ABSTRACT OF THE DISCLOSURE

A vertical drafting apparatus that provides for a variety of movements of a ruler or the like along the surface of a drafting board, and wherein the main supporting members of the drafting ruler are pivotally interconnected to pivot about an axis vertically extended from the surface of the drafting board, and wherein the axis is substantially parallel to the drafting board and the ruler portion is allowed to remain flat with the working surface of the drafting board regardless of the location of the ruler relative to the surface of the board.

The present invention relates generally to drafting equipment, and, more particularly to a drafting apparatus wherein the main supporting members are pivotally interconnected to pivot about an axis that is substantially parallel to the surface of the drafting board and raised therefrom.

BACKGROUND OF THE INVENTION

While a number of drafting apparatuses are available on the market, the prior art devices rely on what may be termed as "horizontal movement" of the main supporting members to which a ruler or the like is pivotally attached. With such construction, much of the space over a drafting board is continually occupied by the supporting members of the ruler, and, generally, larger drafting boards are necessary because of the "horizontal" action of the drafting machine.

Available space in many drafting rooms may be limited, and, as a consequence thereof, smaller, more compact drafting devices may be advantageous. In the "horizontal" movement drafting devices, the main supporting members during horizontal positioning of the ruler often extend beyond the confines of the drafting board and, thus, are subject to inadvertent displacement.

SUMMARY OF THE INVENTION

In general terms, it is an objective of the present invention to provide a drafting apparatus for operation in association with a drafting board wherein the drafting apparatus occupies a space within the confines of the drafting board, and does not extend therebeyond in the operation thereof.

It is another object of the invention to provide a novel arrangement of the supporting components of a drafting apparatus wherein the supporting members pivot about an axis that is substantially parallel to the surface of the drafting board.

It is a further object of the invention to provide a drafting apparatus that pivots in a "vertical" manner as distinguished from a "horizontal" manner.

It is still another object of the invention to provide a novel drafting apparatus having "vertical" action thereby making it more compact and, wherein the "vertical" action facilitates its handling.

It is a further object of the invention to provide a drafting apparatus wherein the main supporting members are interconnected to pivot about axis substantially parallel to the surface of a drafting board, and, wherein positioning of the drafting apparatus for drawing or the like does extend any portion of the drafting apparatus beyond the confines of the drafting board.

These and other objects will appear from an understanding of the drawings and description herein.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be more readily understood by reference to the following drawings, of which:

FIGURE 1 is a perspective view of the drafting apparatus embodying the invention;

FIGURE 2 is an enlarged elevational cross-section taken along line 2—2 of FIGURE 1;

FIGURE 3 is a plan view of the drafting apparatus of FIGURE 1; and,

FIGURE 4 is an enlarged elevational view in partial section taken along line 4—4 of FIGURE 1.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIGURE 1, a drafting apparatus, designated generally by the numeral 10, is shown mounted on a drafting board 11, as by a bracket member 12 secured to the board 11 by a fastening means (not shown).

In general, the drafting apparatus 10 comprises: a base swivel assembly 13, swivable about a shaft 14 attached to bracket member 12 (see FIGS. 1 and 4); a rear support member 15, pivotally attached to swivel assembly 13 to pivot about an axis "A," substantially parallel to the plane of the drafting board 11; a front support member 16 pivotally attached to member 15 to pivot about an axis "B" substantially parallel to the plane of the drafting board 11; and, also member 16 is pivotally attached to front swivel member 17 to pivot about an axis "C" substantially parallel to the plane of the drafting board 11, a protractor member 18 attached for rotation relative to front swivel member 17; a ruler 19 attached to the protractor member 18 by an arm 20; and, a belt or cable 21 interconnecting said front swivel member with said base swivel assembly 13. As can be seen in FIGURE 1, members 15 and 16 pivot about an axis "B," thus, as the front swivel assembly 17 is moved along board 11 in the direction indicated by arrow "D," the angle represented by "E" becomes more and more acute. As the axis "B" is ordinarily a distance above the surface of the board 11, the action of the members 15 and 16 in being positioned to change angle "E" is termed "vertical" action for the purposes of describing this invention. It can readily be seen that as the front swivel member 17 is moved toward and away from rear swivel member 13, there will be no occasion to extend any beyond the confines of the board 11 in either a lateral or longitudinal direction. Thus, accidental bumping of the members 15 and 16 cannot occur when someone passes down an aisle or the like made up of rows of drafting boards, as is normally found in a drafting room or department.

As the ruler 19 is positionable about an axis "F," and the rear swivel assembly pivots about the shaft 14, with members 15 and 16 being pivotally interconnected, it is possible to draw a line along ruler 19 for drafting purpose anywhere on the board 11.

For details of the drafting machine 10 of FIGURE 1, reference is now made to FIGURES 2, 3 and 4. In FIGURE 2, the front swivel member 17 is shown with protractor member 18 rotatable with shaft 22. A spring 23 urges protractor member 18 upwardly so that serrations 24 engage serrations 25 to maintain the protractor member in the desired position. If it is desired to change the position of the protractor, it is only necessary to push downwardly slightly on shaft 22 to disengage the serrations 24, 25 and the protractor member 18 can be freely rotated about axis "F." The ruler 19 is attached to protractor member
3,483,625

18, and is positionable with the positioning of the protractor member. The belt 21 is secured to rotatable drum 26 and is threaded over rollers 27 and 28 to maintain the ruler 19 in a parallel position. A cap 29 is threadably secured to cylindrical member 30 which houses spring 23. Ball bearings 31 between cap 29 and assembly housing 32 facilitate rotation thereof.

FIGURE 3 shows the belt 21 running from the front swivel assembly 17 to the base swivel assembly 13 and passing through members 15 and 16. Members 15 and 16 interfit at axis “B” to permit a pivotal relationship between the two members, and the construction of the ends 15b and 16b prevents any twisting or tortional displacement between the members 15 and 16. Openings 35 in the members 15 and 16 help reduce the overall weight of the members and make them easier to position. A torsional spring 50 may be placed around the axis between the members 15 and 16 to urge them toward one another.

In FIGURE 4 the base swivel assembly 13 is shown mounted on shaft 14 and bracket member 12. The belt 21 passes over rollers 36 and 37 where it is secured to a rotatable drum 38 as at fastener 39. Rotation of the assembly 13 is facilitated by bearings 40. A spring 41 is attached between assembly 13 and the member 15 as at brackets 42 and 43.

Thus, a drafting apparatus 10 has been described wherein the ruler is maintained flat against the drawing board or a sheet of drawing paper mounted thereon, and the ruler is positionable in a variety of positions during a drawing operation. Notably, the members 15 and 16 are pivotal about a horizontal axis “B” that is substantially parallel to the surface of the drawing board, and, as the ruler is moved toward or away from the operator, the angle “E” between members 15 and 16 is varied to provide what is termed as “vertical” action, thereby confining the movements of the drawing machine 10 within the confines of the drawing board without any extensions therebeyond where it may be accidentally bumped or the like.

Details of the structure can well be modified from that specifically shown and described hereinabove and, accordingly, the foregoing description of one embodiment of the invention is not to be construed in a limiting sense.

What is claimed is:
1. A drafting apparatus comprising, in combination:
   mounting means for mounting said apparatus to a supporting surface;
   a first member pivotally mounted to said mounting means for movement about a first axis substantially parallel to said supporting surface;
   a second member pivotally attached to said first member for movement about a second axis substantially parallel to said supporting surface;
   protractor means pivotally attached to said second member for movement about a third axis substantially parallel to said supporting surface, said protractor means being movable along the supporting surface by the pivotal movement of said first and second axis;
   a first swivel means engaging said protractor means for rotating said protractor means about a fourth axis normal to said supporting surface;
   a second swivel means engaging said mounting means for rotating said first member about a fifth axis normal to said supporting surface; and
   a single belt interconnecting said first and second swivel means over said first and second members and over said first and second axis maintaining the movement of the protractor means in a parallel path.

2. A drafting apparatus as claimed in claim 1 including a protractor member rotatable relative to said fourth axis and including spring means urging said protractor member in a predetermined interengagement relative position with said protractor means.

3. A drafting apparatus as claimed in claim 1 wherein said first and second members pivot relative to one another without twisting relative to one another.

4. A drafting apparatus as claimed in claim 1 wherein said protractor means includes a ruler that remains in flat contact with said supporting surface during pivotal movement of said first and second member.

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