

No. 835,887.

PATENTED NOV. 13, 1906.

G. HIGGINSON.
FLEXIBLE BOOK LEAF OR THE LIKE.
APPLICATION FILED JULY 8, 1905.

FIG. 1.

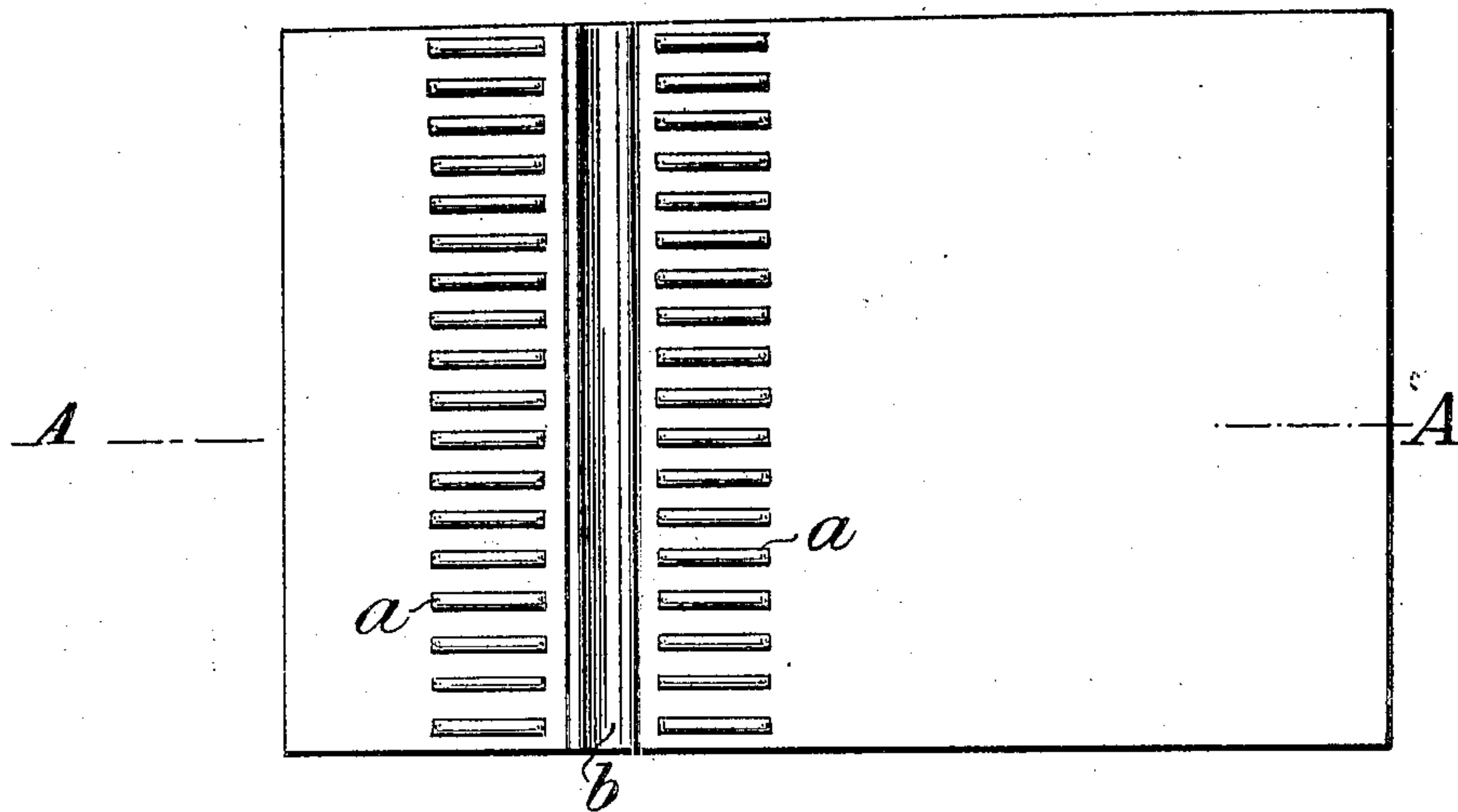


FIG. 2.

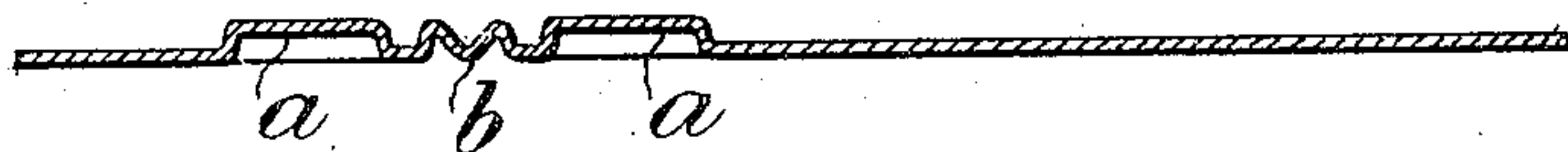


FIG. 3.

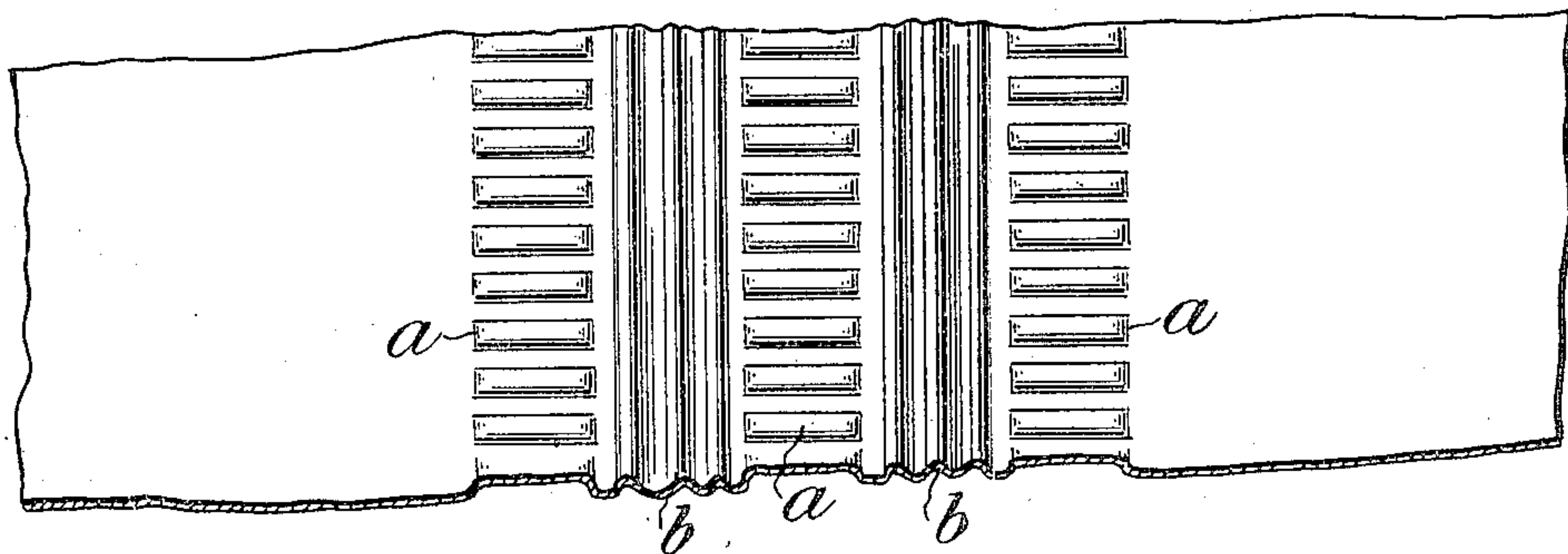
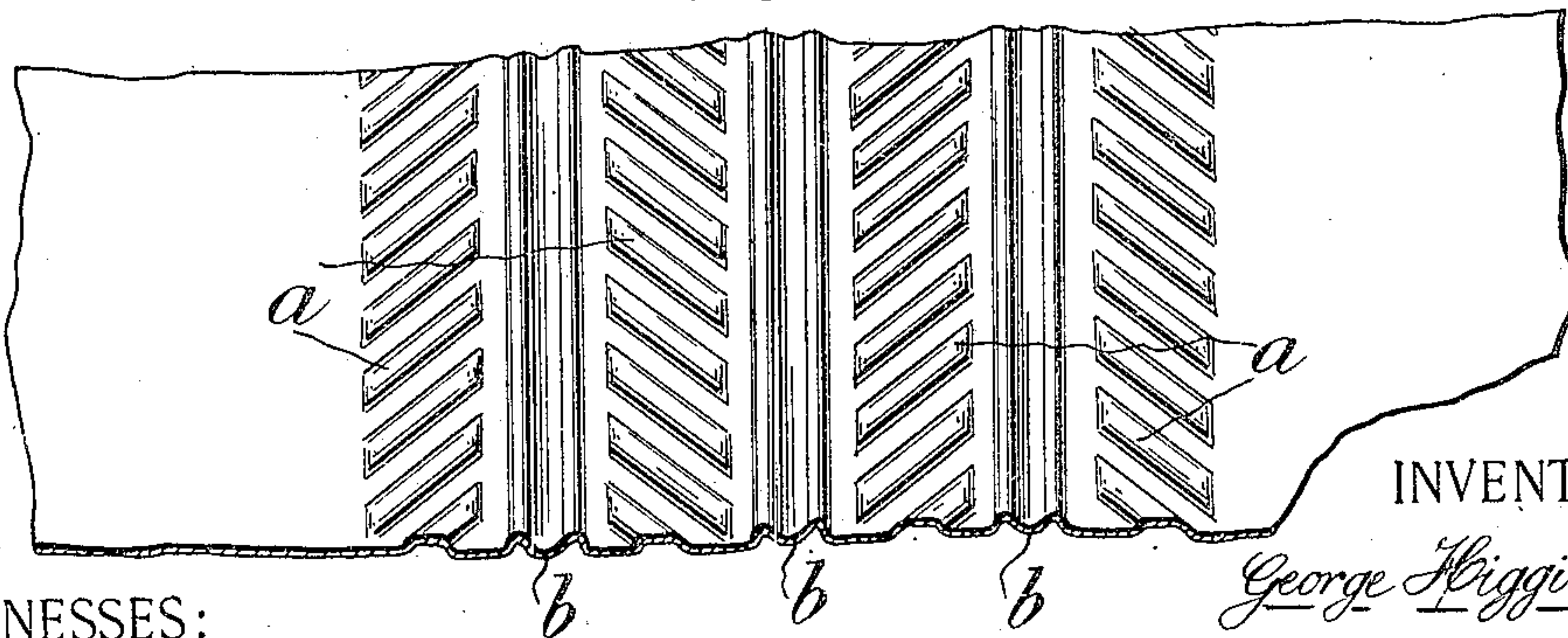


FIG. 4.



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GEORGE HIGGINSON, OF LONDON, ENGLAND, ASSIGNOR TO THE PULMAN PATENTS COMPANY, LIMITED, OF LONDON, ENGLAND.

FLEXIBLE BOOK-LEAF OR THE LIKE.

No. 835,887.

Specification of Letters Patent.

Patented Nov. 13, 1906.

Application filed July 8, 1905. Serial No. 268,788.

To all whom it may concern:

Be it known that I, GEORGE HIGGINSON, mechanical engineer, of 1 and 2 Ham Yard, Piccadilly Circus, London, England, have invented certain new and useful Improvements in and Relating to a Flexible Book-Leaf or the Like, of which the following is a specification.

This invention relates to sheets of paper, cardboard, and the like, and especially to leaves of loose-leaf ledgers, albums, and the like, and provides a simple and efficient method of strengthening, hinging, and folding paper, cardboard, and the like so that it may be readily folded or bent in use and without impairing the strength thereof.

Paper, cardboard, or the like constructed in accordance with this invention is provided with one or more series or rows of corrugations or ribs extending transversely to the line about which the sheet is adapted to be bent. Preferably such bending-line is made of decreased stiffness, as by a corrugation, to facilitate bending.

Referring now to the drawings, Figure 1 is a plan of a sheet of paper hinged in accordance with this invention. Fig. 2 is a section on line A A, Fig. 1. Fig. 3 is a plan of a portion of a sheet of paper hinged along two lines. Fig. 4 is a plan of a modified pattern.

In the construction shown in Figs. 1 and 2 I provide two series of corrugations *a a*, which are disposed with their ends extending toward the plane portion of the sheet. For clearness the corrugations are shown as exaggerated in size. In practice corrugations of about half the width and length shown and spaced apart about one-sixteenth of an inch give good results. Preferably the sheet is provided with a portion of decreased stiffness, so as to facilitate bending, and this portion is best formed between the series of ribs *a a*. Preferably such portion is made by corrugating the sheet as shown at *b*, the ribs *a a* extending at right angles to the corrugation *b*, although any transverse arrangement may be adopted. The transverse corrugations *a a* tend to strengthen the paper or the like against bending in one direction, while the longitudinal corrugation or corrugations *b* tend to facilitate the bending in the same direction. Hence the paper is strengthened on either side of the fold and may easily be bent along said fold. The form shown in Fig. 3 is adapted

for the same use and has two or more bending-lines, there being three or more rows of transverse corrugations *a a* and one or more longitudinal corrugations *b* being disposed between and transversely of each pair of rows of transverse corrugations *a*. In the form shown in Fig. 4 the transverse corrugations *a* are oblique to the corrugations *b*.

The strength of paper, cardboard, or the like provided with a hinge or fold in accordance with this invention is not impaired in any way, so that the paper is not liable to become torn or broken in use. This form of hinge or fold may be adopted in sheets employed for a variety of uses, such as the leaves of bound books, which are of such a thickness that they cannot be readily opened flat, covers of books, the leaves of loose-leaf ledgers, and in cardboard boxes.

The sheet provided by my invention preferably has a plane portion and a series of transverse ribs for strengthening the sheet at the desired point. Preferably such plane portion is distinguished from the ordinary cellular board by being formed of a single thickness of material.

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

1. A substantially flat sheet of paper, cardboard, or the like, having a plane portion, and a series of ribs the ends of which extend toward said plane portion.

2. A substantially flat sheet of paper, cardboard, or the like, having a plane portion, and a series of ribs the ends of which extend toward said plane portion, and a portion of decreased stiffness extending transversely to said ribs.

3. A sheet of paper, cardboard or the like having a plane portion, two series of ribs the ends of which extend toward said plane portion, and a portion of decreased stiffness between such series.

4. A sheet of paper, cardboard or the like having a plane portion, a plurality of series of ribs the ends of which extend toward said plane portion and a plurality of portions of decreased stiffness arranged alternately with such series.

5. A sheet of paper, cardboard or the like having a plane portion, an elongated portion of decreased stiffness, and a series of strengthening-ribs arranged at right angles to said last-named portion.

6. A sheet of paper, cardboard or the like having a portion for attachment to a binder, book or the like, said sheet having a series of ribs adjacent to such portion and extending
5 transversely thereto, and a plane unribbed portion outwardly of such ribs.

7. A sheet of paper, cardboard or the like having an elongated corrugation about which the sheet can be bent, a series of ribs extend-
o ing transversely thereto, and a plane portion beyond the ends of such ribs.

8. A sheet of paper, cardboard or the like having an elongated corrugation about which the sheet can be bent, two series of ribs ex-
15 tending transversely thereto, one of said series being at either side of said corrugation, and a plane portion beyond the ends of each of said ribs.

9. A sheet of paper, cardboard or the like
20 having a portion for attachment to a binder, book or the like, such sheet having a series of ribs extending transversely to such portion,

and a plane portion outwardly of such ribs said ribs being formed of the entire thickness of the sheet.

10. A sheet of paper, cardboard or the like having a line of decreased stiffness, and a series of ribs arranged along said line and extending transversely thereto, said ribs being formed of the entire thickness of the sheet. 25

11. A sheet of paper, cardboard or the like having a line of decreased stiffness, and a series of ribs arranged along said line and extending transversely thereto, said ribs being formed of the entire thickness of the sheet, 30 and the ends of said ribs nearest such line being spaced apart therefrom.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

GEORGE HIGGINSON.

Witnesses:

ROBERT MILTON SPEARPOINT,
H. D. JAMESON.