A. J. HAUG.

DRAWING BOARD.

APPLICATION FILED DEC. 2, 1916.

1,354,743.

Patented Oct. 5, 1920.

2 SHEETS—SHEET 1.

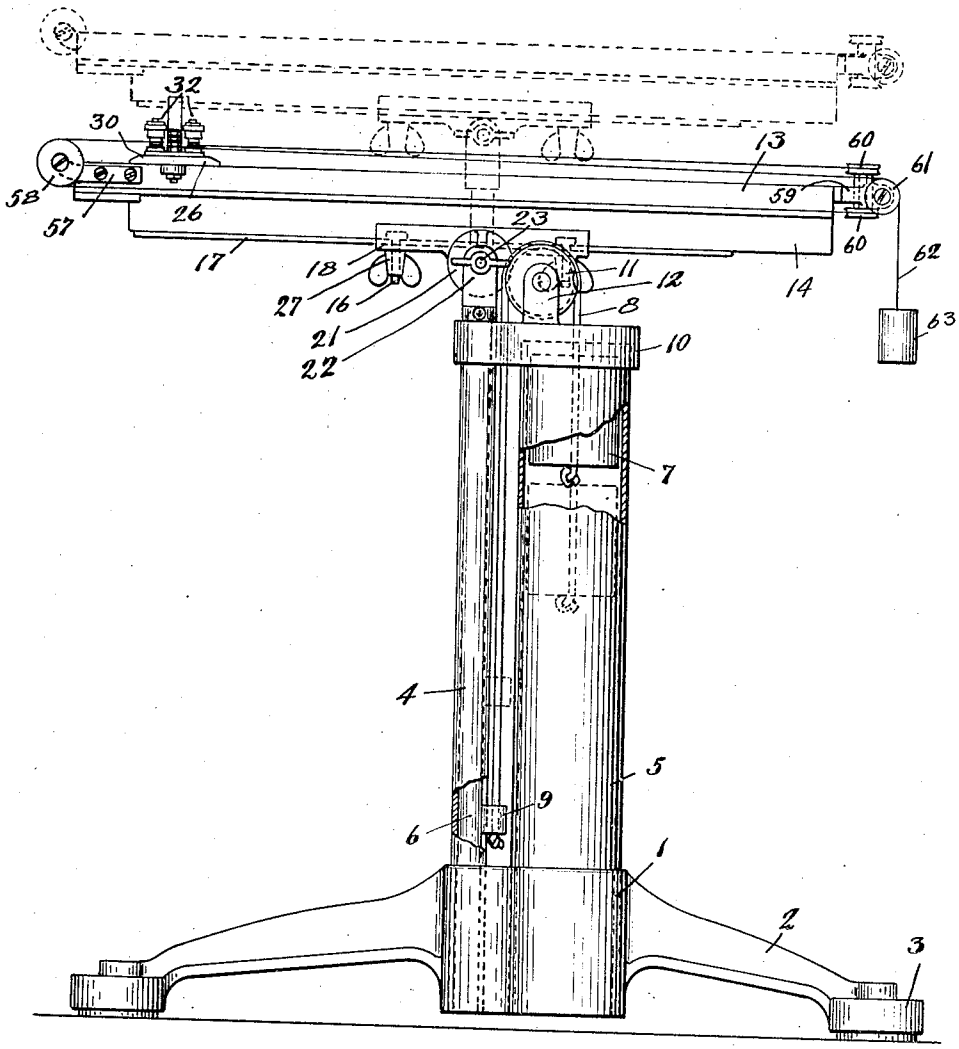


Fig. 1.

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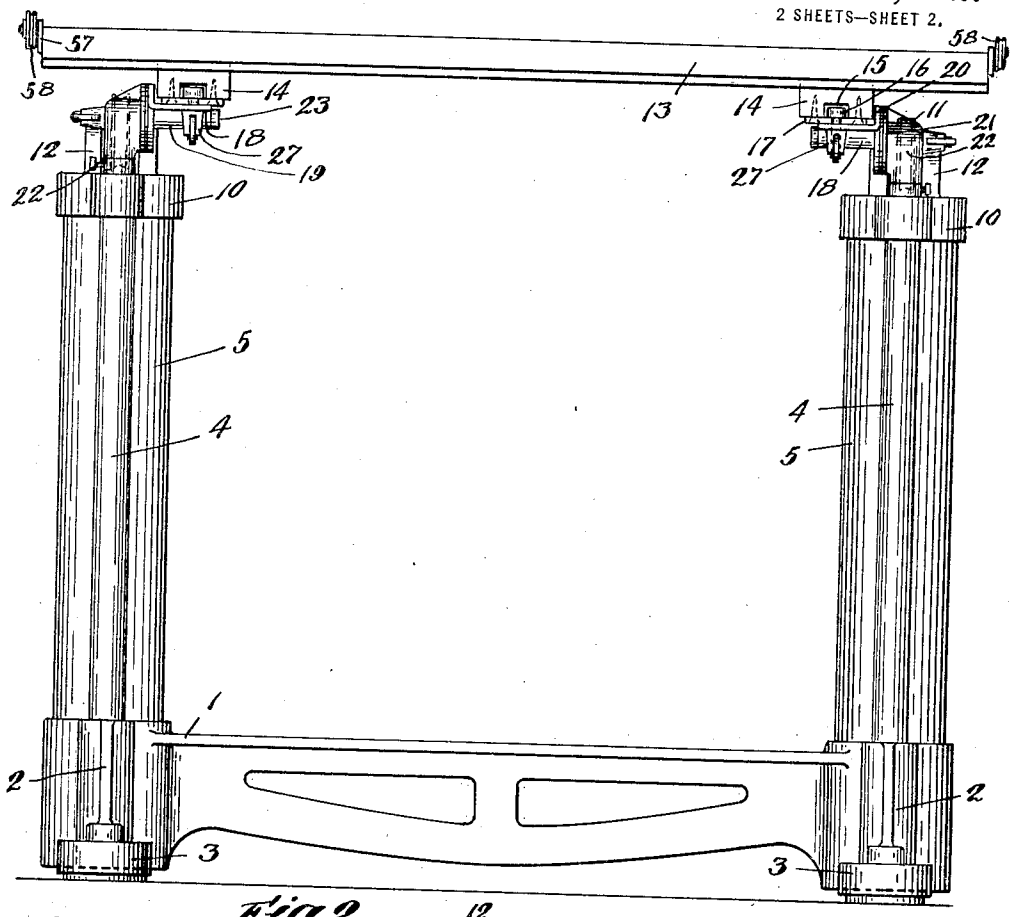


Fig. 2.

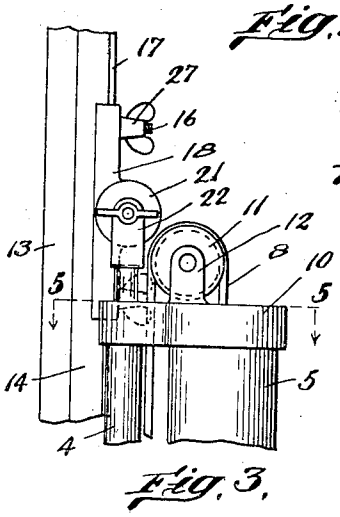


Fig. 3.

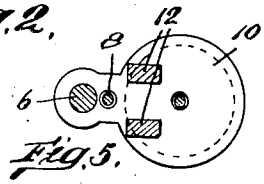


Fig. 5.

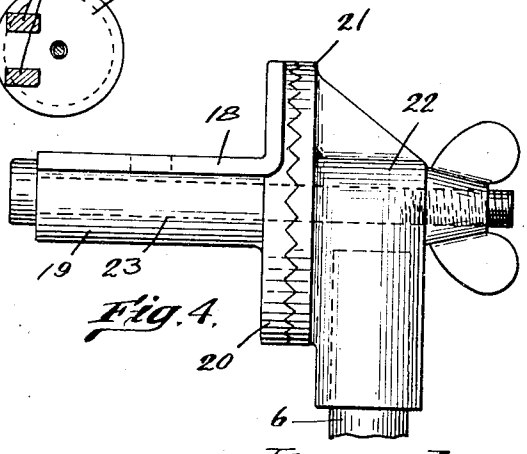


Fig. 4.

Inventor,

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UNITED STATES PATENT OFFICE.

ANTON J. HAUG, OF NASHUA, NEW HAMPSHIRE.

DRAWING-BOARD.

1,354,743. Specification of Letters Patent. Patented Oct. 5, 1920.

Application filed December 2, 1916. Serial No. 134,592.

To all whom it may concern:

Be it known that I, ANTON J. HAUG, a citizen of the United States, residing at Nashua, in the county of Hillsborough and State of New Hampshire, have invented an Improvement in Drawing-Boards, of which the following is a specification.

The invention relates to an improvement in drawing boards of the self-supported type, wherein a variety of adjustments are provided for.

The improved board is mounted with relation to a portable stand and self-balanced in such mounting, so that the board may readily be bodily adjusted to any height within the designed limits, and may be tilted with relation to the stand to any position from and including a horizontal position or a full vertical position.

The improved board comprises a stand having a plurality of fixed tubular uprights, certain of which carry guide-rods, on the upper end of which the board proper is mounted for a pivotal and sliding movement, the remaining uprights of the stand serving as housings for weights, joined through flexible connectors to the guiding rods of the board, to balance the board in its bodily vertical movement with respect to the stand. The mounting of the board for height movement is such that the board is constrained to move in a predetermined plane. The pivotal mounting of the board with relation to the guide rods is such as to permit the board to be adjusted on said pivots to a full vertical position, a full horizontal position, or any intermediate position.

In the drawings:—

Figure 1 is a side elevation, partly in section, illustrating the improved board, an adjusted position of the board being shown in dotted outline.

Fig. 2 is a front elevation of the same.

Fig. 3 is a broken elevation illustrating principally the board in a full upright or completely vertical section.

Fig. 4 is an enlarged detail illustrating the clamping connection for securing the board at desired inclination with respect to the stand.

Fig. 5 is a section on line 5—5 of Fig. 3.

The improved board, as illustrated, includes a stand 1, comprising a base 2, of appropriate spread, having feet or floor-engaging portions 3. Rising from the base are tubular uprights 4 and 5, arranged in pairs at each end of the base, the former being of materially less diameter than the latter. The uprights 4, which, considered from the front of the board, are arranged in advance of the uprights 5, serve as guiding uprights for the vertical bodily or height movement of the board, each of said uprights being for this purpose provided with a guide rod 6, telescopically arranged therein, to the upper end of which the board is pivoted in a manner to be later described. The uprights 5 serve merely as housings for the board counterbalancing means, there being provided for this purpose appropriate weights 7, slidably mounted within each of said uprights 5, which weights are connected by flexible connectors 8, to lugs 9 projecting laterally from the rods 6, preferably near the lower end of the latter, the uprights 4 being slotted longitudinally to permit the disposition of the lugs beyond the uprights, for convenience in securing the connector thereto. The uprights 4 and 5 are of similar height, and each pair are both closed at the upper ends by a single cap 10, on which is secured a pulley 11, mounted in ears 12 rising from the cap, the cap being appropriately formed with openings to permit the passage of the connector 8 therethrough, which connector leads over the pulley.

The drawing board proper, shown at 13, is designed to be of any usual or desired type. The board is mounted for appropriate sliding movement through strips 14 secured to the lower surfaces of the board and in which strips and throughout the length thereof, are formed slots 15. Connecting bolts 16 have their heads of an appropriate size to be slidably received in the slots 15, in the strips, plates 17 being secured to the under side of the strips alined with slots 15, but of a size to receive the shanks of the bolts 16. The strips and plates in this particular formation provide a convenient way of forming T-formed slots to receive the

connecting bolts, and prevent other than a sliding movement of the latter with relation to the strips, so that it is to be understood that any specific forms to secure this end may be used.

The bolts below the strips extend through brackets 18, there being one such bracket for each strip. Each bracket is of right-angle formation, as shown, the connecting bolts passing through the horizontal portion of the bracket and the vertical portion thereof bearing against one side-wall of the strip to further guide the parts in the permitted adjustment. The terminals of the bolts are provided with thumb-nuts or equivalents 27 to secure the brackets and strips in fixed relation following desired sliding adjustment of the board. The bracket includes a connecting sleeve 19 arranged transversely and centrally of the horizontal portion thereof, and in line with the sleeve there is formed one member 20, of a conventional type of clamping disk, the opposing and similar member 21 of which is carried upon a connector 22, removably fixed upon the upper end of the guide-rod 6. The connector 22 and bracket 18 are connected for pivotal movement by a rod 23, extending through the sleeve 19, and through an appropriate bearing formation of the connector, a wing nut 24 on the rod end serving to secure the respective members of the clamping disk in relative positions against independent movement, when desired. The members 20 and 21 of the clamping disk are here shown as having their proximate faces serrated or formed with teeth to secure an interlocking coöperation when it is desired to fix the bracket and the connector in adjusted relation though other usual constructions are contemplated. The board, as an entirety, is thus capable of vertical or height movement within the limits of the structure, and guided in such movements through the rods 6, the weights 7 acting to counterbalance the weight of the board and carried parts, so that such board will remain at any desired height. Furthermore, by reason of the bracket mounting with respect to the connector 22, the board is readily adjustable to any inclination with respect to the stand, from the horizontal position to a full vertical position, and, of course, capable of being locked in adjusted position. That characteristic of the structure which permits the board to attain a full vertical position is of importance, as it is desirable, under some conditions of drafting, to have the board directly vertical, and a position approaching the vertical has been insufficient to answer the ends desired. Hence it will be noted that the plates of the brackets 18 extend in both directions beyond the connecting sleeves 19, and that the connecting-bolts are, by their arrangement at the ends of the plates, beyond interference with the uprights 4 and 5, in tilting. Hence the board can swing to a true vertical position.

In addition to these movements of the board, with respect to the uprights, it is, of course, apparent that, by reason of the connection between the brackets and strips carried by the board, the board is independently movable or slidable with respect to its pivotal mountings, thereby permitting the board to be moved toward or from the stand in any plane in which the board might be positioned.

It is to be noted that by reason of the spaced-apart tubular uprights, and the guiding rods supporting the board at the opposite edges, a very rigid board supporting and guiding means is provided which constrains the board for height adjustments in a predetermined plane and without permitting the board to swing sidewise or oscillate during such adjustment.

I claim:

1. A drawing board structure including in combination a base, a drawing board, means to angularly adjust said board with respect to said base, means to slidably adjust said board with respect to said base, means to adjust said board for height movement in any angularly or slidably adjusted position and means to balance said board in such height movement.

2. A drawing board structure comprising a base, board supporting and guiding means movable with respect to said base for guiding the board in height adjustments, means for balancing the board in height adjustments, and connections intermediate said supporting and guiding means and the board to permit an independent sliding movement of the board with respect to said board supporting and guiding means in any height adjustment.

3. A drawing board structure comprising a base having spaced-apart tubular uprights, guiding and supporting means for the board movably arranged in certain of said uprights to guide and support the board in height adjustments, balancing means for the board arranged in other of said uprights, brackets slidably connected to the board, and pivotal connections between the brackets and guiding means capable of locking adjustment to secure the board in pivotal adjusted relation.

4. A drawing board structure comprising a base having spaced-apart tubular uprights, guiding and supporting means for the board movably arranged in certain of said uprights to guide and support the board in height adjustments, balancing means for the board arranged in other of said uprights, brackets slidably connected to the board and pivotally connected to the

guiding means, the pivotal connection between the bracket and guiding means being capable of locking adjustment to secure the board in pivotal adjusted relation, connections between the brackets and board providing for locking the board in desired sliding adjustment thereof.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

ANTON J. HAUG.

Witnesses:
B. J. NOYES,
H. B. DAVIS.