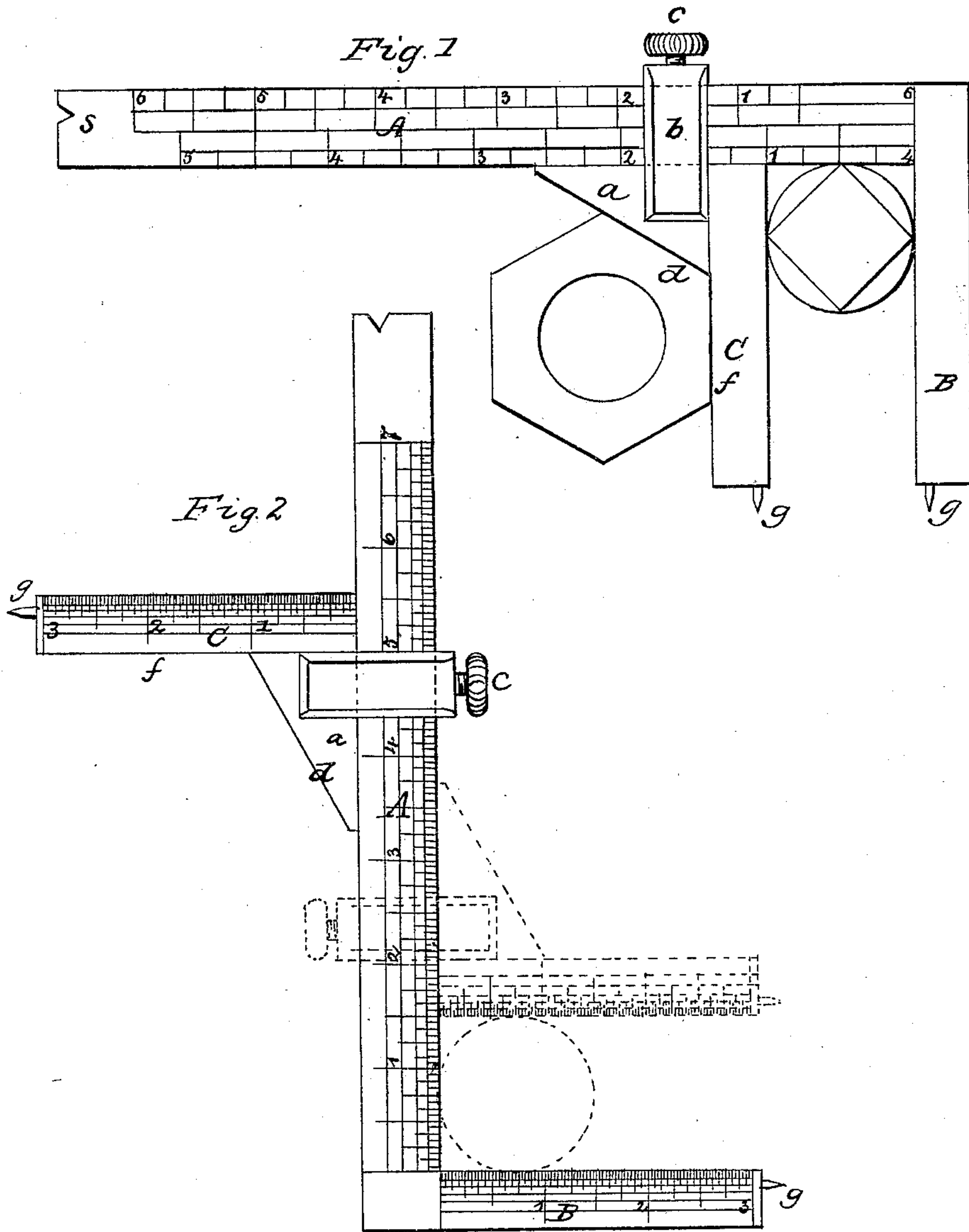


E. C. C. KELLOGG.
Gage for Determining Angles.

No. 59,721.

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IMPROVEMENT IN GAGES FOR DETERMINING ANGLES.

Specification forming part of Letters Patent No. **59,721**, dated November 13, 1866; antedated
November 4, 1866.

To all whom it may concern:

Be it known that I, E. C. C. KELLOGG, of the city and county of Hartford, in the State of Connecticut, have invented a new and Improved Slide-Gage; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a side view of my improved slide-gage. Fig. 2 is a view of the opposite side to that represented in Fig. 1, with the movable arm reversed.

Similar letters of reference indicate corresponding parts in both figures of the drawings.

By being provided with proper tools or instruments in manufacturing machinery the work can be done better and in a more expeditious manner. Small tools or instruments used for various purposes are often mislaid or lost, which sometimes causes vexatious loss of time. Now, the object of this invention is to avoid trouble of this kind and facilitate mechanical manipulations; and to this end it consists in a novel construction of a slide-gage, whereby it is rendered applicable to many different useful purposes.

To enable others skilled in the art to make and use my invention, I will proceed to describe it with reference to the drawings.

A is a straight flat limb, of uniform width and thickness, to one end of which, and at right angles thereto, a straight arm, B, of uniform width and thickness, is firmly attached, either by making the two of the same piece of metal or in any other suitable manner. The arm B is made about half the length of the limb A, and somewhat smaller. Another straight arm, C, of uniform width and thickness, and of the same length as the arm B, is so fitted to the limb A that it may occupy a position at right angles thereto, slide freely thereon, and be firmly held in any position on either side thereof, as shown in Fig. 2; and for this purpose the said arm C is provided with a foot-piece, *a*, to which is attached a strap, *b*, one portion of which passes on either side of the limb A, and the said strap is provided with a set-screw, *c*, to screw up against the edge of the limb A.

The inclined edge *d* of the foot-piece *a* is made at an angle of one hundred and twenty degrees with the edge *f* of the arm C to form a hexagon gage. The two arms B and C are each provided with a sharp steel point, *g*, at its extremity, which enables the gage to be used as a pair of compasses for describing circles or arcs.

The limb A, Fig. 1, is provided on the side shown in Fig. 1 with two scales, one at each edge. The scale at the inner edge, marked with the numeral 4, at or near its point of junction with the inner edge of the arm B, is so graduated from the said point of junction that the inner edge of the arm C indicates upon it in inches and fractional parts thereof the diameters of the circumscribing circles of squares of given width measured between opposite sides, the divisions of this graduation bearing the same proportion to inches and fractional parts thereof that the diameters of the circumscribing circles of squares of given size bear to the width of such squares, and their object being, by applying the inner edges of the arms B and C to the circumferences of cylinders, to enable them to be turned to a proper size to slab to square prisms of any width.

The scale on the outer edge of the limb A, (marked 6,) at a point in line with the inner edge of the arm B, is so graduated that the inner edge of the strap *b* will indicate thereon in inches and fractional parts thereof the diameters of the circumscribing circles of hexagons of given width between their parallel sides, the divisions of this graduation bearing the same proportion to inches and fractional parts thereof that the diameters of the circumscribing circles of hexagons of given size do to the width of such hexagons, and the object being, by applying the inner edges of the arms B and C to the circumferences of cylinders, to enable them to be turned to a proper diameter to slab to hexagonal prisms of any width.

On the opposite side of the gage, as shown in Fig. 2, the inner edge of the limb A is a true scale of inches and fractional parts thereof. The corresponding side of the fixed arm B has also upon its inner edge a scale of inches

and fractional parts thereof, the smallest fractional parts being one-half of those on the limb A. On the corresponding side of the movable arm C there is on that edge which is toward the arm B when the said limb C is in the position shown in Fig. 1, and in red outline in Fig. 2, a scale of inches and fractional parts thereof corresponding with that on the arm B.

The said scales on B and C commence at the inner edge of A. These three scales on A, B, and C enable opposite points in the circumference of a circular body to be found by placing the gage over the said body, bringing the edges of the three scales against its circumference, and making the two points of the said body which are opposite to those points in the scales of B and C, indicating half the measurement indicated by the inner edge of C upon the scale of A.

It will be seen that by placing the gage in the manner above described upon the circumference of a circular body the inner edge of the arm C indicates upon the scale on the inner edge of A the diameter of the circle, the gage thus serving the purpose of a pair of calipers.

By slipping off the movable arm C over the end of the limb A, and putting it on again in the reversed position, (shown in black outline in Fig. 2,) the gage may be used as a surface-gage for scribing parallel lines upon a body placed on a surface-plate.

In the extremity of the limb A there is a V-shaped notch, *s*, of proper angular form to serve as a gage for the grinding of the edges of the screw-cutting tools used in lathes to the proper angle.

The slide-gage constructed as above-described serves nine different purposes—viz., first, a try-square; second, a pair of compasses; third, a hexagon-gage; fourth, a gage for slabbing cylinders to form square prisms of given size; fifth, a gage for slabbing cylinders to form hexagonal prisms of given size; sixth, a pair of calipers; seventh, a means of finding opposite points of a cylinder; eighth, a surface-gage; ninth, a screw-tool gage. Its use for all of these purposes has been herein described.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The construction of a slide-gage with scales, such as are represented in Fig. 1, and herein described, for slabbing polygonal prisms.

2. A slide-gage, with the several scales on its limb A, and fixed and movable arms B and C, with points *g g* on the said arms, and with a hexagon-gage on its movable arm, all substantially as herein specified.

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