July 29, 1952 E. LAXO 2,605,156

SELF-LOCKING MECHANISM FOR TILTING TOP DRAFTING TABLES

Filed June 3, 1950

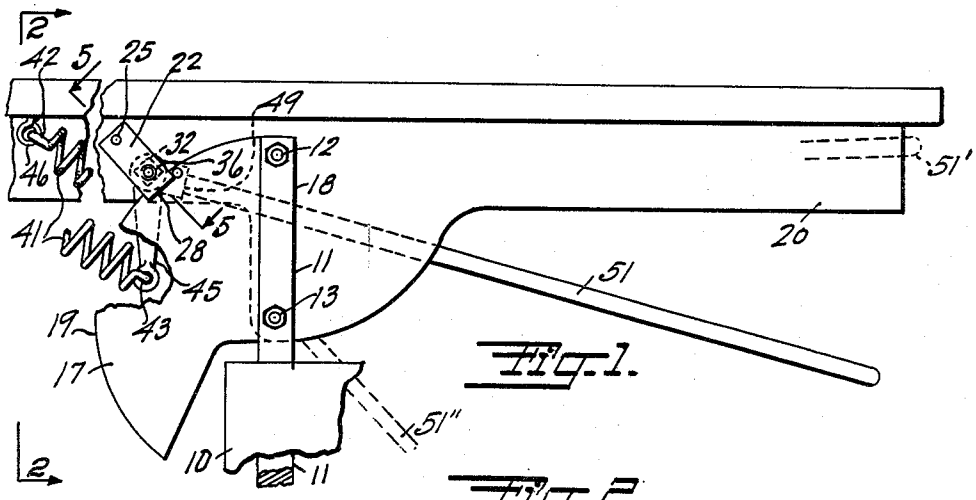


Fig. 1.

Fig. 2.

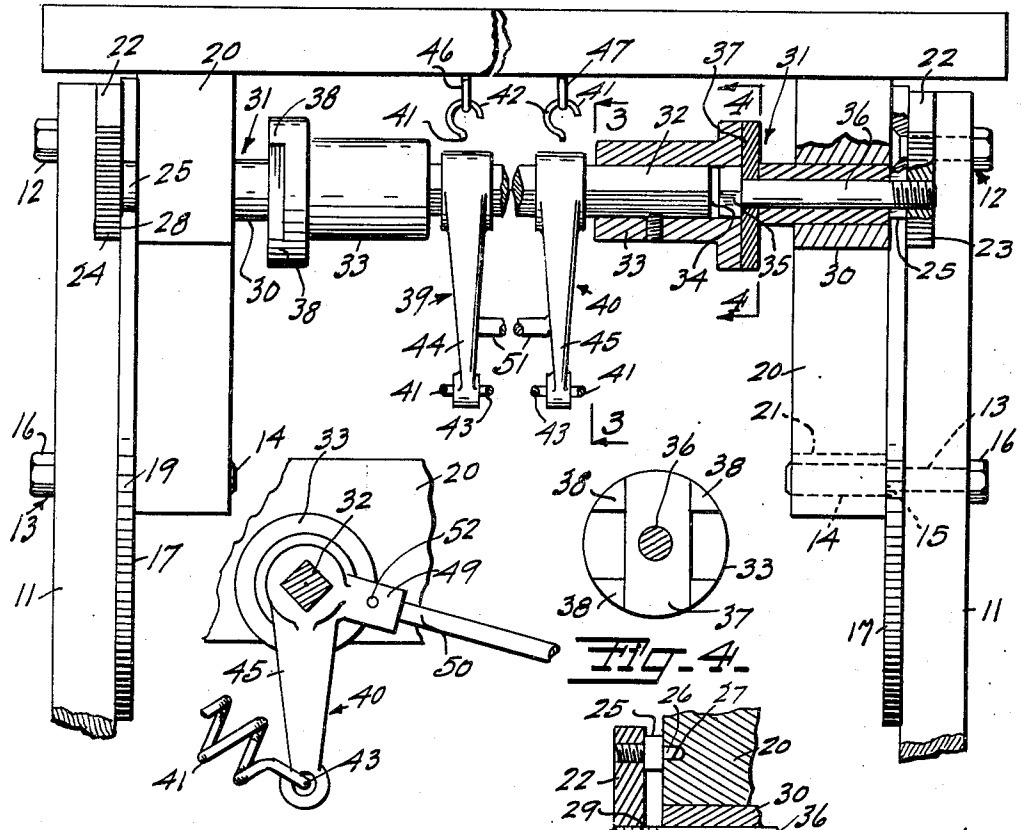


Fig. 3.

Fig. 4.

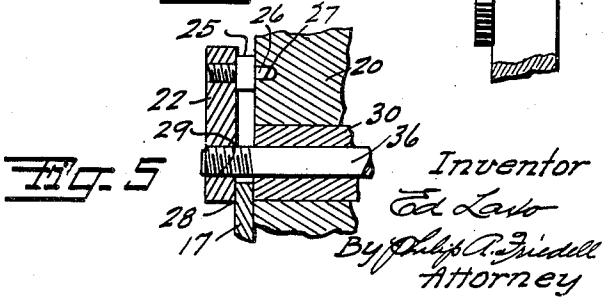


Fig. 5.

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Patented July 29, 1952

2,605,156

UNITED STATES PATENT OFFICE

2,605,156

SELF-LOCKING MECHANISM FOR TILTING TOP DRAFTING TABLES

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Application June 3, 1950, Serial No. 165,951

7 Claims. (Cl. 311—38)

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This invention relates to improvements in tilt adjustments of drafting tables and provides a quick-acting self-locking apparatus by which a drafting table can be adjusted to any desired inclination by merely gripping an operating lever and the table simultaneously and manually adjusting the table to the desired angle and releasing the operating lever which when released automatically locks the table in the instant adjusted position.

This invention is an improvement over the table tilting arrangement disclosed in my copending application Serial Number 70,089, filed January 10, 1949, because of its simplicity in design and arrangement and the method of operation and more secure locking.

This invention provides a drafting table which may be adjusted at will to any desired angularity, from level to almost vertical so as to function as an easel if desired as well as to provide easy access to all parts of the board when large drawings are executed, and which adjustment can be executed almost instantly.

The objects and advantages of the invention are as follows:

First, to provide a drafting board which can be adjusted to any desired degree of angularity from level to substantially vertical at will.

Second, to provide a drafting board as outlined which will maintain a level position transversely irrespective of such angular adjustments.

Third, to provide angular adjusting means for a drafting board including a manually operable release lever for releasing the locking means and which automatically locks the drafting board in the instant angularly adjusted position when the release lever is released.

Fourth, to provide angular adjusting means as outlined which is relatively simple in construction, instantly operable, and positive in action, and which is composed of a minimum number of parts for efficient operation.

In describing the invention reference will be had to the accompanying drawings, in which:

Fig. 1 is a fragmentary side elevation of a drafting board with the invention applied thereto.

Fig. 2 is a rear elevation viewed in the direction 2—2 of Fig. 1 and shown on an enlarged scale with parts shown in section.

Fig. 3 is a section taken on line 3—3 of Fig. 2.

Fig. 4 is a section taken on line 4—4 of Fig. 2.

Fig. 5 is a section taken on line 5—5 of Fig. 1.

The invention includes a supporting structure 10 having standards 11 which may be fixed or may be adjustable vertically (as disclosed in the

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previously mentioned copending application and which adjustment does not constitute a part of the present invention).

Fixedly secured to the upper end of each standard is one element of the locking device, being secured at two points as indicated at 12 and 13, the upper securing means 12 being indicated as a bolt, though it may be secured by any other suitable means, while the lower securing means consists of a bolt which terminates at one end in a long cylindrical head 14 to function as a pivot and having a shoulder 15 to seat on the one element of the locking device which is secured to the standard by the nut 16, this one element of the locking device consisting of a flat disc segment 17 one edge of which is coincident with one side of the standard as indicated at 18, the other side being formed to substantially a semi-circle as indicated at 19 to permit adjustment close to a right angle and being formed of flat steel plate or other suitable material.

The drafting board supporting frame 20 is supported on the pivots 14, through a bushing 21 which assures uniform action without binding or play which might occur if supported directly on the wood. Thus the supporting frame will rock in either direction on these pivots.

The means for locking the board in any adjusted position consists of a clamp 22 for each end of the frame as indicated at 23 and 24, each consisting of a flat metal strip with a fulcrum 25 secured in one end and having a plug end 26 to fit in a hole 27 provided in the frame, with the other end bearing on the disc element as indicated at 28. A tapped hole 29 is provided adjacent the other end for the clamping screw, the tapped holes in the two clamps having respectively right and left hand threads.

A bushing 30 is mounted in each frame member in axial alignment with the threaded hole in the clamp member and has a length greater than the thickness through the frame member 20 so as to amply clear the inside of the frame member as indicated at 31 so as to assure positive clamping action irrespective of any swelling of the wood.

The actuating means operates on the order of a double end socket wrench and consists of a shaft 32 which has a socket 33 fixed on each end with the end of the shaft terminating in spaced relation inwardly from the end of the socket as indicated at 34, leaving ample space with clearance to the end for the head 35 of a screw 36 which operates in the tapped hole 29 in the clamp. A washer 37 is interposed between the head of the bolt and the bushing 30, the bolts

respectively having right and left hand threads, the socket having projections 38 to prevent relative rotation of the washer.

Mounted on the shaft are two bell crank levers 39 and 40, with tension springs 41 having their respective ends 42 and 43 connected respectively to the arms 44 and 45 of the main lever, and to suitable fastening means 46 and 47 provided on the board supporting frame or on the drawing board as shown; the other arm of each bellcrank lever consisting of a socket 49 in which the respective ends 50 of the U-shaped control lever 51 are secured as indicated at 52, the cross bar of this lever projecting substantially to the front and extending throughout the major portion of the length of the table for simultaneous gripping of the front of the drawing table and the cross bar.

As will be noted, the board supporting frame is free to swing about the pivots 14 and the clamp 23 moves with this frame, skirting the circular portion of the disc 17. When the lever 51 is released, the springs 41 turn the shaft 32, which in turn, through the sockets 33 turn the bolts 36, screwing them into the clamp and drawing the clamp against the disc to lock the disc in the instant position.

To adjust the drawing board to any specific angle, the lever 51 is lifted and brought up to the board to the position indicated at 51' where the board and the lever can be simultaneously grasped by one hand to retain the board free for adjustment and for manual urgence of the board to the desired angle, at which time the lever is merely released, the springs snapping it down assisted by the weight of the lever to the dotted position indicated at 51'', and tightening the clamps. Thus the apparatus is self-locking by merely releasing the lever and which can be done without releasing the grip on the board.

I claim:

1. A drawing table having standards and a frame pivotally supported by said standards on a horizontal axis and manually adjustable to any desired inclination at will; locking means for locking said frame in adjusted position comprising; clamping means cooperative between said standards and said frame and including each a clamp element; respective right and left hand screws cooperative with said clamp elements; a double ended socket wrench cooperating with said screws; spring means cooperative between said socket wrench and said frame for urging said socket wrench for tightening said screws in said clamp elements, and a manually operable lever for releasing said screws and the clamp elements controlled thereby against the urgence of said spring means, with said spring means locking said clamp elements when said lever is released.

2. A structure as defined in claim 1; said clamping means comprising a disc segment fixed on each standard; said clamp elements having one end engaging over the edge of said disc segments and a fulcrum at the other end with said screws operating in tapped bores provided closely adjacent to and with the screws clearing the edge of the disc.

3. Self-locking means for a drawing table having a frame and standards having pivotal means for supporting said frame, comprising; a substantially semi-circular plate fixed to each standard; a clamp having one end engaging said plate and having a fulcrum at the other end engaged in the frame, and having a threaded bore formed adjacent to and clearing the peripheral edge of the plate; a screw for each clamp; a double ended socket wrench cooperating with said screws; spring means for urging said socket wrench to tighten said screws in said clamps; and a manually operable lever fixed on said shaft for loosening said screws to release the clamp with said spring means tightening said screws when said lever is released.

4. Self-locking means for a drawing table having standards and a frame pivotally supported by said standards on a horizontal axis comprising; a substantially semi-circular plate fixed to each standard and having their axes coincident with the pivotal support for the frame; a clamp for each plate and having one end cooperating with the edge portion of the plate and having a fulcrum at the other end, and each provided with a tapped bore adjacent to and clearing the edge of the plate; a screw for each clamp and having a head; a bushing for each screw and having a in said frame; a washer interposed between the length greater than the thickness of and mounted head of each screw and its bushing; a shaft having a socket at each end and engaging the heads of the respective screws and including means retaining said washers against relative rotation with said heads slidable and non-rotatable in said sockets; a spring lever on said shaft adjacent each socket and a spring cooperating between each lever and said frame; and a U-shaped manually operable lever having its respective legs fixed in the respective spring levers and with its cross bar projecting substantially to the front of and extending throughout the major portion of the length of the drawing table when in clamp releasing position for simultaneous gripping of the lever with the clamps released, and of the table for angular adjustment, with said springs operating said screws to clamp the table in adjusted position when the manually operable lever is released.

5. An automatically adjustable tilting drafting table comprising a pair of spaced, vertical, stationary frame members; a drafting board; means pivotally mounting the drafting board on the frame members for swinging about a horizontal axis; a clamping member for each frame member, each said clamping member being fixed to the drafting board; a screw member for and in threaded engagement with each clamping member, said screw members being oppositely threaded and being operable, when rotated in one direction, to clamp the clamping members to the frame members and, when rotated in the opposite direction, to release the clamping members from the frame members to allow rotation of the drafting board.

6. An automatically adjustable, tilting drafting table comprising a pair of spaced upright stationary frame members; a drafting board; means pivotally mounting the drafting board on the frame members for swinging about a horizontal axis; a clamping member for each frame member, said clamping members being fixed to the drafting board on opposite sides thereof for cooperation with the frame members; a screw member for each clamping member, one of said screw members having a left-hand thread and the other having a right-hand thread, each said screw member being in threaded engagement with its clamping member, said screw members being arranged in axial alignment with one another; a shaft extending between and fixed to said screw members to rotate the same; means for rotating said shaft manually; and spring

means fixed at one end to the shaft and at the other end to said drafting board to rotate said shaft in a direction to clamp said clamping members to the frame members.

7. An automatically adjustable, tilting drafting table comprising a pair of spaced, upright stationary frame members; a drafting board; spaced, depending members fixed to the drafting board on opposite sides thereof; means pivotally mounting the depending members on the frame members for swinging the drafting board about a horizontal axis; a plate interposed between each depending member and the adjacent frame member; a clamp for each of said plates, each said clamp being fixed to the drafting board and having a portion thereof adjacent said plate; a screw for each clamp and in threaded engagement therewith, said screws being arranged in axial alignment and being oppositely threaded; a shaft and an operating handle therefor for operating said screws to

clamp the clamping members to said plates when rotated in one direction and to release the same from said plates when rotated in the opposite direction; and resilient means for normally urging said shaft in said first mentioned direction.

ED LAXO.

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