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LOOSE LEAF BINDER

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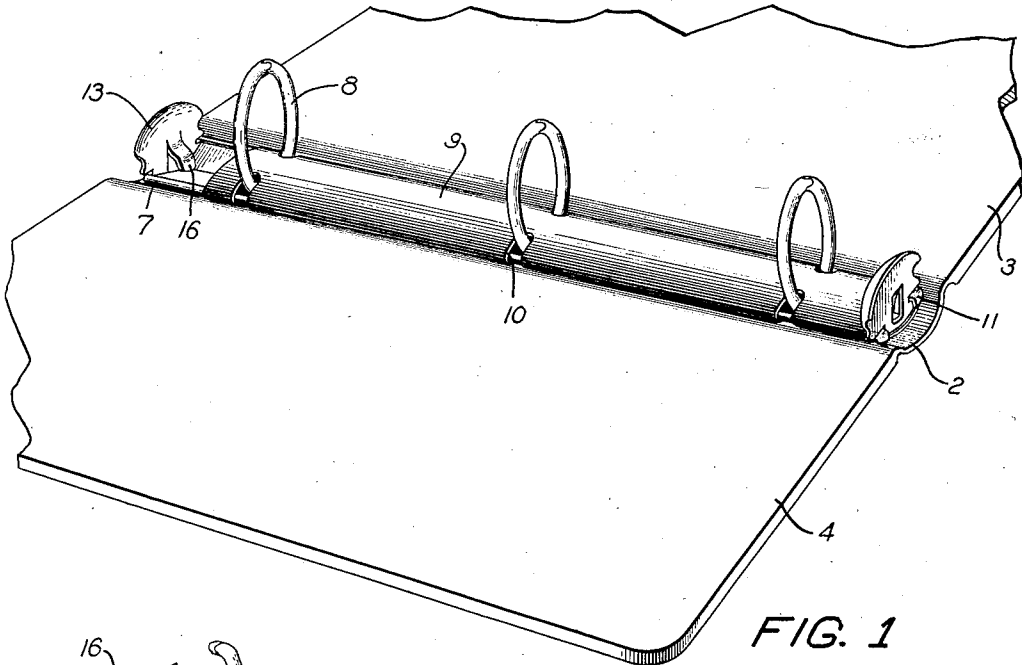


FIG. 1

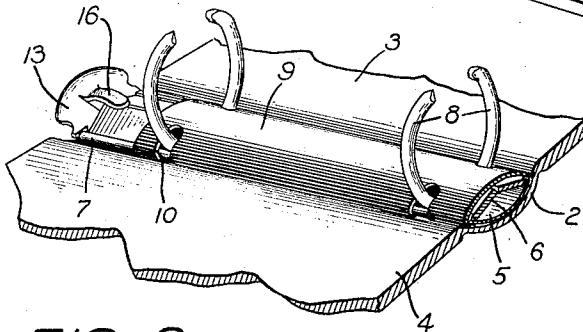


FIG. 2

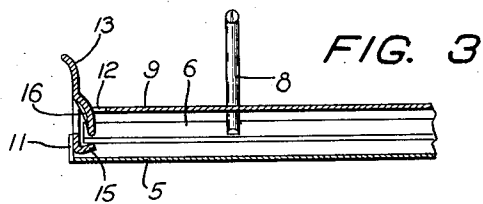


FIG. 3

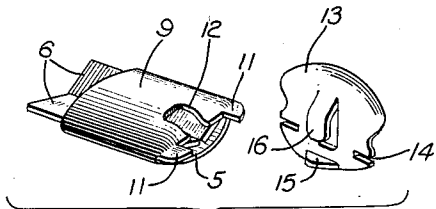


FIG. 5

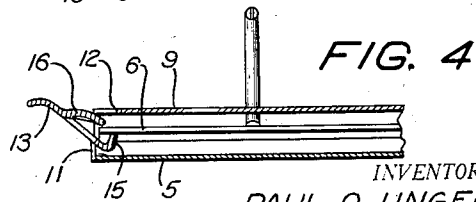


FIG. 4

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LOOSE LEAF BINDER

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9 Claims. (Cl. 129—24)

This invention relates to a loose leaf binder, and more particularly to a trigger for opening and closing the sheet retaining prongs of a loose leaf binder.

Triggers adapted to open and close the prongs of a loose leaf binder have been known in the past, but few of them have achieved any degree of success, either because the devices were not positive in operation, or were too expensive or complicated for commercial production. In many such structures the prongs are interlocked in closed position. Accordingly, if the user attempts to open the prongs by hand, the toggle plates cannot be moved and the rings will be bent out of shape.

It is an object of this invention to provide a simple and efficient trigger capable of opening and closing the sheet retaining prongs of a loose leaf binder. It is a further object of this invention to provide a trigger that is easily assembled with a ring metal and will not become displaced from its proper position in use. It is a further object of this invention to provide a trigger that will not interfere with manual opening of the sheet retaining prongs. Other objects of this invention will become apparent upon reading the following description, taken in conjunction with the accompanying drawing, in which

Figure 1 is a perspective view of a loose leaf binder embodying the invention with parts broken away to facilitate illustration of the structure when the prongs are in closed position;

Figure 2 is a fragmentary view showing the prongs in open position;

Figure 3 is a fragmentary longitudinal sectional view taken through the center of the ring metal with the prongs in closed position;

Figure 4 is a view similar to Figure 3 showing the prongs in open position; and

Figure 5 is a detail perspective showing the end of the ring metal and the trigger before assembly.

In the drawing, the reference numerals 2, 3 and 4 respectively indicate a back member and a pair of cover members on opposite sides of said back member. The back member and cover members may be of any conventional design. A metal spring back 5 is secured to the back member 2 in any suitable manner. A pair of toggle plates 6 is mounted in the spring back with the outer edges of the plates abutting the edges 7 of the spring back. Each toggle plate has secured to it a plurality of sheet retaining prongs 8 which engage the ends of opposite prongs to form closed rings when the toggle plates are in the position illustrated in Figures 1, 3 and 5. A

cover plate 9 is positioned over the toggle plates 6 with its outer edges embracing the edges of the spring back. The cover plate is notched at its edges, as indicated at 10, to allow the necessary clearance for the sheet retaining prongs.

Each end of the cover plate 9 is provided with a pair of integral projecting tongues 11 and a centrally disposed notch 12. A trigger 13 is provided with a pair of slots 14 into which the tongues 11 are adapted to fit. In order to facilitate assembly of the triggers with the cover plate, the tongues 11 are flattened to cause them to lie in the same plane. After the trigger has been positioned against the end of the ring metal with the tongues 11 projecting through the slots 14, the tongues 11 are bent downwardly, as shown in Figure 1.

The trigger is provided with a boosting lip 15 which is preferably integral with the trigger and is bent from the lower edge of the trigger to project under the ends of the toggle plates 6, as shown in Figures 3 and 4. When the mechanism is in the position illustrated in Figure 3, a small outward and downward force applied against the upper portion of the trigger will cause the lip 15 to lift the toggle plates 6 and thereby move the sheet retaining prongs 8 to open position. As can be seen in Figures 3 and 4, the trigger pivots about the line of engagement between the tongues 11 and the slots 14 rather than on the spring back 5. This arrangement facilitates the assembly of the triggers with the ring metal and virtually eliminates the possibility of the trigger being displaced from its proper position during use.

The trigger 13 is provided with another lip 16 projecting inwardly into the notch 12 so as to engage the upper surface of the toggle plates and to depress them to close the prongs when the triggers are pressed inwardly. The lip 16 is shown as being integral with the trigger and struck out therefrom, but it will be understood that it may be formed separately and may be secured to the trigger in any suitable manner.

It is essential that the lip 16 project inwardly beyond the pivot point of the trigger so that if the prongs are opened manually the toggle plates will move the trigger to the position shown in Figure 4. If the lip 16 didn't extend far enough inwardly of the pivot point, any effort to open the rings manually would result in a direct vertical force against the lip 16 which would be opposed by the connection between the trigger and cover plate. In other words, the pivot point of the trigger and the point of application of force to

the trigger by the toggle plates tending to open the rings would be in the same vertical plane, and the trigger would not move around its pivot. The lip 16 would prevent upward movement of the toggle plates 6, and the continued application of force would cause the prongs to be bent out of shape.

Although I have illustrated and described a loose leaf binder in which the ring metal is provided with a trigger at each end, it will be understood that the mechanism may be operated by a single trigger and that the other trigger may be eliminated. In this case one end could be closed by the end of the cover plate or by an end cap of any suitable design. The construction with a trigger at each end is preferred, because it gives the ring metal a more balanced effect and enables the prongs to be opened from either end of the binder.

While I have described a preferred embodiment of my invention in considerable detail, it will be understood that the description 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 structure described, except as limited by the appended claims.

I claim:

1. In a loose leaf binder, a ring metal including a cover plate provided with a pair of projecting tongues, and a trigger slotted to receive said tongues, said tongues being bent against said trigger to retain said trigger in position adjacent the end of said ring metal.

2. In a loose leaf binder, a ring metal including a pair of toggle plates and a cover plate, and a trigger having a depressing lip projecting therefrom, said cover plate being notched to allow said lip to project therethrough.

3. In a loose leaf binder, a pair of toggle plates and a trigger pivoted adjacent one end of said toggle plates, said trigger having a booster lip engageable with the lower surface of said toggle

plates and a depressing lip engageable with the upper surface of said toggle plates.

4. In a loose leaf binder, a pair of toggle plates, a cover plate, a trigger pivotally secured to said cover plate, a booster lip projecting from said trigger to engage the lower surface of said toggle plates, and another lip projecting from said trigger to engage the upper surface of said toggle plates.

5. In a loose leaf binder, a pair of toggle plates, a trigger pivoted adjacent one end of said toggle plates, and a lip struck out from said trigger and engaging the upper surface of said toggle plates, the point of engagement of said lip with said toggle plates being spaced inwardly of said pivot a distance sufficient to allow said toggle plates to move said trigger around said pivot when said toggle plates are moved upwardly.

6. In a loose leaf binder, a pair of toggle plates, a trigger, and a lip struck out from said trigger, said lip being adapted to depress said toggle plates when said trigger is pressed in one direction.

7. In a loose leaf binder, a pair of toggle plates, a plurality of sheet retaining rings mounted on said toggle plates, and a ring opening and closing trigger pivoted adjacent one end of said toggle plates, the ring closing means of said trigger comprising a lip struck out from said trigger.

8. In a loose leaf binder, a pair of toggle plates, and a trigger including a lip projecting from its lower edge and another lip struck out from said trigger, said first mentioned lip being operable to boost said toggle plates, and said second mentioned lip being operable to depress said toggle plates.

9. In a loose leaf binder, a cover plate notched at one end, a pair of tongues projecting from said end on opposite sides of said notch, a pair of toggle plates positioned under said cover plate, and a trigger secured to said cover plate by said tongues, said trigger having a lip projecting through said notch into engagement with said toggle plates.

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