Sept. 13, 1938. J. T. JONES, JR 2,130,135

DRAWING INSTRUMENT

Filed Sept. 25, 1937

Fig. 1

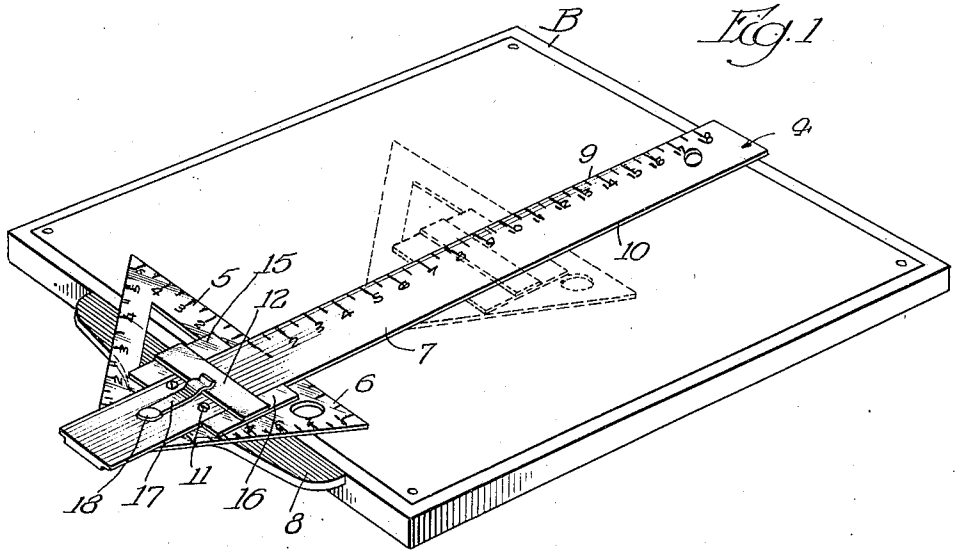


Fig. 2

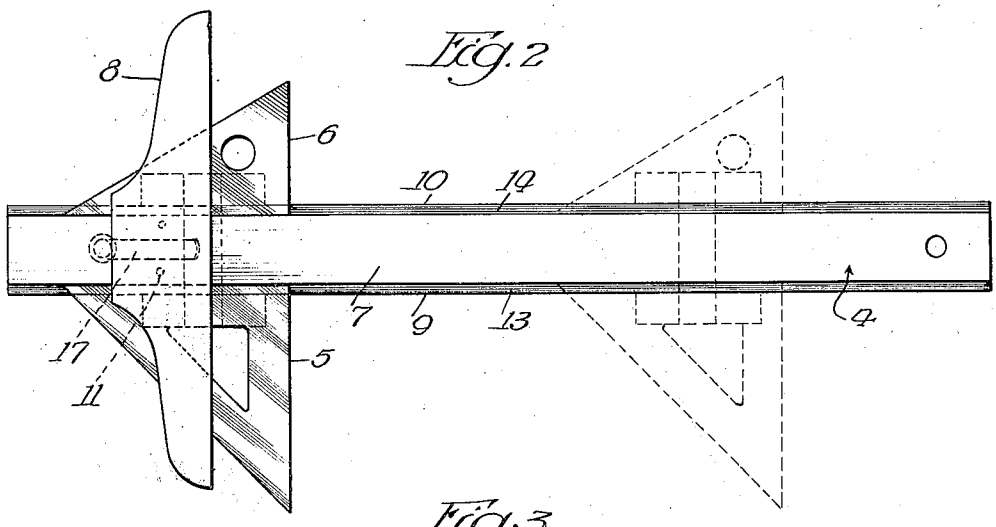
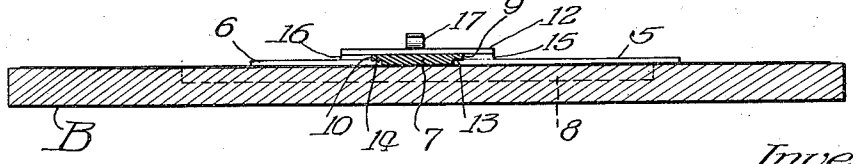


Fig. 3



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DRAWING INSTRUMENT

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4 Claims. (Cl. 33—95)

The present invention relates generally to drawing instruments. More particularly the invention relates to that type of drawing instrument which is adapted for use with a drawing board in connection with the preparation of mechanical and other drawings and includes as one of the parts thereof a standard or conventional T square.

One object of the invention is to provide an instrument of this type which has greater capabilities of use than, and is generally an improvement upon, previously designed drawing instruments of the same general character by reason of the fact that in addition to the T square it includes or embodies a pair of triangles which are disposed at opposite sides of the ruler of the T square, permit the user of the instrument to make guide or other lines either at right or different acute angles with respect to the side edges of the ruler and are connected together for conjoint sliding movement lengthwise of the ruler.

Another object of the invention is to provide a drawing instrument of the last mentioned character in which the inner margins of the triangles fit in longitudinally extending grooves in the bottom side corners of the ruler of the T square and the triangles are of such thickness that the bottom faces thereof are flush or coplanar with the bottom face of the ruler of the T square.

A further object of the invention is to provide a drawing instrument of the type and character under consideration in which the triangles for permitting the user of the instrument to make guide or other lines at right or different angles with respect to the side edges of the ruler are connected together for conjoint sliding movement by way of a bridge which extends across the top faces of the triangles and overlies and fits slidably against the top face of the ruler.

A still further object of the invention is to provide a drawing instrument of the aforementioned type and character in which the ruler of the T square is provided at the cross-piece end thereof with a spring clip which is adapted releasably to engage the bridge and to hold the triangles in an inoperative position over the cross-piece of the T square when it is not desired to use them.

In addition the invention contemplates as one of its objects the provision of a drawing instrument which is generally of new and improved design and may be manufactured at a comparatively low cost.

Other objects of the invention and the various advantages and characteristics of the present drawing instrument will be apparent from a consideration of the following detailed description.

The invention consists in the several novel features which are hereinafter set forth and are more particularly defined by claims at the conclusion hereof.

In the drawing which accompanies and forms a part of this specification or disclosure and in which like numerals of reference denote corresponding parts throughout the several views:

Figure 1 is a perspective showing a drawing instrument embodying the invention in place on a drawing board;

Figure 2 is a bottom view of the instrument illustrating in detail the manner in which the inner margins of the triangles fit slidably within the grooves in the lower or under corners of the ruler of the T square; and

Figure 3 is an enlarged transverse sectional view through the central portion of the ruler of the T square.

The drawing instrument which is shown in the drawing constitutes the preferred embodiment of the invention. It is adapted primarily for use with a rectangular drawing board B in connection with the preparation of drawings and embodies as the main parts thereof a T square 4 and a pair of triangles 5 and 6.

The T square 4 is of standard or conventional design and consists of a ruler 7 and a cross-piece 8. The ruler, as shown in Figure 1, embodies parallel side edges 9 and 10 and is adapted to overlie the board B and to be moved or slid back and forth between the top and bottom edges of the board in connection with the drawing of parallel lines. The side edges 9 and 10 of the ruler are straight and are adapted to form guides for a pencil or drawing pen, as well understood in the art. The cross-piece 8 of the T square is fixedly secured to one end of the ruler 7 by means of screws 11 and is adapted to engage slidably one of the side edges of the board B and guide the ruler in connection with shift thereof between the top and bottom edges of the board. As shown in Figures 1 and 2 the cross-piece 8 extends at right angles to the ruler and fits against the bottom face of the latter. The inner face or edge of the cross-piece is straight and is adapted during use of the instrument to be pressed or held in abutting relation with the contiguous side edge of the board B.

The triangles 5 and 6 are disposed at opposite sides of the ruler 7 and are cross-connected by a bridge 12 for conjoint sliding movement lengthwise of the ruler. The triangle 5 is a 45°

or right angled triangle and is arranged so that one of the short side margins thereof is adjacent to the side edge 9 of the ruler. Such short side margin of the triangle fits in a longitudinal groove 13 in the bottom side corner of the margin of the ruler with the edge 9 so that the triangle 5 is slidable in a rectilinear manner lengthwise of the ruler. The triangle 5 corresponds in height or thickness to the groove 13 with the result that the bottom face thereof is flush or coplanar with the bottom face of the ruler 7. As the result of the arrangement of the triangle 5 the other short side margin serves as a guide for lines at right angles to the ruler 7 and the hypotenuse of the triangle 5 serves as a guide for lines at an angle of 45° with respect to the side edges 9 and 10 of the ruler. The triangle 6 is a 30–60° triangle and is positioned directly opposite the triangle 5. It is arranged with the right angle thereof in opposed relation with the right angle of the triangle 5 and is positioned with the long side margin thereof adjacent to the side edge 10 of the ruler 7. Such long side margin, as shown in Figures 2 and 3, fits in a longitudinal groove 14 in the lower or bottom corner of the margin of the ruler with the edge 10 so that the triangle 6 is slidable in a rectilinear manner lengthwise of the ruler. The height of the triangle 6 is such that the bottom face thereof is flush or coplanar with the bottom face of the ruler 7. As the result of the aforementioned arrangement of the triangle 6 the short side margin serves as a guide for lines at right angles to the ruler 7 and the hypotenuse serves as a guide for lines at an angle of 30° with respect to the side edges 9 and 10. Preferably the two triangles are arranged so that the right angle portions thereof face in the direction of the free end of the ruler, that is, the end without the cross-piece 8. The bridge 12 extends transversely across and is slidable lengthwise of the top face of the ruler 7 of the T square. It is in the form of a strip and is connected at one end thereof to the triangle 5 by a block 15. The other end of the bridge is connected by a block 16 to the triangle 6. The two blocks are fixedly secured to the two triangles respectively and fit slidably against the side edges of the ruler 7. They are elongated lengthwise of the ruler and together with the inner margins of the triangles form sliding connections between the triangles and the ruler whereby the triangles may be slid lengthwise of the latter without tilting. By shifting the triangles lengthwise of the ruler, they may be brought into any desired position over the board B for line guiding purposes. When it is desired to make lines at right angles to the side edges of the ruler the triangles are slid into the proper or desired position so that the side margins or edges at right angles to the edges 9 and 10 serves as pencil or pen guides. In the event that it is desired to make lines at an angle of 45° with respect to the side edges of the ruler the hypotenuse of the 45° triangle 5 is used. When lines at an angle of 30° with respect to the side edge 10 are desired the hypotenuse of the 30° triangle 6 is used. By reason of the fact that the bottom face of the triangles 5 and 6 are coplanar with the bottom face of the ruler 7 the triangles fit flatly against the paper on which the drawings are to be made. The triangles 5 and 6 are slidable conjointly from one end of the ruler 7 to the other. When it is desired to dispense with use of the triangles and to use only the ruler 7 the triangles are shifted to a position wherein they overlie the cross-piece 8 of the T square, as shown in Figures 1 and 2. In order releasably to hold the triangles in this position a spring finger 17 is provided. This finger fits against and extends lengthwise of the top face of the ruler 7. It is located over the cross-piece 8. The outer end of the finger is secured or fastened in place by way of a stud 18 which extends through the finger and into the ruler. The inner end of the spring finger is curved and is adapted to bear against and grip frictionally the bridge 12 when the triangles are in their inoperative position. The extreme inner end of the finger is bent upwards so that when the triangles are shifted into their aforesaid inoperative position the bridge slides under the finger. In order to release the triangles for use it is only necessary to shift them away from the cross-piece 8 and thus dislodge or disengage the bridge 12 from the spring finger 17.

When it is desired to use the instrument in connection with the preparation of a drawing on the board B the ruler 7 is placed across the board and the T square is shifted inwards until the inner edge or face of the cross-piece 8 is brought into abutting relation with the contiguous side edge of the board. By shifting the T square back and forth between the top and bottom edges of the board straight lines may be made on the drawing by use of the side edges 9 and 10 as guides. In the event that it is desired to make lines at right angles to the edges 9 and 10 or at different acute angles with respect to such edges the triangles 5 and 6 are shifted over the drawing to the proper location and the edges or margins thereof used as guides. At the end of a drafting operation or when triangles 5 and 6 are no longer needed the two triangles are shifted into their inoperative position wherein they overlie the cross-piece 8 of the T square and are releasably or frictionally held in place by the spring finger 17.

The present drawing instrument is comparatively simple as far as design or construction is concerned and hence may be manufactured at a low and reasonable cost. It materially facilitates drafting and is in the form of a self-contained unit. In view of the fact that the side edges or margins of the ruler 7 of the T square have the longitudinal grooves 13 and 14 therein there is little if any likelihood of ink running under the ruler when the edges 9 and 10 are used as guides for a ruling pen in connection with inking of a drawing. Due to the fact that the two triangles 5 and 6 are cross-connected by the bridge 12 and are interlocked or held against lateral displacement with respect to the ruler the triangles may be used for line guiding purposes without the necessity of the user holding the ruler and triangles at one time. The grooves 13 and 14 intersect the free end edge of the ruler 7 of the T square, as shown in Figure 2, with the result that the triangles may be slipped out of sliding engagement or contact with the ruler when they are not desired, or it is desired to substitute other types of bridge connected triangles for them on the ruler. As shown in Figure 1 the ruler 7 is provided along one side margin thereof with a scale for linear measurement and the two triangles 5 and 6 are provided along their outer side margins with similar scales.

The invention is not to be understood as restricted to the details set forth, since these may be modified within the scope of the appended claims, without departing from the spirit and scope of the invention.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent is:

1. As a new article of manufacture, a drawing instrument comprising a T square consisting of a ruler with full length longitudinally extending grooves in the bottom or lower corners of the side margins thereof and a cross-piece connected to and underlying one end of the ruler, a pair of triangles positioned on opposite sides of the ruler and having the inner margins thereof fitting in the grooves so that they are slidable longitudinally of the ruler, and a bridge connected to and extending between the two triangles and overlying the top face of the ruler for connecting the triangles together for conjoint sliding movement lengthwise of said ruler.

2. As a new article of manufacture, a drawing instrument comprising a T square consisting of a ruler with full length longitudinally extending grooves in the bottom or lower corners of the side margins thereof and a cross-piece connected to and underlying one end of the ruler, a 45° triangle and a 30–60° triangle positioned on opposite sides of the ruler and having the inner margins thereof fitting in the grooves so that they are slidable lengthwise of the ruler, and also having the bottom faces thereof substantially flush with the bottom face of the ruler, and a bridge connected to and extending between the two triangles and overlying the top face of the ruler for connecting the triangles together for conjoint sliding movement lengthwise of said ruler.

3. As a new article of manufacture, a drawing instrument comprising a T square consisting of a ruler with full length longitudinally extending grooves in the bottom or lower corners of the side margins thereof and a cross-piece connected to and underlying one end of the ruler, a pair of triangles positioned on opposite sides of the ruler and having the inner margins thereof fitting in the grooves so that they are slidable longitudinally of the ruler, a bridge connected to and extending between the two triangles and overlying the top face of the ruler for connecting the triangles together for conjoint sliding movement lengthwise of said ruler, and means adjacent to the cross-piece of the T square for releasably holding the triangles against sliding movement when shifted into an inoperative position over said cross-piece.

4. As a new article of manufacture, a drawing instrument comprising a T square consisting of a ruler with full length longitudinally extending grooves in the bottom or lower corners of the side margins thereof and a cross-piece connected to and underlying one end of the ruler, a 45° triangle and a 30–60° triangle positioned on opposite sides of the ruler and having the inner margins thereof fitting in the grooves so that they are slidable lengthwise of the ruler and also having the bottom faces thereof substantially flush with the bottom face of the ruler, a bridge connected to and extending between the two triangles and overlying the top face of the ruler for connecting the triangles together for conjoint sliding movement lengthwise of said ruler, and a spring finger mounted on the top face of said one end of the ruler and arranged to grip frictionally and releasably the cross-piece when the triangles are shifted into an inoperative position adjacent to the cross-piece.

JOEL T. JONES, JR.