Jan. 26, 1926. 1,571,173

G. A. PARSONS

LOOSE LEAF BINDER

Filed Jan. 19, 1925 2 Sheets-Sheet 1

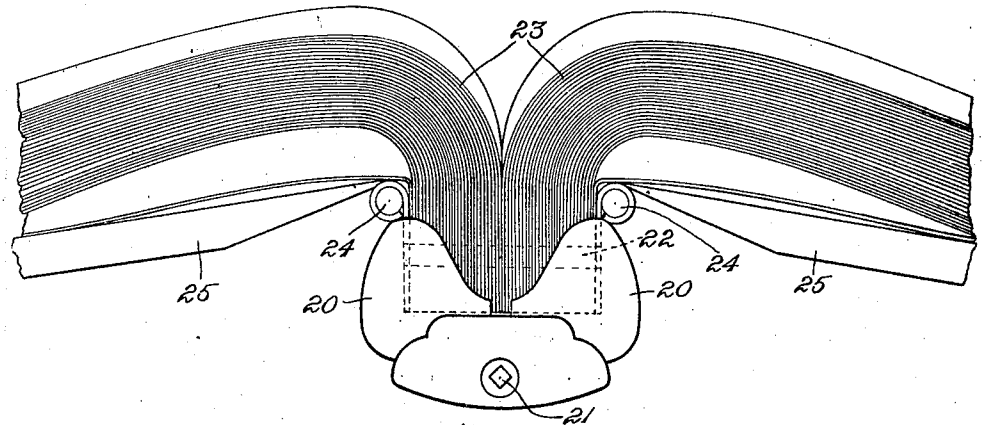


Fig. 1.

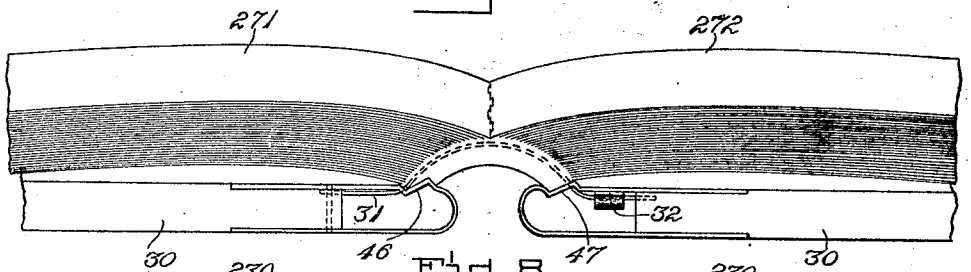


Fig. 8.

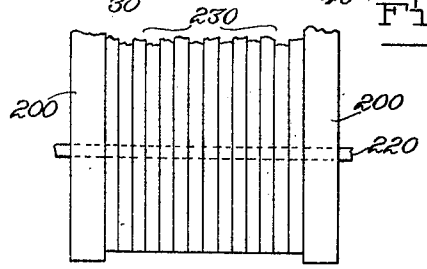


Fig. 2.

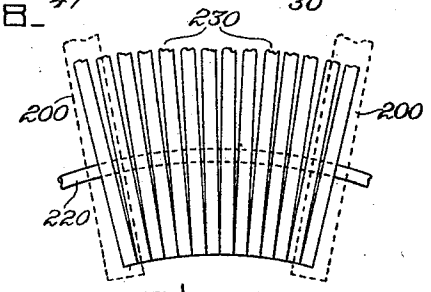


Fig. 3.

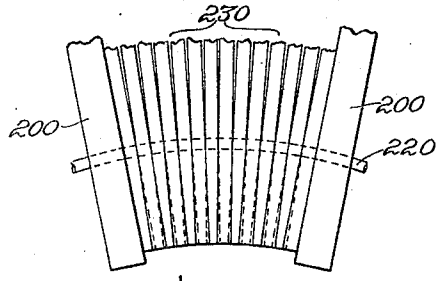


Fig. 4.

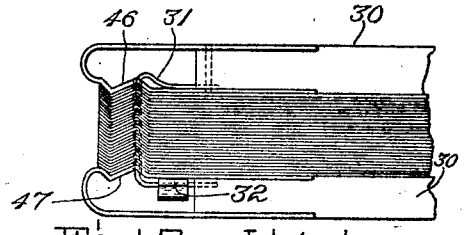


Fig. 9.

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LOOSE LEAF BINDER

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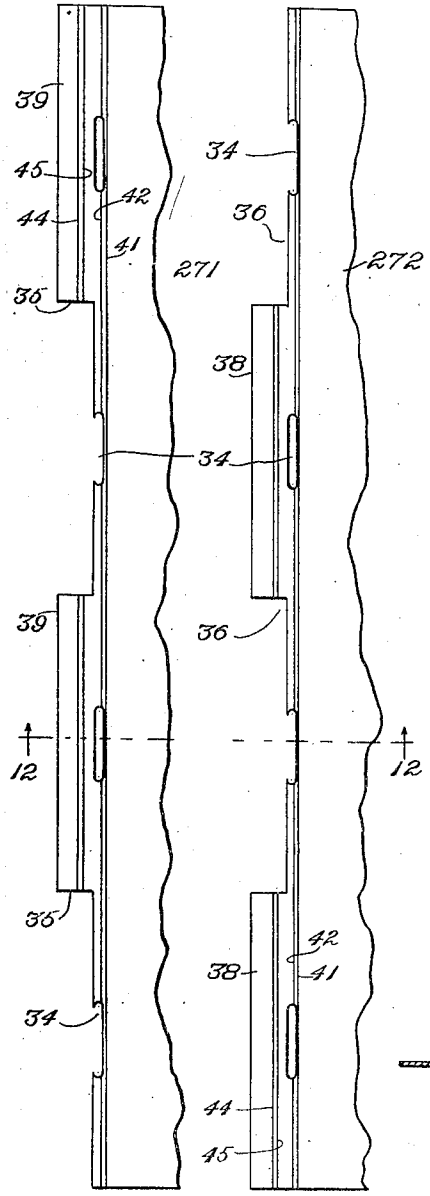


Fig. 10. Fig. 11.

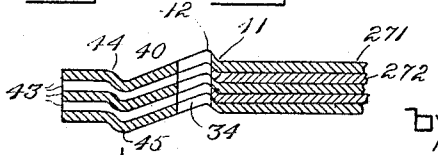


Fig. 12.

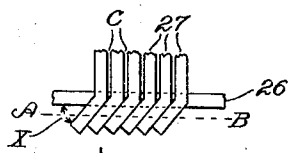


Fig. 5.

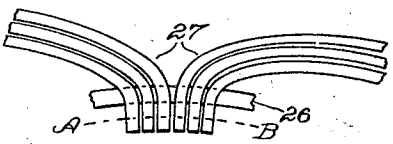


Fig. 6.

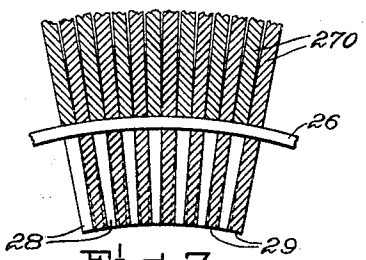


Fig. 7.

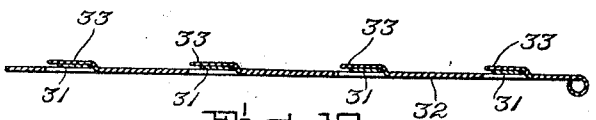


Fig. 13.

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UNITED STATES PATENT OFFICE.

GEORGE AYER PARSONS, OF NEW YORK, N. Y., ASSIGNOR TO CHARLES E. BEDAUX COMPANY, INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

LOOSE-LEAF BINDER.

Application filed January 19, 1925. Serial No. 3,327.

To all whom it may concern:

Be it known that I, GEORGE AYER PARSONS, a citizen of the United States, residing at New York, county of New York, State of New York, have invented a certain new and useful Improvement in Loose-Leaf Binders, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates especially, although not exclusively to loose-leaf binders of the relatively heavy and substantial type such as are employed for bookkeeping and similar purposes, and has for its general object to provide a binder of standard type which may be opened relatively flat, as in the case of an ordinary bound book, thereby facilitating the use thereof and avoiding the waste of paper incidental to the fact that in such binders as heretofore usually constructed the inner ends of the leaves are so curved and are held so closely together as to make a considerable portion thereof unsuitable for use.

The more particular objects of the invention, together with means whereby the latter may be carried into effect, will best be understood from the following description of one form or embodiment thereof illustrated in the accompanying drawings. It will be understood, however, that the particular construction described and shown has been chosen for illustrative purposes merely, and that the invention, as defined by the claims hereunto appended, may be otherwise embodied without departing from its spirit and scope.

In said drawings:

Fig. 1 is an end view, partly broken away, of a standard type of loose-leaf binder, showing the same in opened position.

Figs. 2, 3 and 4 are diagrammatic views illustrating the limitations of a binder of the type shown in Fig. 1.

Figs. 5, 6 and 7 are similar views illustrating the manner in which these limitations are removed in accordance with the present invention.

Figs. 8 and 9 are end views, partly broken away, of a binder constructed in accordance with the principles illustrated in Figs. 5 to 7, showing the same in open and closed position, respectively.

Figs. 10 and 11 are detail views of the inner ends of two adjacent leaves of the binder shown in Figs. 8 and 9.

Fig. 12 is an enlarged sectional view of several superposed leaves of the character shown in Figs. 10 and 11, the thickness of the leaves being greatly exaggerated for convenience of illustration.

Fig. 13 is a detail sectional view of the means for locking the binding strips.

Referring to Fig. 1, there is shown therein in somewhat conventionalized form a binder of a type now quite commonly used, said binder comprising a pair of oppositely disposed clamping members 20 which are movable toward and from one another in a rectilinear direction by mechanism (not shown) operated by a key or wrench applied to a socket 21, said clamping members having extending between them a suitable number of binding posts 22 usually telescopic which pass through suitably arranged perforations in the leaves 23 adjacent the inner ends or edges of the latter. Hinged to the clamping members 20, as at 24, are the covers proper 25 which, in conjunction with said clamping members, constitute the backs or covers of the binder. By suitably operating the clamping members 20 by means of an implement applied to the socket 21, said members may be caused to clamp the inner ends or edges of the leaves tightly together in parallel relation irrespective of the number of said leaves.

A binder such as above described cannot be opened flat after the manner of an ordinary bound book, but, on the contrary, it is necessary that the inner portions of the leaves curve from the approximately horizontal into the vertical plane, so that a considerable portion of the inner ends of the leaves is unavailable for use, resulting in a considerable waste of material and inconvenience in use. In the case of an ordinary bound book, the flat opening is permitted by the fact that when the book is opened the binding is thrown upwardly into a raised curve from which the leaves can extend in an approximately horizontal direction irrespective of the point at which the book is opened. No such upward curvature is permitted by the telescopic binding posts 22 and rectilinearly movable clamping members 20 of the usual binder. Even, however, if the clamps 20 were permitted a relative

angular movement and a flexible post substituted for the rigid post 22, upward flexure of the latter would be prevented by the extreme inner ends of the leaves 23 beyond said post, as will be clear from the diagrams, Figs. 2 to 4. In these diagrams, the clamping members or backs are conventionally represented at 200, the leaves of a greatly exaggerated thickness at 230, and a flexible binding post or strip at 220. Fig. 2 represents the position of the parts with the binder closed. In this position it must be assumed that the backs 200 are so adjusted with respect to, and so secured in position on the binding post or strip 220, as to clamp the leaves 230 together with such tightness as may reasonably be permitted by the compressibility of the leaves. If now an attempt be made to flex the post or strip 220 by a relative angular movement of the backs 200, one of two things must occur, namely:— (1) the leaves 230 must separate from one another at the post or strip 220, as indicated in Fig. 3, or (2) the combined thickness of the extreme inner ends of the leaves must be reduced, as indicated in Fig. 4. Neither of these operations is possible because: (1) the leaves 230 cannot separate at the post or strip, being firmly clamped together by the backs 200, and since (2) said leaves, being initially clamped together with the tightness reasonably permitted by their compressibility, a further reduction of their combined thickness at the inner ends is impracticable.

In accordance with the present invention, the foregoing difficulties are overcome and a throw-up of the binding post or strip and consequent flat opening of the binder are obtained by permitting a reduction of the combined thickness of the inner ends of the superposed leaves in accordance with the principles illustrated in Figs. 5 to 7.

In Figs. 5 and 6, 26 denotes a flexible binding post or strip and 27 the leaves which at their inner ends are bent at an obtuse angle X to the outer or body portions thereof, the angle being located substantially at the post or strip. Fig. 5 indicates the position of the parts when the binder is closed. It will be observed that at this time the combined thickness of the rear ends of the leaves, measured along the line A—B parallel to the post or strip, is greater than the sum of the thicknesses of the several leaves, measured in a direction normal to their surfaces. A certain amount of looseness, indicated at *c*, is therefore provided between the body portions of the leaves, even when the latter are clamped as tightly together as possible at their inner ends. When the binder is opened, as illustrated in Fig. 6, the post or strip 26 is curved upwardly, and the inner ends of the leaves may be brought into positions substantially perpendicular or radial thereto, thereby taking up the excess thickness measured along the line A—B and permitting the required reduction of the effective combined thickness of the leaves at the inner side of the post or strip. As may be shown by an analysis of the figures, the proportion of reduction effected is represented by the expression: 1—sine X.

As illustrated in Fig. 7, a similar result may be accomplished by cutting away or notching the inner ends of the leaves 270 beyond the binding post or strip 26, different, and preferably alternate, leaves being notched or cut away, as shown at 28, at different points to receive the remaining portion 29 of the other or intermediate leaves. When the binder is opened, and the binding post or strip 26 is curved upwardly, as shown, the portions 29 of the inner ends of the several leaves 270 are received in the notches 28 of the adjacent leaves, thereby permitting an overlapping of the inner ends and a consequent reduction of their effective combined thickness.

While either of the constructions above described may be employed to accomplish the desired result, Figs. 8 to 13 illustrate an embodiment of the invention in which both are utilized. As shown in Figs. 8 and 9, the binder comprises a pair of substantially rigid (as distinguished from hinged) covers or backs 30 connected by a plurality of parallel, flexible binding posts or strips 31 preferably composed of spring steel. The ends of the strips 31 are secured to one of the backs or covers 30 and are loosely received at their opposite ends within suitably disposed recesses in the other. Said last named cover is provided with a locking slide 32 (see particularly Fig. 13) which is guided therein for longitudinal movement transversely to the strips and formed with raised fingers 33 to engage the latter and lock the same in adjusted position. The set of leaves comprises two forms shown at 271 and 272 in Figs. 10 and 11 respectively, the leaves 271 preferably alternating with the leaves 272 in the series. All of said leaves are formed with registering, elongated slots or perforations 34 to receive the binding strips 31. The inner ends of the leaves 271 are cut away to form notches 35, while the inner ends of the leaves 272 are similarly cut away to form notches 36, said notches being at different points in the respective leaves, the notches 35 corresponding in size, shape and position to the remaining portions 38 of the leaves 272, and the notches 36 similarly corresponding in size, shape and position to the remaining portions 39 of the leaves 271. All of said notches extend substantially to the perforations or slots 34. The inner ends of all of the leaves are folded or bent along lines adjacent the slots or perforations 34 to provide end portions 40 disposed at an obtuse

angle to the remainder or body portions of the leaves. In order to give a set to said portions, the leaves are preferably folded in opposite directions along two parallel lines 41 and 42 so as to offset the portions 40 slightly from the body portions of the leaves, said lines being relatively close together and being located respectively at opposite sides of the outer edges of the slots 34. The extreme inner ends 43 of the leaves are preferably disposed substantially parallel to the body portions thereof and are connected with the angular portions 20 by two opposite folds along parallel lines 44 and 45. As a result, two oppositely disposed projecting creases 42 and 45 are provided, giving a definite set to the angular portions 40, which are accordingly slightly offset from the remaining portions of the leaves. This form of the leaves is preferably maintained when the binder is closed by forming the inner faces of the covers 30 with complementary surfaces 46 and 47 corresponding to the form of the leaves.

In Fig. 9 the binder is shown closed, the leaves, and particularly the bent inner ends 40 thereof, being clamped tightly together in parallel relation, in accordance with the principle illustrated in Fig. 5. When the binder is opened, as shown in Fig. 8, the fixed connection of the flexible strips 31 with the substantially rigid backs 30 causes said strips to be thrown or curved upwardly, the combined thickness of the portions 40 of the leaves being reduced in accordance with the principle illustrated in Fig. 6, and the extreme rear ends 43 of said portions being moved into overlapping relationship, as illustrated in Fig. 7. By reason of the upward curvature of the binding posts or strips, the body portions of the leaves are permitted to lie substantially flat, as in a permanently bound book, and as illustrated in Fig. 8, thereby avoiding the waste of paper incidental to the curving of the leaves in binders of the type shown in Fig. 1, and greatly facilitating the use of the binder.

Having thus described my invention, I claim:

1. In a loose leaf binder, in combination, a plurality of separate leaves, a binding post or strip passing through said leaves adjacent their inner ends, and means associated with said post or strip for clamping said leaves tightly together in parallel relation, the inner ends of different leaves being cut away at different points beyond said post or strip to receive the remaining portions of other leaves when the binder is opened.

2. In a loose leaf binder, in combination, a plurality of separate leaves, a flexible binding post or strip passing through said leaves adjacent their inner ends, and means associated with said post or strip to clamp said leaves tightly together in parallel relation and to curve said post or strip when said binder is opened, the inner ends of different leaves being cut away at different points beyond said post or strip to receive the remaining portions of other leaves when the binder is opened.

3. In a loose leaf binder, in combination, a plurality of separate leaves, a binding post or strip passing through said leaves adjacent their inner ends substantially perpendicularly to the outer or body portions thereof when said binder is closed, and means associated with said post or strip for clamping said leaves tightly together in parallel relation, the inner ends of all of said leaves being bent at an obtuse angle to said outer or body portions thereof when the binder is closed, and the inner ends of different leaves being cut away at different points beyond said post or strip to receive the remaining portions of other leaves when the binder is opened.

In testimony whereof I affix my signature.

GEORGE AYER PARSONS.