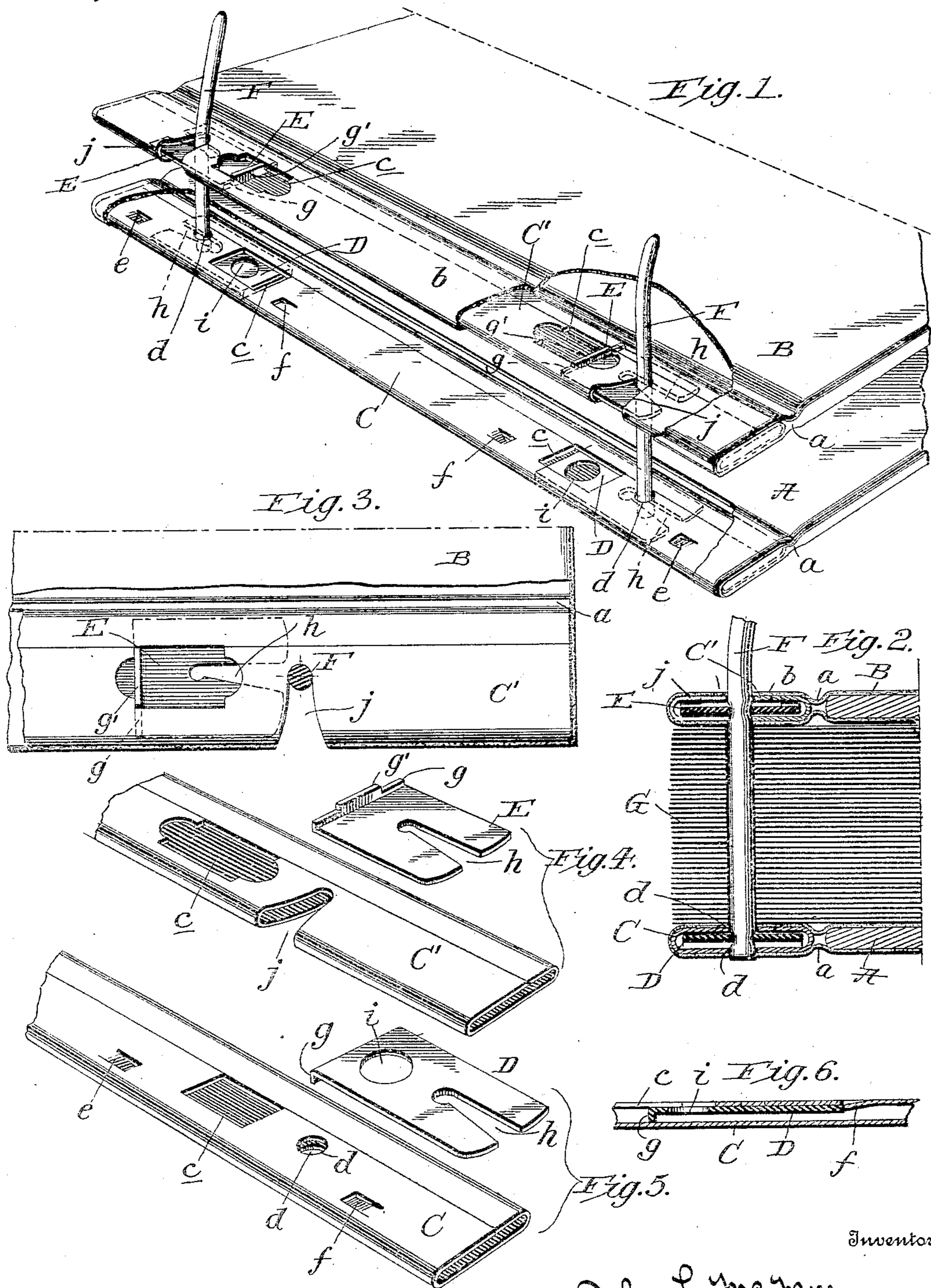


J. L. McMILLAN.
LOOSE LEAF BINDER.
APPLICATION FILED DEC. 4, 1907.

930,783.

Patented Aug. 10, 1909.



Witnesses
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JOHN L. McMILLAN, OF SYRACUSE, NEW YORK.

LOOSE-LEAF BINDER.

No. 930,783.

Specification of Letters Patent.

Patented Aug. 10, 1909.

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To all whom it may concern:

Be it known that I, JOHN L. McMILLAN, a citizen of the United States, residing at Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Loose-Leaf Binders, of which the following is a specification.

This invention pertains to "loose leaf binders," and is designed more particularly for the temporary binding of invoices, letters, bills, and the like, though applicable for the binding of loose sheets of all kinds.

The invention consists primarily in the employment of cover-boards having clamping or gripping devices, and flexible impaling posts or members designed to connect the cover-boards, and to pass through and hold in place the interposed loose leaves or papers. The flexible impaling members are clamped firmly at one end to one of the cover-boards, the connection therewith being a relatively permanent one designed to be disturbed only in case it becomes necessary to supply a new impaling member, while the clamps of the other cover-board are designed to grip and to release the impaling members as often as necessary to insert or remove sheets or papers.

In mercantile houses, business offices, and other establishments having large numbers of loose leaves, invoices, records, and the like, often of uniform size and character, it is very desirable to provide a temporary binder to hold and retain in convenient shape, and in proper order or sequence, such sheets or papers. In many instances the use of the binder is only temporary, while in others it is desirable that it be permanent. Owing to the considerable number used, and to the widely varying number of papers which it is desirable under different circumstances to place within a single binder, as, for instance, in connection with different classes of goods, or different departments of a business, a wide range of capacity and relative cheapness of construction are important considerations. The present invention has these objects primarily in view.

A convenient type of temporary binder is that in which one of the two cover-boards is provided with posts or stems upon which the loose sheets are threaded or impaled, being first perforated at points corresponding with the location of the posts or stems of the binder. As hitherto constructed, however, such binders have been open to the objection that the posts are rigid, and until the binder

is completely filled, protrude beyond the removable cover-board, and being rigid, are more or less in the way, and are liable to deface desks or other furniture upon which the binder is used or placed. Many of such "post" binders have ratchet devices which permit the adjustment of the removable cover-board only by certain set distances or increments, thus at times leaving the bound sheets in a relatively loose condition, and at other times binding them quite firmly, whereas it is, of course, desirable that the papers be always held in compact form without undue strain or pressure upon the fastening devices. I attain these objects by the employment of flexible impaling members, which, though normally protruding beyond the removable cover-board, yield readily, and lie flat against the cover-board when the binder is laid upon a desk or other surface, and which, when the binder is completely filled, may be cut off flush with the surface of the cover-board so that the binder presents substantially the appearance of an ordinary binder.

The invention will be readily understood upon referring to the accompanying drawings, in which:

Figure 1 is a perspective view of the binder with portions broken away better to show the construction and arrangement of the parts; Fig. 2, a cross section through the binding boards and one pair of clamping devices; Fig. 3, a face view of one of the outer clamps of the removable cover-board; Fig. 4, a perspective view of said clamp with the parts separated; Fig. 5, a similar view of one of the second or inner clamps; and Fig. 6, a longitudinal sectional view through the same.

In these drawings A and B indicate the cover-boards each having a flexible portion or hinge *a* extending from end to end a short distance inward from its rear edge. The narrow strip or clamping portion *b* of each cover-board, extending from the hinge *a* to the rear edge of each cover-board, consists of, or contains, a flat tubular shell or casing C, designed at once to produce a strong clamping member and to serve as a container for clamps D and E, which are conveniently stamped out of sheet metal, and are of the form best shown in the perspective views, Figs. 4 and 5.

The particular construction of the hinges *a*, or the manner of uniting the shells or casings

C with the cover-boards A B is unimportant. A convenient construction is that shown in the drawings, and best seen in Figs. 1 and 2, where the cloth, leather, or other flexible material with which the cover-boards are faced, is carried about and cemented to the shells or casings, and about the cover-boards themselves, a crease or indentation being made between the shell or casing and the cover-board, as seen in Figs. 1 and 2, to facilitate the hinging action.

The shells or casings C are conveniently formed of sheet metal cut and bent to the shape best indicated in Figs. 4 and 5, suitable portions being cut or removed from the metal prior to bending into tubular form to produce the openings indicated in the drawings.

Referring first to the shell or casing C of the cover-board A, it is provided, as seen in Fig. 5, in its inner face or fold, with an elongated opening *c*, a smaller and preferably circular opening *d*, and with two inturned tongues *e* and *f*, which serve to limit the longitudinal play or movement of the clamp-plate D which is introduced into the shell or casing prior to the latter being finally closed or folded into shape. A second opening *d* is advisably made in the outer face of the shell or casing C in line with the opening *d* in the inner face, as seen in Fig. 2.

The clamp-plate D consists of a flat plate preferably of sheet metal having one end bent over to form a flange or lip *g*, and having at the opposite end a tapering or V-shaped slot or opening *h*. Near the end bearing the lip or flange *g* is an opening *i*, designed to receive a stem or implement by which to move the clamp longitudinally within its shell or casing.

The clamp-plate D is located within the shell C beneath the opening *c*, and between the inturned spurs *e* and *f*, which serve to limit its longitudinal movement within the shell, as will be readily understood upon referring to Figs. 1 and 6. The tapering slot or opening *h* is in line with the holes or openings *d* of the shell or casing C, which are designed to receive the inserted end of a flexible binding post F, which is conveniently made of leather, though other materials as rubber, braided cord, or the like, may be employed.

Preparatory to inserting the binding post or member F in the openings *d*, the clamping slide E is retracted so that its flanged end approaches, or bears against, the stop-spur *e*, thereby bringing the wide end of the slot *h* opposite, or a short distance from, said openings *d*. The binding post of member F being passed through the holes *d*, the clamping slide E is moved longitudinally, thereby causing the walls or edges of the slot *h* to pass on opposite sides of the stem, and by reason of the tapering form of the slot, to gradually wedge upon or grip the post or member F, as indicated in Fig. 2.

It will be observed upon referring to Figs. 1 and 5 that one wall of the slot *h* is parallel with the edges of the slide or clamp E, while the other wall or edge of the slot is at an angle thereto. The purpose of this construction is to cause the post or binding member F to be not only wedged within the slot, but also to be crowded by the inclined edge of the slot against one wall or edge of each of the holes or openings *d*, so that the post or impaling member shall be clamped within the plate, and between the plate and the edges of the openings *d* in the shell or casing. This gives a very firm hold to the impaling post or member F, and insures its retention even under rough usage or handling of the binder.

It is not essential that the clamping plate be provided with the lip or flange *g*, but is deemed expedient to thus form it, since the flange imparts greater stiffness to the plate, and also renders unnecessary the too close folding or flattening of the shell or casing C, which might tend to destroy the integrity of the metal in the folds, and likewise tend to the more ready bending or buckling of the shell or casing C.

The clamps E of the cover-board B are substantially the same as those of the cover-board A; that is to say, they are formed of thin plates, preferably of sheet metal, having a flange or lip *g* and tapering slot *h*, but the flange *g* is provided with a raised central portion *g'*, and the opening *i* is omitted.

The shell or casing C' of the cover-board B is similar to the shell C of cover-board A, but its elongated opening *c* is made in the outer instead of the inner face, and instead of the holes or perforations *d*, tapering notches or openings *j* extend inward from the rear edge of the shell or casing, as shown in Figs. 1, 3 and 4, thus permitting the cover-board B to be applied laterally, or edgewise, to the impaling posts or members F instead of being strung upon or passed over the ends of said members. This greatly facilitates application and removal of the cover-board.

The posts or impaling members F having been duly secured to the cover-board A in the manner described, the sheets or leaves to be bound are perforated in the usual way, the perforations being spaced to correspond to the spacing of the impaling members, and said sheets or leaves G are then threaded upon, or passed over, the ends of the impaling members, and pressed down upon the cover-board A. The cover-board B is then applied laterally, or edgewise, as above pointed out, the impaling posts or members F entering the notches *j* and being pressed firmly to the bottoms or ends thereof, as in Figs. 1 and 3. This done the clamps or plates E are moved longitudinally by pressure applied to the upturned lips *g'* thereof, either by hand or by a suitable implement, thereby causing the plates E to wedge upon

and grip the impaling post or member, and to press the same firmly against the end walls of the notches *j*. In this way a very firm hold is secured upon the impaling posts or members, and the cover-board B is thereby held securely in place. When it becomes necessary to insert or to remove sheets or leaves, the clamping plates E are moved backward, thereby unclamping the impaling posts or members, and permitting the ready removal of the cover-board B, and the insertion or removal of sheets or leaves as required. Should it happen at any time that the number of leaves increase to such an extent that the impaling posts or members are of inadequate length to receive them, or should an impaling post or member become broken or weakened, a new one may be inserted upon first retracting the slides D E of such member, and passing a new one through the openings *d* of the shell or casing C, thereafter restoring the clamp D to its gripping position, and finally adjusting the clamp E to bind the boards together. When the binder is completely filled, the leaves may be removed and put in any suitable holder or receptacle, or if it be desired to retain them in bound form, the protruding ends of the binding posts or members F may be cut off flush with the outer face of the cover-board B, and the bound sheets filed away in any usual or convenient manner.

The flexible impaling posts or members not only avoid injury to furniture and inconvenience to the user, but they give a desirable flexibility to the binder as a whole, facilitating the turning of the leaves and inspection of the pages, and since the clamps are free to engage the impaling posts or members at any point in the length of the latter, it will be seen that the boards may always be made to press closely upon the leaves or sheets G whether their number be large or small.

The upturned flange or lip *g'* of the clamp or slide E serves not only as a means by which to move the slide to and from clamping position, but also acts as a stop to limit its movements by coming into contact with the ends, or end shoulders, of the opening *c*.

The impaling members F are here referred to as "posts" for the reason that this term is in common use as designating any stem or self-sustaining member of this general character over or upon which perforated leaves are threaded, and because, though flexible, the impaling members here described are, when of moderate or even considerable length, self-sustaining, and will stand while the leaves are being threaded or strung upon them. This degree of stability, or capacity of standing upright, is desirable, and the leather cord or belting described possesses this property in a sufficient degree.

It is apparent from the nature of materials stated,—leather, rubber, or the like,—that the impaling posts or members are slightly compressible, thus permitting the clamping devices to embed themselves sufficiently in the material of the posts to secure a firm hold and guard against slipping, yet without danger of cutting or weakening the impaling members.

I am aware that cords, both of spun fiber and of leather, covered spiral springs, wires, and the like, have been used as impaling members for temporary and loose leaf binders. I am also aware that clamping or gripping devices have been provided to secure a cover-board to or upon impaling members of different kinds. It will be observed, however, that while flexible and measurably soft, the impaling members or posts of my device,—preferably made of round leather belting,—have sufficient rigidity to stand alone, and hence the leaves or sheets may be easily and speedily threaded thereon, singly or in groups. Leather, rubber, braided cord (sash cord or the like) all possess adequate stability for the purpose, yet are sufficiently compressible to permit the wedging walls of the clamping slide to embed themselves therein without destroying the integrity of the material. In fact, unless the edges of the clamping slide be quite deeply embedded in the sides of the impaling member or post and so maintained for a long time, the indentations produced will gradually disappear and the impaling member resume its original form. These are desirable characteristics of the device, and contribute materially to the convenience and efficiency thereof.

It is particularly to be noted that although the notches *j*, by which the edgewise application and removal of the cover-board B is rendered possible, are entirely unobstructed when the clamping slides are retracted, one arm or jaw of each slide completely bridges and effectually closes its opening when the slide is moved to clamping position, hence it is impossible for the cover to slip off laterally when the slide is even partially moved in the clamping direction. It is also particularly to be observed that each impaling member or post of my structure is held by an individual clamping device, and that such device requires no bending, knotting or tying together of said members or posts, nor any abrupt bending or reeving through slots, the clamp merely pinching or compressing the post between two walls or edges of the clamp or clamp and plate. Hence it is possible instantly to detach, remove and replace the individual impaling members or posts, and to avoid any projection, loop, knot, or the like protruding beyond the outer face of the cover-board at the normally attached end of the post.

The device is simple and cheap in construction, and very efficient in use. The materials employed are variable at will within the range of known materials usual or suitable to such purposes. In practice I have found it convenient to make the shells C C' and the clamp-plates D E of sheet iron, and the impaling posts are preferably formed of round leather belting, which being a commercial article readily obtainable in most places, and of convenient form and size, is found peculiarly adapted to the purpose.

Having thus described my invention, what I claim is:

15 1. A binder comprising two cover-boards; impaling posts or members each having one end seated in an opening in one of said cover-boards; clamps carried by said cover-board and adapted to secure the inserted ends of the binding posts or members therein, but to permit their ready disengagement therefrom; and clamping or gripping devices carried by the other of said cover-boards and adapted to grip or bind the impaling members at any desired point in their length, said impaling members being of material which is flexible and compressible, but of sufficient stability to maintain an upright position during the threading or impaling of sheets or leaves thereon.

2. In a binder, the combination of two cover-boards; impaling members secured to one of said boards and formed of leather; and clamping devices carried by the other of said boards, and movable relatively thereto and to the impaling members, whereby they are adapted to embed themselves in and engage the impaling members at any point in the length of the latter, or to release the same, as desired.

3. In a loose leaf binder, the combination of a cover-board; flexible and compressible impaling posts having their ends seated in one of said cover-boards; clamping or gripping devices carried by said cover-board and serving to secure one end of each impaling member in said cover-board, and to retain the same firmly in place until it becomes necessary to substitute another impaling member; a second cover-board provided with openings to receive the impaling members; and clamps carried by said second cover-board, and adapted to grip or bind the impaling members, substantially as set forth.

4. In combination with a cover-board A provided with a shell or casing C having holes or sockets *d*; clamping slides mounted in said shell or casing, and having each a tapering opening *h*; impaling members F adapted to

enter the sockets *d* and to be secured therein by the clamps D; a second cover-board B provided with a shell or casing C' having notches *j*; and clamping plates E mounted in said shell or casing, and having each a tapering opening *h*, said clamping plates serving to grip and compress the impaling members F and thereby to secure the second cover-board B at any desired adjustment upon the impaling members.

5. In combination with a cover-board having a shell or casing C, provided with openings *d*; impaling members F seated in said sockets; and clamping slides D having tapering slots or openings *h*, and mounted within the shell or casing, one wall of the slot *h* being parallel with, and the other at an angle to, the length of the shell or casing.

6. In a loose leaf binder, the combination with a cover-board having impaling members, of a second cover-board B provided with a shell or casing C' having seats or notches *j* opening to the outer edge of the cover-board to receive, laterally, the impaling members; and clamping slides E having two jaws and the intermediate opening *h*, whereby the slides are adapted to straddle and clamp the impaling members within the open seats or notches *j*, and to completely bridge and close the open ends of said seats or notches.

7. In a binder, the combination of cover-boards each provided with a tubular shell or casing having openings from face to face for the passage through them of impaling members; compressible impaling members, each having one end seated in the recesses of one cover-board; and sliding clamping plates mounted in the tubular shells or casings, and adapted to grip or bind the impaling members therein at any desired points in the length of said impaling members.

8. In a binder, the combination of a cover-board provided with a tubular shell or casing having an opening in its face, a seat or opening to receive an impaling post or member, and inturned spurs; and a clamping plate mounted within said shell or casing, and movable between the spurs to clamp or bind an impaling member inserted within the socket or opening.

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

JOHN L. McMILLAN.

Witnesses:

E. MORAN,
L. M. DE CLERCQ.