United States Patent [19]

Schade

[11] **3,717,416**

[45] **Feb. 20, 1973**

[54] ARCHED RING-WIRE POST BINDER

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[73] Assignee: **National Bank Book Company, Inc.**, Holyoke, Mass.

[22] Filed: **May 21, 1971**

[21] Appl. No.: **145,789**

Related U.S. Application Data

[62] Division of Ser. No. 784,533, Dec. 3, 1968, Pat. No. 3,606,557

[52] **U.S. Cl.** **402/31**

[51] **Int. Cl.** **B42f 3/02**

[58] **Field of Search** ..... 402/73–77, 71, 402/80 R, 26–45

[56] **References Cited**

UNITED STATES PATENTS

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Primary Examiner—Jerome Schnall
Attorney—Chapin, Neal & Dempsey

[57] **ABSTRACT**

An arch-type ring binder with cover members and hinged thereto an assembly of hingedly connected back panel sections comprising opposed side panel sections and a connecting panel section, an arched split ring loose leaf toggle mechanism fixed on one side panel and means on one of said other back panel sections, preferably the other side panel section, for releasably locking the arched rings thereto, said binder with the rings in locked condition providing a post binder type assembly with a loose leaf ring mechanism, and with the rings in unlocked condition having the operational advantages and usefulness of a ring binder type of loose leaf unit.

2 Claims, 12 Drawing Figures

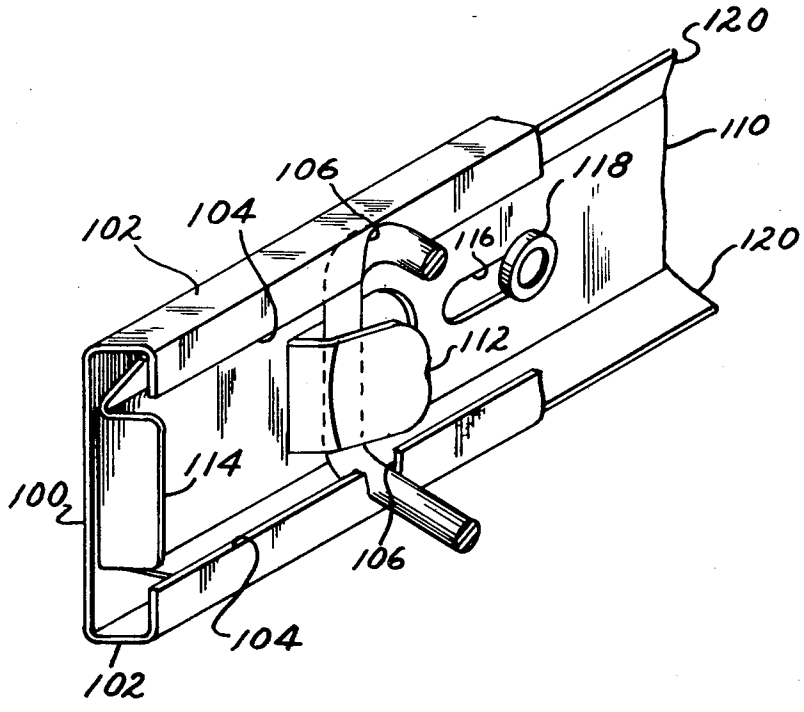


Fig. 1.

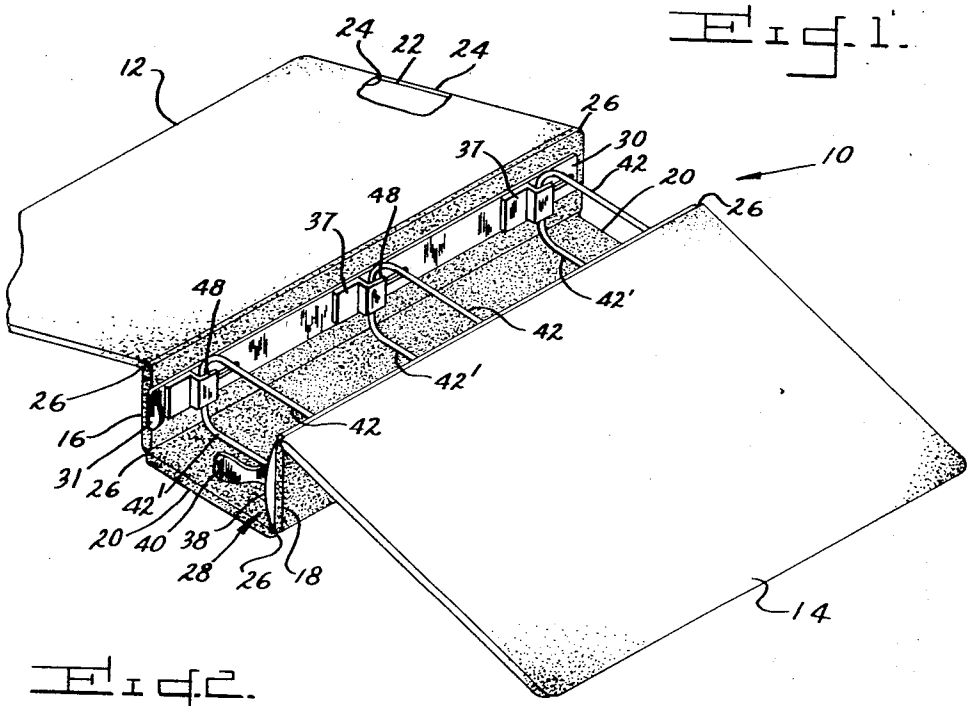


Fig. 2.

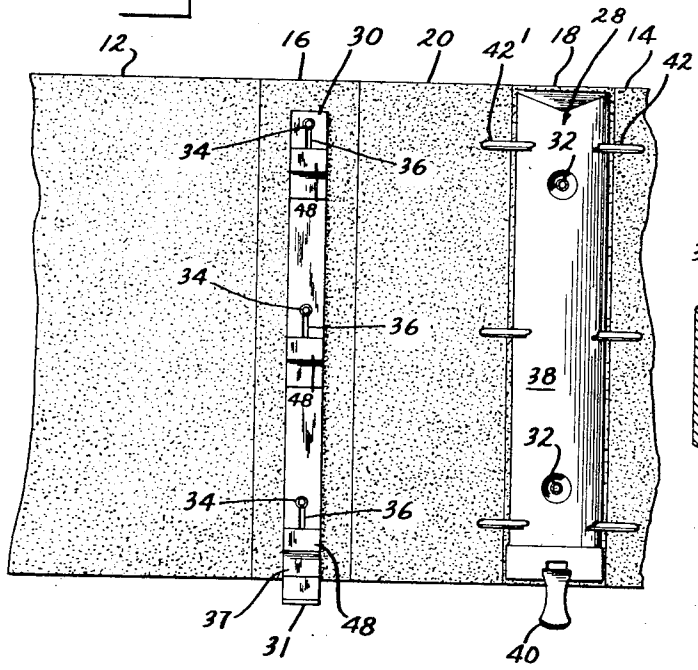
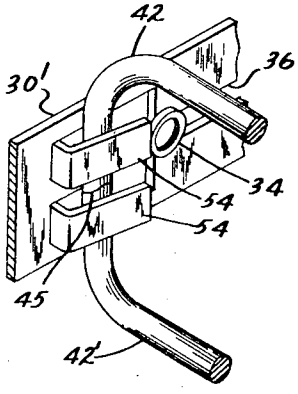


Fig. 3.



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Fig. 4.

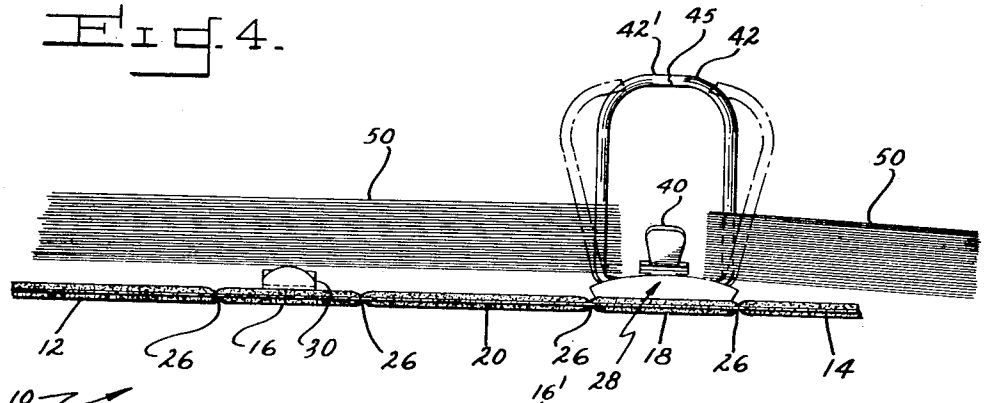


Fig. 7.

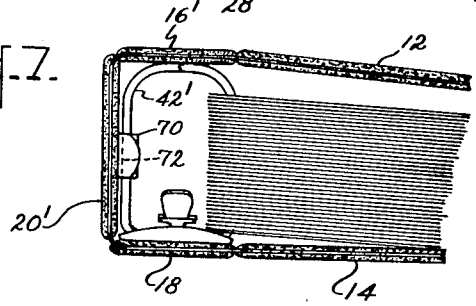
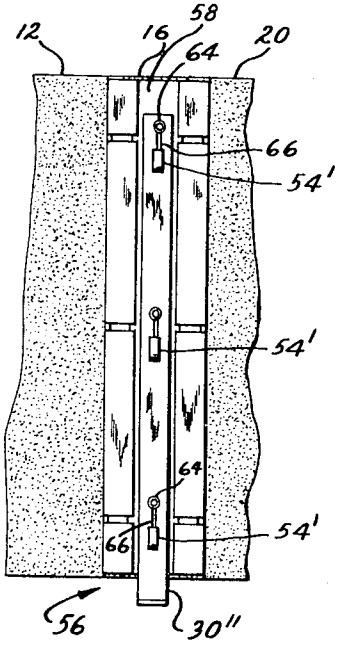


Fig. 5.



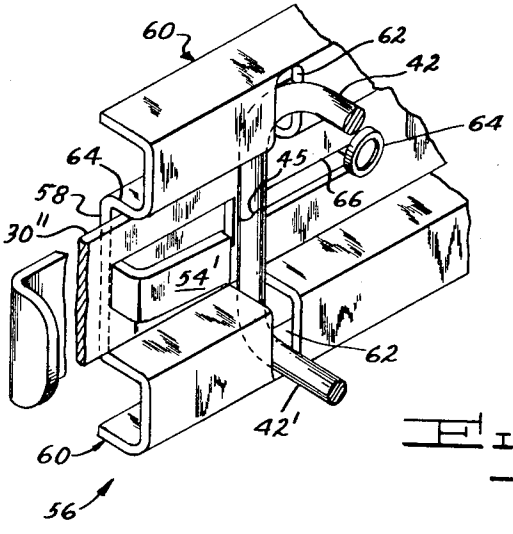


Fig. 6.

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Fig. 8.

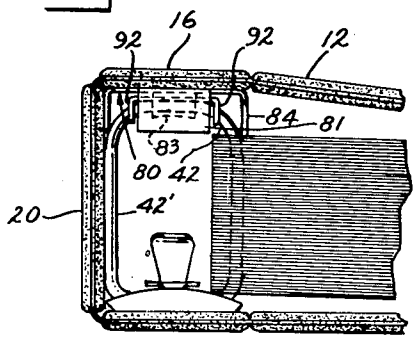


Fig. 10.

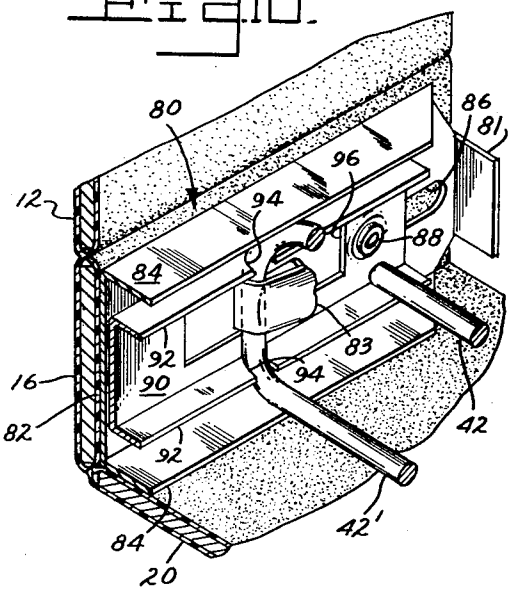


Fig. 9.

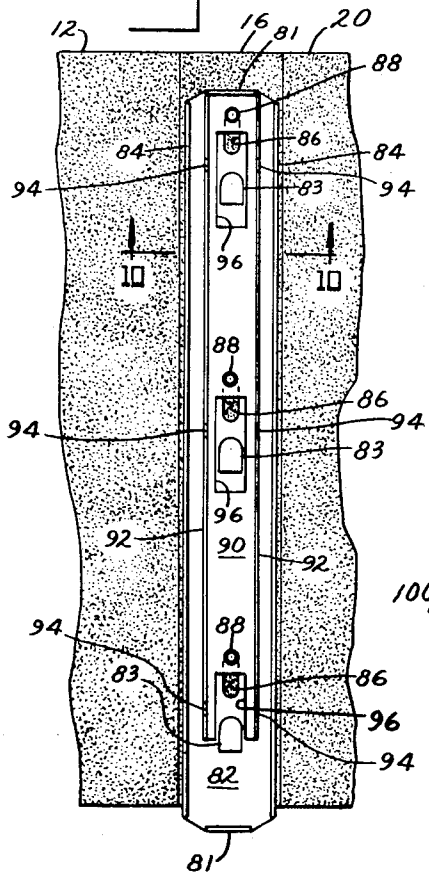
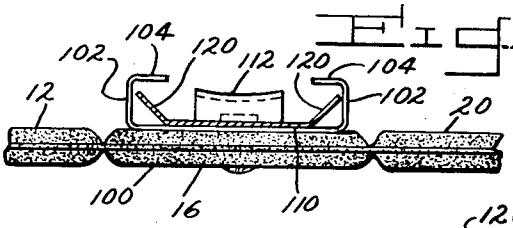


Fig. 11.



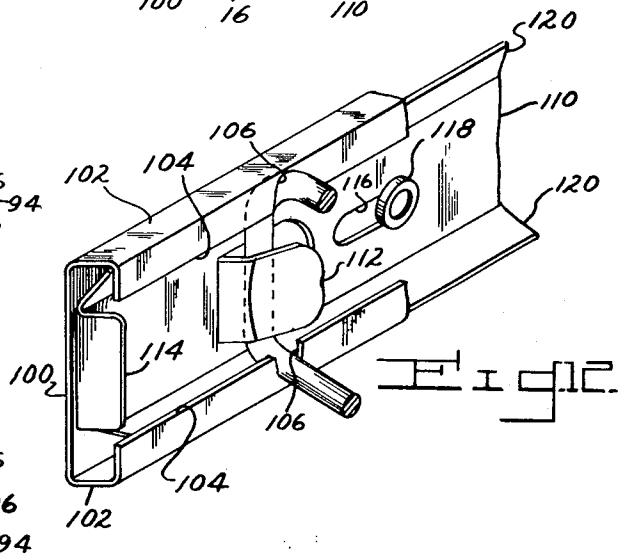


Fig. 12.

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ARCHED RING-WIRE POST BINDER

This application is a division of application Ser. No. 784,533 filed Dec. 3, 1968, now U.S. Pat. No. 3,606,557 granted Sept. 20, 1971.

BACKGROUND

This invention relates to loose leaf binder constructions and particularly to a ring binder assembly having mating split ring halves mounted in a unique type of back panel assembly for use as a large capacity post binder.

To this end the invention provides a type of post binder unit particularly for relatively large capacity binders as for catalogs and the like, or for other loose sheet material; and by incorporating a simple means for locking and unlocking the ring unit in the back panel assembly, the user may insert or remove individual catalogs or pages without the need to remove any overlying material as in many typical post binder constructions. In addition by unlocking the ring unit the individual pages or sheets of the bound material may be positioned on a flat surface for easier reference or for the purpose of writing and making notations on the individual sheets. Thus the new construction combines the advantages of post binder and loose leaf ring binder use.

The above and other objects and advantages of the present invention will be apparent from the following description of an embodiment thereof as shown in the accompanying drawings, in which:

FIG. 1 is a perspective view of a binder of the present invention with the covers turned back and the back panel sections assembled as a post binder unit;

FIG. 2 is a plan view of the binder of FIG. 1 with the covers cut away and the ring members disengaged for the covers and back panel sections to lie in planar relation on a flat surface;

FIG. 3 is an enlarged fragmentary perspective view showing a modification of the arched ring locking bar element shown in the assembly of FIGS. 1 and 2;

FIG. 4 is an end view of the binder as seen in FIG. 2 with filler sheets mounted on the rings;

FIG. 5 is a top plan view of another embodiment of a ring locking element arranged with a notched ring embracing means;

FIG. 6 is an enlarged fragmentary perspective view showing the arched end of a ring positioned in the assembly of FIG. 5;

FIG. 7 is a partial end view of a binder showing an alternative embodiment of the invention, the releasable ring locking bar as seen in FIGS. 1 and 2 being mounted on the intermediate back panel connecting section;

FIG. 8 is a partial end view of an assembled binder of this invention illustrating a further embodiment of the ring locking means positioned on the same back panel section as in FIGS. 1, 2, and 4 and formed with a pair of channel shaped members;

FIG. 9 is a plan view of the ring locking means shown by FIG. 8;

FIG. 10 is an enlarged fragmentary perspective view of the arched section of a ring in locked position as at the upper end of the assembly shown by FIG. 9;

FIG. 11 is an end edge view of a still further embodiment of the ring locking means; and

FIG. 12 is an enlarged fragmentary perspective view showing the arched end of a ring locked in position in the assembly shown by FIG. 11.

Referring to FIGS. 1, 2 and 4, the loose leaf binder 10 of the present invention has front and rear covers 12 and 14 which are suitably hinged along their inner edges to the outer edges of a pair of opposed side panel sections 16 and 18, respectively, the inner edges of panels 16 and 18 being in turn hinged at opposite sides of an intermediate connecting panel section 20. The panel sections 16, 18, 20 constitute an assembly of back panels, an arrangement which may be assembled into U-shaped form as shown by FIG. 1, this U-shaped configuration being characteristic of the binding panel portion of known types of post binder units.

In the embodiment shown the covers and back panel sections may be suitably constructed by enclosing flat stiffener members such as indicated in FIG. 1 at 22 for the cover 12. Such stiffeners may be fenced in between sections of a pair of sheets of suitable thermoplastic covering material 24. The sheets are heat sealed around the edges of each of the stiffeners and furthermore provide the hinged portions as at 26 between the various panels, all as will be readily understood in the art.

A "ring metal" assembly indicated generally by numeral 28 is shown mounted on one of the side panels of the binder back assembly as on the panel 18. As best seen in FIG. 2, it is fixed to the panel in the usual manner by a pair of spaced rivets at 32. As illustrated the ring metal may comprise a standard type of top spring or cover plate 38 in which is carried suitable toggle plate mechanism on which the inner ends of the split ring halves are anchored (not shown) for snapping to and from closed and open positions (see FIG. 4). As will also be readily recognized by those skilled in the art a conventional ring toggle plate operating lever is provided at 40 at one end of plate 28 and, if considered desirable, a duplicate lever may be provided at the other end of the plate 38. Such toggle plate and lever mechanisms are well known in the art for manipulating the ring halves and to releasably hold in open or closed condition and need not be further described in detail. One example may be found in U.S. Pat. No. 2,030,473 granted Feb. 11, 1936 to John Schade.

The matching arched ring halves 42 and 42' of the ring mechanism extend directly upwardly from opposite sides of the spring plate 28 in generally parallel relation (see FIGS. 1 and 3) and are formed at their upper ends with bent portions at right angles to the post portions. The ends of the ring halves terminate in the usual notched mating tips as at 45. The particular advantage of the arched form of ring wire will be later more specifically described.

In the embodiment of the invention in FIGS. 1, 2, and 4 one form of locking means is shown as an elongated bar 30 carried on the side panel section 16 opposite side panel section 18. It may be mounted for limited sliding movement as on a plurality of spaced rivets at 34 of the panel section, the rivets projecting upwardly of the panel surface. A plurality of spaced longitudinally extending slots 36 in bar 30 engage the rivets below the heads thereof for the desired shifting movement to and from a locked and an unlocked position. Bar 30, (FIG. 2) is formed by a strip of metal or

other suitable material and provided with a number of upwardly offset ring engaging fingers **48** corresponding to the number of ring wires. Each is suitably affixed thereto in this form of locking member as by welding a plate portion **37** (FIGS. **1** and **2**) to the surface of the bar. An upturned end at **31** of the bar provides a handle for manually shifting the bar **30**.

Referring to FIG. **1**, the assembled U-shaped hinged back panel arrangement of side sections **16** and **18** and the connecting section **20** is held by the "locked" position of the bar **30** and results in the arched wires connecting the side panels together as shown. The top portions of the ring-wire halves underlie the fingers **48** at each side of the mating tip ends. Thus each ring half when so anchored contributes to maintaining the connection in a fairly rigid manner. In this U-shaped condition of the binder back assembly one arched wire half **42'** lies against connecting panel **20** while the other arched half **42** lies outwardly thereof to hold the binder contents. The halves **42'** provide a stiffening reenforcement for panel **20**. The halves **42** constitute the "posts" of the binder when in this condition. As thus set up the contents held on the posts (halves **42**) of the assembly can be inspected and used for reference or reading purposes as in a usual post binder.

As mentioned above, the arched wire and releasable locking bar construction affords unusual advantages in the operation and use of the binder. First, the rigid character of the assembled back sections in locking the top of the rings as shown by FIG. **1** permits it to function as a typical post binder having a large filler pack carrying capacity on the order of from three to 5 inches in thickness and has substantial stability although a standard size of heavy ring wire is used. It is thus suitable for holding a plurality of catalogs or other reference material without the need for the typically large diameter metal posts usually found this type of unit to withstand the hard wear to which such units are commonly subjected.

Next, considering FIGS. **2** and **4** the disengagement of the locking bar fingers and freeing of the arched rings permits all panel sections to be positioned in flat relation on a table surface so that the ring halves **42** may be disposed in upright relation in order to function in the manner of a standard toggle plate ring binder for insertion or removal of filler sheets indicated at **50** in FIG. **4**. With the rings thus freed a portion of the filler material may be turned over on the ring half **42'** so that sheets may lie at either side of panel **18**. Next the ring halves may be spread apart at the desired location and the insertion or removal of an individual sheet or group of sheets **50** may be readily accomplished with all the convenience of a common three ring binder and without the need to first remove any overlying material as in the case of many typical post-binder constructions.

It will further be appreciated from FIG. **4** that when the rings are disengaged and the back panel sections are resting in planar relation on a flat surface that the pages may also be turned to either side to lie in flat condition against the inside of the underlying panels. Accordingly, any printed or written material on the pages may be more conveniently examined particularly at the inner marginal portions of the sheets where the usual punched binding holes are threaded on the wires. Moreover, if the user wishes to make any written notations or entries on the individual pages a flat surface is provided for a satisfactory writing surface. Thus the binder although in post binder form has all the added advantages which are typical of the common ring binder units.

Various alternative forms of the invention and of the ring locking means as thus far described are shown by the remaining figures. The particular advantages of each will now be described.

In FIG. **3** an alternative to the welded fingers **48** of FIGS. **1** and **2** is shown. Here, a pair of laterally spaced fingers **54** are struck upwardly or lanced from the material of a locking bar at **30'** The fingers **54** as shown may have a slightly divergently angled relation to the plane of the bar **30'** and preferably are spaced side by side so that each engages the top of the arched ring halves at locations spaced from the mating tip ends at **45**. The angled nature of the fingers provides a slight wedging action on the wires when the bar **30'** is shifted to holding position and thus assists in securing a rigidly locked condition on a ring and assists in holding the mated tip ends of the ring halves together.

In FIGS. **5** and **6** another form of locking finger is provided in an elongated bar at **30''**. Here, a single lanced projection at **54'** is provided. It is struck centrally from the material of the bar after the manner of the pair of fingers **54** of FIG. **3**. The central location of finger **54'** will cover the mated tips at **45** in overlying relation when moved to locked position.

In FIGS. **5** and **6** the locking bar **30''** is in addition mounted for sliding movement on a central portion at **58** of a ring embracing member **56**. Member **56** may be incorporated on panel **16** with the locking bar and by reason of its channel formation serves as an additional means to anchor the outer end portions of the arched rings so as to insure the stability of a binder in assembled condition. It is particularly designed for units having larger capacity rings and intended for extremely heavy duty use. Although adaptable for many purposes, post binders of the general type as disclosed herein are commonly used to bind groups of current catalogs and the like together for reference purposes. When so used they are often subjected to hard wear and severe handling. Member **56** is preferably of heavy gage metal and not only accurately locates and positionally secures the outer ends of the arched rings for locking purposes, but also effectively resists any twisting strains to which the opposing panels **16** and **18** may be subjected in view of the larger size ring wire used. As noted from FIG. **5** member **56** preferably extends the full length of panel **16** and thus also acts as a reenforcing element for this panel. It is secured thereto by the rivets **64**, the rivets passing upwardly of the central portion **58** and through the longitudinal slots at **66** of bar **30''** for the slidable locking and unlocking movement of the bar.

Portion **58** of the channel member is at the bottom of a central section, U-shaped in cross-section (FIG. **6**) and formed at each side with an inverted U-shaped skirt indicated at **60**. Notches in the side skirt formations are at **62**, these notches being cut partially from the metal of the top walls of the side sections and partially from the walls **64** common to the central and side U-shaped portions. Notches **62** receive the corners of the arched right angled ring halves and, as will be ap-

parent from FIG. 6, the insertion of the upper ends for moving the fingers 54' into locking condition as well as stabilizing the binder assembly for the severest type of handling as above mentioned.

In FIG. 7 an alternative embodiment of the invention is shown in which the arched rings are releasably locked or anchored by fingers at 70 which may be similar to those as described above and carried on a sliding bar at 72 mounted on the back panel connecting section 20'. The anchoring of the arched ring halves 42' may be centrally on section 20' as shown, or, if desired, close to the upper end of the ring halves against panel 20' for snugly holding these ring halves on the panel section. In any event, by locking the inner halves of the rings in this manner a large capacity arched ring may be utilized in a sturdy assembly and furnish the advantages of post binder and ring binder convenience. It is to be noted that with the upper back panel side section 16' unattached, this section and its cover 12 may be swung back at the top hinged edge of section 20'. The uppermost pages of the binder contents may thus be turned over the top of the arched rings for somewhat easier inspection in using the binder for reference. The particular construction of FIG. 7 is less well adapted, in comparison with the forms above described, to withstand conditions where extremely hard usage is normally to be expected. However, it offers the operational advantages of both the post binder and ring binder types where severe handling is not anticipated.

Two additional embodiments of the invention showing variations of an elongated plate locking means are shown, respectively, by FIGS. 8–10 and FIGS. 11 and 12. Each form is characterized by a channel type of construction in which sheet metal of a lighter stock may be used without sacrificing the sturdy character of an assembled binder. These forms in addition strengthen and reenforce the side panel to which they are attached.

In FIGS. 8, 9, and 10 the slidable locking member 80 is of a channeled panel formation. It may be stamped from thinner metal stock that is shown by the forms of locking bar as in FIGS. 1–4 and in FIGS. 5–6. The flat plate portion 82 of member 80 in locked condition is preferably of a size to cover substantially the inner surface area of the side panel section 16. Portion 82 has right angled side flanges 84 which preferably engage the ring halves, as will be described, and is mounted for sliding movement against the surface of panel 16 itself. A plurality of longitudinal slots 86 are provided in plate 82 and rivets 88 which fix a stationary channel plate 90 to side panel 16 in overlying relation to plate 82 extend through the slots to permit limited sliding movement to and from locked condition. Upturned portions at 81 are bent and each end of plate 82 for finger manipulation to either position. Fingers 83 are struck from the plane of the plate to serve as the locking elements.

As 185 be seen from FIG. 8, the outer edges of opposing flanges 84 in locked condition preferably bear against the outside of each opposing ring half in order for the closed tip ends of the wires to be held together and eliminate any significant separation thereof while in use. From FIG. 8 it will also be noted that the flanges 84 may be dimensioned, within limits, to determine a desirable full pack size of filler contents to be mounted on the post-like ring halves 42. In other words the lower edge of the outer flanges 84 may be shortened somewhat to engage the ring at a higher position than that shown by FIG. 8 and still be effective to hold the tip ends together. This lower edge of the outer flange, of course, will determine the extent to which the top of the binder contents can be built up before preventing a locking engagement of the fingers 83 over the rings. Accordingly, the dimension of the flanges may be varied to prohibit an excessive "stuffing" of the "posts" 42 in any given size unit.

The stationary channel plate 90 is fixed by the rivets 88 in overlying relation to plate 82. Plate 90 is held in spaced relation to panel 16 for the limited sliding movement of locking plate 82 as by the downwardly struck metal of plate 90 immediately surrounding each rivet (see FIG. 10). This dimpled depression is formed for spacer purposes when "staking" the heads of the rivets. Thus the slots 86 receive the depressed spacer sections through which the rivets extend to fasten plate 90 to panel 16.

The stationary plate 90 is formed with flanged sides 92 in the edge of which are cut oppositely paired notches 94 for receiving the upper ends of the ring halves 42 and 42' as best seen in FIG. 10. Notches 94 prevent twisting strains on the ring halves when the binder is in use in the same manner as described in connection with the form of FIG. 6. Slots 96 are cut in plate 90 in the area between the notches 94 and the ring locking fingers 83 extend upwardly through the slots 96 for movement to and from locking engagement when plate 82 if shifted. The nested channel plate arrangement thus securely holds the rings from separation and twisting strains for a sturdy assembly which will effectively resist rough handling in operation.

In the further modification of FIGS. 11 and 12 a two-piece sheet metal locking plate assembly is also indicated. Here a flanged metal reenforcing and supporting panel or plate 100 is secured in fixed relation on the side panel section 16 (FIG. 11). A right angled flange 102 at each side is provided with an inwardly turned edge or lip 104. Opposed pairs of notches 106 are cut in the edges 104 for registration with the opposed upper corners of each closed ring as best seen in FIG. 12. Mounted on the panel portion of plate 100 is a slidable locking plate 110 which is provided with locking fingers 112 struck therefrom, a manual shifting handle or tab 114 at one end, and longitudinally extending slots 116 for receiving the rivets at 118 which fix panel plate 100 on the side section 16.

Locking plate 110 has divergently and upwardly angled side flanges 120, the outer edges of these flanges preferably being fitted with a clearance spacing close to the inside corners formed between flanges 102 and lips 104 (FIG. 11) in order to pocket the plate 110 for the sliding movement. Thus a stationary panel reenforcing member is provided for the side panel section 16. The ring-locking slide plate 110 is formed to be braced by the pocketed flanges at each side, and the notches 106 provide means not only for resisting twisting strains in use but also for clamping the tip ends of the ring wires together in the assembly. The flanges 102 also serve to prevent stuffing a binder as described above. With this construction the thinner sheet metal stock may also be used without losing the sturdiness and ruggedness desirable for large capacity post binders of this type.

What is claimed is:

1. In a loose leaf post binder casing structure of the type having a pair of covers and hinged at the inner edges thereof a back panel assembly provided with a pair of side panel sections and hingedly joined therebetween a central connecting panel section, said panel assembly being adapted to hold a pack of sheet material between said side sections; a post binder back construction comprising

a split ring wire loose leaf mechanism affixed to the inner face of one of said side panel sections having a plurality of longitudinally spaced pairs of separable, mated, ring halves forming an arched configuration with generally parallel sides and generally right angularly directed outer tip end portions

an elongated U-shaped plate member having a central connecting portion thereof stationarily fixed in flat planar overlying relation against the other of said side panel sections, the side walls of said plate member extending outwardly therefrom and having inwardly turned marginal edge sections provided with oppositely facing notched portions for receiving the arched corners of said ring halves when said side panel sections are assembled in opposed parallel facing relationship, and

an elongated releasable locking plate member having a central section slidably overlying said central connecting portion of the fixed plate in flat planar relation and mounted thereon for limited longitudinal movement, said locking plate being provided with outwardly angled marginal side portions extending into an underlying relation to said inwardly turned marginal edge sections of the stationary plate,

said locking plate also having ring wire engaging fingers offset outwardly of the plane thereof and being movable to releasably hold the outer end portions of the ring halves against said locking plate and locking the side panel sections in assembled condition with the ring halves seated in said notched portions thereby anchoring said ring halves in mating closed relationship.

2. The structure of claim 1 in which said loose leaf mechanism is a toggle spring plate unit.

* * * * *