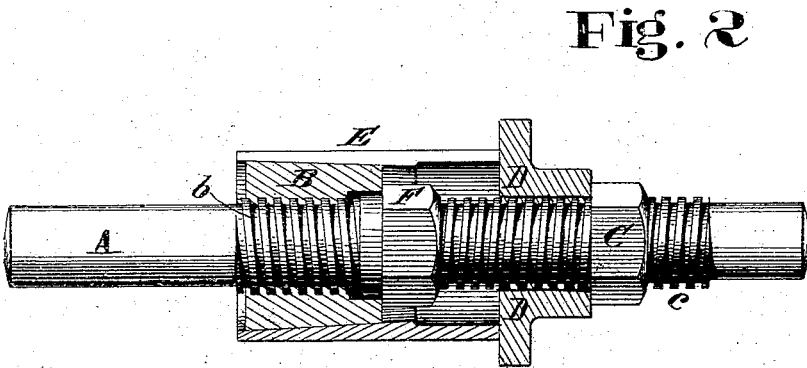
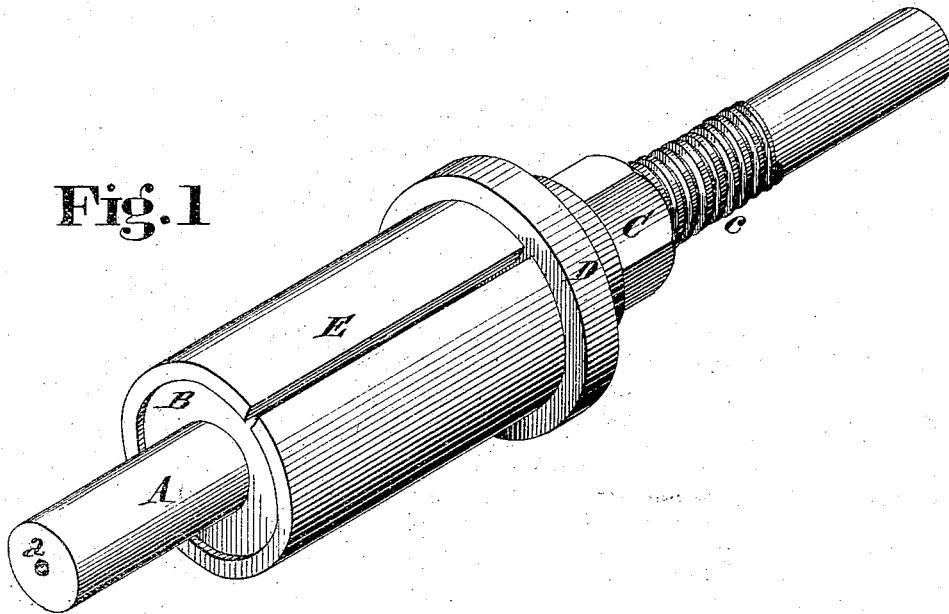


H. P. KING.  
Expanding-Mandrels.

No. 153,347.

Patented July 21, 1874.



Attest

*John Jones*

Inventor

*Henry P. King*  
*By F. Millward*  
Attorney

# UNITED STATES PATENT OFFICE.

HENRY P. KING, OF BENHAM'S P. O., INDIANA.

## IMPROVEMENT IN EXPANDING-MANDRELS.

Specification forming part of Letters Patent No. **153,347**, dated July 21, 1874; application filed June 22, 1874.

*To all whom it may concern:*

Be it known that I, HENRY P. KING, of Benham's Post Office, Ripley county, State of Indiana, have invented a certain new and useful Improvement in Expanding-Mandrels, of which the following is a specification:

My invention relates to the class of machinists' mandrels adapted to fit various sizes of circular openings or bores in work to be turned, the mandrel serving to hold the work tightly while being turned; and my invention consists of a combination of split sleeve, expansible to fit bores of different sizes, a conical plug to fit the same interiorly, and a central mandrel, having screw-threads, washers, and nuts upon it, to support and operate the different parts of the mandrel, the construction of the mandrel being such that it is adapted to receive different sizes of conical plugs and expansible sleeves, so as to render one central mandrel adapted to be used with a great range of bores in the work to be held.

Figure 1 is a perspective view of my improved expanding-mandrel. Fig. 2 is an axial section of the same.

A is the stem or central shaft of the mandrel, which is properly centered, as shown at *a*, to rest between centers of laths, and is provided with screw-threads *b c* upon it, one of which, *b*, is left-handed, and used to support the conical plug B, a number of which are provided of different sizes, to interchange for different sizes of work. The other screw, *c*, is pro-

vided with a nut, C, to operate a loose collar, D, which is used to force the expanding-sleeve E over the conical plug, so as to increase the diameter of the expanding-sleeve to fit the work to be held. The work is held upon the exterior of this expanding-sleeve E, and if necessary the sleeve may be in sections of different diameters exteriorly, to fit various sizes of bores without expansion necessarily. A permanent nut or head, F, is provided on the central mandrel A, against which the conical plug B is firmly screwed, the left-hand screw preventing, in the usual rotation of the lathe, any displacement of the plug.

In the operation of the mandrel, the work to be turned or otherwise operated upon is placed over the expansible sleeve, and the nut C is screwed up, so as to cause the collar D to force the conically-bored sleeve E over the conical plug B, and thus the sleeve is expanded to closely fit the work to be held.

I claim—

The combination of double threaded mandrel A *b c*, plug B, expanding-sleeve E, loose washer D, and tightening-nut C, connected and operating substantially as and for the purpose specified.

In testimony of which invention I hereunto set my hand.

HENRY P. KING.

Witnesses:

EDGAR J. GROSS,  
J. L. WARTMANN.