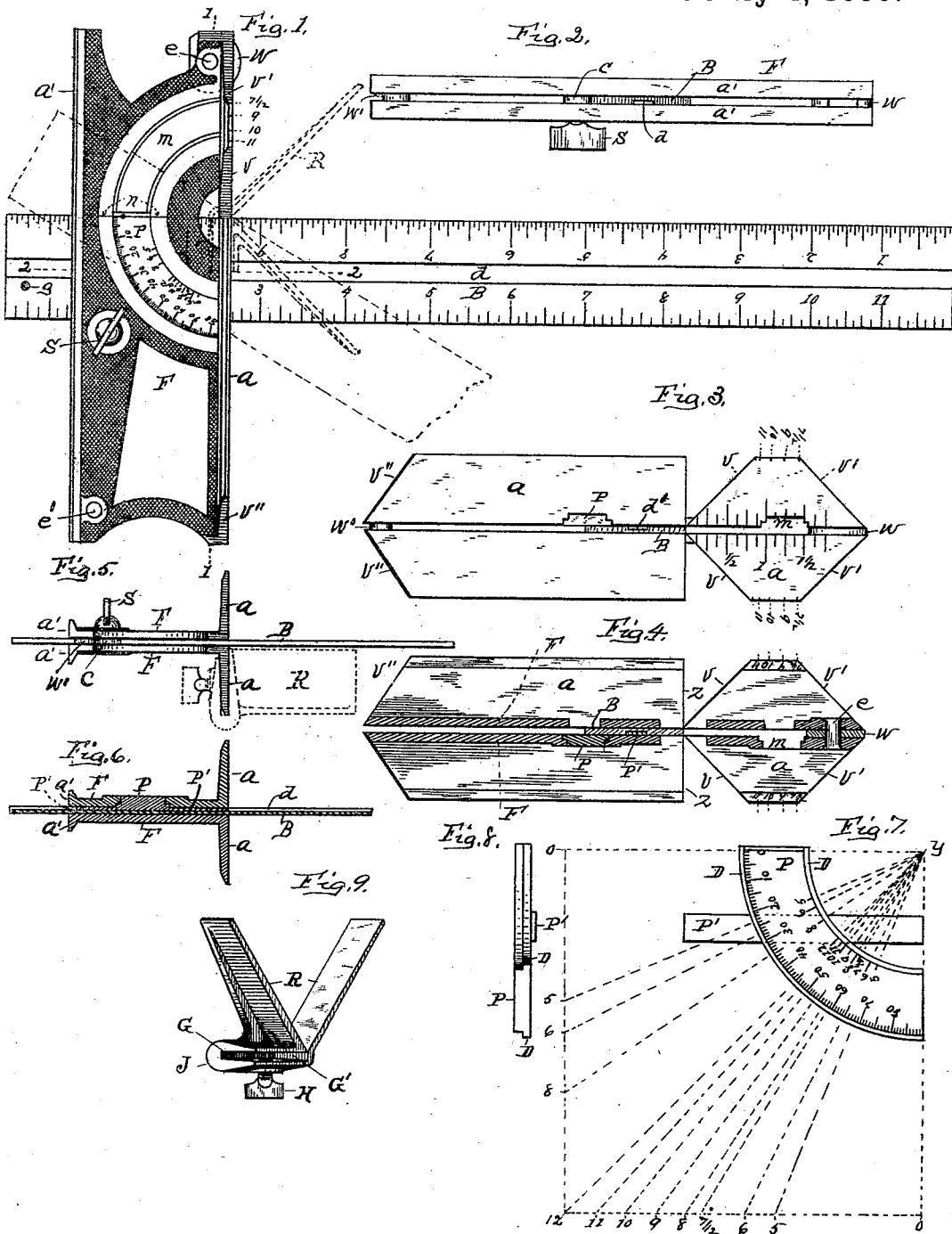


(No Model.)

M. GATES.
INTERSECTING MITER.

No. 500,570.

Patented July 4, 1893.



Witnesses.

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UNITED STATES PATENT OFFICE.

MATTHIAS GATES, OF WICHITA, KANSAS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO JONATHAN R. SNIVELY, OF SAME PLACE, AND ALFRED H. FLOWER AND ROBERT H. GROSS, OF BOSTON, MASSACHUSETTS.

INTERSECTING MITER.

SPECIFICATION forming part of Letters Patent No. 500,570, dated July 4, 1893.

Application filed July 16, 1892. Serial No. 440,249. (No model.)

To all whom it may concern:

Be it known that I, MATTHIAS GATES, a citizen of the United States of America, residing at Wichita, in the county of Sedgwick and State of Kansas, have invented certain new and useful Improvements in Intersecting Miters, of which the following is a specification, reference being had therein to the accompanying drawings and the letters of reference thereon, forming a part of this specification, in which—

Figure 1. is a side view of the tool; Fig. 2. a rear face view thereof; Fig. 3 a front face view thereof; Fig. 4 a sectional view on line 1—1 of Fig. 1, looking toward the face; Fig. 5. an end view of the tool; Fig. 6. a cross-sectional view on line 2—2. of Fig. 1; Fig. 7. a face view of the protractor quadrant of the tool, showing, in dotted lines, a diagram, representing thereby the manner of scaling the carpenter's protractor of said quadrant; Fig. 8. a side view of said protractor quadrant, and Fig. 9. is a perspective view of an intersecting center-miter head, designed as an attachment to the intersecting miter-bevel.

This invention relates to certain improvements in a mechanic's tool, designed for the purpose of a tri-square, a depth gage, a parallel gage, a miter-gage, a machinist's bevel gage, a carpenter's bevel and pitch gage, a center gage, a rabbeting gage, and a scale, and consists in the particular construction and novel arrangement of parts, which improvements are fully set forth in the following specification, and pointed out in the claims.

Referring to the drawings F represents a frame, made in two opposite and similar parts, preferably of malleable iron; which frame parts are arranged with their plain sides exactly opposite and facing each other, and are held a uniform distance apart by means of interposed washers *w* and *w'*, and are secured together, at the junction of said washers, by means of rivets *e* and *e'* arranged through corresponding holes of the frame parts and washers. Each said frame part *f* is provided with two side flanges, one of considerable comparative width shown at *a* and one of less width as shown at *a'*; the said flanges of one part extending in the opposite

direction from those of the fellow frame part, and so formed that those shown at *a* are parallel with those shown at *a'*, and so the face of each flange is at right angles to the facing surfaces of the two frame parts.

One frame part F is provided, in its side, with a semi-circular slot *m* arranged radiating from a point on a plane with the face of flanges *a. a.* and arranged to slide in said slot is a quadrant plate P having flanges D. D. which are seated, or shouldered in corresponding offsets of the frame adjoining the slot, as shown in Figs. 3, 4, 6, 7 and 8. Secured to, or made integral with, the inner side of said quadrant P is a guide bar P', made of a length equal to the width of frame F, and as the quadrant is caused to slide in its slot, said guide bar, operates in the space between the frame parts, see Figs. 1 and 7.

B is a scale blade, and is provided centrally in one side with a longitudinal channel *d*, in form corresponding with bar P', and extending throughout the length of the blade. The blade thus formed is placed between the frame parts, adjacent quadrant P with bar P' in the channel *d* of the blade; the position of said bar being such as to thus hold one edge of blade B to register with the center point from which semi-circular slot *m* radiates, as represented in Fig. 1, and by such arrangement of the blade its edge will thus intersect said center point at all possible adjustments thereof with relation to the face of flanges *a a*, also by such arrangement the quadrant P is held wholly in one end portion of slot *m* when blade B is adjusted at right angle to frame F, so that one end of the quadrant will be held so its zero scale mark will be equal with said intersecting edge of the blade B, and at an equal line the frame adjacent each side of slot *m* is provided with a scale indicator mark shown at *n* in Fig. 1, and thus when the zero mark of quadrant P registers with said mark *n* of the frame, it indicates that the blade B is held at a right angle to the faces *a—a* and *a'—a'*—of frame F.

As a means of describing the tool more clearly I will designate the intersecting edge of the scaled blade B as the forward edge, and the opposite edge thereof as the rear edge,

and at or adjacent the rear edge of the blade B is arranged a thumb screw S placed through a hole of one framed part and through an interposed washer or collar C, (see Fig. 5) and turned into a corresponding screw threaded hole of the opposite frame part, and serves as a clamping screw, to be set to cause the two frame parts to clamp and hold adjusted the blade B, the collar C of said screw serving as a stop gage for the blade B when brought to the position as shown in Fig. 1. And in such position of blade the tool may be used as a tri-square; also, by maintaining such angle of the blade, it may be passed between, the frame parts F with one end extending beyond the rear flange faces $a'-a'$ and thus adjusting the blade it serves as a depth gage, and will serve such purpose at either face of the frame.

In Fig. 1, the end of blade B extending from flange faces $a'-a'$ is represented as provided with a hole g which hole is for the purpose of inserting therein a scratch awl or pencil point, for parallel gage marking, and by adjusting the blade to bring said hole certain given distances, or desired distances, the tool may be used as a scratch gage.

On the face of quadrant P and adjacent its outer side, it is provided with regular degree scales ranging from zero to ninety degrees, which scale serves as a machinist's protractor for adjusting blade B to any desired angle within the arc of the quadrant. The inner side of the quadrant is provided with a carpenter's pitch and bevel scale, ranging each way from a $1\frac{1}{2}$ position, or forty-five degrees angle position of the blade B, which scaling I term a carpenter's protractor, and the said scaling is such as to give, one-fourth, one-third, one half, and two-thirds pitch; the term pitch being commonly known to carpenters, as the bevel or incline of roofs of buildings and the like. In determining the bevel of these various pitches, it has been customary to use an ordinary square, striking a line, representing the hypotenuse of the angle; gaging the angles by locating the terminals of the hypotenuse along the sides of the square, (see the representation by dotted lines in Fig. 7,) wherein the sides of said square are represented ranging from the vertex 12 each way to 0, and each side may be supposed to be divided into inches and fractions thereof. The quadrant P is located in this square as shown, and a series of radial lines are drawn, as represented by the dotted lines; which touch the points of the square at such points as represent the various pitches, being denoted, in one direction, at 11, 10, 9, 8, $7\frac{1}{2}$, 6 and 5, and in the opposite direction at 8, 6 and 5. The quadrant is therefore marked at such places touched by said radial lines, as shown; thus determining the scale of the carpenter's protractor, and when the said quadrant is moved in its slot and either said scale mark is brought to register with the indicator mark n of the frame, such indicated angle will be

given blade B, regarding the face of the frame F as the base line or side line of the angle, and the blade representing the hypotenuse of the angle, and thus, the tool is adapted as a carpenter's bevel and pitch gage, and by the use of the regular degree scales of the protractor the tool is adapted as a machinist's bevel gage, and adjusting either protractor so its center point will register with indicator mark n , the blade will be set to a miter, and thus the tool is adapted as a miter gage.

Flanges $a-a$ of the frame are made with miters, at either side of blade B and at the end at the forward edge of said blade as shown at V, V, and V' V' which are miter-bevels, and between said two bevels, at the outer margin of said flanges, scale marks are made, and when lines are drawn from the vertex of the angle intersected by blade B, parallel with angles V, V, such lines will represent the various pitches indicated by such scaling, which is shown in the drawings as being 11, 10, 9, $7\frac{1}{2}$, which represent what is termed by carpenters as the jack-miters, of pitches one-fourth, one third, one-half, and two-thirds, respectively. The opposite end of flanges $a-a$ are beveled as shown at V'' which bevels represent a one-third pitch. At the end of the tool adjacent forward or intersecting edge of blade B'' the face of flanges $a.a$ are scales d' as shown in Fig. 3, representing one inch and a fraction of an inch, which scale is used as a gage locating the position of blade B when laying out rabbets, a term known by carpenters, when furrowing wood, and thus the tool is adapted as a rabbeting gage.

R represents a center-head, or square, and is made with a yoke J having set therein a clamping screw H, and adapted to be adjusted on one flange a adjacent blade B, as represented by dotted lines in Figs. 1 and 5, so the side G of the yoke chamber will bear against the outer edge of said flange, and so the end G' of said chamber will bear against the square side Z of the flange, which will bring the vertex of the angle of said head to register with the center of the semi-circular slot M of the tool frame, with the side of the head close to blade B, as shown in Fig. 1, and thus said head angle intersects the intersecting point of the frame and blade of the tool, which results not only in providing a center gage, but, also, in the use of said head, in providing an intersecting bevel gage.

In uniting the two frame parts the interposed washer W is arranged so as to project from the frame as shown in Fig. 1, and serves as a guide when adjusting the tool to any certain work.

In forming the angles V.—V. of flanges $a-a$ the sides Z Z of the flanges are made to be at right angle with the length of the frame, and serve as a gage for squaring lumber or metal upon which the tool is adjusted.

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

1. The combination with the two-part frame provided with the parallel face flanges; and with the semi-circular side slot, and clamping screw; of the scaled quadrant, provided with the cross-guide bar, and the blade provided with the longitudinal side channel, substantially as and for the purpose set forth.

2. The intersecting miter-bevel comprising the two-part flanged frame having a flange of each part beveled and provided with pitch graduating marks and with the rabbet scale marks; the compound sliding protractor arranged in a semi-circular slot of one frame part, and provided with a guide bar extending between the frame parts, and the graduated blade provided with the longitudinal side channel arranged between said frame parts, guided by said bar, and arranged with one edge intersecting the center of said semi-circular slot, and a clamping screw for holding the blade, when adjusted, substantially as and for the purpose specified.

3. The herein described intersecting miter-bevel provided with the adjustable blade, and with the opposite beveled flanges, substantially as set forth.

4. The herein described intersecting miter-bevel provided with the adjustable blade, and

with the opposite beveled flanges and pitch graduating marks arranged, substantially as set forth.

5. The herein described intersecting miter-bevel provided with the adjustable blade, with the opposite face flanges extending each way from the intersecting edge of the blade, and provided with the rabbet scale marks, substantially as set forth.

6. The herein described intersecting miter-bevel provided with the adjustable blade, and with the sliding compound protractor arranged to be adjusted jointly with the blade, with the opposite face flanges, and with the square and bevel sides of said flanges, substantially as set forth.

7. The herein described intersecting miter-bevel, provided with the parallel faces, with the sliding quadrant provided with the compound protractor, and with the adjustable intersecting blade, arranged to be adjusted jointly with said quadrant, substantially as set forth.

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Witnesses:

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