Oct. 15, 1957 J. MacLEAN 2,809,636

ROLL RING BINDERS

Filed June 16, 1954 2 Sheets-Sheet 1

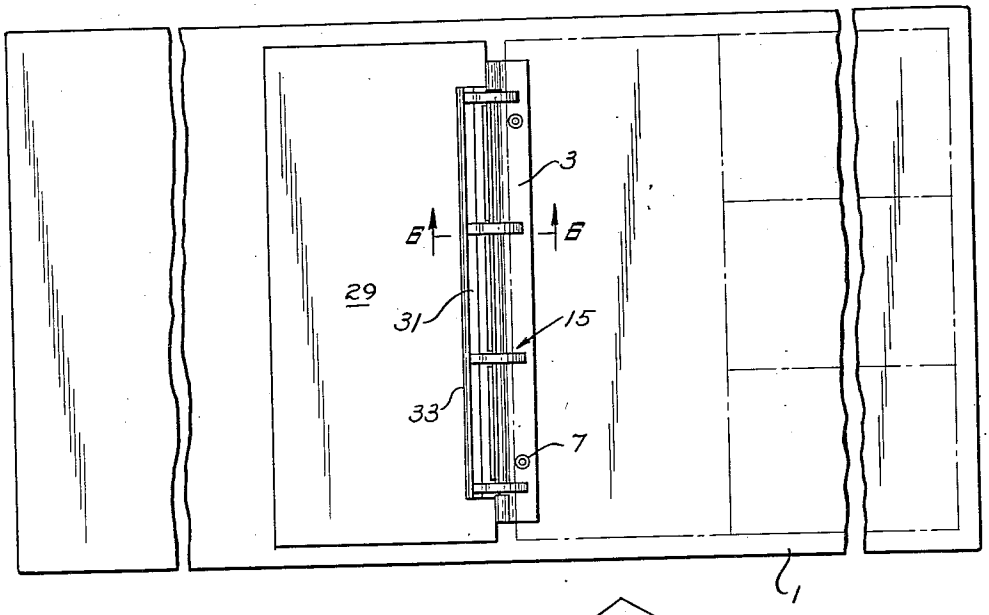


Fig. 1

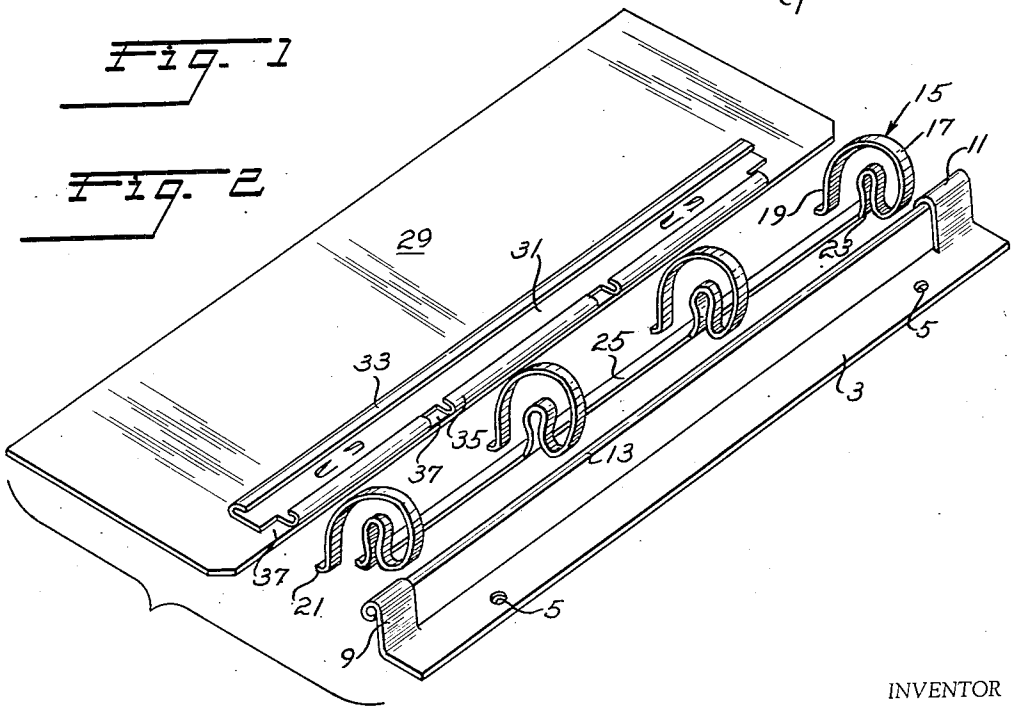


Fig. 2

INVENTOR

JOHN MACLEAN, deceased

by JOHN R. MAC LEAN, ADMINISTRATOR

BY Robert J Patm

ATTORNEY

Oct. 15, 1957 J. MacLEAN 2,809,636

ROLL RING BINDERS

Filed June 16, 1954 2 Sheets-Sheet 2

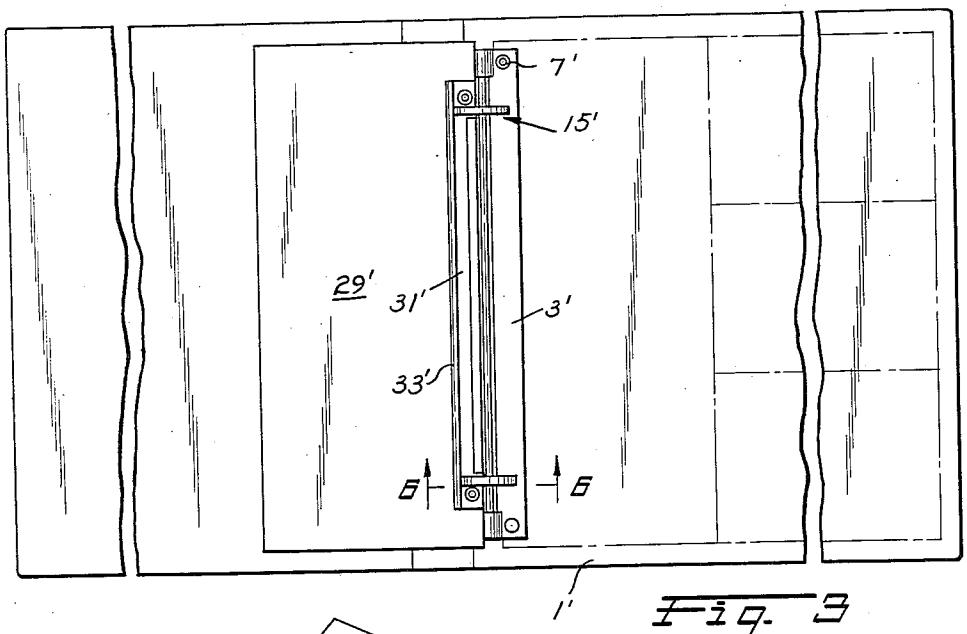


Fig. 3

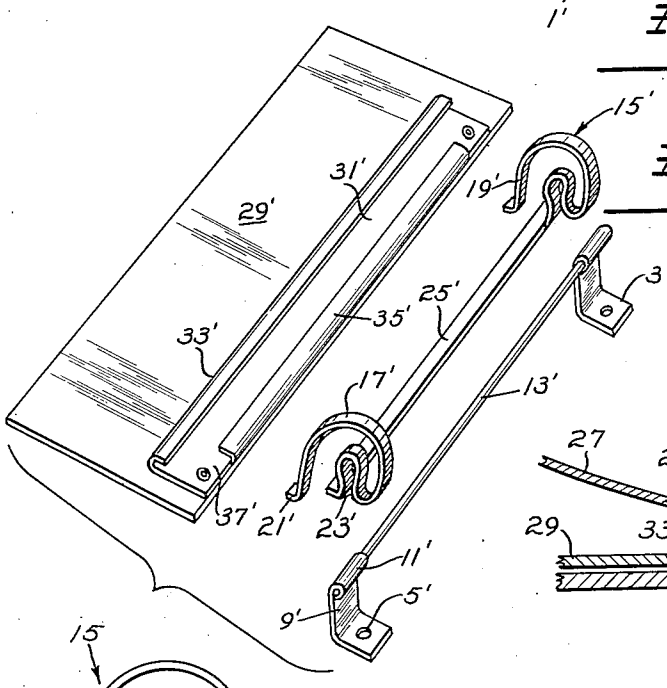


Fig. 4

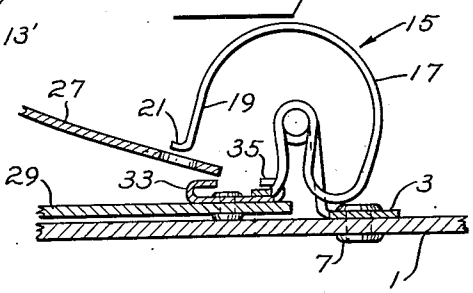


Fig. 5

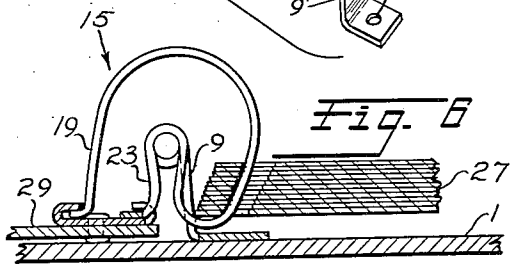


Fig. 6

INVENTOR

JOHN MAC LEAN, deceased

by JOHN R. MAC LEAN, ADMINISTRATOR

BY Robert J. Patton

ATTORNEY

United States Patent Office

2,809,636

Patented Oct. 15, 1957

2,809,636

ROLL RING BINDERS

John MacLean, deceased, late of Pueblo, Colo.; by John R. MacLean, administrator, Pueblo, Colo.

Application June 16, 1954, Serial No. 437,023

4 Claims. (Cl. 129—23)

This invention relates to binders for maintaining a plurality of sheets in assembled relation, and more particularly to looseleaf binders adapted to retain a plurality of punched sheets of paper, metal, plastic, cardboard, cloth or the like, and to permit easy addition and subtraction of punched sheets to and from the remainder of the sheets.

Looseleaf binders for punched sheets, as known heretofore, have suffered from the great disadvantage that the punched sheets carried by the binder tended to wear through and tear in the region of the punched holes, especially between the hole and the adjacent edge of the sheet. As the sheets were turned over the rings, they rubbed against the rings and caught in irregularities on the rings, with the result that they soon became torn in the region of the holes and came loose from the binder. This tendency of punched sheets to tear loose from the looseleaf binders of the prior art was so prevalent that it became a well known expedient to reinforce the region of the holes of a punched sheet with small rings of gummed material; and indeed, these gummed reinforcing rings have become a common staple of office equipment.

In an effort to overcome the above disadvantages, a number of expedients have been tried. For example, it has been proposed to greatly multiply the number of rings in a looseleaf binder, thereby cutting down the amount of wear inflicted by each ring upon a given sheet. However, this expedient has resulted in greatly increased cost of manufacture, and in a rather complicated mechanical device having a number of separable rings of which only a few meet squarely and fit tightly together. The rings which did not meet or which were misaligned presented sharp edges and crevices which further tore the sheets. In other efforts to overcome these difficulties, it has been proposed to form the interengaging portions of the ring halves in such a manner as to present a minimum of interruptions in the smooth curve of the closed ring; but even so, the mere frictional wear imposed by dragging the sheets over the rings was still sufficient to tear out the sheets. Thus, persons turning the sheets inevitably tended to pull on them while doing so, with the result that no matter how smoothly the ring was constructed, the sheets would ultimately wear through and tear out.

Although a number of attempts were made to overcome the foregoing difficulties and other disadvantages of the prior art looseleaf binders, none, so far as is known, was entirely successful when carried into practice commercially on an industrial scale, other than those heretofore proposed by the present inventor.

Accordingly, it is an object of this invention to provide a looseleaf binder which will receive and accommodate a plurality of sheets and will hold these in such manner as to be readily accessible, and which will retain the individual sheets and the entire quantity against accidental or casual displacement.

Another object of the invention is to provide a binder

to receive and hold sheets in a position to be retained against displacement and yet to be readily available for reference, and in which one or several sheets can be added or removed to or from any desired place.

The invention also contemplates the provision of a looseleaf binder adapted to retain a plurality of punched sheets, in which the sheets will not wear through nor tear out despite frequent or repeated use.

It is a further object of the invention to provide a looseleaf binder in which the frictional wear between the binder and the punched sheets is practically eliminated.

Still another object of the invention is the provision of a looseleaf binder enabling the filing and removal of sheets with marked ease, and at the same time preventing accidental or inadvertent removal or escape of the sheets.

A further object of the invention is the provision of a looseleaf binder in which the rings and sheets are bodily removable from the binder as a unit for storage.

A still further object of the invention is the provision of a looseleaf binder which is easy to manufacture, cheap to construct, strong and durable in use, simple in operation, and easy to use.

Other objects and advantages will become apparent from the following description taken in conjunction with the accmpanying drawings in which:

Figure 1 is a plan view of a looseleaf binder according to the invention, showing the binder open.

Figure 2 is an exploded assembly view in perspective showing the ring assembly of the binder.

Figure 3 is a view as in Figure 1, but showing a modified form of a binder according to the invention.

Figure 4 is a view as in Figure 2 but showing the embodiment of Figure 3.

Figure 5 is a view as in Figure 6, but showing the binder open for receiving a sheet; and

Figure 6 is a sectional elevational view taken on the line 6—6 of Figure 1.

Broadly stated, the present invention contemplates the provision of a binder having a baseboard, a plurality of ring members mounted on the baseboard for rotation about a common axis spaced from the baseboard, and a throwboard carried by and rotatable with the ring members, so that when the throwboard is turned about the axis, the ring members will turn with it as a unit. The invention further contemplates that the unit comprising the throwboard and ring members be bodily removable from the baseboard, so that sheets carried by the ring members may be stored as a bundle.

Referring now to the drawings, Figure 1 shows a plan view of an open looseleaf binder having a baseboard 1. The baseboard may also have a cover board swingably connected to it; but the presence or absence of a cover board forms no part of the present invention. Hence, it is to be understood that the term "binder" as used in this specification includes binders having a baseboard only, as well as binders having in addition a cover board. Stanchion means 3 is provided with holes 5 to receive eyelets 7 by which stanchion means 3 is firmly attached to baseboard 1. Instead of eyelets 7, rivets or staples may be used to fasten the stanchion means to the baseboard; or the stanchion means may be glued or cemented to the baseboard. Stanchion means 3 is further provided with upstanding ears 9, as best seen in Figure 2, having turned over ends 11 carrying between them a cross shaft 13.

Mounted for rotation on cross shaft 13 is a plurality of ring members 15. Each ring member comprises a roughly circular portion 17 having at one extremity a terminal portion 19 including an outward projection 21. The outward projection 21 comprising part of terminal portion 19 may be formed simply by bending out a tab at

the free end of ring members 15. At the opposite extremity of ring member 15 is a base portion 23 which forms the supporting means for the ring member and is itself formed generally in the shape of a loop and more particularly in a keyhole convolution, whereby the bend of the loop disposed centrally of the ring member is of greater diameter than the width of the throat of the loop radially outward from said bend.

As best seen in Figure 2, a plurality of ring members are provided which are joined at their base portions by bridge means 25 comprising a bar along which the ring members are mounted in substantially coaxial relationship. It will be obvious that ring members 15 and bridge means 25 may be easily manufactured by stamping from strips or sheet metal a thin strip corresponding to the bar and having a plurality of lateral strips, and then bending up the lateral strips into the form of ring members 15. Instead of being formed from strips of sheet metal, the unitary assembly of ring members may be formed from a variety of elongated shapes, as for example wire or thin bar stock. In any event, the material from which the ring members are formed must be to some degree resilient, and for this purpose may be spring steel or the like. Thus it will be obvious that a plurality of ring members is provided on which punched sheets 27 may be filed.

For the purpose of retaining sheets 27 on ring members 15, and also for the purpose of providing a cover for the sheets and a backing for them when they are turned, throwboard 29 is provided. The throwboard may take the form of a cover having substantially the length of the sheets so as to protect the top sheet from wear or dirt; or, as in the case of a checkbook, the throwboard may take the form of a part-length board covering only the check stubs.

Throwboard 29 is detachably connected to ring members 15 and bridge means 25 by means of strip 31, riveted, eyeletted, stapled, glued, cemented or otherwise fastened firmly to throwboard 29. Strip 31 is provided with a first edge 33, which is turned over as by bending to form a first channel means. Strip 31 is also provided with a second edge 35 which is also turned over as by bending and which is the opposite lateral edge of the strip from edge 33. It will be noted that edge 35 defines a second channel means opposed to the first channel means, and that the two channel means open toward each other. Second edge 35 does not extend uninterruptedly full length of strip 31, but is recessed at a plurality of points, as indicated by recesses 37 in Figure 2.

In Figures 3 and 4 is shown a modified form of the invenion having ony two ring members 15′ interconnected by a bar comprising bridge means 25′. Thus, in this modified form, the ring members are disposed at either end of the bridge means. It will also be noted that only two recesses 37′ are needed to accommodate the two base portions 23′, and that these recesses are disposed at either end of second edge 35′. It will of course be understood that the number of rings forms no part of the present invention, and that the term "plurality of ring members" as used in this specification refers to any number of ring members in excess of one.

The assembly of the device is as follows:

When stanchion means 3 has been attached to baseboard 1 as described above, the stanchion means will firmly support cross shaft 13 above the baseboard and parallel thereto. Resilient ring members 15 may then be forced upon the cross shaft by forcing the inner loop comprising base portion 23 around cross shaft 13 until the latter is seated in the bend of the inner loop.

The keyhole convolution of this inner loop assures that the width of the throat of the loop will be less than the diameter of the cross shaft, so that the cross shaft will be in effect resiliently clipped within the bend of the loop. There will be in effect a snap action as the ring member is forced on and pulled off the cross shaft 13. Needless to say, the plural ring members 15, held together in substantially coaxial relationship as they are by bridge means 25, will all be snapped on and pulled off cross shaft 13 as a unit.

However, once seated on cross shaft 13, ring members 15 will be rotatable thereon. Thus, they will rotate about their own axes on the shaft 13 and will give the appearance of rolling over when turning.

The same detachability of the ring members as a unit may be achieved by forming the ring members integral with the cross shaft, in which case the cross shaft turns with the ring members and is detachable therewith. Thus for example, the cross shaft integral with the ring members could be detachably received by spring clips atop the upstanding ears of the stanchion means, or the cross shaft integral with the ring members could be rotatably mounted in the turned-over ends of the upstanding ears with the ears in turn detachably mounted on the baseboard.

Throwboard 29 may be detachably engaged with ring members 15 and bridge means 25. To this end, outward projections 21 are slipped into the first channel means formed by first edge 33, and the bar comprising bridge means 25 is slipped into the second channel means formed by second edge 35. In order that the respective parts may be maintained in this engagement, the first and second channel means defined by first edge 33 and second edge 35, respectively, are spaced closer together than the normal spacing between terminal portions 19 and bridge means 25, so that when engagement is effected as described, ring members 15 will be resiliently deformed by having the gap between terminal portion 19 and base portion 23 narrowed, as best shown by comparison of Figures 5 and 6. The tendency of ring members 15 resiliently to spring back to normal shape will keep terminal portions 19 and bridge means 25 firmly engaged in their respective channel means on throwboard 29, thus maintaining the throwboard and ring members in engagement, and thus closing the gaps between terminal portions 19 and base portions 23. It will thus be seen that when engaged with ring members 15, throwboard 29 will turn as a unit with the ring members about cross shaft 13 as an axis of rotation. It will also be observed that recesses 37 accommodate base portions 23 when bridge means 25 is seated in the second channel means defined by second edge 35.

It will also be apparent first edges 33 and 35 may be replaced with short tabs. Thus, instead of edge 33 defining a continuous channel means, a plurality of tabs may instead be provided, each disposed opposite a recess 37 and each performing the same function as the corresponding portion of edge 33 as shown. Similarly, the lengths of edge 35 may be shortened until mere tabs remain. In any event, the terms "edge" and "channel means" are intended to include either form, and are intended to apply whether the edges and channel means be continuous or discontinuous.

In use, the operation of the devise is as follows:

Starting with the assembled device as shown in Figure 6, and assuming that it is desired to add or subtract sheets, the first step is to push the throwboard 29 to the right, as viewed in Figure 6. This rightward movement of the throwboard will force terminal portion 19 to the right: but base portion 23 will stay where it is, that is, the distance between terminal portion 19, and base portion 23 and bridge means 25 will be lessened. The second channel means defined by the second edge 35 will also move to the right, with the result that bridge means 25 will be disengaged from its seat therein. The throwboard may then be tilted and withdrawn to the left, whereupon second edge 35 will be drawn entirely clear of bridge means 25; and at the same time, outward projection 21 will be withdrawn from its seat in the first channel means defined by first edge 33.

With the ring members thus opened, sheets 27 may be filed thereon, as shown for example in Figure 5. In filing the punched sheets, the free ends of the ring mem-

bers at terminal portion 19 will be inserted into the holes and the sheets assembled on the ring members. The throwboard may then be re-engaged with the ring members in a manner substantially the reverse of that in which it was disengaged from the ring members. In order to re-engage throwboard 29, outward projection 21 may be slipped into the first channel means defined by first edge 33, and the throwboard pushed to the right as seen in Figure 6. When terminal portions 19 have been bent toward base portion 23 a sufficient distance, bridge means 25 will be brought into position to enter the second channel means formed by second edge 35. When seated in the second channel means, bridge means 25 will not be spaced so far from terminal portions 19 as is normal, with the result that ring members 15 will remain resiliently deformed and will press the respective parts into interengagement.

It will of course be understood that outward projection 21 and bridge means 25 may be seated in their respective channels in an order which is the reverse of that described above. Thus, to attach the throwboard, bridge means 25 may be seated first, and terminal portions 19 individually pushed into their seats afterwards. By the same token, to detach the throwboard, terminal portion 19 with associated outward projections 21 may individually be bent back and unseated before bridge means 25 is released from the second channel means. However, the method of attachment and detachment first described is obviously somewhat easier to perform, and for that reason will possibly be preferred by most users of the binder herein described.

When a plurality of sheets have been inserted in the binder and the cover board attached, the binder will then retain the sheets in assembled relation without danger of accidental displacement or escape of any sheet. If it is desired to open the binder to a given sheet, the cover board and a number of sheets above the desired sheet may be lifted up and swung over to expose the desired sheet. However, since the ring members turn as a unit with the cover board, and since the sheets, which are turned have moved as a unit with the cover board, there will be no relative movement between the sheets which are turned and the ring members, with the result that there will be no frictional wear on the sheets being turned in the region of their punched holes. Similarly, when the sheets are turned back to their original position atop the desired sheet, the cover board, turned sheets and ring members will all turn as a unit, thus avoiding frictional wear on the sheets being turned.

When a group of sheets is no longer needed and it is desired to store the same, the assembly ring members, sheets and throwboard may simply be removed bodily from the binder and preserved as a bound folio. For example, when a series of looseleaf checks of the type commonly used in commercial checking accounts has been drawn and it is desired to preserve the stubs in numerical order, the ring and throwboard assembly carrying the bundle of stubs may be withdrawn from the binder and filed, and a new assembly carrying fresh checks may be inserted in its place. In this way, a relatively expensive binder may be used repeatedly; while at the same time used fillers such as check stubs may be maintained in assembled relation against misarrangement or loss.

Thus it will be seen that the present invention provides a looseleaf binder adapted to maintain a plurality of punched sheets in assembled relation, comprising a baseboard, stanchion means upstanding from the baseboard and carrying a cross shaft, so that the cross shaft is supported by the baseboard, a plurality of incomplete, resilient ring members axially rotatably supported by the cross shaft, each ring member having a terminal portion provided with an outward projection and having a base portion spaced from the terminal portion by a gap, bridge means interconnecting the base portions of the various ring members, and keeper means having first channel means thereon adapted to receive the outward projections and second channel means thereon adapted to receive the bridge means, the first and second channel means opening toward each other and being spaced apart a distance less than the normal distance between the outward projections and the bridge means, so that when the outward projections are seated in the first channel means and the bridge means in the second channel means, the gaps will be closed thus maintaining the punched sheets on the ring members against accidental removal, and the ring members will be resiliently deformed thus maintaining them in engagement with the keeper means, and the keeper means and ring members will turn together as a unit, with the result that frictional wear by the rings on the punched sheets being turned will be effectively prevented.

Although the present invention has been described in conjunction with preferred embodiments, it is to be understood that modifications and variations may be resorted to without departing from the spirit and scope of the invention, as those skilled in the art will readily understand. Such modifications and variations are considered to be within the purview and scope of the invention and appended claims.

What is claimed is:

1. A looseleaf binder comprising a baseboard, a cross shaft supported on said baseboard parallel thereto, a plurality of incomplete, resilient ring members mounted on and supported by said cross shaft for rotation substantially about the axis of said cross shaft, each said ring member having a terminal portion adapted to enter punched sheets when the latter are filed on said ring members and a base portion spaced a distance from said terminal portion by a gap, said base portions being interconnected by bridge means, and keeper means adapted to engage said terminal portions and bridge means to close said gaps and prevent accidental removal of said punched sheets from said ring means, said keeper means resiliently deforming said ring members by forcing said terminal portions and base portions closer together to lessen said distance, said resilient deformation maintaining said keeper means in engagement with said ring members whereby said keeper means and ring members turn as a unit, each said ring member having an inwardly extending, outwardly opening loop formed from the material thereof for the reception of said cross shaft in the bend of said loop, said bend of said loop being substantially concentric with said ring member when said keeper means engages said terminal portions to close said gaps.

2. The invention of claim 1, in which the sides of said loop are spaced apart a distance less than the diameter of said cross shaft so that said cross shaft is resiliently retained in said bend of said loop by said sides of said loop.

3. A looseleaf binder adapted to maintain a plurality of punched sheets in assembled relation, comprising a baseboard, a cross shaft supported by said baseboard, a plurality of incomplete, resilient ring members mounted on and supported by said cross shaft for rotation substantially about the axis of said cross shaft, each ring member having a terminal portion provided with an outward projection and having a base portion spaced from said terminal portion by a gap, bridge means interconnecting said base portions, and keeper means having first channel means thereon adapted to receive said outward projections and second channel means thereon adapted to receive said bridge means, said first and second channel means opening toward each other and being spaced apart a distance less than the normal distance between said outward projections and said bridge means, whereby when said outward projections are seated in said first channel means and said bridge means in said second channel means, said gaps will be closed thus maintaining said punched sheets on said ring members against accidental removal, and said ring members will be resiliently deformed thus maintaining them in engagement with said keeper means, and said keeper means and ring members

will turn together as a unit, each said ring member having an inwardly extending, outwardly opening loop formed from the material thereof for the reception of said cross shaft in the bend of said loop, said bend of said loop being substantially concentric with said ring member when said keeper means engages said terminal portions to close said gaps.

4. The invention of claim 3, in which the sides of said loop are spaced apart a distance less than the diameter of said cross shaft so that said cross shaft is resiliently retained in said bend of said loop by said sides of said loop.

References Cited in the file of this patent

UNITED STATES PATENTS

712,297	Gorman	Oct. 28, 1902
1,617,958	MacLean	Feb. 15, 1927
2,139,480	Young	Dec. 6, 1938

FOREIGN PATENTS

32,299	Switzerland	Jan. 25, 1905
568,257	Great Britain	Mar. 26, 1945