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LOOSE LEAF BINDER CONSTRUCTION

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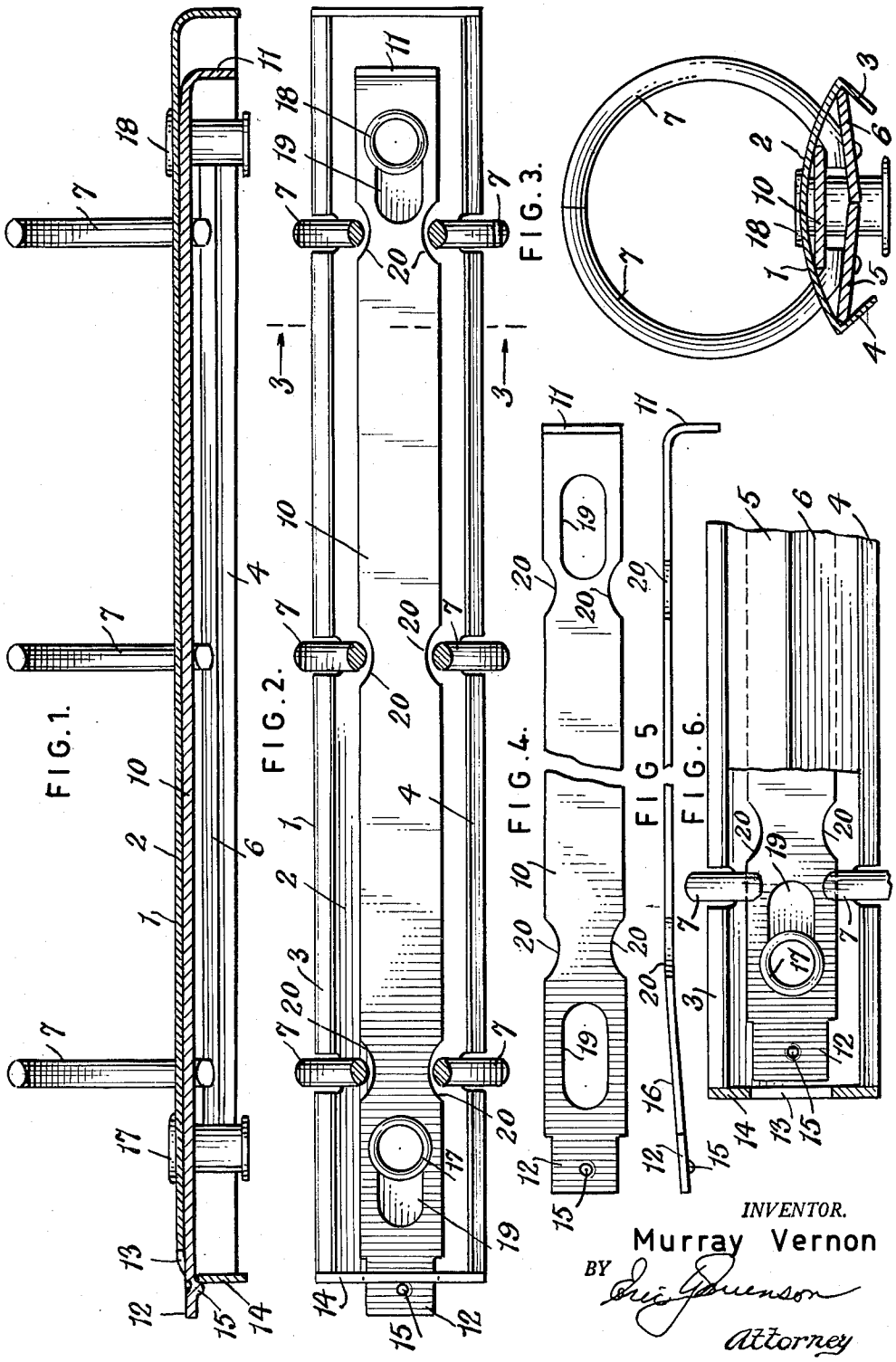


FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4.

FIG 5

FIG. 6.

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LOOSE LEAF BINDER CONSTRUCTION

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This invention relates to ring binders and more particularly to a construction in which the ring segments of the binder will be locked in closed position, after the insertion of the pages or leaves, thereby permanently mounting the pages on the rings of the binder.

Most binders of this general type are provided with means by which the ring segments can be moved apart or separated when desired for the removal of the pages or for the placement of pages on the rings. However, there are various occasions where a more permanent retention of the leaves or pages on the rings is desired, and the present invention has reference to a binder in which the rings can be permanently locked in a closed position after the leaves or pages are placed on them, thereby preventing removal of the pages except by the destruction of the holes in the pages through which the rings pass, or by dismantling of the binder structure.

More particularly, the invention contemplates the provision of a ring-segment mounting in which the ring segments are attached at one end to plates confined between the flanges of an arched, springy housing, with the ring segments requiring a pivotal movement to separate them, and with a slidable locking bar disposed in the housing and located between the attached ends of the rings and the under side of the housing, with said bar being effective to permit an opening movement or separation of the ring segments only when the bar has a portion of it projecting out of the housing, and which bar, when fully withdrawn into the housing, will interpose parts of its between the ring segments and the inner surface of the housing in a manner to prevent the needed pivotal movement of the ring segments in order to separate them.

It is therefore the primary object of the present invention to provide a device by which the movement of a locking bar to a position within a housing will lock the ring segments in their closed position, with the locking bar thereafter rendered inaccessible by reason of its complete insertion within the housing.

With these and other objects to be hereinafter set forth in view, I have devised the arrangement of parts to be described and more particularly pointed out in the claims appended hereto.

In the accompanying drawing, wherein an illustrative embodiment of the invention is disclosed,

FIG. 1 is a vertical sectional view through a ring binder mechanism, constructed in accordance with the invention;

FIG. 2 is a view of the under side of the structure shown in FIG. 1, but with the ring-carrying plates omitted to more clearly disclose the construction of the locking bar;

FIG. 3 is a sectional view, taken substantially on the line 3—3 of FIG. 2, looking in the direction of the arrows;

FIG. 4 is a view of the under side of the locking bar;

FIG. 5 is a side elevational view of the locking bar, and

FIG. 6 is a view of a portion of the under side of the binder mechanism, showing the locking bar in its housed position and effective to prevent opening or separation of the ring segments.

Referring to the drawing, 1 generally indicates the elongated springy housing generally employed in ring binders. The same has a top panel 2 which is upwardly

arched as shown in FIG. 3 and is provided along its opposite longitudinal edges with inturned flanges 3 and 4.

Confined within the housing 1 between the side flanges 3 and 4 thereof, is a pair of similar metal plates indicated respectively at 5 and 6 and disposed in side-by-side relation. The ends of the ring segments or halves 7 are secured to these plates by being riveted, welded or otherwise attached to them. In the closed position of the ring segments, as shown in FIG. 3, the two plates 5 and 6, carrying these ring segments, incline downwardly. When the ring segments are opened or spread apart, the plates incline upwardly, the same being able to assume such position due to the resilience or springiness of the body of the housing 1. The structure thus far described is known in ring binder construction.

At 10 is shown the locking bar, which is in the form of an elongated metallic strip provided with an angular lip 11 at one end and with a tongue portion 12 at its opposite end, said tongue portion being capable of sliding movement through an aperture 13 provided at the junction of the panel 2 and one of the end walls 14 of the housing 1. In said tongue portion 12 there is provided a projection or stop 15, the purpose of which will be presently explained. As will be noted in FIG. 5, one portion of the locking bar, and which portion includes the tongue 12, is slightly bent at an angle as indicated at 16.

The housing 1 is adapted to be attached to the back of a binder in the known manner namely, by means of the rivets 17 and 18, and the locking bar 10 is provided with a pair of slots 19 through which the rivets 17 and 18 extend and which slots permit a limited sliding movement of the locking bar. The longitudinal edges of the locking bar are provided with suitably spaced notches 20 which, when the locking bar is in its inoperative or unlocked position, as shown in FIG. 2, register with and clear the ends of the rings 7, so that at that time it is possible to open or separate the ring segments since the locking bar does not then interfere with the pivotal movement required by the ring segments in order to separate them.

When the binder mechanism is fitted on a binder by attaching the same thereto by means of the rivets 17 and 18, the locking bar is located in its inoperative or unlocked position, as shown in FIG. 2, at which time the tongue portion 12 of the locking bar extends through and projects out beyond the slot 13 where it is available for manual engagement to slidably move the locking bar. At this time, the notches 20 are registered with the ring segments 7 so that the ring segments are free to be separated or moved to open or spread position, permitting the pages or leaves to be placed on the rings. The ring segments are opened or spread apart manually and after the leaves or pages are placed on them, they are closed or brought together to the position shown in FIG. 3.

To effect the permanent locking of the rings in their closed position and their maintenance in such position, the locking bar 10 is slid inwardly or toward the right as viewed in FIG. 2, until it is completely housed within the housing 1 as shown in FIG. 6. The normally angular position of the portion 16 of the locking bar is such that at the end of the withdrawal movement of the locking bar into the housing, the end of the bar enters the housing and reaches a point just inwardly of the end wall 14 thereof, and said end of the bar will spring down and will become located below the slot 13 and will become disaligned therewith and cannot be reached to move the bar lengthwisely. The projection 15 on the bottom of the locking bar 10 is primarily employed to hold the bar in its extended or unlocked position shown in FIGS. 1 and 2, until the rings are loaded with the leaves or pages and during handling or transportation of the binder

before being filled. Thereafter a slight lift imposed on the end of the bar and an inward thrust on the tongue portion 12 will force the bar 2 into the locking position shown in FIG. 6. It will be noted that when the locking bar is moved to the locking position of FIG. 6 and is wholly positioned within the housing 1, the notches 20 will become disaligned with the end portions of the ring segments 7 and the straight edge portions of the locking bar, located between the notches, will enter between the ends of the rings and the top panel 2 of the housing and will prevent the ring segments from pivotally moving in a manner to enable them to be separated. They will thus remain in locked position.

The described arrangement is such that when the locking bar is inserted within the housing as above described, the rings will be permanently locked and can only be separated by removal of the rivets 17 and 18 to obtain access to the locking bar and effect its movement to unlocked position.

Having thus described a single embodiment of the invention, it is obvious that the same is not to be restricted thereto, but is broad enough to cover all structures coming within the scope of the annexed claims.

What I claim is:

1. In a ring binder, an elongated springy housing for attachment to the inside of the back of a binder, a pair of plates disposed in side-by-side relation within the housing, ring segments having their inner ends connected to the plates, said ring segments being capable of pivotal movement by inclination of the plates to separate the ring segments, spaced rivets for attaching the housing to the back of a binder, a locking bar within the housing and positioned between the inner ends of the ring segments and the inside surface of the top of the housing, said bar being capable of longitudinal sliding movement relatively to the housing, the bar having slots in engagement with the rivets and limiting the longitudinal sliding movement of the bar, the bar having its opposite side edges provided with spaced notches, the notches being positioned to register with the inner ends of the ring segments to permit separating movement of the ring segments when the locking bar is so positioned relatively to the housing

that a portion of the locking bar extends beyond one end of the housing, said end of the housing having an opening through which a part of the locking bar can extend, the locking bar being longitudinally slidable to an extent to completely house it within the housing to render it inaccessible and disalign its notches with the inner ends of the ring segments, the locking bar having an angular end portion movable through the opening and arranged to become disaligned with the opening after said end enters the housing so that it cannot be reached by the insertion of a tool or other object through said opening.

2. In a ring binder, a housing having end walls, one of said walls being provided with a slot, a locking bar having an overall length less than the interior of the housing so that said locking bar can be completely contained within the housing and nested between the end walls thereof, pivotally-mounted ring segments, the locking bar having notches disaligned with the ring segments only when the locking bar is completely contained within the housing and alignment of the notches with the ring segments being had only when a part of the locking bar protrudes out of the slot, the locking bar having an angular end portion which, when the locking bar is wholly contained within the housing, becomes disaligned from the slot so that the tip of the angular end portion is inaccessible through the slot.

3. In a binder as provided for in claim 2, wherein the angular end portion of the locking bar is provided with a projection on its under surface adjacent to its tip to hold the angular portion in a raised position and extending out of the slot to thereby prevent inadvertent sliding movement of the locking bar in a manner to bring its end inside of the housing.

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