

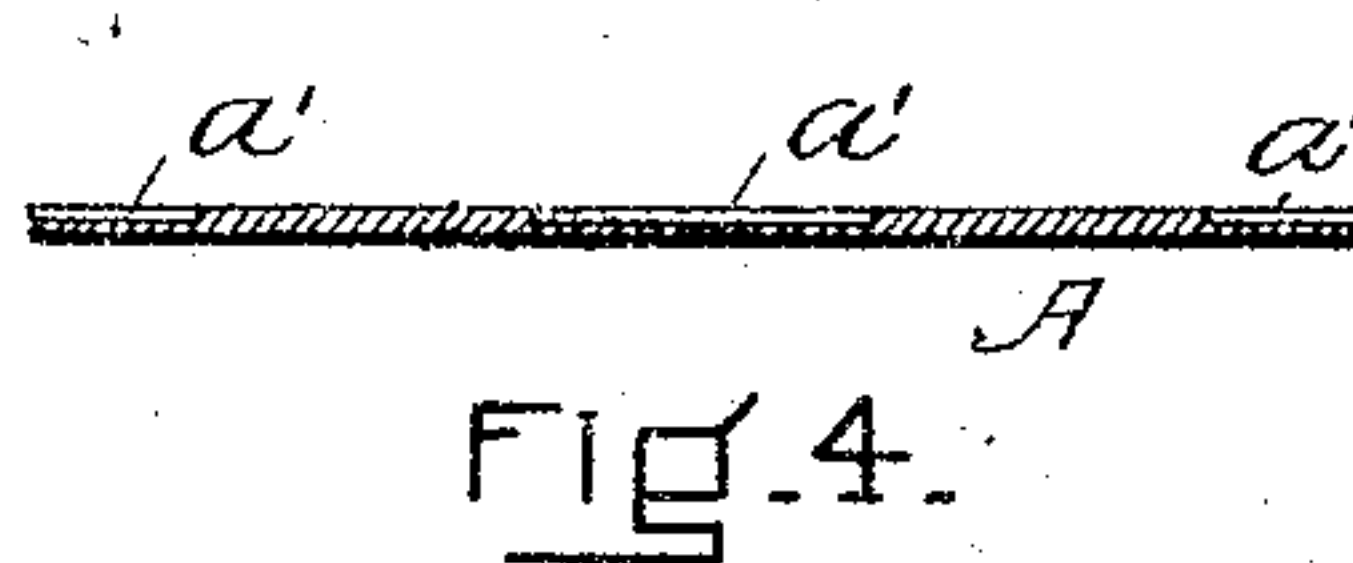
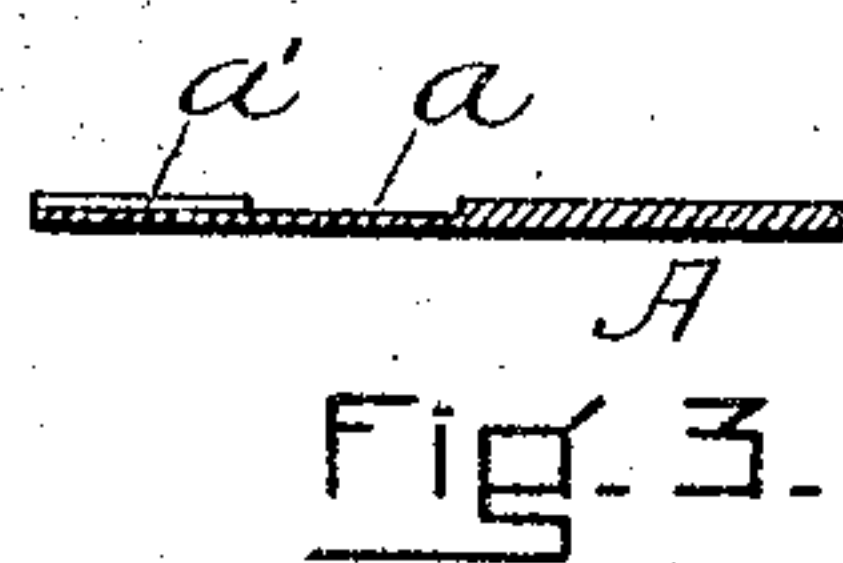
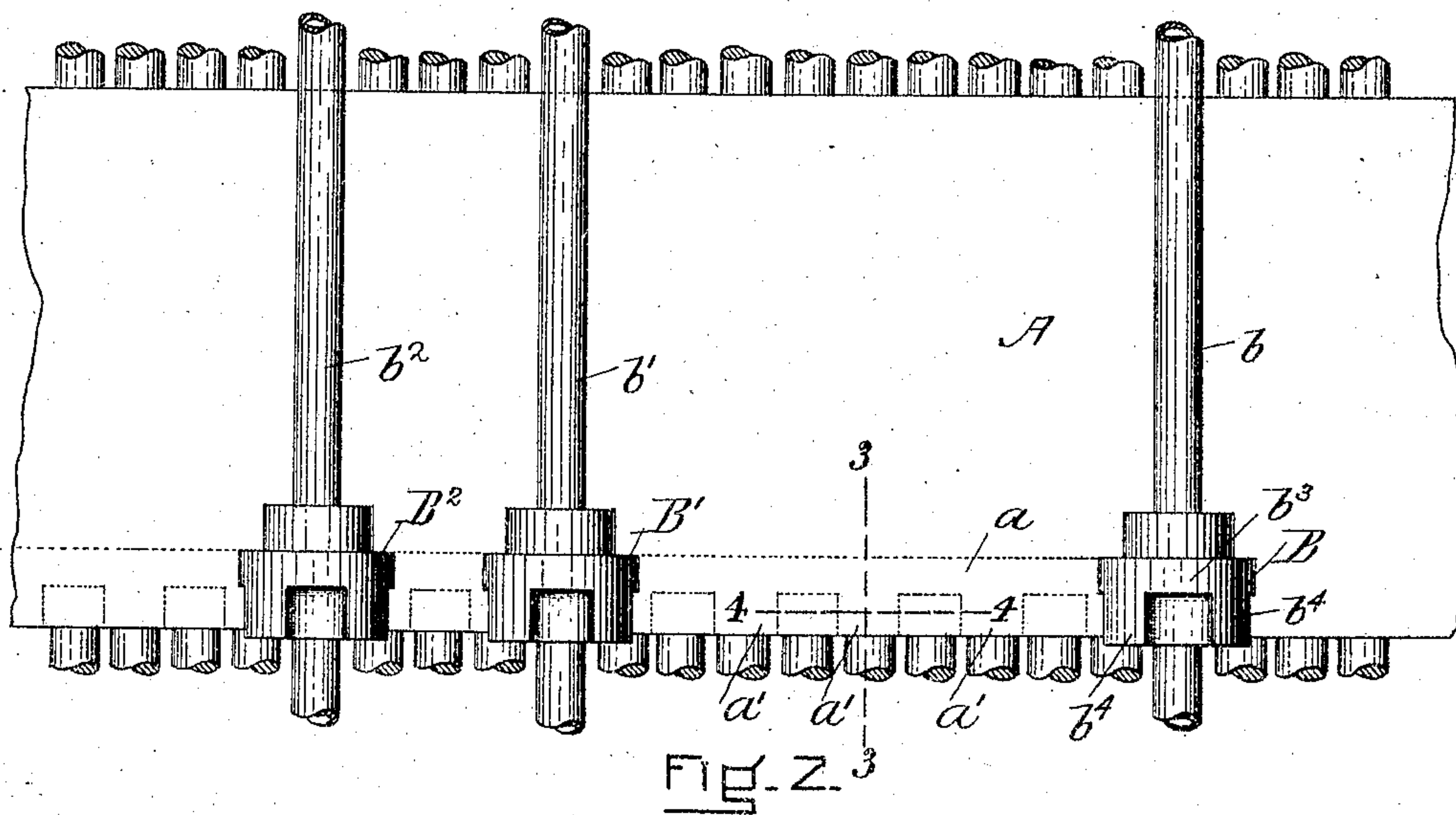
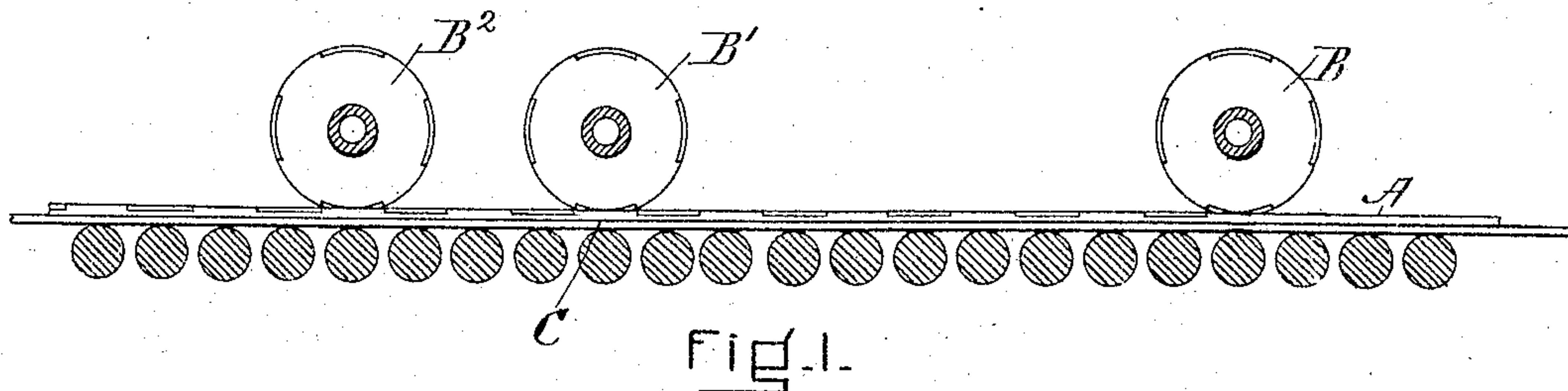
No. 778,377.

PATENTED DEC. 27, 1904.

R. S. ROBSON & H. C. BLACKMER.

METHOD OF MAKING PAPER FOR DETACHABLE OR OTHER LEAVES OF BOOKS.

APPLICATION FILED OCT. 16, 1902.



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UNITED STATES PATENT OFFICE.

ROBERT S. ROBSON, OF SOMERVILLE, AND HERBERT C. BLACKMER, OF MELROSE, MASSACHUSETTS, ASSIGNORS TO CLARKE LOOSE LEAF BOOK COMPANY, OF KITTERY, MAINE, A CORPORATION OF MAINE.

METHOD OF MAKING PAPER FOR DETACHABLE OR OTHER LEAVES OF BOOKS.

SPECIFICATION forming part of Letters Patent No. 778,377, dated December 27, 1904.

Application filed October 16, 1902. Serial No. 127,476.

To all whom it may concern:

Be it known that we, ROBERT S. ROBSON, of Somerville, and HERBERT C. BLACKMER, of Melrose, in the county of Middlesex and State of Massachusetts, citizens of the United States, have invented a new and useful Improvement in Methods of Making Paper for the Detachable or other Leaves of Books, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

It is desirable in books employing relatively thick writing-paper—such, for instance, as ledgers—and whether said books have permanent leaves or detachable ones that the leaf be made thinner adjacent to its binding line or end in order that it may be more readily and easily turned in the opening of the book, may lie more flatly when open, and may take less space or thickness at the bend; and our invention consists in a method of decreasing the thickness of a web of paper during its manufacture from the pulp and in the paper-making machine, whereby the web may have produced in it during said manufacture one or more sections which shall be thinner than the main parts of the web and which thin sections shall be so arranged in the web as to permit the web to be subsequently cut into leaves which shall have such end sections adjacent to the binding edges or portions thereof.

In carrying our invention into effect we mount in the paper-making machine at such places in the machine as may be desirable rolls so fashioned or shaped, supported, and braced as to form in the making paper while it is yet soft and formative one or more sections, preferably relatively narrow and which shall be thinner than the main or other portions of the web. These rolls we prefer to mount over the bed upon which the web travels. We also prefer to provide them with means whereby they can be heated, because the best effect is secured by the employment of heated rolls, which dries the water from the paper while the rolls are operating upon it to form the sections reduced in thickness.

When two or more of these rolls are used upon the web of paper to operate in succession thereon, we prefer that they be so arranged as to work upon the same line in order that they may all assist in the formation of the thinned section of the web, and if the surface or any part of the surface of the rolls has impressions like those indicated in the drawings then the rolls must be geared or otherwise connected together, so that they will not only be arranged in line with each other, but also so that their impressions will register with the impressions which they form in the web of paper. We also prefer to mount the rolls in the machine so that their lateral position with respect to each other and the web may be varied in order that the thin portions may be changed with respect to the edge of the web as may be required for variations in the size of the leaves and for other purposes.

Instead of employing narrow rolls to form the thinned sections of the web, rolls of the full width of the paper may be employed and may bear slight enlargements where desired and of the width of the thinned sections, or, if desired, the thinned sections may extend crosswise the web from edge to edge instead of lengthwise of it, when the projections upon the roll or rolls for forming said thinned portion crosswise the web will extend lengthwise the rolls.

In the drawings we have represented the rolls as adapted to form a web of paper suitable for the manufacture of detachable leaves described in the application of Herbert C. Blackmer, filed August 25, 1902, Serial No. 120,893. Such leaves have along their binding edge holes through which binding-posts extend, and our invention is adapted not only to form such leaves, but also to establish in them a thinned section extending from top to bottom of the leaf adjacent to the binding edge, and whereby they may be bent more readily in flat open position and also lie more closely and flatly. The thinned section adjacent to the binding edge may, if desired, extend laterally to cross the binding end in which

the binding-holes are formed and this will increase the flexibility of this end of the leaf and will decrease the quantity of paper in the assembled leaves where they are bound together.

5 In lieu of forming the rolls to impress in the web this form of thinned sections they may be shaped to impress in the web of paper a series of narrow thinned sections, which shall be parallel with each other for the purpose
10 of providing the leaf with the flexibility desired, or the rolls may be formed so as not to impart continuous thinned sections to the web, but to make them in lengths that shall be somewhat less than the full width of the leaf, so
15 that there may be an unthinned portion of the leaf at each end of the thinned section and along the upper and lower edges of the leaf and to such extent strengthen the leaves at their edges.

20 We will now describe the invention in conjunction with the drawings, forming a part of this specification, wherein—

Figure 1 is a view, partly in longitudinal vertical section and partly in end elevation, of
25 a paper-making machine equipped to produce our method. Fig. 2 is a view in plan thereof. Fig. 3 is a section of the paper web upon the dotted line 3 3 of Fig. 2. Fig. 4 is a section upon the dotted line 4 4 of Fig. 2.

30 Referring to the drawings, A represents a web of paper; B B' B², rolls for forming therein the thinned sections of the character indicated; b b' b², their supporting-shafts, and C the bed of the machine over which the web
35 passes. The rolls represented each have a section b³ for forming the continuous thin section a in the web A and the lateral extensions b⁴ for forming the lateral thinned extensions a' from the section a. These thinned sections
40 a a' may be arranged anywhere in the web desired and there may be also more than one line if so required. The location of these thinned sections depends upon the width of

the web and the way in which it is folded or cut to form the leaves or sides of the leaves. 45
The means for gearing the rolls together are not shown. As many of these rolls may be employed as desired. It is necessary that enough of them be used to definitely fix in the web of paper the thinned sections, so that 50 they shall be maintained therein during the full operation of the paper-making machine. The devices for heating the rolls are also not shown. Any of the usual expedients may be employed. 55

We do not confine ourselves in practicing the process to the form of rolls described nor to the number of rolls nor to the arrangement of the impressions lengthwise or crosswise the web of paper so long as they are so 60 arranged as to provide in the finished leaves the thinned section or sections adjacent to the binding edge and extending into and across it, if desired.

Having thus fully described our invention, 65 we claim and desire to secure by Letters Patent of the United States—

1. The process of preparing paper to have a strip or portion therein thinner than the adjacent portions of the sheet consisting in subjecting the web of paper during its manufacture and while the web is in a plastic condition to the pressure of a roll and extracting the moisture from said thinned portion of the web of paper by means of heat. 75

2. The process of preparing paper to have a thin, narrow section formed therein, consisting in subjecting the web of paper, during its manufacture and while the web is in a plastic condition, to the pressure and drying action of 80 a heated roll or rolls.

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