TILTABLE DRAFTING BOARD SUPPORT MEANS

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10 Claims. (Cl. 45—131)

This invention relates to tiltable drafting board support means and more particularly such as is shown in our joint application with Paul L. Paulsen, Serial No. 713,677, filed February 6, 1958, now Patent No. 2,899,772, issued August 18, 1959, the present application being a division thereof.

By means of the present subject-matter, the tiltable drawing board may be readily releasably locked in any desired angular position with respect to its supporting stand and it is also automatically releasably locked in a given selected predetermined angular position.

The present invention meets the need for quick but positive adjustability of the angle of the drawing board thereby conserving the time of the draftsman or engineer using the equipment.

Other objects and advantages will be apparent from the following description taken together with the accompanying drawings, illustrating an embodiment of our invention and in which drawings—

Figure 1 is a perspective view of a tiltable drafting board and supporting stand with which the invention is shown associated;

Figure 2 is an enlarged end elevation view of the board and stand shown in Fig. 1, showing in full lines the board lowered to horizontal position and in dotted lines the board raised to vertical position;

Figure 3 is a view of mechanism shown in Fig. 2 on a still larger scale, and also being a sectional view on the lines 3—3 of Fig. 4, showing in full lines the position of the mechanism when the board is at the angle shown in Fig. 1, an alternative position of some of the parts being shown in broken line;

Figure 4 is a face view of parts shown in Fig. 3 and being a section taken on the lines 4—4 of Fig. 3;

Fig. 5 is a cross section further enlarged taken on the lines 5—5 of Fig. 4; and

Fig. 6 is a fragmentary perspective view of parts shown in the other figures.

Referring in detail to the illustrative construction shown in the drawing, the numeral 21 indicates base or support for the drawing board 23a that is angularly tiltable on the base 21, the drawing board being carried by a frame 23 by means of brackets 24 secured to a corner of the stand as at 26 and which journal the shaft 28 of the frame as more particularly shown in pending application of Paul L. Paulsen et al., Serial No. 691,774, filed October 22, 1957, now Patent No. 2,928,703, issued March 15, 1960. Base 21 may also be a support at one end of a desk 22. The support rod 112 for the drawing board is articulated with the drawing board frame 23 as at 111, at one end and, at its other or lower end, passes through the transversely elongated slot 113 in the base stand part 114 where it is engaged by the releasable retaining mechanism 115 of the present invention, the latter being manually actuable by a knob 116 or hand wheel 116 accessible on the outer face of the stand pedestal 114 as next more particularly described.

The stand or pedestal part 114 of the base 21 is shown of box formation and has the parallel side walls 117 and 118. In the wall 117 is an opening 119 reinforced by a collar 119a in which is a bushing 119b.

When the knob 116 is rotated in a counterclockwise direction the shank 122 is partially unscrewed from the arbor 120 and the inner tube 129 is then free to move, under the influence of the support rod 112 into the pair of holes 131 with the pair of holes 132, so that the support rod may move freely therethrough. Since the tubes 124—129 are rotatable in the stand walls 117 and 118 they adjust themselves to angular movements of support rod 112, as indicated in Figs. 2 and 3. When, however, the knob 116 is rotated in a clockwise direction the shank 122 is screwed inwardly into abutment with the closure 130 of the inner tube 129, which moves the latter axially of the outer tube 124 to tend to place the pair of holes 131 and the pair of holes 132, respectively, out of register and thus to pinch the support rod 112 and grip it against movement, thereby causing it to support the board frame in any selectable angular or tilted position, from a horizontal position as shown in full lines in Fig. 2 to a vertical position as shown in broken lines in Fig. 2.

An intermediate angular position for the frame and drawing board shown in Fig. 1 is one of say 55 degrees from the horizontal, this being an angular or tilted adjustment frequently used, and it has been found desirable to provide a releasable stop for the drawing board frame in this position. To this end, the latter rotatable tube 124 has passed thereto a hanger member 133a having parallel sides 133 and a front piece 134 that is of channel shape and is here shown welded to the sides 133 as at 135. Circular perforations 136 in the sides 133 permit hanger 133a to ride loosely on the outer tube 124, the sides 133 of the hanger straddling the support rod 112 and support rod holes 131 and 132. A washer 137 on the rod 112 that rides between and in contact with the sides 133 keeps the hanger 133a aligned with the rod.

The front 134 of the hanger is continued longitudinally in the direction of the rod 112, in both directions from the tube 124, and has a longitudinally elongated slot 138 in its lower face. At the lower end of the rod 112 is shown a ferrule 139 that is held on the rod by a set screw 140 and that carries a button 141. Slot 138 is in the path of the button 141 in longitudinal movements of the rod 112, the portion of the hanger front 134 that has the slot 138 therein thus providing a detent button 142 for cooperation with the button 141. The lower end of this detent portion 142 is turned outwardly as at 142a so that as the drawing board frame is raised from the horizontal position shown in full lines in Fig. 2 to say the 55° or more position shown in Fig. 1, the button 141 engages the cam surface 143 of the detent and swings the detent away from the support rod until the button 141 rides into the slot 138. Since the lower
end of the detent is heavier than its upper end it hangs away from the lower end of the support rod in the horizontal position of the drawing board frame and since the board is raised to an angular position the support rod and its lower end is in the direction of the detent, the slot 138 and the button 141 are interengaged. After such interengagement, as shown in Fig. 3, the board may then be lowered to the 55° position and held in the position so long as the detent 142 is engaged with button 141. Slot 138 is long enough so that the button 141 may ride therein while permitting raising of the drawing board to the vertical position.

When it is desired to lower the drawing board to less than a 55° angle from the horizontal, the upper end of the detent 142 is manipulated by a finger of the draftsman acting upon the fingerpiece 144 of the detent 142 to rock detent 142 into dotted line position in Fig. 3. Fingerpiece 144 extends upwardly through the opening 113 in the stand in the angular positions of the frame. By drawing the fingerpiece 144 toward the rod the lower end of the detent is canted outwardly and the button 141 is released from the slot 138, permitting lowering of the drawing board further toward the horizontal. As the drawing board moves toward the horizontal from the 55° angle the rod 112 again oscillates in the opposite direction depressing the finger piece 144 below the upper surface of the stand, but this is not objectionable since the fingerpiece 144 need only be manipulated when the support rod 112 is in the position which it occupies when the drawing board is at the 55° angle.

In the lowermost position of the drawing board and frame as shown in full lines in Fig. 2, the detent 142 again may, by gravity, swing away from the support rod 112, the lower end of the support rod 112 being at this time swung to the left from its position shown in Fig. 3 to its position as shown in full lines in Fig. 2.

Since a large size board is here contemplated, having considerable weight, means are provided for counter-balancing at least a part of the weight of the drawing board and frame as the board and frame are lowered to the horizontal, such means being here illustrated by the coil spring 145 carried by encirclement on the rod 112 in abutment with the washer 137 which is between the hanger sides 133, this washer 137 thereby serving a dual purpose. At its other end the coil spring 145 in its extended state, extends upwardly on the rod 112 in position to be contacted by the frame so that, when the frame is dropped, the spring 145 is placed under compression, resisting but not preventing downward movement of the frame and board and thereby cushioning the drop of the latter, spring 145 being placed under further compression as the frame is moved to the horizontal.

The invention having been described such changes may be made as fall within the scope of the appended claims without departing therefrom.

What is here claimed is:

1. In drafting board mechanism of the class described, a pair of walls, an outer tube having rotatable bearings in said walls respectively, an inner tube slideable in the outer tube, registering diametrically opposite pairs of holes in said inner and outer tubes, a rod passing through said holes, a screw axially threaded in said outer tube engaging said inner tube, whereby said screw may be turned in one direction to move the inner tube with respect to the outer tube to place the holes of the pairs of the holes respectively out of register to grip said rod or the screw may be loosened to permit said holes of the pairs of holes to register under the influence of said rod to permit sliding movement of the rod with respect to the rod.

2. The structure of claim 1 wherein the tubes rockably carry a hanger member having side walls perforated for the free movement of said outer tube therein and a bight portion extended to provide a detent element, a longitudinally elongated slot in said detent element, and a button on said rod cooperating with said slot to releasably prevent downward movement of the rod in the tube.

3. The structure of claim 2 wherein the lower end of the detent is turned outwardly and the upper surface permitting said button to pass by the detent in upward movement of the rod.

4. In tiltable support means for use with a base and a board pivotally mounted thereon and a support rod articulated with the board, the combination of, means on the base for engaging the rod therewith, a hanger carried by said means oscillatable thereon, said hanger having sides straddling the rod and having a lower end extending in the direction of the lower end of the rod, interengaging slot and button elements on the hanger lower end rod and rod jointly interengageable when the lower end of the hanger is moved into position against the lower end of the rod, said button being engaged by the lower end of said slot to limit downward movement of the rod, said hanger having an upper end extending in the direction of the upper end of the rod for tripping the hanger to disengage said slot and button interconnection, to permit further downward movement of the rod from said predetermined position, the rod being freely movable in a direction upwardly from said predetermined position by movement of said button in said slot.

5. In tiltable support means for use with a base and a board pivotally mounted thereon and a support rod for the board articulated at its upper end therewith and passing downwardly into said base, the combination of, means including a pair of axially relatively movable tubes passing said rod therethrough for gripping the rod to maintain the board in a selective angular position, and means including a hanger member carried by said means and oscillatable with respect to the rod, and a slot and button interconnection jointly carried by said rod and hanger detent for releasably fixing the board in a predetermined angular position against downward movement while permitting further free upward movement from said predetermined position.

6. The structure of claim 5 wherein said hanger detent is channel shape facing said rod.

7. In tiltable support means for use with a base and a board pivotally mounted thereon and a support rod for the board articulated at its upper end therewith and passing downwardly into said base, the combination of, means including a pair of axially relatively movable tubes passing said rod therethrough for gripping the rod to maintain the board in a selective angular position, and means including a hanger member carried by said means and oscillatable with respect to the rod, and a slot and button interconnection jointly carried by said rod and hanger detent for releasably fixing the board in a predetermined angular position against downward movement while permitting further free upward movement from said predetermined position.

8. The structure of claim 7 wherein there is a washer on the rod riding said tube between said hanger sides to locate the hanger with the rod medially thereof.

9. The structure of claim 7 wherein the hanger has a fingerpiece at its upper end passing through a slot in the base for rocking the hanger to disengage said button and slot interconnection.

10. The structure of claim 8 wherein said washer serves as an abutment for a coil spring on the rod engaging with the board to cushion the downward movement of the latter.

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UNITED STATES PATENT OFFICE
CERTIFICATION OF CORRECTION

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It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 2, line 46, for "pased" read -- passed --; line 55, after "front" insert -- piece --; column 3, line 8, for "the", second occurrence, read -- that --; line 28, for "mainipulated" read -- manipulated --; column 4, line 2, for "downward" read -- downwardly --; line 5, for "butaon" read -- button --; same line 5, for "upward" read -- upwardly --; line 24, for "predetermined" read -- predetermined --.

Signed and sealed this 1st day of August 1961.

(SEAL)
Attest:

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