J. B. Mallalieu.

Mandrel.

No. 64,234. Patented Apr. 30, 1867.

Fig: 1.

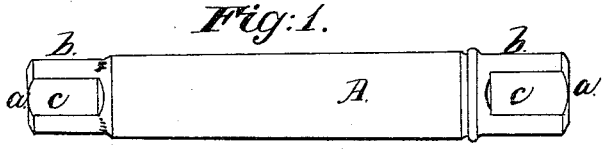


Fig: 2.

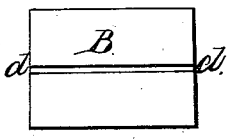


Fig: 3.

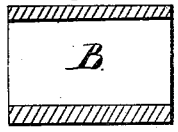


Fig: 4.

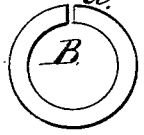


Fig: 5.

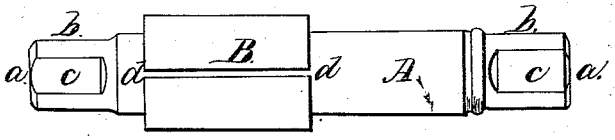
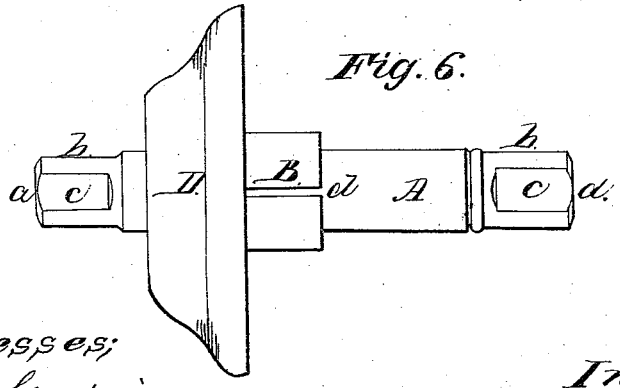


Fig. 6.



Witnesses;
Frederick C. Goodwin
S. A. Goodwin

Inventor;
James B. Mallalieu

United States Patent Office.

JAMES BUCKLEY MALLALIEU, OF CHICAGO, ILLINOIS.

Letters Patent No. 64,234, *dated April* 30, 1867.

IMPROVEMENT IN EXPANDING MANDRELS.

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, JAMES BUCKLEY MALLALIEU, of Chicago, in the State of Illinois, have invented a new and improved Mandrel, as a mechanical instrument or tool for use in turning iron, brass, or metals, or wood in turning-lathes; and I do declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference thereon.

Figure 1 is a top view of the mandrel.

Figure 2 is a top view of the bush or jacket.

Figure 3 is a section view of the bush or jacket in a line through the centre.

Figure 4 is an end view of the bush or jacket.

Figure 5 is a top view of the mandrel, with the bush or jacket fitted to the same.

Figure 6 is the improved mandrel fitted into a base to be turned.

Similar letters, where they occur in different figures, denote the same parts.

The nature and object of my invention are to construct a tapering mandrel, provided with an elastic or yielding bush or jacket, which will enable me to use the same mandrel and bush or jacket for different pieces of work, and at the same time will enable me to turn the ends of the work I am engaged on, or rim it out, as circumstances should require. I use a mandrel tapering in form to such a degree as circumstances should require, and on this mandrel I use a bush or jacket, with the bore made to conform to the mandrel, and the periphery made with parallel sides. At one line on the surface of this bush or jacket is cut a slit longitudinally through to the bore, thus making the bush or jacket yielding, which will enable it to fit at any point on the tapering mandrel desired. This bush or jacket, when in use, is made flush with or shorter than the bore of the article to be turned, both sides or ends of the article extending each way beyond the bush or jacket. It is obvious that this construction of the bush or jacket will enable me, while holding the bush tightly in the bore aforesaid, to turn the article I am working on both ends perfectly, without danger of injuring the mandrel or bush by the turning-tool, and without the necessity of a collar to hold the bush from slipping through, and without reversing the article to be turned on the mandrel for finishing; but will also enable me to rim out the article as I might desire.

I am aware that yielding bushes or jackets on tapering mandrels have been used before. One is shown in the patent granted to Sherrod, June 21, 1853. But this construction fails to produce the advantageous results before described, which are only attained by my peculiar arrangement.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings annexed.

A is a mandrel of cast steel, or other suitable metal, hardened at the ends to the depth of from one-eighth to one-fourth of an inch. It may be of any suitable dimensions and length, with an inch diameter at the largest end, and seven inches in length; it may taper about one-eighth of an inch, so that the diameter of the smallest end shall be seven-eighths of an inch, and in about that proportion or angle for a longer or shorter mandrel. *a a* are sockets in the two ends of the mandrel, sunk at an angle of about eighty degrees, ending in a smaller and nearly perpendicular socket, which sockets are to be hardened, and are for the hold of the centres when placed in the turning-lathe or machine. *b b* are two shoulders at each end of the mandrel, flattened on one side at *c c*, through which, by means of a dog or other similar instrument rightly adjusted, the motion of the mandrel upon the centres may be promoted. B is the bush or jacket, of cast iron or other suitable metal, with a cut, slit, or opening, *d*, through its entire length. It is to be made with a taper in its interior circle, corresponding with the taper of the mandrel, to which it is to be fitted, and its exterior surface, periphery, or disk of equal diameters throughout, and of parallel lines or surfaces, and it may be of any length or thickness of metal desired and convenient for the purposes aforesaid. Upon a mandrel of the length and dimensions above described, the bush or jacket may be two inches in length and one-eighth of an inch in thickness of metal. It will be obvious, however, that in constructing and operating my improved mandrel, the length and diameter of the mandrel, and the length and thickness of metal of the bush or jacket required, must vary according to the size and thickness and consequent weight of the articles to be turned, and the power used in operating the machine. D is a column base to be turned, shown for illustration.

The operation of my invention is shown by placing the bush or jacket B on the mandrel A, and fitting the complete tool into the base D to be turned, as in fig. 6. The whole is then placed on the centre points *a a*, into the usual turning-machine or lathe, and by the power applied subjected to the action of a common turning-chisel, with the results and advantages before enumerated.

What I claim as my invention, and desire to secure by Letters Patent, is—

The combination of the mandrel A with the movable bush or jacket B, without a collar, as and for the purposes set forth.

JAMES B. MALLALIEU.

Witnesses:

S. A. GOODWIN,

GEO. E. ADAMS.