May 29, 1951 W. E. NORDMARK 2,554,839

DESK STRUCTURE

Filed June 16, 1947 2 Sheets-Sheet 1

Fig. 1

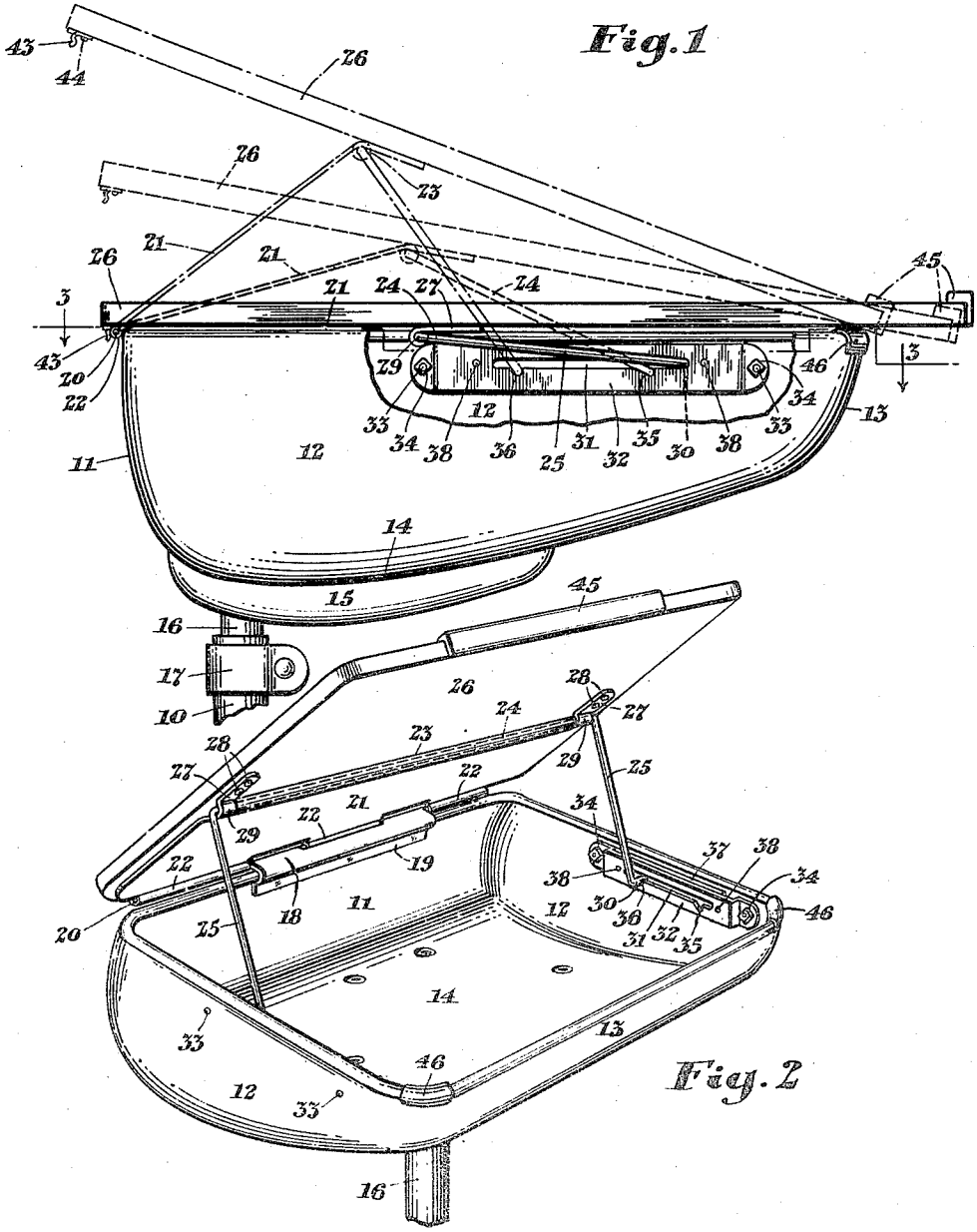


Fig. 2

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DESK STRUCTURE

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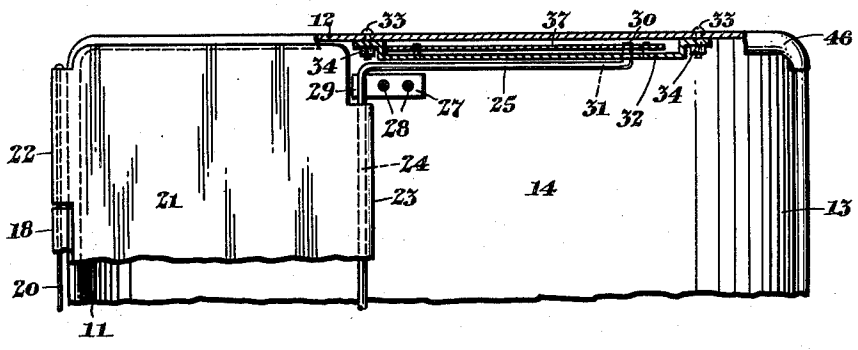


Fig. 3

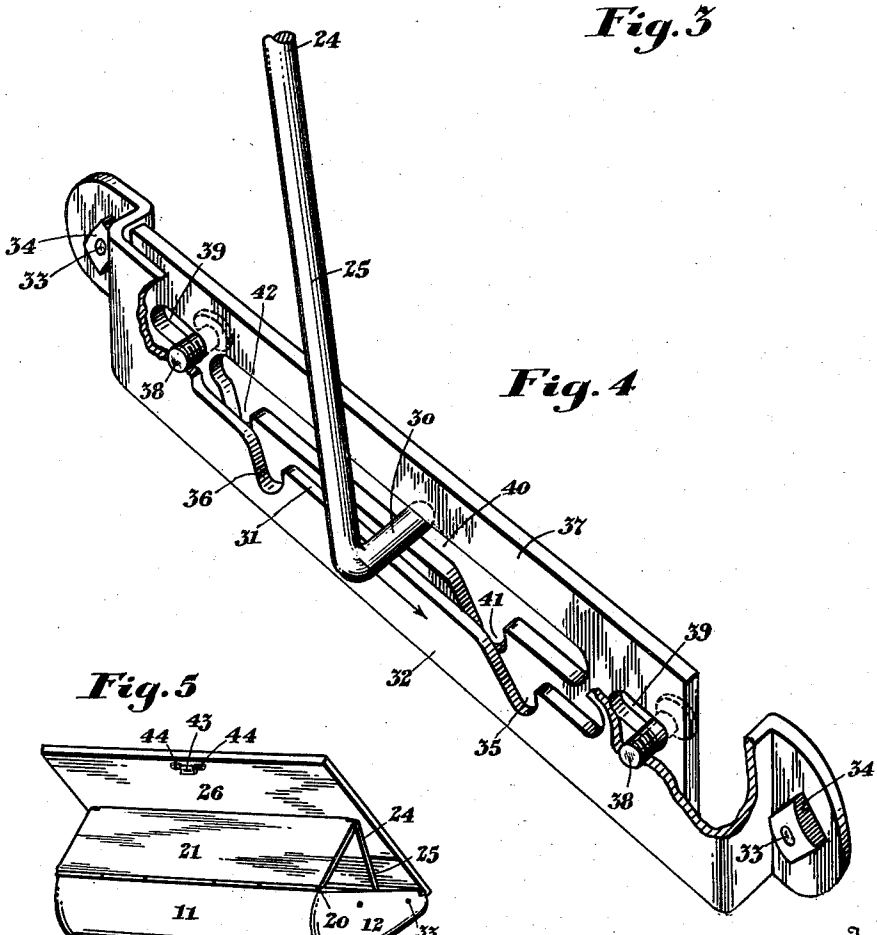


Fig. 4

Fig. 5

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DESK STRUCTURE

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5 Claims. (Cl. 312—316)

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The present invention relates to desk structures and more particularly to such structures for use in classrooms or the like. The invention is in the nature of an improvement on the desk structure disclosed in a co-pending application for patent on Combination Desk and Chair Structure, Serial No. 714,396, filed December 6, 1946, by Benjamin J. Oom, Claude L. Tinklepaugh and Edward Earl Westen and by them assigned to my assignee.

The primary objects of this invention are to provide an improved box-type desk top having a cover which may be tilted upwardly in the rear to give access to the interior of the desk-top, and which cover may also be secured in a reverse tilted position with the front elevated so that the cover is better adapted to support books and papers in a conveniently inclined position for reading and writing; to provide such a desk structure in which the normally horizontal cover may be manually lifted in the rear until any of certain predetermined angles of inclination is reached, whereupon the rear of the cover may be manually lowered to its original position while the front of the cover remains in a firmly supported position of elevation the cover thus being conveniently inclined for better vision in reading and writing; to provide such a desk structure in which the cover may be lowered from its inclined reading position to its normal horizontal position by merely raising the rear end of the cover to its maximum height, thus automatically disengaging the mechanism which supports the front end of the cover in elevated position and then manually lowering the top to horizontal position; to provide a smooth and quiet operating mechanism for such a structure; and in general to provide such a desk structure which is efficient in operation, reasonably economical in manufacture and attractive in appearance.

An illustrative embodiment of the invention is shown in the accompanying drawings, wherein:

Figure 1 is a side elevational view, partly broken away, of a box-type desk top the supporting pedestal for which is shown fragmentarily and which pedestal may be of the U-shaped type shown in the co-pending application identified above, wherein a desk top is mounted on the upper end of one vertical support and a chair is mounted on the upper end of the other vertical support of the U-shaped pedestal, the cover of the top box being here indicated in three different positions;

Figure 2 is a side and rear perspective view of the same with the cover of the top box being shown in a still different position;

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Figure 3 is a fragmentary sectional view of parts of the same, taken on line 3—3 of Figure 1;

Figure 4 is an enlarged, fragmentary perspective view of certain operating parts at one side of the desk structure; and

Figure 5 is a front and side perspective view of the desk structure with the front of the cover thereof in an elevated position.

Referring now in detail to these drawings, the box-type desk top structure there shown may be mounted on any suitable support or pedestal, but is particularly well adapted for inclusion in a combination desk-chair unit of the type shown in the application identified above which unit is mounted on a tubular supporting frame having a vertical support for a chair (not shown) and another vertical support, here designated 10, for the desk structure. The desk top is preferably of sheet metal formed into a box for the reception of books and supplies, the box having a front wall 11, side walls 12, a rear wall 13, and a bottom 14 to the underside of which is secured a mounting bracket 15 having a depending portion 16 vertically slidably disposed within the vertical support 10 and maintained therein in vertically adjusted position by means of a clamp 17. The upper marginal edges of the front, side and rear walls of the top box are curled inwardly and downwardly as shown to provide a smooth upper rim for the box.

A hinge leaf 18 (see Figure 2) is secured to the front wall 11 of the top box, said leaf having a flange 19 secured as by spot welding to the inside of the front wall 11 and being curled around the upper rim of the front wall and then curled forwardly, downwardly and inwardly to form a bearing for an elongated hinge pin 20. A hinge member 21 has similar curled portions 22 on its forward edge which embrace portions of the hinge pin 20 to thus secure the hinge member 21 to the upper, forward end of the top box swingably about a horizontal axis.

The rearward end 23 of the hinge member 21 is also curled to form a bearing for the horizontal middle portion of a bent rod bail 24 having rearwardly and downwardly extending opposite side portions or links 25 which are thus connected to the hinge member 21 swingably about a second horizontal axis. The wood lid or cover 26 for the box is also connected to the rearward end of the hinge member 21 swingably about said second horizontal axis by means of bearing brackets 27 secured as by wood screws 28 to the underside of the cover 26 and having curled portions 29 which turnably embrace the opposite ends of the middle portion of the bail 24.

The lower, rearward ends of the side portions

or links 25 of the bail 24 are turned outwardly to form arms 30 which are slidably disposed in forwardly-rearwardly extending slots or guides 31 in guide members 32 mounted adjacent to the inner surfaces of the side walls 12 of the top box as by means of bolts 33 passing through aligned apertures in the guide members and the side walls and provided with nuts 34. Rearwardly located notches 35 and forwardly located notches 36 are provided in the guide members 32, below and adjoining the guides 31. These rearward and forward pairs of notches constitute stop means adapted to receive the arms 30 of the bails' link portions 25 to prevent rearward movement of the arms 30 beyond predetermined points.

A bar 37 is forwardly-rearwardly slidably mounted on each guide member 32 by means of screws 38 passing through slots 39 in the front and rear ends of the bar 37 and threaded in the guide member (see Figure 4). Each bar 37 has a forwardly-rearwardly extending opening 40 with downwardly extending rearward and forward notches 41, 42 respectively therein, which opening and notches register with the guide 31 and notches 35, 36 of the guide member when the bar 37 is slid to a rearward position, but the notches 41, 42 of the bar 37 do not register with the notches 35, 36 of the guide when the bar 37 is slid to a forward position. The arms 30 extend through the guides 31 into the openings 40 of the bars 37, and contact of said arms 30 with the forward ends of the openings 40 slides the bars 37 forwardly whereas contact of the arms 30 with the rearward ends of the openings 40 slides the bars 37 rearwardly. It will therefore be seen that the stop means—notches 35, 36—are operable during forward movement of the arms 30 to prevent any rearward movement of the arms beyond predetermined points when the arms are seated in either pair of notches 35 or 36, and that when the arms 30 arrive at the forwardmost ends of the openings 40 in the bars 37 said bars are slid forwardly so that the arms are permitted unimpeded rearward travel in the guides 31 and openings 40, the notches 35, 36 being rendered inoperable as stop means.

A spring clip 43 is secured as by means of wood screws 44 adjacent the center front edge of the cover 26 of the top box. This clip 43 normally engages the curled forward edge of the hinge member 21 so that the hinge member and the cover are normally coupled together for movement in unison. The spring clip 43 is, however, yieldable under pressure to permit uncoupling of the cover and the hinge member so that the cover is free to move relative to the hinge member.

If desired the rearward end of the cover 26 may be provided with a book rest 45 as shown in Figures 1 and 2.

Operation

The normal position of the cover 26 is horizontal as shown in full lines in Figure 1, in which position the cover serves as a work surface and to keep dust and dirt out of the top box.

Access may be had to the interior of the top box by manually lifting the cover 26 at its rear end, to a rearwardly-upwardly inclined position illustrated in Figure 2. During this upward swinging or tilting movement, the cover 26 and hinge member 21 are coupled together by the spring clip 43 and therefore move in unison. Meanwhile the arms 30 of the links 25 move forwardly, passing freely over the notches 35, 36 because of the forward-upwardly opening formation of said notches. When the cover reaches its extreme limit of upward movement, arms 30 slide bars 37 forwardly thus rendering notches 35, 36 inoperable so that the arms 30 may pass freely rearwardly thereover as the cover is swung back to its normal horizontal position, and the arms 30 move the bars 37 rearwardly when such normal position of the cover is reached.

The cover may be moved to forwardly-upwardly inclined positions for convenience in reading and writing, and as shown to a position of 10 degree inclination as illustrated by the dotted lines of Figure 1 or to a position of 20 degree inclination as illustrated by broken lines in the same figure. This is accomplished by manually lifting the cover 26 at its rearward end until the arms 30 engage in one of the pairs of notches 35 or 36 thus to prevent rearward movement of said arms beyond the pair of notches selected. The rear end of the cover 26 is then pressed downwardly, thus disengaging the spring clip 43 from the hinge member 21 and uncoupling the cover from the hinge member, which latter remains supported in rearwardly-upwardly inclined position by the links 25 and their arms 30 engaging in notches 35 or 36 of the guides 31. The cover is then swung downwardly in the rear, so that its rearward end rests on and is supported by the rim of the rear wall 13 of the top box. If desired, rubber cushioning elements 46 may be mounted on said rim at the rear corners of the top box, for silencing this contact of the cover with the top box.

The cover 26 is returned from either of its forwardly-upwardly inclined positions to its normal horizontal position by again manually raising the rear end of the cover to its extreme limit of upward movement, whereupon the bar 37 is moved forwardly and the spring clip 43 is forced into engagement with the hinge member 21. The cover 26 may then be lowered in unison with the hinge member as previously described.

It will thus be seen that this invention provides an easily and quietly operated desk structure well adapted to the purposes set forth, and while but one specific embodiment of the invention has been herein shown and described it will be understood that the construction shown may be modified without departing from the spirit of the invention as the same is defined by the following claims.

I claim:

1. In a desk structure of the class described: an upwardly open top box and a cover therefor; means for mounting the cover on the top box whereby the front edge of the cover is pivotally associated with the upper front edge of the top box to permit swinging movement of the cover to a rearwardly-upwardly inclined elevated position giving access to the interior of the top box through the open top thereof; means for pivotally supporting the cover intermediate its front and rear edges when elevated as aforesaid, said last-mentioned means comprising a forwardly-rearwardly extending guide on the top box having a stop notch therein, and a link pivotally connected to the cover forwardly of the guide and intermediate the cover's front and rear edges and provided with an arm movable in the guide and adapted to engage in said stop notch; said front edge of the cover being dissociable from the upper front edge of the top box to permit swinging movement of the cover about its pivotal connection to said link to a rearwardly-downwardly inclined elevated position; stop means preventing

forward and rearward and consequent lowering movements of the cover when in said rearwardly-downwardly inclined elevated position; and means for disengaging said arm from said stop-notch to permit lowering movement of the cover.

2. In a desk structure of the class described: an upwardly open top box and a cover therefor; means for mounting the cover on the top box whereby the front edge of the cover is pivotally associated with the upper front edge of the top box to permit swinging movement of the cover to selected rearwardly-upwardly inclined positions giving access to the interior of the top box through the open top thereof; means for pivotally supporting the cover intermediate its front and rear edges when elevated as aforesaid to a selected position, said last-mentioned means comprising a forwardly-rearwardly extending guide on the top box having stop notches therein, and a link pivotally connected to the cover forwardly of the guide and intermediate the cover's front and rear edges and provided with an arm movable in the guide and adapted to engage in one of said stop notches; said front edge of the cover being dissociable from the upper front edge of the top box to permit swinging movement of the cover about its pivotal connection to said link to a rearwardly-downwardly inclined elevated position; stop means preventing forward and rearward and consequent lowering movements of the cover when in said rearwardly-downwardly inclined elevated position; and means for disengaging said arm from said stop-notch to permit lowering movement of the cover.

3. In a desk structure of the class described: an upwardly open top box and a cover therefor; means for mounting the cover on the top box whereby the front edge of the cover is pivotally associated with the upper front edge of the top box to permit swinging movement of the cover to a rearwardly-upwardly inclined elevated position giving access to the interior of the top box through the open top thereof; means for pivotally supporting the cover intermediate its front and rear edges when elevated as aforesaid, said last-mentioned means comprising a forwardly-rearwardly extending guide on the top box having a stop notch therein, and a link pivotally connected to the cover forwardly of the guide and intermediate the cover's front and rear edges and provided with an arm movable in the guide and adapted to engage in said stop notch; a bar mounted for forward and rearward, sliding movement adjacent the guide, said bar having a notched opening therein into which said arm extends, and said bar being shiftable by contact of said arm with the forward end of said opening to a forward position in which the notches of the guide and bar opening are out of registry thus to permit unimpeded rearward movement of the arm in the guide and the opening, and said bar being shiftable by contact of the arm with the rearward end of said opening to a rearward position in which the notches of the guide and the bar opening are in registry and are thus engageable by said arm during the latter's forward movement; said front edge of the cover being dissociable from the upper front edge of the top box to permit swinging movement of the cover about its pivotal connection to said link to a rearwardly-downwardly inclined elevated position; stop means preventing forward and rearward and consequent lowering movements of the cover when in said rearwardly-downwardly inclined elevated position.

4. In a desk structure of the class described; an upwardly open top box and a cover therefor; a hinge member having its forward end mounted at the front of the top box swingably about a horizontal axis and having its rearward end connected to the cover intermediate the latter's front and rear edges swingably about a second horizontal axis, said hinge member and cover being associated at their front edges for swinging movement in unison about the first-mentioned axis to a rearwardly-upwardly inclined elevated position giving access to the interior of the top box through the open top thereof; means for supporting the cover at the second-mentioned axis when elevated as aforesaid, said means comprising a forwardly-rearwardly extending guide on the top box rearwardly of the second-mentioned axis and having a stop-notch therein, and a link pivotally connected to the cover and the hinge member at said second-mentioned axis and provided with an arm movable in the guide and adapted to engage in said stop notch; said front edge of the cover being dissociable from the front edge of the hinge member to permit swinging movement of the cover about the second-mentioned axis to a rearwardly-downwardly inclined elevated position; and means for disengaging said arm from said stop notch to permit lowering movement of the cover.

5. In a desk structure of the class described: an upwardly open top box and a cover therefor; a hinge member extending across the top box from side to side and having its forward end mounted at the front of the top box swingably about a horizontal axis and having its rearward end connected to the cover intermediate the latter's front and rear edges swingably about a second horizontal axis, said hinge member and cover being associated at their front edges for swinging movement in unison about the first-mentioned axis to a rearwardly-upwardly inclined elevated position giving access to the interior of the top box through the open top thereof; means for supporting the cover at the second-mentioned axis when elevated as aforesaid, said means comprising forwardly-rearwardly extending guides on the opposite sides of the top box rearwardly of the second-mentioned axis and having stop notches therein, and a bail having a horizontal middle portion turnably mounted on the rearward edge of the hinge member and having links depending at opposite sides of the top box and provided with arms movable in the guides and adapted to engage in said stop notches; said front edge of the cover being dissociable from the front edge of the hinge member to permit swinging movement of the cover about the second-mentioned axis to a rearwardly-downwardly inclined elevated position; and means for disengaging said arm from said stop notch to permit lowering movement of the cover.

WALTER E. NORDMARK.

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