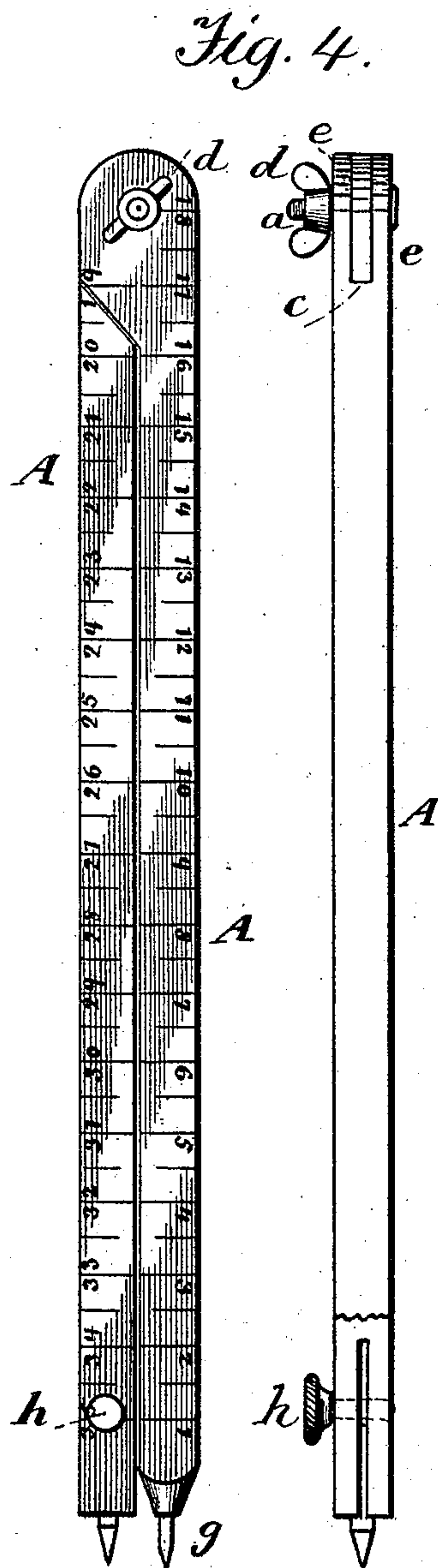
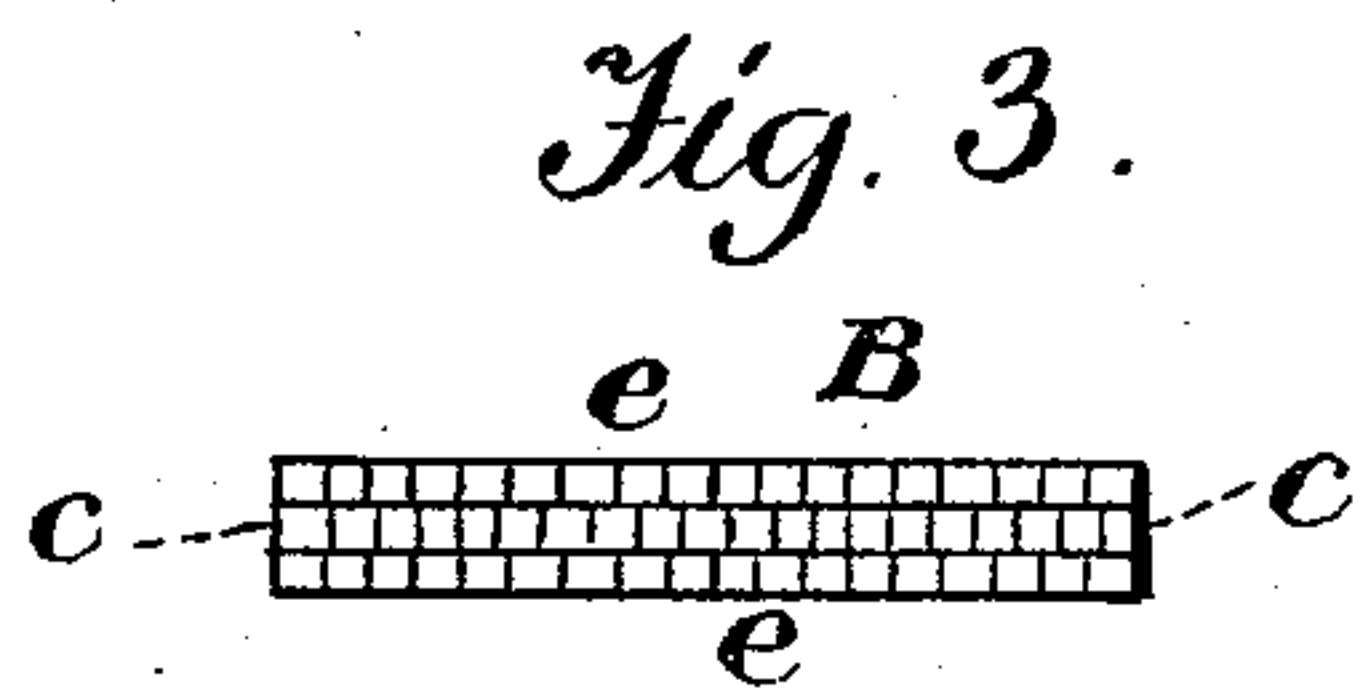
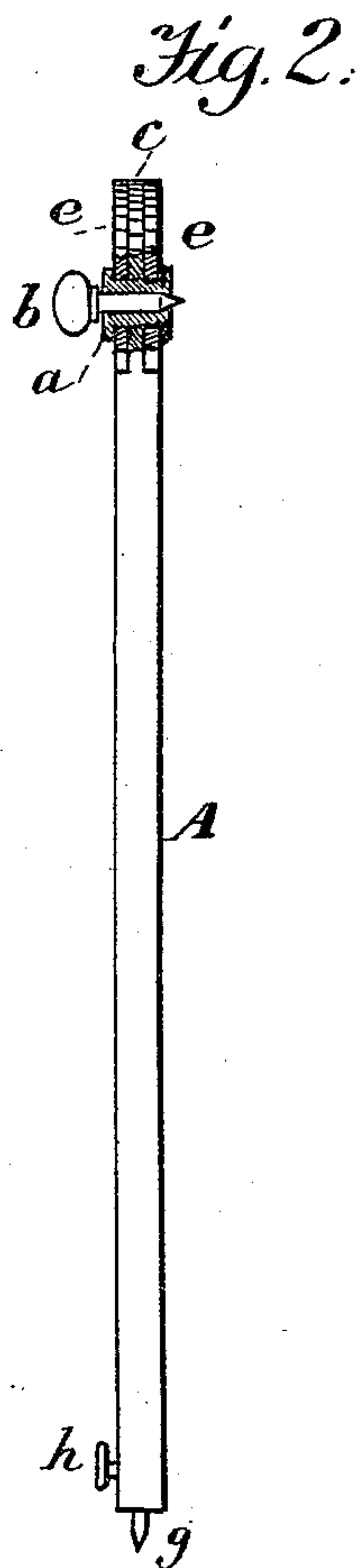
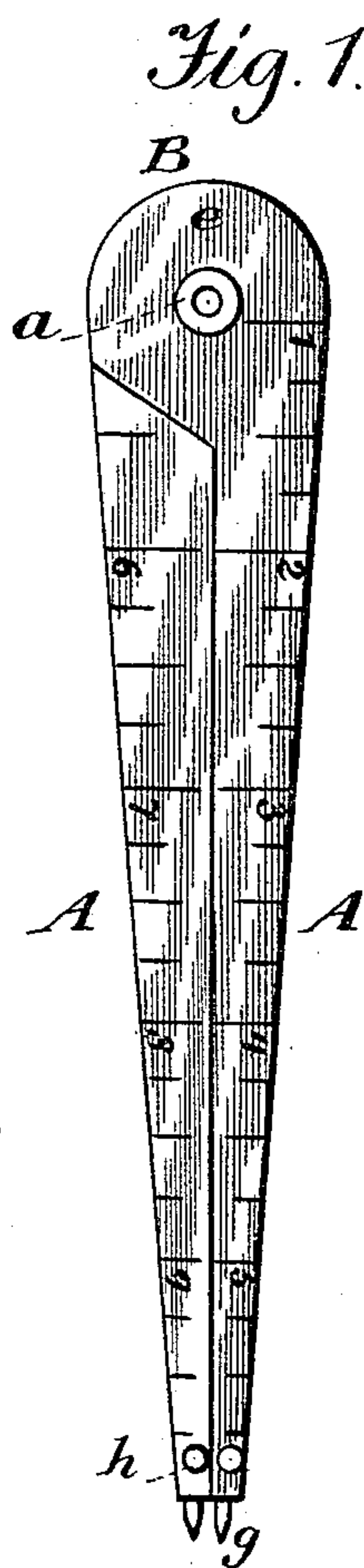


(No Model.)

J. V. COLLINS.
COMPASSES.

No. 459,519.

Patented Sept. 15, 1891.



Witnesses.
A. Ruppert.
H. A. Daniels

Inventor.
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UNITED STATES PATENT OFFICE.

JOSEPH VICTOR COLLINS, OF OXFORD, OHIO.

COMPASSES.

SPECIFICATION forming part of Letters Patent No. 459,519, dated September 15, 1891.

Application filed April 18, 1891. Serial No. 389,476. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH VICTOR COLLINS, a citizen of the United States, residing at Oxford, in the county of Butler and State of Ohio, have invented certain new and useful Improvements in Compasses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to drafting-instruments; and it consists in certain improvements in compasses, as hereinafter described and claimed.

In the accompanying drawings, Figure 1 represents a side view of compasses provided with my improvements. Fig. 2 is an edge view of the same. Fig. 3 is a plan of the graduated surface of the head of the compasses, the same being reduced to a plane. Fig. 4 represents a modified form of compasses.

Referring to Fig. 1, which represents drafting-compasses, each of the legs A is five inches in length and is provided with division-marks, like a rule, so that when the legs are opened and brought to a straight line, the device may be used as a rule. The head B of the compasses is semicircular, the center being in the bolt *a*, by which the parts are secured. The head B is divided into three parts, the central part *c* being carried by one leg and the outer parts *e* being on the other leg. The semicircular surface of the head is provided with vernier graduation-marks showing two or more different graduations. In the drawings the half-circle of each of the outer parts *e* is shown as divided into eighteen parts and that of the central part *c* divided into twenty parts, thus forming two 9-10 verniers, by which angles may be set off to degrees. The number of divisions in the graduations, however, may be increased as desired, so that angles may be read more closely and accurately; also one outside leg may read finer than the other. The inner face of each leg A is on a straight line running to the axial center in the bolt *a*, so that the legs may be set at any angle. The said bolt is made tubular and is fitted with a cylindrical peg *b*, so that a center or vertex may be readily ascertained and fixed. A thumb-nut *d* may be placed on the bolt *a*, as

seen in Fig. 4, to loosen or tighten the joint, as desired.

The legs A are preferably of the form shown in Fig. 1 and are provided with the ordinary pen and pencil attachments of compasses, these being constructed either to slide in grooves in the legs and secured by screws or to be connected with the legs in any suitable manner.

The device thus constructed will answer the purposes of several instruments—compasses, a rule, a triangle, a square, and a true protractor—and with a scale would constitute a complete set of drawing-instruments.

A modified form of the compasses is shown in Fig. 4, this form being adapted for use in school-rooms. The compasses are constructed of wood, and the parts are made thicker than those of the metal compasses shown in Fig. 1. The legs A are usually made eighteen inches in length and provided with the division-marks of a rule, so that the device, when opened and extended, forms a rule thirty-six inches in length. The semicircular head is divided and provided with vernier graduation-marks, as before described, except that the graduation is not usually so fine and the marks not so numerous as in the metal drafting-compasses. One of the legs is provided with a point *g*, the other leg being bored at its extremity to receive a pencil of chalk or other marker, and having a slit and adjusting-screw *h* for clamping the inserted pencil. The joint of the two parts of the compasses may be loosened by means of the thumb-nut *d* and the legs set at any angle and secured by the thumb-nut. A cheap article is thus provided for use in schools.

I claim—

1. Compasses having two legs the inner faces of which are on lines running to the axial center in the head of the compasses, the head being divided and semicircular in form, and the divisions of the head being severally provided with graduation-marks, one of said divisions having a graduation different from that of another division, substantially as and for the purposes described.

2. Compasses having two legs and a divided semicircular head, part of which is carried by one leg and part by the other leg, a hollow se-

curing-bolt at the axial center, and a cylindrical peg to be inserted in said hollow bolt, the semicircular surfaces of the several divisions of the head being provided with graduation-marks, one of said divisions having a graduation different from that of the others, substantially as set forth and described.

3. Compasses having legs A provided with marks of measurement along the same, a semicircular head in three divisions, the central division *c* being carried by one leg and the outer division *e* being carried by the other

leg, and a hollow securing-bolt *a*, the semicircular surfaces of the three divisions of the head being severally provided with graduation-marks, one of said divisions having a graduation different from the others, substantially as and for the purposes described. 15

In testimony whereof I have affixed my signature in presence of two witnesses.

JOSEPH VICTOR COLLINS.

Witnesses:

F. J. CONE,

B. F. CHURCHMAN.