

Geographical Map.

N^o 58,748.

Patented Oct. 16, 1866.

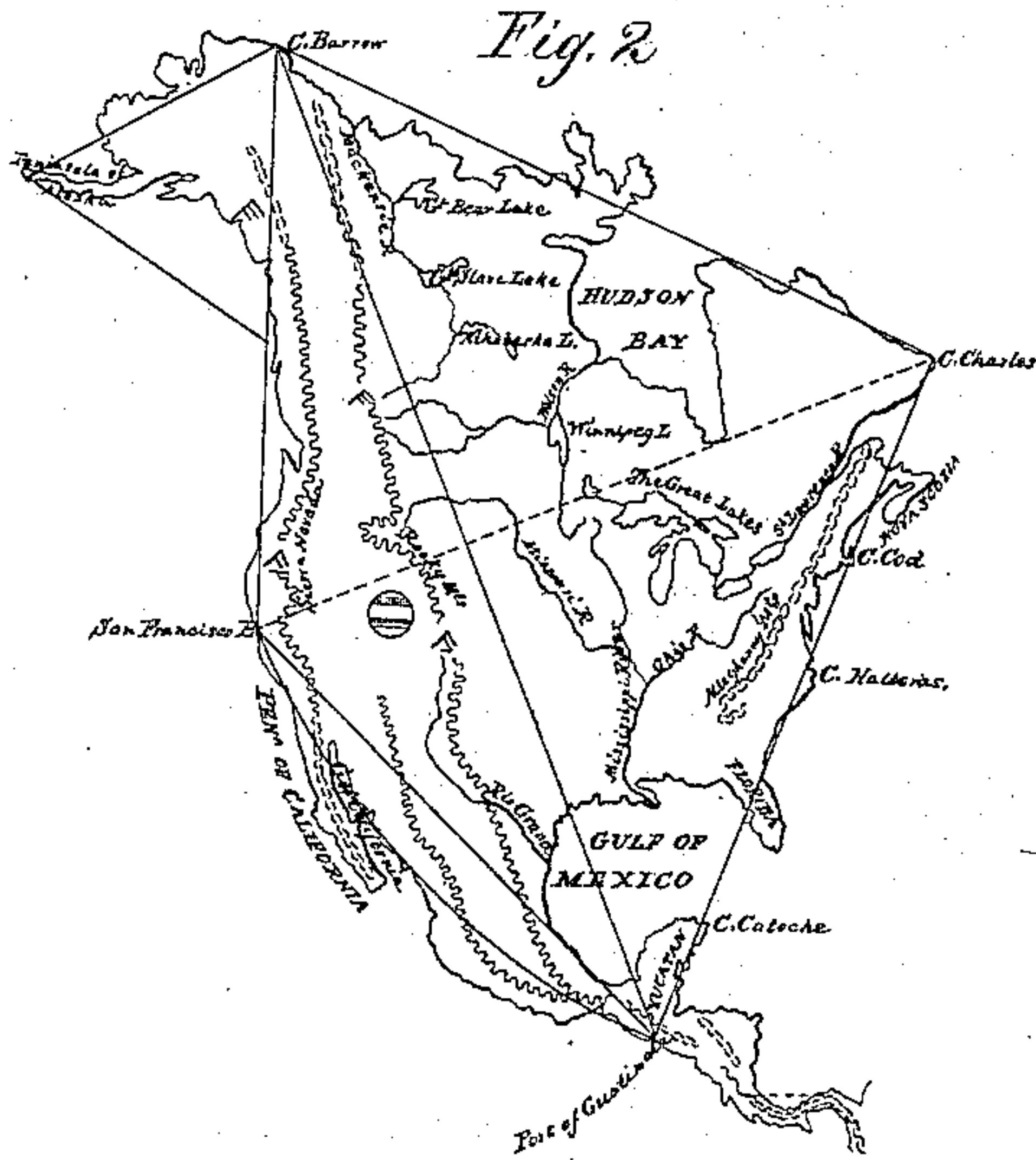
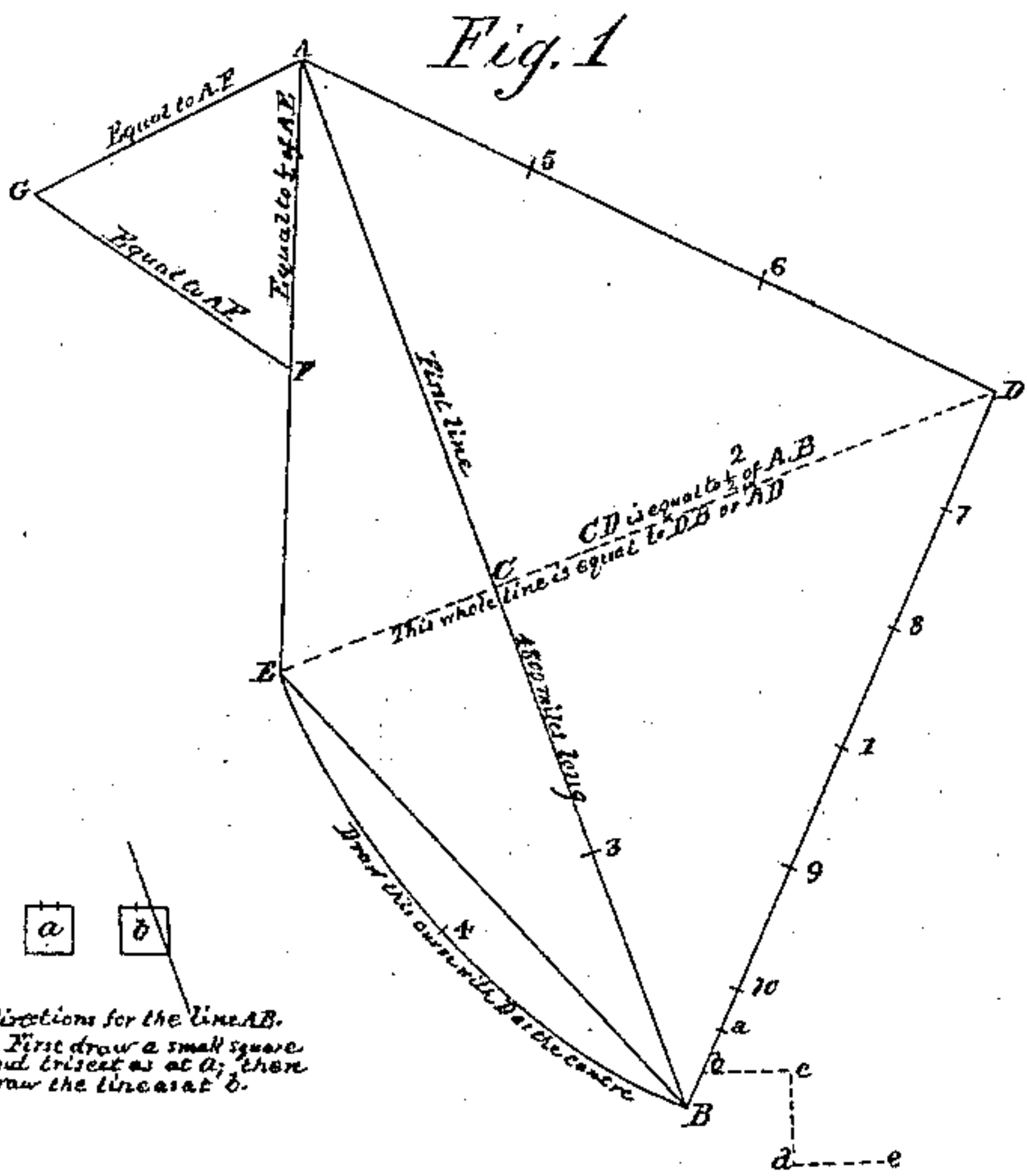


Fig. 5

MOUNTAIN CHAINS

First Class Over 16,000 feet high or over three miles high.

Second Class Between 8000 and 16000 feet or 1½ and 3 miles high

Third Class Between 2000 and 8000 feet or ½ and 1½ miles high

Fourth Class or Hills Under 2000 feet

CITIES AND TOWNS

1st Class Cities whose population is between 1000 and 10,000	2nd Class Cities whose population is between 10,000 and 100,000	3rd Class Cities whose population is between 100,000 and 1,000,000 <i>The star mark is the diff.</i>	4th Class Cities whose population is over 1,000,000 <i>The star mark is the diff.</i>
.....1,000	○---10,000	◎---1,000,000	
;-;-2,000	+---20,000	+---200,000	⊕---2,000,000
*--3,000	#--30,000	#--300,000	*--3,000,000 Gr.
✦--4,000	#--40,000	#--400,000	PLATEAUS
✦--5,000	#--50,000	#--500,000	⊖---1,000 feet high
✦--6,000	#--60,000	#--600,000	⊖---5,000 " "
✦--7,000	#--70,000	#--700,000	⊖---9,000 " "
✦--8,000	#--80,000	#--800,000	⊖---12,000 " " &c.
✦--9,000	#--90,000	#--900,000	

MOUNTAIN PEAKS

△ ¼ Mile high	△ 2 Miles high	
△ ½ " "	△ 2½ " "	Low Lands
△ ¾ " "	△ 3 " "	Hilly Regions
△ 1 " "	△ 3½ " "	High Lands
△ 1½ " "	△ 4 " "	

Fig. 3

Fig. 4

Reference to lines used in the construction
of the State of Alabama.

From 1 to 2, First Line, 150 miles in length.

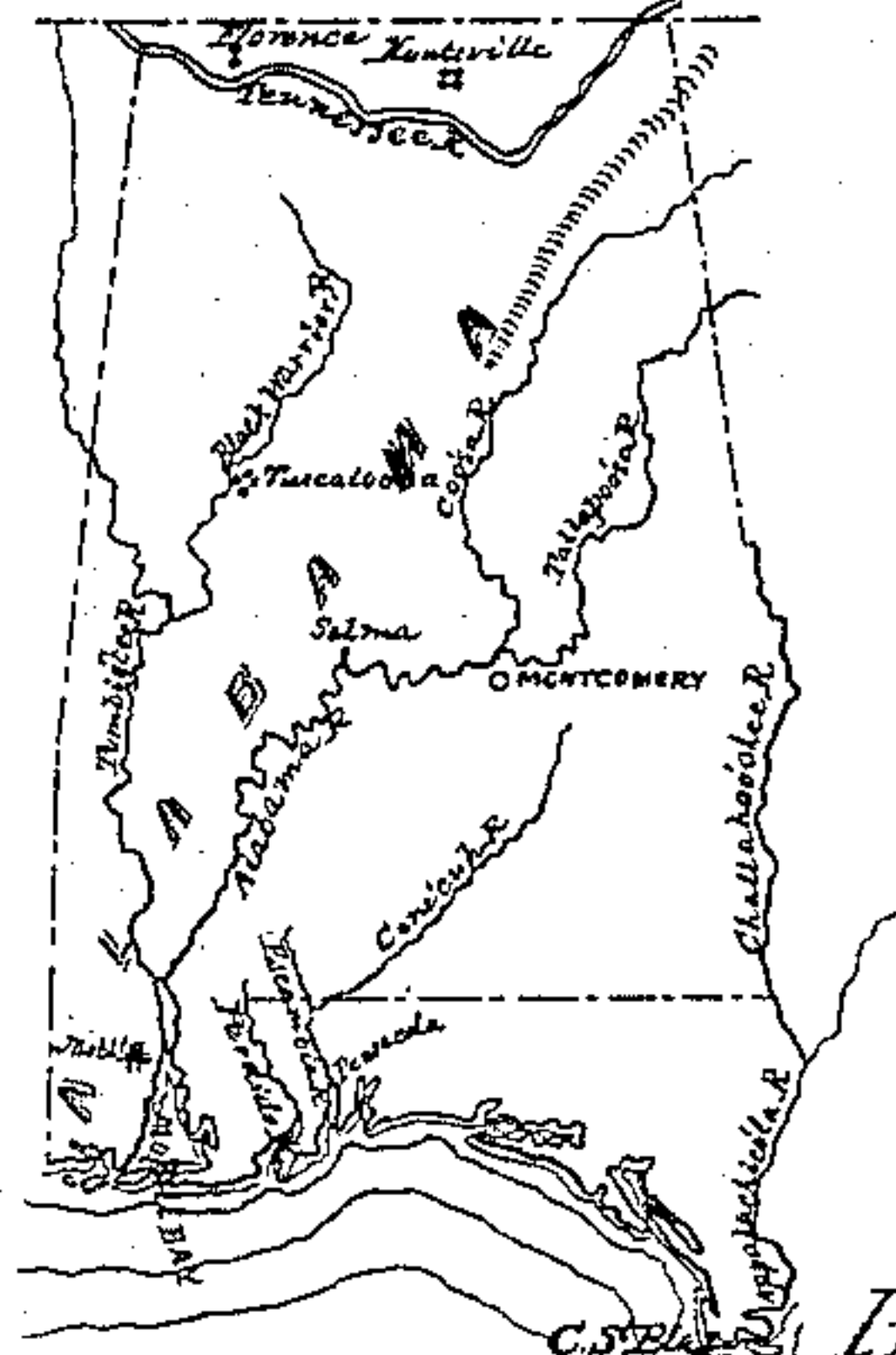
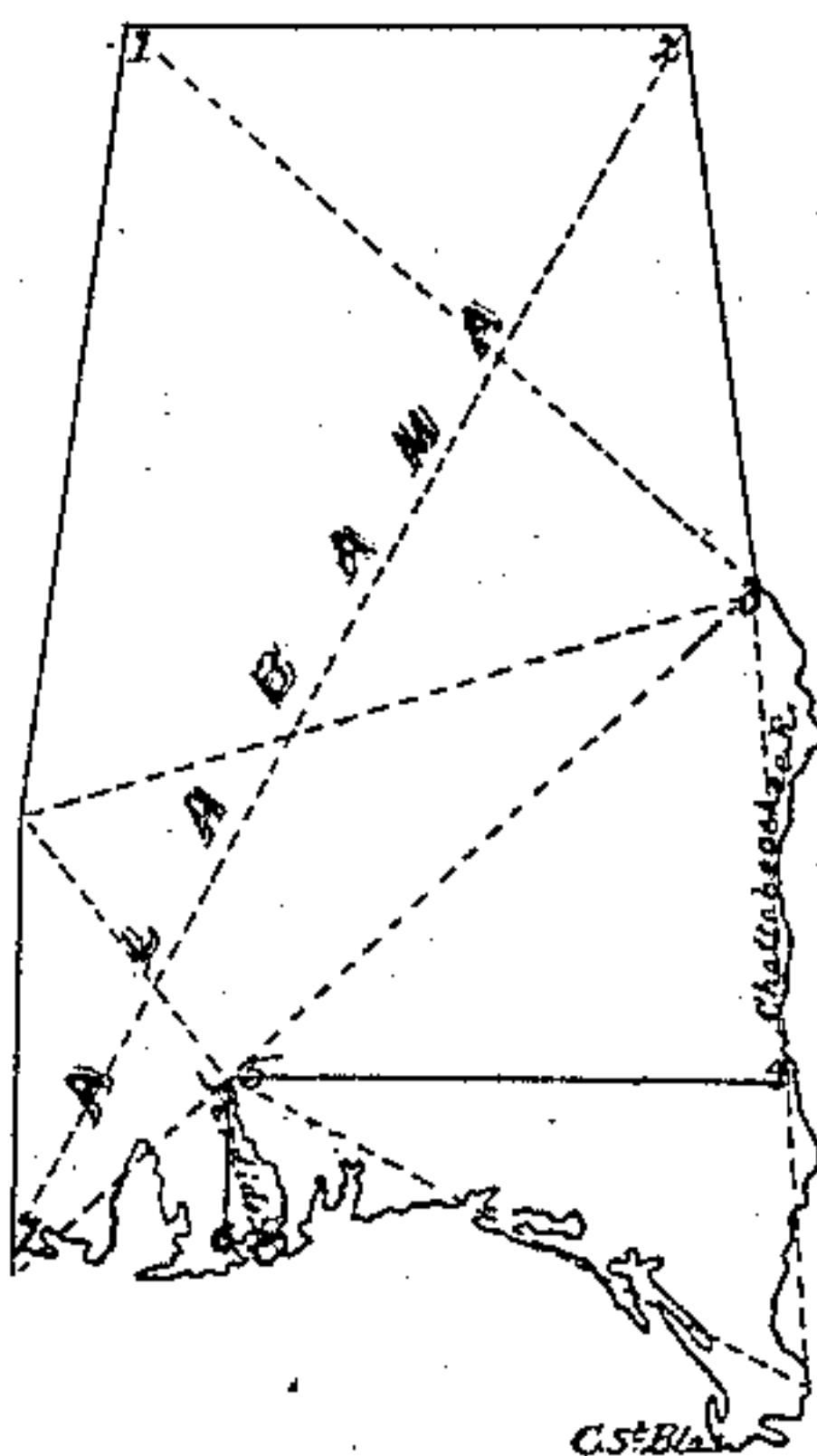
From 2 to 3, Equal to First Line.

From 3 to 4 D² " — D² — " —

From 4 to 5 D^o " D^o "

From 5 to 6 Equal to $\frac{1}{3}$ of First Line.

From 6 to 7 D_4^0 " D_4^0 " D_4^0 "



Witnesses.

Reverthwait
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UNITED STATES PATENT OFFICE.

E. A. APGAR AND A. C. APGAR, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN GEOGRAPHICAL MAPS.

Specification forming part of Letters Patent No. 58,748, dated October 16, 1866.

To all whom it may concern:

Be it known that we, E. A. APGAR and A. C. APGAR, of Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a new and useful symbolic language for expressing the size of cities and the heights of hills, mountains, and plateaus, and also an Improved Method of Constructing Geographical and other Maps; and we do hereby declare the same is fully described and represented in the following specifications and the accompanying drawings.

The nature of our invention consists in the use of such triangulations and other geometrical figures for helps in map-drawing, in which some one line in each case is selected and used for determining the lengths of other lines about the figure.

The importance of our discovery and invention consists in determining what line about the figure to be constructed will best serve the purpose of a measuring-unit. In order to serve such a purpose, it must be a convenient measure or multiple of other lines whose lengths are to be determined by it. We claim to have discovered for each of our geometrical figures such a convenient measuring-unit, and to have made use of a new and highly-important method of using this measuring-unit for completing the figure.

The nature of our invention consists in a simple, comprehensive, and easily retained symbolic language and mode of constructing maps for the use of schools, whereby the pupil will be enabled, by a little practice, to draw and construct maps of States, continents, &c., without the aid of a copy, and to remember the population of cities, the height of hills, mountain-peaks, and plateaus. Nor will the pupil require the knowledge necessary for the ordinary system of construction. Our method is especially suited to the youthful capacity; but can be used with profit by the older and more advanced pupils.

In the accompanying drawings, which form part of this specification, Figure 1 represents the triangulation of the continent in accordance with our invention. Fig. 5, a table representing the symbolic characters used.

The following is a further explanation of our invention. In constructing the triangulation of North America, the line A B is taken as the base

or measuring-unit by which the lengths of other lines are determined. This first or base line is bisected at C, and the line C D is drawn at right angles to and one-half as long as A B. The points A and D, and D and B are next connected, and then the line C D is extended to the left, making the whole line D E equal in length to A D or D B. The points A and E and E and B are connected with straight lines, and the arc E B, drawn with D as center. A E is bisected at F, and upon A F is constructed the equilateral triangle A F G.

A skeleton map is thus produced which determines the position of the most important points upon the coast-line, and also the general contour of the continent. The lines composing this geometrical expression of the continent are next bisected, trisected, or quadri-sected, as the case demands, for the purpose of determining the position of other important points about or within the continent. This geometrical expression of the continent is easily constructed, the relation between it and the continent readily remembered, and upon it the map may accurately be drawn. There is no use made of mathematical instruments and no reference to degrees or angles other than right angles. Its use enables the pupil to draw from memory.

Triangulations similarly constructed are prepared for aids in drawing other continents, sections of continents, islands, &c.

From the above it will be seen that we have invented a system of off-hand map-drawing, (the necessity of which professional experience has taught us, in preference to the abstruse and complicated methods in present use,) whereby a knowledge of geography, through a plain and easy system of language and construction, may be acquired by the younger pupils without waiting for acquaintance with the higher branches or use of mathematical instruments; and thus it places geography side by side with the reading lessons, for which object our invention, we trust, has reached the desideratum.

We therefore distinctly claim as original with us and desire to secure by Letters Patent—

1. The use for map-drawing of such geometrical figures as are constructed by taking in each case some one line as a measuring-

unit, by means of which the lengths of other lines about the figure are determined. We do not claim the use of those figures which are constructed by the measurement of angles.

2. The trisecting and bisecting of certain lines about our geometrical figures for the purpose of determining the positions of certain prominent points along the coast lines of the continents.

3. That symbolic language for maps in which dots and lines, arranged substantially as de-

scribed, are used to represent certain numbers, whether of population of cities or the height of isolated hills, mountain-peaks, or plateaus in feet or miles or other units of measurement.

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Witnesses:

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