July 26, 1966 G. P. SHILLINGER 3,262,454

BINDER ASSEMBLY

Filed June 23, 1964 2 Sheets-Sheet 1

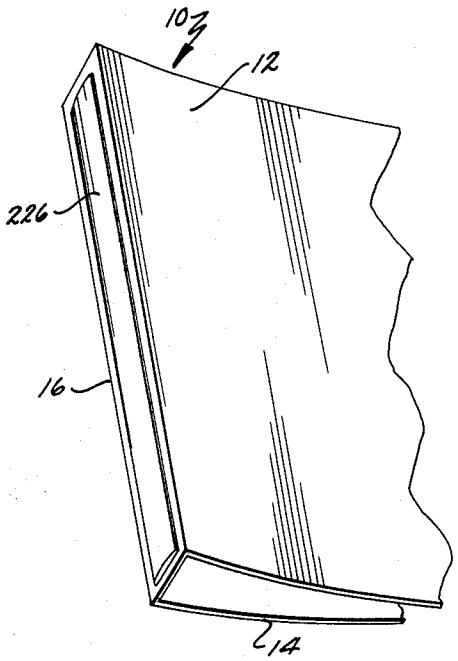



FIG. 1.

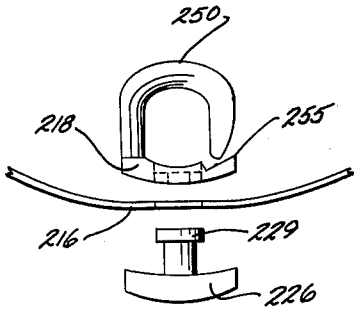



FIG. 4.

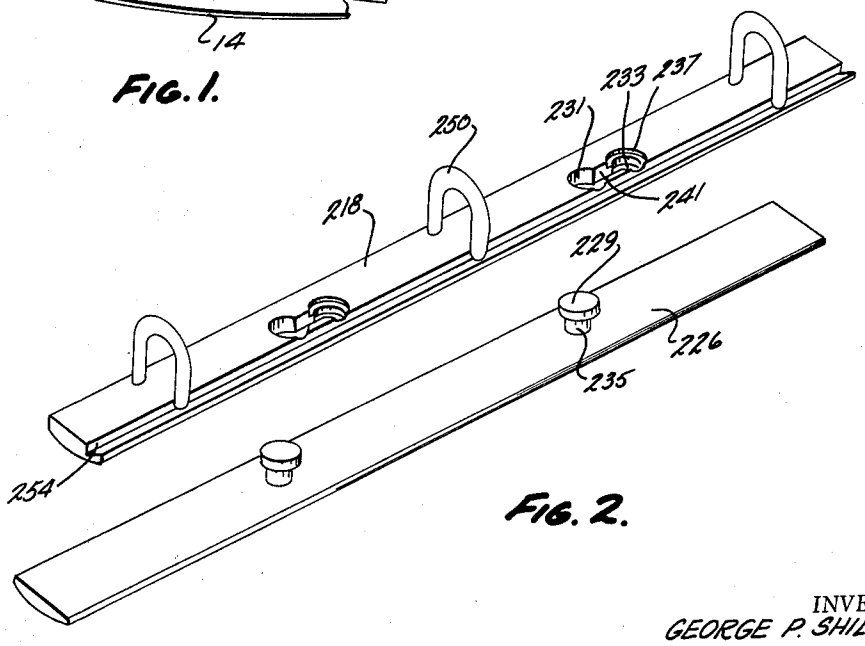



FIG. 2.

INVENTOR.
GEORGE P. SHILLINGER
BY Price & Heneveld
ATTORNEYS

July 26, 1966 G. P. SHILLINGER 3,262,454

BINDER ASSEMBLY

Filed June 23, 1964 2 Sheets-Sheet 2

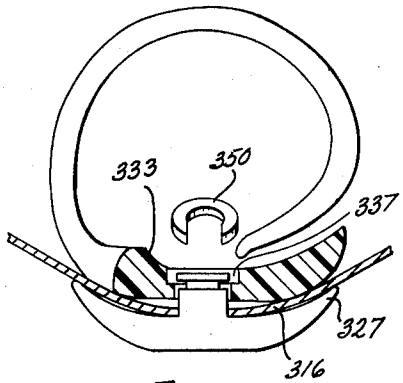



FIG. 6.

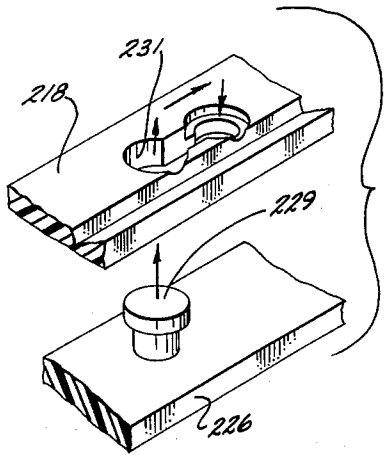



FIG. 3.

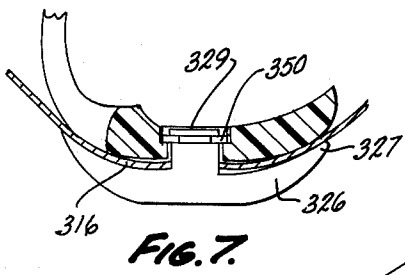



FIG. 7.




FIG. 5.

INVENTOR.
GEORGE P. SHILLINGER

BY Price & Heneveld

ATTORNEYS

United States Patent Office

3,262,454

Patented July 26, 1966



3,262,454

# BINDER ASSEMBLY

George P. Shillinger, 735 Wendover Blvd., Muskegon, Mich.

Filed June 23, 1964, Ser. No. 377,294
1 Claim. (Cl. 129—1)

This invention relates to loose leaf binders, and more particularly to a manually attachable detachable ring assembly for loose leaf binder jackets.

The page holding ring assemblies of conventional loose leaf binders usually either have two or three snap open, metal rings to hold the pages in rigid covers, or alternatively a large number of adjacent resilient, split plastic rings that retain both the pages and cover sheets.

The metal ring type is relatively complex and expensive due to the support back ridge allowing ring spreading. It must be manufactured by special equipment and techniques. The plastic ring type is less expensive due to its structural simplicity. However, it requires special machinery to open all of the rings simultaneously for assembly of cover sheets and pages. Consequently, after the sheets and covers are prepared in a print shop, the printer must assemble them on special equipment in his shop or send them to a binder for assembly on his special machines.

Neither type enables removal of the ring structure from the cover jacket once it is assembled. Only the metal ring type enables page removal without tearing unless special equipment is used.

It is an object of this invention to provide a relatively inexpensive binder than enables the ring assembly to be installed manually at a print shop or the like, without requiring any special machinery. The complete assembly of the loose leaf booklet can, therefore, be prepared in a few seconds time by a person having no special skill and utilizing no special tools.

Another object of this invention is to provide a loose leaf binder employing easily assembled plastic ring and ring lock structures that can be formed relatively inexpensively by conventional forming techniques, and assembled when and where desired.

It is another object of this invention to provide an inexpensive plastic ring loose leaf binder that enables pages to be subsequently manually inserted or removed with little effort.

These and several other objects of this invention will become apparent upon studying the following specification in conjunction with the drawings in which:

FIG. 1 is a perspective fragmentary view of a loose leaf binder forming the first form of this invention;

FIG. 2 is a perspective exploded view of the two main components with a jacket and forming the first form of this invention;

FIG. 3 is an enlarged, fragmentary, perspective view of the components illustrated in FIG. 2;

FIG. 4 is an end elevational view of the components illustrated in FIGS. 2 and 3;

FIG. 5 is a perspective, exploded view of the main components of a second form of this invention;

FIG. 6 is a fragmentary, sectional, elevational view of the components in FIG. 5 being combined with the back edge of a jacket; and

FIG. 7 is a sectional view of the components in FIG. 6 as assembled.

Referring now specifically to the first form of the invention shown in FIGS. 1 through 4, the complete binder assembly **10** includes a jacket which has a front cover page **12**, a back cover page **14**, and an intermediate connecting back edge **16**.

On the inner face of this back edge is mounted an elongated plastic plate or strip **218** extending substantially



the length of the back edge. Protruding inwardly into the jacket from the exposed face surface of this strip are a plurality of spaced, resilient, split plastic rings **250**. Each ring has portions that overlap for page retention after insertion.

The plastic components may be of several suitable materials such as polyethylene, vinyl polymers, nylon, or others with sufficient strength, resiliency, and forming capacity to assume the desired configurations. In the broadest aspects these may be formed of other materials such as metals, e.g. spring steel.

It is conceivable that the particular type of locking structure and the particular structure of the interlocking strips and/or the connectors therebetween can be modified somewhat within the broader aspects of this invention.

Along the outer face of the back edge is a second elongated strip **226** to cooperate with strip **218** to form basic interlocking components. Element **226** is formed with a slight arcuate configuration and a concave inner surface that fits against the outside face of back edge **216**. Also, preferably element **218** is bowed slightly inwardly.

Element **226** includes spaced lateral projections, each with an enlarged head **229** and a smaller neck **235**. The disc-shaped head is smaller in diameter than a corresponding through opening **231** in element **218**, but larger in diameter than an adjacent opening **233** connected to opening **231** by a slot **241**. The slot has a diameter slightly larger than neck **235**. A countersunk recess **237** slightly larger than head **229** is provided on opening **233** to receive the head and enable a flush fit to be obtained upon interconnection of the locking components. The openings and connecting slot comprise receiving sockets.

Assembly of these components basically follows the movements indicated by the arrows in FIG. 3. The two elongated resilient elements are placed on opposite sides of back edge **216** so that the lower element is slightly offset longitudinally from the upper element to enable enlarged head **229** to fit through opening **231**. Normally, the head will not pass clear through the opening until the elements are deformed temporarily together to a generally flattened condition. When the strip is deformed, the head passes through the opening. Element **226** is then slid longitudinally with respect to element **218** and the back edge to move head **229** over opening **233**. Upon release of the deforming pressure, the inherent resilient bias of the curved element **226** pulls head **229** down into countersunk recess **237** for an interlocked connection. The natural resiliency of the plastic retains the interlock and prevents accidental disassembly of the unit.

Purposeful disassembly of the structure is accomplished by reversal of the steps, i.e. pressing the strips together, sliding element **226** back, and allowing head **229** to withdraw from opening **231** upon release of pressure due to inherent resiliency of the strip.

It will be noticed that the unique rings **250** which form an integral part of element **218**, actually are spaced from the receiving sockets and heads. Element **218** also preferably includes a unique channel **254**, the back edge of which serves as a "stop" surface for inserted pages, to facilitate simple assembly of pages into the notebook. Yet, the rings retain the pages once inserted since the pages rest on edge **255**. This particular ring and strip structure is described and claimed more particularly in my copending application entitled RING, Serial No. 377,592, filed June 24, 1964.

## SECOND FORM

In FIGS. 5, 6 and 7 is shown a preferred variation of the construction described previously. The receiving sockets are not elongated as previously and the elements include added collar locks.

More specifically, referring to FIGS. 5 through 7, the

interlocking, elongated, resilient, plastic components **318** and **326** are slightly arcuate in configuration. Element **326** has male-type protrusions, each having a head **329** on an adjacent slotted neck portion **335**. These protrusions interfit with the circular openings or sockets **331** in element **318**. The openings preferably have a countersunk, upper enlarged recess **337** coaxial therewith to receive the larger diameter collars to be described, and form a flush fit when assembled. The outside element **326** also has a pair of deformable, resilient lip edges **327** which curl up to have a curvature greater than the curvature of the adjacent portions of element **318**. When the two elements are pressed together over the jacket back edge, the lips must be resiliently deformed so that, upon release of the force, the resilient bias of the lip edges tends to force the two strips apart to draw the rigid, thin collars **350** tightly into the recesses. This binds the assembly together on the jacket. The two elements fit into interengaging relation with each other on opposite sides of back edge **316** of the loose leaf jacket. These plastic collars are normally unattached to the other components until assembly is complete.

Assembly is achieved by placing the two strips **318** and **326** on opposite sides of back edge **316** of the jacket, inserting the male members through openings in the back edge, pressing the elements together until the concave surfaces are forced together against the inherent bias of the resilient strip. The male members are inserted as far as possible. Then collars **350** are slid into slots **335** of each protrusion. When the elements are released, the resilient bias of element **326** retracts the collars back into countersunk recesses **337** in strip **318**, to retain the assembly in an interlocked condition.

Rings **351** are integral with strip **318**, as previously. The elongated concavity **333** forms a stop edge for the pages according to the principles of my copending application identified above.

It will be realized from observation of the forms of the invention illustrated that each of these has advantages for some particular uses. There are definite differences between the forms of the invention, but both have certain principles in common in the broader concept presented. It may be apparent to those in this field after studying these particular preferred forms of the invention, that certain other forms can be achieved by combining certain features and/or altering details of these modifications, yet without departing from the inventive concept presented. Accordingly, this invention is to be limited only by the scope of the appended claim and the reasonably equivalent structures to those defined therein.



I claim:

A loose leaf binder including a cover having a back panel, an elongated plastic plate located along the inside of said back panel, and having a plurality of integral, spaced sheet supporting rings extending from one face thereof away from said back panel; a plurality of locking sockets therein, each including a through opening and a countersunk enlarged recess in said one face; an elongated plastic locking bar along the outside of said back panel, including a plurality of spaced projections extending through said back panel and said sockets; each of said projections having edge slots near to but spaced from the outer end thereof; a plurality of enlarged diameter slotted collars slidably engaged on respective ones of said projections in said edge slots and received in said recesses; and said locking bar including a pair of resilient, deformable, edge lips curled toward said back panel and, when assembled, being resiliently deformed and under compression to hold said collars into tight engagement with said recesses.


**References Cited by the Examiner**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 1,599,526 | 9/1926 | Hatz | 129—23 |
| 1,895,972 | 1/1933 | Childs | 129—23 |
| 1,905,097 | 4/1933 | Irving | 129—1 |
| 1,970,285 | 8/1934 | Douvry | 129—1 |
| 2,017,342 | 10/1935 | Dawson | 129—1 X |
| 2,157,872 | 5/1939 | Trussell | 281—25 |
| 2,280,184 | 4/1942 | Brennan | 281—19 X |
| 3,175,847 | 3/1965 | McKowen | 281—36 |

FOREIGN PATENTS

| | | |
|---|---|---|
| 876,245 | 7/1942 | France. |
| 25,598 | 1911 | Great Britain. |
| 483,709 | 4/1938 | Great Britain. |


JEROME SCHNALL, *Primary Examiner.*