To all whom it may concern:

Be it known that I, CHARLES R. SCHWARTZ, citizen of the United States, resident of Minneapolis, county of Hennepin, State of Minnesota, have invented certain new and useful Improvements in Dental Measuring-Tools, of which the following is a specification.

The object of my invention is to provide a tool by means of which the circumference of a tooth can be easily and quickly determined preparatory to making a crown or cap thereof.

A further and particular object of this invention is to provide a tool equipped with means for accurately marking on gold leaf the exact distance around the tooth.

Other objects of the invention will appear from the following detailed description.

The invention consists generally in various constructions and combinations, all as hereinafter described and particularly pointed out in the claim.

In the accompanying drawings forming part of this specification,

Figure 1 is a side view of a measuring instrument embodying my invention,

Fig. 2 is a sectional view through a portion of the shank of the instrument,

Fig. 3 is a similar view, illustrating a modified construction,

Fig. 4 is a view corresponding to Fig. 3 but with a straight head,

Fig. 5 is a view showing a cylinder of a certain circumference by means of which the exact size of the rod can be determined.

In the drawing, 2 represents a shank having a stud 3 formed on one end thereof and adapted to enter a hollow head 4 and secured therein by means of a thumb screw 5. The head is preferably curved, as shown, terminating in a nose 6, and the middle portion of said head has a slot 7 therein. A wire 8 is attached to the Shank of the screw and passes down through the slot and out through the opening in the end of the head to form a loop 9, and the other end of the wire is carried through a slot 10 in the head and is extended along outside said head and near the Shank 2 and is attached at 11 to a sleeve 12 that is secured on the shank by a suitable means, such as the thumb screw 13. By loosening this screw, the sleeve may be moved back and forth on the shank to increase or decrease the size of the loop according to the shape and size of the tooth upon which it is to be fitted.

The sleeve 12 is preferably provided with rigid rings or loops 14 projecting upon opposite sides thereof in substantially the same plane and forming finger holes to be grasped by the user of the tool. One of these loops has a rigid prong 15 formed thereon projecting in the plane of the rod and provided with a tapered marking end 16. The end of the Shank 2 has a similar loop 17 thereon into which the thumb is inserted and a second marking prong 18 is mounted on the loop 17 and has a tapered end corresponding to the one described with reference to the prong 15. The wire 8 has one end fastened to the Shank and the other to the sleeve, as described, and when the sleeve is moved with respect to the Shank to contract or enlarge the loop 9, the distance will be indicated by the travel of the sleeve on the Shank. For instance, assuming that the wire is withdrawn within the head and it is desired to move the Shank and sleeve relatively to project the wire and form a loop, then the length of the loop so formed will be indicated by the distance the sleeve travels on the Shank, and when the loop is placed around a tooth and drawn tight and then removed, the space between the marking prongs 15 and 18 will correspond to the length of the loop and the user of the instrument, by locking the sleeve on the Shank with the thumb screw 13, can mark out in the gold leaf by means of the prongs 15 and 18 the exact area of the leaf required to fit the contour of the tooth.

With this device, one end of the wire being fastened to the Shank and the other to the sleeve, it is not necessary to cut the wire and measure it and a single piece of wire can be used until worn out or broken.

In Fig. 3 I have shown a modification which consists in providing a stud 19 on the end of the Shank having an eye 20 to which one end of the wire is attached, the other end passing through the hollow head and through a slot 21 in the Shank to a hole 22 in the sleeve, where a head is formed on the wire to secure it in the hole. One end of the sleeve is preferably tapered, as at 23, and exteriorly threaded to receive the interiorly threaded tapered cap 24 by means of which the sleeve is locked in any desired position on the Shank. In other respects the
device corresponds substantially to the tool above described.

In Fig. 4 a modified form of head 25 is provided, which is substantially straight instead of having a curved end, as shown in the other figures.

In Fig. 5 I have shown a cylinder which I prefer to use to determine the exact circumference of the loop. In forming the loop, the wire is pushed out of the head, as shown, and the cylinder inserted as shown in Fig. 1, the exact circumference of the cylinder being known. When the wire is tightened, the length of the loop will, of course, correspond to the circumference of the cylinder and this circumference is then indicated by suitable marks on the shank 2. Then when the sleeve is adjusted so that its prong 15 will register with this mark, the user of the tool will know that the distance between the prongs corresponds exactly to the length of the loop, and relative movement of the prongs toward or from one another will cause a corresponding change in the size of the loop. I am thus able to determine at any time the distance around a tooth by clasping the wire thereon and then noting the position of the marking prongs with respect to one another.

I claim as my invention:

A dental measuring tool comprising a shank having a head at one end thereof, and a thumb loop at the opposite end, and graduated near said thumb loop, a sleeve mounted on said shank and provided with loops to receive the fingers, said thumb loop and said finger loops having shanks provided with prongs terminating in opposing parallel marking points, said sleeve being freely slidable on said shank toward and from said thumb loop and having means for locking it on said shank, a wire attached at one end to said sleeve and at its other end to said shank and passing through an orifice in said head, movement of said sleeve back and forth expanding or contracting the loop formed in said wire, the circumference of said loop corresponding to the distance between the marking points of said prongs and indicated by the graduations on said shank, said points serving as a means while the thumb and fingers are still in the loop for marking a length of gold leaf corresponding to the circumference of the loop.

In witness whereof, I have hereunto set my hand this 3d day of March, 1916.

CHARLES R. SCHWARTZ.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D.C."