Nov. 17, 1953 W. E. SCHROER 2,659,373

LOOSE-LEAF POST BINDER

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Fig. 1.

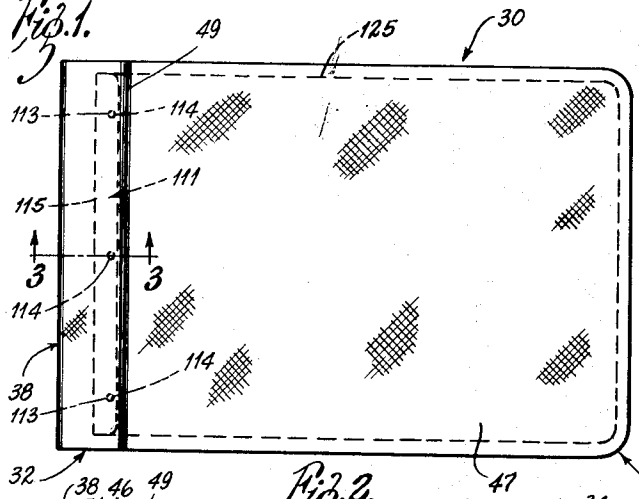


Fig. 2.

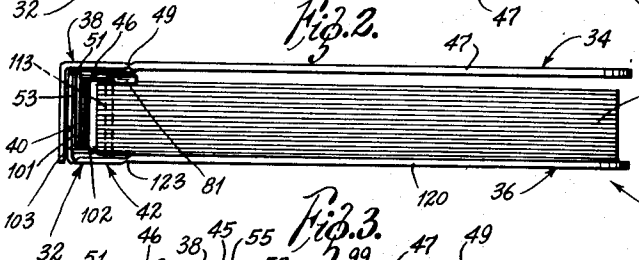


Fig. 3.

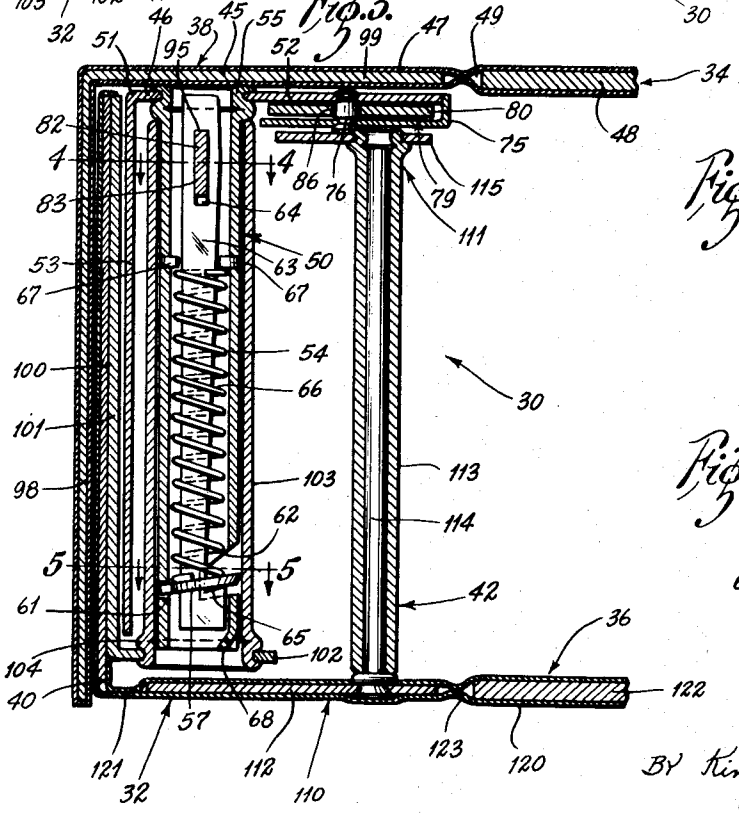


Fig. 4.

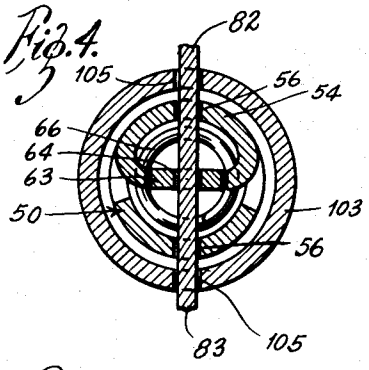


Fig. 5.

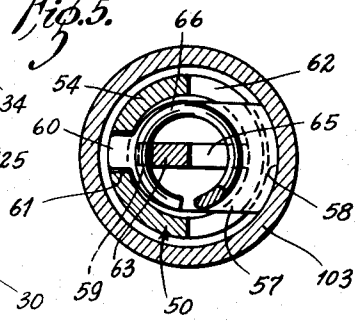


Fig. 19.

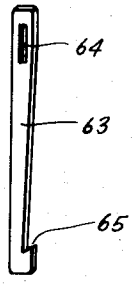
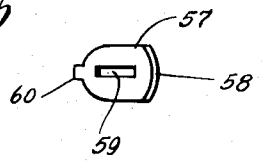


Fig. 20.



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Fig. 6.

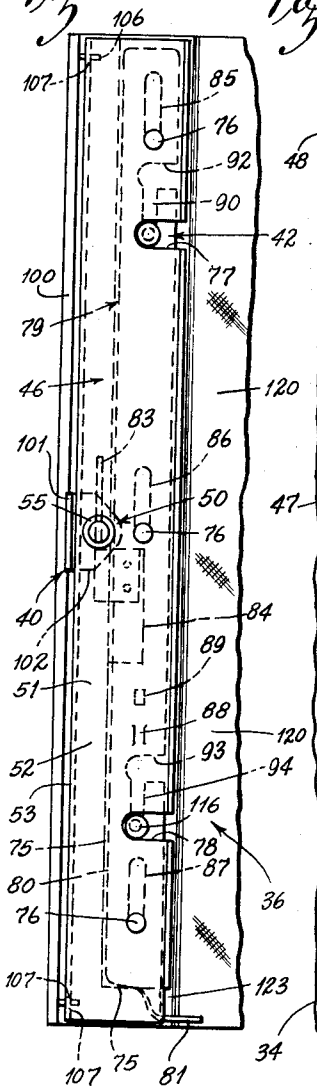


Fig. 7.

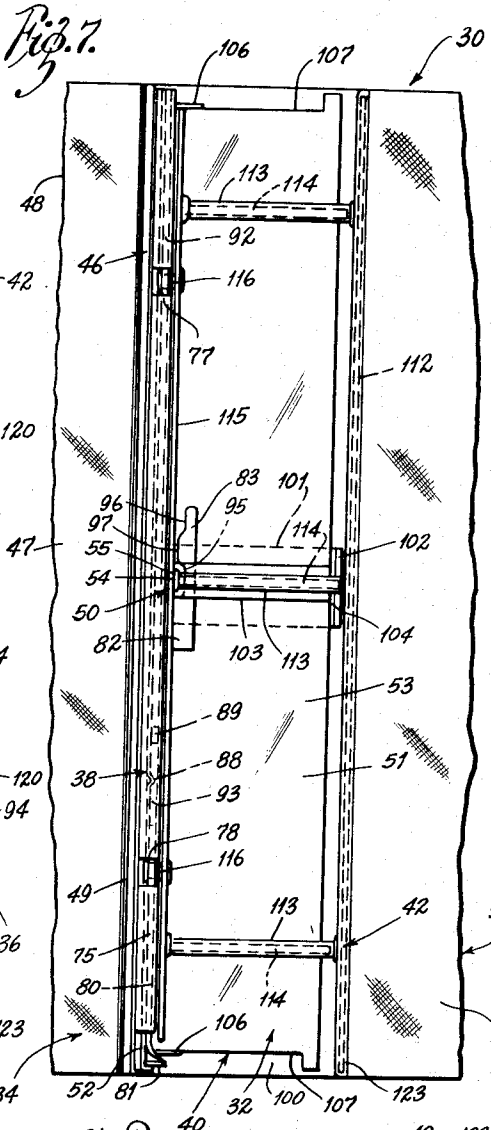


Fig. 8.

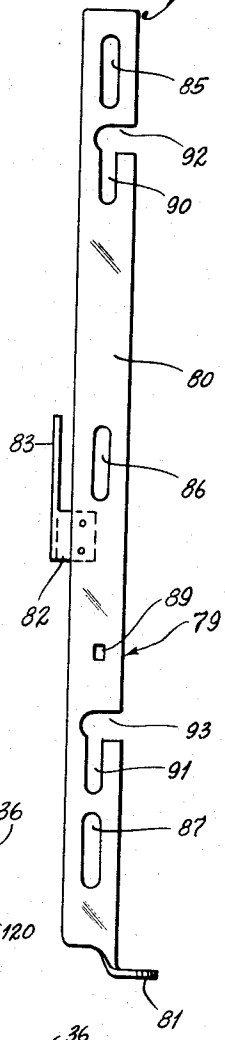


Fig. 10.

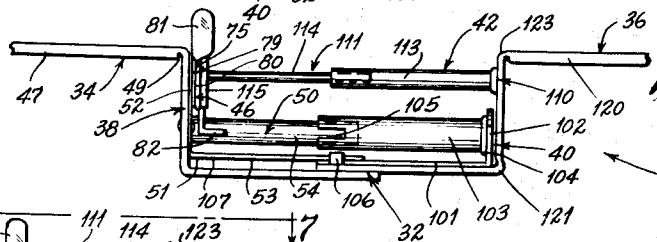
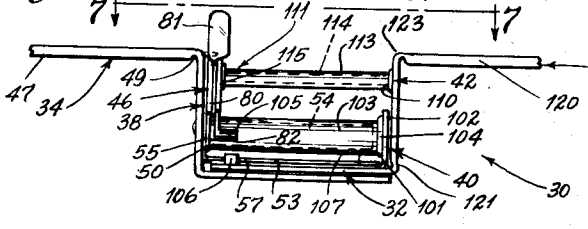


Fig. 9.



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Fig. 11.

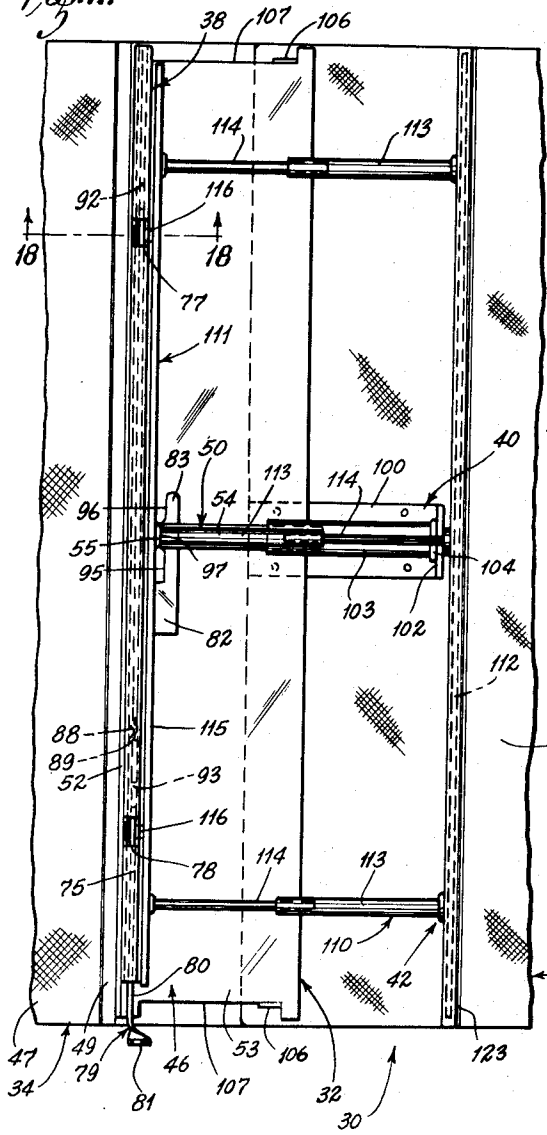


Fig. 12.

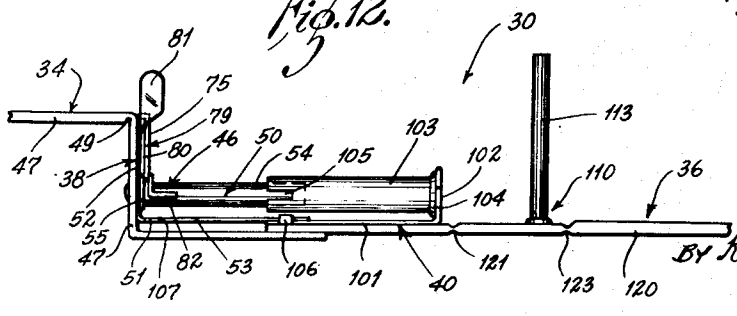


Fig. 13.

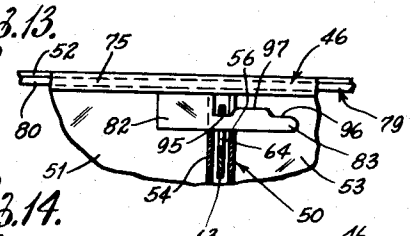


Fig. 14.

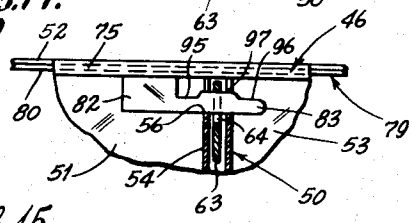


Fig. 15.

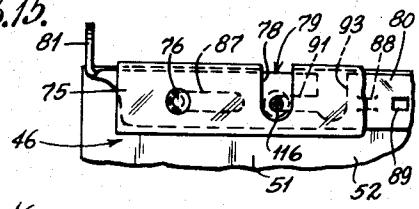


Fig. 16.

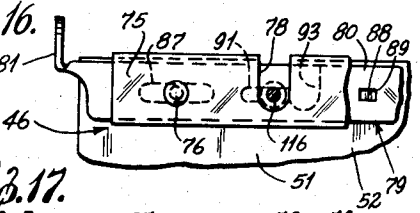


Fig. 17.

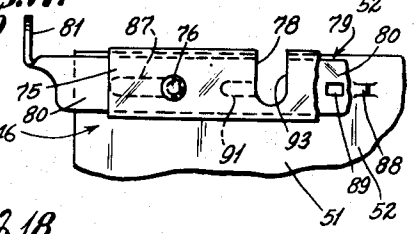
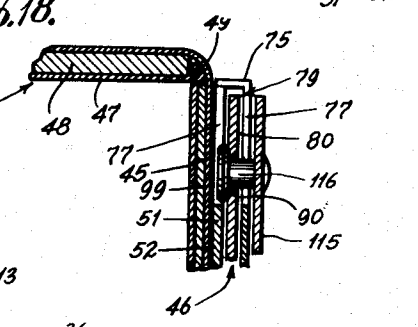


Fig. 18.



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UNITED STATES PATENT OFFICE

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LOOSE-LEAF POST BINDER

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Application November 30, 1950, Serial No. 198,259

2 Claims. (Cl. 129—8)

1

The present invention relates to binders adapted to retain loose leaves in book form, and more particularly to a loose leaf post binder having a novel binding assembly which may be quickly and easily adjusted to different thicknesses for the purpose of facilitating the posting of handwritten entries and in which the transfer bar is readily released.

Briefly, the present invention includes an adjustable binding assembly having attached flaps to form a binding cover of book form. The binding assembly has an expansible loose leaf retaining assembly of the post and sleeve type, the upper unit of which is removable for the purpose of adding or removing loose leaves. The loose leaf retaining assembly is disconnectably engaged by an angle assembly which cooperates with a back plate assembly through a post lock which is adapted to maintain the loose leaf retaining assembly against expansion from an adjusted thickness position. A movable lock bar which is part of the angle assembly cooperates with the post lock and with a removable unit of the loose leaf retaining assembly to provide selective release of the post lock and selective disconnection of the loose leaf retaining assembly.

It is an object of the present invention to provide a loose leaf post binder having a binding assembly which is quickly and easily expansible to facilitate the posting of handwritten entries.

It is another object of the invention to provide a loose leaf post binder in which an expansible loose leaf retaining assembly may be maintained against expansion from an adjusted position.

It is another object of the invention to provide a loose leaf post binder in which the loose leaf retaining assembly may be quickly and easily disengaged from attachment with a portion of the binding assembly to permit the addition or removal of leaves.

It is another object of the invention to provide a loose leaf post binder having a releasable post lock adapted to resist movement in one direction only.

It is another object of the invention to provide a loose leaf post binder having a movable lock bar which is adapted selectably to release the post lock or to release the loose leaf retaining assembly.

Other objects of the invention are to provide a loose leaf post binder which is well suited to serve the requirements of a posting ledger, which is sturdy and dependable in its operation, and which is simple and easy to use.

Additional objects and advantages will be apparent from the following description taken with the accompanying drawings, in which:

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Fig. 1 is a plan view of a loose leaf post binder constructed in accordance with the teachings of the present invention;

Fig. 2 is a side elevation of the loose leaf post binder of Fig. 1 with loose leaves retained therein;

Fig. 3 is an enlarged fragmentary cross-sectional elevation taken generally along the line 3—3 of Fig. 1, the leaves being removed;

Fig. 4 is a further enlarged cross-sectional plan view taken generally along the line 4—4 of Fig. 3;

Fig. 5 is a view similar to Fig. 4, but taken generally along the line 5—5 of Fig. 3;

Fig. 6 is an enlarged fragmentary plan view of the binder of Fig. 1 with the outside angle and upper flap removed;

Fig. 7 is an enlarged fragmentary plan view of the binder of Fig. 1 in open position with leaves removed, the view being taken generally from the line 7—7 of Fig. 9;

Fig. 8 is an enlarged plan view of a lock bar;

Fig. 9 is an enlarged fragmentary end elevation of the binder as shown in Fig. 7;

Fig. 10 is a view similar to Fig. 9, but with the binding assembly in expanded position;

Fig. 11 is a view similar to Fig. 7, but with the binding assembly in the expanded position of Fig. 10;

Fig. 12 is an enlarged fragmentary end elevation of the binder as shown in Fig. 10, but with the loose leaf retaining assembly disengaged from the angle assembly and with the transfer bar assembly removed;

Fig. 13 is an enlarged fragmentary view showing relative positions of a cam bracket and a release bar, wherein the post lock is engaged;

Fig. 14 is a view similar to Fig. 13, but showing the parts in relative positions, wherein the post lock is released;

Fig. 15 is an enlarged fragmentary view showing relative positions of the lock bar and a detent device, wherein both the post lock and the loose leaf retaining assembly are engaged, the detent being inactive;

Fig. 16 is a view similar to Fig. 15, but showing the parts in relative positions wherein the post lock is disengaged and the loose leaf retaining assembly is engaged, the detent being active;

Fig. 17 is a view similar to Fig. 15, but showing the parts in relative positions wherein the post lock is engaged and the loose leaf retaining assembly is disengaged, the detent being inactive;

Fig. 18 is a further enlarged fragmentary

cross-sectional view taken generally along the line 18—18 of Fig. 11;

Fig. 19 is an isometric view of a release bar; and

Fig. 20 is a bottom plan view of a catch dog.

Referring to the drawings more particularly by means of the reference numerals thereon, a loose leaf post binder 30 comprises a binding assembly 32 to which is secured a hinged upper flap 34 and a hinged lower flap 36, as shown in Figs. 1, 2, and 3. The binding assembly 32 broadly comprises three cooperative sub-assemblies, viz., an angle assembly 38, a panel or back plate assembly 40, and a loose leaf retaining assembly 42. The back plate assembly 40 and the loose leaf retaining assembly 42 are hinged together and both are adapted to separable engagement with the angle assembly 38, as will appear.

The angle assembly 38 comprises an outside angle 45 and an inside angle assembly 46. The outside angle 45 is completely covered by a pliable binding skin 47 of leather, fabric, or the like, cemented or glued thereto, and which extends to enclose in like manner a cover 48, thereby forming the upper flap 38. The cover 48, which may be of any suitable material, such as cardboard, either stiff or flexible as desired, is separated from the outside angle 45 so as to leave a gap 49, thus permitting the pliable binding skin 47 to serve as a hinge for the flap 34.

The inside angle assembly 46 includes a lock post assembly 50 disposed centrally of the ends of an angle 51 so as to depend from a horizontal flange 52 thereof parallel to a vertical flange 53 thereof. The lock post assembly 50 includes a sleeve-like post 54 having a deformed end 55 secured to the horizontal flange 52, as clearly shown in Fig. 3. Near the end 55, the post 54 has diametrically opposed rectangular apertures 56 having a mutual axis parallel to the angle 51 (Figs. 4 and 14).

A catch dog 57 in the form of a plate, as shown in Fig. 20, having a bevelled edge 58, a rectangular aperture 59, and a lug 60, is assembled within the post 54 so that the lug 60 pivotally engages a rectangular aperture 61 in the wall of the post 54, and so that the bevelled edge 58 is disposed so as to be vertically movable in a notch 62 in the wall of the post 54 opposite the aperture 61, as shown in Fig. 3. It will be noted that, when the catch dog 57 lies in a position which approaches the horizontal, the bevelled edge 58 extends beyond the outside of the wall of the post 54, but that when it is pivoted upwardly about the aperture 61, the bevelled edge is withdrawn so as to be disposed completely therewithin. A release bar 63, shaped as clearly shown in Fig. 19, and having a rectangular aperture 64 and an inclined ledge 65, is also assembled within the post 54 so as to dispose the ledge 65 beneath the catch dog 57. A compression spring 66 surrounds a portion of the release bar 63 and acts between the top of the catch dog 57 and a plurality of indentations 67 deformed from the wall of the post 54. A deformed lug 68 may be pressed inwardly from the wall of the post 54 at its free end after assembly therewithin of the various parts as above described to prevent their accidental removal therefrom.

A structural member 75, having an L-shaped cross section, as clearly shown in Fig. 3, is secured by peened over spacing lugs 76 to the flange 52 in spaced relation to the inner face thereof and extends from one end of the flange 52 to within a relatively short distance of the other end, as shown in Figs. 6, 7, 11, 15, 16, and 17. The member 75 and the flange 52 have corresponding spaced coaxial notches 77 and 78 for a purpose to appear. A lock or actuating bar 79 of the general shape clearly depicted in Fig. 8 includes an elongated flat strip 80 having one of its ends shaped and bent to form a handle 81. A cam bracket 82 having an elongated finger-like cam portion 83 extending parallel to the strip 80 is secured thereto as by riveting or welding intermediate the ends of the strip 80. The lock bar 79 is slidably disposed between the flange 52 and the member 75, a portion of the latter being removed as indicated at 84 in Fig. 6 to provide clearance for the cam bracket 82. Thus disposed, the lock bar 79 is retained by the lugs 76 which respectively extend through longitudinal slots 85, 86 and 87 in the strip 80. Thus retained, the lock bar 79 is susceptible to limited longitudinal movement along the flange 52. A rectangular boss 88 is formed in the flange 52 of the angle 51 and a rectangular aperture 89 is formed in the strip 80 of the lock bar 79, the relation of the boss 88 and the aperture 89 being clearly depicted in Figs. 6, 15, 16 and 17. It is obvious from these figures that this arrangement provides a detent action wherein the lock bar 79 may easily be moved so as to occupy a predetermined intermediate position along the flange 52 and, therefore, in respect to the lock post assembly 50 attached thereto.

The strip 80 of the lock bar 79 additionally has longitudinal slots 90 and 91 which intersect respectively with transverse notches 92 and 93, as shown in Fig. 8. The spacing of the several slots and notches in the strip 80 is such that when the lock bar 79 is in the position of Fig. 17, the notches 92 and 93 are in axial alignment with the notches 77 and 78, respectively, but that when the positions of either Fig. 15 or Fig. 16 obtain, portions of the slots 90 and 91 coincide respectively with the axes of the notches 77 and 78.

With the lock bar 79 disposed as above described between the flange 52 and the channel 75, the cam portion 83 of the cam bracket 82 extends slidably through the apertures 56 in the post 54 and also through the aperture 64 in the release bar 63. As best shown in Figs. 13 and 14, the cam portion 83 includes coextensive edge portions 95 and 96 with a raised edge portion 97 therebetween. The edges 95, 97 and 96 thus serve to support the release bar 63 against the biasing action of the spring 66 for the positions of the lock bar 79 as shown in Figs. 15, 16 and 17, respectively. It is obvious that when the lock bar 79 is moved to the position of Fig. 16, the release bar 63 will be lifted and will, in turn, cause the catch dog 57 to pivot upwardly and thereby effect withdrawal of the bevelled edge 58 from outside the wall of the post 54 and into released position. When, however, the release bar 79 is supported by either of the edges 95 or 96, the spring 66 will be free to effect an approximately horizontal position of the catch dog 57, thereby disposing a portion of the bevelled edge 58 outside the wall of the post 54 and into locking position as aforementioned.

The inside angle assembly 46 is disposed within the outside angle 45 so as to leave a gap or open space between the vertical flange 53 of the angle 51 and a vertical flange 98 of the angle 45, and the angle assembly 38 is completed by

riveting the horizontal flange 52 of the angle 51 to a horizontal flange 99 of the angle 45.

The back plate assembly 40 comprises a flat plate 100 which is preferably of the same length as the angles 45 and 51, but whose width is intermediate the widths of the flange 98 of the angle 45 and the flange 53 of the angle 51. A lock sleeve bracket 101 having a transversely extending flange 102 is secured as by riveting or welding centrally of the plate 100 and a lock sleeve 103 having a deformed end 104 is secured to the flange 102, as clearly shown in Fig. 3. The lock sleeve 103 is adapted slidably to receive the lock post assembly 50 of the angle assembly 38 and has diametrically opposed notches 105 adjacent its upper end to receive the cam portion 83 of the cam bracket 82. With the lock sleeve 103 thus engaging the lock post assembly 50, the plate 100 is slidably received in the aforementioned space between the flanges 98 and 53 of the angles 45 and 51, respectively. Tabs 106 may be pressed from the ends of the plate 100 so as to extend transversely therefrom and engage notches 107 formed at the ends of the flange 53 of the angle 51, the tabs 106 and the notches 107 thus cooperating in an obvious manner to limit the normal movement between the back plate assembly 40 and the angle assembly 38. If desired, the tabs 106 and the notches 107 may be eliminated, thereby providing for simple disengagement of the angle assembly 38 and the back plate assembly 40.

The loose leaf retaining assembly 42 comprises a posting bar assembly 110 and a transfer bar assembly 111 (Figs. 3, 7 and 9–12). In the illustrated embodiment of the invention, the posting bar assembly 110 includes a flat strip 112 to which are secured two sleeves 113 and one post 114, and the transfer bar assembly 111 includes a flat strip 115 to which are secured one sleeve 113 and two posts 114. The sleeves 113 and the posts 114 may be secured as clearly illustrated in Fig. 3, and it is understood that the several sleeves 113 are each adapted slidably to receive a post 114 in telescoping engagement, the transfer bar assembly 111 being not only expansible, but also completely separable from the posting bar assembly 110. Additionally, the strip 115 of the transfer bar assembly 111 has upstanding headed lugs 116 adapted to engage the notches 77 and 78 of the inside angle assembly 46, and, when thus disposed, to be, in turn, engaged by the slots 90 and 91 in the lock bar 79.

The plate 100 of the back plate assembly 40 and the strip 112 of the posting bar assembly 110 are both enclosed by a pliable binding skin 120 similar to the skin 47, the plate 100 and the strip 112 being spaced apart, however, as best shown in Fig. 3, to leave a gap 121 to permit the skin 120 to serve as a hinge therebetween. The skin 120 also extends to enclose a cover 122, similar to the cover 48, to form the lower flap 36, there being a gap 123 between the strip 112 and the cover 122 to permit the skin 120 to serve as a hinge for the flap 36.

Use

The normal closed position of the loose leaf post binder 30 is as illustrated in Figs. 1, 2 and 3. In this position, the binding assembly 32 is adapted to retain loose leaf sheets, such as 125, in conventional loose leaf book form, the sheets being disposed on the telescoped sleeves 113 and posts 114 and between the strips 115 and 112 of the loose leaf retaining assembly 42. If the combined thickness of the sheets 125 is equal to or less than a predetermined minimum dimension, the binding assembly will normally be collapsed to the position best shown in Fig. 3, wherein substantially the full length of the posts 114 and the lock post assembly 50 are inserted into the sleeves 113 and the lock sleeve 103, respectively. If the lock bar 79 is assumed to be in the "locked" position illustrated in Fig. 15, the headed lugs 116 will be engaged by the slots 90 and 91, thus securing the angle assembly 38 to the loose leaf retaining assembly 42. Further, with the lock bar 79 in the position of Fig. 15, the cam portion 83 of the cam bracket 82 will be in the position of Fig. 13, wherein the release bar 63 is supported upon the edge 95, thus permitting the bevelled edge 58 of the spring-biased catch dog 57 to extend beyond the wall of the post 54 and to engage the inside surface of the lock sleeve 103, as shown in Fig. 3. It is obvious that the catch dog 103, thus disposed, will preclude the lock post assembly 50 being withdrawn from the lock sleeve 103, thus securing the back plate assembly 40 also to the angle assembly 38. The binding assembly 32, therefore, is locked in rigid position and the loose leaf binder 30 may be used in any position, such, for example, as that of Figs. 7 and 9, wherein the flaps 34 and 36 may be fully opened.

The posting of handwritten entries upon the sheets 125 may be facilitated by expanding the binding assembly 32 to the position illustrated in Figs. 10 and 11. This may be accomplished by moving the lock bar 79 to the "posting" position of Fig. 16, whereupon the cam portion 83 is disposed as shown in Fig. 14. The release bar 63 is thus lifted and causes the catch dog 57 to be withdrawn from engagement with the lock sleeve 103. This permits the angle assembly 38 and the still secured transfer bar assembly 111 to be reciprocated freely with respect to the back plate assembly 40 and the attached posting bar assembly 110. After posting entries as desired, the binder 32 may be returned to the collapsed position of Figs. 1, 2, 3, 7 and 9, and again locked by pushing the lock bar 79 to the position of Fig. 15, or the locking operation may be effected before the collapsing operation, it being noted that the catch dog 57, even though it be disposed against the inside of the lock sleeve 103, will always permit movement of the lock post assembly in a direction to collapse the binder assembly 32.

It is obvious from the foregoing that any combined thickness of sheets 125 greater than the aforementioned predetermined minimum dimension, but equal to or less than a predetermined maximum dimension, may also be accommodated by partial withdrawal of the posts 114 and the lock post assembly 50 from the sleeves 113 and the lock sleeves 103, respectively. If the combined thickness of sheets 125 exceeds the first mentioned predetermined dimension, the sheets 125 may be compressed between the strips 110 and 111 and retained en masse.

When sheets are to be added to or removed from the binder assembly 32, the lock bar 79 is moved to the "unlocked" position of Fig. 17. This effects alignment of the notches 92 and 93 in the lock bar 79 with the respective notches 77 and 78 in the inside angle assembly 46, thereby disengaging the slots 90 and 91 from the headed lugs 116 in the transfer bar assembly 111. This permits the binding assembly 32 to be opened to the position illustrated in Fig. 12, whereupon the transfer bar assembly 111 may be completely disen-

gaged from the posting bar assembly 110 for the addition or removal of sheets as desired. Upon replacement of the transfer bar assembly 111, the binder may again be closed and locked in a manner which is now apparent.

Clearly, the above description and the accompanying drawings disclose a novel loose leaf post binder having the advantages sought therefor. It is understood that both the description and the drawings are in no sense restrictive, and that the rearrangement of parts or the substitution of equivalent elements and principles is considered as within the scope of the present invention, which is limited only by the claims which follow.

What is claimed is:

1. In a loose leaf binder, in combination, a first assembly having an upper flap hinged thereto, a second assembly having a lower flap hinged thereto telescopically associated with said first assembly, said first assembly comprising two angle members secured together in semi-nested relation so as to provide a slot between parallel disposed flanges thereon, said second assembly comprising two hinged plate members, one of said plate members, but not the other thereof, being adapted slidably to occupy the aforementioned slot, a first expansible means associated with said first and second assemblies for retaining loose leaves including a plurality of posts and sleeves in respective telescoping engagement, said first expansible means comprising two separable units, one of said separable units being secured to said other plate member against removal and the other of said separable units being selectably releasable from said first assembly for bodily removal from said loose leaf binder, a second expansible means associated with said first and second assemblies for maintaining the same in cooperative relation one with the other including first and second sleeves in telescoping engagement, said first sleeve being secured to said first assembly, said second sleeve being secured to said one of said plate members, means disposed within said first sleeve for selectably binding the same against movement in at least one direction relative to said second sleeve, and a member reciprocably mounted on said first assembly selectably releasing said binding means when in an intermediate position and effecting release of said other of said separable units from said first assembly when in one extreme position of movement, said reciprocable member both locking said binding means and securing said other of said separable units against release when in said other extreme position of movement.

2. In a loose leaf binder, in combination, a first assembly having an upper flap hinged thereto, a second assembly having a lower flap hinged thereto telescopically associated with said first assembly, said first assembly comprising two angle members secured together in semi-nested relation so as to provide a slot between parallel disposed flanges thereon, said second assembly comprising two hinged plate members, one of said plate members, but not the other thereof, being adapted slidably to occupy the aforementioned slot, a first expansible means associated with said first and second assemblies for retaining loose leaves including a plurality of posts and sleeves in respective telescoping engagement, said first expansible means comprising two separable units, one of said separable units being secured to said other plate member against removal and the other of said separable units being selectably releasable from said first assembly for bodily removal from said loose leaf binder, a second expansible means associated with said first and second assemblies for maintaining the same in cooperative relation one with the other including first and second sleeves in telescoping engagements, said first sleeve being secured to said first assembly, said second sleeve being secured to said one of said plate members, means disposed within said first sleeve for selectably binding the same against movement in at least one direction relative to said second sleeve, and a member reciprocably mounted on said first assembly selectably releasing said binding means and effecting release of said other of said separable units from said first assembly, means limiting the movement of the reciprocable member in each direction of reciprocation, detent means defining an intermediate position of said reciprocable member between its limit positions, a cam element secured for movement with the reciprocable member and slidably engaging said binding means, said cam element being adapted to effect release of said binding means only when said reciprocable member occupies an intermediate position of its range of reciprocable movement, a plurality of longitudinal slots formed in said reciprocable member parallel to the direction of reciprocation thereof, a transverse notch intersecting each of said longitudinal slots at one end of the latter, said notches being wider than said longitudinal slots, and a plurality of upstanding headed lugs secured to the said other of said units for respective retention in said longitudinal slots, said lugs being releasable through said notches, said lugs being so disposed relative to the reciprocable movement of the reciprocable member as to be retainable in said longitudinal slots when the reciprocable member is either in one of said limit positions or in said intermediate position and to be releasable through said notches when the reciprocable member is in the other of said limit positions.

WALTER E. SCHROER.

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