

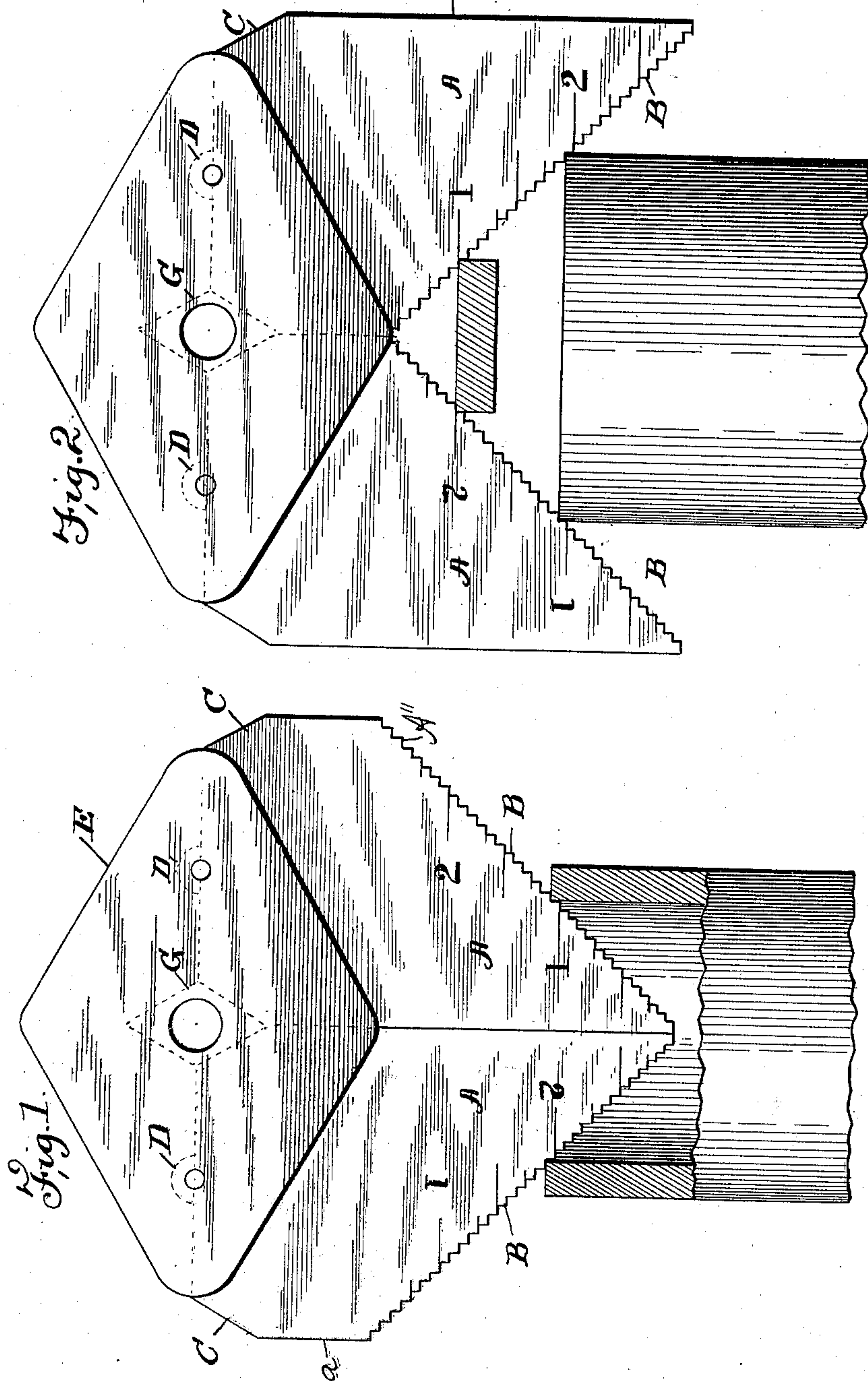
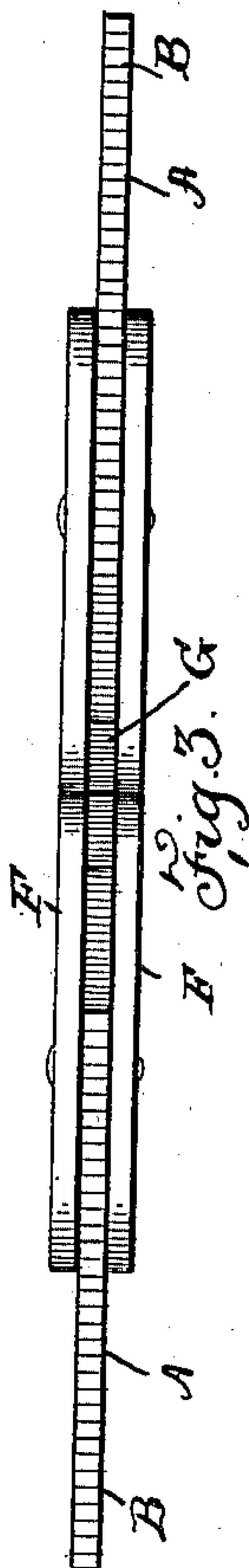
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C. S. LABOFISH.
GAGE.

APPLICATION FILED APR. 1, 1901.

NO MODEL.



WITNESSES
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GAGE.

SPECIFICATION forming part of Letters Patent No. 741,146, dated October 13, 1903.

Application filed April 1, 1901. Serial No. 53,898. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. LABOFISH, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Gages; 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 ap-
 10 pertains to make and use the same.

My invention relates to improvements in gages.

One object of my invention is to produce a neat, simple, and comprehensive instrument
 15 capable of measuring the external and internal diameter of cylindrical and flat objects with great facility and without adjustment.

Another object of my invention is to so construct my instrument as to enable one to use
 20 it as a square to ascertain the squareness of inner or outer rectangular objects.

To the ends and objects just mentioned, my invention consists of certain devices, combination of parts, and features of construction, all of which will be hereinafter described, and particularly pointed out in the concluding claims.

In the drawings forming part of this specification, Figure 1 is a face view of my gage.
 30 Fig. 2 is a similar view showing the blades swung around for measuring the external diameter of objects. Fig. 3 is a side elevation of Fig. 2, showing the blades slightly open to expose part of the diamond-shaped
 35 block.

Similar letters indicate corresponding parts throughout the several views.

As shown in the drawings, my gage consists of two similar blades A A, each of which
 40 has one of its ends cut away from the extreme lower corner of the edge A' up to a short distance from its opposite upper corner, so as to leave a short parallel edge α and form an angle of forty-five degrees of the edges A' and A''. Thus when the two blades are
 45 placed side by side with their edges A' adjoining they form jointly a salient angle of ninety degrees along their outer edges A'', as in Fig. 1, and when the two blades are placed
 50 so that their parallel edges α adjoin they form a similar inside angle of ninety degrees along the edges A'', as in Fig. 2. Along the edges

A'' of the two blades are graduation-marks representing minute fractions of an inch and numerals each indicating inches, halves, or
 55 quarters of an inch. The numerals of the two blades run each in reverse order to the other, so that whichever of the parallel edges are adjoining the numerals at the right are in proper position to be read at a glance and
 60 the graduation-marks are at right angles to the straight edges A' for the same purpose.

To dispense with very minute graduation marks, which are subject to obliteration, step-like serrations B may be cut along the edges
 65 A'', each of said steps representing a fraction of an inch. Said steps also assist in centering the object to be measured by bearing against it in the manner shown in Figs. 1 and 2. Each of the upper corners of each of said
 70 blades is in the present construction cut away to a certain angle C, and an ear D is preferably formed between the two cut-away corners C, whereby the blade may be pivoted, for the purpose hereinafter described.
 75

The two blades A, shaped as previously described, are held pivotally in a yoke by their ears D with their parallel edges A' adjoining. It will be observed that the ears D are in the middle of the upper corners of each
 80 blade. Consequently when the two blades are swung around on their pivots the two parallel edges α will adjoin and contact. The yoke referred to, in which the two blades are held pivotally, is composed of two plates E
 85 and F and a block G between. The latter holds the two plates the proper distance apart, so that the blades may swing freely on their pivots, as clearly shown in Fig. 3. The block G is in the present illustration diamond-
 90 shaped in its contour, so that its angles may correspond to the joint angle formed by the two cut-away corners C of the two contiguous blades which impinge against said block, and the transverse central line thereof passes
 95 through the centers in the ears D or the pivots upon which the blades turn, as is indicated by the dotted lines in Figs. 1 and 2. The corners C impinging against the block G prevent the blades from moving beyond the cen-
 100 tral vertical line of the block G between the two pivots D when the blades are in either position, so that the two lower ends of the blades, as well as the graduation-marks, are

always in perfect alinement and the angle formed by the two blades is always true when the blades are in either position and require no attention on the part of the user.

5 The numerals and graduation-marks referred to above when the two blades A A are in the position shown in Fig. 1 indicate in graded progression the joint width of the two blades forming the salient angle. If now the
10 salient angle be inserted into an orifice in an object until the edges A'' touch diametrically the walls of the orifice, the graduation-marks at the points upon the angle where the surface-line of the object measured intersects
15 said angle thus indicate the internal diameter of the orifice by reason of the portion of the angle occupying the diametrical line of the orifice, as clearly shown in Fig. 1. Similarly, when the two blades are swung around upon
20 their pivots so as to bring them into position shown in Fig. 2 the numerals and the graduation-marks indicate in graded progression the distance between the two edges A''. If now an object be entered between the two
25 blades forming the reëntrant angle in the manner shown in Fig. 2, the diametrical surface-line of the object which intersects the two edges A'' being in line with the graduation-marks thereon is thus measured and
30 indicated by the said graduation-marks and numerals. As described, the two blades form angles of ninety degrees when in either position. Consequently this instrument may be used to ascertain the squareness of objects
35 with equal facility, thus adding to its usefulness as a measuring and gaging instrument.

As slight changes may be made in the general construction of my device, I consider myself at liberty to make such alterations
40 as fairly fall within the spirit and scope of my invention.

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

1. A gage comprising a plate, oppositely-
45 disposed pivots held fixedly thereon, and two angular blades held reversibly upon said pivots to form jointly a salient or a reëntrant angle, to gage the inner or outer squareness of rectangular objects.

50 2. A gage comprising oppositely-disposed angular blades, means for holding the blades reversibly to form jointly a salient or a reëntrant angle, and means for controlling the two ends of said blades to form correct vertexes.
55

3. A gage comprising oppositely-disposed angular blades, means for holding the blades reversibly to form jointly a salient or a reëntrant angle, and graduation-marks along
60 those edges of said blades which form said angles, for the purpose specified.

4. A gage comprising a plate, oppositely-disposed pivots thereon, angular blades held reversibly upon said pivots, to form jointly
65 a salient or a reëntrant angle, and means upon said plate for controlling the free ends of the blades, to form correct vertexes.

5. A gage comprising two angular blades, each having one angle of forty-five degrees, and means for holding said blades reversibly
70 to form jointly a salient or a reëntrant angle of ninety degrees, to gage the squareness of rectangular objects.

6. A gage comprising two contiguously-mounted angular blades each having one an-
75 gle of forty-five degrees, a plate, pivots upon said plate upon which said blades are held reversibly, and means upon said plate for controlling the vertexes of the blades, to form jointly a salient or a reëntrant angle of
80 ninety degrees.

7. A gage comprising two angular blades each of which has a long edge and a short edge parallel thereto, a plate and pivots
85 thereon, said blades being held contiguously and reversibly upon said pivots, to form jointly a salient angle when the long edges contact or a reëntrant angle when the short edges contact.

8. A gage comprising two angular blades,
90 means for holding the blades reversibly, to form jointly a salient or a reëntrant angle, and a device intermediate between the two blades for controlling the two ends of said blades, to form correct vertexes.
95

9. A gage comprising a plate, oppositely-disposed pivots thereon, two angular blades
100 journaled upon said pivots, and a block upon said plate against which said blades impinge, to control the vertexes of said blades to form jointly correct vertexes.

10. A gage comprising a plate, oppositely-disposed pivots thereon, a block intermediate between, and in horizontal alinement
105 with, said pivots, and two angular blades journaled upon said pivots contiguously, the contiguous edges of said blades being in vertical alinement with the center of said block, to form jointly correct vertexes.

11. A gage comprising two blades each of
110 which is cut away from its extreme lower corner toward the opposite upper corner, and having its upper corners cut away to a certain angle, a plate upon which said blades are held reversibly, and an angular block
115 upon said plate of corresponding angle against which one of the upper corners of each blade impinges, for the vertexes of said blades to form jointly a correct vertex.

12. A gage comprising two contiguously-
120 mounted trapezoidal blades each having one edge oblique to its parallel sides, a plate upon which said blades are held reversibly to form a salient or a reëntrant angle, and graduation-marks along said oblique edges of the
125 blades which form said angles, for the purpose specified.

13. A gage comprising two contiguously-mounted trapezoidal blades, a plate upon
130 which said blades are held reversibly to form jointly a salient or a reëntrant angle, and graduation-marks along the oblique edges of said blades, to collectively indicate measurements of objects of various diameters with-

out adjustment, said graduation-marks being at right angles to the straight edges A' of said blades, to facilitate the reading.

14. A gage comprising two contiguously-mounted trapezoidal blades, a plate upon which said blades are held reversibly, to form a salient or a reëntrant angle, graduation-marks upon the oblique edges of said blades, and numerals upon each blade for indicating inches or half-inches, said numerals of one blade being in reverse order to those of the other, for the purpose specified.

15. A gage comprising a yoke, and two angular blades held reversibly therein, said yoke being composed of two plates and a block between the two plates to hold them the proper distance apart, for said blades to turn freely to form a salient or a reëntrant angle.

16. A gage comprising two angular blades each of which is cut away from the extreme lower corner toward the opposite upper corner and having its upper corners cut away, and an ear intermediate between the upper corners, a plate, and a block thereon upon which said blades are held reversibly with their cut-away corners impinging against said block.

17. A gage comprising a yoke, said yoke being composed of two plates and a block between, pivots for holding the plates in position, said pivots being in horizontal alignment with said block, and two angular blades having cut-away upper corners journaled

upon said pivots between the two plates with one of the cut-away corners of each blade impinging against said block, to prevent the movement of either blade beyond the vertical central line through said block.

18. A gage comprising two contiguously-mounted blades, each of which has one of its corners cut away and the edge thus formed serrated, to center the object to be measured, and means for holding the blades reversibly, to form a salient or a reëntrant angle.

19. A gage comprising a plate, oppositely-disposed pivots thereon, two angular blades held reversibly upon said pivots, to form a salient or a reëntrant angle and steps upon the edges for the object to be measured to bear against the shoulders of said steps.

20. A gage comprising a plate, oppositely-disposed pivots thereon, a block intermediate between said pivots, trapezoidal blades, adapted to form collectively a salient or reëntrant angle, journaled upon said pivots and impinging against said block, steps upon the edges of the blades forming the angles, and means upon said blades, in juxtaposition to the said steps, for indicating the measurement of the objects gaged therewith.

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

CHARLES S. LABOFISH.

Witnesses:

HARRY S. WELCH,
FRANK A. JONES.