W. H. MURPHY.

LOOSE LEAF BINDER.

APPLICATION FILED FEB. 5, 1920.

1,398,388. Patented Nov. 29, 1921.

Fig. 1.

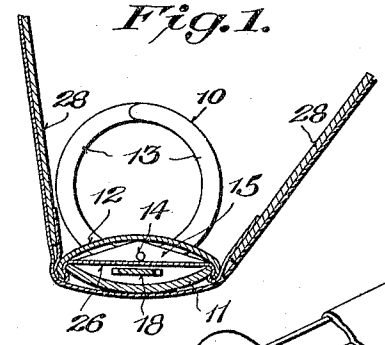


Fig. 2.

Fig. 3.

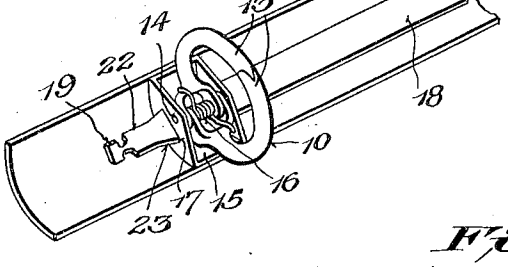


Fig. 4.

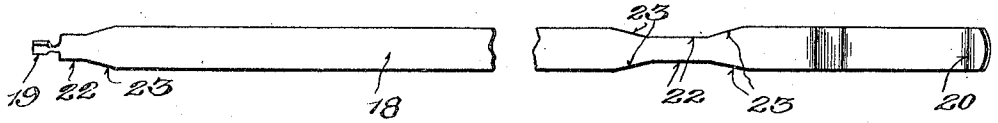


Fig. 6.

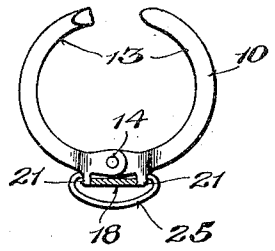


Fig. 5.

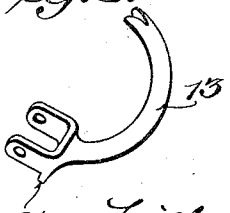


Fig. 7.



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LOOSE-LEAF BINDER.

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Application filed February 5, 1920. Serial No. 356,365.

To all whom it may concern:

Be it known that I, WILLIAM HAROLD MURPHY, a citizen of the United States, and a resident of Independence, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Loose-Leaf Binders; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to improvements in that type of loose leaf binders which comprises binding rings formed of a pair of curved mating binding posts, the mating ends of which are adapted to be moved toward and away from each other to open and close the binding rings for the insertion or removal of pages.

One object of the present invention is to provide a simple but substantial and durable actuating and locking mechanism for the binding rings so as to render the binder less expensive to manufacture. A further object is to arrange the locking mechanism below the binding rings so that the entire length of the latter may be utilized, thus securing a greater capacity for the book. Another object is to construct the actuating mechanism to positively lock the rings closed, but when the locking mechanism is released the rings will be opened by means of springs, thus eliminating the necessity of the user opening or closing the rings with his fingers.

In the accompanying drawings,—

Figure 1 is a cross sectional view of a preferred form of loose leaf binder embodying the present invention.

Fig. 2 is a perspective view of the back of a binder with the mechanism assembled, the binding rings being shown opened and a part of the housing broken away for the purpose of better illustrating the interior parts.

Fig. 3 is a similar view with the top of the housing removed and showing the rings closed.

Fig. 4 is a plan view of the locking mechanism actuator.

Fig. 5 is a detail view of one of the binding posts.

Fig. 6 is a sectional view of a modified form of mechanism, and

Fig. 7 is a detail view of the spring employed in the modified form.

As shown in the drawings, the binding rings 10 are mounted in a housing formed by the back 11 of the binder and a top 12, ends of the back 11 being turned upward to close the ends of the housing.

The binding rings 10 each consists of two curved mating binding posts 13 pivotally secured on a pin 14 mounted in supports 15 in the housing, a coiled spring 16 being secured on the pin 14 and having its ends in engagement with the binding posts to tension the binding ring open, as shown in Fig. 2.

Below he binding rings 10 the supports 15 are provided with apertures 17 in which is mounted a longitudinally slidable locking bar or slide 18, one end of said bar being twisted as at 19 and its other offset as at 20, to prevent accidental displacement of the bar and the offset end 20 also forming a handle by which the bar may be moved in the apertures 17. Throughout the greater portion of its length bar 18 is of sufficient width to engage, at its sides, depending ears or projections 21 formed on the bottom of the locking posts 13, whereby when the bar is moved into position where the sides will engage the projections 21 on the posts, said posts will be rocked on pivot pin 14 and their mating ends brought together where they will be locked by the bar 18. To permit the binding rings 10 to be opened, the bar 18 is formed of a reduced width in proximity to each of the binding posts, as shown at 22, 22, by recesses therein, the sides of the bar between the narrowest and widest portions constituting cam surfaces 23 to facilitate manipulation of bar 18. When the bar 18 is moved to a position where the narrower portions 19 will lie between the projections or ears 21 of the binding posts, spring 16 will oscillate the binding posts on their pivot pin and open the ring. By effecting the opening and closing of the rings 10 in this manner, the operator does not have to touch the rings and by positively locking the rings closed they cannot be opened by taking the book up by the leaves nor by dropping the book.

In the modification shown in Figs. 6 and 7, the coil spring 16 heretofore described is dispensed with, and a curved plate spring 25 substituted therefor. The ends of spring

25 engage the outer sides of projections 21 and tend to force said side projections toward each other and open the rings 10 when the bar 18 is moved to bring its recessed portions 19 in registry with said projections. The rings 10 are closed by the bar 18 in the same manner as in the other type of binder.

In a binder of this last form, the entire mechanism is located below the binding rings, thus giving the binder a maximum capacity. Furthermore, a spring such as the one used in this form of device is less liable to break, due to excessive opening and closing of the binding rings.

The top 12 which may be constructed of any suitable metal, is provided for the purpose of completing the housing of the mechanism and to hold a strip of cloth 26 in a fixed position across the back 11 and over the edges thereof. Notches 27 are formed in the top through which the rings 10 project and the top is made sufficiently large to fit down over back 11 with the cloth 26 between, and is fastened on back 11 by means of its edges being clenched down upon the cloth and against the back of plate 11 and further by the bent up ends of the back, one end of which is slotted to permit bar 18 to pass therethrough. Cloth 26 is provided for assisting in holding the book cover boards 28 to the housing of the mechanism, cloth 26 being glued to the inside of the cover boards 28 and the cloth on the outside of the cover boards being glued to the back 11.

What is claimed is:

1. In a loose leaf binder, the combination with the back, of binding rings each comprising a pair of mating binding posts or prongs pivotally mounted on said back, transversely spaced projections on the binding posts, said projections being on the exterior of said posts and located below the binding surfaces of the posts, a locking bar below said posts and positioned between the projections of each of said binding rings, said bar being of reduced width adjacent each pair of binding posts to form cam surfaces on each of its sides, said cam surfaces being adapted to engage the projections on said posts to close the binding rings, and means independent of the bar for opening said rings when the reduced portions of the bar are moved intermediate the projections on the binding posts.

2. In a loose leaf binder, the combination with the back, of binding rings each comprising a pair of mating binding posts or prongs pivotally mounted on said back, transversely spaced projections on the binding posts, said projections being on the exterior of said posts and located below the binding surfaces of the posts, a locking bar below said posts and positioned between the projections of each of said binding rings, said bar being of reduced width adjacent each binding ring to form cam surfaces on each of its sides, said cam surfaces being adapted to engage the projections on said posts to close the binding rings, and a spring for each pair of binding posts and adapted to open the rings when the reduced portions of the bar are moved intermediate the projections on the binding posts.

3. In a loose leaf binder, the combination of a binding ring comprising a pair of mating binding post members, resilient means for yieldingly holding said ring open, transversely spaced projections formed on said ring members and adapted to be moved toward each other when the ring is opened and away from each other when said ring is closed, said projections being located below the binding surfaces of the ring members, and a longitudinally slidable locking bar positioned between said projections of sufficient width to force said projections apart whereby the ring may be locked closed, said bar being of reduced width adjacent the binding ring whereby said ring may be opened when the reduced portion is moved intermediate the projections.

4. In a loose leaf binder, the combination of a binding ring comprising a pair of mating binding post members, transversely spaced projections formed on said binding ring members adapted to be moved toward and away from each other when the ring is opened and closed, respectively, a spring positioned below the binding ring and engaging said projections adapted to move said projections toward each other and yieldingly hold the ring open, and a locking bar positioned between said projections adapted to move said projections apart and hold said ring closed.

5. In a loose leaf binder the combination with the back, of spaced transverse supports carried by said back, each of said supports having an aperture therein, binding ring posts pivotally mounted on the supports, means for yieldingly holding the binding rings open, and a locking bar slidably mounted in the apertures in the supports for locking said rings in closed position.

6. In a loose leaf binder the combination with the binding rings each composed of a pair of posts, supports for said posts, said supports each having an aperture therein below the binding ring posts, a depending projection on the lower end of each post, a locking bar slidably secured in said apertures for engagement with the projections on the posts whereby said posts may be closed, said bar being of reduced width adjacent each ring, and a spring for opening the rings when the reduced portions of said bar are moved intermediate the projections on the posts.

WILLIAM HAROLD MURPHY.