Dec. 29, 1931. O. K. MITCHELL ET AL 1,838,856

LAP TABLE

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Fig. 3

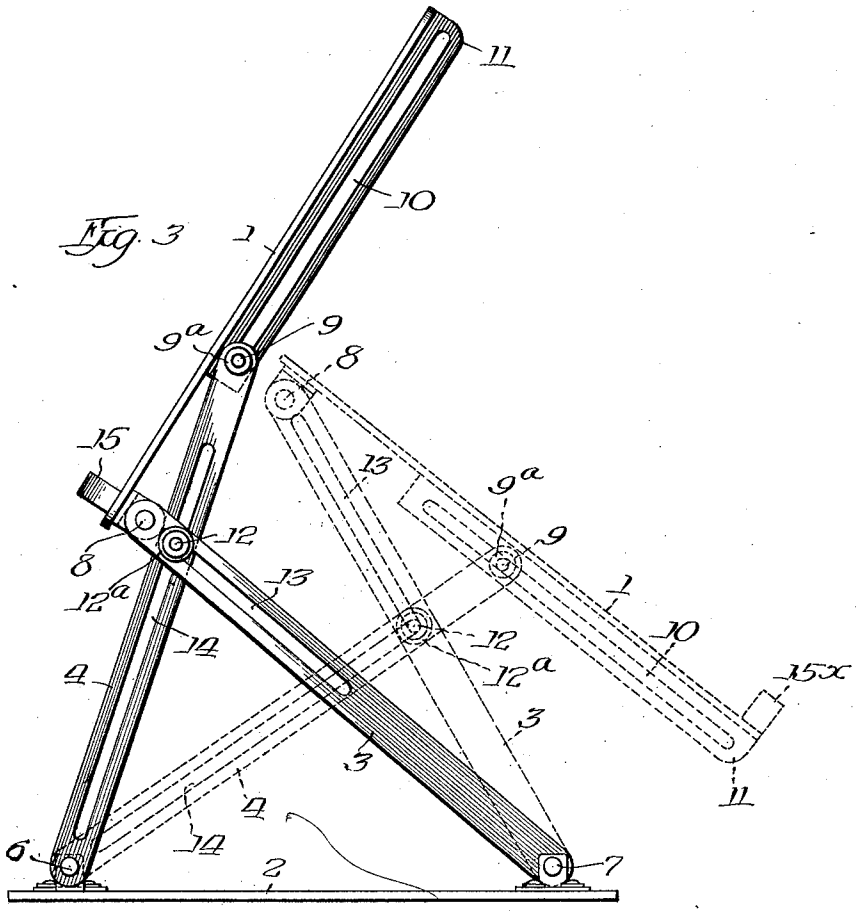
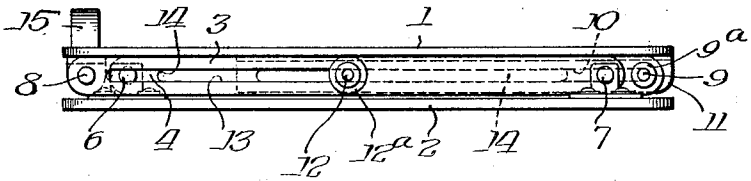


Fig. 1



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LAP TABLE

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Fig. 2

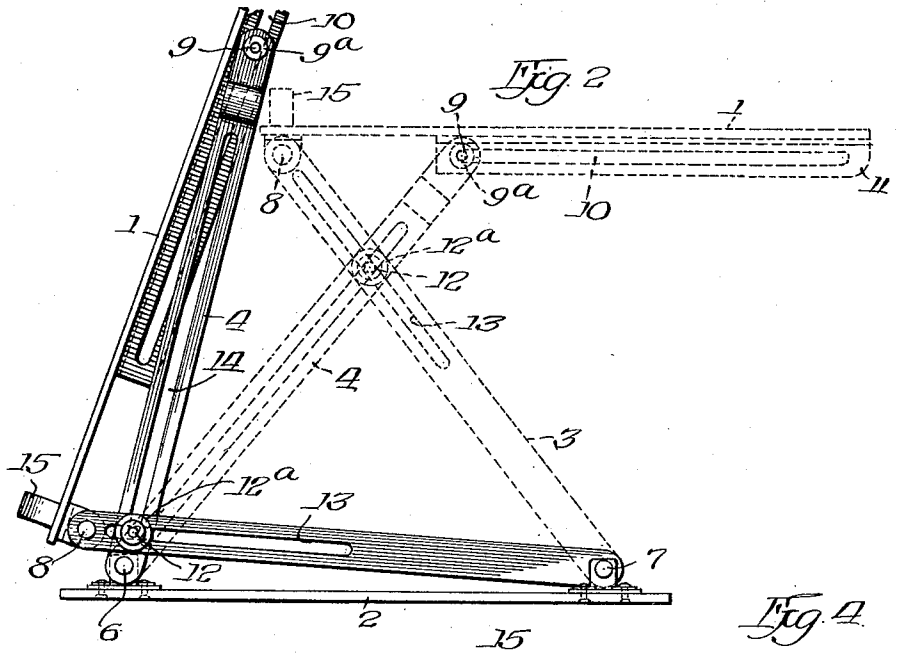
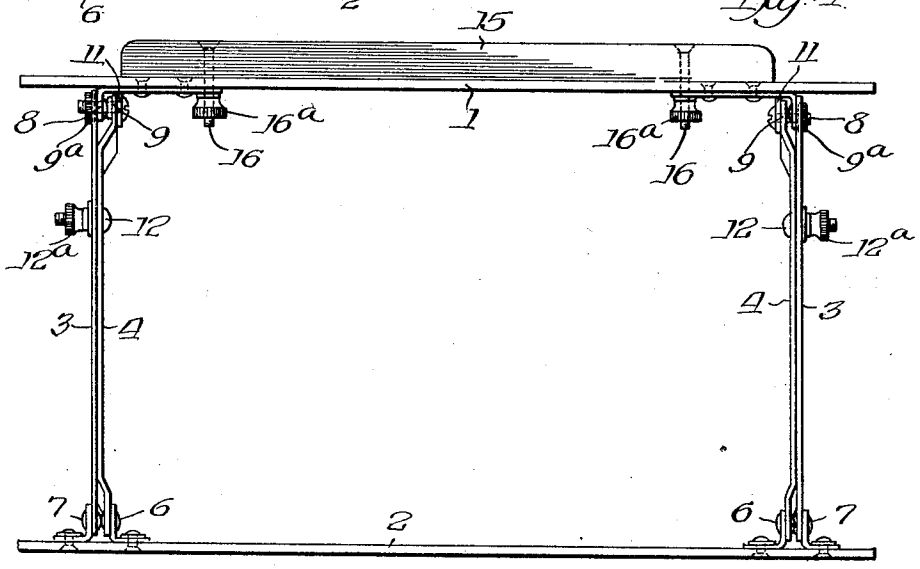


Fig. 4



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Patented Dec. 29, 1931 1,838,856

UNITED STATES PATENT OFFICE

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LAP TABLE

Application filed February 16, 1927. Serial No. 168,499.

This invention relates to tables of the kind which, for the sake of affording ample support for the table when resting upon the lap or elsewhere, has its supporting legs mounted upon a board-like base member; and which, for the purpose of making the table member adjustable in hight from its said base member as well as angularly adjustable, has its legs in the form of connecting links pivoted to the two members which they connect, namely, the table member and the base member, and has some of the pivotal connections adjustable in the plane of the member to which they are connected.

One object of the present invention is to provide a vertically and angularly adjustable system of supporting links between a table and its base which will be of very simple construction, will afford a wider variety of angular adjustment than has been attainable with constructions heretofore known, will render the table more easily adjustable to the various positions which it can assume, and will combine vertical adjustability with angular adjustability in a manner to afford a wide range of vertical adjustment without material change in the angular position of the table.

Another object of the invention is to provide a table which, while having its base member as well as its table member in the form of flat boards and while having adjustment in both the angular presentation of the table member and the height of the table member above the base member, will have its supporting and adjusting links all arranged in pairs, crossed between said members and located in vertical planes extending from front to rear of the table and so related that the rear portion of the table member can swing about a horizontal axis extending from side to side of the front portion of the table member until it attains an approximately vertical upstanding position, or other desired angle of presentation, and then, with or without material departure from said angle of presentation, can be moved bodily to or from the base member in order to change its height about the base member.

Still another object is to provide a table of the kind above described, in which the supporting and adjusting links are all in vertical fore and aft planes located at the lateral margins of the table, so that the upper surface of the base member will be left free and unobstructed for use as a working surface when the table member is upstanding at a substantial angle of elevation, in which position the table member may, if desired, be used as a protecting screen, a means upon which to hang a copy or made to serve any other purpose for which it may be suitable.

The invention proceeds upon the principle of connecting the vertically and fore-and-aft tilting table member with the base member through means of supporting links which together with the members can all collapse into parallel relation, the links being arranged in pairs, all working in vertical planes extending from front to rear of the table, parallel to each other and to the fore-and-aft tilting plane of the table member; the lower ends of links of each pair being pivoted stationarily, to the front and rear margins respectively, of the base member; and the links being crossed between the members so that one link of each pair extends from the rear margin of the base member upwardly and forwardly to the front margin of the table member, while the other link of each pair extends from the front margin of the base member upwardly and rearwardly toward the rear margin of the table member; the upwardly and forwardly extending links being adapted for stationary pivoting to the opposite margins of the two members and providing, by the pivotal connections at their forward ends, the aforesaid swinging axis upon which the table member swings vertically to an upstanding position over the front margin of the base, and providing, by the pivotal connections at their rear ends, the axis upon which the table member through the radius action of said links, may swing bodily upward; the upwardly and rearwardly extending links being adapted for stationary pivoting upon the front margin of the base member, and adapted for both pivoting and fore-and-aft movement relatively to the rear portion of the table member, so as to leave said rear portion un-

restrained in its upward swinging movement; the stationary base pivots of the upwardly and rearwardly extending links being adjacent to the forward pivots of the upwardly and forwardly extending links to cause the upwardly and rearwardly extending links to remain in approximate parallelism with the table member in moving to their upstanding position, and the fore-and-aft movement of their rear ends relatively to the table member being of sufficient range, (preferably extending from the rear portion well past the middle of the table member) to permit the table member to move bodily upward a considerable distance, after attaining its upstanding position with or without material change in its angular relation to the base member; the crossed links of the pairs being, at their crossings, free to move, each in the plane of the other, both longitudinally and laterally; and means being provided for fixing the parts at any selected adjustment.

Preferably, the legs of each pair are pivoted together at the places of their crossing, but their pivots are received by both legs which they connect, through the medium of slots extending longitudinally of the legs in order that the point of intersection may change freely and the described movements may take place, and with the substantial advantage of being able to clamp the legs together at their intersections, after a desired adjustment has been attained and thus render the structure more rigid in any position to which it may be adjusted. In addition to the movements referred to, a table supported from its base in the manner described is also adapted to be moved relatively to the base vertically without changing its parallelism with the base, thereby presenting the table at different heights but in substantially horizontal position and incidentally changing its horizontal offset rearwardly in relation to the base; and the structural conditions described also adapt the table, by swinging about the axis defined by its stationary pivotal connections, to assume, any position intermediate of the upstanding or high elevation and horizontal positions referred to and even a position of rearward depression. The two pairs of crossed legs lie in parallel planes extending from front to rear of the table and spaced apart by approximately the lateral dimension of the device or such proportion thereof as will be sufficient to insure stable support of the table upon the base; the crossed legs are of equal length or so near equal length that they can reach simultaneously from the front and rear margins of the base, respectively, to the rear and front margins of the table member and each pair of legs constitutes a system of mutually bracing links defining the relative positions of the table member and base member, not only by shifting the pivotal connection of one leg or link of each pair upon the member to which it is connected, but by the shift of the links or legs and their interlock relatively to each other. By making the crossed links or legs mutually bracing and self sustaining, the construction is particularly well adapted for the production of links or legs from flat metal stock fashioned in a punch press or equivalent means of cheap quantity production. The construction of crossed, pivotally connected, and slotted supporting legs with combined sliding and pivotal connection in one leg of each pair with the table, adapts the table member to assume a position of depression or inclination at a substantial angle to the horizontal in a direction opposite to the upstanding or inclined position first herein referred to.

In order that the invention may be fully understood, the preferred embodiment thereof will be described with reference to the accompanying drawings, in which—

Figure 1 is an end elevation of the table and base members with their connecting legs in folding or collapsed position.

Figure 2 shows the same parts, from the same view point, after the table member with one leg of each pair has swung to an upstanding angular position about its pivotal connections with the other leg of each pair; said figure also showing in dotted lines the elevation of the table member relatively to the base member while retaining substantial parallelism with the latter.

Figure 3 is a view showing the table member raised from the position of Figure 2 while approximately retaining the relative angle of presentation of its reading surface, in assuming which the upstanding legs have drawn their pivotal connections with the table inwardly along the under side of the table, and the pivotal connections at the crossings of the legs have slid upwardly in the slots of said upstanding legs; and this view also shows in dotted lines a variation of the dotted line position of Figure 2, involving depression of the outer end of the table with replacement of the book supporting ledge; and

Figure 4 is a view from the left of Figure 2, showing the dotted line position of Figure 2 in full lines.

1 represents a table member, and 2 a base member from which said table member is supported. As a means for supporting table member 1 from base member 2 with freedom of elevation and angular adjustment, the present invention employs two pairs of legs 3, 4, the legs of each pair being connected by pivots 6, 7, to the base 2 at points thereon adjacent the respective longitudinal margins of said base; and said links 3 and 4 being also pivotally connected at 8 and 9, respectively, to the table member 1, but of the said pivotal connections 8 and 9, those indicated at 8 are fixed pivots, while those indicated at

9 are movable in the plane of the table member 1, as, for instance, by mounting the said pivots 9 in slots 10 of a cleat or flange 11 secured to said table member. The legs 3 and 4 of each pair are crossed between the table member 1 and the base member 2, and at the places of their crossing they are preferably united by pivots 12 for the purpose of firmly binding the legs together in any relative positions which they may assume in the adjustment of the table member 1, and thereby rendering the structure more rigid in its various positions. In order that the crossed legs may, while thus pivoted together, assume various relative positions, the pivots 12 are received in slots 13 and 14 in the respective legs of the pair, thereby permitting the pivot to move longitudinally of one leg whenever the other leg swings laterally, and at the same time execute such movement longitudinally of the swinging leg as the radius action may involve.

At such number of the pivotal connections, for instance, at moving pivots 9 on the table member and the crossing pivots 12, the pivots are provided with clamping means, such, for instance, as nuts 9*a* and 12*a*, which can be readily loosened to permit adjustment and then tightened to hold the parts in the positions assumed.

The pairs of crossed connecting and supporting legs related to the table and base members as described, the device may assume either a complete folded or collapsed position, such as shown in Figure 1, or any one of the several positions shown by full and dotted lines in Figures 2, 3, and 4. In moving from the position of Figure 1 to the position of Figure 2, table member 1 has its rear or outer margin, together with the legs 4 of the respective pairs, swung upwardly about the pivots 8 as an axis, in the course of which the crossing pivots 12 will travel toward the ends of the slots 13 and 14 and be raised slightly by the distance of the inner end of the slot 14 from the base pivot 6. Having assumed this position, nuts 9*a* and 12*a* may be tightened and the position retained, if found to involve convenient presentation of the supporting surface of the table member 1. Or the table member 1, while retaining an angular position approximating that shown in full lines in Figure 2, may, by the sliding of pivots 9 in the slots 10 of the table member and the sliding of pivots 12 upwardly in the slots 14 of the legs 4, assume an elevation similar to that shown in the full line position of Figure 3, or any position intermediate of the full line positions of Figures 2 and 3. Having assumed the full line position of Figure 3, and the nuts 9*a* and 12*a* being loosened, the uppermost or outer margin of the table member 1 may be depressed without materially changing the relative positions of the pivots 8 and 9, but with sliding movement of pivot 12 in the slot 13, and thereby bring the table into the horizontal position shown in dotted lines in Figure 2. By continuing depression of the outer margin of the table member 1 from the position shown in dotted lines in Figure 2, pivot 12 may be further displaced downwardly in slot 13, and pivot 9 may move in slot 10 a distance to bring the table into a position of depression and presentation of its supporting surface in the opposite direction to that involved in Figures 2 and 3.

15 represents a supporting ledge, preferably provided upon the table member 1, and suitable in position and dimensions to prevent reading matter or any other object which the table is used to support, from sliding off the table member when the latter is at a substantial angle of elevation. This supporting ledge may be secured in a manner to render it readily removable, as, for instance, through means of studs 16 carrying removable nuts 16*a* (Figure 4). If the table member is given an angle of depression such as suggested by dotted lines in Figure 3, the supporting ledge 15 will be changed to the position 15*x* as shown.

We claim:

1. A collapsible and reversible lap-table, comprising boards, a pair of primary connecting members each having fixed pivotal connections with both of the boards, a pair of secondary connecting members crossing the primary connecting members, and each having pivotal connection with one of the boards, means connecting the opposite end portions of each of the secondary connecting members with the other board, for both pivotal and transverse movement of the last-mentioned end portions relative to the said other board, at least one member of each pair of connecting members being movable along the other, and means for locking said connecting members against pivotal movement relative to the boards.

2. A collapsible lap table, comprising a base board and a table board, a pair of connecting members having fixed pivotal connections at their ends with the rear portion of the base board and the forward portion of the table board, a second pair of connecting members pivotally connected at their ends with the forward portion of the base board and the rear portion of the table board, the pivotal connections with the rear portion of the table board being slidable forwardly and rearwardly on the table board, the connecting members of one pair being disposed across the connecting members of the other pair, and locking means at the crossing points of the member slidable longitudinally of the members and adapted to adjustably connect the crossed members together and to permit relative adjustment of the boards.

3. A collapsible and reversible lap table, comprising two boards, two primary connecting members each having fixed pivotal connections with the boards, two secondary connecting members each having pivotal connections with the boards, said last mentioned connections with one of the boards being movable relative thereto, said secondary connecting members being disposed across the primary connecting members, and locking means at the intersecting points and slidable longitudinally of the members for adjustably connecting the crossed members together in pairs and to permit relative adjustment of the boards.

4. In a collapsible table a base board, a table board, a primary support between said boards, comprising a pair of legs, each having at its ends fixed pivotal connection, respectively, with the rear portion of the base board and the forward portion of the table board, said legs, by their vertical swinging movement, affording bodily vertical adjustment of the table board to different heights above the base board, a secondary support between said boards comprising legs crossing the legs of the primary support and having pivotal connections with the respective boards at points offset forwardly and rearwardly of said fixed pivotal connections, said secondary support having, in addition to its pivotal connections with said boards, a yielding movement relatively to the table board which releases the table board to vertical swinging movement in assuming angular adjustment, upon its primary support, pivotal connections between the legs at their crossings adapted to shift their positions in response to the height adjustment and angular adjustment of the table board, and means for releasably locking the legs of one support against movement relatively to those of the other support and thereby hold the table to its adjustments.

5. A collapsible table as described in claim 4, in which the yielding of the secondary support and the shifting of the crossing pivots have ranges of movement which permit the table member to swing about its pivots on the primary support, from collapsed position to approximately vertical position and then by the swinging of its primary support, move bodily upward while maintaining its upstanding position.

Signed at Oak Park, Illinois this 14th day of February, 1927.

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