F. H. VANNAN.

Expanding Mandrel.

No. 202,768. Patented April 23, 1878.

Fig. 1.

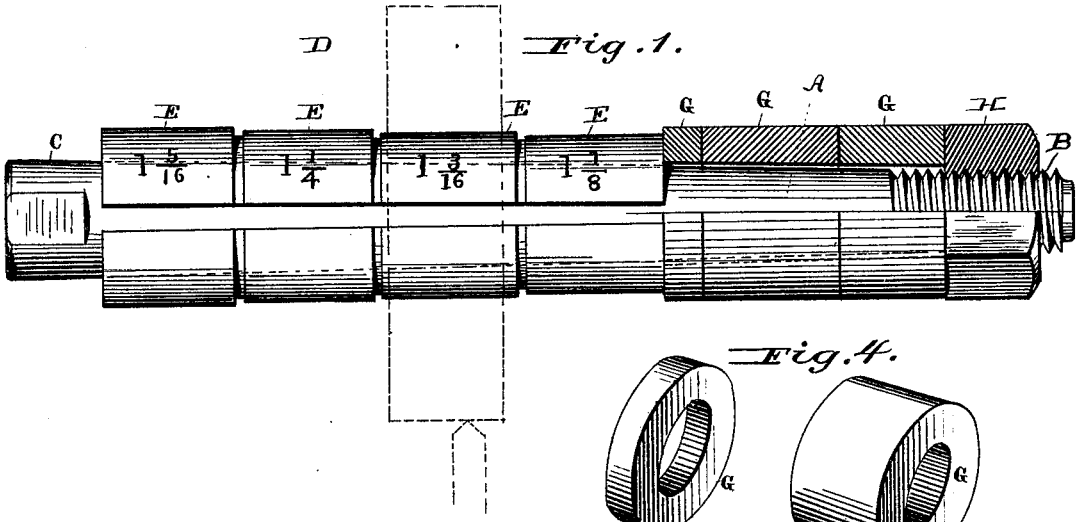


Fig. 4.

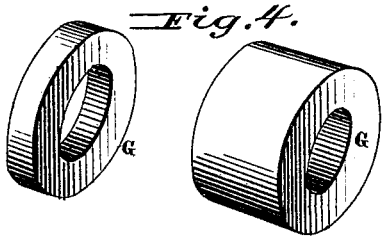
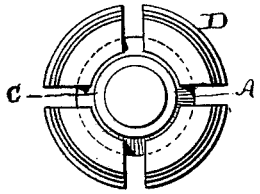


Fig. 2.



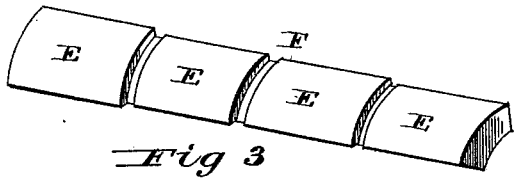
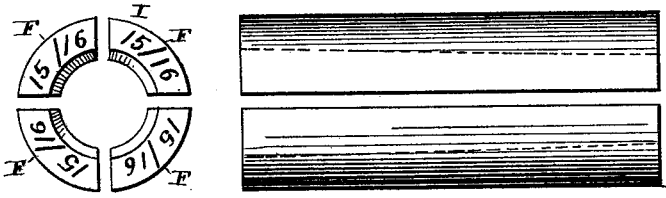


Fig 3

Fig. 5.

Fig. 6.



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UNITED STATES PATENT OFFICE.

FORBES H. VANNAN, OF WILKESBARRE, PENNSYLVANIA.

IMPROVEMENT IN EXPANDING MANDRELS.

Specification forming part of Letters Patent No. **202,768**, dated April 23, 1878; application filed March 14, 1878.

To all whom it may concern:

Be it known that I, FORBES H. VANNAN, of Wilkesbarre, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Expanding Mandrels; and I do hereby declare that the following is a full, clear, and exact description.

This invention relates to certain improvements in expanding mandrels for metal-working machines; and the invention consists in the special construction and arrangement of parts, which will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a side elevation of my expanding mandrel, showing the washers and nut in section. Fig. 2 is an end view of Fig. 1, with the nut and washer removed. Fig. 3 is a perspective view, showing a section of the bushing shown in Fig. 1. Fig. 4 is a view showing two of the washers in perspective. Fig. 5 is a side elevation of the mandrel, and Fig. 6 is an end and side view of the bushing shown in Fig. 1 in modification.

The object of my invention is to dispense with the large number of cumbersome heavy mandrels that are necessarily kept in all machine-shops, and to save the time now lost in forcing articles upon them; also, to save the expense of fitting mandrels to odd jobs which the standard mandrels will not fit, which is a continued expense in all jobbing and repair shops.

A represents the mandrel, having one end, B, provided with a screw-thread. This mandrel is made tapering from the end B outward to the end C, as shown in figures of drawing. The ends B and C, after being centered, are hardened to prevent wear.

In constructing the bushing D, a piece of suitable material is bored to the exact size and taper of the mandrel. This piece is then forced upon the mandrel and turned down to the required diameter. This bush can be turned to a uniform diameter, as shown in Fig. 6 of drawings; or it can be turned with a series of faces, E, of increased diameters, as shown in Fig. 1 of drawings; or it can be turned to a taper when the nature of the work requires it. After the bush is turned as desired, the size is stamped upon it, and the bush is cut into four or more equal longitudinal sections, F, as may be desired, each piece bearing the stamp indicating the size.

In the case of a series of faces of increased diameters the size is stamped upon each one of the series.

G G G are washers of varying sizes, of greater diameter than the mandrel, so as to permit of their being forced after the bushing by the nut H.

The operation of this expanding mandrel is as follows: The article to be placed upon the lathe is fitted upon the bushing as far up on the mandrel as may be done easily and retain the sections of bushing in place. Enough washers are then put on to reach the nut at a point near the front end of the screw-thread. The bushing carrying the work is then forced up on the mandrel by the nut until a sufficiently snug fit is made to hold the articles against the tool.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the mandrel A and bushing D, composed of two or more separate sections adapted to slide on the mandrel A, with washers G and nut H, as specified.

2. The improved bushing for expanding mandrels, consisting of separate sections, and adapted to slide lengthwise upon the surface of the mandrel, as set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

F. H. VANNAN.

Witnesses:
H. K. MCLEAN,
G. W. MOOERS.