

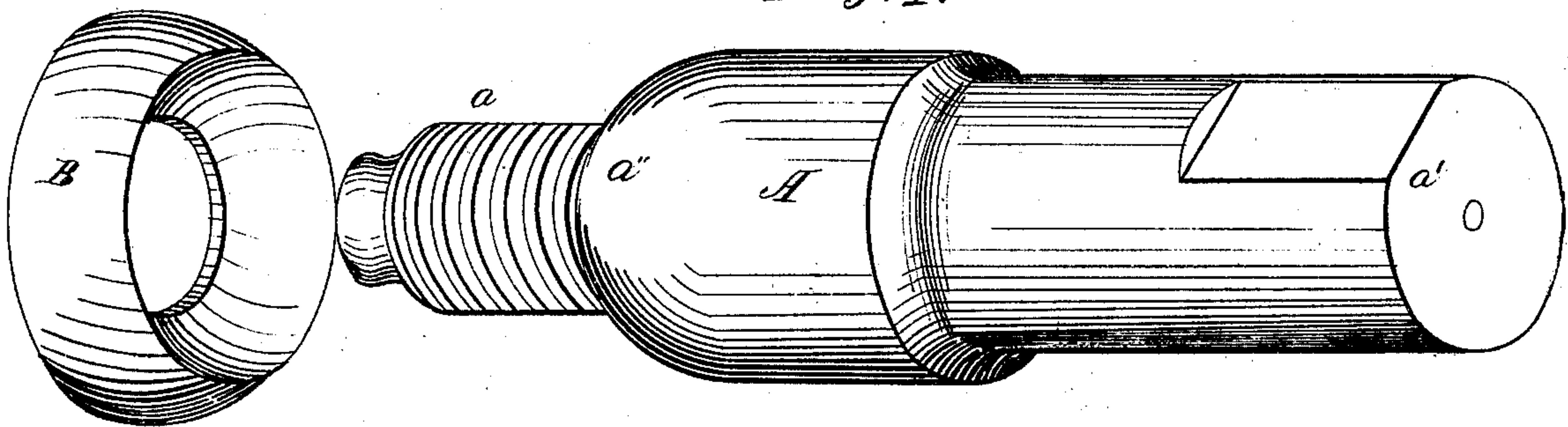
*G. A. Gray, Jr.,*

*Nut Mandrel.*

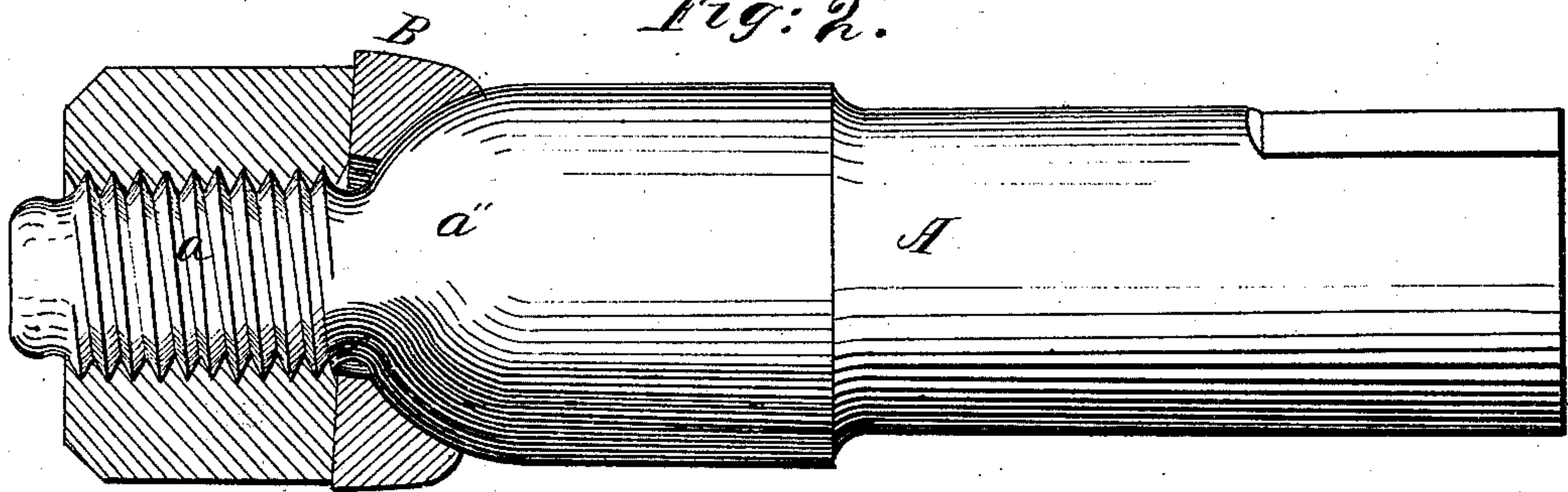
*No. 91,841.*

*Patented June 29, 1869.*

*Fig: 1.*



*Fig: 2.*



*Witnesses*

*Charles Bauer*  
*C. F. A. Stewart*

*Inventor*

*George A. Gray, Jr.*  
*by*  
*Harold M. Woodward*  
*Attorney*

# United States Patent Office.

GEORGE A. GRAY, JR., OF CINCINNATI, OHIO, ASSIGNOR, BY MESNE ASSIGNMENT, TO HIMSELF, AND ALEXANDER GORDON.

*Letters Patent No. 91,841, dated June 29, 1869.*

## IMPROVED NUT-MANDREL.

The Schedule referred to in these Letters Patent and making part of the same.

*To all whom it may concern:*

Be it known that I, GEORGE A. GRAY, Jr., of Cincinnati, Hamilton county, State of Ohio, have invented a certain new and useful Improvement in Mandrels for "Facing" Nuts; and I do hereby declare the following to be a sufficiently full, clear, and exact description, to enable one skilled in the art to which my invention appertains, to make and use it, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to that class of nut-mandrels in which the shoulder or face against which the nut is screwed adapts itself to the face of the nut; and consists of a spherically-cupped washer, constructed to fit a spherically-formed shoulder of the mandrel.

In the accompanying drawings—

Figure 1 is a perspective view of a mandrel with washer detached.

Figure 2 is a longitudinal section of mandrel-washer and nut to be faced, in position.

A is the mandrel, which is screw-threaded at *a* to receive the nut.

It may be provided with conical indentations *a'* at each end, so that it can be worked between the centres of the lathe, or it may be turned tapering at the large end, and driven into the lathe-spindle.

The shoulder *a'* of the mandrel is spherically formed, as shown.

A washer, B, constructed with a plain straight face on one side, and spherically cupped or dished on the other, fits against and matches the shoulder *a'*. The nut to be faced is screwed against this washer, as shown in fig. 2, and no matter what may be the plane of the face of the nut with relation to the axis of the threaded mandrel, the washer rolls over the shoulder and adapts itself to the nut.

The purpose of this device is to admit of a crooked nut being forced tightly against the shoulder or face of the washer to a solid bearing without being "canted over" on its thread.

I claim herein as new, and of my invention—

The construction and arrangement, with reference to each other, in the tool herein described, of the threaded portion *a*, spherical shoulder *a'*, and washer B, as and for the purpose specified.

In testimony of which invention, I hereunto set my hand.

G. A. GRAY, JR.

Witnesses:

CHAS. E. CALLAHAN,  
GEO. W. EBRIGHT.