Oct. 6, 1936. W. NELSON 2,056,801

LOOSE LEAF BINDER

Filed March 9, 1934 3 Sheets-Sheet 1

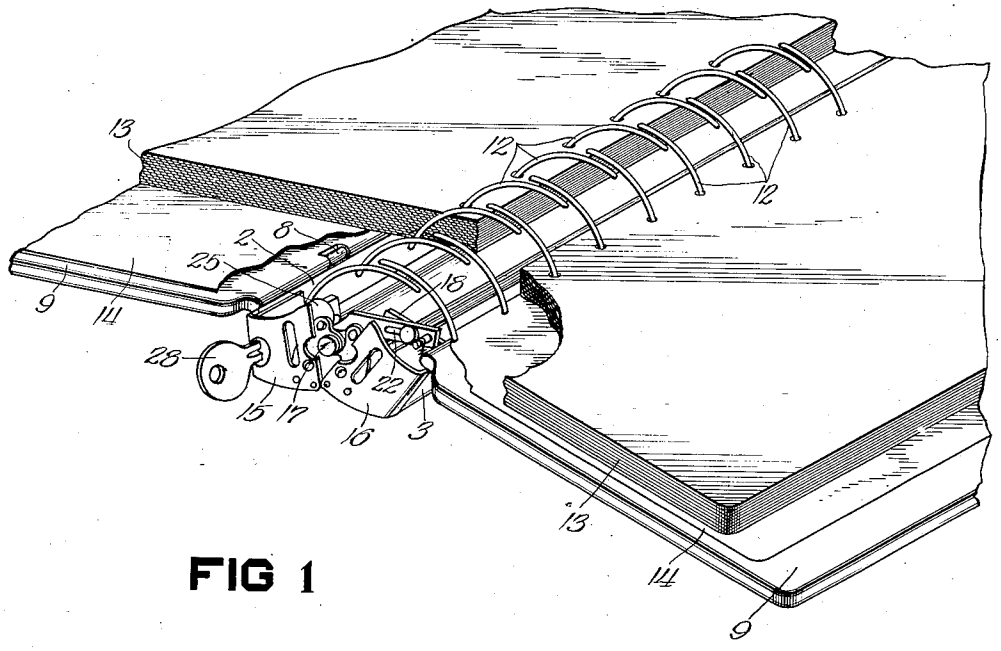


FIG 1

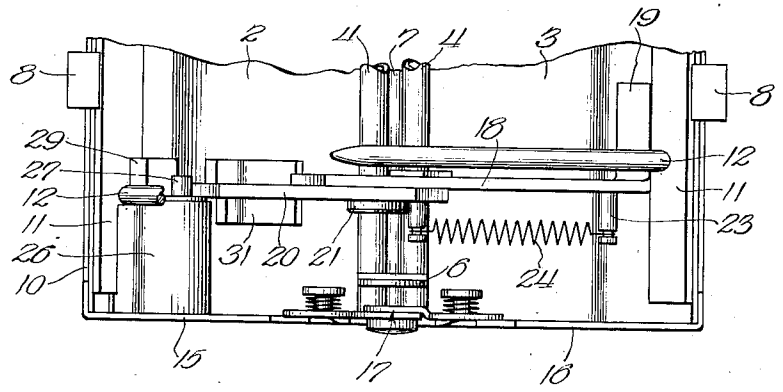


FIG 2

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LOOSE LEAF BINDER

Filed March 9, 1934 3 Sheets-Sheet 2

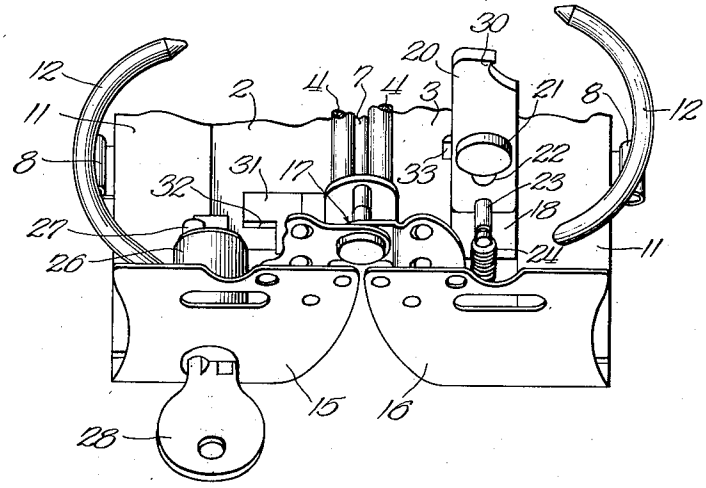


FIG 3

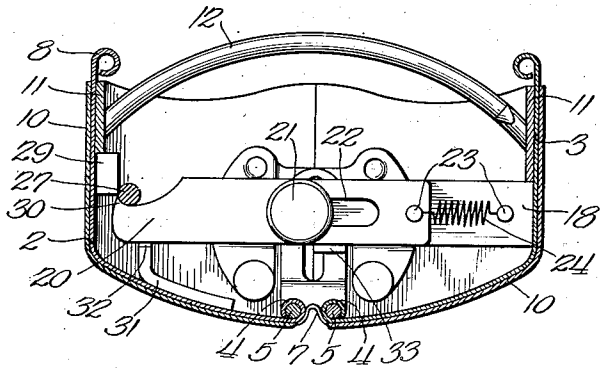


FIG 4

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LOOSE LEAF BINDER

Filed March 9, 1934 3 Sheets-Sheet 3

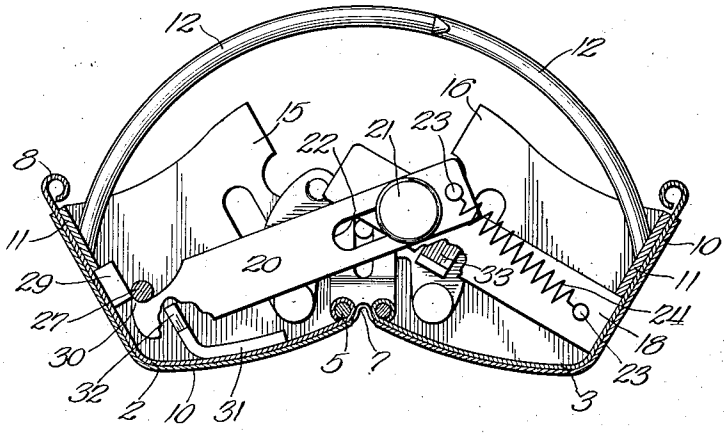


FIG 5

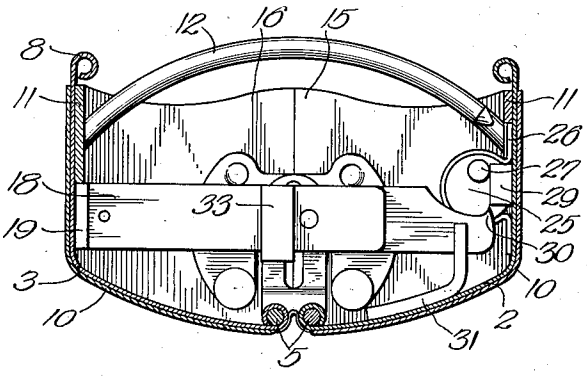


FIG 6

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UNITED STATES PATENT OFFICE

2,056,801

LOOSE-LEAF BINDER

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Application March 9, 1934, Serial No. 714,759

11 Claims. (Cl. 129—17)

This invention relates to a loose leaf binder of the prong type and more particularly to means for locking the same.

It is an object of this invention to provide means for locking a prong binder in an intermediate position so that the binder may be opened far enough to permit the sheets to lie substantially flat, but not far enough to permit the addition or removal of sheets from the binder, when the binder is locked. Other objects of this invention will become apparent upon reading the following description taken in conjunction with the accompanying drawings, in which

Figure 1 is a fragmentary perspective view of a loose leaf binder embodying my invention;

Figure 2 is a top elevation of one end of the binder structure;

Figure 3 is a fragmentary perspective view showing one end of the binder in fully open position;

Figure 4 is a cross sectional view of the back of the binder in closed position;

Figure 5 is a cross sectional view showing the back of the binder locked in intermediate position; and

Figure 6 is a cross sectional view of the back of the binder in closed position taken in the opposite direction from Figure 4 and showing the lock in open position.

In the drawings, reference numerals 2 and 3 indicate a pair of angular back sections having their inner edges curled, as indicated at 4, to receive a pair of hinge rods 5. The curled edges 4 are slotted at suitable intervals to receive a plurality of hinge bands 6, Figure 2, which encompass the rods 5. A strip of fabric 7 is secured between the curled edges 4 to act as a cushioning member.

Each back section has a plurality of portions extending from its outer edge curled to form hinge sleeves 8 by means of which a pair of covers 9 may be secured to the back sections. The back sections 2 and 3 may be covered with a layer 10 of bakelite, leather, imitation leather or other suitable material. A bar 11 carrying a plurality of curved prongs 12 is welded or riveted to each back section adjacent its outer edge. A plurality of sheets 13 and a pair of fly leaves 14 are impaled on the prongs 12. The prongs are long enough so that when the binder is open to its intermediate position prongs from opposite sides of the binder overlap to a substantial extent, and are each spaced closely adjacent a prong from the opposite side, so that it is substantially impossible to remove a sheet or add a sheet when the binder is open to its intermediate position.

The binder is provided at each end with a pair of end closure plates 15 and 16, and latching mechanism indicated generally by the reference numeral 17. This latching mechanism is fully disclosed and described in patent No. 1,732,584 issued October 22, 1929 to G. W. Newman and assigned to the assignee of this application. Accordingly, it is not deemed necessary to describe the latching mechanism 17 in detail except to state that it provides for arresting the back sections of the binder in the different positions, fully open, partially open, and closed. It will be understood that the particular latching mechanism illustrated is not essential to the invention, and that any latching mechanism that will function in a similar manner will be suitable.

The locking mechanism includes a bar 18 having one end 19 welded or riveted to the side of the back section 3. A second bar 20 is pivotally connected to the free end of the bar 18 by means of a stud 21 secured to the bar 18 and passing through an elongated slot 22 in the bar 20. The bars 18 and 20 are each provided with a post 23 to which the opposite ends of a coil spring 24 are secured. The spring tends to keep the arms 18 and 20 in a straight line but permits pivotal movement and expansion of the arms within the limits of the slot 22.

The back section 2 has a cylinder lock 25 secured thereto by means of a strap 26. A locking pin 27 projecting beyond the cylinder of the lock is adapted to be rotated by means of a key 28. The lock is so constructed that the key cannot be removed therefrom when the lock is intermediate its open and fully locked positions. A metal block 29 is secured to the back section 2 to act as a stop for the pin 27 so that whenever the pin abuts against the stop, the user becomes aware of the fact that the lock is either locked or fully open.

The upper edge of the free end of the arm 20 is notched, as indicated at 30, to engage with the pin 27 when the pin is in locking position. The bottom of the free end of the arm 20 is supported by means of an L-shaped member 31 which is provided with a shoulder 32 which prevents anyone from pushing the arm 20 beyond the end of the pin 27 to disengage the arm from the pin when the pin is in locking position. Another L-shaped arm 33 is permanently secured to the arm 18 to provide support for the arm 20 near its pivot point and to prevent the arm 20 from pivoting in the wrong direction.

The operation of the locking mechanism is quite simple. When the pin 27 is in open posi-

tion, as shown in Fig. 6, the binder may be opened and closed by the proper manipulation of the latching mechanism 17 without any interference from the locking mechanism. When the pin 27 is in locking position, the binder may be opened to its intermediate position, shown in Figure 5, without interference because of the pivotal connection between the arms 18 and 20. However, when the binder is in the intermediate or partially open position, the stud 21 engages the end of the slot 22 and the notch 30 engages the pin 27 so that the binder cannot be moved any farther towards fully open position.

From the foregoing it will be seen that I have provided simple and efficient means for locking a prong binder in an intermediate position permitting the sheets to lie flat for reading or writing thereon, but not allowing the insertion of additional sheets or the removal of any sheets without destruction of the same. Although I have shown the locking mechanism at only one end of the binder, it will be understood that a duplicate locking mechanism may be provided at the other end of the binder if desired. Generally, however, a single locking mechanism affords all the required security.

While I have described a preferred embodiment of my invention in detail, it will be understood that the description thereof is illustrative, rather than restrictive, as many details may be modified or changed without departing from the spirit or scope of my invention. Accordingly, I do not desire to be restricted to the exact construction described, except as limited by the appended claims.

I claim:

1. In a loose leaf binder, sheet retaining prongs, and key-operated locking means permitting partial opening movement of said prongs when in locking position, but preventing movement sufficient to allow insertion or removal of any sheets.

2. In a loose leaf binder, key-operated means to lock said binder against opening beyond a predetermined point, and a plurality of sheet retaining prongs adapted to retain the sheet contents of the binder securely against removal when the binder is opened to said predetermined point.

3. In a loose leaf binder, a pair of hingedly connected back sections, a bar permanently secured to one of said back sections, a second bar slidingly pivotally mounted on said first mentioned bar, and a key-operated lock mounted on the other of said back sections, said lock engaging said second bar to lock said binder against full opening movement, the sliding pivotal connection between said bars permitting opening of said binder to a predetermined intermediate position when said lock is in locking position.

4. In a loose leaf binder, a pair of hingedly connected back sections, a bar permanently secured to one of said back sections, a second bar slidingly pivotally mounted on said first mentioned bar, spring means tending to hold said second bar in a line parallel to said first bar, and a key-operated lock on the other of said sections engaging said second bar to lock said binder against opening beyond a predetermined point.

5. In a loose leaf binder, a pair of hingedly connected back sections, a key-operated lock mounted in one of said back sections, and a bar secured to the other of said back sections, said bar engaging with said lock to lock said binder against full opening movement, said bar being capable of sliding pivotal movement to permit partial opening of said binder when in locking engagement with said lock.

6. In a loose leaf binder, a pair of hingedly connected back sections, a locking pin mounted on one of said sections, a bar secured to the other of said sections, a second bar slidingly pivotally secured to said first mentioned bar, said second bar being engageable with said locking pin, and key means to move said locking pin out of engagement with said second bar.

7. In a loose leaf binder, a pair of hingedly connected back sections, a locking pin mounted on one of said sections, a bar connected to the other of said sections engageable with said locking pin, and a shouldered member mounted on said first mentioned section, said shoulder preventing forceful disengagement of said bar from said locking pin.

8. In a loose leaf binder, a pair of hingedly connected back sections, a key-operated locking pin mounted on one of said sections, a bar having one end notched to engage said pin and provided with a slot near the opposite end, a second bar projecting from the other of said back sections, and a stud passing through said slot and said second bar to provide a sliding pivotal connection between said bars.

9. In a loose leaf binder, a pair of hingedly connected back sections, a bar projecting from one of said sections, a second bar slidingly pivotally mounted on said first mentioned bar, a supporting arm secured to said first mentioned bar and adapted to engage the second bar to prevent said second bar from pivoting in one direction, and a key-operated lock mounted on the other section and engaging said second bar to prevent full opening movement of said binder.

10. In a loose leaf binder, a pair of hingedly connected back sections, a locking pin mounted on one of said sections, a bar connected to the other of said sections, a supporting member upon which said bar is adapted to rest, said supporting member being rigidly secured to said first mentioned back section, and a shoulder on said supporting member adapted to engage said bar to prevent forceful disengagement of said bar from said locking pin when said binder is in closed position.

11. In a loose leaf binder, a pair of hingedly connected back sections, a bar rigidly secured to one of said back sections, a second bar having one end slidingly pivoted to said first mentioned bar, a locking pin mounted in the other of said back sections, and means to move said pin into or out of engagement with the free end of said second bar.

WILLIAM NELSON.