(No Model.) 3 Sheets—Sheet 1.

A. E. MEEK.

COMBINED BEVEL, PROTRACTOR, GAGE, CENTER SQUARE, &c.

No. 409,414. Patented Aug. 20, 1889.

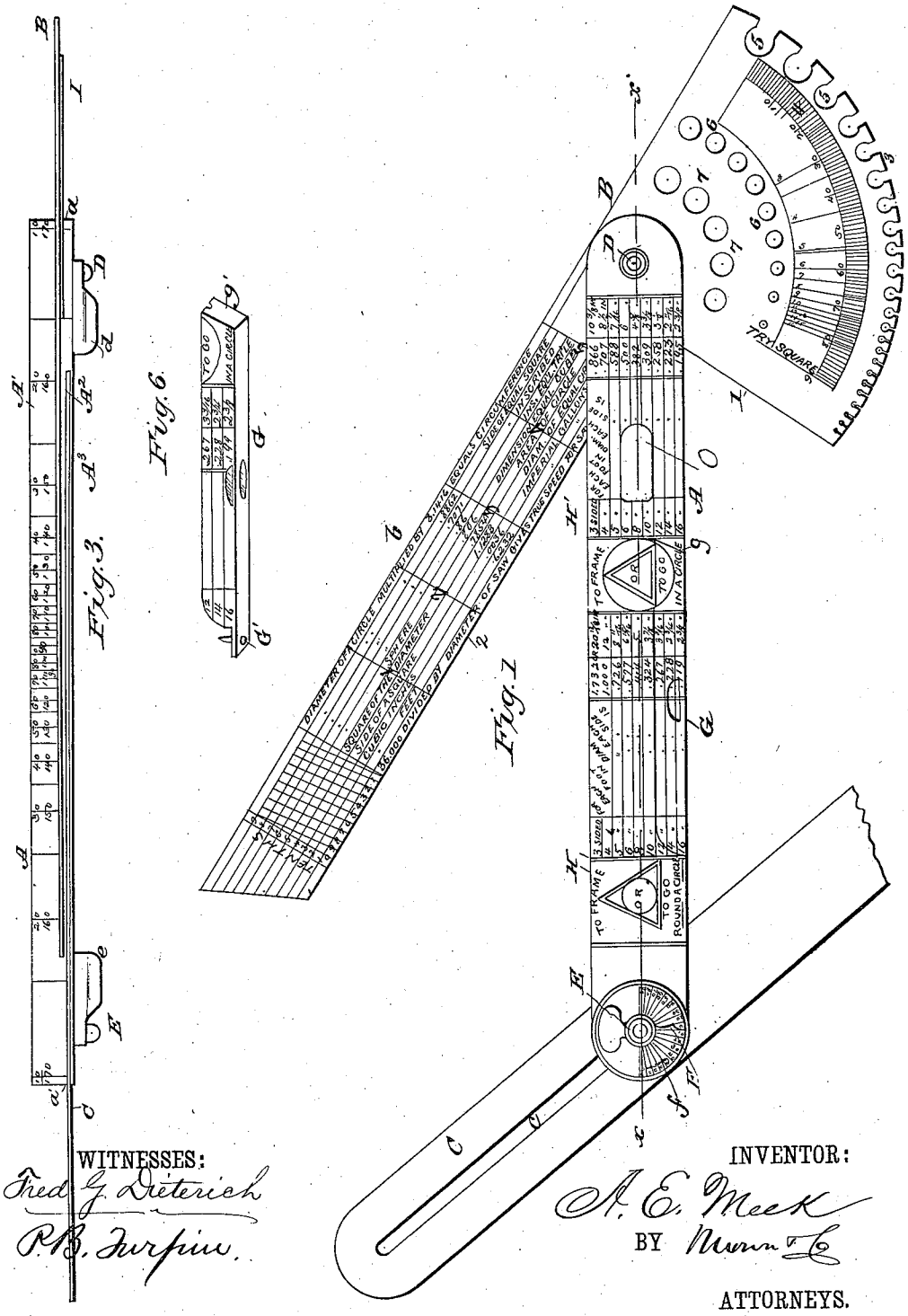


Fig. 3.

Fig. 6.

Fig. 7.

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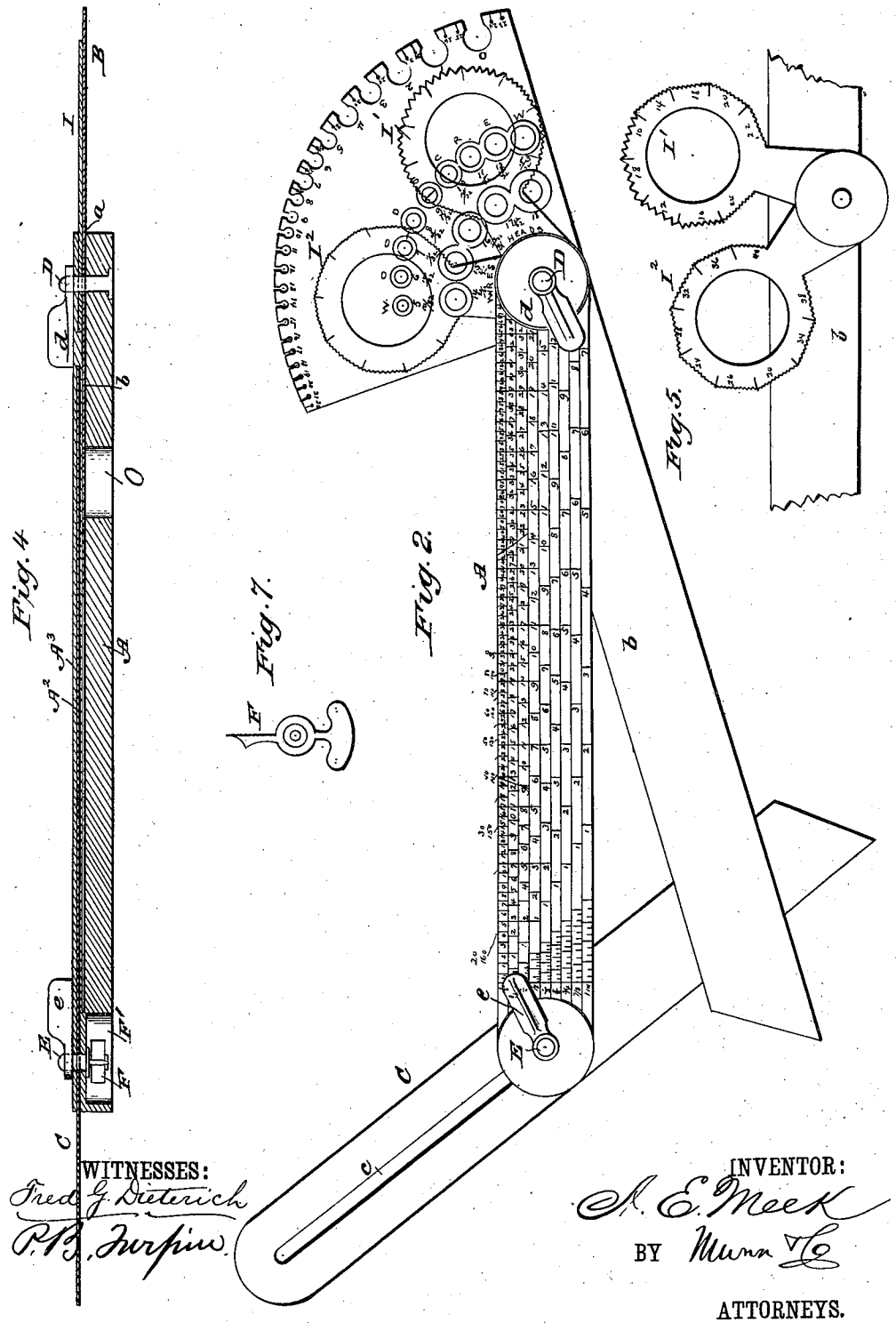
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No. 409,414. Patented Aug. 20, 1889.



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(No Model.) 3 Sheets—Sheet 3.

A. E. MEEK.

COMBINED BEVEL, PROTRACTOR, GAGE, CENTER SQUARE, &c.

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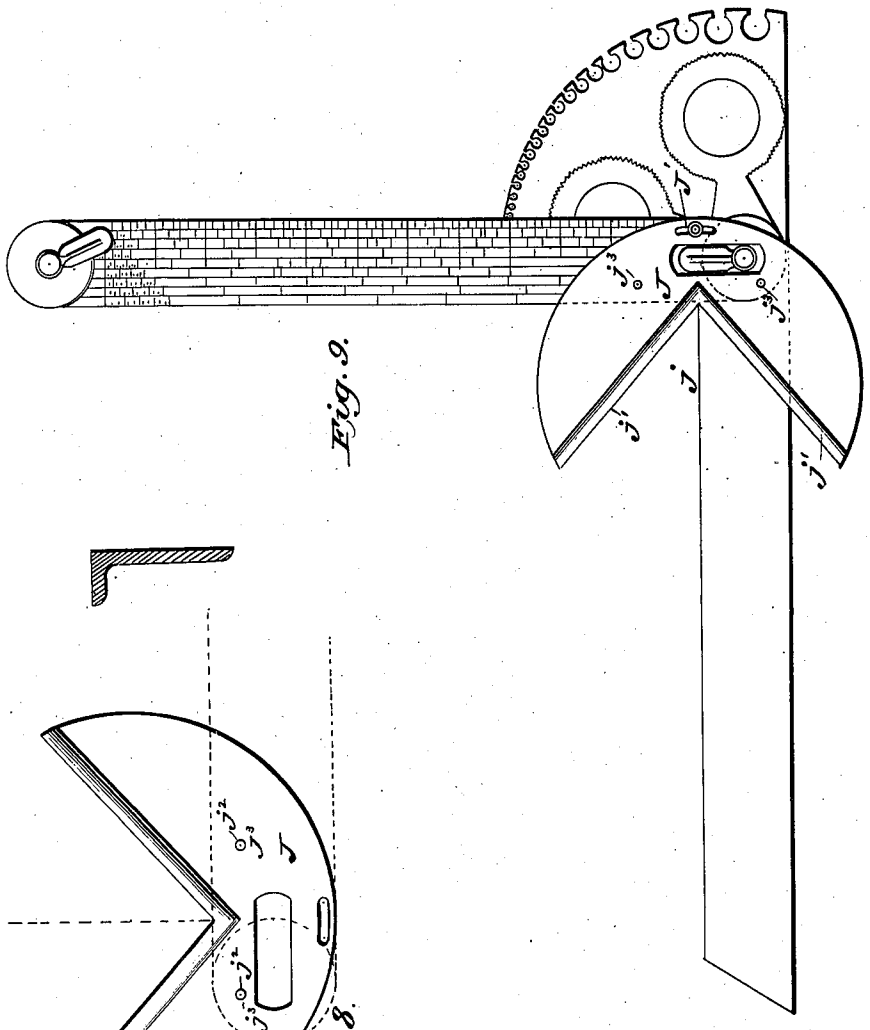


Fig. 2.

Fig. 3.

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UNITED STATES PATENT OFFICE.

ALPHONZO EUGENE MEEK, OF DALLAS, TEXAS.

COMBINED BEVEL, PROTRACTOR, GAGE, CENTER-SQUARE, &c.

SPECIFICATION forming part of Letters Patent No. 409,414, dated August 20, 1889.

Application filed March 13, 1888. Serial No. 267,132. (No model.)

To all whom it may concern:

Be it known that I, ALPHONZO EUGENE MEEK, of Dallas, in the county of Dallas and State of Texas, have invented a new and useful Improvement in Combination-Tools, of which the following is a specification.

This invention is a combination-tool seeking to provide a single implement so constructed and inscribed as to be useful to architects, draftsmen, millwrights, machinists, and all metal and wood workers, and which shall be light and convenient to carry and may be quickly adjusted to its different positions for use, in the manner hereinafter described.

The invention consists in certain features of construction and combinations of parts, as will be hereinafter described and claimed.

In the drawings, Figures 1 and 2 are respectively front and rear views of the device. Fig. 3 is an edge view thereof. Fig. 4 is a section on line *x x*, Fig. 1. Fig. 5 is a detail view of the thread-gage; Fig. 6, a detail view of the level. Fig. 7 is a detail view of the inclinometer-pointer. Fig. 8 is a detail view of my center-gage, and Fig. 9 is a view of the device with the center-gage in position for use.

The device comprises a spirit-level, two bevels, an inclinometer, wire iron and thread gages, protractor, scale of cuts and lengths of all the angles around the circle, and tables useful to those in the mechanic arts. The main bar or body A is slotted from one end at *a*, forming a way for the quadrant-blade B, and from its opposite end at *a'* forming a way for the angle-blade C, which forms a part of the inclinometer, and the blades B and C are secured by screws D and E, having winged nuts *d* and *e*, by the tightening of which their respective blades may be secured in any desired adjustment. The front face of the body adjacent the opening for screw E is graduated at *f*, and a weighted pointer F is pivoted on said screw E and registers along said graduation *f*, the body A, blade C, pivot, and pointer thus forming an inclinometer. The opening *c* of blade C, through which the screw E passes, is slotted or elongated in the direction of length of said blade C, so such blade may be set into the slot *a'* of the body A when the device is folded up. It will be noticed that the slots *a a'* form the body A into a main strip A' and strips A^2 A^3.

On or around the edge of the main strip A' I provide protractor-graduations for use by platting-engineers. Such graduation-marks are formed on the edge of the section A', as will be seen in Fig. 3, and the center is a mark across the opposite edge of the section. The protractor is used as any other protractor by simply placing the tool on its flat side, with the center on any given point on a line, and the degree-points are noted by dotting or indicing on the graduated edge.

The spirit-level G is fitted to enter a socket provided for it in the main strip A', such socket being undercut at one end *g* to receive the end *g'* of the level, and the opposite end of such level is held by means of a screw G', such level when in position forming practically a part of the main strip A', as shown in Fig. 1.

On its front face the body A has inscribed tables H H', giving the length of the sections of different polygonal frames which it may be desired to fit in or around circles. On its opposite or rear face the body A is graduated into a scale of inches and fractions thereof.

The quadrant B pivots on screw D and has its blade *b* fitted to be incased in slot *a*. The edges 1 and 2 of the quadrant-head and blade form a true fixed try-square. The outer edge 3 of the quadrant-head is curved in the arc of a circle, and such head is properly graduated on its front face at 4 to form it into a protractor, while the front face of the blade *b* of such quadrant is inscribed with information to aid in ascertaining the circumference of a circle, the side of a square equal a given circle, the side of a square which may be inscribed in a given circle, &c.

In describing the protractor-graduations 4 on the quadrant of the bevel-blade they may be said to be not used or applied from a given center, as commonly known in protractors,

but are arranged to be used to get the degrees of inclination readily and quickly by architects, millwrights, machinists, and carpenters by taking the reading of the graduation-line through a slot or opening O through the section A′ of the blade A, as shown in Figs. 1 and 4, when such opening is adjusted over the protractor-graduations, thus giving the degree-reading without making a draft with a right line and center, as would have to be done with regular protractor. For instance, in all grain-establishments, flour-mills, cotton-seed mills, and ore-mills, where materials are handled by inclined planes, spouting, &c., especially flour and cotton-seed mills, the product in its various stages of reduction requires various angles of incline, to run which is ordinarily ascertained by the millwright by a brief draft. This arrangement by degrees on a bevel-blade gives the whole matter at a glance.

It will be understood that a dot or indicator-point may be formed in the wall of opening O, by which to insure accuracy in reading the protractor graduation-lines.

The curved edge of the quadrant-head is formed with openings 5, forming a metal and wire gage.

I form through the quadrant-head openings 6 and 7, the former forming wood-screw gages, while the latter serve as wire-gages and as gages for nail and screw heads.

On the screw D, between the quadrant and the strip A^2, I pivot the thread-gage I, formed in sections $I' I^2$, the edges of which are formed to gage threads from 8 to 40, as will be understood from Figs. 2 and 5.

When not in use, the inclinometer-blade C may be slipped up in slot a' and the shank of the quadrant be turned into the slot a, when the device is in compact shape for carrying or for storing away.

It will be seen that the slotting of the body at $a\ a'$ enables the incasing of the plates C b in said body and so protects such plates when not in use. For this reason I prefer to pivot the plates to the body in such slots. I also prefer to provide a socket F′, in which to seat the pointer F and to provide the graduations f on the base wall of such socket.

It is my purpose to construct the device of steel, and to mark the graduations and tables therein.

The center gage-plate J is formed with a recess j, having its opposite walls $j'\ j'$ diverging outwardly, and is supported on the main bar, being provided with openings j^2 to receive steady pins or studs j^3 on said bar, so the placing of the plate J on the bar with openings j^2 over pins j^3 will insure the proper arrangement of the said plate with reference to the edge of the main bar, so the latter will be at a right angle to a line that will equally divide angle between the walls j' of the recess j in plate J. The plate J is secured to the main bar by a screw J′, as shown. By the arrangement of the gage-plate as described, it is easy to bring the edge of the quadrant-blade to intersect the angle of the walls i' by simply bringing the right-angled edge of the body of such quadrant into line with the edge of the main bar. The edge of the blade will intersect the angle of the walls, as shown.

In use, by placing the walls $j'\ j'$ against a shaft and drawing a line along the edge of the quadrant-blade and then adjusting the center gage-plate to a different position on the shaft and drawing another line along the said straight-edge, the intersecting point of such lines will mark the center of the shaft.

Having thus described my invention, what I claim as new is—

1. The combination of the main bar, the center gage-plate having a recess formed with diverging walls, fastenings for securing the gage-plate to the main bar, with the side edge of such bar at right angles to a line equally dividing the angle between the walls of the recess in the gage-plate, and a blade B, connected with said main bar, all substantially as described, whereby when blade B is turned at right angles to the main bar one of the edges of said blade will equally divide the angle between the walls of the recess in the gage-plate, substantially as set forth.

2. The combination of the main bar having studs j^3, the plate J, having recess j, and openings j^2 to receive studs j^3, and the quadrant-plate having the edge of its blade equally dividing the angle between the walls of recess j, substantially as set forth.

3. A compound tool, substantially as described, comprising the body A, having a level, the inclinometer-blade pivoted to such body, the pivoted pointer, the graduations along which said pointer registers, and the quadrant pivoted to said body, all substantially as set forth.

4. The compound tool comprising the body A, the plate C, having slot c, the screw connecting said plate C to the body, the pointer F, and the graduations f, along which said pointer registers, the quadrant-plate pivoted to the body and having its head formed with a curved edge, and having graduations forming a protractor, and having openings in said curved edge forming a metal gage, openings being made through said head, forming screw and head gages, substantially as set forth.

5. The compound tool herein described, comprising the body A, the quadrant-plate pivoted thereto, and the thread-gage I, pivoted to the body, substantially as and for the purposes specified.

6. The improved compound tool herein described, consisting of the body A, having slots $a\ a'$ formed from its opposite ends, and having a socket F′ and graduations f, the level on said body, the plate C, the screw for pivoting said plate C to the

body, the pivoted pointer registering along graduations *f*, the quadrant-plate having a head and a shank, the latter being fitted to slot *a*, and the head having wire and metal gage, the screw for pivoting the quadrant-plate to the body, and the thread-gage, also pivoted on said screw between the quadrant-plate and the strip A^2 of the body, all substantially as and for the purposes specified.

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