

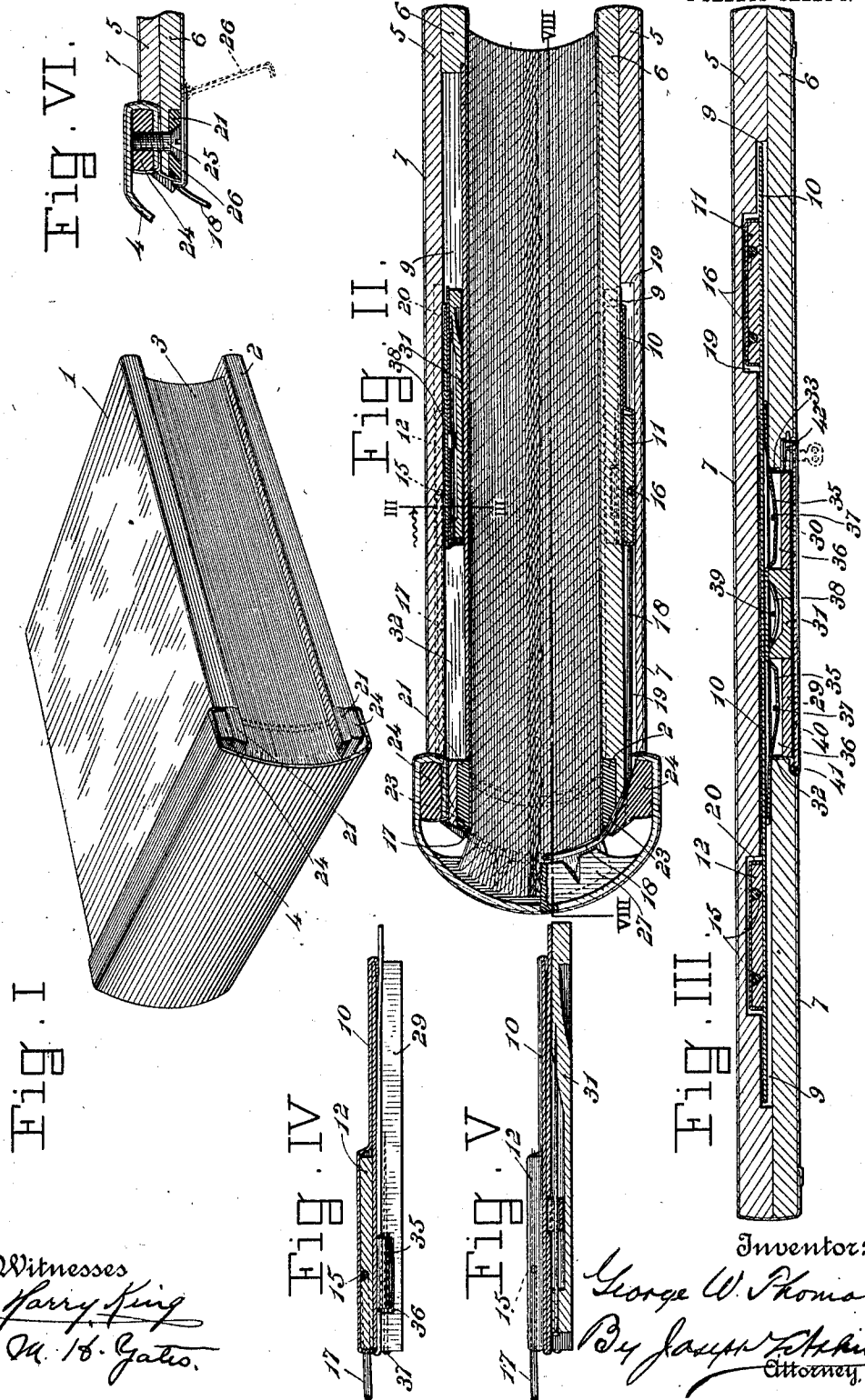
G. W. THOMAS.  
LOOSE LEAF BINDER.

APPLICATION FILED OCT. 23, 1908. RENEWED AUG. 12, 1911.

1,003,824.

Patented Sept. 19, 1911.

2 SHEETS-SHEET 1.



Witnesses  
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2 SHEETS—SHEET 2.

Fig. VII.

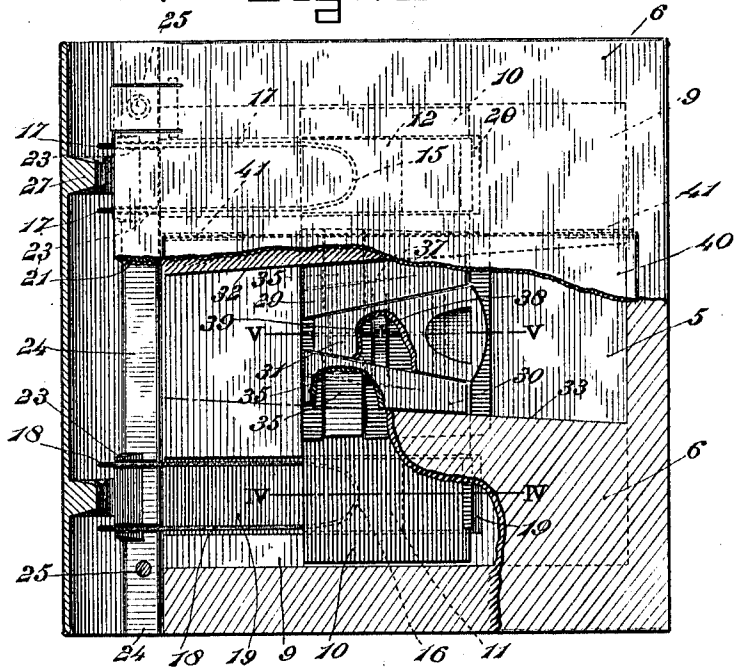
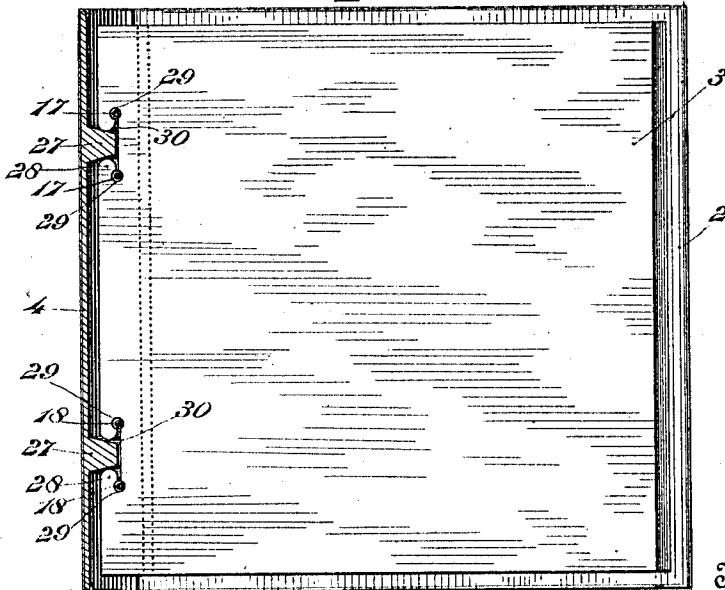


Fig. VIII.



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# UNITED STATES PATENT OFFICE.

GEORGE W. THOMAS, OF RED OAK, IOWA, ASSIGNOR OF ONE-HALF TO JOHN M. HALBERT, OF RED OAK, IOWA.

## LOOSE-LEAF BINDER.

1,003,824.

Specification of Letters Patent. Patented Sept. 19, 1911.

Application filed October 23, 1908, Serial No. 459,239. Renewed August 12, 1911. Serial No. 643,780.

*To all whom it may concern:*

Be it known that I, GEORGE W. THOMAS, of Red Oak, in the county of Montgomery, State of Iowa, have invented certain new and useful Improvements in Loose-Leaf Binders, of which the following is a specification.

The object of my invention is to produce improvements in loose leaf binders whereby an assemblage of sheets may be united in a well bound book suitable for temporary or permanent use, and whereof the number of sheets may be increased or diminished at will.

What constitutes my invention will be hereinafter specified in detail, and succinctly set forth in the appended claims.

In the accompanying drawings, which constitute a part of this specification, Figure I is a perspective view of one of my binders, in preferred form of embodiment, incorporated into a book. Fig. II is a vertical section, on different planes, illustrating various parts of the internal mechanism of the device. Fig. III is a section on the line III—III of Fig. II. Fig. IV is a section on the line IV—IV of Fig. VII. Fig. V is a section on the line V—V of Fig. VII. Fig. VI is a detail view illustrating the preferred means of uniting the side-boards and back of the book, and showing the manner of cooperation of the clamping-bars of the tension-fixing mechanism. Fig. VII is an inside view of one of the side-boards of my binder, detached and partly broken away, the back of the binder being shown in longitudinal section. Fig. VIII is a section on the line VIII—VIII of Fig. II.

Referring to the numerals on the drawings, 1 indicates one side-board and 2 the other, 3 the leaves confined in book form between them, and 4 the back.

The parts above referred to are shown in assembled form in Fig. I, upon inspection whereof it will appear that the book resulting from the use of my binder is perfectly smooth and regular in all its contours, presenting no obstruction from the outside at any point. It may be observed that the back 4 is separable from the sides 1 and 2, and that while the back is flexible and adapted to accommodate different thicknesses of books, it is also readily separable so that one back may be substituted for another at

pleasure, as the thickness of the book may require.

I prefer to make each of the side-boards 1 and 2 substantially identical in construction, and shall describe them accordingly.

Each side-board is preferably made of two or more thicknesses 5 and 6, which may be constituted of any suitable material of stiff and durable constituency, such, as is employed in the book-binding art, and each side-board, composed of as many thicknesses as it may be, is preferably enveloped in a skin 7, as of leather or other surfacing material. Each side-board is provided between the plates 5 and 6 with a rectangular recess 9, whose sides are preferably substantially parallel with the outer edges of the side-board. The contour of the recess 9 is clearly illustrated in Figs. III and VII, its full extent being shown in dotted lines in the latter figure. The recess 9 is provided for the sliding accommodation between the plates 5 and 6 of a tension-plate 10, which works to and from the back 4 within the recess 9. The tension-plate is preferably made of metal, as of sheet steel, of a thickness sufficient to carry such strain as may be laid upon it. Near its opposite ends, as indicated at 11 and 12, respectively, it is provided with cable blocks, each of which is adapted to receive the bends 15 and 16 of binding members or cables 17 and 18, and thereby to secure said cables operatively to the tension-plate 10. The blocks are representative of any suitable means for securing the cables to the tension-plate, and may be, of course, varied at the pleasure of the manufacturer. When employed, it is necessary to provide cable-channels 19 and 20 of ample dimensions to accommodate them to the transverse movement of the tension-plate 10, of which they constitute a part. The channels 19 and 20 extend from the forward limit of movement of the plate 10 toward the back 4 of the binder, and their principal office is to accommodate the cables 17 and 18. The cables are preferably made of smooth steel wire, preferably the best steel piano wire, in order that they may work freely, endure such strain as may be required of them, and hold their shape in service. The cables extend from the tension-plate 10 in one side-board to the corresponding tension-plate in the other side-board,

and are guided from one side-board to the other preferably over a clamping-bar 21, which extends transversely from edge to edge of each side-board into which it is countersunk, as clearly shown in Figs. I, II, 5 VI, and VII. Each bar is preferably provided with a recess 23 to receive and accommodate the bend of the cables in passing from one side-board to the other. The back 4 also carries two clamping-bars 24, 10 which serve the double purpose of securing the back to the side-boards and in rigidly securing the cables in any position to which they may be adjusted. In respect to the latter function, the coöperative pairs of bars 15 21 and 24, with the means of securing them together, constitute tension-fixing mechanism. The means employed for uniting them are preferably screws 25 inserted from the inside of the board through apertures 20 provided for them in the bar 21 and screwing into a threaded aperture in the bar 24. (See Fig. VI). The head of the screw being countersunk in the bar 21 is preferably 25 covered with a hinged cap 26, whereby it is ordinarily hidden from sight but made readily accessible whenever occasion requires.

Each of the bars 24 is secured to the back 30 4, one at each end of the back, so that when the respective bars 21 and 24 are fastened together, they serve to hold the back in place. The bars 24 are preferably infolded into the material of which the back is made, 35 as shown in Figs. I, II, and VI, the construction shown being preferred because of its simplicity and effectiveness in securing a smooth and durable finish for the back.

The back is preferably made of a stiff 40 material, such as raw hide, which may be covered with a finishing skin, and it is preferably provided with inwardly projecting flexible stiffening ribs 27, as shown in Figs. II, VII, and VIII.

Each of the sheets 3 is preferably provided with oppositely projecting lugs 28, 45 which constitute a space into which the ribs 27 may enter when the back is closed, as shown in Fig. VIII. Each sheet is also provided with cable eyelets 29 that are terminally 50 disposed at the end of a slot 30. Any suitable means for securing the sheets to the cables may be employed, but I prefer the cutting or notching of the sheets described as affording convenient means for removing 55 and inserting sheets into the book. Moreover, the space between the lugs 28 accommodated to the reception of the ribs 27 is an important feature, inasmuch as the engagement of the ribs with the lugs in the closed 60 back relieves the strain of the sheets upon the binding-cables.

It has been specified that each side-board is preferably provided with a tension-plate 65 10, and that is the construction that I prefer,

but it will be obvious from what follows that it is practicable to permanently anchor the cables at one end in one side-board, and attach them to the tension-plate in the other side-board only. Such construction would 70 not, however, lend itself to the interchangeability of parts, which is the preferred feature of my device. Assuming, therefore, that the preferred construction is employed, it will appear by reference to Fig. II, for ex- 75 ample, that if the screws 25 be loosened, either or both of the tension-plates 10 may be slipped toward the back 4, thereby affording increased length of cable between the side-boards for increasing the thickness of 80 the book at will.

In practice, whenever the clamping-bars 21 and 24 are loosened for the introduction or withdrawal of sheets from the binder, the plates 10 are, while the book is open, drawn 85 asunder until the desired tension upon the cables is produced. The bars 21 and 24 are then firmly secured so that the tension upon the cables obtained by force applied to the tension-plates is permanently and 90 securely fixed. The clamping of the respective bars 21 and 24 together serves, as specified, not only to secure tension of the cables and to fasten the sheets between the side-boards, but also to secure the back to the 95 side-boards, or, in fine, to complete the book form assemblage of the several members of the device.

It is obvious that by mere tension upon the plates 10 it would be difficult, if not im- 100 possible, to secure proper tension upon the binding-cables preparatory to the operation of the tension-fixing mechanism. For that reason, I prefer to provide upon each tension-plate 10 adjustment-securing mech- 105 anism, which may consist of lateral-plates 29 and 30 separated by an intermediate wedge-plate 31, all secured to the tension-plate 10 and operatively disposed between side-walls 32 and 33 of a channel provided for the ac- 110 commodation of the members specified in the inner plate 6 of each side-board. The lateral-plates 29 and 30 are free to move transversely to and from the side-walls 32 and 33 of the channel in which they work, 115 being confined between said side-walls and to the tension-plate 10 as by loops 35 secured to the plate 10 and working respectively within recesses 36 provided for them in the plates 29 and 30, respectively. A pin 37, 120 secured to the opposite sides of each recess 36 and passing behind the loop 35, as shown in Fig. III, and corresponding to the illustration afforded in Fig. IV, serves to confine each plate within the recess provided for 125 it. The intermediate plate 31 is likewise confined in place as by a loop 38 and pin 39 (compare Figs. III and V). The contiguous faces of the plates 29 and 30 and the intermediate plate 31 are inclined, as shown 130

in Fig. VII, so that the plate 31 constitutes a wedge by which, at any point in the channel defined by the walls 32 and 33, the plates 29 and 30 may be forcibly driven into engagement with said walls and thereby confine the said plates and the tension-plate, which carries them, in a fixed position.

It will be understood from the foregoing that the tension-plates 10 are, in respect to the mechanism last described, provided with tension-adjusting mechanism that is operable to fix the tension upon the cables 17 and 18 preparatory to the adjustment of the several screws 25 by which the tension-fixing mechanism is operated.

In practice, the screws 25 are loosened, the side-boards opened outwardly, and the required number of sheets 3 inserted into place. Thereupon the desired tension is applied to the tension-plates 10 and the tension-plates are secured as by movement of the wedge or intermediate plate 31 in the position of adjustment which has been attained. The operator then tightens the screws 25, closes the hinged caps 26 and the back is complete and ready for use.

To afford an inside finish for the side-boards 1 and 2, I prefer to provide for each channel defined by the side-walls 32 and 33 a countersunk door 40, hinged at one edge, as indicated at 41, and provided at the other with a key lock 42 for securing the door and protecting the mechanism it covers.

It is not my purpose to limit myself to the exact details of construction herein shown and described, but reserve the right to modify and vary the same within the scope of the principle of my invention as herein set forth.

What I claim is:

1. In a loose-leaf binder, the combination with side-boards and binding-members extending from one side-board to the other, of pairs of clamping-bars carried upon the re-

spective side-boards in such manner as to engage the binding-members, and means for fastening the said bars together for such engagement.

2. In a loose-leaf binder, the combination with side-boards, a clamping-bar on each, and binding-members for the respective clamping-bars and uniting the side-boards, of a back provided with two clamping-bars corresponding to the bars on the side-boards, and means for fastening the clamping-bars on the back and side-boards together, respectively, and thereby engaging the binding-members between them.

3. In a loose-leaf binder, the combination with side-boards and wire cables uniting the same as binding-members, of a tension-plate working in a recess in one of the side-boards and secured to said cables, cable channels for the accommodation of the said cables, mechanism adapted to secure adjustment of the tension-plate, and tension-fixing mechanism adapted to permanently fix the tension so secured.

4. In a loose-leaf binder, the combination with side-boards and binding-members uniting the same and adapted to engage notched sheets between the side-boards, of a back provided with ribs adapted to enter the notches in said sheets.

5. In a loose-leaf binder, the combination with side-boards and binding-members uniting the same and adapted to engage notched sheets between the side-boards, of a separable back provided with ribs adapted to enter the notches in said sheets.

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

GEORGE W. THOMAS.

Witnesses:

C. D. COOK,  
EDW. F. SHUEY.