(No Model.)

J. H. McGRAW.

LATHE MANDREL.

No. 480,435. Patented Aug. 9, 1892.

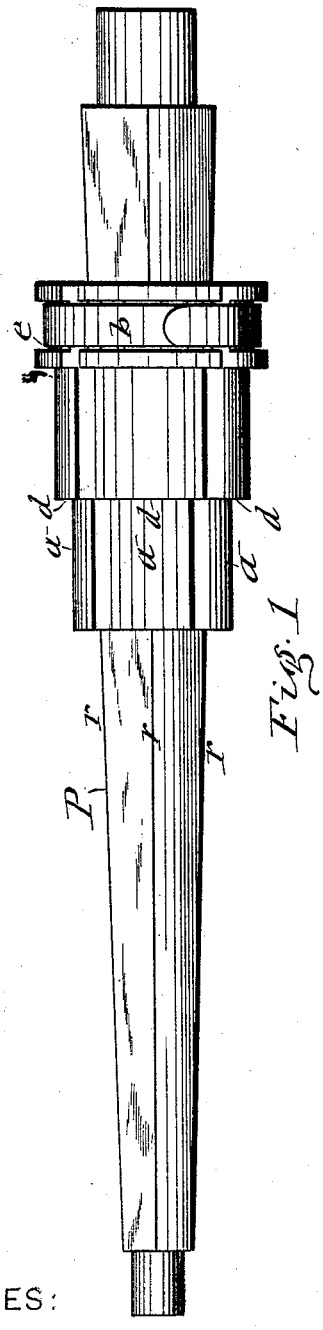

Fig. 1

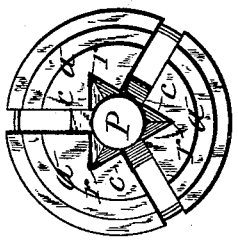

Fig. 3

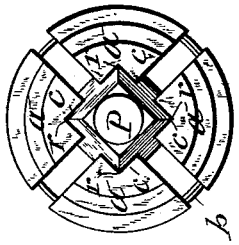

Fig. 2

WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN H. McGRAW, OF OSWEGO, NEW YORK.

LATHE-MANDREL.

SPECIFICATION forming part of Letters Patent No. 480,435, dated August 9, 1892.

Application filed August 31, 1891. Serial No. 404,176. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. McGRAW, of Oswego, in the county of Oswego and State of New York, have invented new and useful Improvements in Lathe-Mandrels, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to the class of lathe-mandrels which are expansible to fit different-sized holes or bores of the work to be operated on.

The object of the invention is to provide an expansible mandrel which shall be simple and comparatively inexpensive in construction and efficient and convenient in its operation.

To that end the invention consists, essentially, of an expanding mandrel comprising a longitudinally-smooth tapering spindle provided with longitudinal ribs and work-holding blocks grooved longitudinally internally and mounted thereby movably on the aforesaid ribs, as hereinafter more fully described, and set forth in the claim.

In the annexed drawings, Figure 1 is a side view of a lathe-mandrel embodying my invention. Fig. 2 is an end view of the same, and Fig. 3 is an end view illustrating a modification of my invention.

Similar letters of reference indicate corresponding parts.

P represents a smooth wedge-shaped or longitudinally-tapered spindle, which is provided with longitudinal ribs *r r r*, preferably obtained by forming the said spindle angular in cross-section, either square, as shown in Fig. 2 of the drawings, or triangular, as shown in Fig. 3, or other suitable shape. Upon the ribs or angles of the said spindle are mounted longitudinally movable the work-holding blocks *a a a*, which are sector-shaped in cross-section and provided with longitudinal grooves *c c c* internally, by which they ride on the aforesaid ribs or angles, and are thus restrained from moving laterally on the spindle P. Said sectors are separate and detached from each other, and by means of a suitable adjustable clamp—such as a spring-steel band or other suitable elastic band *b*, embracing the sectors—the latter are retained on the spindle P when not in use. To confine said band in its position on the sectors, I provide the latter with a circumferential groove *e*, in which the band is seated.

In using the described mandrel the spindle P, with the sectors *a a a*, is to be inserted into the bore or hole of the article to be secured to the lathe, and then by driving the spindle from the large end thereof the sectors *a a a* become spread apart from each other and radially outward, so as to obtain a firm hold in the bore or hole. The taper of the spindle is so slight as to obviate the liability of the sectors slipping accidentally on the spindle during the use of the mandrel. To obtain greater range of adjustment of the mandrel, I form the sectors *a a a* with steps *d d*, by which the outer end portions of the sectors are made larger in diameter than the adjacent inner end portions thereof, the different-sized portions of the sectors being used for different-sized bores of the article or work to be held in the lathe.

What I claim as my invention is—

The combination, with the tapering spindle P, shaped angular in cross-section, of the sectors *a a a*, provided with longitudinal grooves *c* and riding thereby on the angles of the spindle and formed with steps *d* and circumferential groove *e*, and the elastic band *b*, seated in said groove and holding the sectors yieldingly upon the spindle, substantially as described and shown.

In testimony whereof I have hereunto signed my name this 25th day of August, 1891.

JOHN H. McGRAW. [L. S.]

Witnesses:

GEORGE HAY,

PATRICK SHEEHY.