C. B. ALEXANDER.

LOOSE LEAF BINDER.

APPLICATION FILED JAN. 11, 1921.

1,434,579. Patented Nov. 7, 1922.

2 SHEETS—SHEET 1.

Fig. 1.

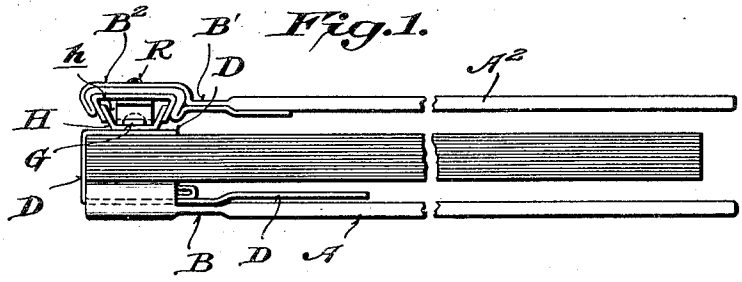


Fig. 2.

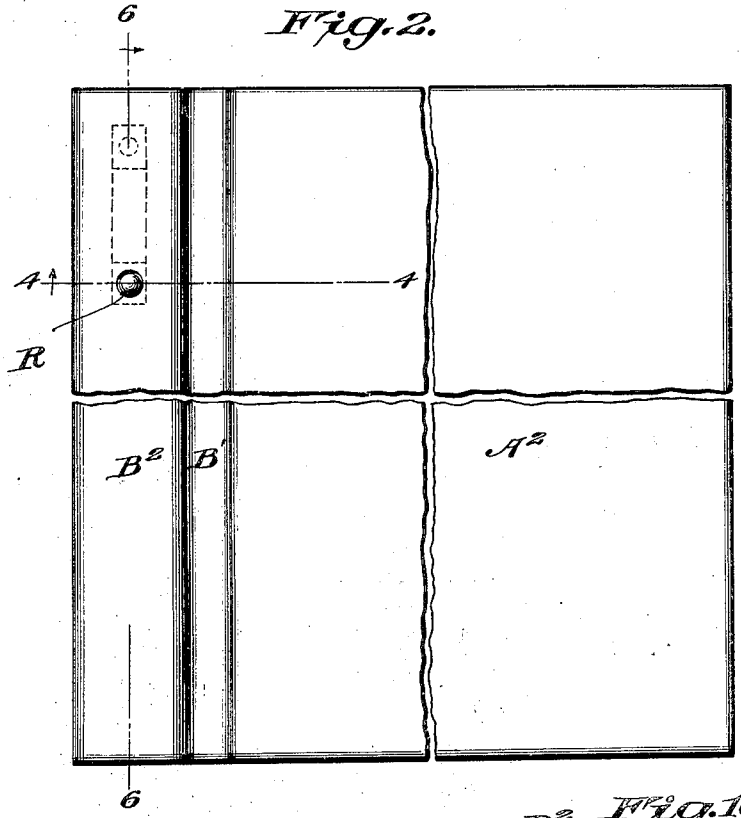


Fig. 3.

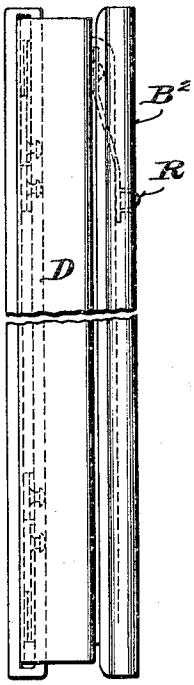


Fig. 4.

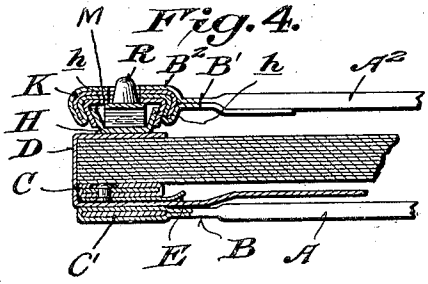
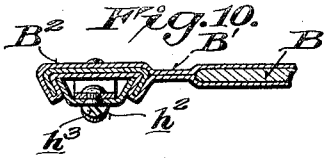


Fig. 10.



Inventor

Clinton B. Alexander

By Church & Church

his Attorneys

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2 SHEETS—SHEET 2.

Fig. 5.

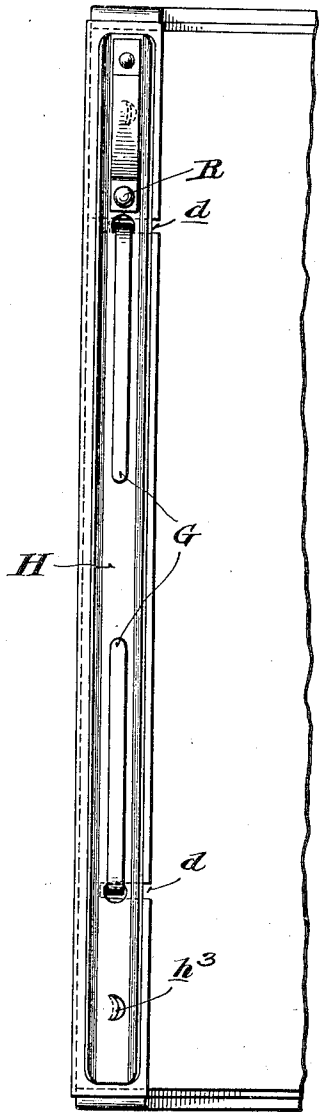


Fig. 6.

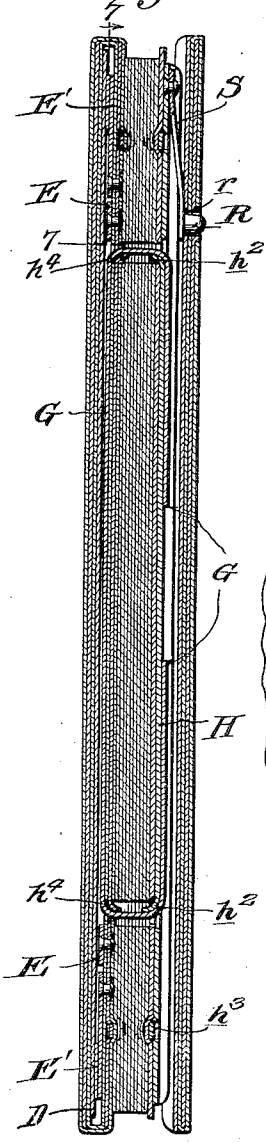


Fig. 8.

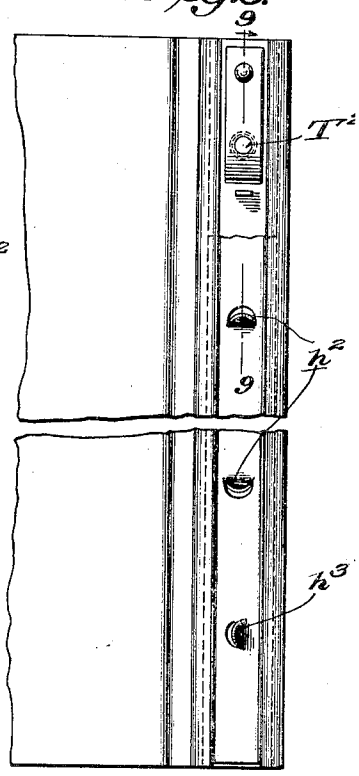


Fig. 9.

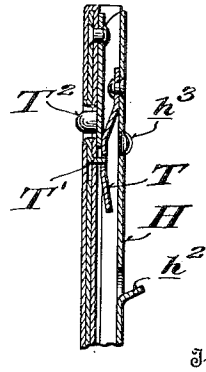


Fig. 7.

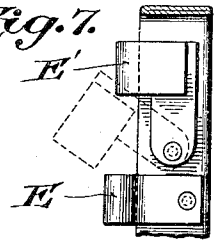
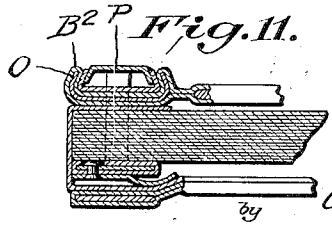


Fig. 11.



Inventor

Clinton B. Alexander

by Church & Church

their Attorneys

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UNITED STATES PATENT OFFICE.

CLINTON B. ALEXANDER, OF WASHINGTON, DISTRICT OF COLUMBIA.

LOOSE-LEAF BINDER.

Application filed January 11, 1921. Serial No. 436,462.

To all whom it may concern:

Be it known that I, CLINTON B. ALEXANDER, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Loose-Leaf Binders; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to loose-leaf binders of that type wherein the leaves to be held together are fastened between clamping members through the medium of pliant impaling thongs which are adapted to be bent down in order to secure the clamping members together with the loose leaves between them. The objects of the invention are to provide a simple structure which, while it may be manufactured cheaply in quantity, according to modern manufacturing methods, will nevertheless bind the loose leaves so as to simulate closely the appearance of a book and with all of the convenience and characteristics of a book, without increasing the bulk at the binding edge to such a degree as to become objectionable. In other words, one of the objects of the invention is to provide a flat structure which will afford the conveniences of a loose-leaf binder, in so far as filing and removing loose sheets is concerned, and at the same time secure the advantages incident to regular book binding, both with respect to the covers, clamping members and the backing of the loose sheets for convenience in titling, etc.

Another object of the invention is to provide a structure in which the life of the impaling thongs will be materially prolonged by avoiding the formation of sharp bends therein, such as are destructive to the life of pliant metal, all as will be hereinafter described and pointed out particularly in the appended claims.

Referring to the accompanying drawings,—

Figure 1 is an elevation looking at the top edge of a loose-leaf binder embodying the present improvements, portions of the covers and leaves being broken away and the parts being represented somewhat out of proportion, in order to illustrate the structure more clearly.

Fig. 2 is a view looking at the front cover of the binder shown in Fig. 1.

Fig. 3 is a view looking at the back of the binder shown in Fig. 1, to illustrate the appearance of the back cover sheet when the binder is filled to part of its capacity only.

Fig. 4 is a detail section on the line 4—4 of Fig. 2, looking in the direction of the arrow.

Fig. 5 is a view substantially corresponding to Fig. 2, in so far as the clamping edge of the binder is concerned, but with the front cover removed.

Fig. 6 is a section through the clamping edge of the binder with the loose leaves therein, substantially on the line 6—6 of Fig. 2.

Fig. 7 is a detail section on the broken line 7—7 of Fig. 6.

Fig. 8 is a view looking at the inside of the back edge of the front cover with a clamping member in place therein, but partly broken away and showing a modified form of lock or catch for retaining the cover and clamping plate in proper assembled relation.

Fig. 9 is a detail section substantially on the line 9—9 of Fig. 8.

Fig. 10 is a transverse section illustrating the omission of the inner channel member on the front cover member.

Fig. 11 is a similar section showing a further modification of the front cover and clamping member, and also illustrating a spring retainer for the back cover sheet shown in elevation in Fig. 7 and in section in Fig. 4.

The loose leaves are adapted to be held between clamping members extending from top to bottom of the sheets along one edge thereof, and these clamping members conveniently embody a rear clamping member which is preferably formed as a part of the rear cover board A to which it is hinged through a thin part of the binding material or fabric indicated at B. This rear clamping member embodies in its construction, as shown in Fig. 4, two metal strips C, C′, enclosed by binding material or cloth and having between them a longitudinal opening

through which one edge of the back cover sheet D may be drawn, but in which it will be held by a clamping means, such, for example, as the fixed spring clamps E and the swinging spring clamps E′, best seen in Figs. 4, 7 and 11, whereby this back cover sheet may be either adjusted or removed, as will be hereinafter explained. The rear clamping member is further provided with apertures from which the impaling thongs G are adapted to project and the said thongs may be connected with this rear clamping member, in any suitable manner as by being formed as part of a continuous length or strip, one end of which projects through each of the openings to constitute properly spaced impaling thongs such as are commonly used in this art.

The front clamping member H is preferably formed of sheet metal with longitudinal edge flanges h giving to the structure a dove-tail formation in cross section. The body of the member is provided with apertures for the passage of the impaling thongs G, such apertures being formed by partly cutting out small ears which are bent downwardly in a wide curve, as shown at h^2, in Figs. 6, 8 and 9, whereby a rounded surface is provided over which the impaling thongs will be given a gradual bend when they are turned down to force the clamping members toward each other and so hold the leaves in place. In addition, these projections h^2 perform another important function in that they enter the upper leaves alongside of the impaling thongs and assist materially both in positioning the clamping member and in retaining the leaves against accidental displacement. To further assist in retaining the leaves in the binder, projections or ears h^4 are formed on the rear clamping member similarly to the projections h^2 on the front clamping member. Should it be desired to still further engage the leaves or provide points of pressure therethrough, the clamping member may be provided with additional projections or ears, as shown at h^3, although it is primarily designed that these ears h^3 shall be located near the ends of the clamping member and function more especially as retainers for co-operating with the front edge of the back cover sheet D, and the latter may, therefore, be provided with slots d, Fig. 5, instead of apertures, through which the impaling thongs pass. This is a desirable structure, inasmuch as in filing additional loose sheets, the back cover sheet does not have to be entirely removed, but may be simply thrown out of the way when the front clamp is removed, and after the new sheet has been placed in position by the front clamp, the projections h^3 overcoming any tendency of the back cover sheet to slip out of position either during or subsequent to the bending down of the impaling thongs or the application of the front cover as will be presently explained. It will be understood, however, that the said back cover sheet is adapted to be drawn out through the opening in the rear clamp, as the number of loose sheets is increased, so as to effectually cover and protect their rear edges and afford a convenient means for the reception of titles, and in placing the titles thereon the said back cover sheet may be entirely removed, if so desired, and the titles printed thereon in an ordinary typewriter, this feature of removability being, therefore, of considerable convenience and importance.

The free ends of the impaling thongs are adapted to be enclosed and protected and finish given to the structure by a cover member which is also of dove tail formation and adapted to be slipped into position longitudinally of the clamping member H, and said cover member may be conveniently formed as a part of the front cover board A^2 to which it is attached by a hinge connection formed by the cover fabric at B′. As in the case of the rear clamping member, this cover member is conveniently formed of a strip of sheet metal K which has longitudinal edge flanges to give it a dove tail formation in cross section. It is adapted to fit around the flanges of the clamping member H. It is preferably entirely enclosed in the fabric B^2 of the cover board material, as shown in Fig. 10, although for heavy usage it is also adapted to receive a second dove tail or channel strip M of sheet metal of similar cross section which is adapted to come into direct contact with the clamping member H, so as to protect and prevent wear on the fabric or cover material. It will be understood that in assembling these parts, the sheet metal strips will be set together by dies or a forming machine adapted to bend them up into proper shape and one will be nested within the other where parallel strips are employed, as in Fig. 4, although in the structure shown in Fig. 10, the fabric or cover material B^2 itself, is not protected by the internal metal strip, but is adapted to directly co-operate with the clamping member and this structure is, perhaps, all that would be required for ordinary purposes, inasmuch as the only wear on the fabric takes place when the cover member is slipped longitudinally into place on the clamping member and, therefore, it only occurs when a new sheet is to be added or removed from the binder.

In connection with the enclosing of the dove tail member with the fabric or cover material, it is found that this structure lends itself conveniently to the formation of a binder when the position of the parts are reversed, as shown, for example, in Fig. 11, where the sheet metal member O which is enclosed by the cover fabric or material B^2

constitutes in effect the clamping member, and the member P, which in cross section resembles the clamping member H, constitutes the cover member for enclosing the ends of the impaling thongs.

In operation, it will be understood that when the sheets have been placed in position, the clamping member applied, and the thongs bent down, the cover member is slipped into place by a longitudinal movement and is, therefore, held firmly throughout its length, and at the same time the impaling pins are prevented from withdrawing and the binder becomes a solid book-like structure. In order, however, to insure the retention of the parts in this position, it is preferred to provide a catch or locking device which will prevent further or reverse relative longitudinal movement of the clamping member and cover member. This locking device or catch may conveniently take the form of a spring supported stud R, Fig. 6, adapted to enter an opening r, the stud R, of course, being secured to one member and the opening being formed in the other member. As shown in this Fig. 6, the stud is mounted on a spring S secured to the clamping member at one end, and the stud is adapted to project into the opening r from which it may be released by being pushed inwardly with the finger or a pencil or other implement and so held until the two parts have been moved longitudinally with relation to each other sufficiently to prevent the re-entry of the stud into the opening. When the parts are being assembled, the stud will enter the opening when the parts have reached their proper relative positions.

Obviously, various types of retaining devices may be employed, and in Fig. 9 a modified form is shown. In this form of the catch or retaining device, the spring T which is mounted on the clamping member H is provided with an opening for the reception of a projection T′ on the cover member, and the spring is adapted to be released through the medium of a button T^2 which is yieldingly mounted on the cover member itself, whereby, when the button T^2 is pressed inwardly, the catch is released and the button T^2 will move away in either direction, in conjunction with the cover member, instead of remaining with the clamping member, as in the structure shown in Fig. 6.

What is claimed is:

1. In a loose-leaf binder, the combination with a rear clamping member and pliant leaf impaling thongs held thereby, of a front clamping member having apertures for said impaling thongs, the material of the clamping member forming the edges of said openings around which the thongs are bent being rounded and extended inwardly to form leaf-engaging projections.

2. In a loose-leaf binder, the combination with a rear clamping member and pliant leaf impaling thongs held thereby, of a front clamping member having apertures for said impaling thongs formed by cutting and bending sections of the material of the clamping member rearwardly into position to enter the openings in the leaves through which the thongs pass.

3. In a loose-leaf binder, the combination with a rear clamping member having a longitudinal opening for a back cover sheet, means for clamping said sheet adjustably in said opening and pliant thongs held by said clamping member, of a front clamping member, a back cover sheet adjustably held in the back clamping member and having its front edge secured by said thongs to cover and protect the back edges of the sheets held between the clamping member.

4. In a loose-leaf binder, the combination with a rear clamping member, a front clamping member, and impaling thongs for connecting said members and impaling and clamping sheets between the same, of a flat back cover sheet removably and adjustably connected with said rear clamping member and having its front edge removably secured by the impaling thongs to cover the rear edges of the sheets clamped thereby, whereby said back cover sheet may be removed for the application of the title, etc., of the bound sheets and means for maintaining the back cover sheet in adjusted position.

5. In a loose-leaf binder, the combination with a front clamping member, impaling thongs and removable back cover sheet, of a rear clamping member having a longitudinal opening therethrough for the back cover sheet and a plurality of clamps for holding said sheet adjustably and removably in said opening and means for removably securing the front edge of the back cover between the front clamping member and the contents of the binder.

6. In a loose leaf binder, the combination with a front clamping member having back cover sheet engaging projections on the inner side, impaling thongs and a back cover sheet underlying the front clamping member, of a book clamping member having a longitudinal opening therein for the back cover sheet, and a plurality of yielding clamping members co-operating with the back cover sheet to retain the same in adjusted position in said opening.

7. In a loose leaf binder, the combination with the front, and rear covers, a rear clamping member and impaling thongs carried thereby, of a front clamping member having apertures for the reception of said impaling thongs, the material of the clamping member forming the edge of said openings around which the throngs are bent being rounded and extended inwardly to form leaf engag-

ing projections, and a cover member carried by the front cover for co-operation with said last mentioned clamping member, said clamping member and cover member both embodying long sheet metal strips of dove tail formation in cross section and adapted to fit one over the other in reversed relation, to thereby provide a space between for the impaling thongs.

8. In a loose-leaf binder, the combination with the front and rear covers, a rear clamping member and pliant impaling thongs carried thereby, of a front clamping member having apertures for the reception of the impaling thongs, the material of the clamping member forming the edge of said openings around which the thongs are bent being rounded and extending inwardly to form leaf engaging projections, a cover member carried by the front cover for said front clamping member, both of said last mentioned members being formed of long sheet metal strips with side flanges and of dove tail formation in cross section to slide one over the other and form a space therebetween for the reception of the impaling thongs, and releasable means for retaining said last mentioned members in predetermined position with relation to each other.

9. In a loose-leaf binder, the combination with a rear clamping member, impaling thongs carried thereby, a rear cover board, fabric cover material enclosing the rear clamping member and forming a hinge connection with the rear cover board, of a front clamping member having apertures therein for the passage of the impaling thongs and edge flanges to form a dove tail structure in cross section, the material of the clamping member forming the edge of said openings around which the thongs are bent being rounded and extended inwardly to form leaf engaging projections, and a fabric covered front cover member of dove tail formation in cross section to enclose said front clamping member, a front cover board, and a fabric hinge connection between said cover board and cover member, whereby the cover board and clamping members are united by fabric hinge connections in the form of a book.

10. In a loose-leaf binder, the combination of a rear clamping member, a front clamping member, and pliant leaf impaling thongs passing through both of said members, each of said members having apertures therein for the impaling thongs and the material forming the edges of said openings in one of said members around which the thongs are bent being rounded and extended inwardly to form leaf engaging projections.

11. In a loose leaf binder, the combination of a rear clamping member having apertures therein, pliant leaf impaling thongs extending through said apertures, and a front clamping member, the material of the rear clamping member forming the edges of said openings around which the thongs are bent being rounded and extended inwardly to form leaf engaging projections.

CLINTON B. ALEXANDER.