May 13, 1958 T. J. FLAHIVE ET AL 2,834,149

BOOKHOLDER

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FIG. 1

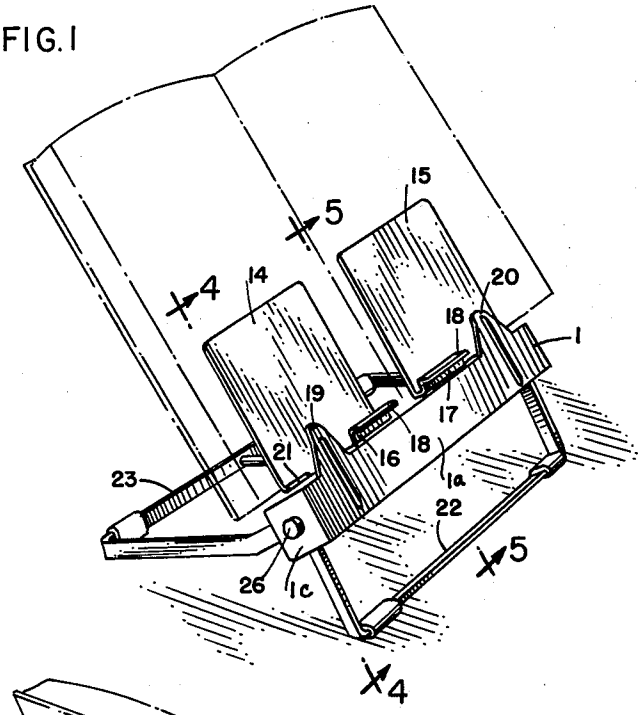


FIG. 2

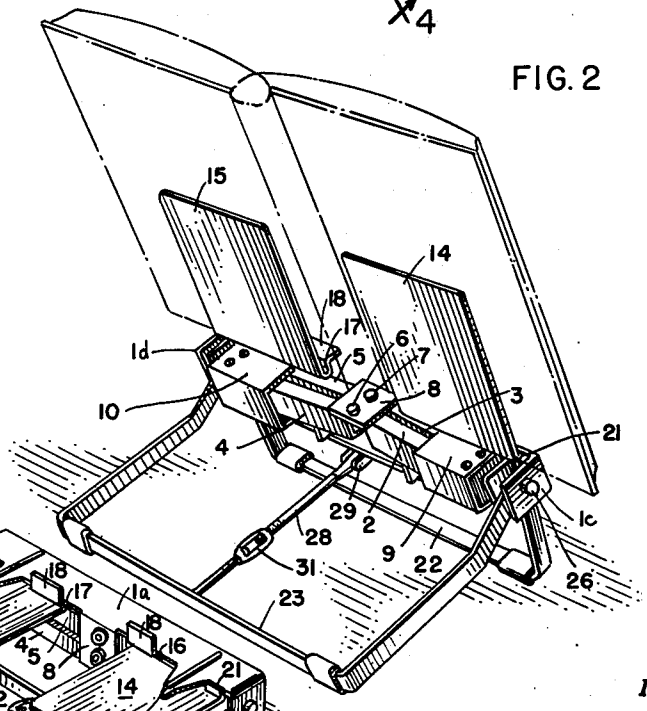
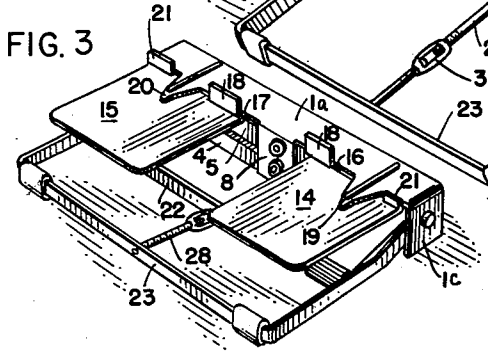


FIG. 3



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FIG. 4

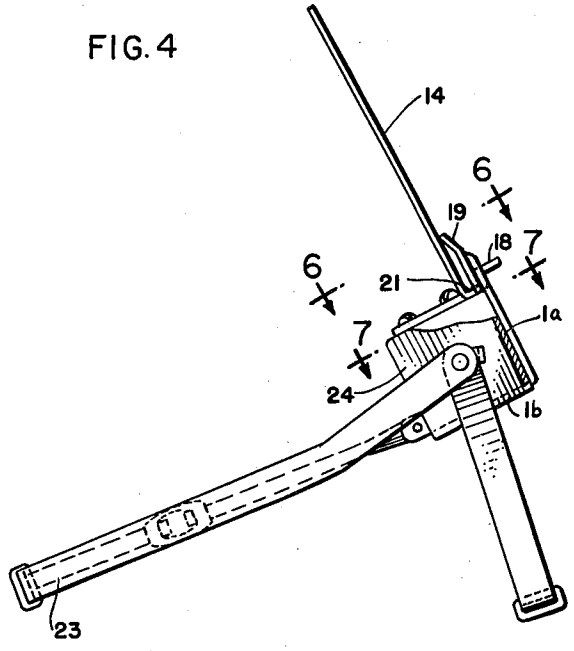
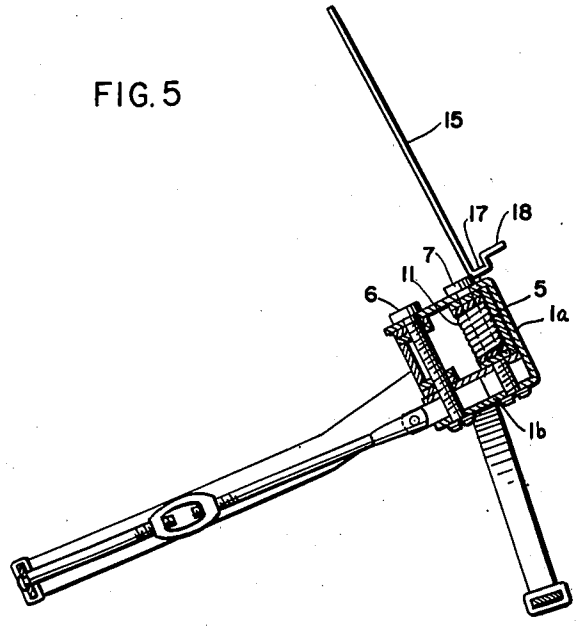


FIG. 5



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FIG. 6

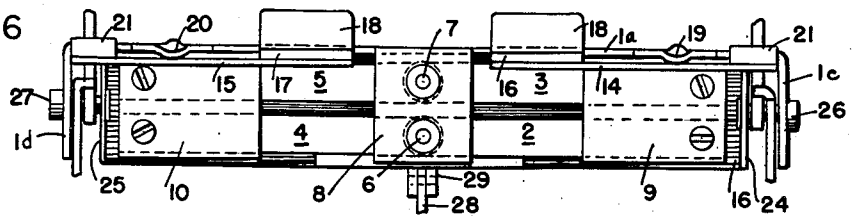


FIG. 7

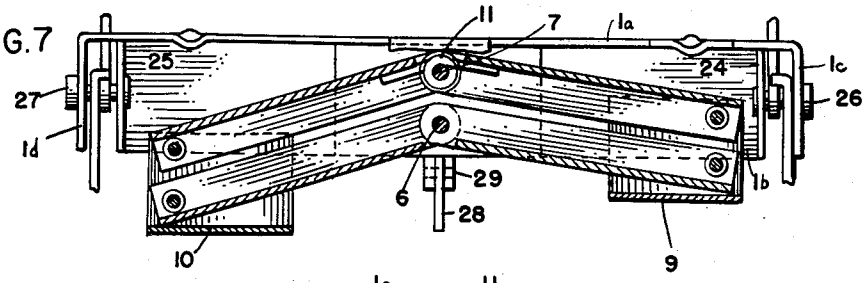


FIG. 8

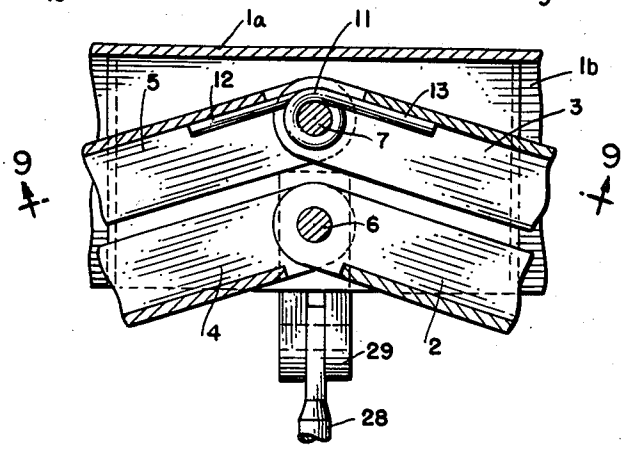
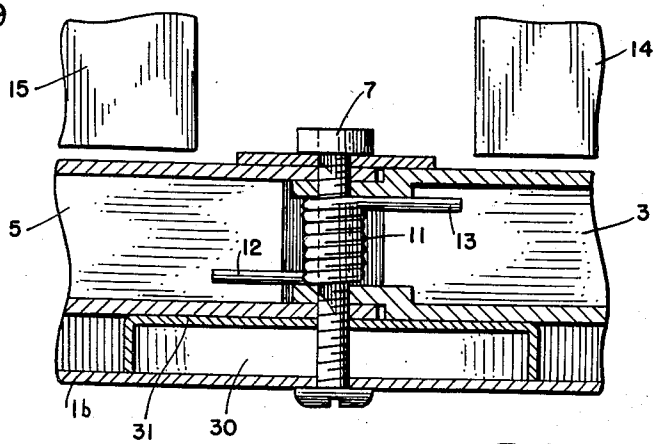


FIG. 9



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May 13, 1958 T. J. FLAHIVE ET AL 2,834,149

BOOKHOLDER

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FIG. 10

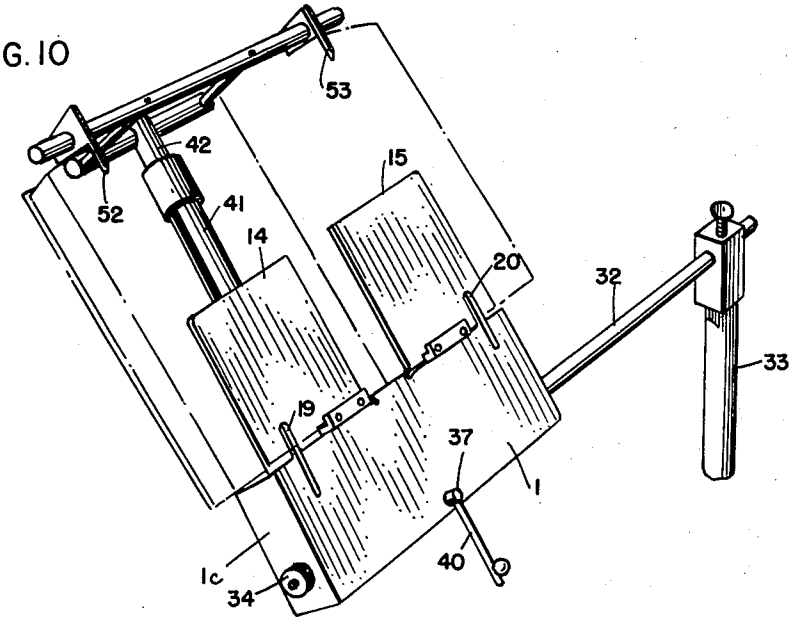
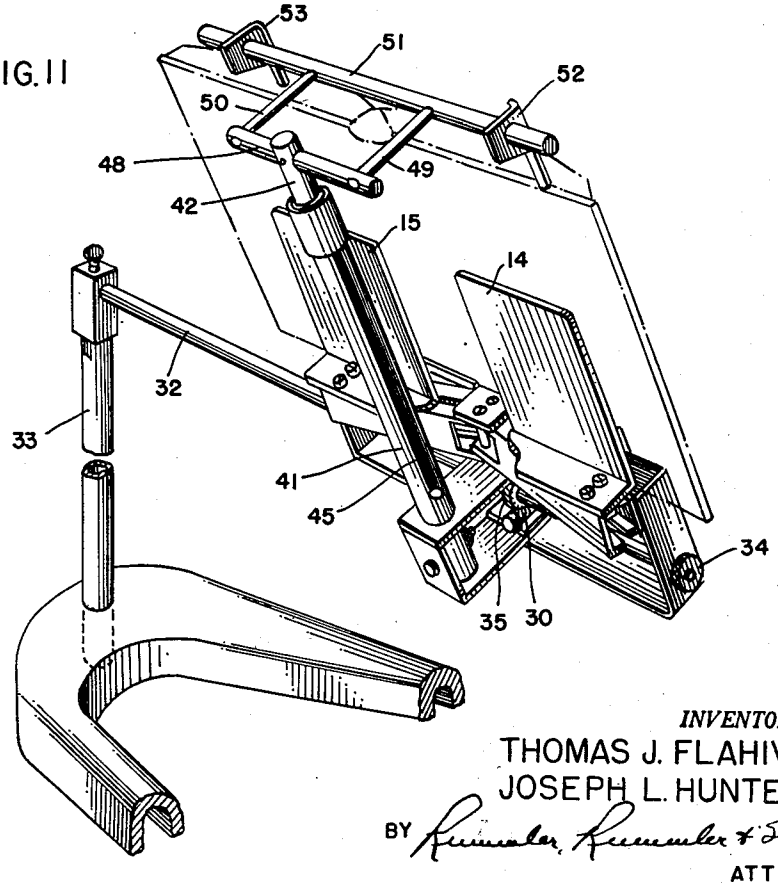


FIG. 11



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BOOKHOLDER

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FIG. 12

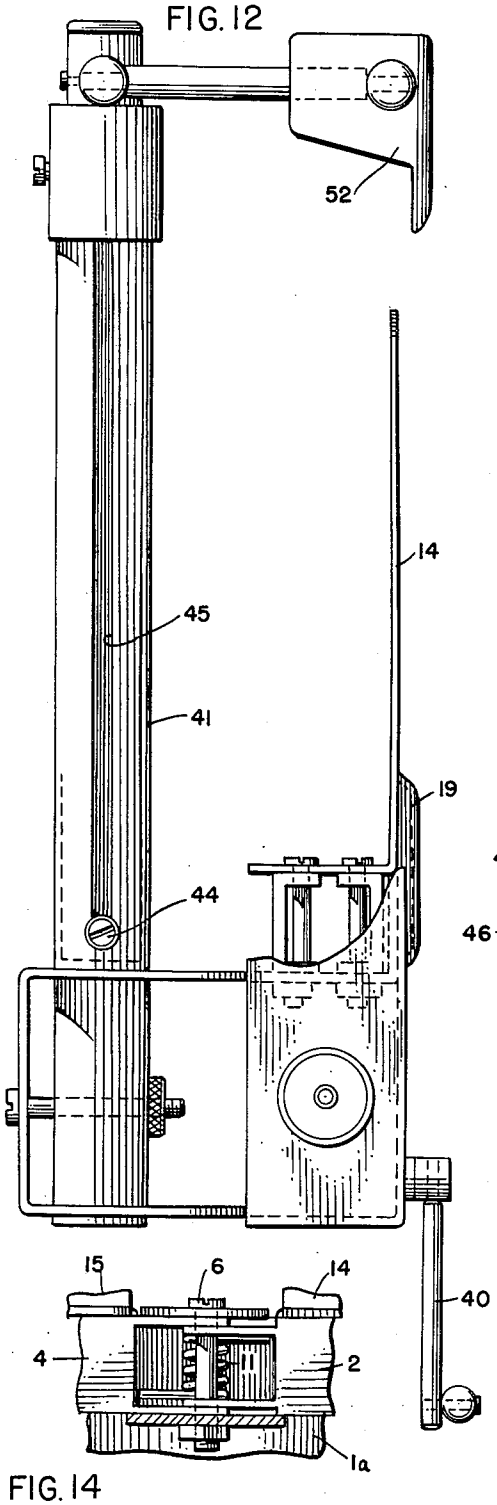
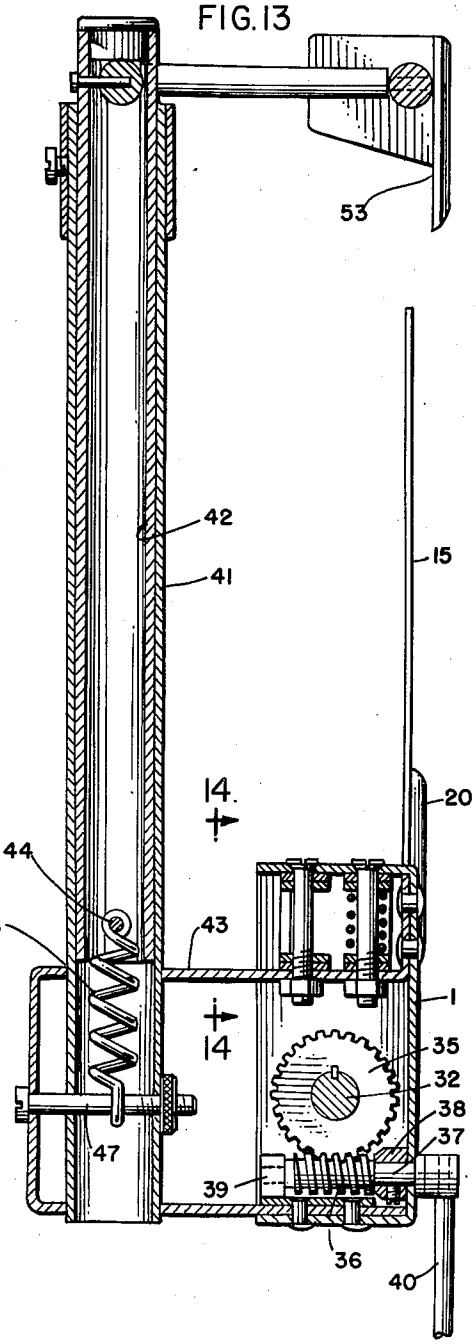


FIG. 14

FIG. 13



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United States Patent Office 2,834,149 Patented May 13, 1958

2,834,149

BOOKHOLDER

Thomas J. Flahive and Joseph L. Hunter, Chicago, Ill.

Substituted for abandoned application Serial No. 406,644, January 28, 1954. This application April 11, 1956, Serial No. 577,615

7 Claims. (Cl. 45—85)

This invention relates to bookholders of the kind intended to firmly support a book, having either board or paper binding, in a suitable position for reading without the use of the reader's hands, and particularly to improvements in bookholder constructions.

The main objects of this invention are to provide an improved bookholder and operating means therefor; to provide an improved bookholder construction adaptable to either table-supported or stand-supported forms of the device; to provide an improved book-supporting and page-leveling means for bookholders; to provide a bookholder construction that may be folded to compact form for convenient carrying; to provide such a device that is adjustable to any convenient angle of book support; to provide such a device that is of simple, light weight construction; to provide a bookholder that is more simple and easy to operate; and to provide such a device that is readily adaptable for holding a book in inverted position for readers lying prone. This application is substituted for abandoned application Serial No. 406,644 filed January 28, 1954.

Specific embodiments of this invention are shown in the accompanying drawings in which:

Figure 1 is a perspective front view showing a table model of the device in set up position, a book mounted thereon being shown in dotted outline.

Fig. 2 is a perspective rear view of the same.

Fig. 3 is a perspective view showing the same in folded position for storage or carrying.

Fig. 4 is a side elevational view of the same in erected position as taken on line 4—4 of Fig. 1.

Fig. 5 is a sectional elevation of the same as taken on line 5—5 of Fig. 1.

Fig. 6 is a top plan view of the device as taken on line 6—6 of Fig. 4.

Fig. 7 is a similar view, partly in section, as taken on line 7—7 of Fig. 4, showing the adjustable book-supporting and carrying arms in operating position.

Fig. 8 is an enlarged fragmentary view of the central portion of Fig. 7.

Fig. 9 is a fragmentary vertical sectional view of the same as taken on line 9—9 of Fig. 8.

Fig. 10 is a front perspective view of the bookholder as adapted for a stand mount for bed or chair side use, a book supported by the device being shown in dotted outline.

Fig. 11 is a rear perspective view of the same illustrating one form of stand.

Fig. 12 is a side elevational view of the bookholder shown in Figs. 10 and 11.

Fig. 13 is a vertical mid-sectional view of the same, and

Fig. 14 is a detail view as taken on line 14—14 of Fig. 13 showing the bookholding arm pivot arrangement.

In the form shown in the drawings, the improved bookholder comprises a base frame 1, in the form of a hollow rectangular body having front, bottom and end walls 1*a*, 1*b*, 1*c* and 1*d* respectively, but open at its top and rear sides, the hollow body 1 providing an enclosure

for two independent pairs of parallel arms 2, 3 and 4, 5, mounted on vertical pivots 6 and 7 midway between the ends of the body, so as to be swingable rearwardly through the open rear side of the body. The pivots 6 and 7 extend between a flange 8, integral on the front wall of the body 1 and extending rearwardly therefrom, and the bottom wall of the body and are rigidly secured in any suitable manner. The outward or free ends of each pair of arms are connected together pivotally by forwardly opening U-shaped bracket members 9 and 10, and the bracket pivots are located adjacent the ends of the arms with the same spacing in the fore and aft direction as the main pivots 6 and 7, so that each pair of parallel arms will move in unison as two sides of a parallelogram.

A coiled spring 11, see Figs. 7, 8, and 9, is mounted on the central pivot 7, and lateral members 12 and 13 at the ends of the spring bear against the arms 3 and 5 respectively to normally urge these arms inwardly of the body 1 and toward the front wall 1*a* thereof.

Each of the bracket members 9 and 10 which preferably extends along the respective arm about one half of the length thereof, carries an upwardly extending support plate, 14 and 15 respectively, which is preferably integral on the bracket member, rectangular in shape, and of a size sufficient to provide a substantial back support for a book resting on the front surfaces of the two plates as shown in Fig. 2. As shown, the support plates 14 and 15 are spaced apart laterally, relative to the parallel arm pivots 6 and 7, to leave a gap between them somewhat wider than the thickness of the average book to accommodate the back of the book binding, and each support plate is provided with a forwardly projecting and upwardly opening U-shaped channel formation, 16 and 17 respectively, extending along its bottom edge and of a width sufficient to receive the bottom edge of the book covers. Preferably, the channels 16 and 17 are of a length at least one-third the width of the respective support plate and extend from the inner or adjacent side edges of the support plates, and the outer wall of each channel is provided with a forwardly projecting flange 18, against which the bottom edges of the pages of a book resting on the support plates may engage.

As shown, the front wall 1*a* of the body 1 is provided with a pair of fixed laterally spaced fingers 19 and 20, which extend upwardly from the front wall to overhang the front surfaces of the book support plates 14 and 15 respectively. The fingers 19 and 20 are located to overhang the support plates at a point adjacent their outward side edges, and the support plates are mounted on their respective parallel arm brackets so that the channels 16 and 17 will be disposed above the top edge of the front wall 1*a* of the body or housing 1. Also, as shown in Figs. 1 and 3, a short forwardly projecting lip or flange 21 is provided at the bottom edge of each support plate adjacent the outer side edge thereof, and the upper surface of each flange 21 is aligned with the bottom surface of the respective U-shaped channel, to provide lateral support for the book covers.

It will now be seen that each of the support plates 14 and 15 is independently swingable rearwardly relative to the front face 1*a* of the body 1 on its respective parallel arms, and that regardless of the extent of rearward movement of the support plates, individually or together, the support plates will always lie in a plane or planes parallel with the front wall of the body because of the parallelogram arrangement of the support plate carrying arms. Thus, when an opened book is laid on the support plates with each of the book covers resting on a respective plate, the back or spine of the book being disposed in the space between the support plates, the support plates will flatly engage the respective

book covers so that the entire weight of the book will be supported by the face surfaces of the two support plates acting in unison and the opened pages of the book will be pressed against the fingers **19** and **20** by the spring action of the parallel arms.

Normally an opened book mounted on the support plates will be thicker on one side than on the other, according to what part of the book is being read, and the support plates **14** and **15** will be at different levels. Each pair of parallel arms, however, acts independently of the other and the two pairs of arms automatically accommodate themselves to the varying thickness of the book portions which they respectively support. Also because of the parallelogram arrangement of the arms, the support plates will always be parallel with the plane of the front wall **1***a* of the bookholder body and the exposed pages will be held flat in a common plane regardless of what part of the book may be opened.

As shown in Figs. 1 to 9 inclusive, the improved bookholder is arranged for desk or table-top use, and the body of the device is mounted on a pair of U-shaped leg members 22—23, the arms of which are pivotally attached to the ends of the bookholder body on a horizontal pivot axis extending longitudinally therethrough. As shown, the ends of the bottom wall of the body are turned upwardly inside of the body end portions **1***c* and **1***d* to provide inner end walls **24** and **25**, inwardly spaced from the end portions **1***c* and **1***d* respectively, forming spaces within which the ends of the U-shaped leg members may be housed. These spaces are open on the top, rear and bottom sides of the body to permit a free 180° angular swing of the leg members, and the pivots **26** and **27** for the leg members are mounted between the inner and outer end walls **24** and **1***c* and **25** and **1***d*, respectively, on a common axis extending longitudinally through the body.

The shorter leg member **22** constitutes the forward support for the bookholder, and the longer leg **23** constitutes the rearward support for the bookholder, and when the two leg members are spread to their normal supporting position the angle of the bookholder body, relative to the surface upon which the device is resting, may be adjusted to suit the desires of the user by rotating the body about the pivots **26** and **27**.

In order to adjust the position of the bookholder body, and fix the angle at which the bookholder body will stand, an adjustable strut **28**, extending between the body of the bookholder and the bottom or cross element of the rearward leg member **23**, is provided; the front end of the strut **28** being pivotally attached to a clevis **29** which in turn is held to the body of the bookholder by the pivot member **6** in a space **30**, formed by a spacer member **31** disposed between the parallelogram arms and the bottom wall **1***b* of the body. In this manner the clevis to which the inner end of the adjustable strut **28** is fastened does not in any way interfere with the swinging action of the parallelogram arms.

Adjustment of the strut **28**, to determine the angle at which the bookholder body will stand, is had by means of a turnbuckle **31** which, by lengthening or shortening the strut **28**, rotates the body about the pivots **26—27** and varies the angle of the bookholder body relative to the rear support member **23**.

As shown in Fig. 3, the U-shaped support legs may be swung to a position substantially parallel with the book support plates **14** and **15**, in which position the bookholder is completely collapsed so that its over-all thickness is substantially that of the bookholder body **1**. This permits the bookholder to be easily stored in a brief case, since in its collapsed state the bookholder will occupy less space than that required for an ordinary book. Also, by providing the rearward or longer leg member **23** in a U-shaped, the bottom bar may be utilized as a handle for carrying the collapsed or folded bookholder when such may be desired.

In the form of the device shown in Figs. 10 to 14, the book-supporting plates **14** and **15**, and the parallel arm arrangement for carrying them, are of the same construction as that employed in the device illustrated in Figs. 1 to 9 inclusive. The bookholder body, however, while of the same length and thickness as the first construction, is made with substantially twice the depth in order to accommodate the mechanism for supporting the bookholder rotatably on the laterally extending arm **32** of a vertical support **33**, as shown in Figs. 10 and 11. As shown, the lateral arm **32** is a rod which extends longitudinally through the lower portion of the bookholder body **1** in the space below the parallel arm mechanism, the outer end of the rod, terminating on the outside of the end wall **1***c* and being suitably threaded to receive a nut **34** which engages a shoulder on the rod **32** and serves to retain the bookholder body thereon.

As shown in Fig. 13, a worm gear **35** is mounted fast on the rod **32**, at substantially the center of the bookholder body, and is meshed with a worm **36**, fast on a shaft **37**, extending at right angles to the rod **32**, and journaled in suitable bearings **38** and **39**. The shaft **37** projects through the front wall of the bookholder body and is provided with a crank arm **40**, by which the worm **36** may be turned. Thus by rotating the shaft **37** by means of the crank arm **40**, the bookholder may be caused to rotate angularly about the worm gear **35** and the support rod **32**, both of which are fixed against turning and the angle of the bookholder can be adjusted to any position throughout a full 360° range. Once the bookholder has been set to the desired angle, it is held in that position by the engagement of the worm **36** and the gear **35**.

As shown in Figs. 10 to 14 inclusive, and in order to hold a book on the bookholder when the bookholder is turned to a forwardly horizontal position for use by a prone reader, an adjustable support is provided for engaging the top edges of the opened book. This support comprises a pair of telescoping tubes **41** and **42**, the outer tube **41** being mounted rigidly on a U-shaped bracket **43** extending rearwardly from the bookholder body **1** below the level of the parallel arm mechanism. The inner tube **42** is longitudinally slidable in the outer tube, and is held against rotation by a transverse pin **44**, which extends through a slot **45** in the wall of the outer tube **41**. The inner tube **42** is also normally urged to a retracted or telescoped position, by means of a spring **46**, which extends between the pin **44** and the transverse bolt **47**, which secures the outer tube **41** on the bracket **43**.

As shown in Figs. 10 and 11, a cross arm **48** is mounted at the upper end of the inner tube **42**, and a pair of forwardly projecting posts **49** and **50** are mounted on the cross arm **48**, one at each end, which posts carry a rigidly attached crossbar **51**. The cross arm **48** and the crossbar **51** are parallel with each other, and with the plane of the front wall of the body **1**, and the crossbar is located forwardly of the cross arm **48**, so as to lie substantially in the plane of the front wall of the bookholder body. A pair of downwardly projecting fingers **52** and **53** are mounted adjacent the ends of the crossbar **51**, which fingers are designed to overhang the upper margins of the pages of an opened book resting on the book support plates **14** and **15**.

Thus, when an opened book is mounted on the bookholder with its covers resting flat on the support plates **14** and **15**, and with the bottom margins of its open pages urged toward the fingers **19** and **20** projecting upwardly from the bookholder body, the inner member **42** of the telescoping vertical support may be raised manually, against the action of the spring **46**, so as to bring the fingers **52** and **53** above the top edge of the opened book, and then released so that the fingers **42** and **53** will be caused to overlap the upper margins of the book pages to hold the pages flat and at the same time support the upper end of the book so that it will be held firmly on the bookholder regardless of how the holder may be turned.

In the operation of the bookholder construction shown in Figs. 10 to 14, the book support plates **14** and **15**, carried by the parallelogram arm mechanism, will always lie flatly against the covers of the opened book, and, under the action of the spring **11** of the parallelogram mechanism, will constantly urge the book forwardly against the fingers **19** and **20**. Also, the parallelogram mechanism will automatically adjust the level of the plates as the thickness of the opened portions of the book varies from side to side. In this manner, each half or side of the opened book is independently supported, and the book pages may be turned by the reader by merely pressing against the side from which the page is to be lifted, thereby depressing the respective support plate and releasing the page from engagement by the respective page holding fingers, so that the page can be lifted and turned in the usual manner.

The operation is the same when the device is being used by a reader who is lying in bed or in a reclining position and looking upwardly at the book, since pressure of the hand against the side of the book from which the page is to be lifted will automatically release the page from both the upper and lower page-holding fingers so that the page can be readily turned. The turned page is then tucked beneath the page holding fingers at the opposite side by merely pressing against the side of the book where the page is to be placed.

The main advantages of this invention reside in the arrangement of the parallelogram support means for the book-supporting plates, whereby the two plates are at all times parallel with the plane of the front wall of the bookholder body, and are independently operable to accommodate varying thicknesses of the book sections whereby a firm and even support for the book is obtained, and the book pages are held perfectly flat.

Further advantages are to be found in the arrangement where the independent parallelogram supports for the book supporting plates are pivoted from the center of the device so that the movement of the book sections as the reader turns the pages of the book will be substantially toward the center line of the device and follow the natural working of the book binding, thereby relieving the back of the book from strain which otherwise might cause it to brack or break.

Other advantages are to be found in the arrangement of the book-supporting plates whereby the bottom edge of the book is not only supported vertically but the book is also held against tipping rearwardly by engagement of the cover edges in the channels at the lower edges of the plates. This permits the use of support plates of considerably less height than the book and thereby minimizes the overall size of the bookholder structure.

Still further advantages are to be found in the simple construction of the device whereby a minimum of space is required for storage, and whereby, in the table-top form, the bookholder can be folded so as to occupy no more space than that of a book of ordinary size.

Although but two embodiments of this invention are herein shown and described, it will be understood that details of the constructions shown may be altered or omitted without departing from the spirit of this invention as defined by the following claims.

We claim:

1. A bookholder comprising two pairs of parallel arms, the arms of each pair being in side by side relation and said pairs of arms normally extending horizontally in opposite directions parallel with a predetermined common plane, a support for said arms, fixed means on said support for pivotally attaching the corresponding ends of each pair of arms thereto for swinging movement of said arms in a direction normal to said common plane, each pair of arms being swingable independently of the other pair, bracket means on each pair of arms pivotally connecting the free ends thereof on axes parallel with and respectively equidistant from the pivot attachment of each of said arms to said support, a book support plate on each of said bracket means and lying parallel with said common plane, means normally urging said pairs of arms toward said common plane, and fixed means on said support extending into the path of movement of said plates toward said common plane.

2. A bookholder comprising two pairs of parallel arms, the arms of each pair being in side by side relation and said pairs of arms normally extending horizontally in opposite directions parallel with a predetermined common plane, a normally horizontal support for said arms, fixed means on said support intermediate the ends thereof for pivotally attaching the corresponding ends of each pair of arms thereto for swinging movement of said arms in a direction normal to said common plane, each pair of arms being swingable independently of the other pair, bracket means on each pair of arms pivotally connecting the free ends thereof on axes parallel with and respectively equidistant from the pivot attachment of each of said arms to said support, a book support plate on each of said bracket means and lying parallel with said common plane, means normally urging said pairs of arms toward said common plane, and fixed means on said support extending into the path of movement of said plates toward said common plane.

3. A bookholder comprising a base frame having a horizontally extending front wall and two pairs of parallel arms disposed horizontally and substantially parallel with said front wall, the arms of each pair being in side by side relation in a common plane extending substantially normal to said front wall, pivot means on said frame attaching the corresponding ends of each pair of arms thereto for independent swinging movement of each pair of said arms in said common plane, a book support plate mounted on and pivotally connected with the free ends of each pair of arms, each of said plates projecting from the respective pair of arms normal to the common plane thereof and substantially parallel with the horizontal axis of said frame, means normally urging said pairs of arms toward said front wall, and finger means on said front wall extending into the path of forward movement of said plates.

4. A bookholder comprising a base frame having a horizontally extending front wall and two pairs of parallel arms disposed horizontally and substantially parallel with said front wall, the arms of each pair being in side by side relation and said pairs of arms being in end to end relation, all of said arms being in a common plane extending substantially normal to said front wall, pivot means on said frame attaching the corresponding ends of each pair of arms thereto for independent swinging movement of each pair of said arms in said common plane, a book support plate mounted on and pivotally connected with the free ends of each pair of arms, each of said plates projecting from the respective pair of arms normal to the common plane thereof and substantially parallel with the horizontal axis of said frame, means normally urging said pairs of arms toward said front wall, and finger means on said front wall extending into the path of forward movement of said plates.

5. A bookholder comprising a base frame having a horizontally extending front wall and two pairs of parallel arms disposed horizontally and substantially parallel with said front wall, the arms of each pair being in side by side relation and said pairs of arms being in end to end relation, all of said arms being of equal length in a common plane extending substantially normal to said front wall, pivot means on said frame substantially midway between the horizontally opposite ends thereof for attaching the corresponding ends of each pair of arms thereto for swinging movement of said arms in said common plane, each pair of said arms being swingable independently of the other pair, a book support plate mounted on and pivotally connected with the free ends of each pair of arms, each of said plates projecting from

the respective pair of arms normal to the common plane thereof and substantially parallel with the horizontal axis of said frame, means normally urging said pairs of arms toward said front wall, and finger means on said front wall extending into the path of forward movement of said plates.

6. A bookholder comprising a base frame having a horizontally extending front wall and two pairs of parallel arms disposed horizontally and substantially parallel with said front wall, the arms of each pair being in side by side relation in a common plane extending substantially normal to said front wall, pivot means on said frame attaching the corresponding ends of each pair of arms thereto for independent swinging movement of said pairs of arms in said common plane, a book support plate mounted on and pivotally connected with the free ends of each pair of arms, each of said plates projecting from the respective pair of arms normal to the common plane thereof and substantially parallel with the horizontal axis of said frame, means normally urging said pairs of arms toward said front wall, finger means on said front wall extending into the path of forward movement of said plates, a pair of rectangular U-shaped support members having their leg ends pivotally attached to said frame on a common horizontal axis extending parallel with said front wall, one of said members having longer legs than the other, and a longitudinally adjustable strut fixed to and extending between the center portion of said one member and said frame for adjusting the angular relation of said one member and said frame.

7. A bookholder comprising a horizontally disposed rectangular frame having a front wall and rearwardly extending end walls, two pairs of horizontal parallel arms mounted on said frame behind and substantially parallel with said front wall, the arms of each pair being in side by side relation in a common plane extending substantially normal to said front wall, means attaching the corresponding ends of each pair of arms to said frame on parallel axes for independent swinging movement of said pairs of arms in said common plane, a book support plate mounted on and pivotally connected with the free ends of each pair of arms, each of said plates being disposed parallel with said front wall and normal to said common plane, means normally urging said pairs of arms swingably toward said front wall, finger means on said front wall arranged to overhang the lower margin of an opened book disposed on said book support plates, a pair of rectangular U-shaped support members mounted one within the other and having their leg ends pivotally attached to the respective end walls of said frame on a common horizontal axis, one of said members having longer legs than the other, and a longitudinally adjustable strut extending between the center portion of said one member and said frame for adjusting the angular relation of said one member and said frame.

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