Aug. 30, 1960 J. W. LYON 2,950,719

METAL LOOSE LEAF BINDING WITH LOCK

Filed June 23, 1958

FIG. 1

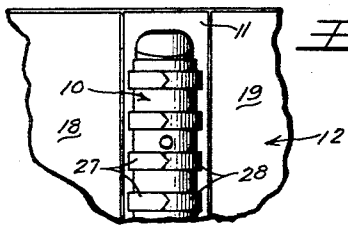


FIG. 2

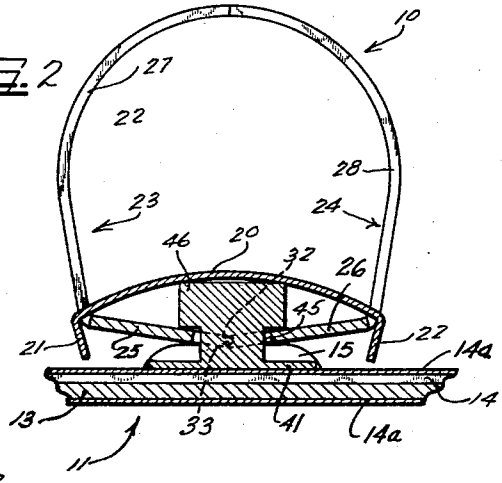


FIG. 5

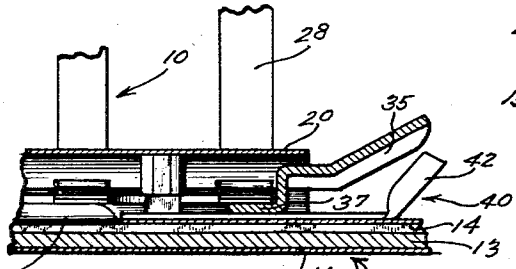
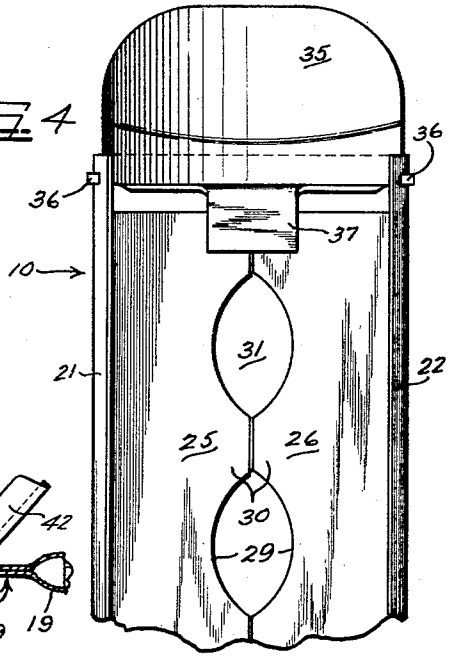


FIG. 3

FIG. 4



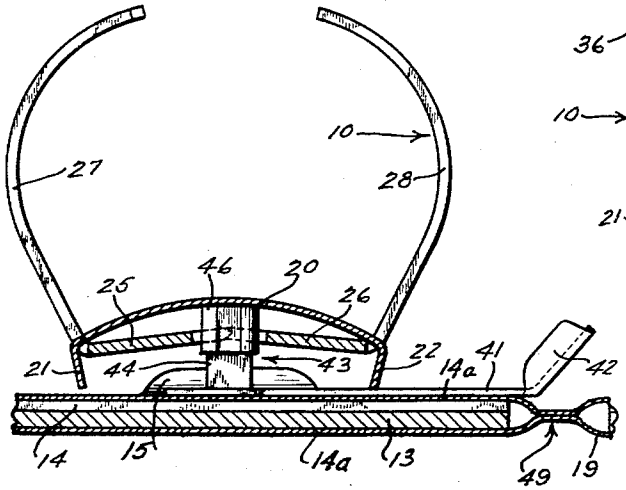
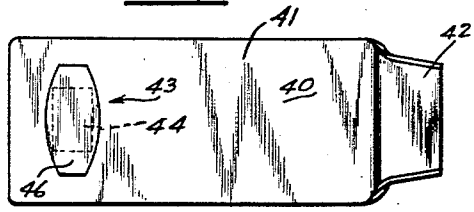


FIG. 6



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METAL LOOSE LEAF BINDING WITH LOCK

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1 Claim. (Cl. 129—24)

This invention relates to binders of metal or like structurally rigid material, for securing a stack of sheets to be bound and more particularly relates to a novel means for positively locking the ring fingers thereof in a closed position when desired.

Metal loose leaf binders, of the type to which applicant's novel locking means is particularly directed, include a base portion or backbone having a plurality of ring fingers extending therethrough in which the ring fingers have inturned flanges adjacent the undersurface of the backbone pivotally abutting one another so that upon separation of the ring fingers the inturned flanges abut the undersurface of the base portion, or at least a portion thereof, to limit the opening movement of the ring fingers.

Applicant contemplates a novel locking arrangement for loose leaf binders of the type above described which comprises the provision of a movable lock having a lug on one end thereof wherein the lug is arranged to be selectively interposed between the inturned flanges of the ring fingers and the backbone or back portion of the binder to prevent opening of the ring fingers. Applicant has devised such a lock which may readily be moved to a position to permit opening of the fingers when the notebook or other article with which the binder is associated is opened out to a flat or nearly flat position.

It is well known that when loose leaf binders of the type above described, which are not provided with a means for locking the ring fingers in a closed position, are dropped or subjected to substantial shock they are liable to become opened thus releasing the sheets they were intended to bind. Accordingly, applicant has attempted to remedy and obviate these undersirable characteristics by providing a novel means for locking the ring fingers of such a binder in the closed position wherein only manual movement of the locking means will permit the opening of the ring fingers and wherein shock on a binder so locked will not cause opening of the ring fingers.

Accordingly, it is a principal object of this invention to provide a novel means for releasably locking a plurality of ring fingers in a binder in the closed position.

It is another object of the present invention to provide a means for readily manually locking a plurality of ring fingers in a binding device of the type above described in the closed position wherein the subjection of the binding device to shock will not cause opening of the ring fingers so locked.

A still further object of the present invention is to provide means for locking a plurality of ring fingers in a binder of the type above described in a closed position comprising the provision of a manually movable lug which can selectively be interposed between the inturned flanges of the ring fingers and the backbone or back portion of the binder to prevent opening movement of the ring fingers.

These and other objects of the present invention will become apparent from time to time as the following specification proceeds and with reference to the accompanying drawings, wherein:

Figure 1 is a fragmentary plan view of a binder embodying the principles of the present invention and showing the binder mounted in a notebook;

Figure 2 is a vertical sectional view through a binder showing the binder fingers locked in the closed loop position by a binder lock constructed in accordance with the present invention;

Figure 3 is a vertical sectional view through a binder illustrated in Figure 1 similar to Figure 2, but showing the ring fingers in the open position;

Figure 4 is a bottom plan view of the binder illustrated in Figure 1;

Figure 5 is an axial vertical sectional view through the binder illustrated in Figure 1 and showing the binder lock in association therewith; and

Figure 6 is a plan view of the binder lock which forms the subject of the present invention.

In the embodiment of the invention illustrated in the drawings there is shown a binding element or binder **10** which is suitably secured to the back portion **11** of a notebook **12** in a manner which will hereinafter be more fully described. The back portion **11** of the binder or binding element **10** is shown as including a stiffening board **13** which underlies a metallic support **14** having a plurality of upwardly disposed recesses **15**. A covering **14***a* of leather, cloth, or other suitable material is shown as being formed about the supporting members **13** and **14** of the back portion **11** and as being fitted about the similarly constructed supporting members of the front and rear covers **18** and **19**, respectively, of the notebook **12** and as being suitably apertured to fit about the upwardly disposed recessed portions **15** of the supporting plate **14**.

The binder **10** comprises an arcuately shaped backbone **20** having depending flanges **21** and **22** extending along opposed longitudinal edges thereof. A pair of comb-shaped members **23** and **24** having inturned flanges **25** and **26**, respectively, and having a plurality of ring fingers **27** and **28**, respectively, extending therefrom are associated with the backbone **20** and are so positioned that each of the ring fingers extends through suitable receiving slots (not shown) in the backbone **20**.

It will be particularly noted in Figure 1 that the fingers **28** are suitably grooved in the outer free ends thereof to receive a complementary portion on the outer free ends of the ring fingers **27** when the fingers are in the closed loop position as shown therein.

Referring now more particularly to Figures 2 and 4 it will be noted that the inturned flanges **25** and **26** of the comb-shaped members **23** and **24** are formed with a plurality of concave grooves **29** along the abutting longitudinal edges thereof which lie intermediate a plurality of projecting engaging nibs **30** so as to form a plurality of apertures **31**. The inturned flange **26** has a concave grooved portion **32** along the inner longitudinal edge thereof which is cooperable with a convex portion **33** along the inner longitudinal edge of the inturned flange **25** to permit rockable movement of the flanges **25** and **26** with respect to one another.

A release lever **35** is shown as having lugs **36** on opposed sides thereof which are received within suitable apertures within the depending flanges **21** and **22** adjacent the end of the binder **10** and as having a central lug **37** underlying the inturned flanges **25** and **26**. The release lever **35** is rockable about the lugs **36** and may be pushed downwardly so that the lug **37** acts upwardly on the inturned flanges **25** and **26** to snap the comb-shaped members **27** and **28** to the position as illustrated in Figure 3 in a manner which is well known in the art. There may, of course, be a release lever provided at each end of the binder **10** to facilitate opening of the

ring fingers 27 and 28 for insertion or removal of sheets from the binder.

A binder lock 40, which forms the subject of the present invention, is shown as comprising a flat plate 41 which has an upturned end 42 at one end thereof and which has an upwardly extending lug 43 on the other end thereof. The lug 43 has a radially reduced shank 44 which may be welded, brazed, soldered or otherwise suitably secured to the plate 41 and has a radially enlarged elongated head portion 46. The elongated head 46 is so positioned on the binder lock 40 that the head may fit through one of the apertures 31 in the binder 10 when the axis of the lock 40 is positioned at right angles to the axis of the binder 10 as shown in Figure 3.

Referring now more particularly to Figures 2 and 5 it may be seen that when the ring fingers 27 and 28 are in the closed loop position the binder lock 40 may be rotatably moved from the position illustrated in Figure 3 until it is coaxially aligned with the binding element 10 so that the head 46 of the lug 43 is interposed between the inturned flanges 25 and 26 and the backbone 20 so that the underside of the head 46 abuts the inturned flanges to prevent opening of the ring fingers 27 and 28. It will further be noted that the upturned end 42 of the binder lock 40 lies under the release lever 35 and that the lug 43 is arranged to cooperate with the aperture 31 on the outermost end of the binding element 10. Obviously, if so desired a binder lock may be provided at each end of the binding element though one is generally quite satisfactory in use.

The binding element 10 is generally associated with a book such as the notebook 12 and is connected therewith by means of a rivet or other suitable securing means which interconnects the backbone 20 with one of the recesses 15. Since the outer portion of each of the recesses 15 extends generally above the lateral surface of the back portion 11 of the notebook 12 the binder 10 is so secured that the flanges 21 and 22 terminate above the lateral surface of the back portion 11 to thus permit the movement of the binder lock 40 therebetween. It will further be noted that in his paricular embodiment of the invention the binder lock 40 is shown as extending over the back cover 19 of the notebook 12 across the heat seal hinge 49 so that when the binder lock is in the unlocked position illustrated in Figure 3 the notebook cannot be closed. Similarly, the binder lock cannot be moved from the closed to the open position unless the notebook is opened. It will be understood, however, that this is not a necessary limitation since it may be desirable to provide a binder lock of shorter dimension or to form the back portion 11 of the binder of greater dimension so that the binder may be maintained in the unlocked position when the notebook is closed, such as, for instance, when the binder must be opened and closed many times over a short interval of time.

Referring again to Figure 3 of the drawings it is apparent that when the binder lock 40 is positioned with its axis perpendicular to the longitudinal axis of the binding element 10 the inturned flanges 25 and 26 of the comb-shaped members 23 and 24, respectively, are free to be moved upwardly about the lug 43 by the lever 35 since the apertures 31 are of greater dimension than the head 46. In this manner, a positively locking binder lock has been provided which can readily be manually moved to permit opening of the ring fingers in a mechanical binding element.

It will herein be understood that this embodiment of the invention has been used for illustrative purposes only and that various modifications and variations in the present invention may be effected without departing from the spirit and scope of the novel concepts thereof.

I claim as my invention:

In a binding element and in combination with a notebook back having a relatively flat surface, an arcuate backbone secured to said back in vertically spaced relation with respect thereto and having a concave portion facing said back and flanges depending therefrom and extending along opposite edges thereof and terminating in spaced relation with respect to said notebook back, a plurality of apertures spaced along opposite edge portions of said backbone adjacent the juncture of said flanges therewith, a plurality of ring fingers extending through said apertures and cooperable to form a plurality of closed loops, inturned flanges extending inwardly from said ring fingers between the underside of said backbone and said notebook back, and extending along and engaged by said first mentioned flanges and pivotally engaging one another on the underside of said backbone and spaced from said backbone when said fingers are in a closed loop position, said inturned flanges having a plurality of concave grooves formed along the adjacent edges thereof and registering with each other to form a plurality of elongated apertures affording communication between said notebook back and the underside of said backbone, a locking plate between said inturned flanges and said notebook back and in engagement with the latter, said locking plate having an outer end portion adapted to be gripped by the fingers for moving said locking plate angularly along said back into alignment with said backbone and in angularly extended relation with respect to said backbone in the space between one of said first mentioned depending flanges and said notebook back, said locking plate having a locking lug extending upwardly therefrom having a shank portion of reduced cross-sectional area extending upwardly through one of said apertures for angular movement with respect thereto and having an elongated head portion extending into engagement with said backbone, longer than the width of the associated aperture and shorter than the length of said associated aperture and of a width less than the narrowest dimension of said aperture, interposed between the underside of said backbone and the upper faces of said flanges with the longer dimension of said head portion out of alignment with the longest axis of said aperture when said locking plate is in alignment with said backbone to lock said binder from opening, and accommodating opening of the binder by angular movement of said locking plate beneath one of said depending flanges to bring the longest dimension of said locking lug in alignment with the longest axis of the associated aperture.

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