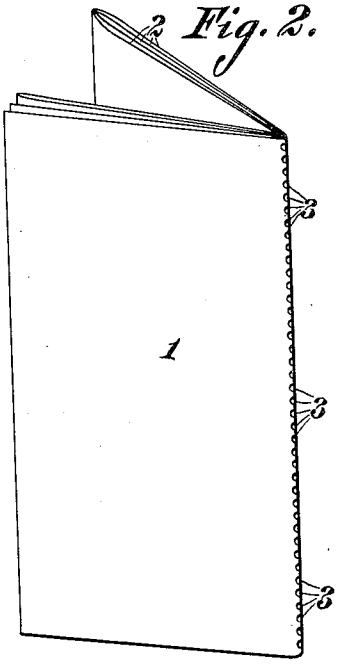
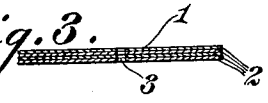



Fig. 3.



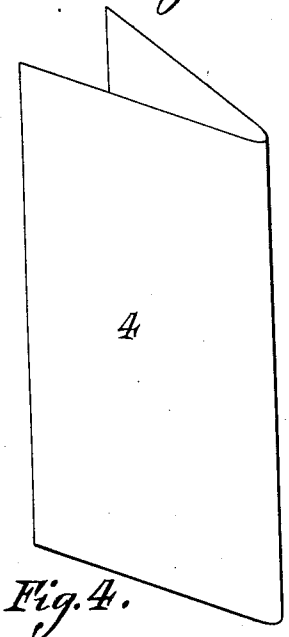




Fig. 4.

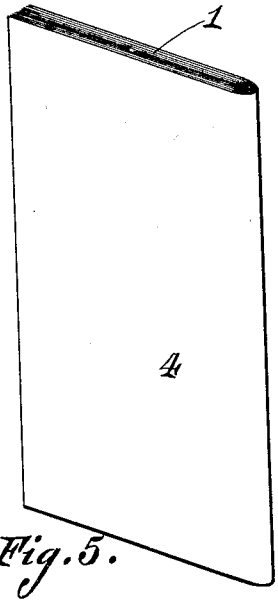



Fig. 5.

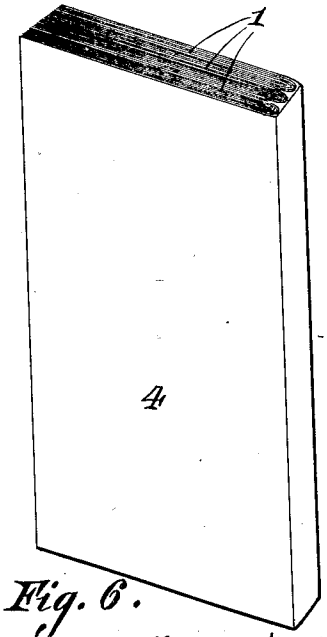



Fig. 6.

Witnesses:

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Harry H. Reiss.

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2 SHEETS—SHEET 2.

*Fig. 7.*

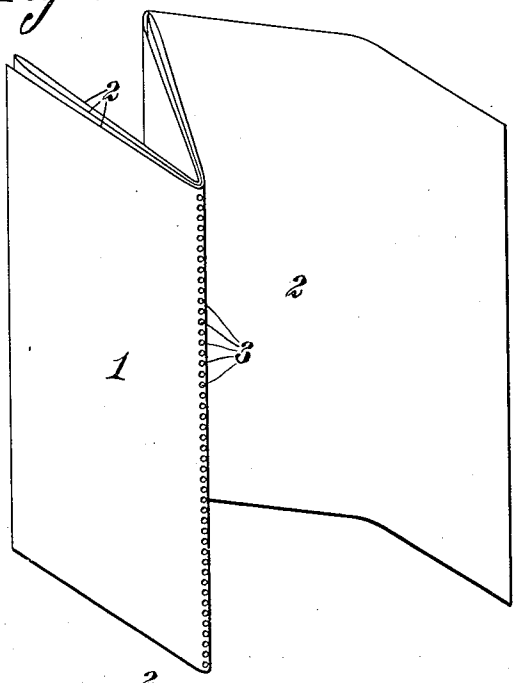
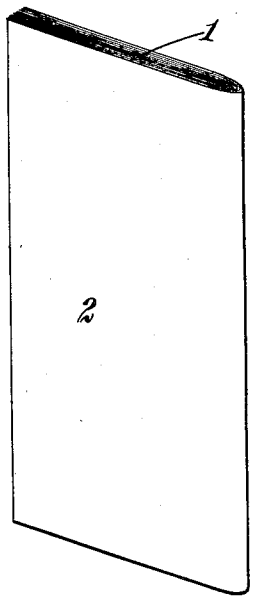



*Fig. 8.*



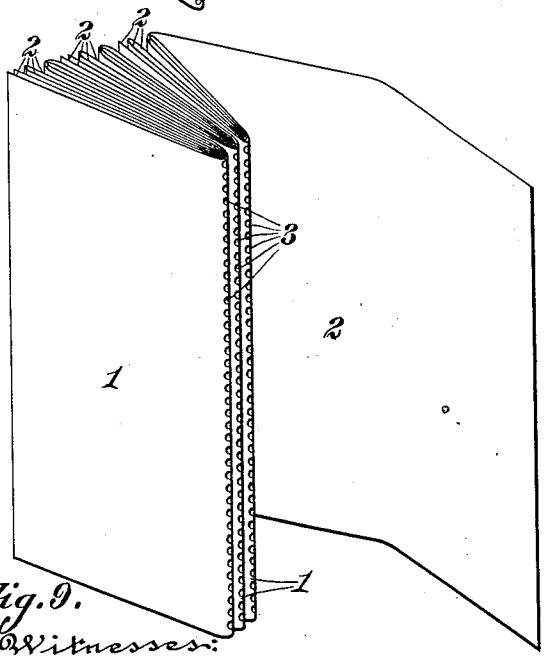




*Fig. 9.*

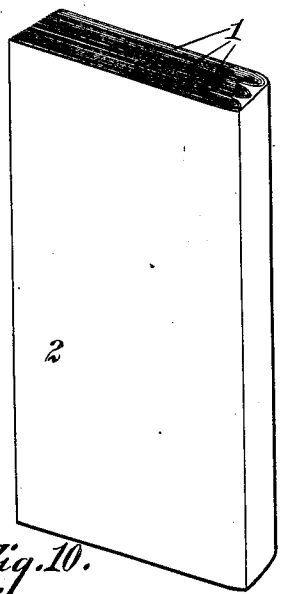



*Fig. 10.*

Witnesses:

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# UNITED STATES PATENT OFFICE.

SIMON J. HARBAUGH, OF ST. LOUIS, MISSOURI, ASSIGNOR TO GREELEY PRINTERY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

## ART OF BOOKBINDING.

1,086,768. Specification of Letters Patent. Patented Feb. 10, 1914.

Application filed June 16, 1913. Serial No. 773,935.

*To all whom it may concern:*

Be it known that I, SIMON J. HARBAUGH, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in the Art of Bookbinding, of which the following is a specification.

This invention relates to bookbinding, and has for its object to provide an improved method of bookbinding, which will enable books, magazines, booklets, pamphlets, etc., to be bound effectively and more economically.

Books, magazines, booklets, pamphlets, etc., heretofore, have been bound in various ways. In some instances, the leaves composing the signatures have been bound by means of either saddle or side stitching or stapling, but this has been found to be expensive. In other instances, the leaves composing the signatures have been pasted together, one leaf having a line of adhesive extending longitudinally through the middle of same, then another leaf being laid upon it, the same method being followed until the required number of leaves had been superimposed. This pasting has been done by hand and, also, by machine, but it has been found to be unsatisfactory, because the adhesive spreads unevenly so that when the leaves are turned they open unevenly, the adhesive sometimes spreading to the printed matter on the leaves. In other methods of bookbinding, transverse grooves or slits have been cut in the backs of the signatures and have been filled with an adhesive, which, when set, held the leaves together, but these methods were not satisfactory on a saddle stitched book or pamphlet unless the same were covered, for the reason that the grooves or slits presented an unattractive and unfinished appearance.

The present invention contemplates the provision of an improved method of bookbinding, in which a limited amount of an adhesive is forced into certain definite spaces so that when the adhesive has set, the leaves will open evenly, and when the book, magazine, booklet, pamphlet, etc., is laid practically flat when opened, the adhesive binding will still retain the required strength.

To this end, the present invention consists in forming a plurality of relatively small and closely spaced perforations on the line of the middle or last fold of each signature before this particular fold is made, then making this middle or last fold on the line of perforations, and finally applying an adhesive to the perforated folds, while sufficient pressure is applied to the sides of the signatures, so as to allow the adhesive only to fill the perforated spaces, from which some of the adhesive is drawn by capillary attraction into the fibers of the leaves surrounding the perforations, the adhesive, when set, binding the leaves securely together and holding the leaves together the entire length, whereas the stapling holds only in the place or places stapled. This method insures the production of a neater looking and stronger book, magazine, booklet, pamphlet, etc., quickly, economically, and satisfactorily.

In the accompanying drawings forming part of this specification, in which like numbers of reference denote like parts wherever they occur, Figure 1 is a plan view of a folded sheet having a line of perforations formed therein on the line of the middle or last fold, before the latter is made; Fig. 2 is a perspective view of same folded on the line of perforations; Fig. 3 is a sectional view, on an enlarged scale, on the line 3—3, Fig. 1; Fig. 4 is a perspective view of a cover; Fig. 5 is a perspective view of a single bound signature in a cover and having its edges trimmed; Fig. 6 is a perspective view of a plurality of bound signatures in a cover and having their edges trimmed; Fig. 7 is a perspective view of a folded sheet having a line of perforations formed therein on the line of the middle or last fold of each leaf except the outer leaf, which is left imperforate to form the cover for the signature; Fig. 8 is a perspective view of same with the imperforate outer leaf covering the perforated leaves, and the edges thereof trimmed; Fig. 9 is a perspective view of a plurality of folded signatures gathered together, the outer leaf of one of the end signatures being imperforate to be used as a cover for all; and Fig. 10 is a perspective view of same, showing the signatures covered with the imperforate outer leaf and having their edges trimmed.

In this improved method of bookbinding, each signature 1 is formed by folding a sheet of paper or the like either by hand or machine in the usual manner into any desired number of leaves 2. After a sheet has

had all folds made therein except the last or back fold, a plurality of perforations 3 are formed on the line where this particular fold is to be made, while the signature is held flat, as depicted in Figs. 1 and 3, the perforations being relatively small and spaced closely together. This last or back fold is then made on the line of perforations 3 after formation of the latter which fold presents an irregular blocking surface approximately twice the area of the blocking surface in the usual method of blocking. A plurality of perforated and completely folded signatures are gathered up and clamped together in a book-clamp (not shown in the drawings) in such manner that the perforated folds register in substantially the same plane. An ordinary flexible adhesive is then applied to the perforated folds, while sufficient pressure is maintained by means of the book-clamp to permit the adhesive only to fill the perforations, and then the signatures are removed from the book-clamp before the adhesive on the perforated folds dries. The signatures may then be covered either separately with a cover 4, as shown in Fig. 5, or collectively with a cover 4, as shown in Fig. 6, their edges being trimmed in both instances, in the former instance a book, etc., composed of a single signature being produced, and in the latter a book, or the like, composed of a plurality of signatures being produced. Some of the adhesive that enters the perforations 3 is drawn by capillary attraction into the fibers of the leaves surrounding and adjacent to the perforations, and, when the adhesive dries thoroughly, it binds the leaves together evenly the entire length of the back fold, while the cover 4 is secured firmly in place by the adhesive on the back fold of the outer sheet of the signature in the case of a single signature book, or the like, and, in the case of a multi-signature book, or the like, the cover is securely held in place by the adhesive on the back folds of the outer sheets of the signatures.

So far, the description relates to the method of binding either a single or a multi-signature book, or the like, which is covered with a separate cover of a different stock than that of which the leaves are formed, but it should be understood that the cover 4 may be omitted entirely, and the outer sheet of a signature may be substituted therefor to cover either a single-signature or a multi-signature book, or the like, in the manner now to be described.

In case the production of a single signature book, or the like is desired, the outer sheet of the signature is left imperforate as depicted in Fig. 7, while each of the other sheets of same has a line or row of perforations 3 formed on the line of the back or last fold as hereinabove described. After the adhesive has been applied to the perforated folds in the manner hereinabove described, the outer sheet of the signature is folded over the perforated fold of the next sheet so that the adhesive on the perforated fold of the latter will, when dry, hold the outer sheet securely in place, while the adhesive that enters the perforations binds the perforated sheets securely together. The edges may then be trimmed to make a finished single signature book, or the like, as shown in Fig. 8. If the book, or the like, is composed of a plurality of signatures the outer sheet of one of the end signatures is left imperforate while the other sheet of this particular signature and all the sheets of the other signature or signatures have their back fold perforated. The signatures are then gathered up in their proper order as shown in Fig. 9, and the adhesive is applied to the perforated folds in the manner hereinabove described, after which the imperforate sheet of the end signature is folded over the perforated folds of all the sheets so that the adhesive on the latter will, when dry, secure the outer sheet in place, whereupon the edges may be trimmed to produce the finished book, or the like, composed of a plurality of signatures as illustrated in Fig. 10. In this way, the outer sheet covers the perforations, and effects the economic production of either a single-signature or a multi-signature neat appearing and strongly bound book, or the like, without the necessity of providing a separate cover.

By this improved method of bookbinding, the finished book, or the like, is stronger than when bound in the usual manner, for the reason that same has a larger blocking surface. By reason of forming perforations on the line of the middle fold of each signature, some of the surplus paper stock is removed, thereby eliminating in part the bulge or extra thickness to be found in all folded and stitched or stapled books. This results in greater economy in trimming, as the signatures lying flat and even may be trimmed in much larger lots. It, also, gives a solid surface for the back of a covered book and makes a flat-opening book, of desired strength and good appearance. Furthermore, greater strength is effected by reason of the perforations extending through the back fold parallel to the closed leaves, while heretofore grooves or slits have been cut transversely through the back fold perpendicular to the closed leaves.

I claim:

1. The herein-described method of bookbinding consisting in forming a row of perforations on the line where the back fold of a signature will occur while the latter is held flat, then in forming the back fold on the completed line of perforations, and finally filling the perforations with adhesive.

2. The herein-described method of bookbinding consisting in forming a plurality of perforations on the line where the back fold of a signature will occur while the latter is held flat, and then in making the back fold on the completed line of perforations, and finally in applying adhesive to the perforated fold while pressure is applied to the sides of the signature to permit the adhesive only to fill the perforations.

3. The herein-described method of bookbinding consisting in forming a plurality of perforations on the line of the back fold of a signature prior to formation of the back fold, then in making the back fold on the completed line of perforations, applying adhesive to the perforated fold to fill the perforations and then in applying a cover to the signature before the adhesive dries.

4. The herein-described method of bookbinding consisting in forming a row of perforations on the line where the back fold of all leaves of a signature will occur except the outer leaf which is left imperforate, then in folding the perforated sheets on the completed line of perforation, applying adhesive to the perforated fold to fill the perforations, and then folding the imperforate leaf over the perforated fold before the adhesive dries.

5. The herein-described method of bookbinding consisting in first forming perforations on the lines where the back folds of the signature will occur, then in making the back folds on the completed lines of perforations, and finally applying adhesive to the perforated folds of a plurality of gathered signatures.

6. The herein-described method of bookbinding consisting in first forming perforations on the lines where the back folds of a plurality of signatures will occur, then in making the back folds on the completed lines of perforations, applying adhesive to the perforated folds of the signature, and then covering a plurality of gathered signatures before the adhesive dries.

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

SIMON J. HARBAUGH.

Witnesses:
GLADYS WALTON,
GEORGE G. ANDERSON.