May 26, 1936. W. G. LUNDQUIST 2,041,772

ADJUSTABLE TABLE

Filed Oct. 20, 1933

Fig. 1.

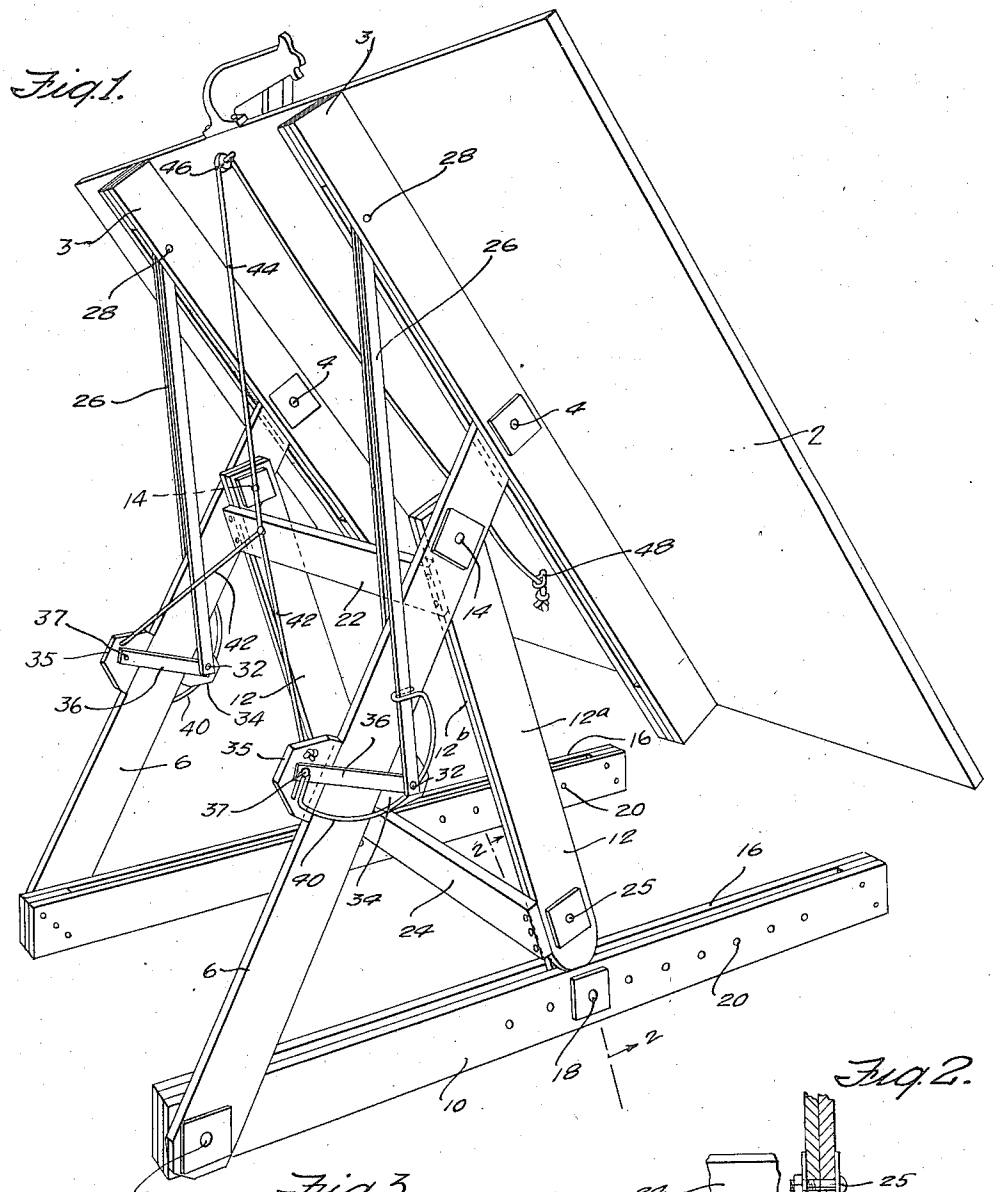


Fig. 2.

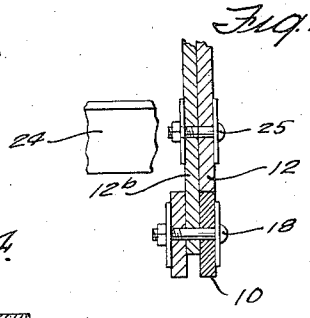


Fig. 3.

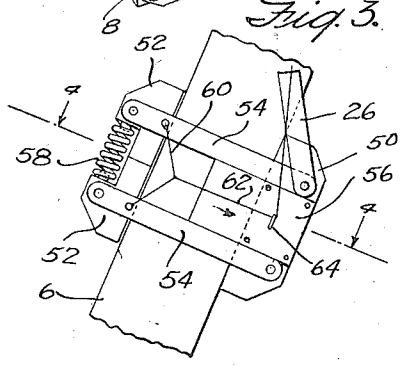
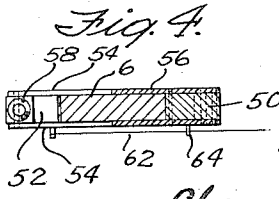


Fig. 4.



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ADJUSTABLE TABLE

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7 Claims. (Cl. 311—36)

This invention relates to a table and more particularly to a table for use in drafting and similar work.

As is well known to those accustomed to making drawings, it is desirable to be able to shift frequently the angular position of the top of the drafting table supporting the sheet upon which a drawing is being made, about a horizontal axis. This enables the draftsman to change his position with each change in the position of the top of the table so that he does not tire as quickly as when working in one position. Changes in the angular position of the table top also enable the various parts of the sheet to be more conveniently reached by the draftsman.

It is also desirable that the top of the table should be readily adjustable vertically to suit the requirements of different draftsmen. Draftsmen of different statures ordinarily employ tables of different heights and draftsmen of substantially the same statures may require tables of different heights for efficient work.

The principal objects of the present invention are to improve the construction and mode of operation of tables for drafting and similar work and to produce a table of this class in which the top of the table may be quickly and easily adjusted about a horizontal axis and will be securely locked in position after each adjustment.

Another object of the invention is to produce a table of the class referred to in which the top of the table may be readily adjusted vertically and may be firmly secured in position after each adjustment.

With the above and other objects in view the invention consists in a table embodying the novel and improved features hereinafter described and particularly pointed out in the claims, the advantages of which will be readily understood and appreciated by those skilled in the art.

The invention will be clearly understood from the accompanying drawing illustrating a drafting table construction embodying the invention in its preferred form and the following detailed description of the construction therein shown.

In the drawing,

Figure 1 is a perspective view illustrating a table embodying the invention;

Figure 2 is a detail sectional view taken substantially on the line 2—2 of Figure 1;

Figure 3 is a view in side elevation illustrating a modified form of the clamping or gripping brake mechanism for holding the top of the table in adjusted position; and

Figure 4 is a sectional view taken substantially on line 4—4 of Figure 3.

In the construction illustrated in the drawing the table comprises a top or board indicated at 2 having reenforcing bars or cleats 3 secured to the under side thereof. The top is pivoted to swing about a horizontal axis by means of bolts 4 passing through the cleats 3 and through the upper ends of the frame members or legs 6 engaging in slots in said cleats. The frame members 6 extend obliquely upwardly from the base of the table and the lower ends thereof are pivoted by means of bolts 8 to the horizontally extending frame members 10 at the base of the table. The frame members 6 are supported vertically by means of the frame members or legs 12 pivotally connected at their upper ends by means of bolts 14 with the frame members 6. The frame members 12 are each composed of outer and inner plates indicated respectively at 12*a* and 12*b*. Each of the plates 12*b* is arranged to extend into a slot 16 in one of the base frame members 10 and the corresponding frame member 12 is adjustably connected with the frame member 10 by means of a bolt 18 arranged to be inserted in any one of a series of openings 20 in the frame member 10 and passing through a corresponding opening in the lower end of the plate 12*b*. The lower ends of the plates 12*a* and 12*b* are secured together by means of bolts 25. Each of the plates 12*a* is arranged to terminate with its semi-circular lower end just above the corresponding frame member 10.

The frame members 12, as illustrated in the drawing, are connected by cross frame members 22 and 24 to which may be added suitable diagonal cross members to assure such necessary transverse stability as may be required. The ends of these cross frame members are secured to the plates 12*a* by means of screws or other suitable fastening devices but are not directly attached to the plates 12*b* in the present embodiment of the invention.

The height of the table top 2 may be adjusted vertically by removing the bolts 18 and by swinging the frame members 12 forwardly or rearwardly about the pivot bolts 14 according to whether it is desired to lower or raise the top, said frame members being finally adjusted to locate the opening in each of the plates 12*b* in registration with one of the openings 20 in the corresponding base frame member 10. The table top is then secured in its adjusted vertical position by passing the bolts 18 through the proper openings 20 in the base frame members 10 and

through the registering openings in the lower ends of the plates 12b.

The pivoting of the table top 2 on the pivot bolts 4 enables the table to be swung about a horizontal axis into any desired position. The mechanism for holding the table top in adjusted position comprises links 26 pivotally connected at their upper ends by means of bolts 28 to the cleats 3. At their lower ends the links 26 are pivotally connected by bolts 32 respectively to brake shoes 34 arranged to engage the under side of frame members 6. Each of the brake shoes 34 is connected by links 36 arranged upon opposite sides of the corresponding frame members 6 with a brake shoe 35 arranged to engage the upper side of the corresponding frame member 6, the brake shoes 34 and 35 thus being arranged in pairs connected by said links. The brake shoe 35 of each pair is pivoted to the corresponding set of links 36 by means of a bolt 37. The links 36 connecting the brake shoes of each pair are of such a length that when these links are in positions substantially perpendicular to the corresponding frame member 6, the distance between the braking faces of the brake shoes will be greater than the width of the frame member 6. The brake shoes of each pair are acted upon by a spring 40 which tends to move the brake shoe 35 downwardly along the corresponding frame member 6 with relation to the brake shoe 34.

The links 36 and brake shoes 34 and 35 are so constructed and arranged that the angle between the line of tension of the links (the line connecting the respective axes of the bolts 32 and 37) and a line perpendicular to the inner faces of the brake shoes is always less than the friction angle. The friction angle, of course, will vary with the materials used in the brake shoes and in the frame members 6 which they engage.

With the above construction, any attempt to tilt the table top 2 in a direction to raise the upper portion of the top, Figure 1, will cause the brake shoes to grip the frame members 6 frictionally to such a degree as to prevent the tilting of the top. The greater the force applied to the table top tending to tilt the same, the heavier will be the gripping action of the brake shoes on the member 6. The table top may, however, be readily tilted in a direction to lower the upper portion of the top. In this case, through the links 26, the brake shoes 34 will be first moved downwardly, thereby freeing the brake shoes from gripping engagement with the members 6 and the entire brake mechanism will then slide freely downwardly along said members.

In order to enable the operator readily to free the brake mechanism from gripping engagement with the member 6 so that the table top may be tilted in a direction to raise the upper portion of the top, cords 42 are each connected at one end to one of the brake shoes 35. The other end of each of these cords is connected with a cord 44 which is passed over a pulley 46 secured to the under side of the table top adjacent the upper portion thereof and this cord also is passed through a guide eye 48 secured to the under side of the table top adjacent the lower portion thereof. By pulling upon the cord 42 the brake shoes 35 may be moved upwardly along the frame members 6 against the action of the springs 40, thereby freeing the brake shoes from gripping engagment with the members 6 and allowing said shoes to be moved upwardly along said members.

In the construction shown in Figure 3 the brake mechanism for holding the top of the table in adjusted position is arranged to hold the said top positively from pivotal or tilting movement in either direction. The said mechanism comprises a brake shoe 50 arranged to engage the lower side of the frame member or leg 6 to which shoe are pivotally connected the lower ends of one pair of links 26. The said mechanism also comprises two brake shoes 52 each arranged to engage the upper side of the frame member 6 in opposed relation to the shoe 50. Each of the shoes 52 is connected with the brake shoe 50 by means of links 54 embracing the leg 6. Secured to the brake shoe 50 on each side thereof is a stop plate 56 located between the links 54 on the corresponding side of said shoe. The lengths of the links 54 and the construction and arrangement of the brake shoes 52 and the stop plate 56 are such that when the links are engaged with said plates the shoes 52 will be out of gripping engagement with the frame member 6 as shown in Figure 3, the adjacent faces of said brake shoes then being in contact as shown in said figure.

The brake shoes 52 are forced yieldingly apart to bring the said shoes into contact with the adjacent face of the frame member 6 by means of a coiled spring 58 interposed between the shoes. The links 54 on each side of the frame member 6 are drawn into engagement with the respective stop plates 56 by means of cords 60 each attached at one end to one of the links 54. The other end of each of these cords is connected to a cord 62 which passes through a guide eye 64 secured in one of the stop plates 56.

With the above construction when the cord 62 is released the spring 58 forces the brake shoes 52 into contact with the upper side of the frame member 6. Any force applied to the brake shoe 50 tending to move said shoe upwardly will cause said shoe and the lower brake shoe 52 to grip the frame member 6. Also, any force applied to the shoe 50 tending to move the said shoe downwardly would cause said shoe and the upper shoe 52 to grip said frame member. Thus the brake mechanism will securely hold the top of the table from tilting movement in either direction.

There is, of course, a set of brake shoes 50 and 52 arranged to engage each of the frame members 6. The cords 62 are connected to a common actuating cord such as the cord 44 shown in Figure 1 which is operated manually by the operator.

When the operator desires to tilt the top of the table, he pulls the cords 62 in the direction of the arrow, Figure 3. The links 54 on each side of the frame member 6 are thus moved toward each other into engagement with the corresponding stop plate 62 and the brake shoes 52 are thus released from gripping engagement with said frame member. With the parts in this position the brake shoes 50 and 52 may be readily moved longitudinally of the frame member 6 by a force tending to slide the brake shoe 50 longitudinally of said frame member. Thus the table top may then be tilted freely in either direction.

In another modified form of the invention the brake shoes 34 are rigidly connected by suitable cross bars as are also the brake shoes 38 and the links 26 and 36 are replaced by tension cords. The construction shown in the drawing, however, is preferred, since the brake mechanism maintains its adjustment in a more reliable manner and there is very little stretch in the ten-

sion members and therefore greater certainty in the operation of the table.

The table construction disclosed in this application also has the advantages that it may be readily disassembled and compactly arranged for transportation. In disassembling the table the brake mechanism for controlling the tilting of the top of the table is first disassembled and removed. The two pivot bolts 4 are then removed and the top of the table is detached from the upper ends of the frame members 6. The bolts 14 are then removed, thereby freeing the frame members 6 which may be folded down alongside the base frame members 10. The bolts 25 are next removed, thereby freeing the plates 12a from the plates 12b and the plates 12a, together with the attached cross-frame members 22 and 24 may be lifted away, leaving the plates 12b free. These plates may thereafter be folded down into the slots 16 in the base frame members. This completes the disassembling of the table.

Tables embodying the present invention not only may be employed in drafting work but also may be used with advantage in sketching, painting, writing and in many other operations.

It is to be understood that the invention is not limited to the particular construction and arrangement of parts of the illustrated embodiment of the invention but that this embodiment is merely illustrative of the invention and that the invention may be embodied in other forms within the scope of the claims.

Having explained the nature and object of the invention and having specifically described a construction embodying the invention in its preferred form, what is claimed is:—

1. A table comprising supporting legs, a top pivotally attached to said legs and means for securing the top in adjusted position, said means comprising friction brake elements which are slidable along the legs, means for normally frictionally locking said brake elements to the legs, links attached to the top and to the friction brake elements, and manually operable means for releasing said brake elements.

2. A table comprising supporting legs, a top pivotally mounted on said legs and means for securing the top in various adjusted positions, said means comprising a pair of friction brake elements on opposite sides of each leg, one of said pair comprising a leading brake element and the other a trailing brake element, links connecting each pair of brake elements on opposite sides of each leg in such a manner that the trailing brake element on each leg is frictionally restrained from sliding along the leg by reason of the less than friction angle at which the displacing force is applied to this trailing element through its link connecting it to the leading brake element, links pivotally attached to the table top and connected to the friction brake elements, and manual means for releasing the brake elements for sliding movement along the legs.

3. A table comprising legs, a top pivotally supported on said legs, friction brake elements slidable along the legs, links attached to said top and to said brake elements, means normally acting to render said brake elements operable consisting of linkage between pairs of brake elements whereby any force tending to move one of the brake elements along the legs is transmitted to another of the brake elements through less than the friction angle, thus making said brake element effective to resist motion and thereby holding the top in position, and manually operable means for releasing said brake elements for sliding movement along the legs.

4. A table comprising supporting legs, a top pivotally attached to the legs, links pivoted to the top and said brake elements and arranged to define the angular adjustment thereof, friction brake elements mounted on each link and slidable along the legs and frictionally engaging the legs, links joining the brake elements in pairs with a link between each pair and so arranged that any displacing force applied to one of the brake elements of a pair is transmitted to the other brake element of said pair at less than the friction angle, and quick acting means to release the brake elements to enable the top to be adjusted.

5. A table having a top, a structure for supporting said top for tilting movement in a generally vertical direction, means normally effective to hold the top positively from tilting movement in either direction, when adjusted to various positions, said means consisting of friction brake elements joined to the top by links and slidable along the supporting structure, links joining pairs of brake elements in such manner that any displacing force applied to one of the brake elements is transmitted to another of the brake elements at less than the friction angle thus rendering it immobile, and manually operable means for releasing said brake elements to permit movement of said top in either direction.

6. A table having a top, legs for pivotally supporting said top for tilting movement in a generally vertical direction, brake means which are slidable along the legs, links pivotally attached to said top and joined to said brake means, said brake means being normally effective to hold said top in any position within their range of movement, and mechanism for effecting quick release of said brake means.

7. A table comprising legs, a top pivotally attached to the legs, links pivoted to the top and arranged to define the angular adjustment thereof, friction brake elements mounted on the links and slidable along the legs, links joining the brake elements in pairs whereby any displacing force applied to one of the brake elements of each pair is transmitted to the other brake element of said pair at less than the friction angle thereby causing the brake elements to frictionally engage the legs thereby locking the top in adjusted position.

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