

Dec. 25, 1951

B. J. OOM ET AL
ADJUSTABLE DESK TOP

2,579,606

Filed Dec. 6, 1946

4 Sheets-Sheet 1

Fig. 1

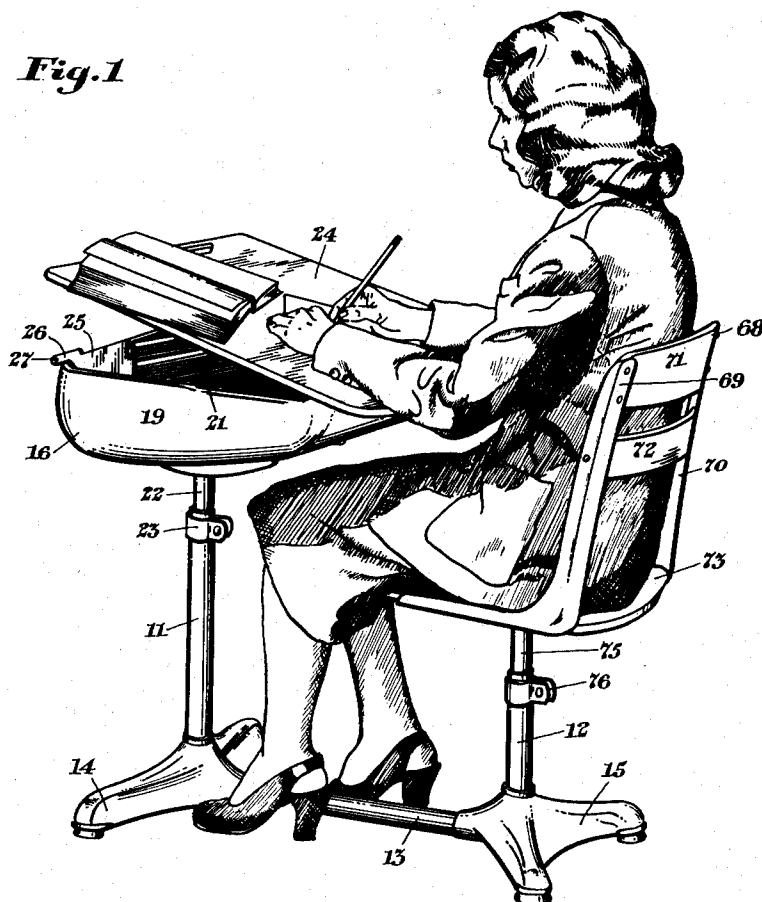
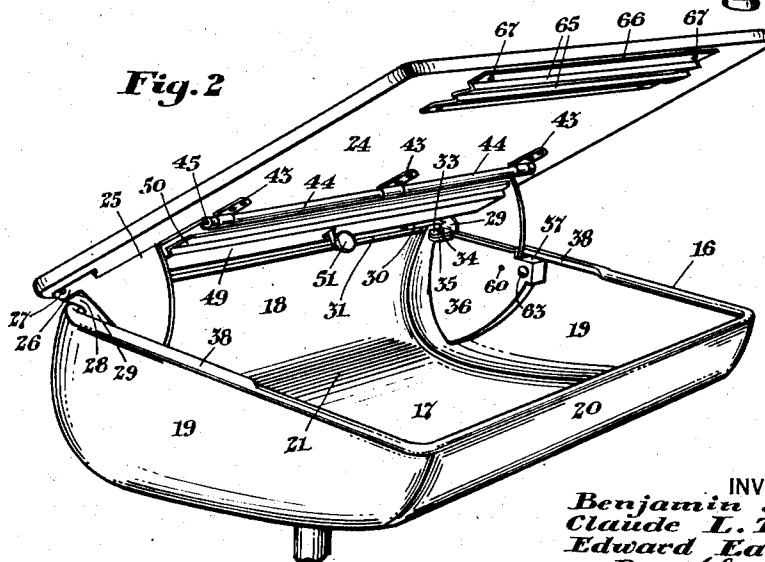


Fig. 2



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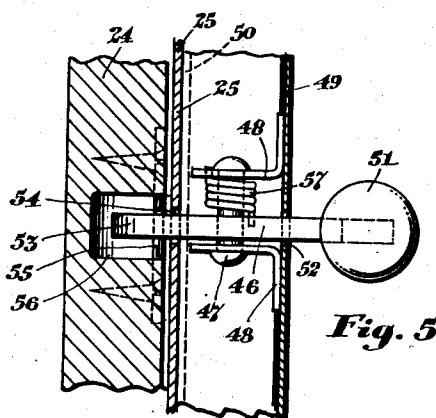
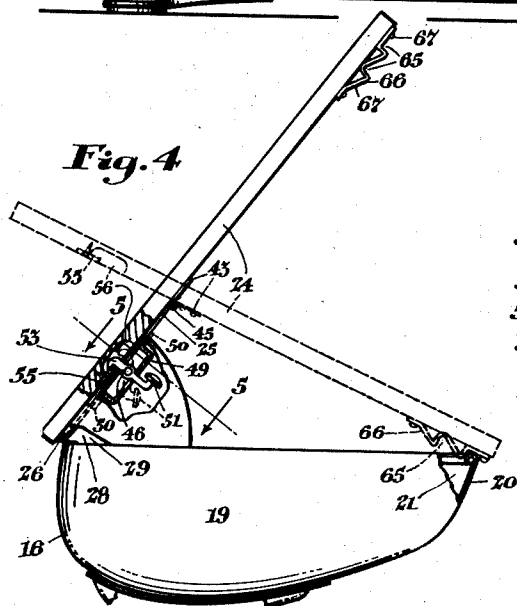
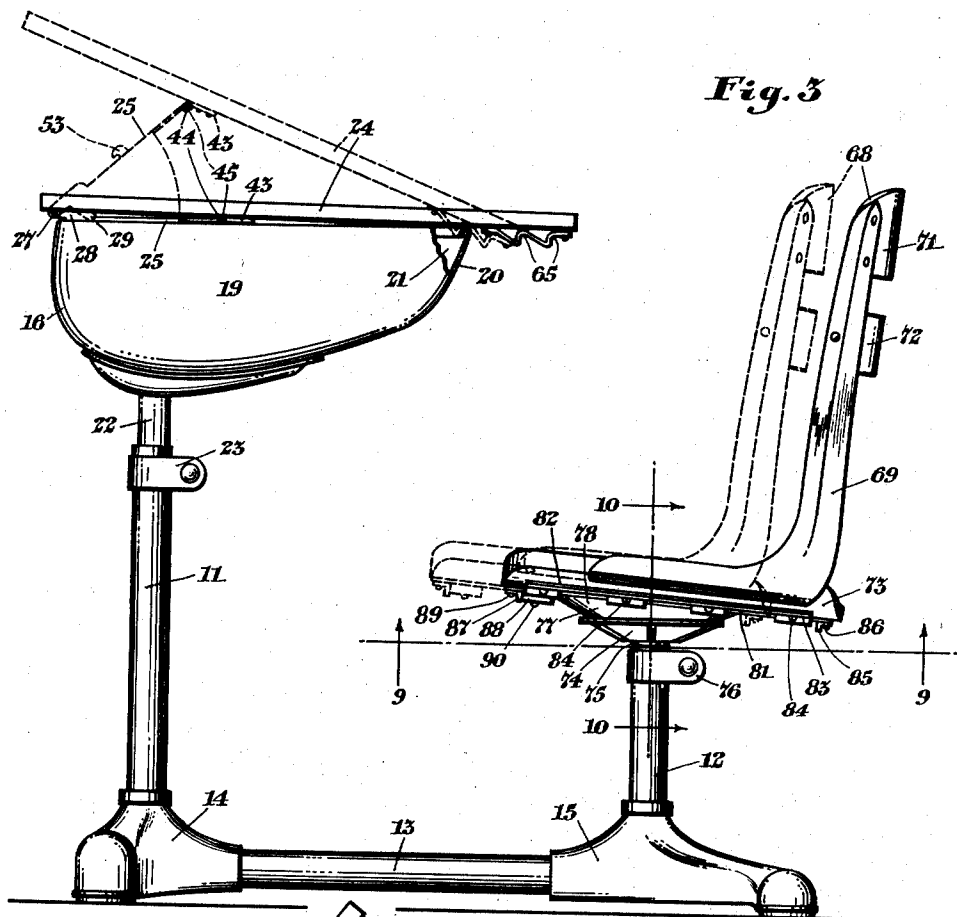
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Fig. 6

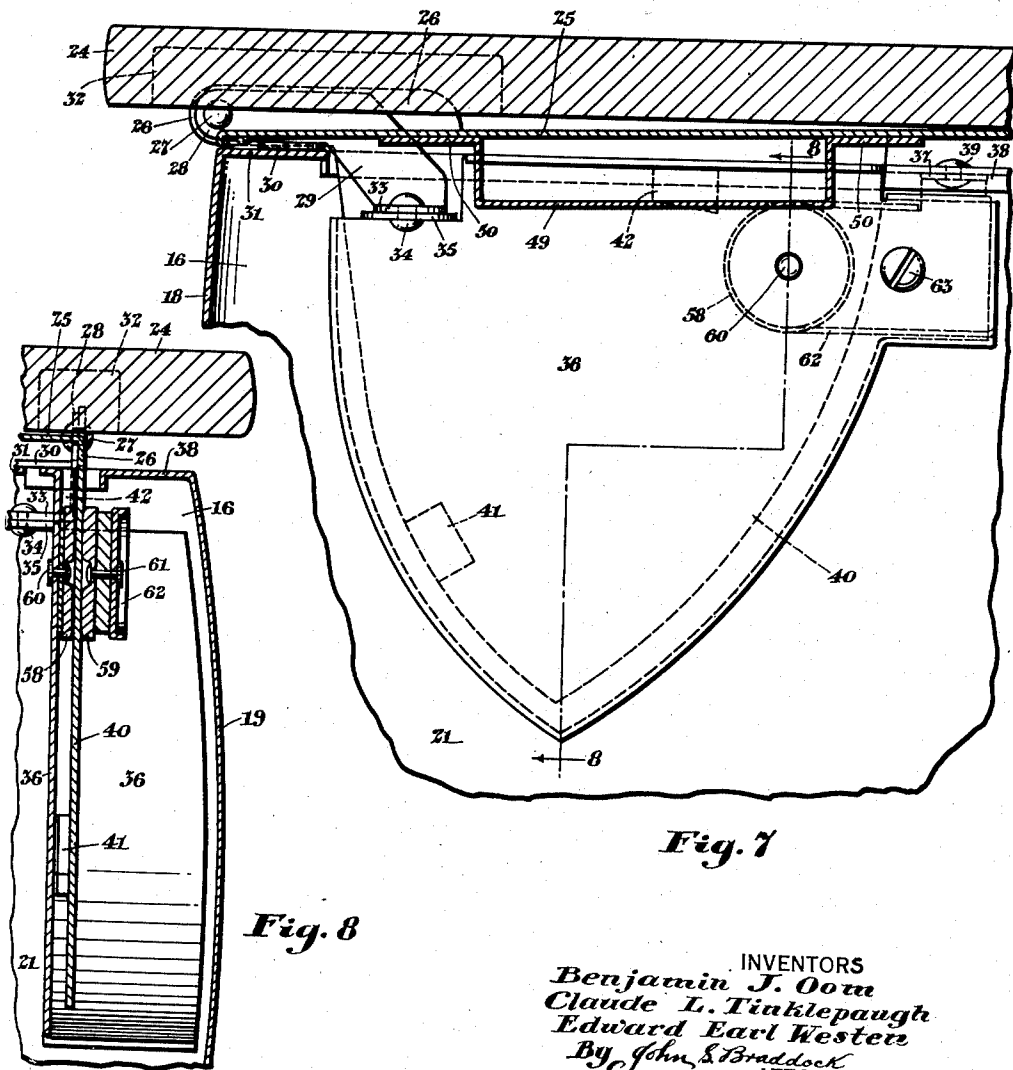
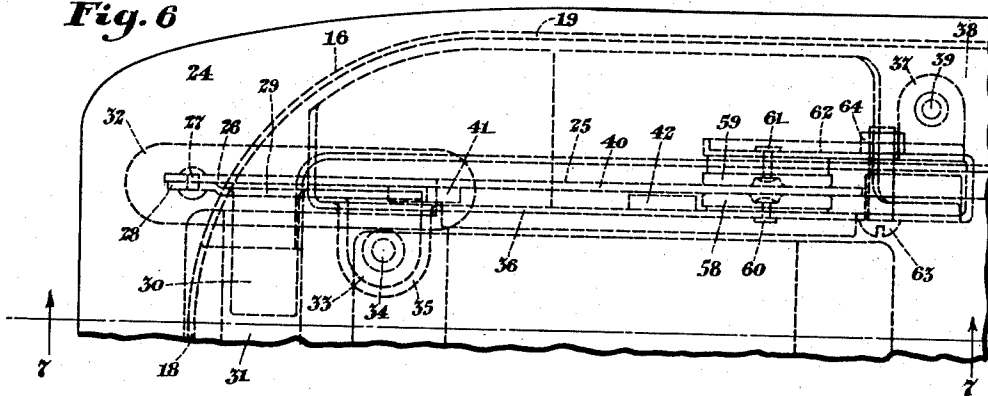


Fig. 7

Fig. 8

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Fig. 9

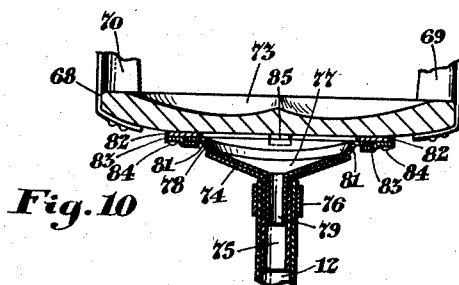
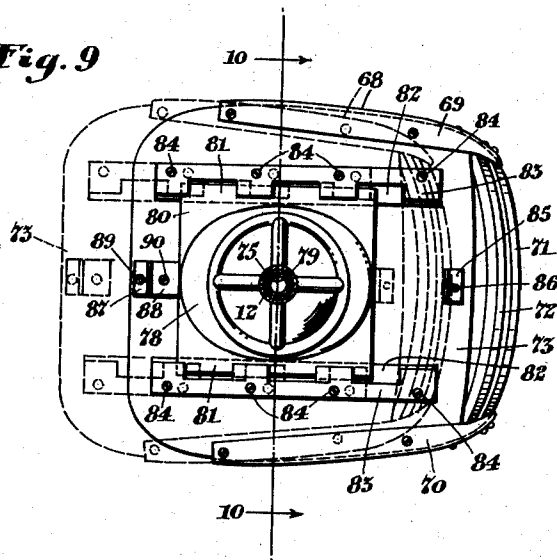


Fig. 10

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UNITED STATES PATENT OFFICE

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ADJUSTABLE DESK TOP

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Application December 6, 1946, Serial No. 714,396

10 Claims. (Cl. 312—316)

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The present invention relates to combination desk and chair structure and more particularly to such articles of furniture especially adapted for use in classrooms and the like.

The primary objects of the invention are to provide a combined desk and chair structure of unitary construction in which the desk comprises a top box having a storage compartment for books and the like and a flat desk-top which serves as a combined cover for the storage compartment and a horizontal work table, or as an inclined table or easel which is especially convenient for writing, drawing or reading; to provide such a desk structure in which the cover may be adjusted to different inclinations for different work requirements or to suit the preference of the chair occupant; to provide such a desk structure in which ready access may be had to the storage compartment by raising the edge of the cover nearest the chair occupant; to provide such a desk structure in which the mechanical parts such as hinges and latch mechanism are well concealed from view so that the desk presents an attractive appearance; to provide such a combined desk and chair structure in which the chair is turnably mounted and is also adjustable forwardly and rearwardly so that the chair may be positioned for maximum comfort and convenience in relation to the inclination of the desk top cover and likewise to suit the preference of the individual occupant thereof; and in general to provide such a structure which is convenient in use, 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 perspective view of the combined desk and chair structure in use by an occupant, the desk cover being shown inclined to a convenient position for reading and writing;

Figure 2 is a perspective view of the top box of the desk, the cover therefor being here shown raised in a position to give ready access to the storage compartment;

Figure 3 is a side elevational view of the combined desk and chair structure, showing the cover of the desk in a horizontal position in full lines and in an inclined position of use in dotted lines, the chair being shown in one adjusted position of use in full lines and in another adjusted position of use in dotted lines;

Figure 4 is a side elevational view of the top box of the desk, and shows the cover therefor in a raised position for access to the storage compartment in full lines, and in a different in-

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clined position of use in dotted lines, certain parts being shown in central, longitudinal, vertical section view;

Figure 5 is an enlarged sectional view taken on line 5—5 of Figure 4;

Figure 6 is an enlarged fragmentary top plan view of the right front corner of the desk structure;

Figure 7 is a sectional view taken on line 7—7 of Figure 6;

Figure 8 is a sectional view taken on line 8—8 of Figure 7;

Figure 9 is a sectional view taken on line 9—9 of Figure 3; and

Figure 10 is a sectional view taken on lines 10—10 of Figures 3 and 9.

Referring now in detail to these drawings, the combined desk and chair therein shown comprises generally a supporting frame having spaced vertical supports 11, 12 of tubular metal construction connected by a horizontal member 13 likewise of tubular metal construction. These three tubular members may be fabricated from a single length of metal tubing bent at front and rear to form a U-shaped frame which is supported in the front by a sheet metal foot member 14 and in the rear by a similar sheet metal foot member 15, which construction is more fully disclosed in Patent No. 2,317,077 issued April 20, 1943 to E. B. Morgan and by him assigned to our assignee.

The top of the desk structure comprises a unitary sheet metal top box 16 having (see Figure 2) a bottom 17, front wall 18, side walls 19 and rear wall 20 defining a storage compartment 21 for school books or the like. This top box 16 is mounted on a tubular metal post 22 which is vertically adjustably secured in the vertical support 11 by means of a clamp 23. The top box 16 serves as a mounting member for the flat, preferably wood, desk-top 24 and in turn the desk-top 24 serves when in its lowered position as a cover for the top box and storage compartment therein.

The desk-top or cover 24 is connected to the top box 16 by means of a hinge member 25 of sheet metal which extends from side to side of the structure. At each side of the hinge member 25 is a forwardly projecting pivot lug 26 the forwardmost end of which is pivotally connected at 27 to a forwardly projecting lug 28 on a bracket 29 whose inwardly projecting flange 30 is secured as by welding to a flange 31 projecting inwardly from the top of the front wall 18 of the top box. The desk-top cover 24 is recessed

at 32 to accommodate the pivot lugs 26 and 28.

As best seen in Figures 6-8, each of the brackets 29 on either side of the top box 16 has an inwardly projecting flange 33 to which is secured as by means of a rivet 34 the front flange 35 of a housing 36, and a rear flange 37 on each housing 36 is secured to a flange 38 extending inwardly from the top of the adjacent side wall 19 of the top box, as by rivets 39. These housings 36 enclose wings 40 which depend from the opposite sides of the hinge members 25, and thus any books which may be in the storage compartment are protected from mutilation by movement of the wings 40.

It will be seen that the hinge member 25 is hinged at its front to the front of the top box swingably about a horizontal axis (the pivots 27), and the hinge member is limited in its upward swinging movement by contact of stops 41 near the lower ends of the wings 40 with stops 42 on the upper side walls of the housings 36.

The hinge member 25 is hinged at its rear to the cover's underside intermediate the cover's front and rear edges, and swingably about a horizontal axis, by means of hinge leaves 43 through which, and through the curled rear edges 44 of the hinge member 25, extends a pin 45.

A latch device is provided for normally latching the cover 24 to the hinge member 25. This latch device, best shown in Figures 4 and 5, comprises a latch lever 46 turnably mounted on a horizontal pin 47 supported by angle brackets 48 which are secured as by welding to a channel bar 49 whose flanges 50 are secured to the hinge member 25, also as by welding. The latch lever 46 has an operating handle portion 51 which extends through an aperture 52 in the channel bar 49, and a latch arm portion 53 which extends through an aperture 54 in the hinge member 25 and is adapted to engage a keeper 55 secured in a recess 56 in the cover 24. A coil spring 57 secured to a bracket 48 and to the latch lever 46 normally urges the latch into engaging position with the keeper 55. It will thus be seen that when the cover 24 and the hinge member lie flush together, they may be moved in unison about the pivotal connections of the hinge member to the top box, and that the latch handle 51 is concealed from view until the desk top is moved to a raised position as illustrated in Figure 2.

In the use of the desk, access may be had to the storage compartment by lifting the edge of the cover 24 nearest the occupant and thereafter lowering the same to close the compartment, during which movements the hinge member and the cover 24 move in unison, and these members are maintained in raised position (until manually lowered) by means of fibrous friction washers 58 and 59 which are interposed between the wings 40 of the hinge member 25 and the adjacent parts of housings 36. As best seen in Figures 6-8 the washer 58 is secured as by means of a rivet 60 to the main wall of the housing and bears against the inner surface of the adjacent wing 40, while the washer 59 is secured as by means of a rivet 61 to an outwardly and forwardly turned spring arm 62 on the housing and bears against the outer surface of said wing 40. An adjustment screw 63 having a nut 64 connects the spring arm 62 and the main wall of the housing 36, and it will be seen that the amount of pressure exerted by the friction washers 58 and 59 on the wing 40 therebetween may be greatened or lessened by tightening or loosening the screw 63 with an ordinary screwdriver, thus to enable

adjustment of the force required to raise and lower the cover 24.

When it is desired to elevate the cover 24 to a rearwardly-downwardly inclined position of use as seen in Figure 1, the cover is first raised to its rearwardly-upwardly inclined position shown in Figure 2 and in full lines in Figure 4. Access is thus given to the operating handle 51 of the latch mechanism, which is depressed by the chair occupant thus permitting the cover 24 to swing downwardly independently of the hinge member 25 to a rearwardly-downwardly inclined use position as illustrated in Figure 1 and by dotted lines in Figures 3 and 4, during which movement the hinge member 25 is maintained in its rearwardly-upwardly inclined position by the friction washers 58 and 59. In such inclined position of use, the cover is firmly supported by engagement of the rear wall 20 of the top box in one of the channels 65 of a keeper member 66 secured as by screws 67 to the bottom of the cover near the rear thereof. To return the cover to its horizontal position, the chair occupant need only raise the cover until the latch arm 46 on the hinge member 25 snaps into engagement with the keeper 55 on the cover, whereupon the cover may be manually lowered in unison with the hinge member.

The chair 68 of the structure is mounted upon the vertical support 12 of the frame, and generally comprises side frames 69 and 70, back rails 71 and 72, and a seat 73. The chair mounting comprises an annular bracket 74 having a depending sleeve 75 fitted into the upper end of the vertical support 12 and vertically adjustably secured therein by means of a clamp 76. The upper end of the annular bracket 74 is flared outwardly to form a conical bearing in which is rotatably disposed the conical middle portion 77 of a mounting member 78 having a depending sleeve 79 turnably disposed in the sleeve 75 of the annular bracket 74. The upper portion of the mounting member 78 is flanged outwardly to form a rectangular plate 80, the side marginal edges of which form guideways 81 for runners 82 which are held in position on the guideways 81 by means of notched cross-sectionally Z-shaped angle irons 83. Screws 84 secure both the angle irons 83 and the runners 82 to the bottom of the seat 73.

It will thus be seen that the chair 68 is mounted for rotation to provide for convenient ingress and egress of the chair occupant, and that the chair is also mounted for forward and rearward sliding adjustment in order that the same may be positioned correctly and conveniently relative to the desk. A rear stop 85 is secured to the seat bottom 73 as by means of a screw 86, and a front stop 87 and spacer block 88 are secured to the seat bottom 73 as by means of screws 89 and 90, and these stops serve to limit the forward and rearward sliding movements of the chair.

While but one specific embodiment of the invention has been herein shown and described it will be understood that this embodiment may be modified without departing from the spirit of the invention as defined by the following claims.

We claim:

1. In a desk structure of the character described: a top box comprising a bottom, a front wall, side walls, and a rear wall; a hinge member having a web portion extending from side to side of the forward part of the top box and connected to the top box at the upper forward corners thereof swingably about a horizontal axis, said

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hinge member having wing portions depending from the opposite sides of said web portion; housings secured to the opposite side walls of the top box and enclosing said wing portion of the hinge member in the hinge member's lowered position; adjustable friction means interposed between each housing and the wing portion enclosed thereby for preventing the free movement of the hinge member; a cover for the top box connected to the rearward end of the hinge member swingably about a second horizontal axis, said cover being movable with the hinge member about the first-mentioned axis to an upwardly inclined position giving access to the top box and being movable relative to the hinge member about the second-mentioned axis to a downwardly inclined position wherein the cover's free end is supported by the rear wall of the top box.

2. In a desk structure of the character described: a top box comprising a bottom, a front wall, side walls, and a rear wall; a hinge member having a web portion extending from side to side of the forward part of the top box and connected to the top box at the upper forward corners thereof swingably about a horizontal axis, a cover for the top box extending from front to rear thereof and connected to the rearward end of the hinge member swingably about a second horizontal axis; a latch lever pivotally mounted on the web portion of the hinge member and a keeper mounted on the underside of the forward portion of the cover, said latch lever having an operating handle portion extending within the top box when the hinge member is in lowered position and a latch portion adapted to engage said keeper when the forward portion of the cover lies flush against the hinge member, spring means for normally urging the latch to its position of engagement, said cover being thus movable with the hinge member about the first-mentioned axis to an upwardly inclined position giving access to the top box and to the operating handle portion of the latch lever, and said cover upon release of the latch lever being movable relative to the hinge member about the second mentioned axis to a downwardly inclined position wherein the cover's rearward end is supported by the rear wall of the top box.

3. In a desk structure of the character described: a top box comprising a bottom, a front wall, side walls, and a rear wall; a hinge member having a web portion extending from side to side of the forward part of the top box and connected to the top box at the upper forward corners thereof swingably about a horizontal axis; a cover for the top box extending from front to rear thereof and connected to the rearward end of the hinge member swingably about a second horizontal axis; a latch lever pivotally mounted on the web portion of the hinge member and a keeper mounted on the underside of the forward portion of the cover, said latch lever having an operating handle portion extending within the top box when the hinge member is in lowered position and a latch portion adapted to engage said keeper when the forward portion of the cover lies flush against the hinge member; spring means for normally urging the latch to its position of engagement; said cover being thus movable with the hinge member about the first-mentioned axis to an upwardly inclined position giving access to the top box and to the operating handle portion of the latch lever; friction means interposed between the top box and the hinge member for supporting the hinge member and the cover in vari-

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ously swung positions; and said cover upon release of the latch lever being movable relative to the hinge member about the second-mentioned axis to a downwardly inclined position wherein the cover's rearward end is supported by the rear wall of the top box.

4. In a desk structure of the class described: an upwardly open top box and a cover therefor; a hinge member hinged at its front to the upper front edge of the top box and hinged at its rear to the cover's underside intermediate the cover's front and rear edges so that lifting of the cover's rearward portion causes the cover's forward portion to bear against the upper surface of said hinge member, the hinge member and cover being thus movable together about the hinge connection of the hinge member to the top box to rearwardly-upwardly inclined positions; a pivotal support associated with the top box and the cover and movable with the cover during said swinging movement to an elevated position of pivotal support for the cover intermediate said cover's front and rear edges; said front edge of the cover being dissociable from the hinge member to permit swinging movement of the cover about said pivotal support to a rearwardly-downwardly inclined elevated position, and stop means preventing forward or rearward and consequent lowering movement of the cover when in said rearwardly-downwardly inclined elevated position.

5. In a desk structure of the character described: an upwardly open top box and a cover therefor; a hinge member hinged at its front to the upper front edge of the top box and hinged at its rear to the cover's underside intermediate the cover's front and rear edges so that lifting of the cover's rearward portion causes the cover's forward portion to bear against the upper surface of said hinge member, the hinge member and cover being thus movable together about the hinge connection of the hinge member to the top box to rearwardly-upwardly inclined positions; and means for maintaining the hinge member in rearwardly-upwardly inclined position while permitting movement of the cover about its hinged connection to the rear of the hinge member to a rearwardly-downwardly inclined position wherein the forward part of the cover is supported by the hinge member and the rearward part of the cover is supported by the rearward part of the top box.

6. In a desk structure of the character described: an upwardly open top box and a cover therefor; a hinge member hinged at its front to the upper front edge of the top box and hinged at its rear to the cover's underside intermediate the cover's front and rear edges so that lifting of the cover's rearward portion causes the cover's forward portion to bear against the upper surface of said hinge member, the hinge member and cover being thus movable together about the hinge connection of the hinge member to the top box to rearwardly-upwardly inclined positions; means for maintaining the hinge member in rearwardly-upwardly inclined position while permitting movement of the cover about its hinged connection to the rear of the hinge member to a rearwardly-downwardly inclined position wherein the forward part of the cover is supported by the hinge member and the rearward part of the cover is supported by the rearward part of the top box; and releasable latch means normally associating the cover and the hinge member for movement in unison to said rearwardly-upwardly inclined positions.

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7. In a desk structure of the character described: an upwardly open top box and a cover therefor; a hinge member hinged at its front to the upper front edge of the top box and hinged at its rear to the cover's underside intermediate the cover's front and rear edges so that lifting of the cover's rearward portion causes the cover's forward portion to bear against the upper surface of said hinge member, the hinge member and cover being thus movable together about the hinge connection of the hinge member to the top box to rearwardly-upwardly inclined positions; and friction means interposed between the top box and the hinge member for maintaining the hinge member in rearwardly-upwardly inclined position while permitting movement of the cover about its hinged connection to the rear of the hinge member to a rearwardly-downwardly inclined position wherein the forward part of the cover is supported by the hinge member and the rearward part of the cover is supported by the rearward part of the top box.

8. In a desk structure of the character described: an upwardly open top box and a cover therefor; a hinge member hinged at its front to the upper front edge of the top box and hinged at its rear to the cover's underside intermediate the cover's front and rear edges so that lifting of the cover's rearward portion causes the cover's forward portion to bear against the upper surface of said hinge member, the hinge member and cover being thus movable together about the hinge connection of the hinge member to the top box to rearwardly-upwardly inclined positions; friction means interposed between the top box and the hinge member for maintaining the hinge member in rearwardly-upwardly inclined position while permitting movement of the cover about its hinged connection to the rear of the hinge member to a rearwardly-downwardly inclined position wherein the forward part of the cover is supported by the hinge member and the rearward part of the cover is supported by the rearward part of the top box; and releasable latch means normally associating the cover and the hinge member for movement in unison to said rearwardly-upwardly inclined positions.

9. In a desk structure of the character described: an upwardly open top box and a cover therefor; a hinge member hinged at its front to the upper front edge of the top box and hinged at its rear to the cover's underside intermediate the cover's front and rear edges so that lifting of the cover's rearward portion causes the cover's forward portion to bear against the upper surface of said hinge member, the hinge member and cover being thus movable together about the hinge connection of the hinge member to the top box to rearwardly-upwardly inclined positions; means for maintaining the hinge member in rearwardly-upwardly inclined position while permitting movement of the cover about its hinged connection to the rear of the hinge member to a rearwardly-downwardly inclined position wherein the

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forward part of the cover is supported by the hinge member and the rearward part of the cover is supported by the rearward part of the top box; and means at the rear of the cover's underside adapted to engage the rear edge of the top box in various rearwardly-downwardly inclined positions of the cover.

10. In a desk structure of the character described: a vertical support; a horizontal desk-top supporting structure on the upper end of the vertical support; a flat desk-top supported by the desk-top supporting structure in a normally substantially horizontal position; a hinge member disposed between the desk-top supporting structure and the desk-top, said hinge member having its forward end connected swingably about a first horizontal axis to the front of the desk-top supporting structure and having its rearward end connected swingably about a second horizontal axis to the underside of the desk-top intermediate the latter's front and rear edges so that lifting of the desk-top's rearward portion causes the desk-top's forward portion to bear against the upper surface of said hinge member, the hinge member and desk-top being thus swingable together about said first horizontal axis; and means associated with the hinge member and the desk-top supporting structure for maintaining the hinge member in rearwardly-upwardly inclined position while permitting movement of the desk-top about said second horizontal axis to a rearwardly-downwardly inclined position wherein the forward part of the desk-top is supported by the hinge member and the rearward part of the desk-top is supported by the rearward part of said desk-top supporting structure.

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