Nov. 18, 1924. 1,516,124

O. SCHLAUPITZ

BORE GAUGE

Filed July 14, 1923

Fig. 1.

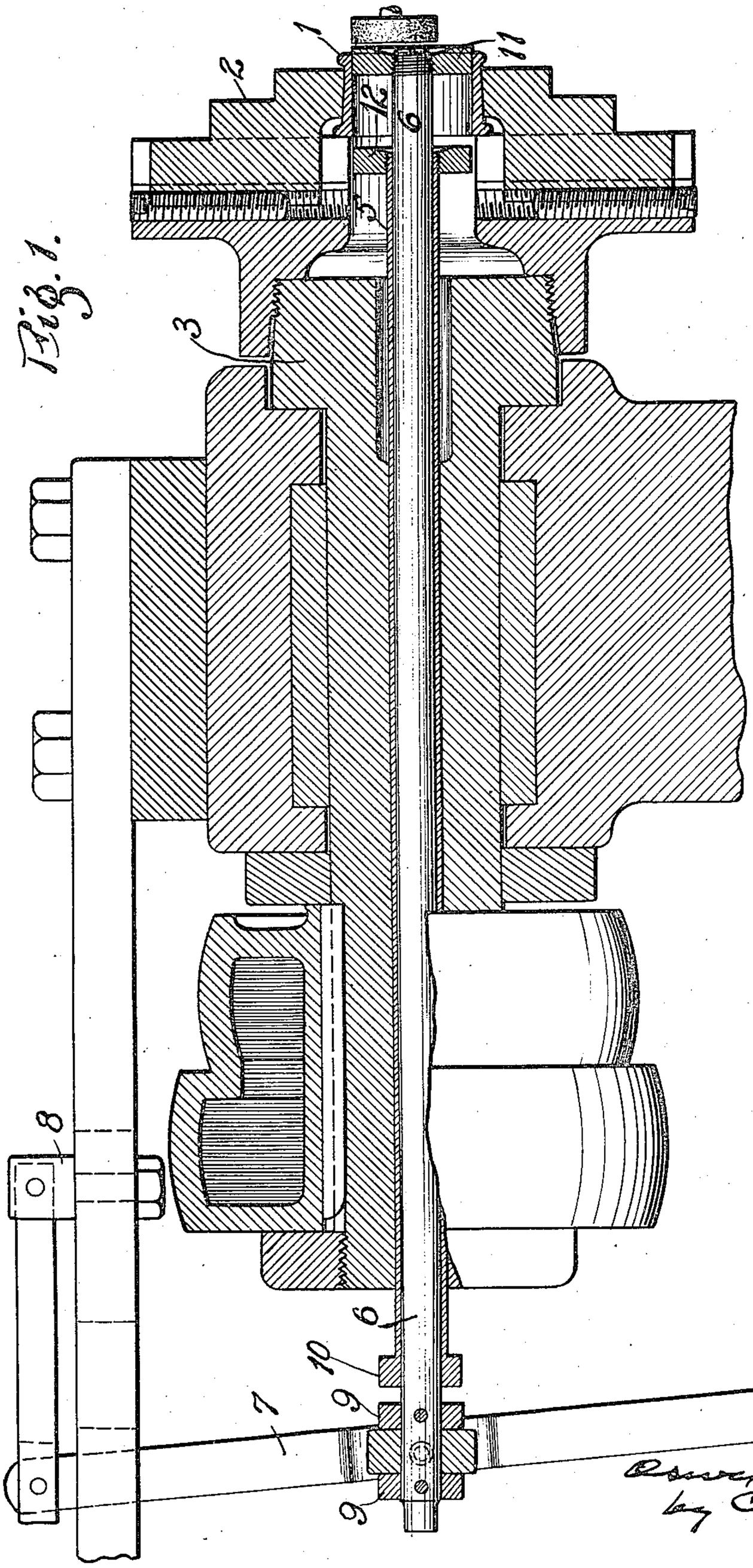
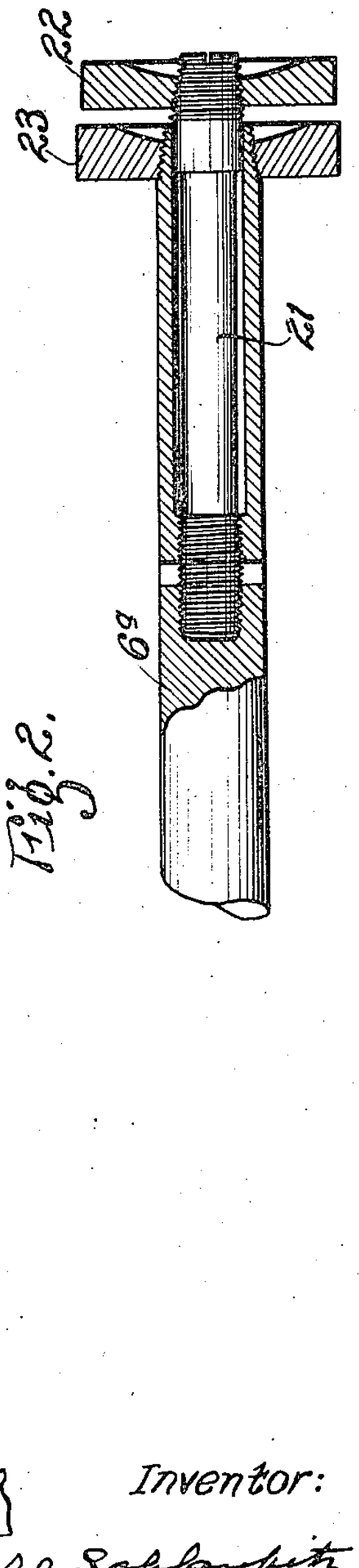


Fig. 2.



Inventor:

Oswald Schlaupitz,

by Cushman,

his Attorneys

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UNITED STATES PATENT OFFICE.

OSWALD SCHLAUPITZ, OF CANTON, OHIO, ASSIGNOR TO THE TIMKEN ROLLER BEARING COMPANY, OF CANTON, OHIO, A CORPORATION OF OHIO.

BORE GAUGE.

Application filed July 14, 1923. Serial No. 651,639.

To all whom it may concern:

Be it known that I, OSWALD SCHLAUPITZ, a citizen of the United States, and a resident of the city of Canton, county of Stark, and State of Ohio, have invented a certain new and useful Improvement in Bore Gauges, of which the following is a specification.

My invention relates to bore gauge and has for its principal object a device that can be attached to a grinding machine or the like in which the bore of a roller bearing cone or similar ring is being ground; so that the bore can be easily and quickly gaged without removing the work from the grinding machine. Another object is a simple and compact device that takes up little room on the grinding machine and does not interfere with the grinding tool.

The invention consists principally in mounting a pair of gaging members in the chuck of the machine in alinement with the bore of the article being ground, said gaging members being operatively connected with a rod that extends through the hollow spindle of the machine, whereby the gaging members may be operated by moving said rod endwise. The invention further consists in the parts and combination of parts hereinafter described and claimed.

In the accompanying drawing

Fig. 1 is a longitudinal section of a portion of the grinding machine and showing the bore gauge; and

Fig. 2 is a fragmentary sectional view of a modified form of gauge.

In the drawing the invention is shown in connection with a machine for grinding the bore of a roller bearing cone. The roller bearing cone 1 is held in a suitable chuck 2 that is mounted on a hollow rotary spindle 3 on the grinding machine, such construction forming no part of the present invention and being shown only diagrammatically. The grinding tool for grinding the bore of the cone is indicated at 4, but is not shown in detail.

Mounted in the hollow spindle 3 is a sleeve 5 that is loosely mounted on a rod 6 that projects beyond the spindle at both ends. Pivotally secured to the rod 6 is an operating handle 7 that is secured to a projecting member 8 on the frame of the machine, whereby the rod 6 may be moved lengthwise of the spindle 3. The handle may have an opening through which the rod extends and may be secured to the rod by collars 9 on said rod.

The sleeve has an enlarged end portion 10 against which one of the collars 9 abuts after the rod has been moved a certain distance toward the cone 1 and thereafter the rod carries the sleeve with it.

Mounted on the end of the rod 6 is a gaging plug or ring 11 and a gaging plug or ring 12 is likewise mounted on the end of the hollow sleeve 5. Preferably the gaging rings are interiorly threaded and the ends of the rod and sleeve are threaded to fit them.

In the form shown in Fig. 1 the gaging ring 11 on the end of the rod is of the diameter of the bore of a normal size cone, that is it is a "go" ring; and the ring 12 on the sleeve 5 is of greater size than the bore of a normal cone, that is it is a "no go" ring. After the bore of the cone has been ground the tool is removed from the bore and the rod 6 is moved to the right (toward the cone), if the bore is of the exact size desired the gaging ring 11 just enters the bore of the cone. The continued movement of the rod 6 moves the sleeve 5 with its gaging ring 12 towards the cone. If this gaging ring enters the bore it shows the operator that the hole is too large, but if it does not enter the bore it shows that the work is satisfactory.

In Fig. 2 is shown a slightly modified construction in which both gaging rings are mounted on a single rod 6ª. In the form shown in Fig. 2, the end of the rod 6ª is bored out and a portion thereof threaded, and a threaded pin 21 is mounted therein. The projecting end of said threaded pin is threaded and a gaging ring 22 is mounted thereon and a gaging ring 23 is also mounted on the end of the rod.

The gaging ring 22 nearest the work may be of smaller diameter than that of a normal bore and the other gaging ring 23 may be of the exact size of a normal bore. In such case, the bore is ground out until the first gaging ring 22 easily enters it; and then the grinding is proceeded with slowly, and the bore gaged from time to time until the second ring is able to enter it.

The herein described bore gauge has numerous advantages. It is simple and com-

pact and takes up very little room on a grinding machine. It makes it possible to gauge the bore of the work without removing the work from the machine and without having to move the cutting tool far from the work. The gaging rings are easily removed. Thus the device is enabled to be easily changed to gauge rings of different sized bores and worn gaging rings may be easily replaced. Obviously, numerous changes may be made without departing from the invention and I do not wish to be limited to the precise construction shown.

What I claim is:

1. In combination with a machine for enlarging the bore of annular articles comprising a rotary chuck and hollow spindle, a gauge disposed in the chuck for gaging the bore of the annular article, and means extending through the bore of said spindle for supporting said gauge.

2. In a grinding machine or the like for grinding the bore of annular articles comprising a rotary chuck and hollow spindle, a pair of gaging members disposed within the chuck in axial alinement with the bore of the annular article, means for supporting said gaging members and means for moving first one and then the other of said gaging members into the bore of the annular article.

3. In a grinding machine or the like for grinding the bore of annular articles comprising a rotary chuck and hollow spindle, a pair of gaging members disposed within the chuck in axial alinment with the bore of the annular article, one of said gaging members being smaller than the other, means for moving first the smaller and then the larger of said gaging members into the bore of the annular article and means for supporting said gaging member.

4. In a grinding machine or the like for grinding the bore of annular articles, comprising a rotary chuck and hollow spindle, a rod extending through said spindle and into said chuck, a gaging member mounted on the end of said rod in axial alinement with the bore of an article being ground, a second gaging member disposed in axial alinement with said bore, means operatively connecting said second gaging member with said rod and means for moving said rod endwise, thereby moving first one and then the other gaging member into the bore of the article.

5. In a grinding machine or the like for grinding the bore of annular articles, comprising a rotary chuck and hollow spindle, a rod extending through said spindle and into said chuck, a gaging member mounted on the end of said rod in axial alinement with the bore of an article being ground, a second gaging member disposed in axial alinement with said bore, means operatively connecting said second gaging member with said rod, one of said gaging members being of larger diameter than said other, and means for moving said rod endwise, thereby moving first one and then the other gaging member into the bore of the article.

6. In a grinding machine or the like for grinding the bore of roller bearing cones and the like comprising a rotary chuck and hollow spindle, a rod extending through said spindle and into said chuck, a sleeve slidably mounted on said rod, a circular gaging member mounted on the end of said rod, a second circular gaging member mounted on the end of said sleeve, said gaging members being in axial alinement with the bore of the cone, and means for moving said rod and said sleeve endwise to bring first one and then the other gaging member into the bore of said cone.

7. In a grinding machine or the like for grinding the bore of roller bearing cones and the like comprising a rotary chuck and hollow spindle, a rod extending through said spindle and into said chuck, a sleeve slidably mounted on said rod, a circular gaging member mounted on the end of said rod, a second circular gaging member mounted on the end of said sleeve, said gaging members being in axial alinement with the bore of the cone, said rod having a handle for moving it endwise, and a collar on said rod adapted to abut against the end of said sleeve after the rod has moved far enough that the gaging member on the end thereof has passed through the bore of the cone, thereby moving the gaging member on said sleeve into said cone.

Signed at Canton, Ohio, this 10th day of July, 1923.

OSWALD SCHLAUPITZ.