May 2, 1950 C. W. BISHOP 2,506,290

EXPANSIBLE LOOSE PAGE BINDER

Filed April 4, 1949 2 Sheets-Sheet 1

Fig. 1.

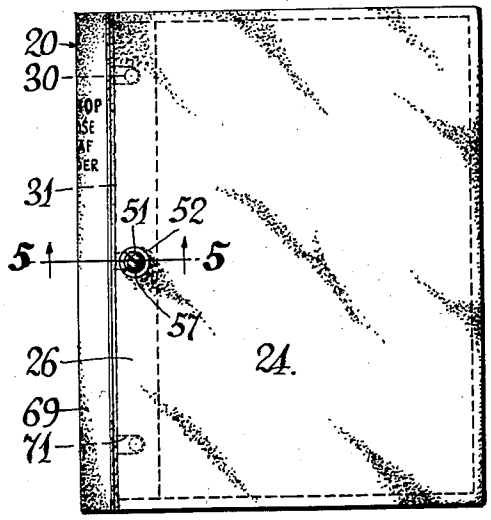


Fig. 2.

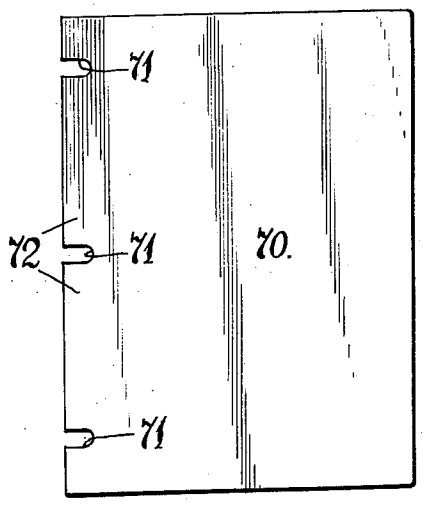


Fig. 3.

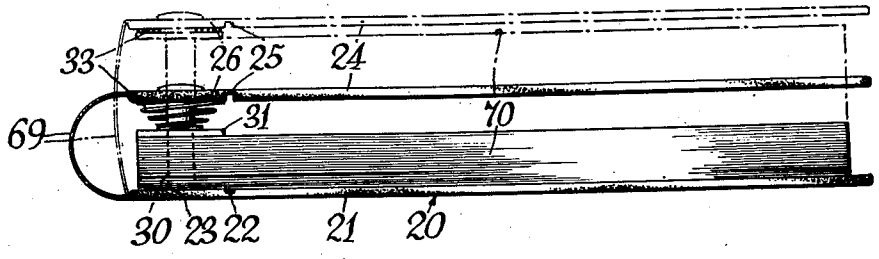
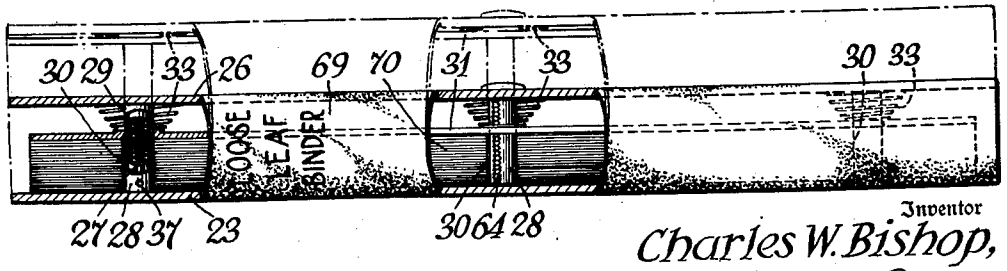


Fig. 4.



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Fig. 5.

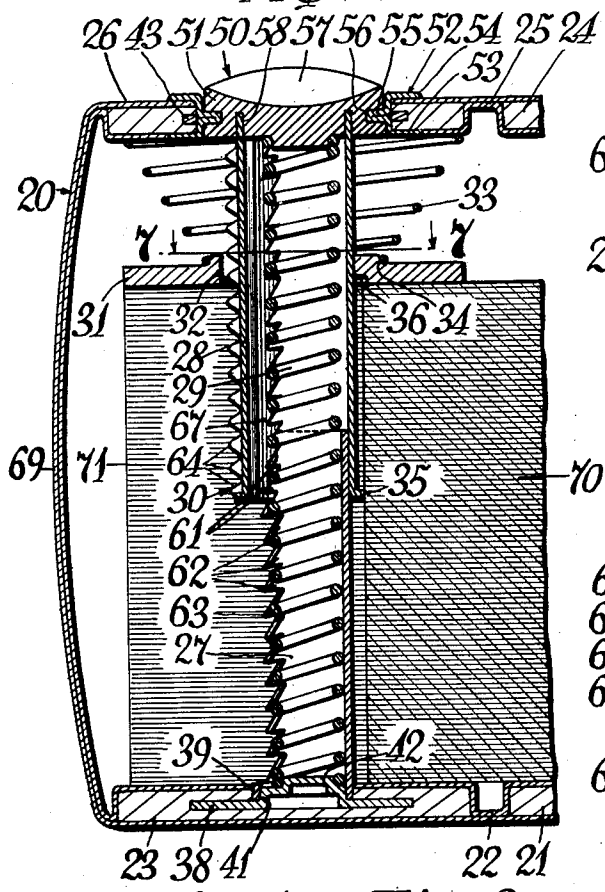


Fig. 6.

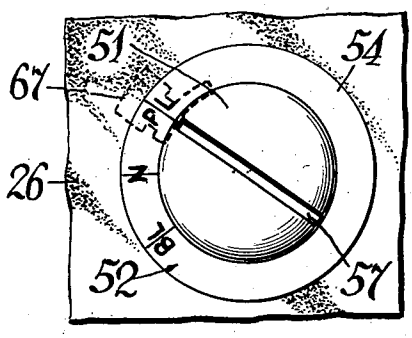


Fig. 7.

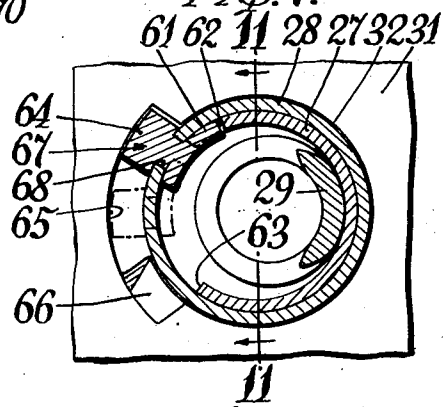


Fig. 10.

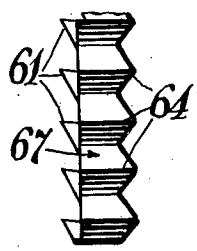


Fig. 9.

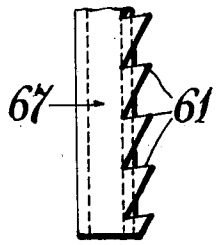


Fig. 8.

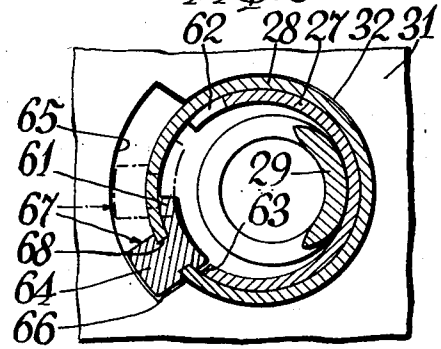
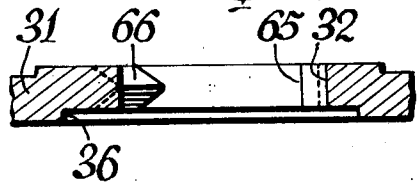


Fig. 11.



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EXPANSIBLE LOOSE PAGE BINDER

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Application April 4, 1949, Serial No. 85,374

13 Claims. (Cl. 129—13)

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This invention relates to loose page binders and more particularly relates to expansible loose page binders wherein a pair of cover members are connected together in a spaced superposed relation by a plurality of tubular telescoped posts in each of which a compression spring is mounted to expand the posts and the binder, wherein a spring actuated pressure bar is slidably mounted on the posts to detachably secure one or a number of pages between the pressure bar and one of the covers, and wherein locking means are operable to unlock the binder for expansion and the insertion and binding of pages therein and operable to lock the binder to detachably secure the inserted pages in the binder.

The objects of the present invention are to provide an improved expansible loose page binder of a relatively large capacity having a few simply formed parts; to provide duplicate and similar spring actuated expansible posts and other parts and thereby reduce manufacturing costs so that the improved binder may be manufactured and sold at a relatively low cost; to provide a spring actuated pressure bar slidably mounted on the expansible posts for resiliently holding one or more pages between the pressure bar and one cover of the binder; to provide spring means so formed and arranged on the expansible posts as to resiliently force the pressure bar toward one cover of the binder to hold one or more pages therebetween and to flatten out between the pressure bar and the other cover upon the insertion of a large number of pages; to provide a simple, effective and readily accessible locking means operable for locking the binder against expansion for unlocking the binder for expansion and for locking the pressure bar thereto for movement therewith when the binder is allowed to expand; to provide a binder in which pages may be inserted and detachably secured between the pressure bar and one cover of the binder when the lifted pressure bar is forced into engagement with the pages and released and the binder is locked by the locking means; and to provide a binder which simulates a bound book in appearance when the covers are connected together by a flexible back counter embossed with suitable indicia.

The foregoing and other objects will appear from a perusal of the detailed description of a preferred embodiment of the invention illustrated in the accompanying drawings wherein:

Figure 1 is a top plan view of my expansible loose page binder.

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Figure 2 is a plan view of a page having one edge notched for use with the binder.

Figure 3 is an end elevational view on an enlarged scale, showing the binder partially filled with pages before it is expanded, and also showing an expanded position of the binder in dot and dash lines.

Figure 4 is an elevational view, on the same scale as Figure 3, looking toward the embossed counter of the binder which is shown before expansion in full lines and after expansion in dot and dash lines. Parts of the counter are broken away to more clearly show the construction of the binder.

Figure 5 is an enlarged fragmentary vertical sectional view taken along line 5—5 of Figure 1, showing the binder partially expanded and locked. The locking telescoping post and associated parts being shown in arbitrarily selected positions to more clearly show the details of construction.

Figure 6 is an enlarged fragmentary plan view showing the slotted head of the post locking means and the indexed annular grommet in which the locking means is rotatably secured.

Figure 7 is an enlarged horizontal sectional view, taken along line 7—7 of Figure 5, showing the toothed locking bar of the outer post part locked to the inner telescoping post part and the pressure bar unlocked for sliding movement on the outer post part.

Figure 8 is the same as Figure 7 except that the toothed locking bar has been rotated through a neutral position to a position in which the telescoped post parts are unlocked for expansion and the pressure bar is locked to the bar for movement therewith.

Figure 9 is a fragmentary view of one face of the locking bar showing the teeth for locking the telescopic post parts against expansion.

Figure 10 is a fragmentary view of the opposite face of the locking bar showing the teeth for locking the pressure bar thereto and

Figure 11 is a transverse vertical sectional view of the pressure bar taken on the line 11—11 of Figure 7.

Referring now to the drawings the binder, generally indicated by the numeral 20, is provided with a stiff back-cover member 21 hingedly connected by a flexible hinge portion 22 to a stiff marginal binding portion 23, and a stiff front cover member 24 hingedly connected by a flexible hinge portion 25 to a stiff marginal binding portion 26. A plurality of tubular post parts 27, preferably three in number, are rigidly secured in

upright relation to the marginal portion 23 intermediate its longitudinal edges in alined spaced relation. A plurality of similar tubular post parts 28 are likewise spaced and secured in upright relation to the marginal portion 26 and are slidably telescoped over the post parts 27 thus expansibly connecting the marginal portion 26 to the marginal portion 23.

The telescoped post parts 27 and 28 each house a compression spring 29 and provide telescopic binding posts 30 expansible by the springs 29. A pressure bar 31, being formed with alined holes 32, spaced to receive the post parts 28 upon which it is slidably mounted, is resiliently urged toward the inner end of the post parts 28 by any suitable spring means. The spring means may comprise a plurality of spirally wound compression springs 33, one encircling each post part 28 and spaced therefrom by a seat 34 formed on the pressure bar 31, around each hole 32, and normally acting between the marginal portion 26 and the pressure bar 31 to resiliently hold the latter against a stop collar 35 formed at the inner end of each post part 28. The springs 33, being spirally wound, occupy a minimum of space when fully compressed between the marginal portion 26 and the pressure bar 31 (see Figs. 3 and 4) so that by providing for a maximum movement of the pressure bar on the post parts 28 the capacity of the binder is increased. The inner face of the pressure bar 31, around each hole 32 is formed with a counterbore 36 to receive the stop collars 35 so that the inner face of the pressure bar lies slightly beyond the inner face of the stop collars, and when the posts 30 are fully telescoped, as determined by the stop collars 35 engaging the marginal portion 23, the pressure bar 31 resiliently engages the marginal portion 23 and one or more pages may be detachably secured therebetween.

When the posts 30 are fully expanded by the springs 29, as determined by any suitable stop means on the posts, and the compression springs 33 are flattened out between the marginal portion 26 and the pressure bar 31, additional pages, up to the capacity of the binder, may be inserted and detachably bound between the pressure bar 31 and the marginal portion 23. Stop means for limiting the expansion of spring actuated telescopic binding posts are well known in the expansible binder art, and accordingly, as indicated at 37 in Fig. 4 the inner end of each post part 28 may be formed with a detent or pimple slidably engaged in a slot or groove formed in the associated post part 27 and engageable with the inner end of the groove to limit expansion of the post parts.

The marginal portions 23 and 26 for substantially their entire length are preferably reinforced by stiff metal plates. The marginal portion 23 encases a reinforcing plate 38 and is formed with a hole 39 for each post part 27 which is inserted in its hole and rigidly secured in upright relation upon a post seat 41 formed in the plate 38. The plate 38 is also formed with a spring seat 42 for one end of each spring 29 to prevent shifting of the springs in their post parts 27.

The marginal portion 26 encases a reinforcing plate 43 to which the outer ends of the post parts 28 may be rigidly secured in upright relation in the same manner that the post parts 27 are secured to the plate 38. The plate 43 is also formed with post seats and spring seats which are not shown but which are substantially the same as the post seats 41 and the spring seats 42.

One of the post parts 28, preferably the center one, may also have its outer end rigidly secured to the plate 43 like the other posts and have a locking means associated with but rotatable independently of the center post part 28. However, to provide a simplified, more rigid and durable post locking construction I prefer to rigidly connect the locking means to the center post part 28 and have it form a part of a unitary rotatable post locking means 50 rotatably secured in the center of the marginal portion 26.

As shown in Fig. 5 the post locking means 50 includes a circular head 51 rotatably secured in the center of the marginal portion 26 as by an annular ring or grommet 52. The grommet 52 being rigidly secured to the center of the marginal portion 26 by its inner and outer external flanges 53 and 54 is formed with an internal flange 55 which slidably fits into a groove 56 formed in the side wall of the head 51, thus rotatably securing the head 51 in the grommet 52.

The outer face of the head 51, while slightly rounded, is substantially flush with the face of the outer flange 54 and is provided with a transverse kerf or slot 57 in which a coin or any available instrument may be inserted to rotate the head 51 and the post locking means 50. The inner face of the rotatable head 51 being flush with the face of the inner flange 53, is rigidly secured to the outer end of the center post part 28, as by forming a circular groove 58 in the inner face of the head 51 concentric with its axis and inserting and rigidly securing the outer end of the post in the groove 58 in any suitable manner.

The tubular center post part 28, forming a rigid part of the rotatable post locking means 50, is provided with a series of internal teeth 61 engageable with teeth 62 formed along one longitudinal edge of a slot 63 formed in the center post part 27 to lock the post parts against expansion by the springs 29 when the means 50 is partially rotated in one direction. The post part 28 is also provided with a series of external teeth 64 slidable in a sector-shaped slot 65 formed as an extension of the center hole 32 of the pressure bar 31 and is engageable with a tooth 66 formed at one end of the slot 65 to lock the pressure bar against movement on the post parts 28 when the means 50 is partially rotated in the opposite direction. The internal teeth 61 and the external teeth 64 being longitudinally, coextensive with the post part 28, are preferably formed in a locking bar 67 rigidly secured in a slot 68 formed in the center post part 28 (see Figs. 7 and 8).

As shown in Figs. 7 and 10 the teeth 64 and the tooth 66 are beveled to be more readily engageable.

Referring again to Figs. 7 and 8 it will be seen that the width of the slot 65 is such that when the locking bar 67 is rotated by the means 50 to a neutral position midway of its locking positions, as indicated in dot and dash lines, its teeth 61 are disengaged from the teeth 62 and its teeth 64 are disengaged from the tooth 66. With the locking bar in its midway or neutral position, the posts 30 are free to be expanded by the springs 29 and the pressure bar 31 is free to be moved on the post parts 28 by the springs 33.

In order to prevent the external teeth of the locking bar from marring the pages the center post part 27 is rigidly secured to the marginal portion 23 with its slot 63 opening toward the back of the binder, and since the slot 63 is of less width than the diameter of the post part 27, and limits rotation of the locking bar 67, the external teeth

64 of the backing bar never come in contact with the bound pages.

The slot 57 in the head 51 being radially alined with the locking bar 67 as indicated in Fig. 6, serves to indicate the position of the locking bar and the outer flange 54 of the grommet 52 may be marked in any suitable manner to indicate where the locking bar should be positioned to perform its functions. For example its post locking bar locking and neutral positions may be indicated by the letters "PL," "BL" and "N" as shown in Fig. 6.

In order to provide a binder simulating a bound book in appearance the back edges of the marginal portions 23 and 26 are connected together by a flexible back or counter 69 which is outwardly bowed sufficiently so as to allow the marginal portions to expand as shown in Figs. 3 and 4. The counter 69 may also be embossed or otherwise provided with suitable indicia such as the title and etc. to further simulate the appearance of a bound book as indicated in Fig. 4.

The term "pages" as used herein is intended to include single pages, leaflets, pamphlets, and etc. and as shown in Fig. 2 the page 70 preferably has one edge provided with notches 71 spaced to receive the binding posts 30 so that the notched marginal portion 72 of one or more of the pages 70 may be inserted under the pressure bar 31, and detachably secured in the binder in any desired order.

Obviously my binder may have many uses, one such use being for example, the binding of pages pertaining to a rapidly developing art or science and keeping the subject matter up to date by removing old pages and detachably binding new pages, collected and received from time to time. In the event some of the new pages are not provided with notches, or if provided with notches not spaced to fit the binder posts, such pages may still be temporarily bound by inserting them under the pressure bar as far as possible and if the importance of the data warrants it, the pages may be properly notched and detachably secured in the binder.

Operation

In order to more clearly explain the operation of my binder it is first assumed that the binder is empty, fully telescoped and locked, and that it is desired to bind a single page. Under these conditions the locking means 50 may be simply rotated to its neutral position and the binder allowed to expand and in so expanding the pressure bar is lifted by the stop collar, or the locking means may be further rotated in the same direction to lock the pressure bar for movement therewith when the binder is allowed to expand. In either event the pressure bar is lifted.

After inserting the page between the lifted pressure bar and the marginal portion 23 force is applied to telescope the binder and in so doing the pressure bar, whether free or locked, engages the inserted page and when the locking means is rotated in the opposite direction the binder is locked against expansion and the pressure bar is free to resiliently hold the page.

Assume now that the binder is partially filled, as shown in Fig. 3, that it is desired to bind additional pages and that the total thickness of the bound pages and the additional pages is less than the fully telescoped capacity of the binder. Under these conditions force is applied to hold the binder against expansion until the locking means has been rotated from its post locking position, through its neutral position, and to its pressure bar locking position. Then the binder is allowed to expand and the locked pressure bar is lifted from the bound pages and the additional pages may be inserted.

After inserting the additional pages force is again applied to telescope the binder and thereby move and hold the lifted and locked pressure bar engaged with the pages. While the pressure bar is held engaged with the pages the locking means is rotated to its neutral position to unlock it from the pressure bar, so that the binder may now be fully telescoped by exerting more force and, while maintaining the force, the binder may be locked against expansion by rotating the locking means to its post locking position. When the binder is locked the force is released and the entire group of pages are resiliently held in the binder by the pressure bar.

Assuming now that, due to repeated insertions of pages, the fully telescoped capacity of the binder has been reached, i. e. the springs 33 have been flattened out between the pressure bar and the marginal portion 26, and that it is desired to bind an additional number of pages. Under these circumstances the operations of the binder is the same as above described, however in telescoping the binder it will be apparent that because the total thickness of the group of pages is greater than its telescoped capacity the binder posts cannot be fully telescoped. In other words the binder posts are expanded sufficiently to accommodate the increased thickness of the pages and are locked in the above manner.

When it is desired to remove some of the bound pages the binder is expanded, the pages removed, and the binder again telescoped and locked all as above described.

It will be observed that in telescoping the binder after the removal of pages the thickness of the remaining pages may be such that (1) the binder is fully telescoped before the locked pressure bar engages the remaining pages, or (2) the locked pressure bar engages the remaining pages before the binder is telescoped as much as possible. In either event when the locking means is rotated to its neutral position both the binder and the pressure bar are unlocked. In the first instance when the fully telescoped binder is locked the pressure bar, having been unlocked, engages and resiliently holds the pages. In the second instance the binder is telescoped as much as possible as determined by the locked pressure bar engaging the pages, and upon the pressure bar being unlocked, the binder is further telescoped and locked so that the pressure bar resiliently holds the pages.

In locking the binder against expansion, except when it is fully telescoped, the thickness of the pages may be such that the teeth 61 of the locking means 50 may not be positioned for locking engagement with the teeth 62. Therefore, if the binder cannot be further telescoped it is allowed to expand slightly to engage the teeth 61 and 62. It is again pointed out that the extent and arrangement of the slot 65 is such that when the binder is locked the pressure bar is free and, being actuated by the springs 33 compensates for the slight expansion necessary to engage and lock the teeth, resiliently holds the pages in the binder.

The herein described and illustrated form of my expansible loose page binder is intended to exemplify the principles of the invention, and it should be understood that various modifications

and changes may be made in the component parts and their arrangement within the scope of the appended claims wherein I claim:

1. An expansible loose page binder comprising a pair of cover members having their marginal edge portions connected together by a plurality of spaced tubular telescoping posts in which compression springs are mounted to expand the posts and thereby expand the binder, a pressure bar slidably mounted on the outer parts of the posts, spring means acting between one cover and the pressure bar to resiliently hold the pressure bar upon pages inserted between the pressure bar and the other cover, and a unitary locking means carried by the one cover for selectively locking the posts or the pressure bar against movement by their springs, said locking means being associated with one of said posts and positionable to unlock the posts for expansion and to lock the pressure bar for movement therewith, whereby pages may be inserted beneath the lifted pressure bar and when the lifted pressure bar is forced to engage the inserted pages by telescoping the expanded posts said means is positionable to unlock the pressure bar and to lock the telescoped posts against expansion, whereby the inserted pages are removably bound between the pressure bar and the other cover.

2. A binder as set forth in claim 1 wherein the spring means is formed to flatten out between the pressure bar and the one cover to provide for a maximum movement of the pressure bar on the outer parts of the telescoping posts.

3. A binder as set forth in claim 1 wherein each post is provided with a spirally wound coil spring flattenable between the pressure bar and the one cover to provide for maximum movement of the pressure bar on the outer parts of the telescoping posts.

4. A binder as set forth in claim 1 wherein the locking means includes one set of teeth selectively engageable with teeth formed on the inner part of one of the telescoping posts and includes another set of teeth selectively engageable with a tooth on the pressure bar when the one set of teeth are disengaged.

5. A binder as set forth in claim 1 wherein the locking means includes a rigid locking bar longitudinally coextensive with the outer part of the center telescoping post, said locking bar being formed with inner and outer teeth throughout its length and being freely slidable and rotatable in a slot formed in and longitudinally coextensive with the inner part of the center telescoping post and in a sector-shaped opening formed in the pressure bar as an extension of the center one of the holes in which the outer parts of the telescoping posts are slidably received, the inner teeth being selectively engageable with teeth formed along one edge of said slot to lock the center post parts against expansion and the outer teeth being selectively engageable with a tooth formed at one end of said opening to lock the pressure bar thereto.

6. A binder as set forth in claim 1 wherein the locking means includes locking teeth radially alined with a slot in a head rotatably secured in the one cover with its slotted face substantially flush with the outer face of said cover which is provided with markings with which the slot is registerable to indicate the position of the locking teeth.

7. A binder as set forth in claim 1 wherein the pressure bar is provided with holes formed to slidably receive the outer tubular parts of the telescoping posts and to receive stop collars formed at the inner ends of the posts so that the inner face of the pressure bar extends slightly beyond the collars and may engage and bind a single page when the posts are fully telescoped.

8. A binder as set forth in claim 1 wherein the marginal edge portions of the pair of cover members are expansibly connected together by a bowed flexible counter embossed with suitable indicia whereby the binder simulates the appearance of a bound book.

9. A unitary tubular telescoping post and pressure bar locking means for expansible loose page binders, comprising an outer tubular post part rotatably secured to one cover of the binder with its outer end exposed and its inner end formed with a stop collar, a side wall of said outer post part being provided with a series of circumferentially narrow inner and outer teeth throughout its length, a spring actuated pressure bar slidably mounted on the outer post part and movable between the stop collar and the one cover, said pressure bar having a tooth selectively engageable by the outer teeth to lock it against movement when said post is rotated in one direction, an inner tubular post part telescoped in the outer post part and having its outer end rigidly secured to the other cover, said inner post part being slotted throughout its length to slidably and rotatably receive the inner teeth and having a series of teeth along one edge of the slot selectively engageable by the inner teeth of the outer post part when the latter is rotated in the opposite direction to unlock the pressure bar and to lock the post parts against expansion, and a compression spring mounted inside of the telescoping post parts to expand the post when unlocked.

10. A post and pressure bar locking means as set forth in claim 9 wherein the inner and outer teeth are formed in a locking bar rigidly secured to the rotatable outer post part.

11. A post and pressure bar locking means as set forth in claim 9 wherein the exposed end of the rotatable outer post part is slotted in alinement with its teeth and the slot is registerable with markings carried by the cover to indicate the position of the teeth.

12. A post and pressure bar locking means as set forth in claim 9 wherein the pressure bar is actuated by a spring flattenable between the pressure bar and the one cover.

13. A telescoping post and pressure bar locking and unlocking means for expansible loose page binders, comprising tubular telescoping post parts in which a compression spring is mounted to expand the telescoped post, a pressure bar slidably mounted on the outer post part, a flattenable spring normally urging the pressure bar toward the inner end of the outer post part, and a rotatable locking bar coextensive with the outer post part and having teeth throughout its length, said locking bar being rotatable from a post-locking-position in which its teeth engage teeth on the inner post part and are disengaged from a tooth on the pressure bar, through a neutral-position in which its teeth are disengaged from both the inner post part and the pressure bar, and to a pressure-bar-locking-position in which its teeth are disengaged from the inner post part and are engaged with and move the pressure bar therewith.

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No references cited.