

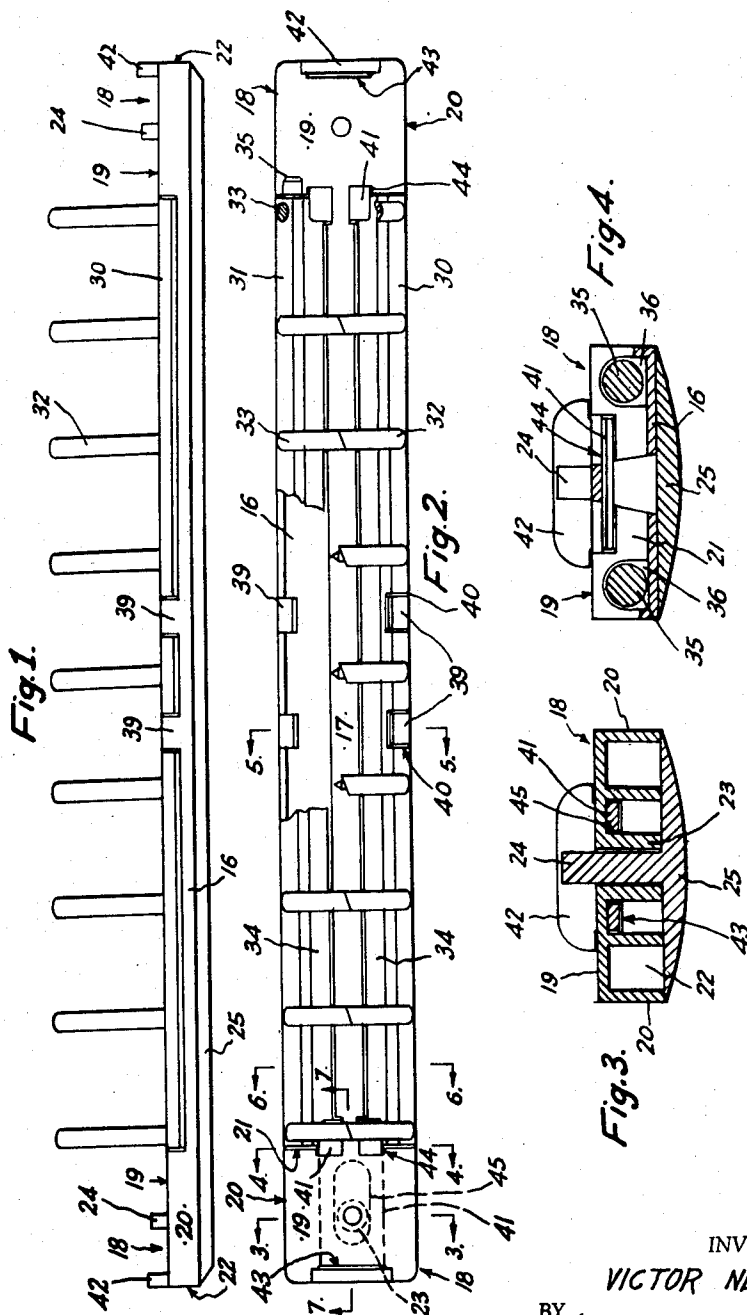
Oct. 20, 1964

V. NEWMAN
LOOSE LEAF BINDER

3,153,417

Filed July 3, 1962

4 Sheets-Sheet 1



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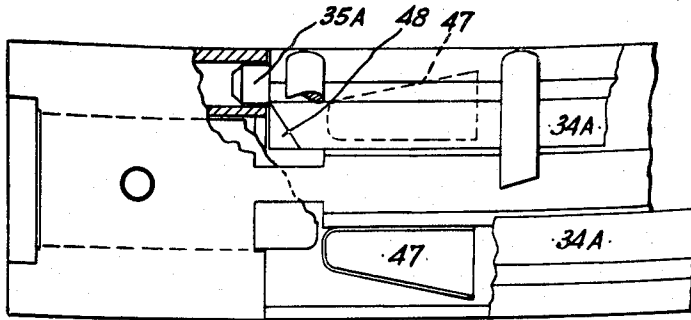


Fig. 10.

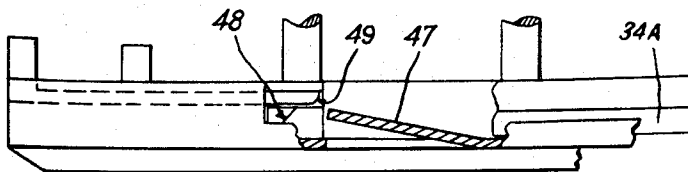


Fig. 11.

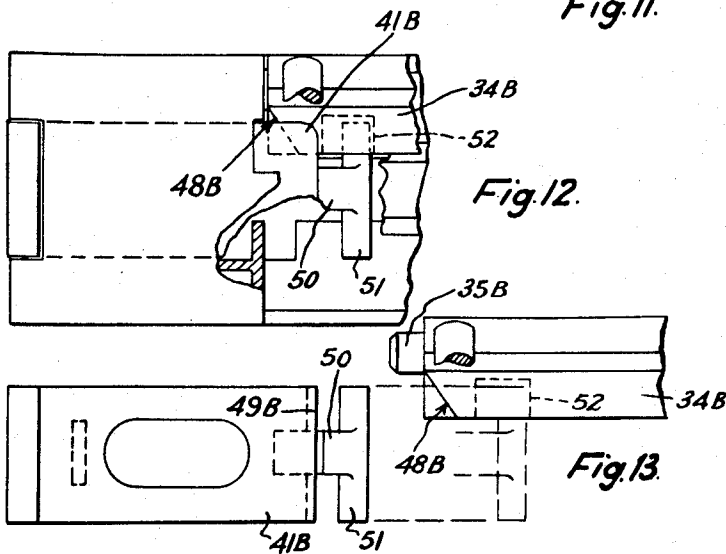


Fig. 12.

Fig. 13.

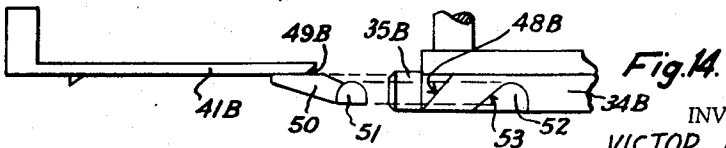


Fig. 14.

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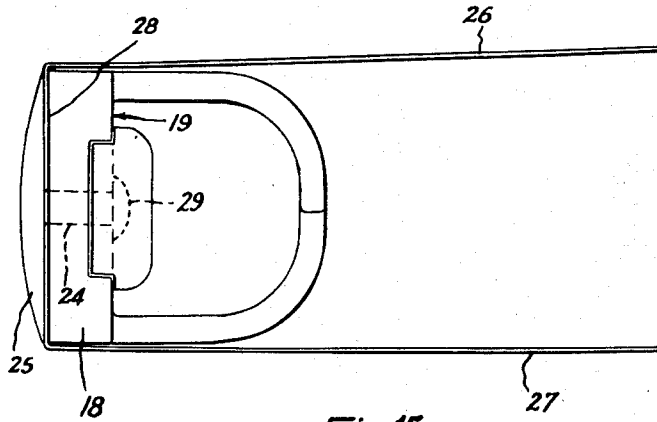


Fig. 15.

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3,153,417

LOOSE LEAF BINDER

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1 Claim. (Cl. 129—24)

This invention relates to loose leaf binders of the kind comprising a base or back-piece; and, mounted thereon, a plurality of arcuate hooks, divided rings or like binder prongs able freely to enter holes in a margin of the sheets of paper to be bound together.

Such binders as made heretofore are usually of metal. That in itself is not objectionable, and the prior binders have proved quite satisfactory in use, but they have been relatively expensive mainly because the prior forms of construction have necessitated manufacture of a large number of separate parts. In the very simplest of the prior devices at least seven different metal parts have been necessary, and that gives rise to expense not only in manufacture of the large number of separate parts but also in the assembly of the parts because of the labor costs and apparatus so involved.

The object of the present invention is to overcome the mentioned shortcomings in a very simple and inexpensive manner.

In its broadest aspect the invention consists in a loose leaf binder comprising a base, a pair of binder bars disposed longitudinally of said base and pivotally mounted thereon so that each may be turned about its longitudinal axis into an open position or a closed position, binder prongs integral with and projecting laterally from said bars whereof the tips are accessible for binding purposes when said bars are in said open position and inaccessible when said bars are in said closed position, and a pair of latch bolts respectively mounted and longitudinally slidable relative to the ends of said base and able in one position to obstruct portions of said bars so to hold them in said closed position.

Examples of the invention are illustrated in the drawings herewith:

FIG. 1 is a side elevation of a binder;

FIG. 2 is a plan projected from FIG. 1;

FIGS. 3-7 are sectional views respectively taken on the correspondingly numbered lines in FIG. 2;

FIG. 8 repeats FIG. 6 except that it shows the binder prongs in open position;

FIG. 9 virtually repeats FIG. 7 except for its showing of a latch bolt in open position;

FIG. 10 is a plan view similar to a left hand end portion of FIG. 2 (but partly sectioned and on a somewhat enlarged scale) showing a slightly modified form of the invention;

FIG. 11 is a partly sectioned side elevation projected from FIG. 10;

FIG. 12 is a view similar to FIG. 10 showing another modified arrangement of the invention;

FIG. 13 repeats portion of FIG. 12 but with the parts displaced from their normal working positions to provide illustration of constructional features;

FIG. 14 is a side elevation projected from FIG. 13; and

FIG. 15 is an end elevation of a binder which may be any one of those shown in the other figures, as applied to a book cover.

Referring to FIGS. 1-9, the base comprises a platform 16 which includes an inverted channel-sectioned stiffening spine 17 and two latch-bolt castings 18 constituting the ends of the base. The base parts 16, 17 and 18 are

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integral and preferably formed as a single molding of plastics material. Each of the casings 18 is in the form of an inverted shallow box, and each has a roof 19, a side wall 20, an inner end wall 21 and an outer end wall 22.

In each casing the roof 19 has an integral boss 23 having a hole through it by which the base may be secured by means of screw or otherwise to a mounting board or the back of a binder cover as well understood. For preference, the bosses 23 accommodate pins 24 of a clamping plate 25 which, as indicated in FIG. 15, forms a convenient way of mounting the binder in relation to a binder cover.

Referring to FIG. 15 it will be seen that a cover consisting of flaps 26 and 27 and a back portion 28, is secured to the binder base 18 by means of the clamp plate 25 and the pins 24. The pins 24 being riveted over against the roof 19 of the casing 18 as indicated at 29. Where, as is preferably the case, the clamping plate 25 is made of a thermo-plastic material the rivet heads 29 may be readily formed by heat softening the emergent ends of the pins 24. It will be appreciated that the clamping plate 25 may be made of a transparent plastic material, and in that case, a printed sheet containing information may be clamped in between the back 28 and the plate 25 so to indicate a book title or other information, as may be required.

Each of the two binder bars 30 and 31 has a plurality of binder prongs 32 and 33 and a keeper flange 34; and, at each of its ends each of said binder bars has an integral hinge pin 35 able to rotate freely within one of a pair of holes 36 (see FIG. 4) provided in the inner end walls 21 of each of the casings 18.

The prongs 32 and 33 are preferably provided with means whereby each mating two of them are assisted to assume and remain in alignment as they reach closed position and when they are in that position. These "registration" means comprise nibs 37 able to home neatly in cavities 38, as shown more particularly in FIG. 6.

Where binder bars are relatively long (as in the embodiment under description) it will be appreciated that the bars will be to some extent flexible and therefore if they are supported only at their outer ends (by means of the pins 35) the center portions of the two binder bars, and hence the prongs in that region, might easily spread apart sufficiently for the binding effect to be impaired. Thus, it is preferable for means to be provided by which the binder bars are restrained against spreading apart in the center regions thereof. These restraining means may consist of hooked lugs 39 which are integral with the base 18 and which embrace cut-away portions 40 on the binder bars. These portions 40 have rounded surfaces which are one and the same (in a cylindrical sense) as the pivot pins 35, thus enabling the cut-away portions 40 to rotate as hinge pins inside the hooked lugs 39, so to prevent lateral spreading apart of the two binder bars in their central regions.

It will be understood that whereas it is desirable for the base member to be relatively rigid, it is desirable for the binder bars to be somewhat flexible, as already indicated above, as it enables them to be longitudinally bowed during their assembly relative to the base, thus to enable them to be sprung into position, first to get the pins 35 homed in the nose holes 36 and then to enable the cut-away portions 40 to be sprung underneath the hooked lugs 39.

It will be apparent that when the binder bars are turned away from each other, the prongs will be spread apart as shown in FIG. 8 and matters to be filed may be placed upon the prongs, or previously filed matter may be removed. It will also be clear that to keep the prongs in the closed position, as shown in FIG. 5 or

6, it is only necessary to apply a downwardly directed loading upon the keeper flanges 34 to hold the prongs in closed position. This downward pressure is applied to the keeper flanges by a pair of latch bolts, each of which consists of a tongue portion 41 and a hand piece 42. The tongues 41 are slidable in guide slots 43 and 44 formed in the top corner portions of the casings 18; that is, in the junctions of the walls 21 and 22 with the roof 19. The tongues 41 have clearance holes 45 by which they extend about the bosses 23. Each of the tongues 41 on its under side has a stop lug 46 able to abut against the related end wall 22 thus to prevent, under normal usage of the latch bolts, separation of the latch bolts from the casings 18 when the latch bolts are pulled with the aid of hand pieces 42 clear of the keeper flanges 34, as best shown in FIG. 9. When the latch bolts are required to keep the binder bars in closed position they are advanced to the position shown in FIG. 7 so that the leading ends of the tongues 41 then overlie the keeper flanges 34 so to hold the binder bars closed.

It will be noticed that the stop lugs 46 are relatively small, but that is to ensure that they do not form too great an obstruction to assemblage of the latch bolts relative to the casings. This assemblage is performed simply by pushing the latch bolt into the position shown in FIG. 7 so that the lug 46 rides over the wall 22, the latch bolt being made efficiently flexible to enable the tongue to bend slightly until the lug clicks into its operative position as shown in FIG. 9.

In the embodiment of the invention already described (as shown in FIGS. 1-10) it is necessary for the binder prongs to be placed in closed position, or in open position, by the user. This is not greatly unsatisfactory for most binding purposes; however, it is a simple matter to provide for the prongs to move automatically to open position immediately the latch bolts are withdrawn from the keeper flanges and for the action of closing the two latch bolts to cause the prongs automatically to reassume closed position.

Referring to FIGS. 10 and 11, the construction there shown is substantially the same as that already described except that portions of the floor of the base are checked out and upwardly bent to function as leaf springs 47. These leaf springs bear against the under sides of the keeper flanges 34A so that immediately the latch bolts are withdrawn the leaf springs 47, by bearing against the under sides of the keeper flanges 34A, cause the binder bars to assume open position by rotation about their pivot pins 35A. To bring the binder bars back to closed position when the latch bolts are pushed inwardly, the adjacent ends of the keeper flanges 34A are chamfered as indicated at 48, so that the leading ends 49 of the latch bolts as they are advanced inwardly will ride against the chamfered portion, somewhat in the manner of a cam, thus to depress the keeper flanges and thereby close the prongs.

As an alternative to the foregoing, the arrangement shown in FIGS. 12-14 is preferred. In that arrangement, leaf springs (such as 47 in FIGS. 10 and 11) are dispensed with, and instead, each of the latch bolt tongues 41B has a forward extension 50 which terminates in a cam bar 51. This cam bar homes in follower recesses 52 formed in the adjacent end portions of the keeper flanges 34B as shown in FIG. 12. When the latch bolts are withdrawn to open position, the cam bar 51 rides against the inclined face 53 of the recesses 52 thus causing the binder bars to be turned outwardly about their hinge pins 35B. When the latch bars are moved inwardly to closed position the forward ends 49B of the tongues 41B ride against a chamfered portion 48B as previously explained with reference to FIGS. 10 and 11.

Although the prongs on the two binder bars preferably meet "point-to-point," as explained above, the prongs on the two strips may be completely out of register or staggered so that they never meet. In that case, the prongs would, in effect, have overlapping free ends when viewed in end elevation, and each prong would then be something more than a quadrant portion of a circle so to give a prong interlapping effect by which paper leaves would be prevented from becoming unbound for so long as the two bars are in closed relationship.

What is claimed is:

A loose leaf binder comprising a base, a pair of binder bars disposed longitudinally of said base, each of said binder bars being pivotally mounted only at its ends on said base so that it may be turned about its longitudinal axis into an open position or a closed position, a keeper flange integral with and projecting laterally from each of said bars, binder prongs integral with and projecting laterally from said bars whereof the tips are accessible for binding purposes when said bars are in said open position and inaccessible when said bars are in closed position, a pair of latch bolts respectively mounted and longitudinally slidable relative to the ends of said base and able in one position to obstruct the ends of said keeper flanges so to hold said binder bars in said closed position, a cam bar on each of said latch bolts and a follower recess in each of said binder bars into both of which said cam bar extends so to cause said binder bars to assume and remain in said open position when said latch bolts are withdrawn from said binder bars, and chamfered portions on said binder bars upon which said latch bolts are able to ride to cause said binder bars to assume said closed position.

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