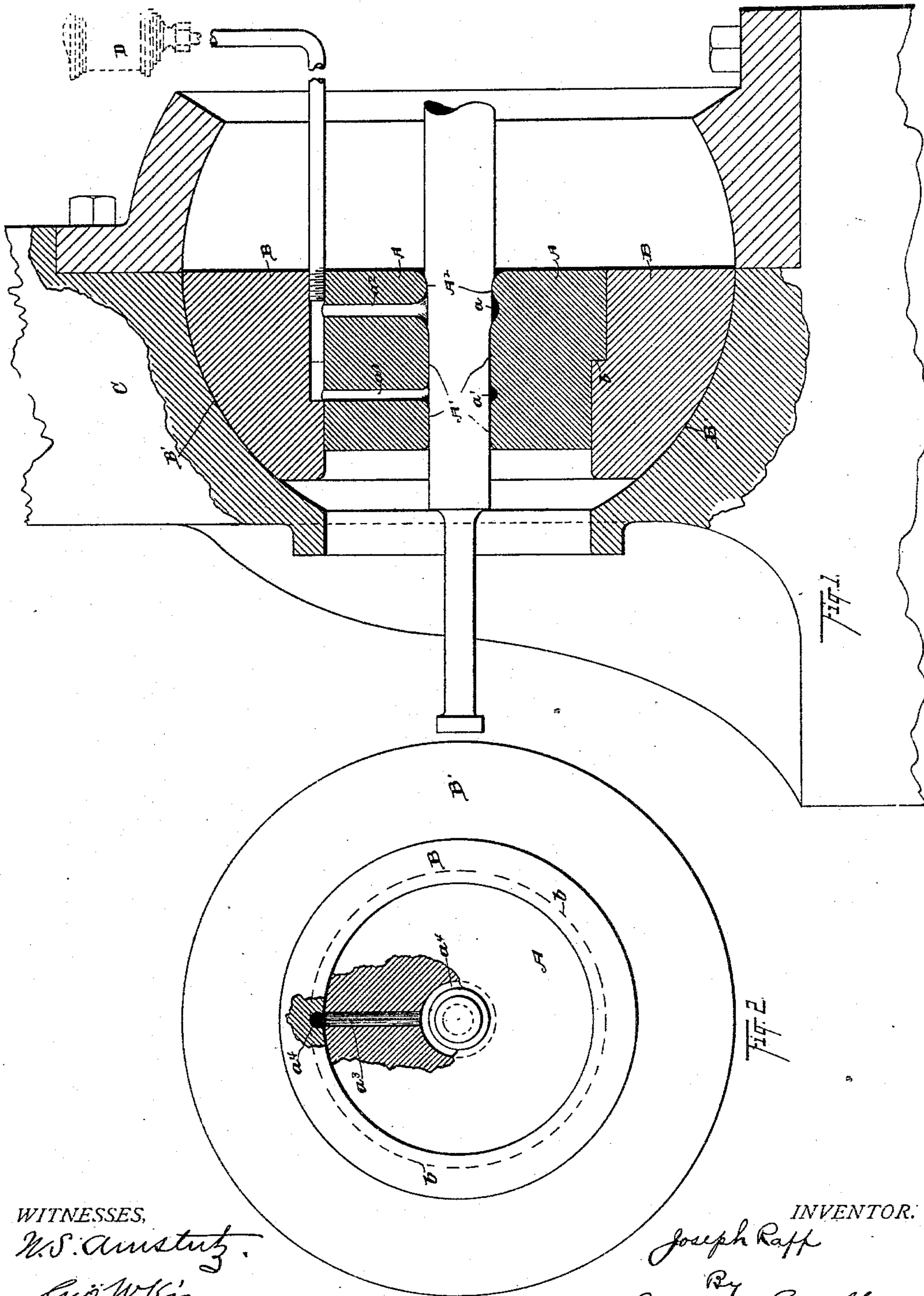


(No Model.)

J. RAPP.
DIE FOR DRAWING SHAFTING.

No. 401,208.

Patented Apr. 9, 1889.



WITNESSES,

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UNITED STATES PATENT OFFICE.

JOSEPH RAPP, OF AKRON, OHIO.

DIE FOR DRAWING SHAFTING.

SPECIFICATION forming part of Letters Patent No. 401,208, dated April 9, 1889.

Application filed November 14, 1888. Serial No. 290,841. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH RAPP, of Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Dies for Drawing Shafting; 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 pertains to make and use the same.

My invention relates to improvements in dies for drawing shafting; and it consists in certain features of construction and in combination of parts hereinafter described, and pointed out in the claims.

My improved dies are intended to operate on ordinary round wrought-metal bars as they come from the reducing-rolls, and at one operation straighten, slightly reduce in size, and smooth the surface thereof, leaving the bars in condition for shafting or other purpose where uniform gage and straight lines and surface are required.

In the accompanying drawings, Figure 1 is a side elevation in section. Fig. 2 is a front elevation of the die and die-ring, partly in section.

A represents the die, B the die-ring, and C the housing for securing or holding the ring. Ring B is preferably shrunk onto the die, the engaging shoulders at *b* preventing the possibility of the die drawing through the ring. The ring at B' is spherical and fits in a corresponding socket in housing C, thus forming substantially a ball-and-socket bearing that admits of a limited universal movement of the die, whereby the latter can adjust itself to the shaft being drawn through the die, so that the axis of the die will always be coincident with the axis of the shaft at the point where the shaft is entering the die. If the die were held rigid, any kinks or crooks of the shaft must be straightened before entering the die, and such straightening consequently precedes the drawing or reduction of the shaft in the die, and so far as permanently straightening the shaft is concerned, the result is about the same as drawing a shaft through tight-fitting dies without reducing the shaft—to wit, the slight bends in the shaft would be sprung into straight lines, and would spring back to their previous crookedness on leaving the

dies. By means of the adjustable feature of the die the straightening and drawing are simultaneous and coincident, and the drawing sets the shaft while the latter is straight, in consequence of which the shaft remains straight after passing the die. This may be illustrated by the well-known practice of straightening a shaft across an anvil, and while the shaft is held in a straight line a well-directed blow will set the shaft after it leaves the anvil; also, the slightest variation of the shaft at the end where the power is applied in drawing will, if the dies are held rigid, crook the shaft; but with my improved construction this difficulty is entirely overcome.

The die has a cylindrical bore, A', of considerable length, and corresponds in diameter with the finished work. The forward section, A², that receives the work, is bored a trifle larger, and is only intended to reduce the shaft a slight degree. Section A² is rounded off to approximately a semicircle, as shown, to facilitate entering the shafting. The forward shoulder of cylindrical section A' is also rounded off, as shown, so that between the two sections occurs the deep annular groove *a*, that is used for lubricating purposes. Farther along—say about midway of the cylindrical section A'—occurs another groove, *a'*, for lubricating. Before the die is placed in the ring holes *a*² and *a*³ are drilled, leading, respectively, into grooves *a* and *a'*. The ring of course covers these holes, and a lateral hole, *a*⁴, is drilled intersecting holes *a*² and *a*³.

An oiler, D, connects with holes *a*, through which a constant supply of oil is discharged into the annular chambers of the die aforesaid, and an ordinary round iron or steel bar, as it comes from the reducing-rolls, is passed through the die, and thereby at one operation is straightened and reduced a trifle in size to bring it to standard gage, and in the operation is given a smooth finished surface suitable for shafting or other purpose.

What I claim is—

1. A die for drawing shafting, the same being secured to a ring having a spherical bearing in the housing, substantially as shown, whereby the die may turn universally to bring itself in alignment with the engaging shafting, substantially as set forth.

2. The combination, with the die for draw-

ing shafting, of a band or ring embracing such die, the periphery of the band or ring being spherical and engaging a corresponding spherical seat in the supporting-housing, substantially as set forth.

3. A die for drawing shafting, the same being loosely mounted, whereby it may turn universally to bring itself in alignment with the engaging shafting, and provided with receiving and finishing bores of unequal diameter, with an annular groove separating these bores, and with suitable holes connecting such annular groove with the lubricating device, substantially as set forth.

4. A die secured to a ring having a ball-

and-socket bearing and provided with receiving and finishing bores of unequal diameter, an annular recess between the bores for lubricating, an annular groove midway of the finishing-bore for lubricating, and with suitable holes connecting such recess and groove with an oiler, substantially as set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 21st day of July, 1888.

JOSEPH RAPP.

Witnesses:

CHAS. H. DORER,
A. J. FRIESS.