

Feb. 14, 1933.

C. E. GALE

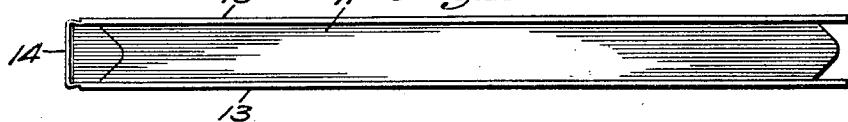
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METHOD OF MAKING BOOKS

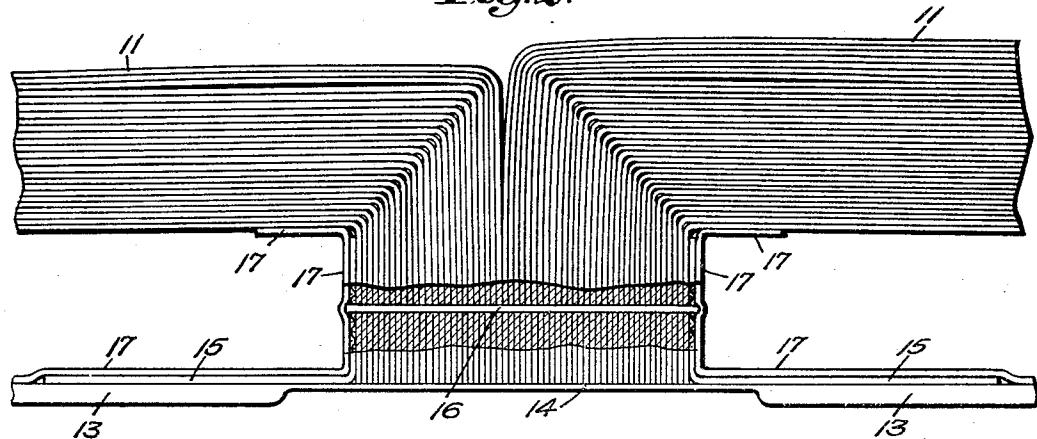
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2 Sheets-Sheet 1

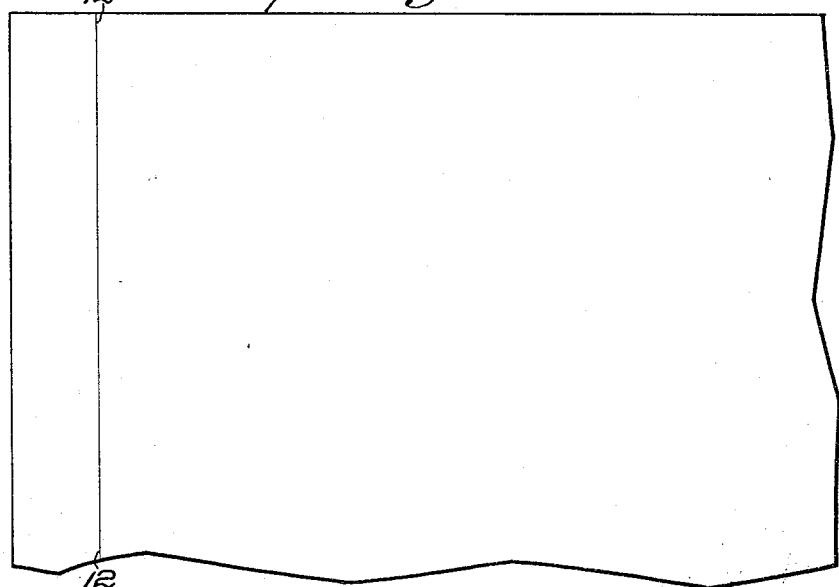
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



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*A*

*Fig. 4.*

*11*

*18 B C A*

*Fig. 5*

*11*

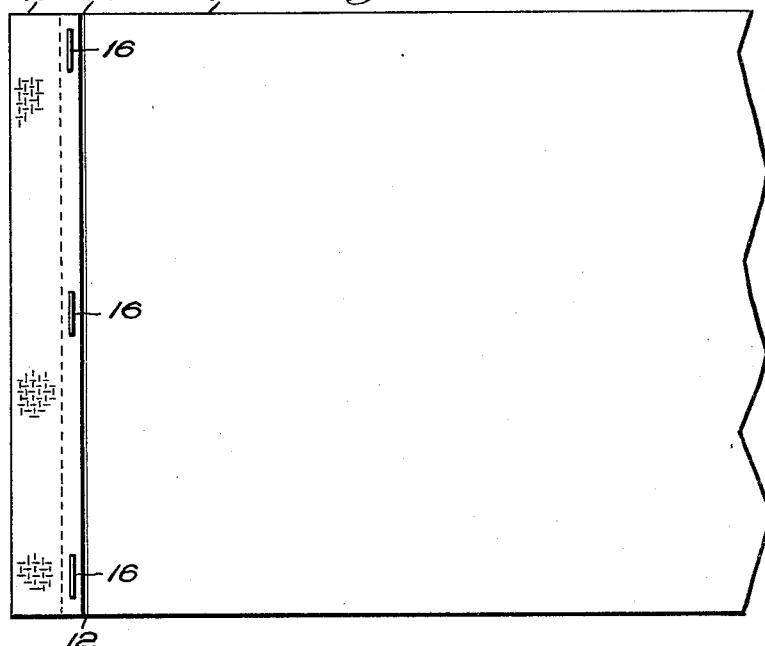
*B 15 C*

*Fig. 6.*

*11*

*15 12 11*

*Fig. 7.*



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*Attest.*

## UNITED STATES PATENT OFFICE

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## METHOD OF MAKING BOOKS

Application filed March 17, 1932. Serial No. 599,373.

This invention relates to a method of making flat-opening books, and while the invention is susceptible of general application to the making of books of the type wherein the leaves are rigidly secured together at the back, as by fastening means such as staples, it is particularly useful in connection with check books and other books and magazines whose cost should be kept as low as possible, while at the same time providing a book which shall be flat-opening. The invention will best be understood by reference to the accompanying drawings, illustrating one specific book and a method 15 of making the same.

In the drawings:

Fig. 1 is an edge elevation of a book made by the method which is the subject of the invention;

Fig. 2 is a sectional view of the same on a much enlarged scale, showing the book open;

Fig. 3 is a plan of a portion of one of the leaves;

Figs. 4, 5 and 6 are elevations illustrating 25 steps in the method of assembling the book; and

Fig. 7 is a plan of the leaves after the leaves and the cloth hinges have been fastened together.

Referring to the drawings, and to the method illustrated therein, there is shown in Figs. 1 and 2 a book comprising superposed leaves 11, each weakened along a line 12-12, the weakening lines being differently and progressively spaced from the binding edge. In the embodiment shown, the spacing increases from the front toward the center, and decreases from the center toward the back, and herein the weakening lines 30 when viewed from the end form a V, with a rounded apex, as shown in Figs. 1 and 2. Thus, when the book is open, the leaves flex along the weakening lines, and the book opens substantially flat as shown in Fig. 2.

One convenient way of weakening each leaf is to fold it sharply, first in one direction and then in the opposite direction along a line parallel with the binding edge, thereby 45 breaking the fibers sufficiently to produce the desired flexibility. Another desir-

able way of producing the flexibility is to weaken the paper during manufacture by making the paper slightly thinner along a narrow zone parallel with what is to be the binding edge. In either case, the weakening shows faintly on the edges of the leaves, as indicated in Fig. 1, when the book is closed.

In the example shown, the leaves are cased in a cover comprising cover boards 13 and a back 14 by cloth hinge strips 15 secured to the leaves, as by staples 16, which also secure the leaves together (see Fig. 2), and the hinge strips are secured, by an adhesive such as glue, to the inner faces of the cover boards, and preferably also to the first and last leaves. Each hinge strip is folded along a line adjacent to the rear or binding edges of the leaves, and the two edges of the hinge strip are presented toward the front of the book. Thus the hinging of the covers is adjacent to the back edges of the leaves, and this contributes to the flexibility of the book. Finish strips 17 of tough paper may be, and herein are, secured as by an adhesive over the cloth hinge strips and the 55 staples.

The first step in assembling the parts is to stack the leaves, as shown in Fig. 4, with the weakening lines lying in a plane A-A 60 perpendicular to the planes of the leaves. Subsequently, the leaves are shifted as by jogging them as by the aid of suitably shaped blocks 18 and 19 engaging opposite sets of edges (see Fig. 5), to cause the weakening lines to be differently and progressively spaced from a plane B-B 65 perpendicular to the planes of the leaves; that is to say, the spacing of the weakening lines increases from the front leaf toward the center and decreases from the center toward the back 70 leaf so that the weakening lines when viewed from the end form a V, with a rounded apex.

While no cutting of the leaves is essential, yet in the present example, the next step is 75 to cut the leaves in a plane C-C perpendicular to the planes of the leaves, to make a square back. The leaves should first be clamped securely together, and so held until the cutting and stapling operations are 80

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completed. As herein shown, the front edges of the leaves are left without cutting, although this is optional. When the printing extends close to the front edges of the leaves, as it would in the case of a check book, it is more economical of paper to print the leaves in this manner, and not to cut off the front edges. The next step is to apply the hinge strips by an adhesive to the first and last leaves, and to fasten the strips and the leaves together by the staples. The hinge strips at first extend rearwardly beyond the binding edges, and are then folded forwardly along lines lying in the plane 15 C—C at the rear edges of the leaves.

The book may now be cased in an appropriate cover. If the book is to have board covers, as in the present example, the next step is to secure the cloth hinges 15 by an adhesive to the inner faces of the cover boards, after which the finish strips 17 are applied by adhesive over the hinge strips and the staples.

The resulting book, though inexpensive, is flat-opening, and therefore more convenient to handle, and particularly more convenient to write in close to the binding, than stapled books as heretofore made.

Having thus described the preferred method of making the book, what I claim and desire by Letters Patent to secure is:

1. The method of making a book, which comprises weakening the leaves along lines parallel with and equally spaced from the binding edges, assembling the leaves with the weakening lines in a plane perpendicular to the planes of the leaves, shifting the leaves to cause spacing of the weakening lines from said plane progressively increasing from the center toward the first and last leaves, and securing the leaves together adjacent their rear edges.

2. The method of making a book, which comprises weakening the leaves along lines parallel with and equally spaced from the binding edges, assembling the leaves to bring them to a position wherein the weakening lines are parallel and progressively spaced rearwardly from the center leaf toward the first and last leaves, and cutting one set of edges of the leaves, which edges are parallel to the weakening lines so that said edges shall occupy a plane perpendicular to the planes of the leaves.

3. The method of making a book, which comprises weakening the leaves along lines parallel with and equally spaced from the binding edges, assembling the leaves to bring them to a position wherein the weakening lines are parallel and progressively spaced rearwardly from the center leaf toward the first and last leaves, clamping the leaves together, and cutting one set of edges of the leaves, which edges are parallel to the weakening lines so that said edges shall

occupy a plane perpendicular to the planes of the leaves.

4. The method of making a book, which comprises weakening the leaves along lines parallel with and equally spaced from one set of edges, assembling the leaves by engagement with one set of edges to bring them to a position wherein the weakening lines are parallel and spaced rearwardly, said spacing progressively increasing in inverse ratio to the proximity of each leaf to the middle leaf of the book, and cutting one set of the edges which are parallel with the weakening lines in a plane perpendicular to the planes of the leaves.

5. The method of making a book, which comprises weakening the leaves along lines parallel with and equally spaced from one set of edges, assembling the leaves by engagement with said set and the opposite set of edges to bring them to a position wherein the weakening lines are parallel and spaced rearwardly, said spacing increasing in inverse ratio to the proximity of each leaf to the middle leaf of the book, and cutting one set of edges of the leaves which edges are parallel with the weakening lines in a plane perpendicular to the planes of the leaves.

6. The method of making a book, which comprises weakening the leaves along lines parallel with and equally spaced from one set of edges, assembling the leaves by engagement with one set of edges to bring them to a position wherein the weakening lines are parallel and spaced rearwardly, said spacing increasing in inverse ratio to the proximity of each leaf to the middle leaf of the book, clamping the leaves to prevent their shifting, and cutting one set of edges of the leaves which edges are parallel with the weakening lines in a plane perpendicular to the planes of the leaves.

7. The method of making a book, which comprises weakening the leaves along lines parallel with and equally spaced from one set of edges, assembling the leaves by engagement with one set of edges to bring them to a position wherein the weakening lines are parallel and spaced rearwardly, said spacing increasing in inverse ratio to the proximity of each leaf to the middle leaf of the book, clamping the leaves to prevent their shifting, and fastening the leaves together while they are clamped.

In testimony whereof, I have signed my name to this specification.

CHARLES E. GALE.