No. 842,047. PATENTED JAN. 22, 1907.

T. F. WILLIAMS.

DRAFTING APPARATUS.

APPLICATION FILED MAY 15, 1906.

2 SHEETS—SHEET 1.

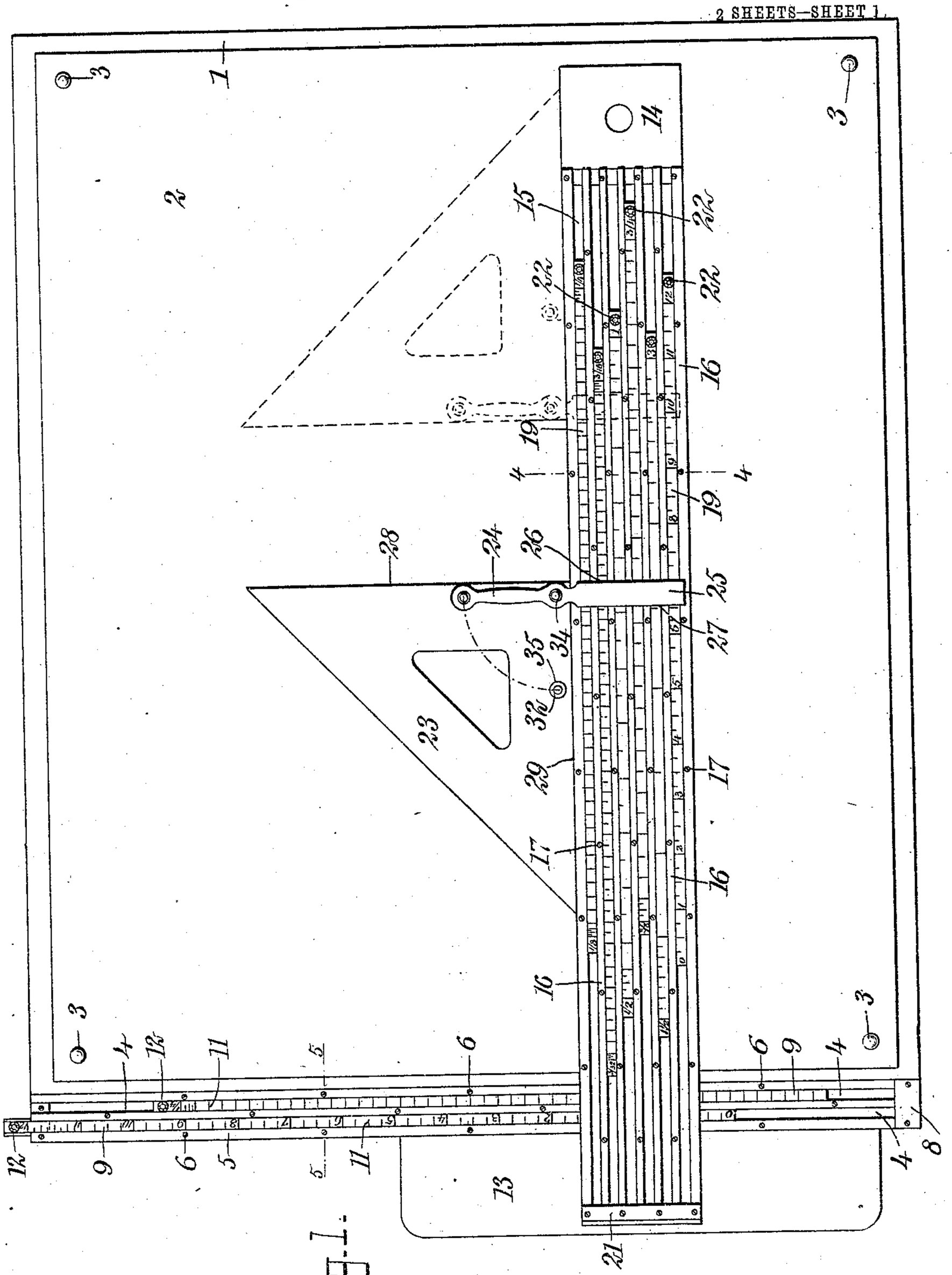

Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 2.

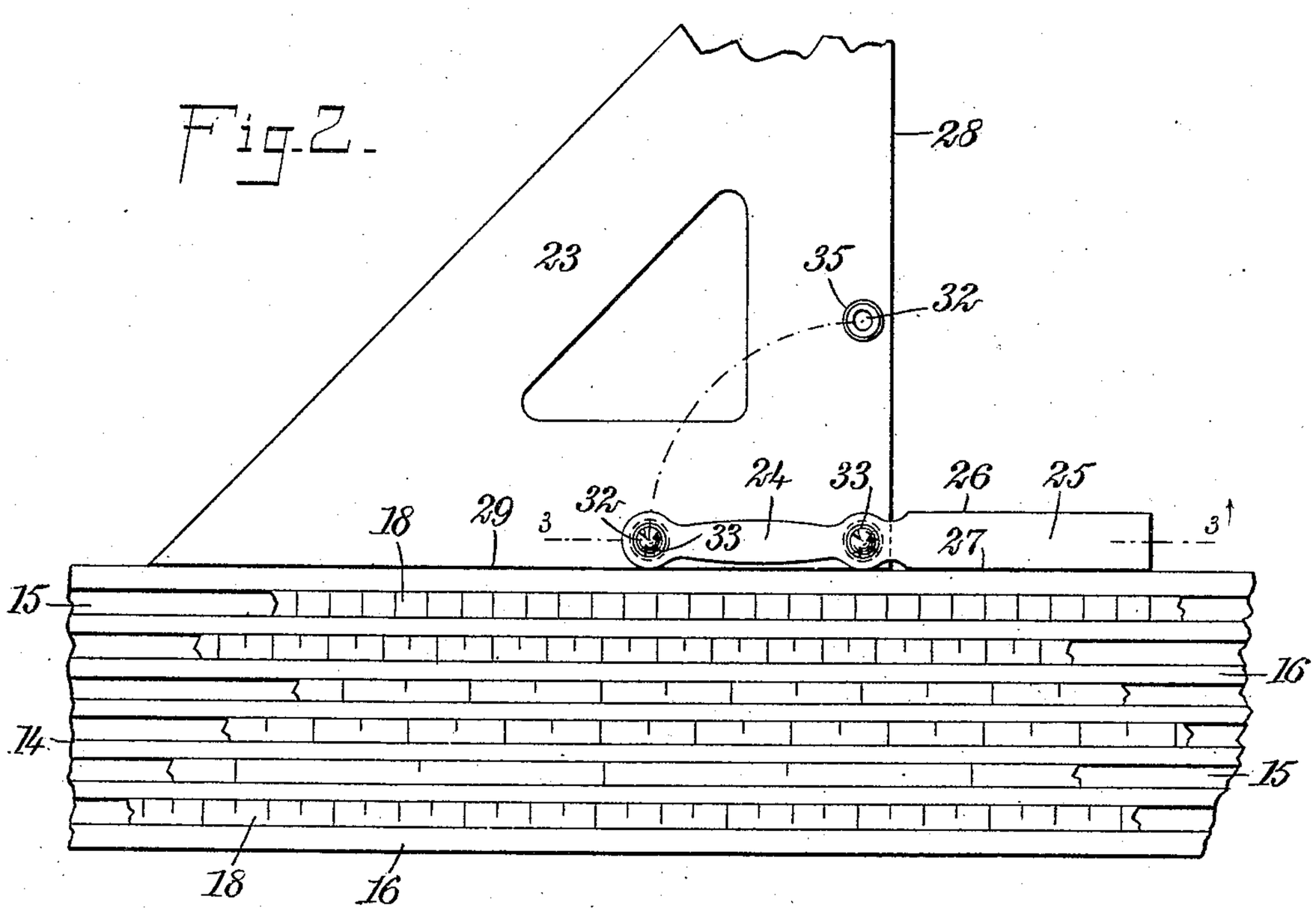


Fig. 3.

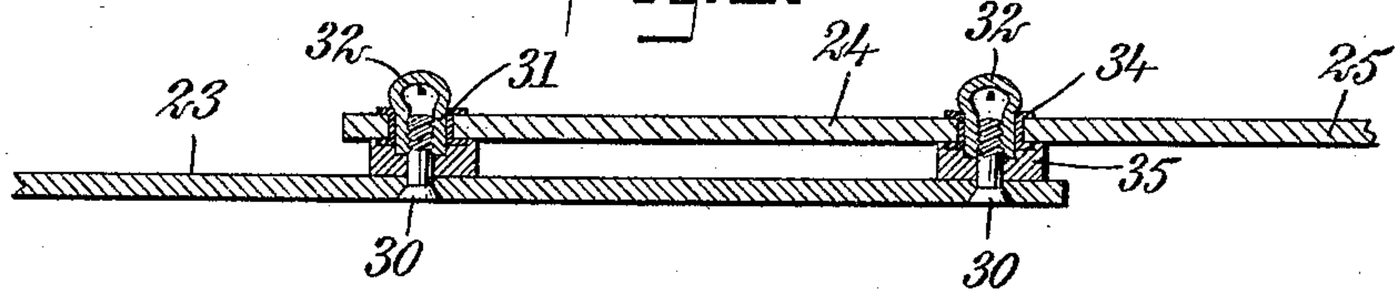


Fig. 4.

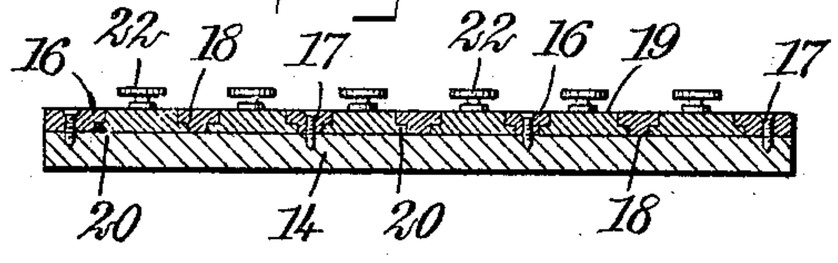
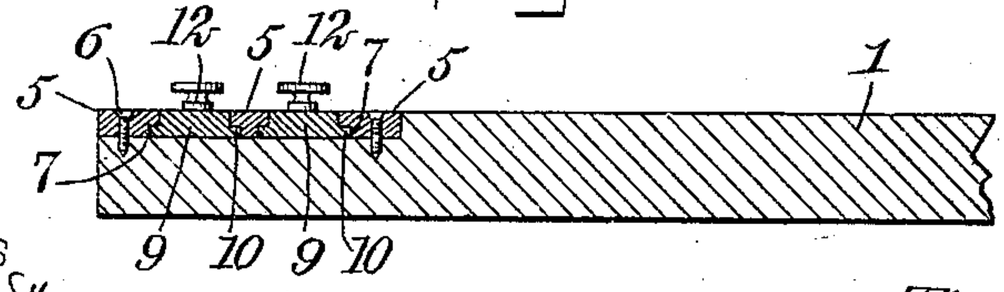


Fig. 5.



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UNITED STATES PATENT OFFICE.

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DRAFTING APPARATUS.

No. 842,047. Specification of Letters Patent. Patented Jan. 22, 1907.

Application filed May 15, 1906. Serial No. 316,904.

To all whom it may concern:

Be it known that I, THOMAS FRANKLIN WILLIAMS, a citizen of the United States, and a resident of New Bethlehem, in the county of Clarion and State of Pennsylvania, have invented a new and Improved Drafting Apparatus, of which the following is a full, clear, and exact description.

This invention relates to drafting apparatus; and it is especially useful in connection with devices of this character embodying the use of scales for the purpose of measurement.

The object of the invention is to provide a drafting apparatus which is simple and durable in construction, which permits the drafting of designs and other drawings with exactness and rapidity, and which facilitates the laying off of measured distances in horizontal or vertical directions.

A further object of the invention is to embody measuring-scales in the apparatus in such a manner as to obviate the necessity of using separate scales for the purpose of measurement, and thereby do away with a great part of the lead-pencil marks or holes in the paper consequent upon the use of ordinary scales.

A still further object of the invention is to provide a device by means of which dimensions may be measured on a drawing already completed with greater rapidity and precision than is possible with the use of an ordinary scale and which affords means for more quickly and accurately setting compasses and dividers than is possible with the ordinary scale.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of my invention. Fig. 2 is an enlarged plan view of a part of the invention. Fig. 3 is an enlarged vertical cross-section on the line 3 3 of Fig. 2. Fig. 4 is an enlarged vertical cross-section on the line 4 4 of Fig. 1, and Fig. 5 is an enlarged cross-section of a part of the invention on the line 5 5 of Fig. 1.

Referring more particularly to the drawings, I provide a drafting-board 1, of the usual form and any convenient size, upon which may be stretched drawing paper or cloth 2 in the usual manner by means of thumb-tacks 3 or other suitable way. The drafting-board 1, near end side thereof, has a recess extending across the entire width, and in which are formed slideways 4, by means of parting-strips 5, attached by means of screws 6 to the board 1. The parting-strips have longitudinal undercut grooves 7 and have their upper surfaces flush with the upper surface of the drafting-board. At one end a transverse piece 8 is fastened upon the parting-strips and extends over the slideways. Within the slideways 4 and between the parting-strips 5 I provide slidable scales 9, which have lateral extensions 10 to engage with the undercut grooves 7 on the parting-strips. The upper surfaces of the scales, which are provided with graduations 11, dividing their lengths into divisions suitable for engineering, architectural, or other drafting, are flush with the upper surface of the drafting-board and of the parting-strips. To facilitate the longitudinal sliding adjustment of the scales in the slideways, I provide buttons 12, adapted to be grasped by the fingers near one end of the scales. The scales may be moved toward the transverse piece 8 and can pass under the same, extending beyond the edge of the board until the buttons 12 abut against the transverse piece 8 and stop the further movement in that direction. In this way it is possible to use the scales to their fullest extent in the direction of the lower edge of the board and still prevent their accidental removal from the slideways thereby. The scales may be inserted in the slideways at the ends opposite to the ends provided with the transverse piece 8.

I further provide a T-square having a helve 13 and a blade 14, secured to each other at right angles in the usual manner by means of screws or otherwise. Upon the blade of the T-square are formed a plurality of slideways 15 by means of parting-strips 16, which are secured to the blade of the T-square by means of screws 17. The parting-strips 16 have longitudinal undercut grooves 18, which engage with the lateral extensions 20 of the scales 19, adjustably mounted in the slideways. The upper surfaces of the parting-strips 16 and the sliding scales 19 are flush, and the latter are provided with graduations dividing the lengths into divisions suitable for the purpose of drafting. The extremities of the slideways remote from the helve of the T-square are open to permit

the insertion and the sliding in and out of the scales within the slideways, while the opposite extremities are covered by a transverse piece 21, extending over the slideways and secured to the parting-strips by means of screws.

The scales have buttons 22 to facilitate the movement of the same in the slideways, and as the transverse piece 21 extends over the slideways the scales may be moved toward the helve and passed under the transverse piece until the buttons 22 abut against the same and prevent their further projection. In this way the scales are prevented from being accidentally forced from the slideways in the direction of the helve, but still permit extreme movement in that direction.

I provide a triangle 23 of the usual form, upon which is mounted an indicating member 24, having a blade 25, adapted to extend over the scales upon the blade of the T-square. The indicating member 24 is so mounted upon the triangle that the edges 26 or 27 of the blade may be in alinement with the edges 28 or 29 of the triangle, as will appear hereinafter. The triangle is provided with upwardly-projecting screw-studs 30, upon which are screwed caps 31, having spherical heads 32, provided with slits 33 for a purpose which will appear hereinafter. The indicating member has openings, and fitting into said openings are eyelets 34, which are adapted to be forced upon the caps 31. The slits 33 in the heads 32 of the caps allow the resilient compression of these to permit the passage of the eyelet and firmly hold the caps in the eyelet. The indicating member is suitably spaced from the triangle by distance blocks or washers 35. The studs and caps upon the triangle are located one at one angle of the same and two others near the sides adjacent to said angle. Thus if it is desired to have the edge 26 of the blade of the indicating member in alinement with the side 28 of the triangle the eyelet near the extremity of the indicating member is forced into engagement with the cap near the edge 28. If it is now desired to have the edge 27 of the blade in alinement with the edge 29 of the triangle, the eyelet near the end of the indicating member is forced from engagement with the cap near the side 28, and the member then is pivoted about the cap at the angle, and the eyelet at the extremity is then forced into engagement with the cap near the edge 29, as appears clearly in Fig. 2.

It will be understood that in the use of this apparatus the location and determination of horizontal and vertical lines are greatly facilitated. If, for instance, necessity arising in the drafting for drawing a number of vertical lines spaced certain distances apart, it is merely necessary to choose that scale on the blade of the T-square corresponding to the scale upon which the drawing is made, set the edge of the indicating member at a suitable point on the scale, draw a vertical line, move the triangle along the edge of the T-square until the indicating member is in alinement with the next point on the scale a proper distance for the purpose of the drawing from the first point taken, and then draw the second line, and so on until the requisite number of vertical lines has been completed. To draw horizontal lines, the edge of the T-square and a scale on the board are used in a similar manner.

As the scales are adjustable in the slideways, it is always possible to start such series of definitely-spaced vertical or horizontal lines from zero of any scale, and thereby the measurement of the distances which these lines shall be apart is more convenient. Any number of scales may be provided, according to the necessity of the user. The scales are normally all interchangeable, and thus a far wider range is given.

In using the apparatus for obtaining dimensions from a drawing already completed the latter is placed upon the board and the triangle or T-square is used in a manner reverse to that just described in making drawings. For instance, in order to obtain the length of a certain horizontal dimension the edge of the triangle is placed at one end of the line to be measured and the scale corresponding to that upon which the drawing is made is adjusted in the slideways until the zero corresponds with the edge of the indicating member. Then the triangle is moved along the edge of the T-square until the edge of the triangle is located at the other end of the line to be measured, and then the edge of the indicating member will show on the scale the exact length of the line to be measured. For the measurement of vertical dimensions the procedure is similar, with the exception that the T-square itself is moved in a vertical direction and the edge of the T-square is used as the indicator with respect to the scales on the board.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a device of the class described, the combination of a drafting-board having a scale slidably mounted thereon with a T-square having a scale slidably mounted on the blade thereof, and a triangle having an extending member adapted to project over said second scale, an edge of said member being adapted to aline with an edge of said triangle, said scales being normally at substantially right angles.

2. In a device of the class described, the combination with a drafting-board, of a T-square having a scale slidably mounted on the blade thereof, and a triangle having an extending member adapted to project over the said scale, and means whereby to aline

the edge of said member with either of the legs of said triangle.

3. In a device of the class described the combination with a drafting-board, of a T-square having a scale slidably mounted on the blade thereof, a triangle provided with buttons adjacent to the edges of the legs thereof, and an extending member having eyes for receiving the buttons, whereby to aline the edge of said member with the edge of either leg of said triangle.

4. In a device of the class described the combination with a drafting-board, of a T-square having a scale slidably mounted on the blade thereof, and a triangle for coöperating with the T-square, said triangle having an extending member, and means for attaching said extending member to the triangle with its edge in alinement with the edge of either leg of said triangle.

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

THOMAS FRANKLIN WILLIAMS.

Witnesses:
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O. E. SHOEMAKER.