June 2, 1942. E. P. SCHREYER 2,284,849

BOOK END

Filed Aug. 29, 1941

Fig. 4.

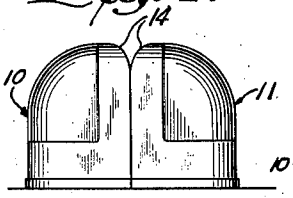


Fig. 5.

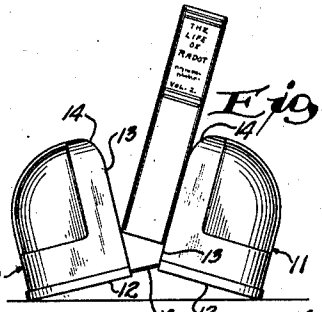


Fig. 6.

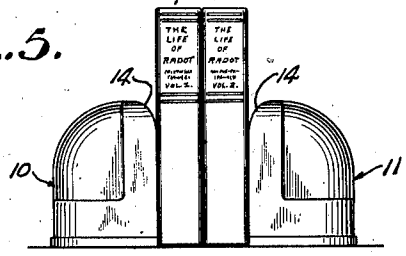


Fig. 1.

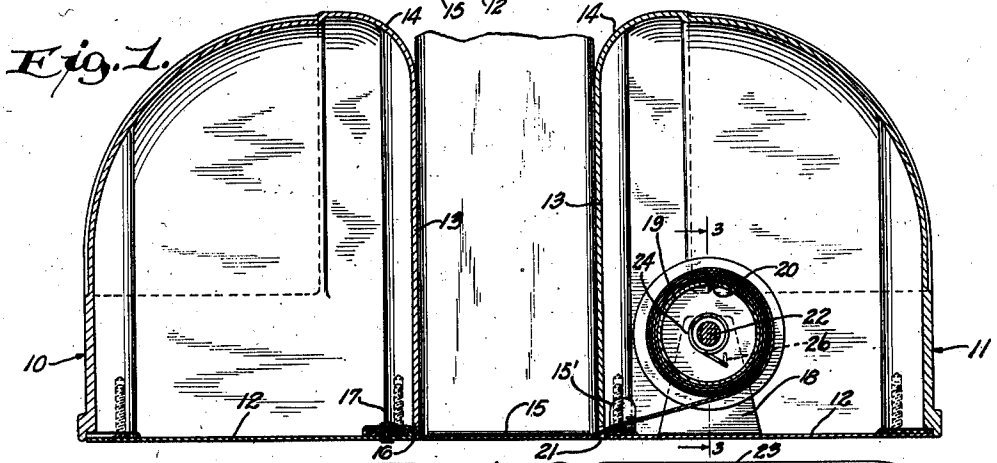
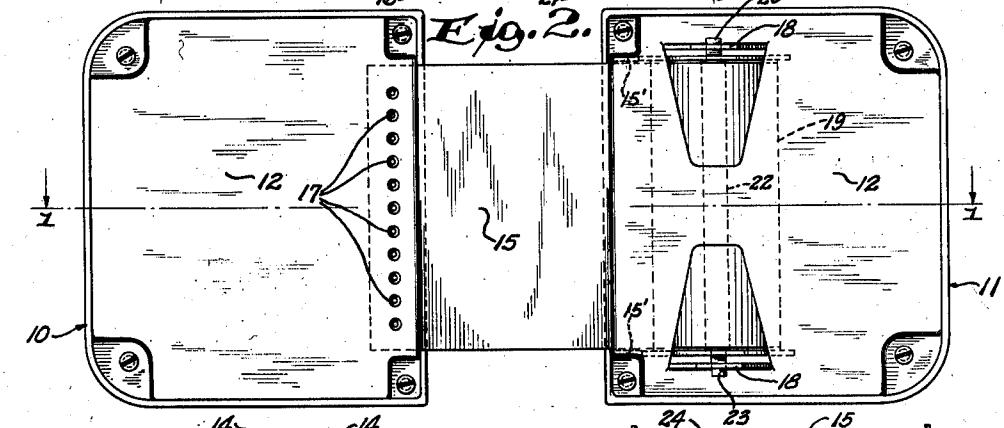


Fig. 2.



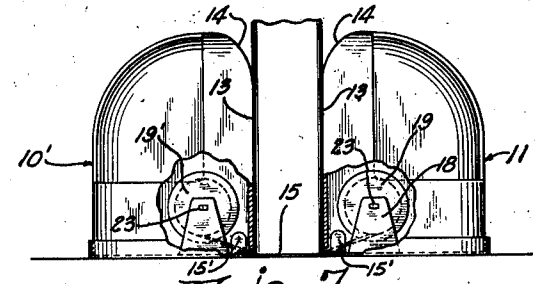


Fig. 7.

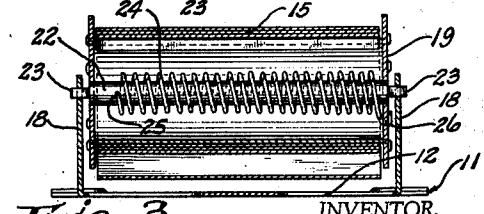


Fig. 3.

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BOOK END

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2 Claims. (Cl. 211—43)

This invention relates to improvements in book ends, and more particularly to a pair of book ends which are yieldingly connected.

Book ends, for table, desk, or shelf use, are ordinarily provided in complementary pairs, in which each book end of a pair is independent of its companion. In use, the conventional book ends must be manually spread or moved together to properly engage the books supported therebetween, such manual spacing being necessitated by the number or thickness of the books to be properly and neatly supported. It is also a fact that if a number of books are being supported by a pair of conventional book ends, and one or more of the books are removed, then one of the book ends must be manually pushed toward its companion to compensate for the vacancy made by the removed books, or the remaining books may fall to angular positions or be improperly supported. Also, if a pair of conventional book ends are correctly positioned for the support of a given number of books and it is desired to add another book to the supported line, then the matter of inserting the additional book in the line is very inconvenient and the book ends must be manually separated to provide additional space therebetween, and after the insertion of the extra book the book ends should be readjusted to correctly position the same for proper orderly support of the new line of books.

With the above in mind, concerning the disadvantages of conventional separated book ends, a primary object of the present invention is to overcome the aforesaid disadvantages by the provision of a pair of yieldingly connected companion book ends in which the book ends automatically position themselves through the insertion or removal of a book from a supported line for proper book supporting spacing relative to the alined books therebetween.

A further object of the invention is to provide associated books ends yieldingly connected together by a flat bottom strip which is inconspicuous and on which books to be supported may be stationed.

A further object of the invention is to provide associated book ends yieldingly connected together by a flat ribbon or flexible bottom strip having its opposite ends extended into and secured within the companion book ends, one or both of said secured extremities of the flexible strip being carried by and windable upon a spring urged roller.

A further object of the invention is to provide yieldingly connected book ends which may be temporarily tilted relative to one another to provide a mouth for the easy insertion therebetween of a book, such temporary tilting being automatically accomplished through the pressure exerted by a book while being inserted, with the book ends returning to proper supporting positions after the book has reached its upright position therebetween.

A further object of the invention is to provide a pair of yieldingly connected book ends which are of very simple construction, are automatic in operation, are strong and durable, are inexpensive, can be produced of any desirable material, are neat and attractive in appearance, and are well adapted for the purposes set forth.

With the above and other objects in view the invention consists of the improved book ends, and their parts and combinations as set forth in the claims, and all equivalents thereof.

Referring now more particularly to the drawing in which the same reference characters indicate the same parts in all of the views:

Fig. 1 is a vertical sectional view through a pair of companion book ends showing the same separated by and engaging a book positioned therebetween, said view being taken on line 1—1 of Fig. 2;

Fig. 2 is a bottom view of the showing in Fig. 1 only with the interposed book omitted;

Fig. 3 is a transverse vertical detail sectional view taken on line 3—3 of Fig. 1;

Fig. 4 is a front view of a pair of companion book ends in adjacent position without a book therebetween, said view being on a smaller scale;

Fig. 5 is a view showing the companion book ends tilted and separated during the act of inserting a book therebetween, said view being on a smaller scale;

Fig. 6 is a view showing the position of the companion book ends with books engaged thereby and supported therebetween, said view being on a smaller scale; and

Fig. 7 is a view, slightly enlarged relative to Figs. 4, 5 and 6, illustrating a modified form of the invention, with parts broken away and in section to show structural details.

Referring now more particularly to the drawing it will appear that the improved book ends comprise a pair of complementary hollow block-like members 10 and 11 of any desired configuration but preferably having flat bottom faces 12 and flat vertical inner faces 13. The book ends of the complementary pair are positioned so that the faces 13—13 of the members 10 and 11 of a pair face one another. The block-like members

10 and 11 may be formed of any desired material such as a plastic, wood, metal, or the like and are preferably hollow throughout. The exterior surfaces may be decorated or carved in any suitable attractive manner. It is also desirable that at the upper end of each vertical inner face 13 there be an outward rounding or curved portion as at 14 for the purpose hereinafter to be mentioned. The block-like members or ends 10 and 11 are permanently connected to each other in the relationship shown by means of a yieldingly secured bottom band or strip 15 of a substantial length and of flexible material.

In the principal form of the invention the bottom face 12 of the block-like member or end 10 is closed by a metallic plate which at its inner end is slightly spaced from the lower edge of the vertical wall 13 so as to provide a crevice 16 into which a portion of the bottom strip or band 15 extends. Said band 15 is riveted or otherwise secured in folded condition transversely along the inner lip of the bottom plate 12 as indicated at 17 in Figs. 1 and 2.

The bottom 12 of the companion block-like member or end 11 is likewise formed by a plate secured in closing position. Within the member 11 are transversely spaced apart supporting ears 18 upwardly struck from the stock of the bottom plate 12. Extending between these ears 18 is a hollow flanged roller 19 to which that end portion of the band 15 which extends into the block-like member 11 is secured, as at 20, and about which roller the extended portion of the band 15 is adapted to be wound and unwound. It should be noted that the lower edge of the vertical wall 13 of the hollow end 11 terminates short of the inner edge of the bottom plate 12 so that the flexible band 15 may enter the member 11 through a small bottom edge crevice 21.

The hollow roller 19 is rotatably mounted on an inner axial shaft 22 whose opposite end portions are flattened as at 23 and are extended through slotted openings therefor in the supporting ears 18, whereby rotation of the shaft 22 is prevented. The hollow roller 19 is placed under tension through the medium of a spring 24 which is coiled about the inner shaft 22, having one extremity secured fast to a portion of the shaft, as at 25, and having its other extremity secured fast to an end of the roller 19, as at 26. It will thus be observed that with the relationship of the non-rotatable inner shaft 22, the roller 19 revoluble thereon, and the anchored spring 24, when the roller 19 revolves in one direction it will wind up or contract the spring 24. When the force tending to turn the roller in the direction to wind up the spring is released, then the spring will automatically uncoil and will thereby automatically revolve the roller 19 in the opposite direction. With relation to the associated book ends 10 and 11 connected by the flexible strip or band 15, it will be observed that when the ends 10 and 11 are moved relative to one another to cause greater separation and consequent elongation of the band 15, then the roller 19, from which the band unwinds, turns in a direction to wind up or coil the spring 24. When the pull on the band 15 is released and it is desired that the book ends 10 and 11 move toward each other, then the uncoiling or expanding force of the spring turns the roller 19 in a direction to automatically wind the band 15 on the roller with the result that there is a force on the book end 10 tending to pull it toward the companion book end 11. At this point it may be noted that in practice it is unnecessary to have the book ends 10 and 11 relatively heavy or weighted to cause the same to assume their proper positions. The band 15 as it leaves the roll passes between guiding ears 15', on each side, whereby the band is always fed to the roll in proper alinement therewith.

In Fig. 4 there is illustrated the position which the companion book ends 10 and 11 normally assume when they are not engaging a book or otherwise held in a separated position. When it is desired to insert a book between the book ends, this is accomplished in the manner indicated in Fig. 5. During this operation the rounded upper ends 14 become useful and permit insertion of the lower edge of the book into the crevice afforded by said rounded ends when the act of inserting the book tends to pry or separate the book ends 10 and 11 relative to each other and they may in fact tilt in the manner indicated in Fig. 5, being separable because of the yielding expansion of the bottom band 15 which unwinds from the roller 19. When the book reaches its proper vertical position between the ends 10 and 11 the winding action of the roller 19 will tend to contract the band 15 and pull the faces 13 of the ends into close engagement with the outer faces of the supported book or books. A book may be removed from a supported line or from between the book ends in the same manner and it should be observed that in all instances, either when a book is inserted or removed, when the ends are separated relative to each other, and pressure thereagainst is released, they will both automatically move back to an impinging position relative to the faces of the supported book or books.

In the principal form of the invention there has been disclosed an anchorage of the end of the band member 15 within the end 10 and a spring urged roller mounting for the end portion of the band 15 within the other book end 11. A slightly modified form of the invention is illustrated in Fig. 7 wherein, in the companion book end 10' there is a spring urged roller mounting for that end portion of the band 15, duplicating the spring urged roller mounting 19 of the companion book end 11. With this arrangement either or both of the secured inner ends of the band 15 may be wound upon or extended from spring urged tensioned rollers.

From the foregoing description it will appear that the improved book ends are effective and automatic in operation, are very convenient in use, and are well adapted for the purposes set forth.

What is claimed as the invention is:

1. Book ends, comprising a pair of complementary book-supporting members, at least one of said members having its main body portion in the form of a hollow shell having an open bottom, a flat base removably secured to said shell to normally close said bottom, a reel supported on said base within the shell, a flexible strip connecting said book-supporting members and having one end windable on said reel, and a spring cooperating with said reel to urge the latter to rotate in a direction to wind the flexible strip thereon and thereby urge the book-supporting members toward one another.

2. Book ends, comprising a pair of complementary hollow book supporting members having flat bases, a flat, flexible strip bridging the bases of said members, means connecting one end portion of said strip to the base portion of one book

supporting member, a spring-urged reel upon the base portion of the other book supporting member, means carried by inner portions of the base of the latter book supporting member revolubly mounting said reel, the adjacent end portion of the flexible strip being secured to said reel for winding and unwinding relative thereto, said reel having disc ends, and spaced ears on inner portions of the base of said latter book supporting member, said ears being in advance of said reel and positioned substantially inwardly of the side walls of said supporting member and alined with said disc ends, whereby said strip passes between said ears to be guided to the reel for smooth winding.

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