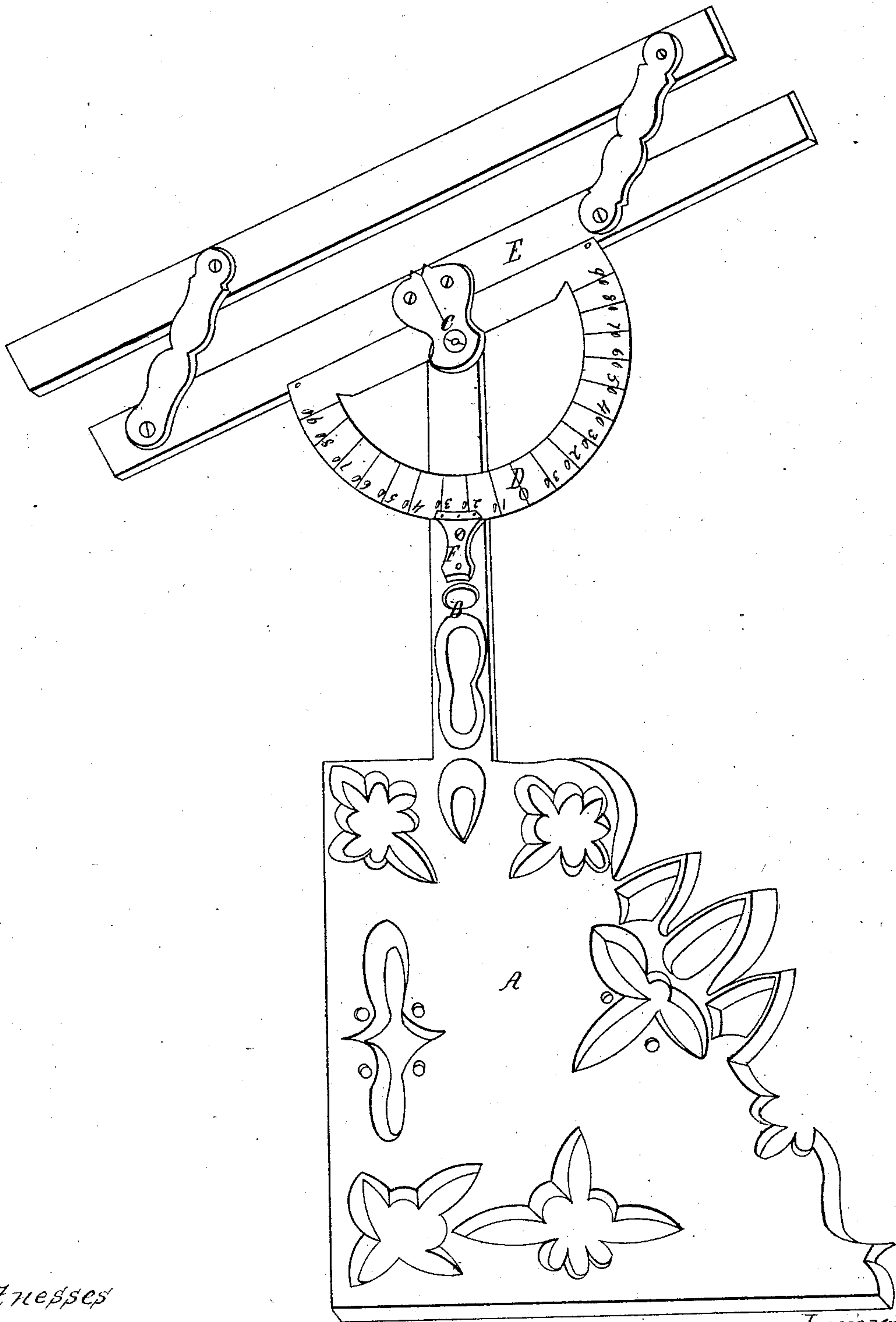


C. Gordon.

Goniometer.

N^o 23,365.

Patented Mar. 29, 1859.



Witnesses
M. Tallant
Neh Ballan Jr.

Inventor
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UNITED STATES PATENT OFFICE.

CHARLES GORDON, OF WASHINGTON, DISTRICT OF COLUMBIA.

PROTRACTOR.

Specification of Letters Patent No. 23,365, dated March 29, 1859.

To all whom it may concern:

Be it known that I, CHARLES GORDON, of Washington, in the District of Columbia, have invented a new and Improved Protractor; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawing, making a part of this specification.

10 This invention consists of an instrument having a heavily weighted base to an arm of which is firmly attached a graduated arc, a vernier and parallel rule, by means of which engineers, surveyors, and draftsmen
15 can protract triangles, or other right lined figures in a more expeditious and accurate manner than heretofore.

To enable others skilled in the art to fully understand and construct my invention, I
20 will proceed to describe it.

In the accompanying drawing, A. represents the heavy base to which the other parts of the instrument are attached. B. represents the meridian limb projecting from
25 said base and parallel to one of its principal sides.

C. represents an adjustable binding screw for fixing the position of the graduated arc and its attachments.

30 D. represents the graduated arc.

E represents the parallel ruler.

F represents a vernier.

The base A, is of cast metal, and purposely rendered heavy in order that it may
35 retain its place on the surface upon which the drawing is to be executed. Its straight lines are planed, or filed off, with great accuracy, and the angles made by them are intended to be as nearly mathematically true
40 as the means of construction will admit. This precaution is also applied to the meridian limb B, which carries the other parts of the instrument; these consist of a vernier, graduated arc, and parallel rulers. The

45 former does not differ in its construction from other verniers, and may be graduated to a coarse or fine reading as any given case may require. The arc which is also graduated moves in front and slightly beneath
50 the edge of the fixed vernier. It has a

tongue, or projection from its base which furnishes the means of fastening it to the meridian limb B, by the screw C. This is not only a clamping screw but also serves
55 as a center around which the arc and rulers revolve. The rulers are firmly riveted on one side to the base of the arc, which secures the simultaneous movement of both together, to any required position.

In order to use my protractor in drawing
60 a diagram or other figures for showing the results of triangulations by compass, or theodolite, the instrument is laid flat upon the drawing paper. Its base and side will represent the base and meridian lines of
65 the work, while the convenient movement of the arc and ruler will enable the operator to read off, and protract any angle for which the data may be furnished in the field notes; such angles may be transferred
70 at once to the paper with perfect accuracy however complicated their number or extent. The instrument may be moved also to any other part of the drawing; but its construction enables the operator at any
75 time to regain the original base, or meridian without perceptible error. It is regarded as one of its principal advantages that the usual base, or meridian lines in the drawing of a survey, or diagram may be substantially
80 dispensed with, since it is at any time only necessary to bring the arc to zero reading, to obtain these lines correctly. The parallel ruler is found most effective not
85 only in tracing the lines; but for facilitating the projection of more extended lines in the drawing, by means of a straight edge applied to one of its sides.

By means of this protractor it is found
90 that the difficulty of closing up the work of a survey, and of making the starting and returning points meet without error, is entirely avoided.

The instrument is simple in its construction not liable to get out of order in ordinary
95 usage, and will be found exceedingly useful to surveyors and engineers as well as architects, and in all institutions of learning where their profession is made a part of
100 curriculum of study.

I do not claim any of the devices separately which are herein referred to, as they have been long known and used; but

What I do claim and desire to secure by Letters Patent, is—

My improved protractor as herein described, consisting of the base, the meridian

limb, the venier, the arc, and rulers with the clamping screw, the whole arranged and operated as specified.

CHARLES GORDON.

Witnesses:

N. CALLAN,

NICHAS. CALLAN, Jr.