W. H. AVERILL.

LOOSE LEAF BINDER.

APPLICATION FILED AUG. 23, 1919.

1,364,973.

Patented Jan. 11, 1921.

2 SHEETS—SHEET 1.

Fig. 1

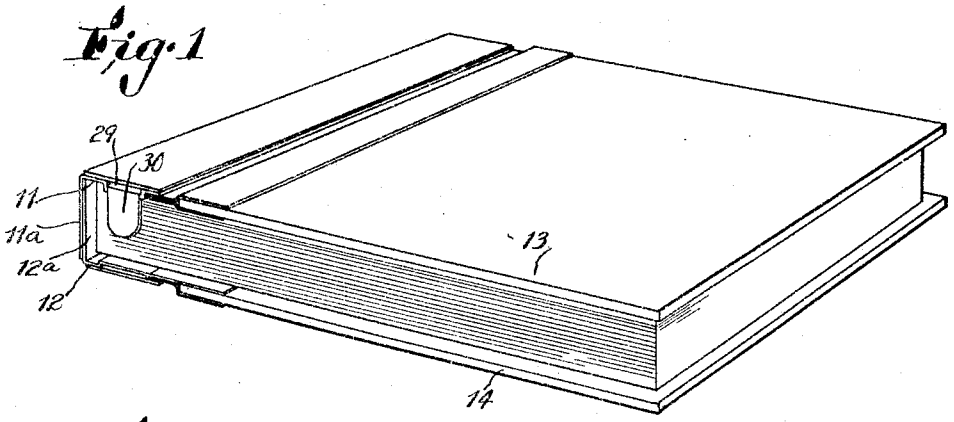


Fig. 2

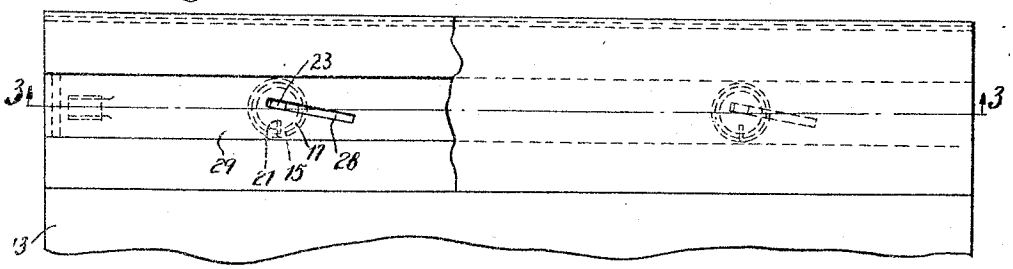
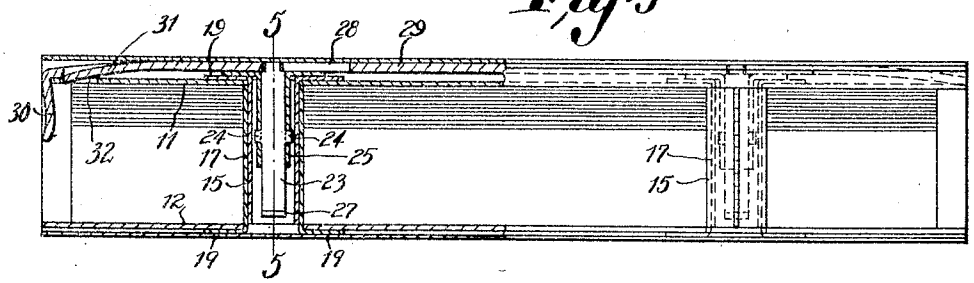


Fig. 3



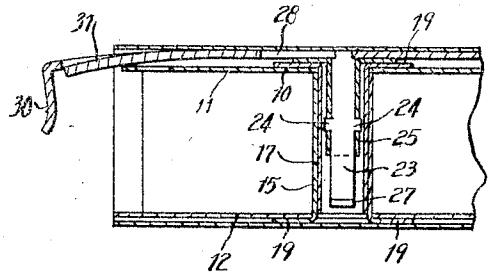


Fig. 4

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2 SHEETS—SHEET 2.

Fig. 5

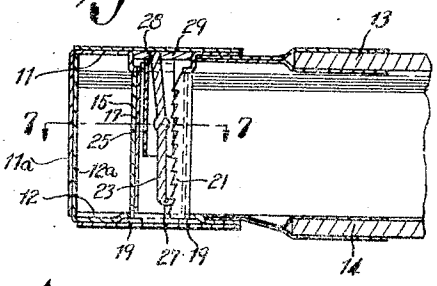


Fig. 7

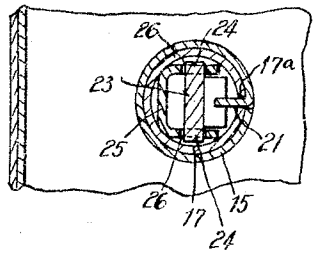


Fig. 6

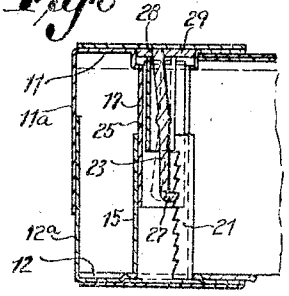


Fig. 10

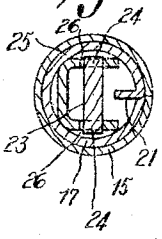


Fig. 8

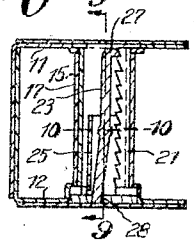


Fig. 9

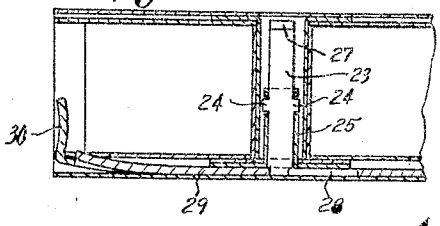


Fig. 11

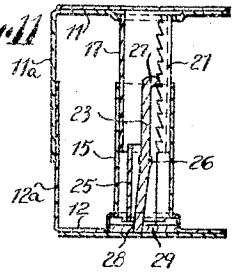
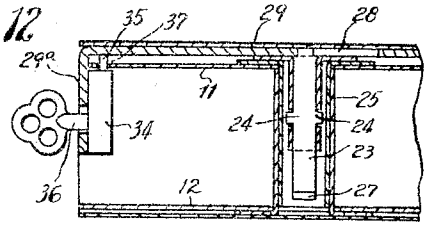


Fig. 12



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UNITED STATES PATENT OFFICE.

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LOOSE-LEAF BINDER.

1,364,973. Specification of Letters Patent. Patented Jan. 11, 1921.

Application filed August 23, 1919. Serial No. 319,466.

To all whom it may concern:

Be it known that I, WILLIAM H. AVERILL, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Loose-Leaf Binders, of which the following is a specification.

The present invention relates to covers or binders adapted to hold a number of loose removable leaves and is of a type which may be adjusted to various widths in order to hold a greater or smaller mass of leaves. More particularly the binder here shown as embodying the present invention is of the same general nature as that disclosed in my prior Patent No. 1,275,198, dated August 13, 1918, which embodies two cover members and telescopic hollow post elements projecting from the respective members and equipped with locking means for locking the cover members at any desired distance apart within limits.

The present invention is embodied in the improved means hereinafter described and claimed, for controlling and releasing the locks of the binder constructed and operable to control all of the locks in unison.

The nature and principles of the means by which the foregoing objects are secured, and the special utility thereof, are set forth in the following specification in connection with the drawings and detailed description of certain embodiments of the invention.

In the drawings,—

Figure 1 is a perspective view of a loose leaf binder embodying the present invention with a collection of leaves associated therewith.

Fig. 2 is a plan view of a portion of the binder, a portion of the outer cover being broken away.

Fig. 3 is a sectional view on the line 3—3 of Fig. 2, showing in detail the locks and the controller therefor, one of the locks being shown in elevation.

Fig. 4 is a view similar to a portion of Fig. 3, showing the controller in releasing position.

Fig. 5 is a section on line 5—5 of Fig. 3.

Fig. 6 is a view similar to Fig. 5, showing a different adjustment.

Fig. 7 is an enlarged section on line 7—7 of Fig. 5.

Fig. 8 is a view similar to Fig. 5, showing a different embodiment of the invention.

Fig. 9 is a section on line 9—9 of Fig. 8.

Fig. 10 is a section on line 10—10 of Fig. 8.

Fig. 11 is a view similar to Fig. 8, showing a different adjustment.

Fig. 12 is a view similar to Fig. 3, showing different means for locking the controller bar.

The same reference characters indicate the same parts in all of the figures.

As in the prior patent above specified, the binder comprises two angular plates or jaws 11 and 12, to which are hinged cover parts 13 and 14, respectively, said jaws being so arranged that the flange 11^a of one overlaps the flange 12^a of the other. To the jaw 12 in the structure as shown by Figs. 1, 2, 3, 4, 5, 6 and 12, are connected larger hollow posts 15, and to the jaws 11 are connected similar hollow posts 17, of sufficiently smaller dimensions to enter and slide within the posts 15. Conveniently the jaws and hollow posts are made of plate or strip metal, preferably steel, and the latter are formed by rolling flat blanks of the material into tubular form. Preferably, also, the means for attaching the posts to the jaw members 11 and 12, respectively, comprise ears or flanges 19 (Figs. 3 and 4) on the ends of the posts 15 and 17, which are seated on the outer sides of the jaw members, and suitably attached thereto, as by brazing or spot-welding.

Rigidly connected with the jaw or plate 12, and located inside of the spaces surrounded by the posts 17, are ratcheted locking bars 21, each of which forms one element of a lock, the complemental element of which is constituted by a latch lever 23 in the post 17. Each locking bar is a serrated flange integral with one of the tubular posts, preferably the post 15, as shown by Fig. 7, the flange projecting through a slot 17^a in the smaller post 17, and into the space surrounded by the posts. The latch lever 23 is provided with trunnions 24 between its ends, so that the lever has two arms. 25 represents a bearing member attached to the plate 11, and projecting into the space between the two plates and into the smaller post 17. Said bearing member is preferably U-shaped in cross section, and provided with orifices 26 forming bearings for the trunnions 24. One arm of the latch lever 23 is provided with a toe 27, adapted to engage a tooth of the locking bar 21. The other arm

of said lever projects from the smaller post 17, into an oblique slot 28 in a controller bar 29, which is movable endwise in a guideway formed in the plate 11. The controller bar has a finger piece 30 at one end whereby it may be moved longitudinally. The slot 28 is so arranged that when the controller bar is moved in one direction, one wall of the slot swings the latch lever into engagement with the locking bar 21, and when the controller bar is moved in the opposite direction, the other wall of the slot swings the latch lever out of such engagement.

When the latch lever is moved from the position shown by Fig. 3, to that shown by Fig. 4, the parts of the binder are unlocked and are free to be separated by lifting the upper plate from the lower one, thereby uncovering the pile of leaves.

The serrated flange 21 which forms the locking bar, may be formed on the smaller tube 17, the bearing member 25 being attached to the plate 12, as shown by Figs. 8, 9, 10 and 11.

To secure the controller bar in locking position, I provide the said bar and the plate 11 with interlocking members, which may be embodied in a resilient tongue 31 on the controller bar, and a slot 32 in the plate 11, the tongue being adapted to spring into engagement with the slot, and to be withdrawn therefrom by forcing upward the outer end of the bar. As shown by Fig. 12, a lock casing 34 may be attached to the downwardly bent end 29^a of the controller bar, said casing having a bolt 35 adapted to be projected by a key 36 into a slot 37 in the plate 11.

In binders of small sizes there will be ordinarily two of the telescopic posts with their associated locks. For large binders there may be three or more such posts.

I claim:

1. A loose leaf binder comprising opposed plates or jaws, complemental post elements on said plates, a toothed locking bar secured to and projecting inwardly from one of the plates into the space between the plates, a bearing member secured to the other plate and projecting into said space, a coöperating latch lever mounted to oscillate on said bearing member, one arm of said lever having a toe to engage a tooth of said bar, and a controller bar longitudinally movable on the last-named plate and provided with an oblique slot receiving the other arm of said lever, and adapted to swing the lever, the arrangement being such that when the controller bar is moved in one direction, one wall of the slot moves the latch lever into locking relation with the locking bar, and when the controller bar is moved in the opposite direction, the other wall of the slot moves the latch lever out of said locking relation.

2. A loose leaf binder comprising opposed plates or jaws having leaf-engaging members, a plurality of toothed locking members carried by one of said plates, and projecting into the space between the plates, a plurality of bearing members carried by the other plate and projecting into said space, a plurality of two-armed latch levers mounted to oscillate on said bearing members, one arm of each lever having a toe to engage a tooth of one of said bars, and a single controller having oblique slots receiving the other arms of said levers and adapted to swing the levers simultaneously into locking relation with the bars when the controller is moved in one direction, and out of said relation when the controller is moved in the opposite direction.

3. A loose leaf binder comprising oppositely arranged plates, one having a larger tubular post projecting into the space between the plates, and the other having a smaller tubular post projecting into said space and arranged to enter the larger post, a toothed locking bar secured to one plate within the post thereon, a bearing member secured to the other plate within the post thereon, a latch lever mounted to oscillate on said bearing member, one arm of said lever having a toe to engage a tooth of said bar, and a controller bar longitudinally movable on the plate having the bearing member, and provided with an oblique slot receiving the other arm of said lever, and adapted to swing the lever into and out of engagement with the locking bar.

4. A loose leaf binder substantially as specified by claim 1, the controller bar and the plate supporting the same being provided with interlocking members adapted to hold the controller bar against unlocking movement when the latch lever is engaged with the locking bar.

5. A loose leaf binder substantially as specified by claim 1, the controller bar being provided with a resilient locking tongue, and the plate supporting said bar being provided with a slot arranged to receive said tongue and hold the controller bar against unlocking movement when the latch lever is engaged with the locking bar.

6. A loose leaf binder substantially as specified by claim 3, the locking bar being a serrated flange integral with the larger post and projecting into the space surrounded by said post, and the smaller post being provided with a longitudinal slot through which said flange projects.

In testimony whereof I have affixed my signature.

WILLIAM H. AVERILL.