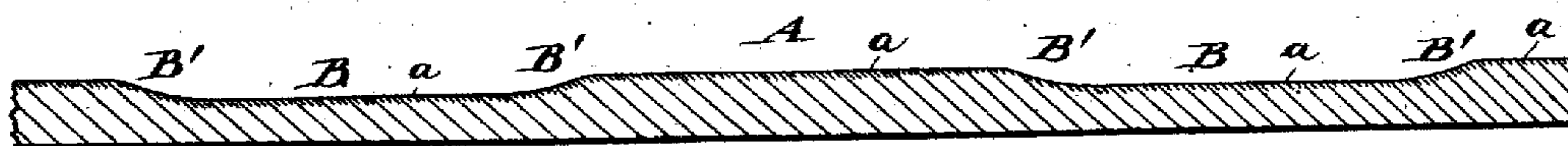
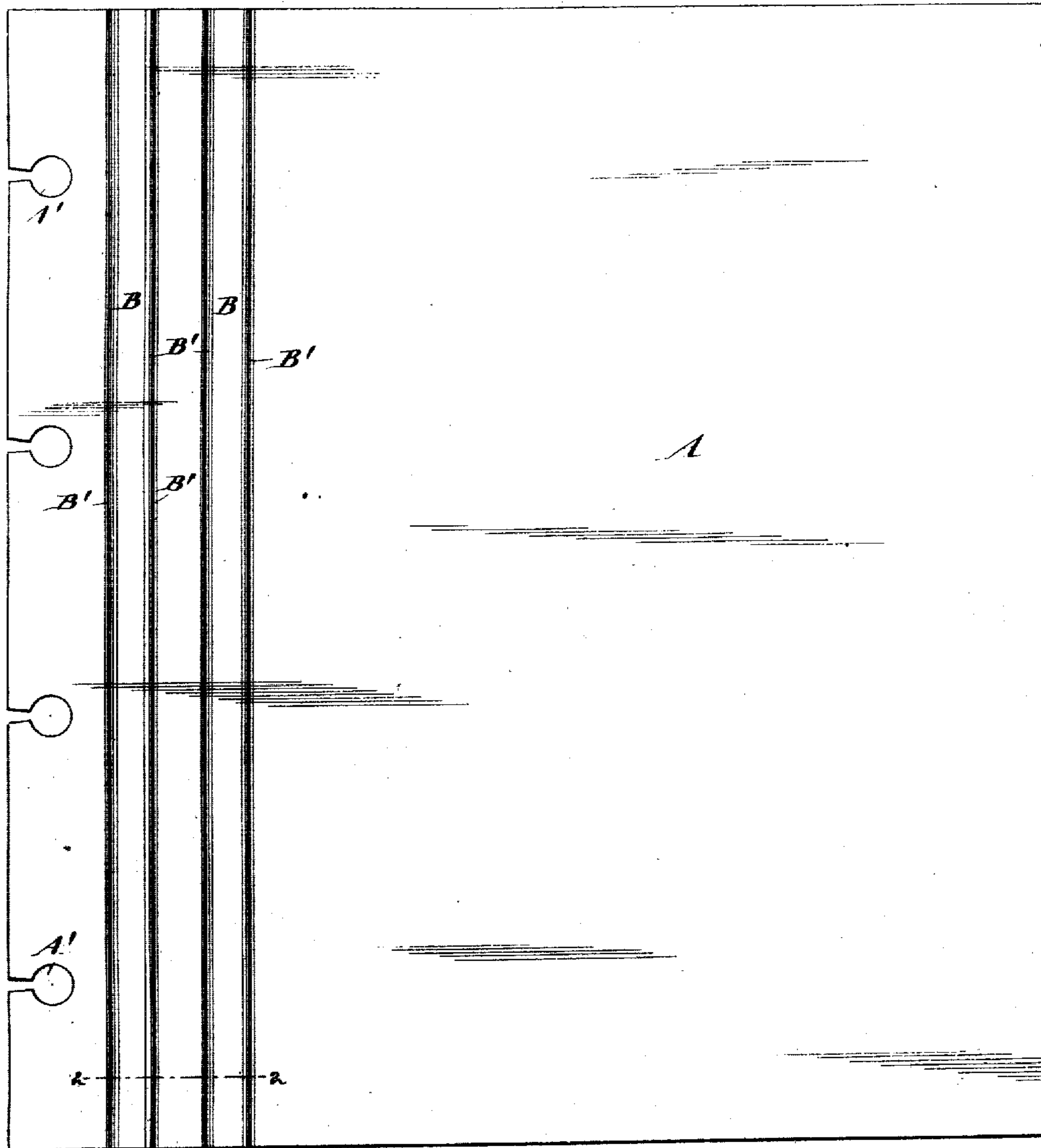


No. 814,239.

PATENTED MAR. 6, 1906.

L. E. SHIPMAN.  
LEAF FOR LEDGERS.  
APPLICATION FILED JAN. 20, 1905.

*Fig. 1.*



*Fig. 2.*

Witnesses:  
B. T. Kapp  
C. L. Meyers

Inventor:  
Lester O. Shipman,  
by his attorney  
Charles R. Searle.

# UNITED STATES PATENT OFFICE.

LESTER E. SHIPMAN, OF NEW YORK, N. Y., ASSIGNOR TO ASA L. SHIPMAN'S  
SONS, OF NEW YORK, N. Y., A FIRM.

## LEAF FOR LEDGERS.

No. 814,239.

Specification of Letters Patent.

Patented March 6, 1906.

Application filed January 20, 1905. Serial No. 241,924.

*To all whom it may concern:*

Be it known that I, LESTER E. SHIPMAN, a citizen of the United States, residing in the city of New York, borough of Manhattan, in the county and State of New York, have invented a certain new and useful Improvement in Leaves for Ledgers, of which the following is a specification.

The invention relates to leaves constructed to lie flat when the book composed of such leaves is open for service, and more particularly to leaves of this character designed to serve in what are known as "loose-leaf ledgers."

The invention is in that class in which the desired flexibility is secured by removing a portion of the material from the sheet in a line or lines of greater or less width and length parallel with the binding edge.

The object of the invention is to provide a leaf in which the desired flexibility is secured by such grooves and at the same time insure sufficient strength to resist the strains to which the leaf is subjected in use, and thus reduce the liability to tear along the groove.

The invention consists in certain novel features by which the above objects are attained.

The accompanying drawings form a part of this specification and show a preferred form of the invention.

Figure 1 is a face view of a leaf containing my invention; and Fig. 2 is a section on the line 2 2 in Fig. 1, showing, on a greatly-enlarged scale, the shape of the grooves.

Similar letters of reference indicate the same portions in both the figures.

A is the body of the sheet, preferably of good quality linen stock, and A' A' are the notches or slots in the binding edge, by which the leaf may be secured in any of the usual or preferred types of loose-leaf binders.

B B are the grooves extending the full height of the sheet from top to bottom parallel with the binding edge. Two grooves are preferred, and my experiments indicate that each should be about one-half inch in width and separated from each other by about the same distance. The grooves are

produced by a cutting-wheel rotated at an extremely high velocity and having the cutter-surface shaped to produce the contour shown in Fig. 2, in which it will be noted all sharp reëntering angles at the sides of the grooves are omitted and the surface line of the sheet descends gradually into the depression and again similarly rises from the opposite side of the groove, as indicated at B' B', joining the body of the sheet by smoothly-rounded reverse curves. By eliminating the angles I am able to produce a groove of sufficient depth to insure the flexibility required and at the same time avoid the formation of lines of weakness along which a tear is likely to develop under strain. Another element of strength inheres by reason of the effect of the rapidly-moving cutting-surface in compacting the remaining fiber of the paper along the groove, due to the pressure of the cutter and also to the polishing effect of the cutter-blades upon the surface of the groove, the latter showing the same smooth hard surface as the calendered portions of the sheet, as indicated at a a.

I prefer to treat one face of the sheet only and, as above stated, to produce two grooves of about the proportions shown for leaves for ledgers and analogous books of the usual sizes; but it will be understood that a greater or less number of grooves may be made and that the widths of the grooves and of the spaces between them may be varied in accordance with the size of the sheet and the conditions of the service for which it may be designed.

I am aware that sheets having grooves or weakened portions, with the sides of such grooves at more or less sharp angles with the bottom, extending from near the top to near the bottom of the sheet and also the full height of the sheet with a line of perforations therein and grooves formed by grinding away the material, have been before proposed and I do not claim such; but

What I do claim, and desire to secure by Letters Patent, is—

A leaf of the character set forth, comprising a sheet having a groove extending across the sheet near and parallel with the binding

edge, said groove being formed by removing  
a portion of the material of the sheet, said  
groove having a plane bottom line curved  
gradually upward therefrom and joined to  
5 the main surface of the sheet by reverse  
curves, the depressed surface of said groove  
being hardened and polished.

In testimony that I claim the invention  
above set forth I affix my signature in pres-  
ence of two witnesses.

LESTER E. SHIPMAN.

Witnesses:

CHAS. A. HAUCK,

CHARLES R. SEARLE.