

Dec. 3, 1940.

E. S. CAIN

2,223,405

DESK

Filed Nov. 10, 1939

2 Sheets-Sheet 1

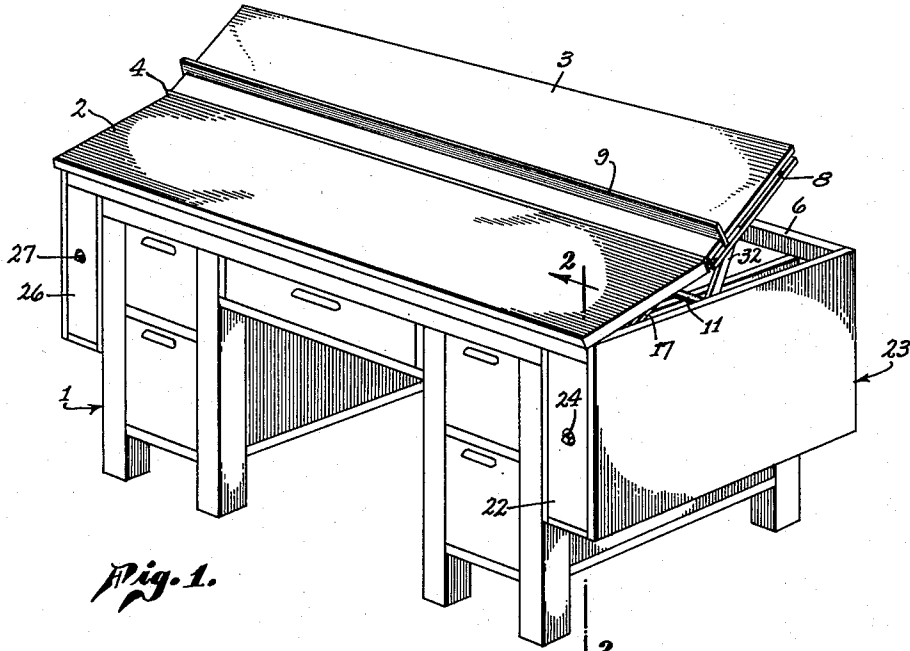


Fig. 1.

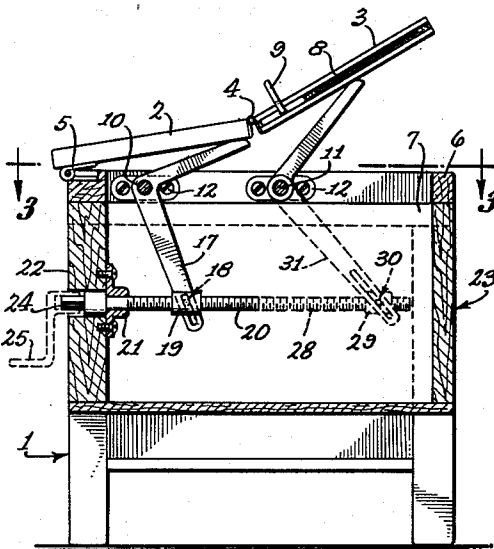


Fig. 2.

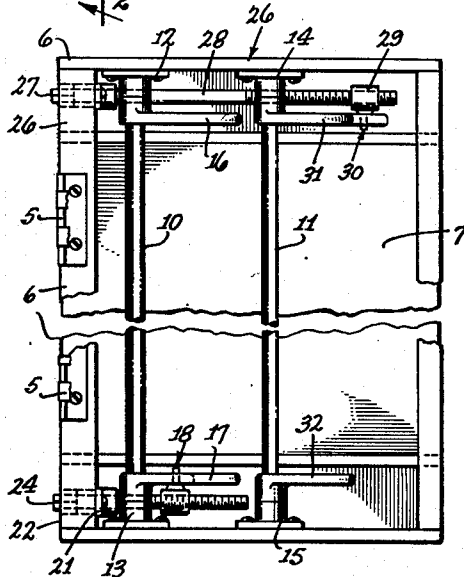


Fig. 3.

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2 Sheets-Sheet 2

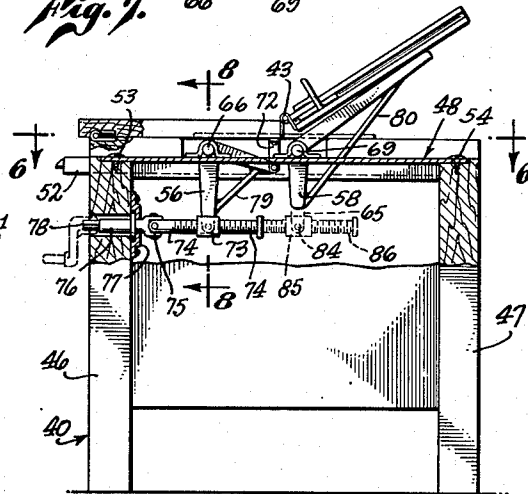
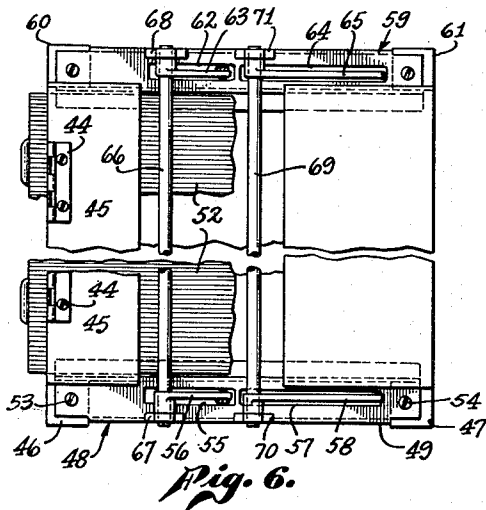
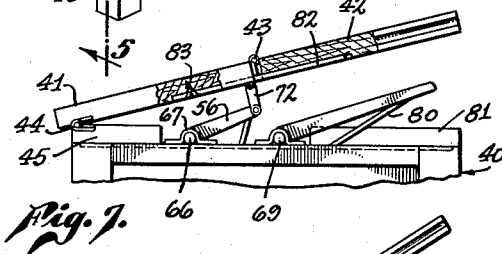
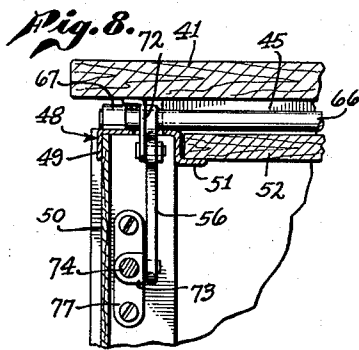
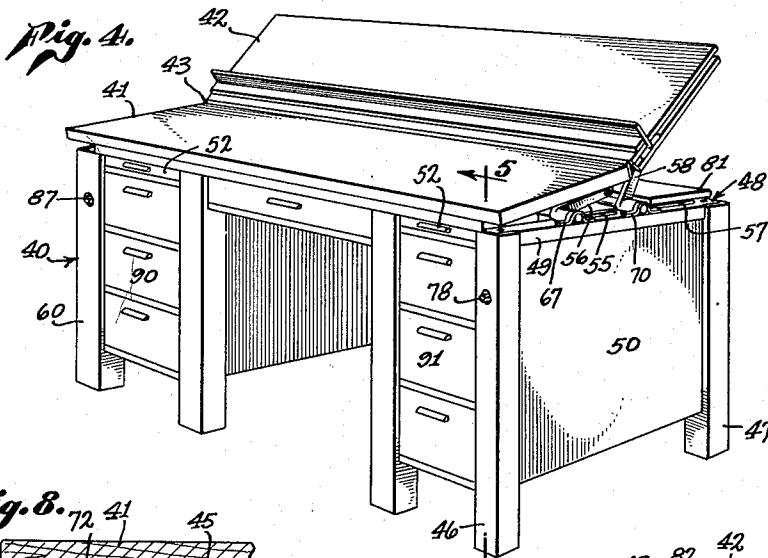


Fig. 5. Inventor

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# UNITED STATES PATENT OFFICE

2,223,405

DESK

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Application November 10, 1939, Serial No. 303,785

4 Claims. (Cl. 45—91)

The invention relates to a desk and has for an object to provide a top therefor, having hinged sections so that the front section may be tilted at an angle convenient for writing purposes, and a back section which may be tilted at another angle convenient for reading or inspecting a book or a drawing or the like supported thereby. By providing a top having sections which are independently adjustable, each section may be adjusted to best serve its own purpose, it being supposed by way of example that the front section is to be used for writing purposes and the back section for holding a book, drawing, or the like, so that it may have proper lighting and be easily inspected by the person drawing or writing on the front section of the desk.

Another object of the invention is to provide improved operating mechanism for a desk or table top having sections, and in particular, operating mechanism which may be readily applied to an existing desk. The operating mechanism also may be embodied in a desk in the course of its manufacture.

For further details of the invention reference may be made to the drawings wherein:

Fig. 1 is a perspective view of one form of the invention.

Fig. 2 is a vertical sectional view on line 2—2 of Fig. 1.

Fig. 3 is a plan view on line 3—3 of Fig. 2.

Fig. 4 is a perspective view of the preferred form of the invention.

Fig. 5 is a vertical sectional view on line 5—5 of Fig. 4.

Fig. 6 is a plan view on line 6—6 of Fig. 5.

Fig. 7 is an end view of Fig. 4 with a portion of the top shown in section.

Fig. 8 is a sectional view on line 8—8 of Fig. 5, with certain parts broken away.

Referring in detail to the drawings, 1 represents a conventional desk to the top and end walls of which my invention has been applied. The top comprises a front section 2 hinged to a back at 3 by means of a piano or other hinge 4. Also the front section 2 is hinged at its front edge at 5 to a fillet or a frame 6 resting on top of the base 7 of the desk 1. The back section 3 at its opposite end is provided with a groove 8 in which a book rest 9 is adapted to slide. Mounted in frame 6 are two shafts 10 and 11, which extend across the top of the base 7, as shown in Fig. 3. At its opposite ends, frame 6 carries bearings 12 and 13 for shaft 10 adjacent the front of frame 6, and also bearings 14 and 15

adjacent the middle of frame 6. Shaft 10 has mounted at its opposite ends a lever 16 and a bell crank lever 17 fixed thereto. The depending arm of bell crank lever 17 has a pin and slot connection 18 with a travelling nut 19 mounted on worm 20 rotatably carried by bearing 21 mounted on the inside front wall 22 of compartment 23, which is suitably secured to the outside end wall of desk 1, as shown in Fig. 1. Worm 20 is provided with a non-circular end 24, which is accessible from the exterior of compartment 23 and to which a crank 25 may be applied to rotate the worm 20. Similarly the other end of desk 1 has suitably fixed thereto a compartment 26 through the front wall of which access may be had to the non-circular end 27 of worm 28 which carries a travelling nut 29, having a pin and slot connection 30 with a bell crank lever 31, fixed to shaft 11. Also lever 32 is fixed to shaft 11. It will be understood that the upper arm of bell crank 17 and the lever 16 are on the same level and engage the undersurface of front section 2. Also the upper arm of bell crank 31 and lever 32 simultaneously engage the undersurface of section 3.

Assume sections 2 and 3 lie flat on the desk. By means of handle 25, worm 20 is rotated to raise the top 2—3 as a whole to a suitable angle for working on the front section 2. Section 3 is carried upward in alignment with section 2, as hinge 4 does not permit section 3 to drop below section 2. Handle 25 is now applied to the end 27 of worm 28, which is rotated to tilt the back section 3 to a desired angle above the plane of section 2, while leaving section 2 in its former selected tilted position. It will thus be seen that sections 2 and 3 may be independently tilted to suit the needs of the artisan.

In applying the invention of Figs. 1 to 3 to an existing desk, it will be understood that the top of the desk is removed and the frame 6 with its mechanism and end sections 2—3 are substituted therefor and the compartments 23 and 26 and their mechanism associated therewith. The former top of the desk may be cut and hinged to provide the sections 2—3 if desired.

The modifications in Figs. 4 to 8 illustrate how the worms and the bell cranks associated therewith may be mounted in the end wall of an existing desk without any increase in the length of the desk, that is compartments such as 23 and 26, which project beyond the ends of the desk, are not employed. Referring to Figs. 4 to 8, the desk 40 is provided with a top having a front section 41 and a back section 42 hinged to-

gether at 43. The front section 41, being hinged at its front edge at 44 to a fillet 45. The usual wooden cross piece between posts 46 and 47 is removed and replaced by a metal cross piece 48 having a downwardly extending flange 49 which overlies the end wall 50 of the desk, and a horizontal flange 51 which supports the usual wooden slide 52. The cross piece 48 is suitably secured to posts 46 and 47 by means of screws 53, 54, or the like. Cross piece 48 has a slot 55 for the bell crank lever 56 and slot 57 for the lever 58. A cross piece 59, similar to 48 is provided between posts 60 and 61. Cross piece 59 has a slot 62 for lever 63 and a slot 64 for bell crank 65. The lever 63 and the bell crank 56 are fixed to shaft 66 rotatably mounted in a bearing 67 on cross piece 48 and in a bearing 68 on cross piece 59. Also bell crank 65 and lever 58 are fixed to shaft 69 rotatably mounted in a bearing 70 on cross piece 48 and a bearing 71 on cross piece 59. The upper arm of bell crank 56 is connected through a link 72 to section 41, and its lower end is pivotally connected to a travelling nut 73, carried by worm 74 connected through a universal joint 75 to the stub shaft 76 mounted in bearing 77 on the inside of the front post 46 and terminating in a non-circular end 78. If desired the levers may be braced as shown at 79 and 80. A fillet 81 may be used across the top of the back of the desk to form a support for top 41-42, when the top is horizontal. Also a similar fillet as shown may be provided between shafts 66 and 69. Fillets 45 and 81 are suitably secured to the top of desk 40 and are of the same thickness and support the top 41-42 slightly above shafts 66 and 69 when the top is horizontal.

The operation is the same as with Figs. 1, 2 and 3. In order to take some of the strain off from hinge 43 when bell crank 56 is operated to lift the whole top 41-42 as shown in Fig. 7, I provide a supporting strip 82 which is secured as at 83 to top 41 and which extends to top 42. Preferably strip 82 is mounted in a groove in both top sections 41 and 42.

The depending arm of bell crank 65, as shown in Fig. 7, is pivotally connected at 84 to a travelling nut 85 carried by a worm 86 which has a universal coupling like 75 (not shown) terminating in an operating head 87 like 78.

Referring to Figs. 4 to 8, the worms and the bell cranks and levers associated therewith are

mounted between the outside of the usual drawers 90, 91, and the inside of the respective adjacent end walls of the desk. In other words the worms and associated levers are mounted inside the desk, but outside the space occupied by the side drawers.

I claim:

1. In a desk, the combination of a base, a top on said base having front and back sections, a hinge connection between said sections, a second hinge between said front section and the front edge of said base, means mounted in said base for tilting said top as a whole, and other means mounted in said base for adjustably tilting said back section above the plane of said front section when said front section is tilted.

2. A desk having end walls, a top on said desk having front and back sections, a hinge between said sections, a second hinge between said front section and the front edge of said desk, a base for said top, a pair of shafts carried by said base, means adjacent one of said end walls for rocking one of said shafts, means adjacent the other of said end walls for rocking the other of said shafts, means mounted with one of said shafts for tilting said top as a whole, and means associated with the other of said shafts for adjustably tilting said back section above the plane of said front section when said front section is tilted.

3. In a desk, a base, a pair of spaced shafts, means supporting said shafts above said base for rocking movement, a top having hinged sections, a fillet for said shafts between said base and said top, a hinge between said top and said fillet, means associated with each of said shafts for tilting one of said top sections, and hand operating means for said last mentioned means.

4. A desk having end walls and corner posts, a metallic cross piece connecting adjacent ones of said posts at each end of said desk and arranged at the top of said posts, each of said cross pieces having a flange adapted to overlie an end-wall of said desk and a flange adapted to support a slide, bearings carried by each of said cross pieces, said cross pieces having slots, shafts mounted in said bearings, levers on said shafts movable in said slots, a tilting top for said desk under control of said levers and means for operating said levers to tilt said top.

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