J. L. McMILLAN & C. H. JOSLYN.

LOOSE LEAF BINDER.

APPLICATION FILED MAY 25, 1908.

943,156.

Patented Dec. 14, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

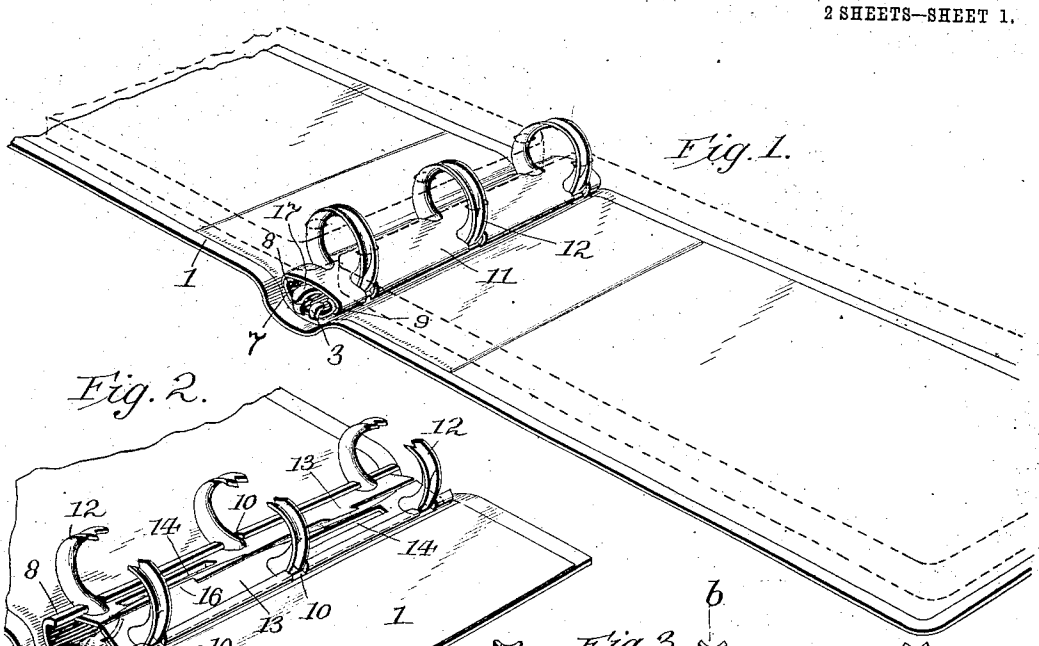


Fig. 2.

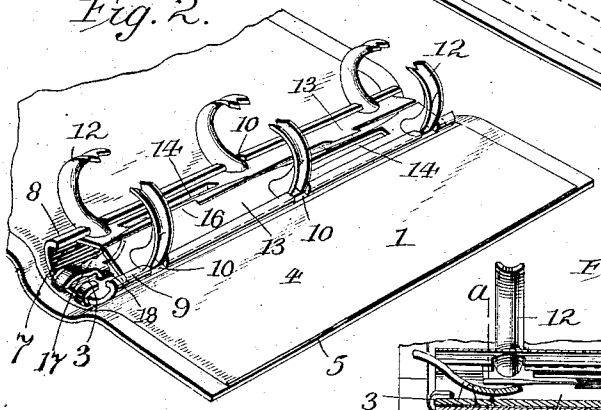


Fig. 3.

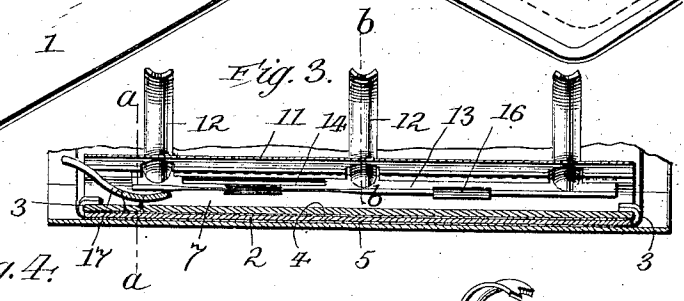


Fig. 4.

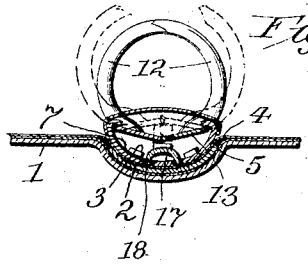


Fig. 5

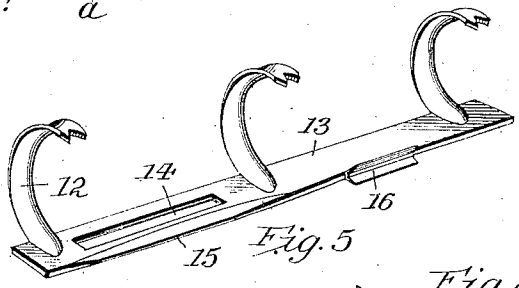


Fig. 6.

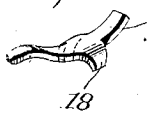


Fig. 7.

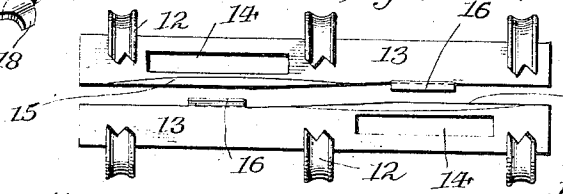


Fig. 8.

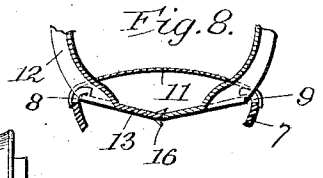
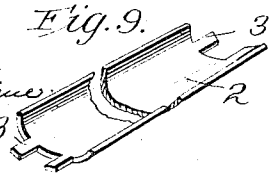


Fig. 9.



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2 SHEETS—SHEET 2.

Fig. 10.

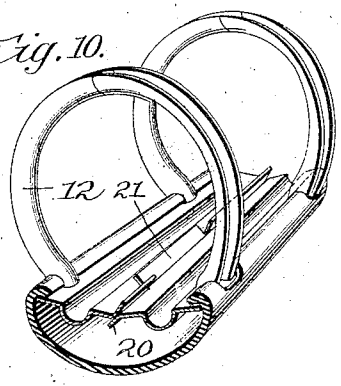


Fig. 11.

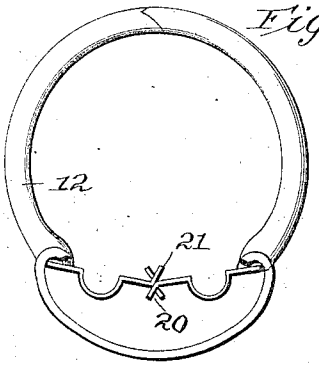


Fig. 12.

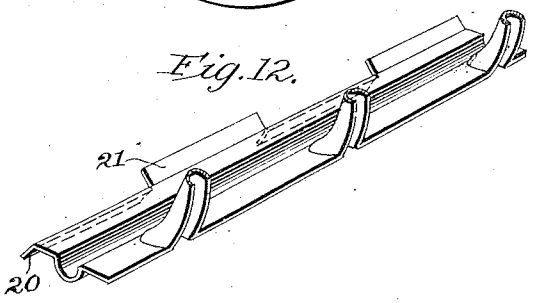
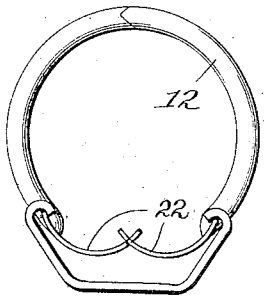


Fig. 13.



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UNITED STATES PATENT OFFICE.

JOHN L. McMILLAN AND CHARLES H. JOSLYN, OF SYRACUSE, NEW YORK, ASSIGNORS TO McMILLAN BOOK COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

LOOSE-LEAF BINDER.

943,156. Specification of Letters Patent. Patented Dec. 14, 1909.

Application filed May 25, 1908. Serial No. 434,843.

To all whom it may concern:

Be it known that we, JOHN L. McMILLAN and CHARLES H. JOSLYN, citizens 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.

Our present invention pertains to improvements in loose-leaf binders, the construction and advantages of which will be hereinafter set forth, reference being had to the annexed drawings, wherein:

Figure 1 is a perspective view of a binder in the form of a book, the leaves being shown in dotted lines and a portion of one of the covers being broken away; Fig. 2 is a similar view, showing the fingers or half-rings thrown open, with the cover and stop plate removed; Fig. 3 a longitudinal sectional view; Fig. 4 a transverse sectional view, taken on the line *a*—*a* of Fig. 3; Fig. 5 a perspective view of one of the finger-carrying plates; Fig. 6 a perspective view of the lever or finger-piece employed to move the ring-carrying plates from the closed to the open position; Fig. 7 a top plan view of the plates, the parts being shown as slightly separated; Fig. 8 a transverse sectional view, taken on the line *b*—*b* of Fig. 3; Fig. 9 a perspective view of the member employed to hold the trough-shaped member, which forms the support or pivotal bearing for the locking plates, in position; Fig. 10 a perspective view of a modified form of the structure; Fig. 11 an end view thereof; Fig. 12 a detail perspective view of one of the rocking finger-carrying plates employed with said modified structures; and Fig. 13 an end view, showing a still further modification.

The main object of the present invention is to provide a simple and efficient loose-leaf binder, in which the fingers or half-rings are carried by plates which have a rocking motion with reference to their supporting member, the plates, or the connections between them, being yielding, whereby a rigid back or supporting member may be employed and the spring action of the plates or connections is depended upon to hold the fingers in their open or closed position.

A further object of the invention is to provide a finger of peculiar cross-section, which while light in structure is strong and affords a wide surface, whereby the tendency of the sheets to tear, as is the case with narrow rings, is avoided.

With these and other objects in view, a description of the preferred construction, or that illustrated in Figs. 1 to 9 inclusive, will first be given.

In said figures the invention is shown as applied to a pocket memorandum book though, of course, it is also applicable to books and binders of various forms.

The covers of the book are formed integrally with the back, as shown in Fig. 1, the continuous sheet 1 being of leather or other suitable material. A semicircular retaining plate 2, shown in detail in Fig. 9, and provided with outwardly-extending prongs 3, is mounted between sheets 4 and 5, which are secured to each other and to the back and covers. This retaining and stiffening plate may be secured to the covers in any manner, that shown being applicable for light books.

Mounted directly over the plate 2 is a trough-shaped member 7, the edges of which (designated by 8 and 9) are curved or turned inwardly and notched, as at 10, at intervals throughout their length. This trough-shaped supporting member or barrel is held in position by the prongs 3 of the retaining and stiffening plate, which prongs are turned upwardly and inwardly over said barrel, as best shown in Figs. 2 and 3. The trough-shaped supporting member is formed of a stiff, non-yielding or non-springing metal.

A cover-plate 11, having inturned edges, is mounted upon the supporting member and holds the upper edges of the trough-shaped member against outward or lateral displacement. Said cover-plate is notched to correspond with the notches 10 formed in the supporting member, so that the fingers or half-rings 12 may pass therethrough. Said fingers are carried by plates 13, best shown in Figs. 5 and 7, each plate being provided with a slot or opening 14 at one side of the center thereof, the portion of the plate opposite said opening being thinned down and brought to a sharp edge, as at 15. The plate at the opposite end is somewhat narrower and a V-shaped projection 16 extends outwardly therefrom, each projection bearing against the thinned or sharp edge 15 of the opposite plate.

Preferably the fingers or half-rings will be formed as integral parts of the plates, being stamped out from a sheet and bent to form. As will be noted, the fingers in cross-section are substantially semicircular, with the rounded face innermost, whereby a broad bearing surface for the paper or sheets will be provided. While the rings are relatively light, the cross-sectional curvature thereof produces a very stiff construction. Furthermore, it is to be noted that the base or root of each half-ring or prong extends back into the body of the plate, so that a rigid and strong structure is produced. In other words, the prong may be said to be rooted in the plate.

The outermost edges of the plates are seated and have their bearings in the upper portions of the trough-shaped supporting member, below the inturned edges 8 and 9. The parts are so proportioned that the aggregate width of the plates 13 is greater than the distance between the opposite faces of the supporting member, and as a consequence when the plates are moved either up or down the thin portions 15, which may be said to constitute spring bars, yield sufficiently to permit the plates to pass the center and be carried into the upper or lower position, so that the fingers are thrown open or brought to their closed position.

During the upward and downward movement of the plates the trough-shaped supporting member remains in its normal position; in other words, it does not expand or contract as in those structures wherein the resiliency or spring of the trough-shaped member is employed to properly hold the carrying plates in their upper or lower position. Any tendency to expand, if there be any, is counteracted by the interlocked cover-plate, which likewise forms a stop to prevent the plates from swinging too far upwardly.

In order to facilitate the opening of the fingers a finger-piece or lever, shown in detail in Fig. 6 and also illustrated in position in Figs. 2, 3 and 4, is placed at one end of the barrel or supporting member, one end of the lever underlying the plates. The lever, designated by 17, is provided with downwardly-projecting prongs or feet 18, the latter passing into notches or openings formed in the trough-shaped supporting member or barrel 7. By depressing the outer end of the lever, the plates 13 will be rocked or thrown upwardly and as a consequence the half-rings or fingers 12 will be separated. To close the fingers it is only necessary to apply pressure to the outer faces thereof, as is usual in books of this character.

It is conceivable that the plates carrying the half-rings or fingers may be formed in various ways, and in Figs. 10, 11 and 12 the plates are shown as provided with depressed portions 19, substantially semicircular in form, which will afford sufficient resiliency in the plates to permit them to be moved upwardly to open or separate the fingers, or thrown downwardly in the act of closing the fingers. The edges of the plates in this form are slitted, and the alternate portions, designated by 20 and 21, are turned upwardly and downwardly, so that when the parts are assembled these sections will overlap and interlock, as shown in Fig. 10.

In Fig. 13 a still further modification is shown, wherein curved plates 22 are employed to carry the fingers or half-rings. The edges of these plates will be notched so that the fingers thereby formed will interlock.

In all the modifications it is to be noted that the trough-shaped supporting member or barrel is rigid and unyielding, and that the resiliency necessary to the opening and closing of the rings resides in the plates.

It is conceivable that in so far as the generic invention is concerned rings of a form other than those herein illustrated may be employed, and that instead of forming the rings as integral portions of the plates they may be made separately and secured thereto. The construction shown is, however, preferred for the reasons above noted.

It is conceivable that a plate with but two rings may be employed, and that a single opening to form a single spring-bar or member would then be sufficient. It is likewise conceivable that the spring arms or bars may be formed upon one plate instead of upon oppositely-disposed plates.

Having thus described our invention, what we claim is:

1. In a loose-leaf binder, the combination of oppositely-disposed plates; a plurality of fingers carried by each plate; a fixed bearing for the outer edge of each plate; and a spring member carried directly by each of the plates, serving normally to throw the plates out of alinement but permitting the same to be swung upwardly and downwardly to carry the fingers into and out of contact with each other.

2. In a loose-leaf binder, the combination of oppositely-disposed plates, the adjacent edges of which have a rocking connection; a plurality of half-rings or fingers carried by each plate; a fixed bearing for the outer edge of each plate; and a spring member formed as an integral part of one of the plates, serving normally to throw the plates out of alinement and to permit the same to be swung upwardly and downwardly to carry the fingers into and out of contact with each other.

3. In a loose-leaf binder, the combination of a rigid trough-shaped member; a pair of plates having their outer edges fulcrumed

upon said member, each of said plates being provided with a spring section; and means for holding the abutting edges of the plates in contact.

4. In a loose-leaf binder, the combination of a pair of plates, each plate having a spring section; means for holding the adjacent edges of the plates together; a fixed support or fulcrum for the outer edge of each plate; and a plurality of fingers carried by each plate.

5. In a loose-leaf binder, the combination of a non-yielding, trough-shaped member; a pair of plates having their outer edges fulcrumed upon said member, each plate having a spring section; means for holding the adjacent edges of the plates together; and a plurality of fingers carried by each of said plates.

6. In a loose-leaf binder, the combination of a non-yielding, trough-shaped member; a pair of plates having their outer edges fulcrumed upon said member, each of said plates being formed with a slot or opening therein, whereby a yielding section is formed; a bearing and connecting member carried upon the edge of each plate, said members being disposed opposite the yielding section of the opposite plate; and a plurality of fingers carried by each plate.

7. In a loose-leaf binder, the combination of a non-yielding, trough-shaped member; a pair of plates having their outer edges fulcrumed upon said member, each of said plates being formed at its inner edge with a spring bar, and with a bearing member adapted to coact with the bar of the opposite plate; and a plurality of fingers carried by each plate.

8. In a loose-leaf binder, the combination of a non-yielding, trough-shaped member; a pair of plates having their outer edges fulcrumed upon said member, each of said plates being formed at its inner edge with a spring bar, the bar being somewhat thinner than the body of the plate and provided with a beveled outer edge, each bar being likewise provided with a V-shaped projection adapted to coact with the thinned edge of the spring bar formed upon the opposite plate; and a plurality of fingers carried by each plate.

9. In combination with a finger-carrying plate for loose-leaf binders, a finger substantially semicircular in cross-section, the root of said finger being struck up from the body of the plate.

10. In combination with a finger-carrying plate for loose-leaf binders, a finger substantially semicircular in cross-section, the root of said finger extending inwardly from the edge of the plate and merging gradually into the plate from which it is struck up.

11. A finger-plate for loose-leaf binders, comprising a plate, and a plurality of fingers integral therewith, said fingers being curved in cross-section and such curvature extending into the body of the plate, substantially as described, whereby the fingers are braced and strengthened at the base or root thereof where they join the plate.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JOHN L. McMILLAN.
CHARLES H. JOSLYN.

Witnesses:
E. F. MORAN,
J. M. DE CLERCQ.