Sept. 6, 1927. 1,641,397

W. S. PROUDFIT ET AL

LOOSE LEAF BINDER

Filed June 14, 1924 2 Sheets-Sheet 1

Fig. 1.

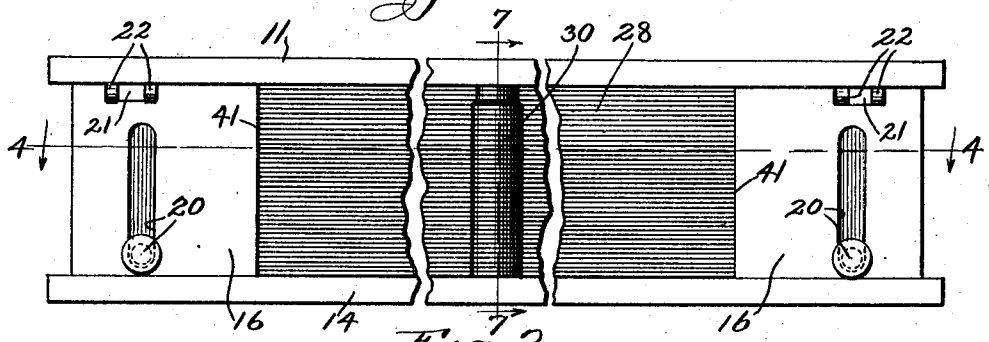
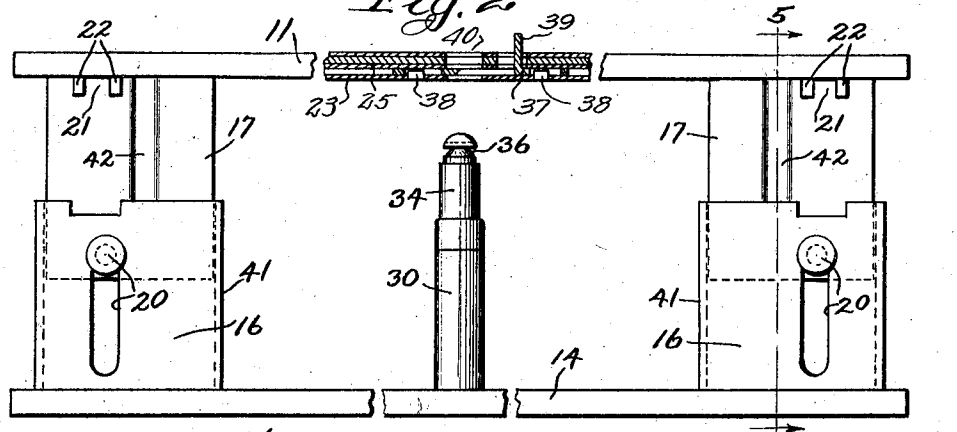


Fig. 2.



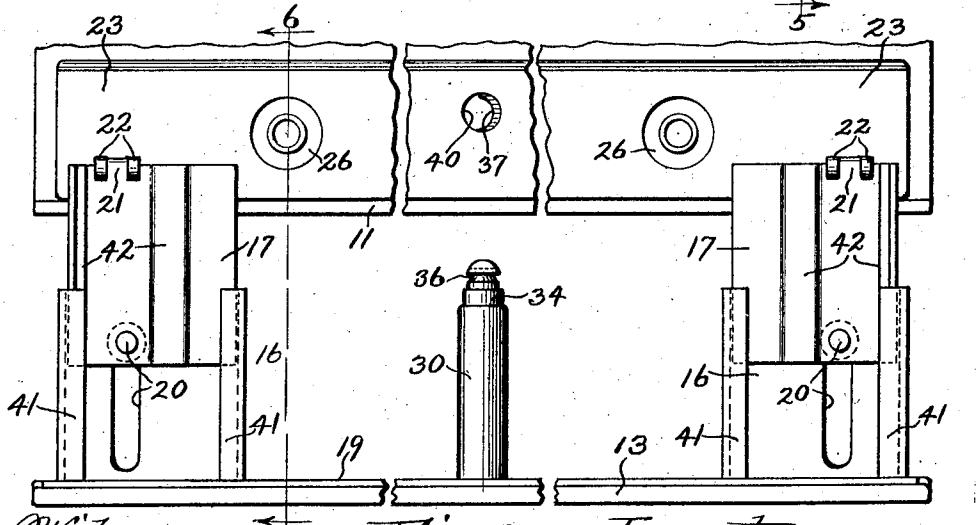


Fig. 3.

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Fig. 4.

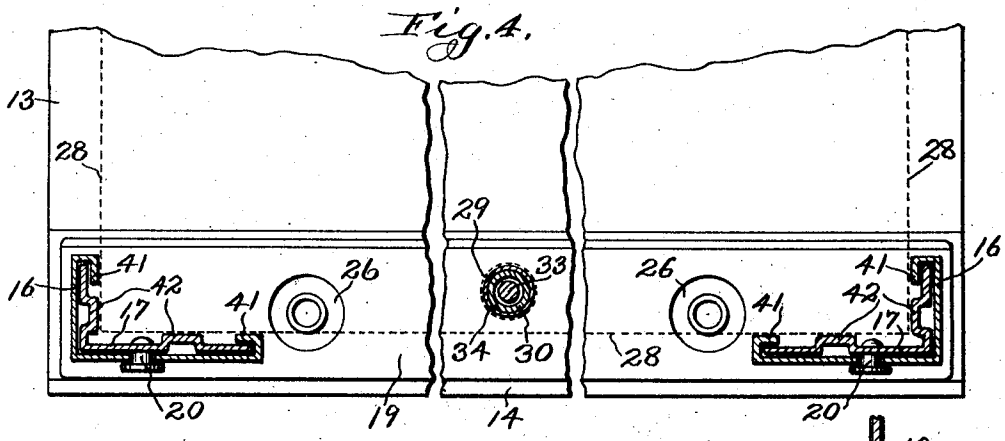


Fig. 5.

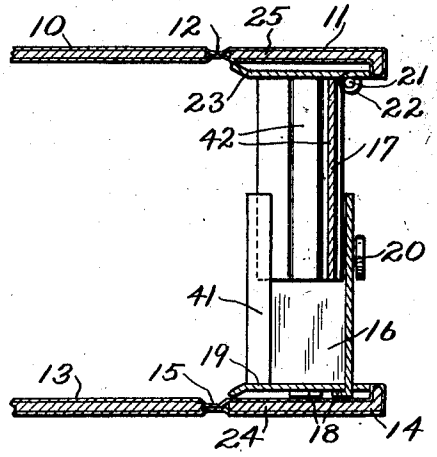


Fig. 6.

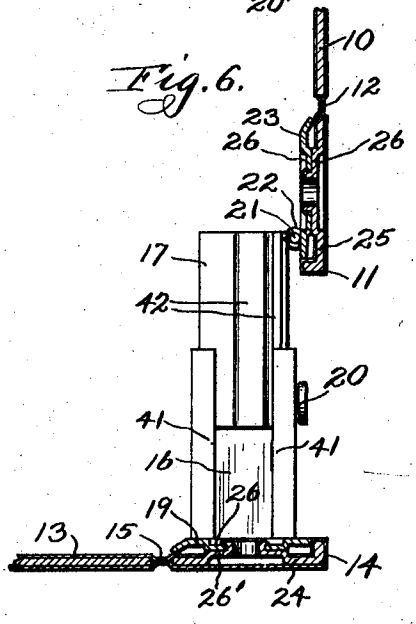


Fig. 7.

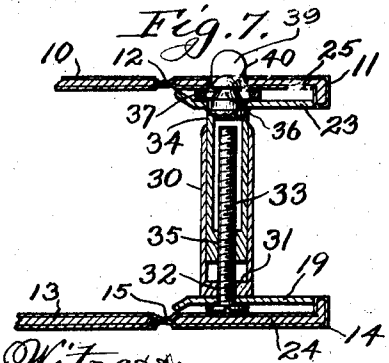
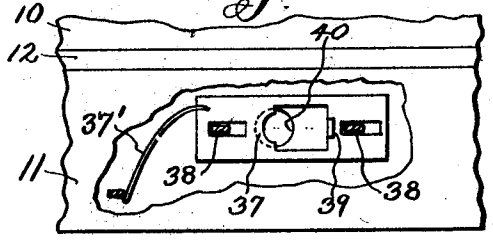


Fig. 8.



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Patented Sept. 6, 1927. 1,641,397

UNITED STATES PATENT OFFICE.

WILLIAM S. PROUDFIT, OF WALKER TOWNSHIP, KENT COUNTY, AND EDWARD F. GRAF, OF GRAND RAPIDS, MICHIGAN, ASSIGNORS TO PROUDFIT LOOSE LEAF CO., A CORPORATION OF MICHIGAN.

LOOSE-LEAF BINDER.

Application filed June 14, 1924. Serial No. 719,977.

Our invention relates to a loose leaf binder of the type known as post binder, and the objects of our invention are, first, to provide a single post extending through a perforation in the leaves which, in combination with a plurality of exterior bearing points for the leaves, will retain them in alignment; second, to provide a second hinge for the cover to enable swinging the binding edge of the cover out of the plane of the leaves; third, to provide novel, adjustable corner guides for the leaves; fourth, to make a novelly constructed binding edge; fifth, to make a novel adjustable post; sixth, to provide a convenient method for assembling the various parts, and other features to become apparent from the description to follow.

In loose leaf binders of this class it is desirable to have only one post to penetrate the leaves; to have a simple means for retaining the leaves in alignment; to have the binder so constructed that the binding edge of the cover can be swung out of the plane of the assembled leaves; to have the several parts of the binder permanently connected together so none of the parts can be mislaid; to make the binding edges of the front and back covers of metal plates spaced apart to accommodate rivets and working parts; and to make an adjustable post; all these desirable features are embodied in our invention.

To describe our invention so that others versed in the art to which it pertains can make and use the same we have illustrated it on the accompanying two sheets of drawings forming a part of this specification, and in which:

Figure 1, is a view in elevation of the back of a loose leaf binder embodying our invention in a closed position with leaves therein, partly broken away; Fig. 2, is a similar view with the leaves removed and the binder in an open position; Fig. 3, is an elevation of the same viewed from the front or inner side with the binder in an open position and with the cover swung back out of the plane of the leaf carrying portion; Fig. 4, is a sectional view taken on line 4—4 of Fig. 1, with the leaves shown by broken lines; Fig. 5, is a sectional view taken on line 5—5 of Fig. 2; Fig. 6, is a sectional view taken on line 6—6 of Fig. 3; Fig. 7, is a sectional view taken on line 7—7 of Fig. 1; and Fig. 8, is a detail sectional view showing the spring pressed catch which co-operates with the post of the binder.

Similar reference characters refer to similar parts throughout the several views.

The front cover 10 is attached to the binding edge 11 by means of a hinge of flexible material 12, and the rear cover 13 is attached to the binding edge 14 by means of a hinge of flexible material 15. The binding edge 11 is permanently connected to the binding edge 14 by means of extensible corner guides each comprising a fixed section 16 and a movable section 17. The sections 16 are rigidly connected at each end of the binding edge 14 by lugs 18, extending through perforations in the metal plate 19 and bent or riveted against the opposite side of the plate. The sections 17 are arranged to slide freely on the sections 16 and are limited in their movement in both directions by the pin and slot connection 20. The binding edge 11 is pivotally connected near each end as at 21 to the sections 17 by means of a hinge piece 22 which may be integral with the metal plate 23. As clearly shown in Figs. 5 and 6, the binding edge 14 is made up of two metal plates 19 and 24, and the binding edge 11 is made up of the two metal plates 23 and 25; and the two plates of each binding edge 11 and 14 are spaced apart and riveted together as shown in Fig. 6. The spacing apart of the two metal plates is accomplished by pressing out a plurality of circular bosses 26, on one of the plates to contact with its co-operating plate or a plurality of circular bosses may be pressed out of both plates of each pair of plates and arranged so that the bosses 26 on one plate will contact with the bosses 26′ on the opposite plate.

From the description thus far given it is clear that the binding edge 11 can be placed in any one of the three positions relative to the binding edge 14, shown in Figs. 1 and 7; Figs. 2 and 5, or Figs. 3 and 6. In Figs. 1 and 7 the binding edge 11 is in what may be termed the closed position, i. e., as close as it can be to the binding edge 14; in Figs. 2 and 5 the corner guides are extended and the binding edge 11 is pulled away from the binding edge 14 as far as possible, and in Figs. 3 and 6 the binding edge 11 is

tilted on its hinge 21 to an edgewise position.

Each leaf 28 or sheet of paper as indicated by dotted lines in Fig. 1, is provided with a perforation 29, through which the binding post 30 extends. As shown in Fig. 7, the outer shell of the post 30 has at one end the inwardly extending flange 31 which is interiorly threaded at 32 and is tightly clamped against the plate 19 by means of the screw 33, the head of which is between the plates 24 and 19. The screw 33 extends within the post 30 a sufficient distance to serve as an adjusting means for the inner telescoping sleeve 34 of the post, the sleeve 34 being provided with internal threads at 35 to fit the screw 33, so that the post can be adjusted to any desired length by turning the sleeve 34. The upper protruding end of the sleeve 34 is provided with an annular groove 36 which co-operates with a sliding spring pressed latch 37 mounted between the plates 23 and 25 of the binding edge 11, and held yieldingly in engagement with the annular groove 36 by the spring 37′ being kept in position by suitable guides 38, as shown in Fig. 8. The head of the sleeve 34 is rounded so that the latch 37 may be pressed down upon it, causing the spring 37′ to yield and permit the latch 37 to snap into engagement with the groove 36. The latch 37 is provided with a suitable finger piece 39 which projects through a slot in the plate 25 so that it can be disengaged from the groove 36 at will.

In operation the binder is placed in an open position as shown in Figs. 3 and 6, the required number of perforated leaves or sheets of paper are threaded over the post 30 and laid flat on the cover 13, the cover 10 is then swung down about the pivot 21 on top of the pile of paper leaves parallel to the cover 13 with the top end of the post 30 extending through the perforation 40 in the binding edge 11, see Figs. 1 and 7, with the latch 37 in engagement with the groove 36. Prior to closing the cover 10 the threaded inner shell 34 is adjusted upon the screw 33 so that its head will be at the proper height to engage the latch 37 and hold the clamping parts 11 and 14 closely against the paper leaves. When thus used either cover 10 or 13 can be swung on its flexible hinge 12 or 15 to any desired position. To remove or insert a leaf the latch 37 is properly manipulated by means of the finger piece 39 to disengage the latch from the groove 36, this will permit moving the cover 10 with its binding edge 11 upward to the position shown in Figs. 2 and 5, and to make it very convenient to strip the required leaves up off of the post 30 the cover 10 with its binding edge 11 is swung back on the pivot 21 out of the path of the leaves as shown in Figs. 3 and 6. After the desired number of leaves have been withdrawn or inserted the cover 10 with its binding edge 11 is again replaced to the closed position as shown in Figs. 1 and 7.

The sections of the corner guides comprising the sections 16 and 17 are arranged to freely slide on one another by having the edges of the sections 16 bent around the edges of the sections 17 as seen at 41, thus it is clear that the bound edges of the leaves will, during ordinary use of the book, engage the bent over edges 41 of the section 16.

The sections 17 are provided with raised ribs 42 which extend to the plane of the bent over edges 41, so that when sections 17 are extended the leaves opposite sections 17 will contact with the ribs 42 and register accurately with the leaves opposite sections 16. The post 30 in combination with the bearing points 41 and 42 holds the leaves of the leaf body securely and accurately in alignment.

One edge of each of the plates 19, 23, 24 and 25 forming the binding edges 11 and 14 of the covers is preferably bent at an angle to the body of the plate to increase the strength of the same.

While we have shown the section 16 and 17 forming the corner guides made angular in cross section, these may be made as flat bars or posts and serve the same purpose and that portion positioned at the ends of the leaf body may be dispensed with, especially in small binders.

It will be understood that the size, shape and arrangement of the parts may be changed without in the least departing from the scope of our invention.

Having thus fully described our invention, what we claim as new and desire to secure by Letters Patent of the United States is:

1. In a device of the class described, two covers, a post connected to one cover and detachably connected to the other cover, guides connecting said covers, each of said guides comprising two connected members, one of said members having its edge bent around the edge of the other member, and said other member having a raised rib lying in the same plane as said bent edge.

2. In a device of the class described, two covers, a post connected to one cover and detachably connected to the other cover, guides connecting said covers, each of said guides comprising two slidably connected members, one of said members having its edge bent around the edge of the other member, and said other member having a raised rib lying in the same plane as said bent edge.

3. In a device of the class described, two covers, leaves provided with a perforation, an adjustable post extending through the said perforation rigidly connected to one cover and detachably connected to the other cover, and adjustable guides secured to the

covers adapted to contact with the edges of the leaves and hold them in alignment, each of said guides comprising two slidably connected members, one of said members being connected to one cover and the other of said members being connected to the opposite cover, and one of said members having its edge bent around the edge of the other member and said other member having raised ribs lying in the same plane as said bent edge.

4. In a device of the class described two covers, a post connected to one cover and detachably connected to the other cover, guides connecting said covers, each of said guides comprising two slidably connected members, one of said members being rigidly connected to one cover and the other of said members being pivotally connected to the other of said covers.

5. In a device of the class described, two covers, a post connected to one cover and detachably connected to the other cover, guides connecting said covers, each of said covers being provided with a binding edge comprising two plates provided with bosses adapted to rigidly space apart said plates.

6. In a device of the class described, two covers, a post rigidly connected to one of said covers, and detachably connected to the other of said covers, the said post comprising an outer shell, a screw extending within said shell an interiorly threaded sleeve adapted to cooperate with said screw, guides connecting said covers, each of said guides comprising two slidably connected members, one of said members being rigidly connected to one cover and the other of said members being pivotally connected with the other of said covers.

7. In a device of the class described two covers one of which is provided with an orifice near its binding edge, a post with a rounded head, and an annular groove adjacent thereto, connected to one of said covers, and detachably connected to the other of said covers, having said orifice therein, a spring pressed sliding latch mounted in said cover with the orifice, means for pressing said latch into and out of engagement with said annular groove and guides connecting said covers, each of said guides comprising two slidably connected members, one of said members being rigidly connected to one cover and the other of said members being pivotally connected to the other of said covers.

8. In a device of the class described two covers, a post connected to one cover and detachably connected to the other cover, guides connecting said covers, each of said guides comprising two connecting members, one of said members being rigidly connected to one cover and the other of said members being pivotally connected to the other of said covers, and one of said members having its edge bent around the edge of the other member, and said other member having a raised rib lying in the same plane as said bent edge.

9. In a device of the class described, two covers each being provided with a binding edge comprising two plates, one of said plates having bosses pressed out of it to contact with the other of said plates to rigidly space apart said plates, a post rigidly connected to one cover and detachably connected to the other cover, guides secured to the covers adapted to contact with the edge of the leaves and hold them in alignment.

In testimony whereof we have signed our names to this specification this 6th of June, 1924, at Grand Rapids, Michigan.

WILLIAM S. PROUDFIT.
EDWARD F. GRAF.