(No Model.)

C. D. WALTERS.

SQUARE AND BEVEL INSTRUMENT.

No. 265,350. Patented Oct. 3, 1882.

Fig. 1.

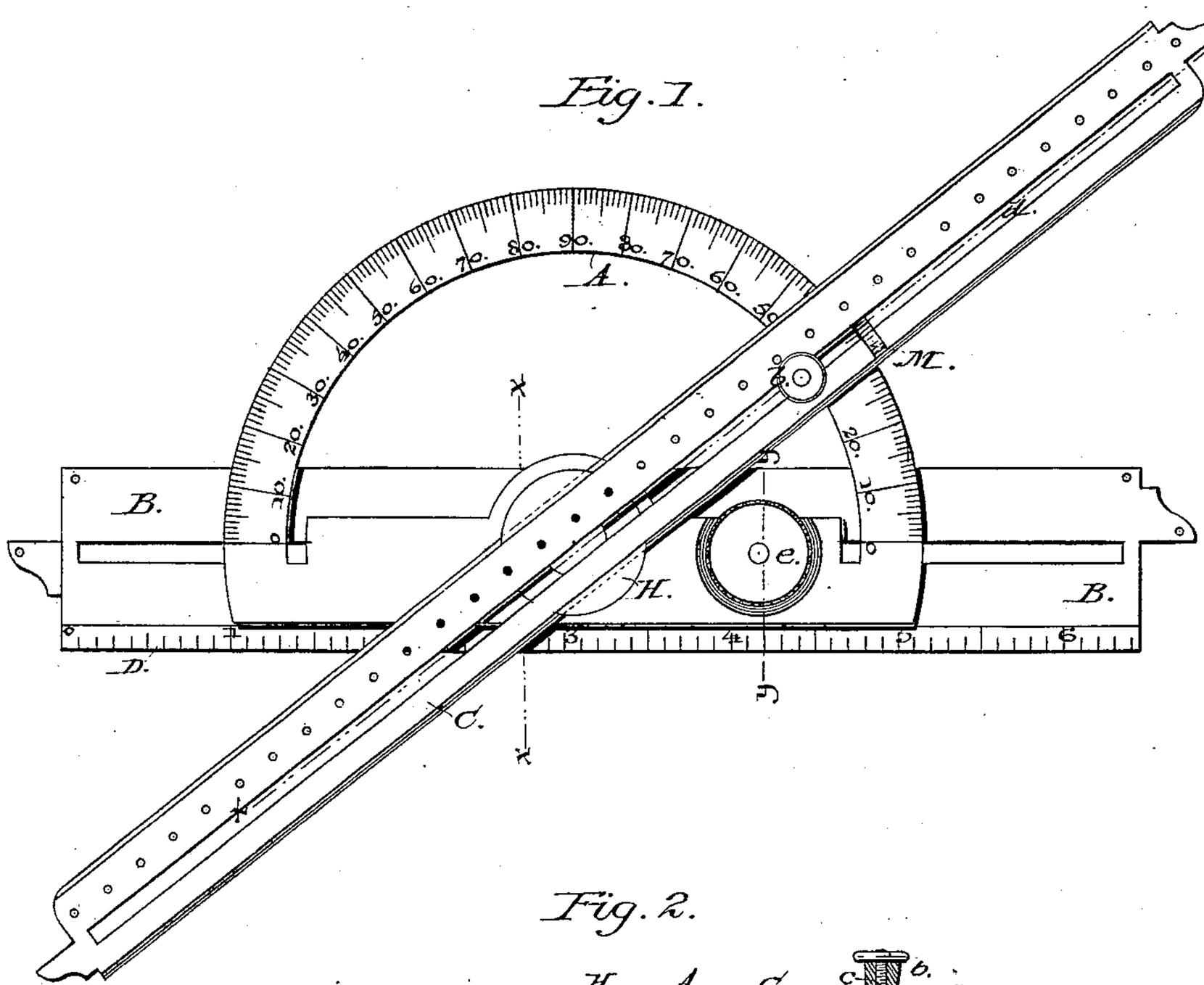

Fig. 2.

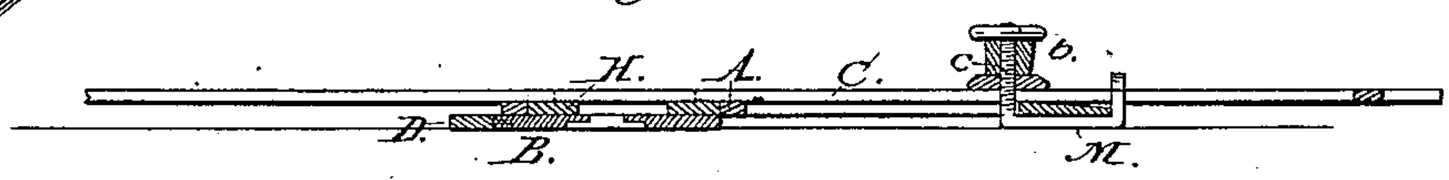

Fig. 3.

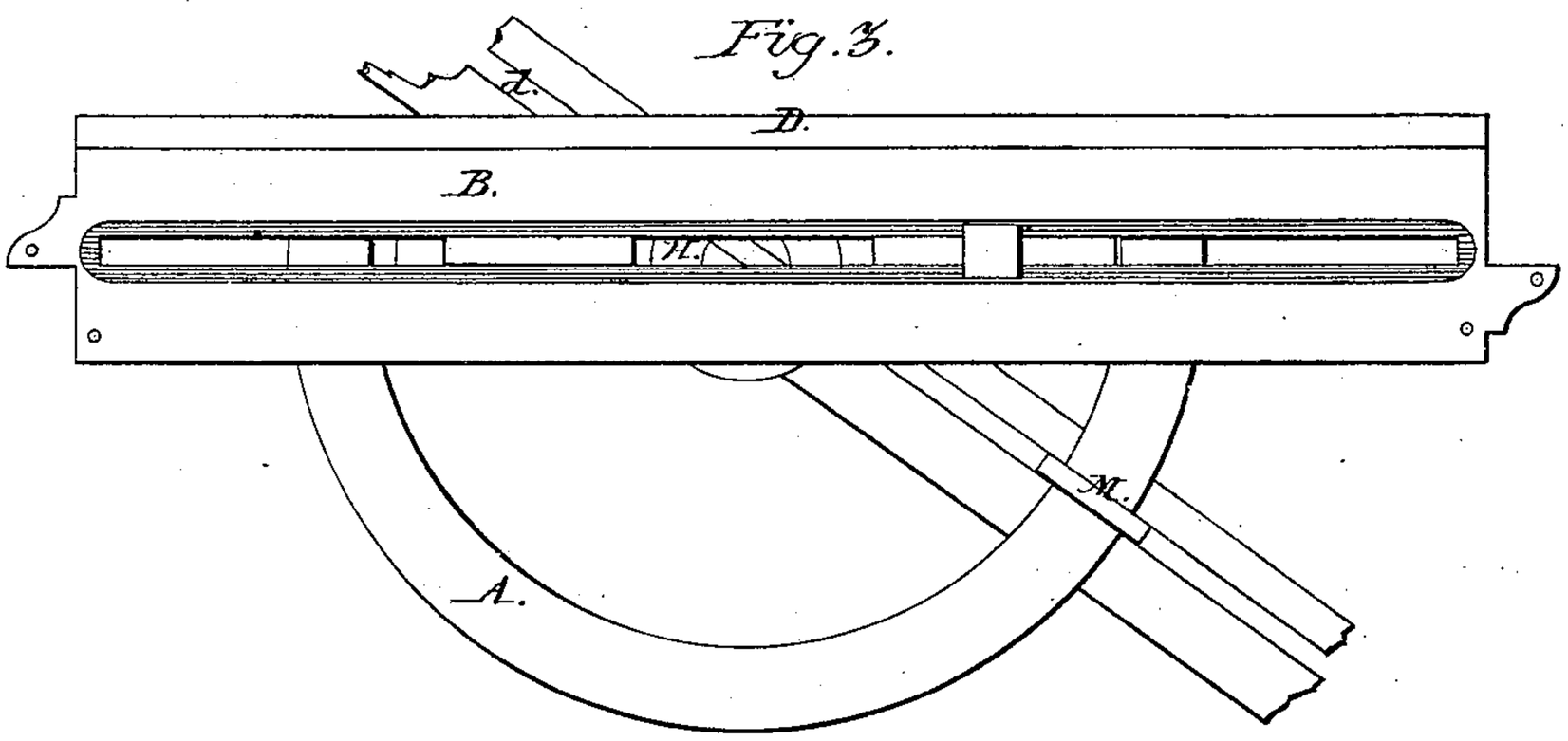

Fig. 4.

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UNITED STATES PATENT OFFICE.

CHARLES D. WALTERS, OF HARRISBURG, ASSIGNOR OF ONE-HALF TO ALEXANDER H. EGE, OF CUMBERLAND COUNTY, PENNSYLVANIA.

SQUARE AND BEVEL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 265,350, dated October 3, 1882.

Application filed December 14, 1881. (No model.)

To all whom it may concern:

Be it known that I, CHARLES DANIEL WALTERS, of Harrisburg, in the county of Dauphin and State of Pennsylvania, have invented certain new and useful Improvements in Square and Bevel Instruments; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention is an improvement upon inventions patented to me August 10, 1880, and January 11, 1881, entitled respectively "a square and bevel instrument" and "a square and bevel surface-gage." Said improvements consist in a former case, in the main, of a quadrantal sector pivoted at the angular intersection of the radii thereof to a blade or rule provided with an index-pointer at one or both extremities, which moves laterally freely over the graduated arc of said sector to indicate the degrees or aliquot parts thereof of a given or required angle. In the case of the latter of the above-mentioned improvements the blade or rule is provided with a longitudinal slot extending throughout the greater part of its length, and is adapted to ride freely across the sector radially. Said blade is also at the same time held firmly to the plane surface of the sector by means of chairs, one of which is secured to the sector at the point of angular connection of the two arms by means of a perforated pivot, upon which said chair and its inclosed blade revolve freely laterally in either direction, while the other chair rests upon the quadrantal graduated arc, and to which it is capable of being rigidly clamped when adjusted.

My present invention consists in utilizing one or more of the devices above mentioned in connection with a graduated semicircle with additional devices, as and for the purpose hereinafter more fully set forth. Hence I propose to use, instead of the two chairs described in the latter of the two above-mentioned improvements granted to me on the date aforesaid, only the chair represented as pivoted at the angular intersection of the radii, whose remote extremities are separated from each other at an angle of ninety degrees, and whose center is coincident with the point of said angular intersection. In place of the chair dispensed with, I propose to substitute in this application a clamping device that from its peculiar construction will perform its clamping function much more effectively, and is at the same time more readily adjustable or removable at will. In addition also to the rule or blade as described in the former of said applications granted to me, I propose to use in my present improvement a similar duplicate blade, which is, however, made to ride radially in but one direction—viz., in a line coincident with the permanent diameter of the semicircle, and rigidly attached thereto by means of a suitable clamping device. For greater convenience in use I propose that said duplicate blade shall move in its appropriate seat upon the plane side of the semicircle opposite to that upon which the other slotted blade rides, as aforesaid.

My invention further consists of a third supplemental blade graduated upon both its plane surfaces, if necessary, and attachable to and detachable from the above-mentioned duplicate blade at will, as and for the purpose hereinafter described.

In referring to the drawings, Figure 1 is a plan showing my instrument complete. Fig. 2 is a section on lines *x x x x* of Fig. 1. Fig. 3 is a plan showing back side of the instrument. Fig. 4 is a section taken on line *y y* of Fig. 1.

Similar reference-letters denote like parts in all of the figures.

In directing attention more particularly to the details of my improvement as illustrated in the accompanying drawings I will remark, as regards the construction and function of the slotted rule C, as shown in plan view, Fig. 1, I propose to construct the same as described in Letters Patent granted me January 11, 1881, as aforementioned, wherein said rule is made of metal or any other suitable material, and slotted throughout the greater part of its entire length, either centrally or with one edge of said slot coincident with the longitudinal center of the blade, and supplied with an index-pointer at one or both extremities. I propose also to so adjust said blade C to the chair

H that it may easily and freely ride and be retained therein by having the edges of said blade beveled off to an angle more or less acute, in order that it may engage more readily with a corresponding dovetailed socketed seat, H, said seat or chair being of such a vertical depth only as will correspond with the thickness of said blade, so that when said blade has been inserted into said chair, preferably endwise, the upper surface of said blade will be flush with the horizontal upper surface of said chair H, while the lower surface thereof is at the same time flush with the horizontal upper surface of the semicircle, in order that the said blade C may thus be so located as to admit of being freely slid or revolved about its pivotal connection over the graduated plane surface of the semicircle A.

In referring to the blade B, in addition to its general construction, which may be similar to that of the blade C, I have found it most convenient, in order to secure its particular function, to countersink or rabbet the slot of the same upon its under side, either throughout the entire or greater part of its length, so as thus to secure sufficient bearings for the reception of the guiding-beads, which latter are either continuous with or riveted fast to the plane surface of the diameter portion of the plate composing the superimposed semicircle. The opposite extremities of the blade B are also pierced by two or more perforations, each for the reception of an equal number of beads or similar appliances to secure the rule immovably, when desired, upon the horizontal surface of the drafting-board. By an examination of the drawings it will be perceived that the arc of the semicircle is graduated into one hundred and eighty degrees and aliquot parts thereof, for the purposes hereinafter set forth. The diameter portion of the semicircular plate is broadened to such a degree as will admit of the reception of a perforation or other bearing-seat sufficient to inclose the chair K, whose center is coincident with the center of curvature of the semicircle A. Said diameter is also pierced for the reception of another perforation, preferably circular, and bounded by beveled edges, and located upon either or both sides of the former perforation to afford a seat for the introduction of a screw or other convenient clamp, *e*, whose function it is to clamp the semicircle to the underlying blade B, said clamping device having its upper bearing-surface countersunk to a depth sufficient to bring the same flush with the plane surface of the semicircle, that no obstruction may otherwise interpose to prevent the ready passage of the blade C over the entire range of said surface. Said diameter is also cut away or niched to a sufficient depth on its inner edge to receive the vertical projection of the clamping device M on the under side when it is desired to bring the edges of the two blades C and B either parallel to or coincident with the same right line or prolongation thereof.

The clamping device M consists of the threaded nut *b* and the inclosed screw *c*, said screw being prolonged vertically downward sufficiently to clear the lower horizontal edge of the concave arc of the semicircle, when the prolongation of the screw, after having passed through the slot of the blade C to the point aforesaid, is bent at right angles in a line coincident with the line of direction of said blade continuously until the outer convex edge of the semicircle is reached, when said prolongation is again bent at right angles upward, again passing through the slot *d* until reaching the upper plane surface of said blade, when said prolongation is again bent at right angles, but in a direction at right angles to the line of direction of the slot, when, terminating, it is made to clamp the upper surface of the blade by means of the revolution of the adjusting-nut *b*.

Some of the uses, among many, to which the instrument may be applied will readily suggest themselves, even upon a merely cursory examination, to any skilled in the use of such instruments. If it be desired, for instance, to use the same as a protractor and lay off a given angle, it will be necessary simply, in the first place, to draw a right line upon the drafting-board. Then, taking said right line as a base-line, I cause the outer edge of the slotted blade B to coincide therewith, then revolving the slotted blade C upon the chair H until that edge of the slot thereof that is coincident with the longitudinal center of said blade coincides with the required line of graduation upon the arc-surface of the semicircle when clamping said blade rigidly thereto by means of the clamping device M, when I draw the required line intersecting the given base-line by pressing my scribe firmly against said edge of the slot until said intersection is reached, when the inclination of the two lines to each other will indicate the required angle. Again, if it be required to measure the obliquity of a given angle, the said or outer edge of the blade B is made to coincide with the one right line constituting one of the limbs of the given angle, when the blade C is made to revolve upon the chair H until said slot-edge coincident with the longitudinal center of the same coincides with the other limb of the given angle, which, upon being then clamped rigidly thereto by the use of the clamping device M, will indicate upon its line of intersection with the graduated arc the obliquity required. If it be required to draw parallel lines to any inclination to a given fixed line, the arrangement of the different parts of the instrument are in the main as above indicated, except that the semicircle is unclamped, so as to admit of a free movement longitudinally in its slotted seat, when the required lines are drawn as indicated by the lines of division upon the supplemental blade D, which is attachable at will along the outer edge of the slotted blade B, whenever exact spacing of lines is required.

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

1. A square and bevel instrument consisting of a graduated semicircle having two rules or blades arranged to slide on opposite sides thereof, as and for the purpose set forth.

2. In a square and bevel instrument, the combination, with a semicircular protractor, of the rule or blade C, provided with a longitudinal slot, one wall of which is coincident with the longitudinal center of said blade, and the clamping device M and chair H, as and for the purpose set forth.

3. In combination with a graduated semicircle, the slotted rule C, and the slotted and rabbeted blade B, both blades provided with pointers, the clamping device *e*, and guiding-beads, as and for the purpose specified.

4. In combination with blade B, semicircle A, and blade C, the graduated auxiliary attachable blade D, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

CHARLES DANIEL WALTERS.

Witnesses:

HARRY MCCORMICK,

ROBT. FUTMER.