May 27, 1930. T. P. LEAMAN 1,759,989

DRAFTING IMPLEMENT

Filed Oct. 11, 1927

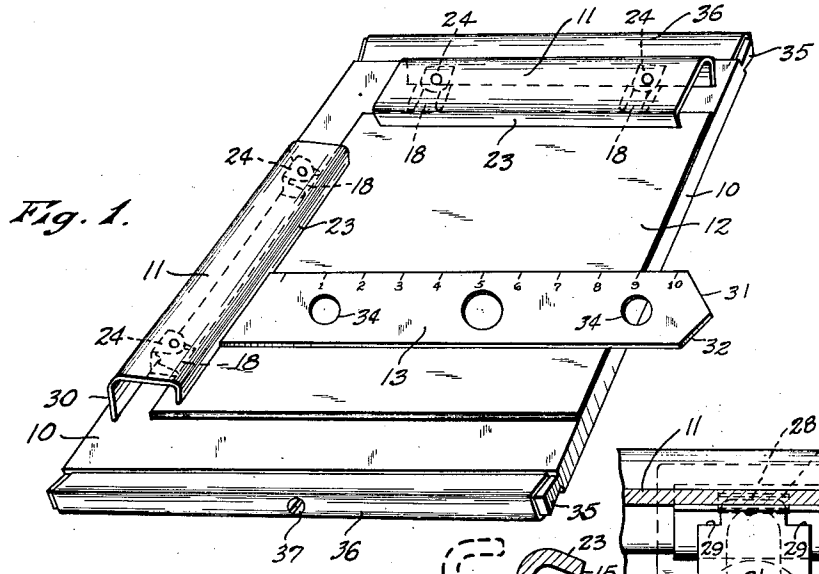


Fig. 1.

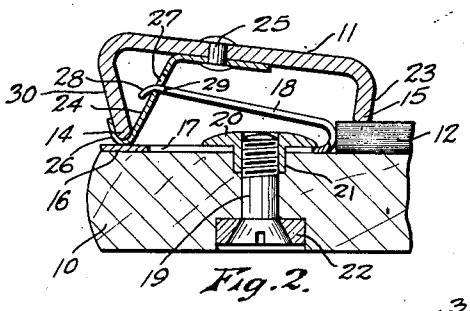


Fig. 2.

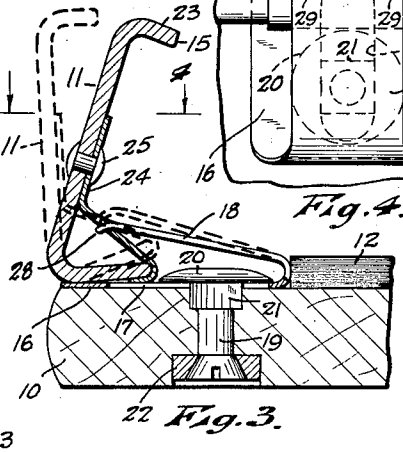


Fig. 3.

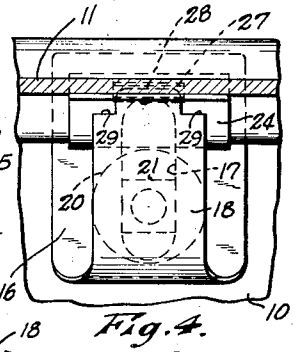


Fig. 4.

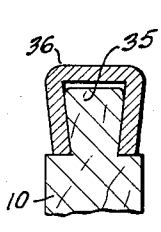


Fig. 5.

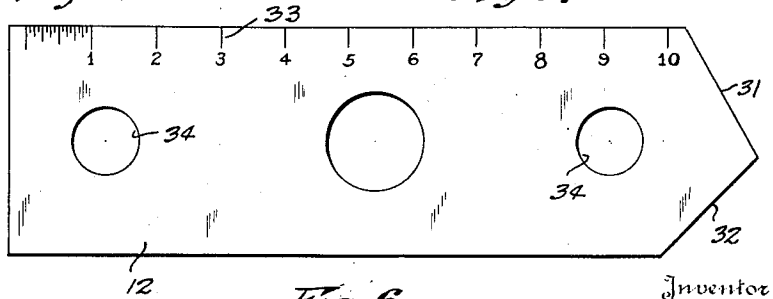


Fig. 6.

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UNITED STATES PATENT OFFICE

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DRAFTING IMPLEMENT

Application filed October 11, 1927. Serial No. 225,483.

This invention relates to a drafting implement for use by draftsmen in making drawings, and particularly to an easily portable device for use in making sketches, and has for an object to provide a device of this character in which there is improved means for holding the paper upon which the sketch or drawing is to be made, which means will securely clamp the paper in position and may be easily released for insertion or removal of the sheets of paper.

It is also an object of the invention to provide improved means for mounting the clamps which may be adjusted for properly aligning the clamps so that they may be used as guides for straight-edge instruments.

It is a further object of the invention to provide an improved strengthening means for the base or body of the board to prevent warping, but which will allow lateral expansion and contraction.

It is a still further object of the invention to provide an improved straight-edge instrument for use with this type of devices.

With the foregoing and other objects in view, I have devised the construction illustrated in the accompanying drawing forming a part of this specification. In this drawing,

Fig. 1 is a perspective view of my improved drafting implement looking down on the top of the same.

Fig. 2 is a detail section through one of the clamps and the means for mounting it on the base or board showing the clamp in paper holding position.

Fig. 3 is a similar section but showing the clamp raised to released the paper.

Fig. 4 is a detail section substantially on line 4—4 of Fig. 3 showing a plan view of the clamp securing means.

Fig. 5 is a detail section of one end of the board showing the strengthening means, and

Fig. 6 is an improved straight edge instrument.

This implement is designed primarily as an easily portable device for carrying one or more sheets of paper on which the sketches or drawings may be made and in which the sheets of paper may be easily secured or released, and when clamped to the board will be securely held in the proper position without shifting during the making of the drawing or sketches. The clamping means for the paper also comprise two elements arranged at right angles to each other along an end and one side edge of the sheets of paper so that the paper is properly held in position, and these clamps form guides for straight edge instruments used in making the drawings. It will, of course, however be understood that the subject matter of the invention may be used on larger and less portable devices if desired. In the structure shown the device comprises a base or board 10 of wood or other suitable material, usually wood, and has two clamps 11 for holding one or more sheets of paper 12 to the board. A convenient arrangement is to have the sheets of paper in a pad and clamp the entire pad on the board, the sheets being torn off as used. It will be apparent from the drawing that these two clamps are mounted one adjacent one side edge of the board and the other adjacent an end of the board, it being preferred that they be arranged at the left side and top respectively. They are also arranged at right angles to each other and form guides for a straight-edge instrument, such as a triangle or the special instrument 13 illustrated.

Each clamp 11 comprises an elongated member preferably of sheet metal and substantially of inverted U-shape in cross section with its opposite edges 14 and 15 toward the surface of the board. Each member 11 is secured to the board by a pair of spring hinges. These hinges comprise a flat strip of metal including a base portion 16 having an elongated slot 17 and a tongue portion 18 bent backwardly over the base portion and spaced above the same. This spring member is secured to the board 10 by means of a screw 19 passing through the board and accessible for operation at the lower side thereof and threaded into a headed member 20 having its head or flange portion resting on the top of the base 16. This member 20 also has a non-circular, preferably square, shank 21 extending through the slot 17 and seating in a similarly shaped opening in the board 10 so

that it will be held against turning movements in the board. The head of the screw preferably seats in the head of a countersunk washer 22 recessed in the under side of the board. It will be apparent that by loosening the screw the spring member 16—18 may be adjusted toward or from the edge of the board and then clamped in adjusted position by tightening the screw, and that each spring member is adjustable independently of the other so that the member 11 of the clamp may be arranged in proper alignment. It will, of course, be understood that in mounting the upper clamp or the clamp at the end of the board, the spring members 16—18 are arranged at right angles to those for the side clamp, so that they are independently adjustable toward and from the end of the board, and therefore, either clamp may be adjusted angularly with respect to the other clamp to bring their inner upright walls 23 at right angles to each other.

Each of the bar members 11 carries a pair of straps 24 of sheet metal which are riveted to the bar, as shown at 25, and are inclined and pass around the outer edge 14, as shown at 26. They also have an opening 27 for passage of a reduced extension 28 on the tongue 18 of the spring element, this opening being substantially the width of this extension so that the shoulders 29 at the side of the extension will limit the amount to which this extension will project into the opening. This extension is also preferably curved downwardly somewhat as indicated in the drawing to form in effect a hook portion to engage the lower edge of the opening 27. The spring 16—18 is so constructed that the tongue portion 18 tends to swing downwardly toward the surface of the board. It will then be apparent that as the opening 27 in the strap 24 is spaced inwardly or to the right of the outer edge 14 of the clamping member as indicated in Fig. 2, the downward pull of the tongue 18 on the lower edge of the opening in the strap will tend to swing the clamp 11 to the right or clockwise about the outer edge 14 and will firmly clamp the inner edge 15 against the top of the sheets of paper 12 to clamp them against the top surface of the board.

If it is desired to release these sheets of paper all that is neccessary is to swing the inner edge 15 of the clamp upwardly or counterclockwise, as viewed in Figs. 2 and 3. The hook extension 28 on the tongue 18 will prevent the clamp moving outwardly, and although it swings about the outer edge 14 this edge will slide inwardly to the position shown in Fig. 2 until the outer wall 30 of the bar rests on the top of the board or base portions 16 of the springs. It will now be apparent that the downward pressure of the spring tongue 18 on the bottom of the opening in the strap 24 is outwardly of the edge 14 and will hold this clamp in the open position of Fig. 3. This will permit of easy insertion or removal of the sheets of paper without any interference from the spring operating clamps, but when the sheets are in position the clamps may be easily swung to the clamping position of Fig. 2 to firmly clamp these sheets against the surface of the board. If it is desired to remove the clamping bars 11 from the board all that is necessary is merely to swing the upper free edge 15 outwardly from the position of Fig. 3, as indicated in dotted lines. This action will withdraw the hook extension 28 from the opening in the strap 24 and will release the clamping bar 11. This structure, therefore, is easily assembled and disassembled without the use of special tools, besides being of extremely simple construction.

It will, of course, be understood that the spring members 16—18 will be adjusted so that the inner upright walls 23 of the clamping bars 11 are at right angles to each other and these inner walls, therefore, may be used as guides for a straight-edge member 13 for drawing lines at right angles to each other when the bars 11 have been clamped onto the paper sheets 12. If one end of this member 13 is inclined, as indicated at 31, at an angle of sixty degrees to its adjacent side edge, then by placing this inclined edge against either of the guide bars 11 lines at either sixty or thirty degrees to each of these bars may be drawn. If the other portion of this end is inclined, as shown at 32, at forty-five degrees to its adjacent side edge then by placing this inclined edge against the bars 11 lines at forty-five degrees to these bars may be drawn. Therefore, this single instrument may be used for drawing horizontal and vertical lines and also lines at the three angles most commonly employed for drafting purposes. Either one or both of the edges of the instrument 13 may be provided with a scale 33 in inches or other units as desired, so that the use of a separate scale is unnecessary. The thumb openings 34 adjacent the opposite ends of this instrument make it convenient to hold it against the guides 23 by inserting the thumb in the nearest opening as the hand grips the edge of the board. This also facilitates shifting of the instrument along the guide.

As the board 10 is made of wood it will, of course, tend to warp due to changes in moisture conditions, and will also tend to expand and contract laterally because of these conditions. I have provided improved means for preventing warping of the board while at the same time permitting lateral expansion and contraction. I have accomplished this by providing a dove-tail rib 35 along each end of the board and then slipping over this dove tail a similarly shaped metal bar

36, it being of course, understood that the dove-tail is inserted by sliding it longitudinally from one end of the bar. The bar is then secured from the sliding off this board by a screw 37. It will be apparent that due to the shape of this bar it is very rigid and offers great resistance against lateral bending and will, therefore, hold the board from warping, but that the board is allowed to expand and contract laterally as the dove-tail end 35 will merely slide laterally in the channel of the bar 36.

It will be apparent from the foregoing description that the structure of this device is very simple and easily manipulated, that the clamps are easily adjustable so that they may be brought at an exact right angle to each other, and that they firmly clamp the papers to the board through the action of the springs 16—18, that when in the clamping position the clamping bars present a smooth outer surface so that they are not easily displaced or accidentally released while in use, but when it is desired to remove or insert new sheets of paper the clamps may be easily manipulated for this purpose. Furthermore, in a portable device of this character especially where it is used to make sketches of machinery in a shop it is desirable that the number of instruments used be reduced to a minimum. Therefore, this arrangement of guides using the straight-edge instrument 13 shown reduces these instruments to a single member which will perform all the operations usually performed by separate scales, T-square and triangles.

Having thus set forth the nature of my invention, what I claim is:

1. In a drafting implement, a rectangular board member, means for clamping one or more sheets of paper to said board comprising a member extending longitudinally of an edge of the board, and springs carried by one of said members and connected to the other member to clamp said second member to the face of the board, said springs also forming the sole means for securing the second member to the board, said second member having an upright inner wall forming a guide for straight-edge instruments.

2. In a drafting implement, a board, a clamp for clamping paper sheets to the board including an inverted substantially U-shaped member, a pair of springs secured to the board and engaging said member and tending to hold the edges thereof against the surface of the board, said member being turnable about its outer edge as a pivot and its inner wall forming a guide for a straight-edge instrument.

3. In a drafting implement, a board, a pair of clamps for a sheet of paper arranged one adjacent one side edge of the board and the other adjacent one end, a pair of securing means for each clamp and at least one of them being adjustable longitudinally of the other clamp so that the clamps may be set at right angles to each other, each clamp being provided with an upright wall forming a guide for a straight-edge instrument.

4. In a drafting implement, a board, a pair of paper clamps including bars mounted on the board at substantially right angles to each other and having upright walls forming guides for straight-edge instruments, means for mounting said bars including springs tending to hold them against the board, one of said means being adjustable on the board transversely of its bar so that the bar may be adjusted angularly with respect to the other bar.

5. In a drafting implement, a paper clamp including a bar, a pair of securing means for said bar comprising a spring element having a base and a tongue portion extending outwardly over the base and tending to move toward the base, and means for securing the base to the board, said bar having means cooperating with said tongue whereby the bar is secured to and clamped against the board.

6. In a drafting implement, a board, a paper clamp mounted on said board including an inverted substantially U-shaped bar, and spring operated means for securing said bar to the board comprising a spring member having a base and a tongue portion extending outwardly over the base, means for securing the base to the board, and a strap extending between the outer upright wall of the bar and the body of the bar having an opening therein into which the end of the tongue projects to clamp the bar against the board.

7. In a drafting implement, a board, a paper clamp mounted on said board including a bar adapted to be turned about its outer edge, a securing means for the bar comprising a spring having a base provided with an elongated slot, a securing screw extending through said slot and adapted for manipulation to permit adjustment of said spring on the base, said spring also including a tongue portion extending outwardly over the base and tending to move toward the base, and means carried by the bar engaged by said tongue to clamp the bar to the board.

8. In a drafting implement, a board, a paper clamp on said board including an inverted substantially U-shaped bar adapted to turn about its outer edge, a pair of spring members for securing the bar to the board comprising a base and a tongue extending outwardly over the base and having a hooked end, means for securing the base to the board, a strap carried by the bar and having an opening to receive said hooked end, said opening being so located that when the bar is in the horizontal position the spring tongue will tend to clamp it against the board in

that position and when the bar is turned about its outer edge to the upright position the opening will pass over this edge so that the spring will tend to hold the bar in the upright position.

In testimony whereof I affix my signature.

THOMAS P. LEAMAN.