C. D. WALTERS.

Square and Bevel Instrument.

No. 230,975. Patented Aug. 10, 1880.

*Fig. 2.*

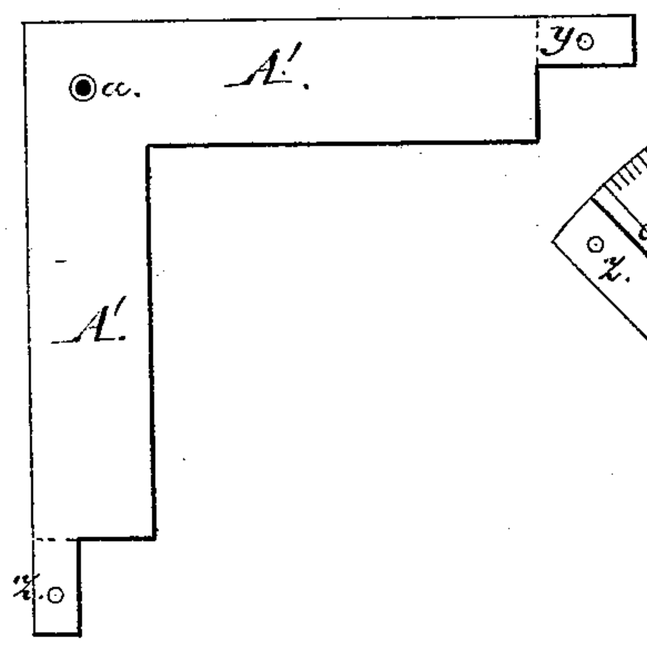



*Fig. 4.*

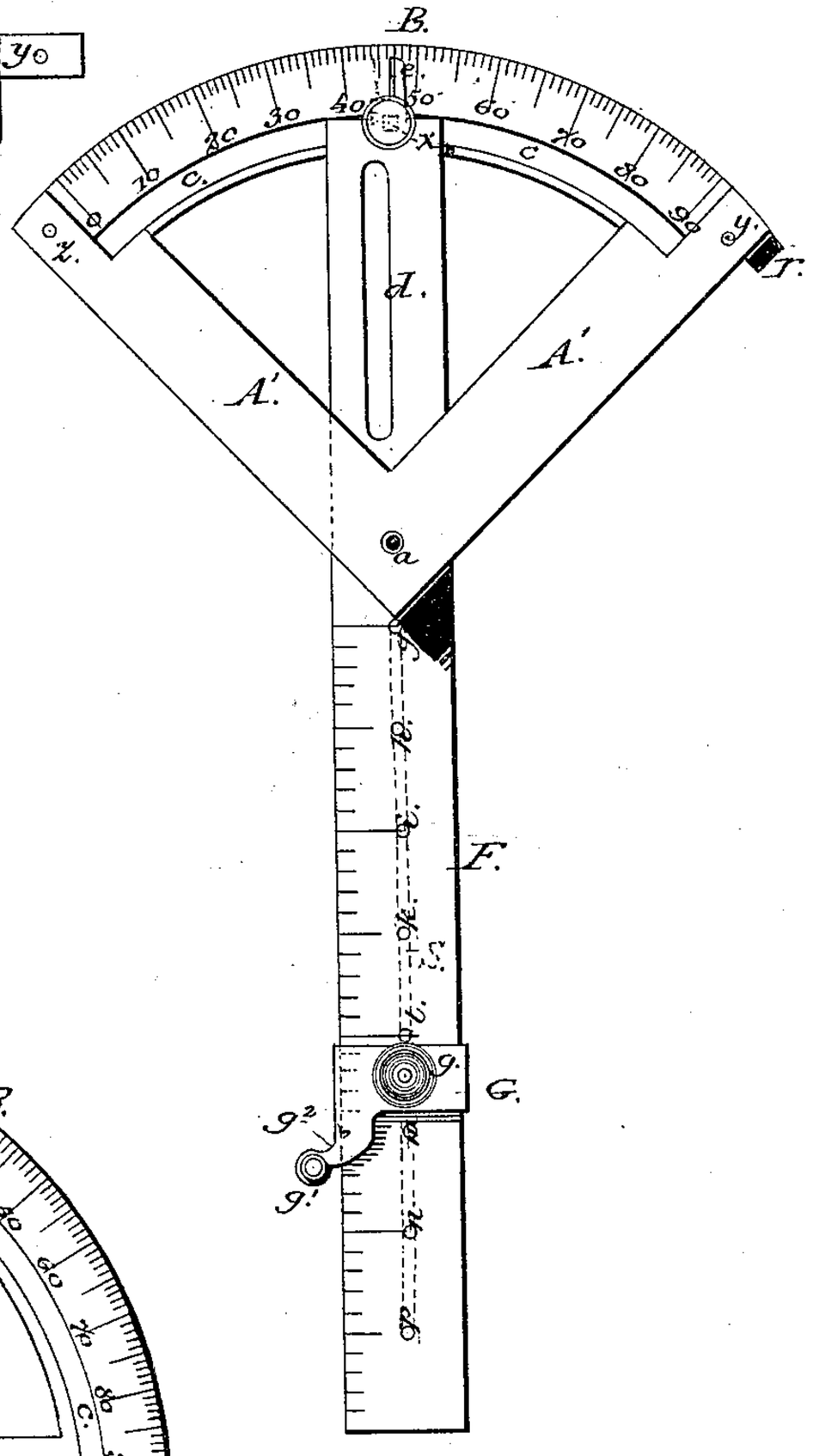



*Fig. 5.*

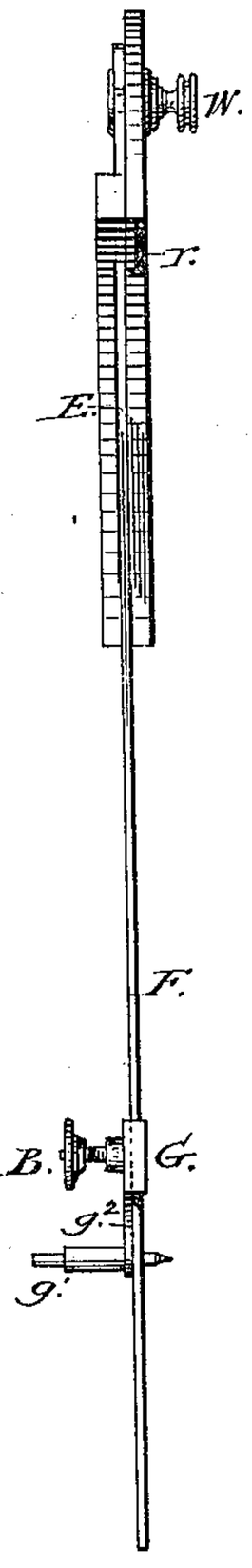
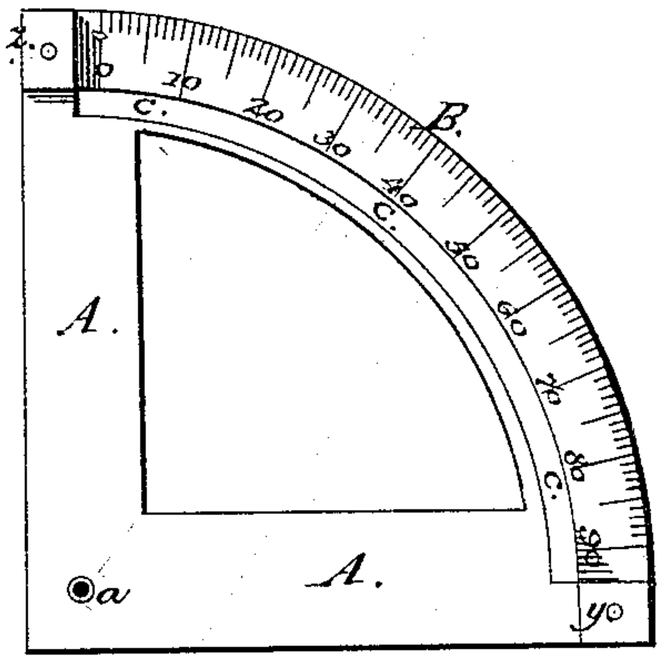



*Fig. 1.*

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# UNITED STATES PATENT OFFICE.

CHARLES DANIEL WALTERS, OF HARRISBURG, ASSIGNOR OF ONE-HALF OF HIS RIGHT TO ALEXANDER H. EGE, OF MECHANICSBURG, PA.

## SQUARE AND BEVEL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 230,975, dated August 10, 1880.

Application filed February 19, 1880.

*To all whom it may concern:*

Be it known that I, CHARLES DANIEL WALTERS, of Harrisburg, in the county of Dauphin, State of Pennsylvania, have invented a new and useful Improvement in Square and Bevel Instruments, of which the following is a specification.

The invention relates to such a combination of parts of an instrument in which the blade or graduated rule is movable upon a perforated pivotal rivet or screw situated at any point between the two extremities of said blade, and hence capable of being adjusted to a right or any bevel angle, as indicated by the index-arm of said ruler, which moves freely upon the graduated arc of a quadrant, as more particularly hereinafter described.

The object of the invention is to secure in a compact and practical form the combined advantages of an instrument for describing a right or any bevel angle in connection with an appliance for describing a circle, any arc thereof, or for laying off any prescribed distance, thus dispensing with the use of dividers, and also for centering, a combination particularly valuable for uses readily suggested to any person skilled in the use of such instruments.

Referring to the drawings accompanying this specification, and which form part of my application, in which like letters refer to like parts in the different views—

Figure 1 shows the sector-shaped piece containing the graduated arc. Fig. 2 is a right-angled piece which is attached to the similar part of the sector at the most convenient points of conjunction, as shown in Fig. 1. Fig. 3 is a side view, and Fig. 4 is a plan view, of the device complete.

A A′ represent a plate of brass or other suitable material in the form of a quadrantal sector, having a smaller quadrantal sector and a concentric quadrantal slot, *c*, cut out of it, and having the arc side graduated. Thin plates or projections *y z* are provided on the ends of the arms or radii of the sector, either attached thereto or a part thereof, for the purpose of supports to the ends of plate A′, Fig. 2, which consists of a right-angled plate, similar to the part A of the sector, and which, when attached to the said projections, forms, with the said part A, a slot, E, Fig. 3, for the passage of the blade or rule F. The blade or rule F consists of a plate of metal or other suitable material divided into two convenient portions by a perforated pivot or bearing, one portion being graduated upon one or both sides, and the other portion provided with a longitudinal slot, *d*, one edge of which slot is coincident with the longitudinal central line of the blade F. This blade or rule F is attached to the sector A A′ B, and held thereto by means of a pivot, *a*, perforated longitudinally, so as to oscillate freely to and fro, as desired, in the slot E. The portion of the blade so elongated as to intersect the angle of the sector and terminating upon the graduated arc of the same, is provided with a suitable index, *e*, coincident with the prolongation of the line passing through the longitudinal center of the blade, and so constructed as to be capable of being adjusted exactly flush with any desired line of division upon said graduated arc. Said portion of the blade is also perforated, if necessary, at such point as may appear most convenient for the reception of the thumb-screw W, moving freely to and fro at will in the quadrantal slot *c*, the office or use of said screw being to secure or clamp the blade or rule to any desired angle shown by the index *e*.

The graduated portion of the rule or blade F is further provided with a series of holes or perforations, *h i k l m n p*, &c., at any convenient distances apart, for the purpose of receiving and holding a pencil or scribe, or other appliance useful for describing or laying off circles, arcs, &c.

When, however, greater accuracy is desired than can be attained by the use of said holes, a sliding register, G, may be used, capable of being adjusted by a thumb-screw, *g*, or other suitable device, and carrying the pencil or scribe *g′* on the arm or projection $g^2$, one edge of which is splayed, so as to aid in the adjustment of the pencil or scribe to any desired line of graduation.

Instead, however, of the perforations *h i k l*, &c., the graduated portion of the blade may be provided with a longitudinal slot, *s*, (shown in dotted lines, Fig. 4,) extending a greater part of its length, in which case the thumb-screw *g*,

being perforated longitudinally, would serve to hold or receive in said perforation the pencil or scribe flush with any desired line of graduation.

To show more fully the uses to which I would apply my invention, I would remark that when the instrument is to be used as a try-square the blade or rule F is moved or oscillated upon its pivotal connection *a* until it is exactly coincident upon its outer edge with the like edge of either arm of the sector A A′ B, in which position it is clamped rigidly thereto by means of the thumb-screw W, as shown in Fig. 3.

When it is desirable that the instrument should perform the function of a miter said rule F is oscillated, as above described, until the index *e* is flush with the central line of division, or forty-five degrees, as shown upon the quadrantal graduated arc; and when thus located it is immovably clamped thereto by means of said thumb-screw W.

When used as a miter the instrument also becomes a convenient tool for centering purposes. When so utilized the disk or other surface whose center it is desirable to find is placed within the sides of the angle of the sector and tangent thereto, when a right line is drawn across said disk by means of a scribe or pencil inserted through the slot *d*, and made to impinge continuously against that side of said slot that is coincident with the longitudinal center of the rule F. Having a second time placed said disk or surface in a similar position within said angle, and drawing another right line so as to intersect the former right line, the point of intersection of the two lines will prove to be the center of said disk or surface.

If desirable to use the instrument as a substitute for a pair of dividers, for laying off any required distance, a scribe or any other sharp-pointed instrument is thrust through the longitudinal perforation of the pivotal connection *a* as a center into the underlying surface sought to be inscribed, and then, thrusting another scribe or like appliance through the desired perforation of the graduated rule, the required distance or radius is attained.

When, however, greater accuracy of radius or measurement is desired than can be attained by the use of said perforations, the sliding register G is utilized by being first placed upon and then slid or moved along the graduated rule until the point of the pencil attached thereto is exactly flush with the required line of graduation, when said point is confined thereto by means of the thumb-screw or clamp *g* of the register G.

Should it become desirable to use the graduated rule F only for any specified purpose, the sliding register G is removable at will, and the flat side of the instrument is laid upon the surface to be inscribed.

If it be required to use the instrument as a protractor the arrangement is most simple and easily applied.

In the first place, if it be desirable to describe any given angle upon any given surface, first adjust the index to the given degree or desired line of the graduated arc, and then clamp the same thereto by means of the thumb-screw W. Then place the instrument upon its side opposite to the thumb-screw W upon said surface. Now, holding the instrument rigidly thereto, press the pencil or scribe against the outer or left-hand edge of the sector, and draw a line from left to right to the angular intersection of the rule and said edge. Next draw another line along the left edge of the rule until it intersects the former line, when an angle will be described, which will be the exact supplement of the required angle.

Again, if it be desirable to measure the obliquity of any given angle, first prolong one of the sides of the given angle in the direction of the angular intersection of the said sides, and then, placing the aforesaid edge of the sector parallel with said prolongation, oscillate the rule until the edge becomes parallel to the other side of the given angle, then clamp the index fast to the graduated arc, and then, upon consulting said arc, the index shows the required obliquity.

If it be desirable to use the instrument as a T-square, the sector is oscillated upon its pivotal connection until one of the limbs or arms thereof is brought to a position at right angles to the rule; and said limb having been furnished at its outer extremity with a flange or projection, *r*, a point of support for said limb is thus secured, which imparts sufficient stability to produce equilibrium, and thus counterbalance the otherwise unequal preponderance of the weight of the sector.

I claim—

1. In combination with said quadrantal sector-shaped and right-angled plates, a graduated blade or rule, F, divided into two parts or arms by means of a pivot, *a*, the one arm or portion being provided with an index and a slot, *d*, one edge of which is coincident with the longitudinal center of said blade, and the other arm or portion of said blade being perforated with holes at certain points of graduated divisions, substantially as and for the purpose as hereinbefore described.

2. In combination with said perforated and slotted rule F, the longitudinally-perforated pivot *a* and the sliding register G, composed of the perforated thumb-screw *g*, the pencil-holder *g′*, and the splayed arm $g^2$, for the purpose as substantially above described.

In testimony that the above is substantially what I claim and desire to secure Letters Patent for in the United States I hereunto subscribe my name in presence of two subscribing witnesses.

CHARLES DANIEL WALTERS.

Witnesses:
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