Nov. 19, 1935. A. W. McCLURE 2,021,738

LOOSE LEAF BINDER

Filed May 25, 1933

FIG. 1.

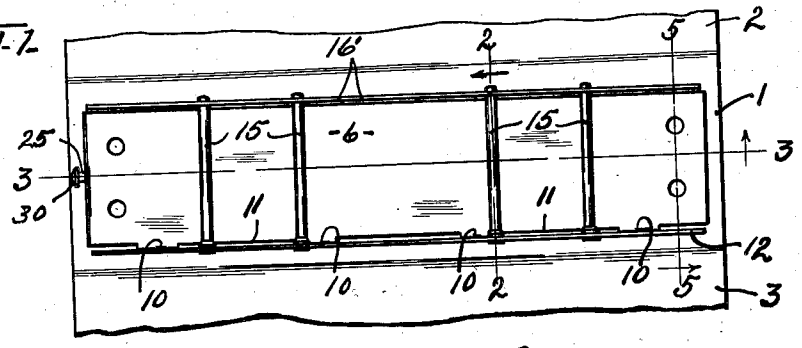


FIG. 2.

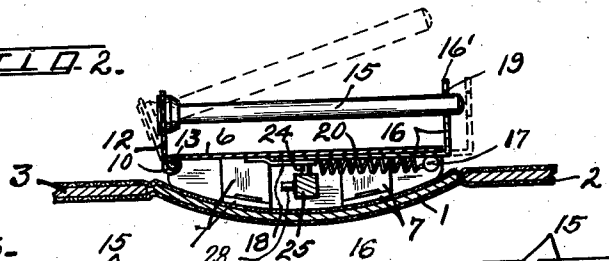


FIG. 3.

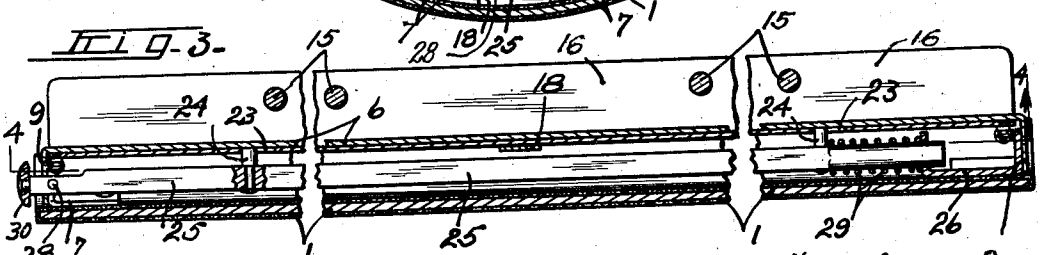


FIG. 4.

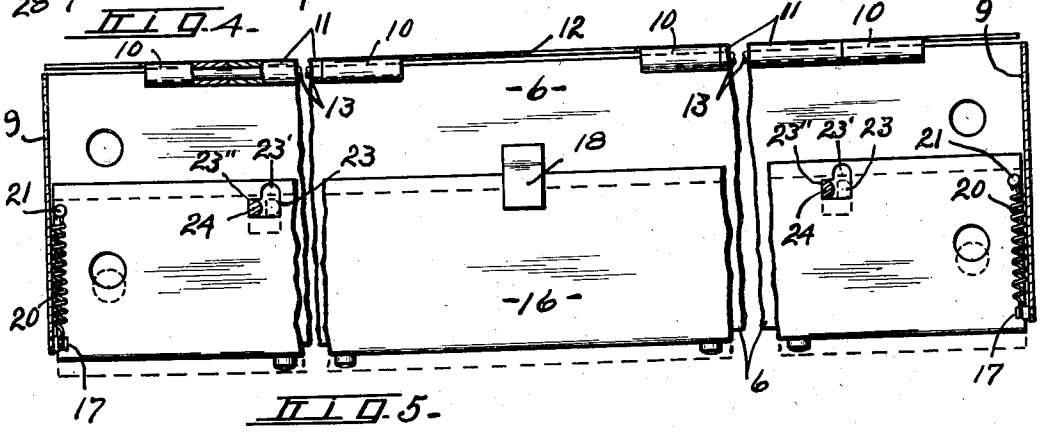
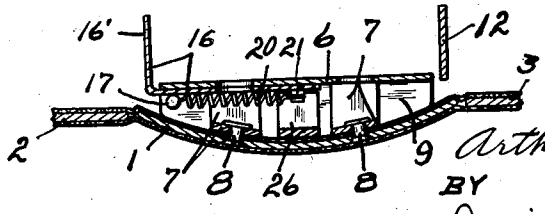


FIG. 5.



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LOOSE LEAF BINDER

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12 Claims. (Cl. 129—23)

This invention relates to loose leaf binders and pertains more particularly to leaf-impaling members and to the means for releasably maintaining said members in position for holding the leaves.

The main objects of this invention are to provide a loose leaf binder which is light, durable and economical in construction and which may be quickly and easily operated for releasing the leaves from the binder or to secure the leaves therein.

Other objects and advantages of the invention pertaining to the structure of the binder and to the form and relation of the parts thereof, will more fully appear from the following description taken in connection with the accompanying drawing in which:—

Figure 1 is an inner face view of my novel binder with the outer portions of the covers broken away.

Figure 2 is an enlarged transverse sectional view through the binder back and the sheet-retaining post-supporting means taken on line 2—2, Figure 1.

Figure 3 is an enlarged longitudinal sectional view taken on line 3—3, Figure 1, with intermediate portions of the binder broken away.

Figure 4 is a longitudinal sectional view taken on line 4—4, Figure 3, showing an inner face view of the frame for supporting the sheet-retaining posts.

Figure 5 is an enlarged transverse sectional view taken on line 5—5, Figure 1.

The binder, as illustrated in the drawing, consists of a back member 1 having two covers 2 and 3 flexibly connected at their inner ends to a respective longitudinal edge thereof. The back member 1 and covers 2 and 3 may be constructed, as shown, in a manner well-known to those skilled in the art and it is believed that no further description of these members is required.

Secured to the back member 1 is a leaf-retaining unit comprising this invention and which consists of a flat supporting plate 6 secured to the back member 1 in spaced relation thereto by a plurality of, in this instance four, angle brackets 7 which have one leg thereof secured by rivets 8 or other suitable means to the back member and the other leg thereof secured by spot-welding or other suitable means to the inner face of the ends 9 of the supporting plate 6.

The ends 9 of the plate 6 are bent inwardly toward the back member 1 at substantially right angles to the major portion of the plate to form end closures, and have the inner edges thereof conforming in contour to that of the inner face of the back member and engaging said back member. This supporting plate 6 is arranged symmetrically over the back member 1 and preferably is of slightly less width and length than is the back member, as illustrated in Figure 1.

The plate 6 has one longitudinal edge thereof extended to form spaced hinge members 10 at the under or inner side thereof and which align with similar hinge members 11 formed on one longitudinal edge of a post-supporting plate 12, said hinge members being operably connected by pintle rods 13. The post-supporting plate 12 extends substantially the entire length of the supporting plate 6 and has permanently secured thereto a plurality of, in this instance four, leaf-impaling posts 15 which extend outwardly from one side of the plate 12 at substantially right angles thereto so that when the plate 12 is at right angles to the supporting plate 6, said posts will extend across the supporting plate 6 in parallel spaced relation thereto.

A substantially rectangular slide plate 16 is mounted adjacent the inner side of the supporting plate 6 at the side thereof opposite the hinge members 10. This plate 16 is slidably supported adjacent the plate 6 by means of a pair of guide pins 17 secured to a respective end 9 of the plate 6 adjacent the side thereof opposite to that at which the hinge members 10 are located for supporting the outer edge of the slide plate 16.

The inner edge of the plate 16 is supported, in this instance, by means of a guide plate 18 secured at one end to the supporting plate 6 substantially midway between the ends thereof, as clearly illustrated in Figures 2 and 4. The slide plate 16 is provided at its outer edge, with a longitudinally extending right angle flange or extension 16' which extends upwardly above the supporting plate 6 and is provided with a plurality of, in this instance four, longitudinally spaced holes 19 adapted to receive therein the outer or free ends of the posts 15 so that when the slide plate 16 is in its innermost position, as illustrated by full lines in Figures 1, 2, and 4, the outer ends of said posts will be supported by the slide plate 16 in position to maintain leaves within the binder.

The slide plate 16 is constantly urged outwardly by means of a pair of coiled springs 20 positioned one adjacent either end of the slide plate 16 and having one end thereof connected with a respective guide pin 17 secured to the supporting plate 6 and the other end thereof connected with a respective stud 21 secured to corresponding ends of

the slide plate 16 adjacent the rear or inner edge thereof.

In order that the slide plate 16 may be releasably maintained in its innermost position in holding engagement with the posts 15, I have provided the plate 16 with a pair of longitudinally spaced L-shaped cam slots 23 positioned adjacent the rear or inner edge of the plate, with one leg as 23' of said slots extending inwardly from in slightly spaced relation to the inner edge of the plate and the other leg 23'' of each slot extending from one side of the first-mentioned leg longitudinally of and in parallel relation with the inner edge of the plate. Each of these cam slots 23 has positioned therein one end of a holding pin 24 which is mounted in a slide bar 25 positioned beneath the plate 16. This slide bar 25 extends inwardly through one end 9 of the supporting plate 6 and terminates a short distance inside of the other end 9 of said supporting plate, as clearly illustrated in Figure 3.

The inner end of the slide bar 25 is slidably supported by a U-shaped bracket 26 which has the outer end thereof secured by electric welding or other suitable means to the adjacent leg 9 of the plate 6, while the other end of the slide 25 is slidably supported in the opposite leg 9 of the plate 6.

The slide 25 is yieldingly maintained in its outermost position against a stop pin 28 secured to said bar and adapted to engage the inner face of the end 9 adjacent the outer end of the bar by means of a coiled spring 29 mounted on the inner end of the slide 25 between the supporting bracket 26 and the adjacent holding pin 24. The holding pins 24 are so mounted in the slide bar 25 relative to the cam slots 23 that when the bar is in its outermost position, said holding pins will be positioned in the portion 23'' of the respective cam slots for holding the slide plate 16 in its innermost position in engagement with the posts 15 and against the action of the springs 20.

The slide 25 is provided with a button 30 at its outer end by which the slide may be readily moved inwardly against the action of the spring 29 for bringing the holding pins 24 into alignment with the portions 23' of the respective cam slots 23 for permitting the slide 16 to be moved outwardly by the action of the springs 20 out of holding engagement with the free ends of the posts 15 for releasing said posts and permitting the same to be rocked about the axis of the pintle 13 away from the supporting plate 6 so that leaves may be readily removed from or mounted upon the posts 15.

It will now be readily understood that when the slide plate 16 is in holding engagement with the posts 15 that said posts may be readily released by merely pressing upon the button 30 to move the slide bar 25 inwardly against the action of the spring 29 sufficiently to move the holding pins 24 along the portion 23'' of the respective cam slots 23 into alignment with the portions 23' of said slots. As the holding pins 24 align with these slot portions 23', the slide 16 is automatically moved outwardly relative to the supporting plate 6 by the action of the springs 20. This outward movement of the slide 16 is sufficient to bring the extension 16' out of holding engagement with the free ends of the posts 15 thereby permitting said posts to be rocked outwardly away from the supporting plate 6.

When it is again desired to secure the posts 15 in their leaf-holding position, this may be readily accomplished by swinging the posts to the normal position parallel with the plate 6 and then moving the plate 16 inwardly against the action of the springs 20 until the holding pins 24 are again brought into alignment with the portions 23'' of the respective cam slots 23. As soon as the pins are in alignment with these portions of the slots, they will be automatically moved to the outer end thereof by the action of the spring 29 upon the slide 25 in which position the holding pins 24 will maintain the slide plate 16 in engagement with the posts 15 until the bar 25 is again moved inwardly.

Although I have shown and particularly described the preferred embodiment of this invention, I do not wish to be limited to the exact construction shown, as various changes in the size, form and relation of the parts thereof may readily be made, without departing from the spirit of this invention as set forth in the appended claims.

I claim:

1. A loose leaf binder comprising a back member, a plurality of leaf-impaling elements, a supporting plate connected with the back member, means mounted on the plate for movement relative thereto for connecting the elements with the plate whereby the elements may move from a leaf-holding position over said plate to a leaf-releasing position at one side of the plate, a holding member mounted on the supporting plate and movable relative thereto for engaging the leaf-impaling elements when said elements are in the leaf-holding position, means associated with the supporting plate for releasably locking the holding member in said engaging position, and actuating means connected with the plate and with said holding member for automatically moving the holding member out of engagement with the leaf-impaling elements when said holding member is released by the locking means.

2. A loose leaf binder comprising a back member, a supporting plate connected to the back member, a plurality of leaf-impaling posts, hinge means connecting said posts at one end to one side of the supporting plate whereby said posts may swing from a leaf-holding position over said plate to a leaf-releasing position at one side of the plate, a holding slide mounted on the supporting plate for movement into engagement with the free ends of the posts when said posts are in the leaf-holding position, means associated with the supporting plate for releasably locking the slide in said engaging position, and means including a spring connected with the plate and with said slide for moving said slide out of engagement with the posts when the slide is released by the locking means.

3. A loose leaf binder comprising a back member, a plurality of leaf-impaling posts, a pair of post-supporting elements slidably mounted one upon the other, means permanently securing one of said elements to the back member, hinge means connecting the posts at one end to one of said elements, means associated with the other element for supportably engaging the free ends of the posts, means for releasably locking said elements against relative movement when the posts are engaged by the post-engaging means, and means for automatically producing relative movement of the elements when released by the locking means for releasing the free ends of the posts.

4. A loose leaf binder comprising a back member, a plurality of leaf-impaling posts, a pair of supporting plates slidably mounted one upon the other, means permanently securing one of said

plates to the back member, hinge means connecting one of said plates with the posts, means associated with the other plate for supportably engaging the free ends of the posts, spring-actuating means connected with the plates for urging the last-named plate out of engagement with the posts, and means mounted on one of said plates and operably engaging the other plate for releasably holding said last-mentioned plate in engagement with the posts against the action of the actuating means.

5. A loose leaf binder comprising a back member, a plurality of leaf-impaling posts, a pair of supporting plates slidably mounted one upon the other, means permanently securing one of said plates to the back member, hinge means connecting one of said plates with the posts, means associated with the other plate for supportably engaging the free ends of the posts, spring-actuating means connected with the plates for urging the last-named plate out of engagement with the posts, one of said plates being provided with a cam slot, a slide mounted on the other plate, and means connected with said slide and engaging said slot for releasably holding the second-mentioned plate in engagement with the posts against the action of the actuating means.

6. A loose leaf binder comprising a back member, a plurality of leaf-impaling posts, a supporting plate permanently mounted on the back member, a slide plate mounted on the supporting plate, means permanently connecting the posts with one of said plates, means associated with the other plate for releasably engaging said posts, actuating means connected with the plates for producing relative movement of the plates to bring the last-mentioned plate out of holding engagement with the posts, a slide bar mounted on the supporting plate, and coacting means associated with the slide plate and slide bar comprising a pin and a cam slot for releasably maintaining the slide plate in holding engagement with the posts.

7. A loose leaf binder comprising a back member, a plurality of leaf-impaling posts, a supporting plate permanently mounted on the back member, hinge means connecting one end of the posts with the supporting plate, a second plate slidably mounted on the supporting plate and provided with a cam slot and adapted to supportably engage the free ends of the posts, actuating spring means connected with the plates for urging the slide plate out of engagement with the posts, a slide bar mounted on the supporting plate, and a holding pin connected with the bar and operably engaging said cam slot for releasably holding the slide plate in engagement with the posts.

8. A loose leaf binder comprising a back member, a plurality of leaf-impaling posts, a pair of post-supporting elements slidably mounted one upon the other, one of said elements being releasably connected with the posts, means permanently securing one of said elements to the back member, holding means associated with the elements for releasably maintaining said elements against relative movement when in position to support the posts in the leaf-holding position, and automatic means for producing relative movement of the elements when said elements are released by the holding means to disconnect said elements from holding relation with the posts.

9. A loose leaf binder comprising a plurality of leaf-impaling posts, a pair of post-supporting elements associated with opposite respective ends ends of the posts and slidably mounted for movement toward and from each other, one of said elements being releasably connected with the posts, resilient means normally urging said elements away from each other to release the posts and means for releasably locking the elements against relative movement when said releasable element is in supporting engagement with the posts.

10. In a loose leaf binder, a back plate, a plurality of impaling posts for retaining a quantity of paper, hinge means for connecting one set of ends of the posts with the back plate, a slide plate mounted on said back plate and slidable into and out of engagement with the other ends of the posts, spring means normally urging said slide plate out of engagement with the said other ends of the posts, and means for retaining said slide plate in engagement with said other ends of the posts against the action of said spring means.

11. In a loose leaf binder, a back plate, a plurality of impaling posts for retaining a quantity of paper, hinge means for connecting one set of ends of the posts with the back plate, a slide plate mounted on said back plate and slidable into and out of engagement with the other ends of the posts, spring means normally urging said slide plate out of engagement with the said other ends of the posts, means for retaining said slide plate in engagement with said other ends of the posts against the action of said spring means, and spring loaded manually operated means for moving said retaining means to a position such as to enable said spring means to move said slide plate out of engagement with said other ends of the posts.

12. In a loose leaf binder, a pair of plates one slidable with respect to the other, a plurality of impaling posts for retaining a quantity of paper, said impaling posts having one set of ends thereof hinged to one of said plates to enable the posts to move into a position parallel to the plates, said other plate having a portion thereof extending perpendicular to the plane of the plates and adapted to engage the other ends of the posts, spring means normally urging said plates apart, means for retaining said plates in a position such that said other ends of the posts are engaged by said other plate against the action of said spring means, and manually operated means for moving said retaining means to enable said spring means to move said plates apart whereby the binder may be opened.

ARTHUR W. McCLURE.