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APPARATUS FOR GAUGING ANNULAR ARTICLES

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Fig. 1

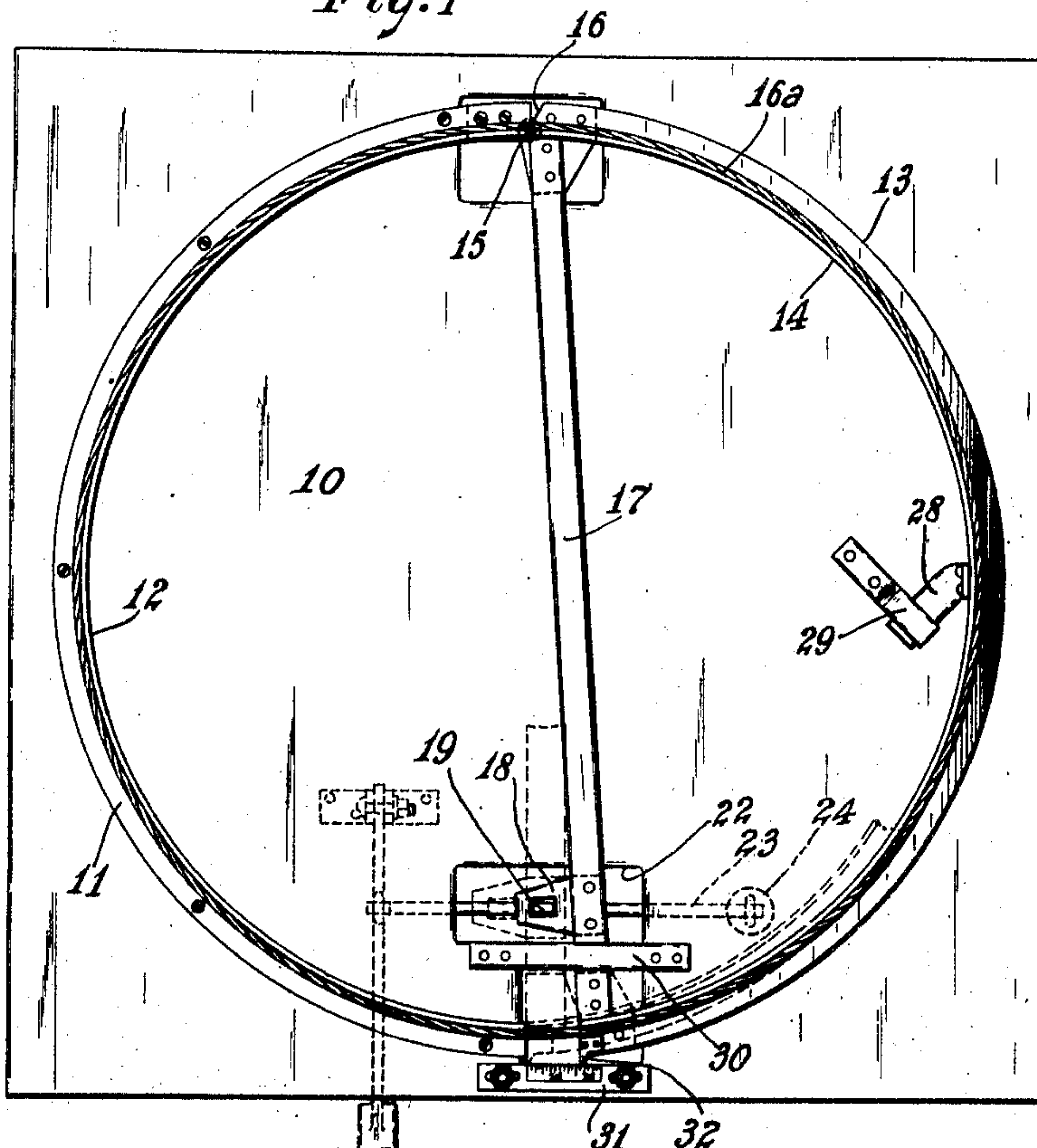
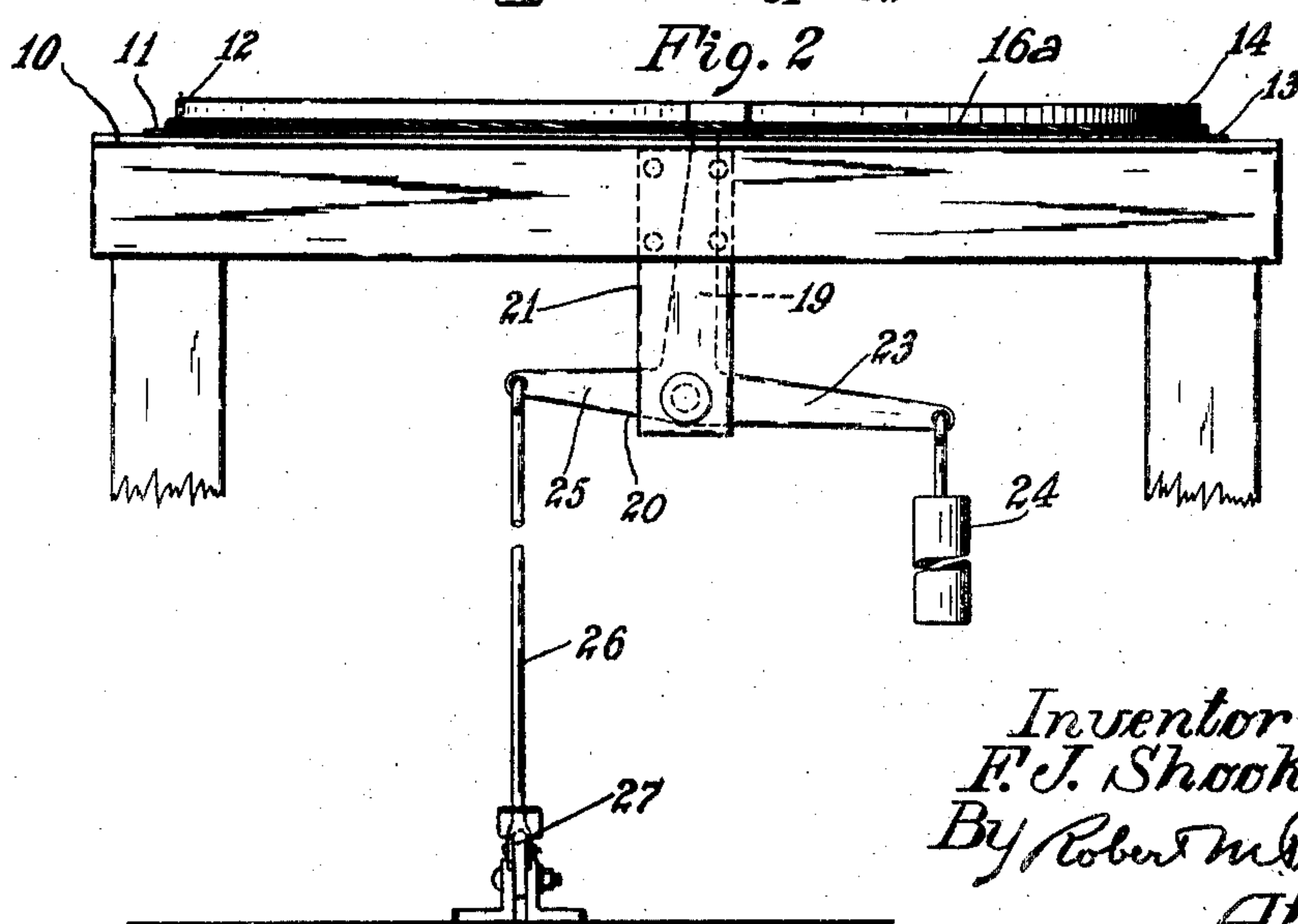


Fig. 2



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APPARATUS FOR GAUGING ANNULAR ARTICLES.

Application filed January 30, 1922. Serial No. 532,526.

To all whom it may concern:

Be it known that I, FLORAIN J. SHOOK, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented a certain new and useful Apparatus for Gauging Annular Articles, of which the following is a specification.

This invention relates to devices for determining the circumferential size of annular articles, an example being the bead rings commonly used in straight-sided pneumatic tires to render the bead portions thereof inextensible.

My chief objects are to provide an improved device adapted to give accurate measurement with a minimum distortion of the article being measured, and to provide a simple device adapted for rapid operation.

Of the accompanying drawings:

Fig. 1 is a plan view of a device embodying and adapted to carry out a preferred form of my invention, with the work in place.

Fig. 2 is a front elevation of the same, with parts broken away.

Referring to the drawings, 10 is a table, upon which is secured a semi-circular piece of angle-iron 11, curved in the plane of one of its flanges, which latter rests flatly upon the table, the other flange 12, rising vertically from its inner periphery. A complementary, semi-circular piece of angle-iron 13, having a vertical flange 14 at its inner periphery, has one end pivoted on the table at 15 (Fig. 1), at the point where the adjacent ends of the vertical flanges 12 and 14 approximately abut each other, and the horizontal flange of the iron 13 is cut away at the end, as shown at 16 (Fig. 1) to permit said iron to be turned about its pivot, the pivot being at the inner periphery of the iron. The angle-irons 11 and 13 thus constitute a substantially circular gauge. 16^a is a ring in position on said gauge. 17 is a diametric brace connecting the ends of the semi-circular member 13 and provided, near its end farthest from the pivot 15, with a horizontal, laterally extending ear 18, which is perforated to receive the upper end of an arm 19 of a three armed lever, 20, pivoted on a horizontal axis on a bracket 21 depending from the table, said arm 19 ex-

tending upward through an opening 22 in the table.

Another arm 23 of the three armed lever 20 extends horizontally from its pivot and is provided with a weight 24 adapted to turn the iron 13 on its pivot 15 away from the iron 11, and the third arm of said lever, 25, extends in the opposite direction and is connected by a link 26 with a treadle 27, for swinging the iron 13 toward the iron 11, against the action of said weight 24, to close the gauge.

A bracket 28 on the angle-iron 13 is slidably associated with a bracket 29 on the table, as is clearly shown in Fig. 1, to prevent upward displacement of said iron, and a bracket or bridge plate 30, transversely overlying the brace member 17, and permitting the latter to slide thereunder, is provided for the same purpose.

At the ends of the angle irons 11 and 13 opposite the pivot 15, where said ends are adapted to be gapped apart, as clearly shown by the full lines in Fig. 1, a scale 31 is adjustably secured to the table 10 by means of bolts 31^a, 31^a, projecting upward from said table through longitudinal slots in said scale and provided with clamping nuts above the latter, and an indicator 32, for said scale, is secured to the end portion of the movable iron 13. Said scale, when placed, as shown, at a distance from the work, preferably is so calibrated as to read in terms of distances measured along the work.

In the operation of the device, the treadle 27 is depressed, closing the angle irons 11, 13, the iron 13 and other parts assuming the positions indicated by dotted lines in Fig. 1, and the ring to be gauged or measured is placed over the vertical flanges 12, 14, of the gauge. The treadle is then released, and the weight 24, through the arms 23 and 19 of the lever 20, opens the gauge against the ring 16^a, with a definite pressure predetermined by the mass of said weight. The combined length of the flanges 12, 14 being known, the length of the gap between their spread-apart ends may be read from the scale 31 and added to said combined length, giving the circumferential length of the ring under a predetermined stretching force. As the ring is distorted only slightly from true circular form, errors resulting from distortion and

unequal stresses are substantially avoided. As the ring lies in actual contact with the vertical flanges 12, 14 throughout their length, a true circumferential measurement
5 is obtained.

If rings are to be gauged for tolerance with respect to a given standard size, the scale 31 may be adjusted upon the table to a position, with respect to the end of the fixed
10 gauge-member 11, such that the indicator 32, with a standard ring on the gauge, will give a certain desired reading, such as zero, or 75, for example, in the case of the particular scale shown in Fig. 1. With the scale so
15 set, it may be determined at a glance whether each of the successive rings comes within the tolerance allowed.

The gauge being of the form described, the rings may be readily placed upon and
20 removed therefrom, and the operating features of the device are adapted for rapid work.

Modifications may be resorted to without departing from the scope of my invention,
25 and I do not wholly limit my claims to the specific construction shown.

I claim:

1. A ring-gauging device comprising a pair of members having arcuate ring-engaging surfaces, said members being hinged
30 together, means for turning one of said members about said hinge to gap said members apart, and a scale bridging the gap thus formed.

2. A ring-gauging device comprising a pair of members formed with arcuate, freely outstanding flanges providing a substantially circular surface adapted to fit within the ring, said members being hinged together,
40 and a scale fixed with respect to one of said members in position to bridge a gap between said members when they are spread apart on said hinge.

3. A ring-gauging device comprising a pair of members having arcuate surfaces which together substantially complete a circle, said members being hinged together at adjacent ends of said surfaces, on an axis parallel with the common axis of said
50 surfaces, said members being adapted to be

swung from and toward each other, about the hinge axis, to change, in effect, the size of said circle.

4. A ring-gauging device comprising a pair of members having arcuate surfaces
55 which together substantially complete a circle, said members being hinged together at adjacent ends of said surfaces, on an axis parallel with the common axis of said surfaces, said members being adapted to be
60 swung from and toward each other, about the hinge axis, to change, in effect, the size of said circle, and means for urging said members apart with determinate force.

5. A gauging device comprising a pair of gauging members which together are adapted substantially to fit the interior of the article to be gauged, one of said members being pivoted adjacent one end of the other, means for applying a predetermined
70 force to spread said members apart, and a scale adapted to register the extent of their relative movement.

6. A gauging device comprising a pair of gauging members the combined length of
75 whose work-engaging faces is slightly less than the peripheral length of the article to be gauged, said members being pivoted together at adjacent ends of said work-engaging faces, yielding means for spreading said
80 members apart, a treadle adapted to draw said members together against the action of said yielding means, and a scale so positioned as automatically to register the relative movement of said members.
85

7. Apparatus of the character described comprising a fixed member formed with an arcuate surface adapted freely to receive and contact with the inner periphery of the work, a similar member having one end
90 pivoted adjacent an end of the first said member, their arcuate surfaces approximately completing a circle, means for turning said pivoted member about its pivot, and a scale bridging the gap thus formed
95 between said members.

In witness whereof I have hereunto set my hand this 27th day of January, 1922.

FLORAIN J. SHOOK.