(Model.)

J. A. WILDE.

Mandrel.

No. 239,006. Patented March 15, 1881.

Fig: 1.

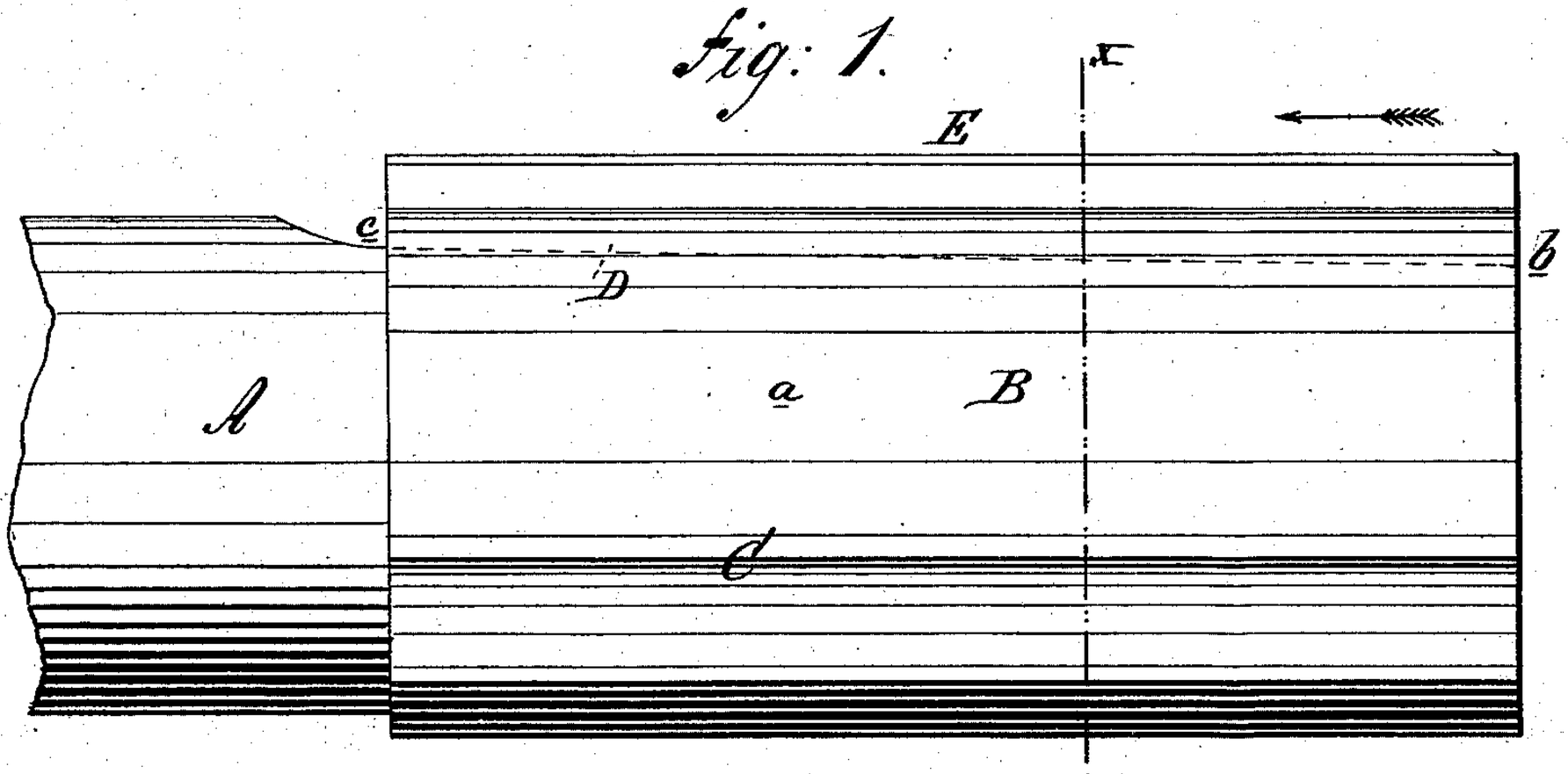


Fig: 2.

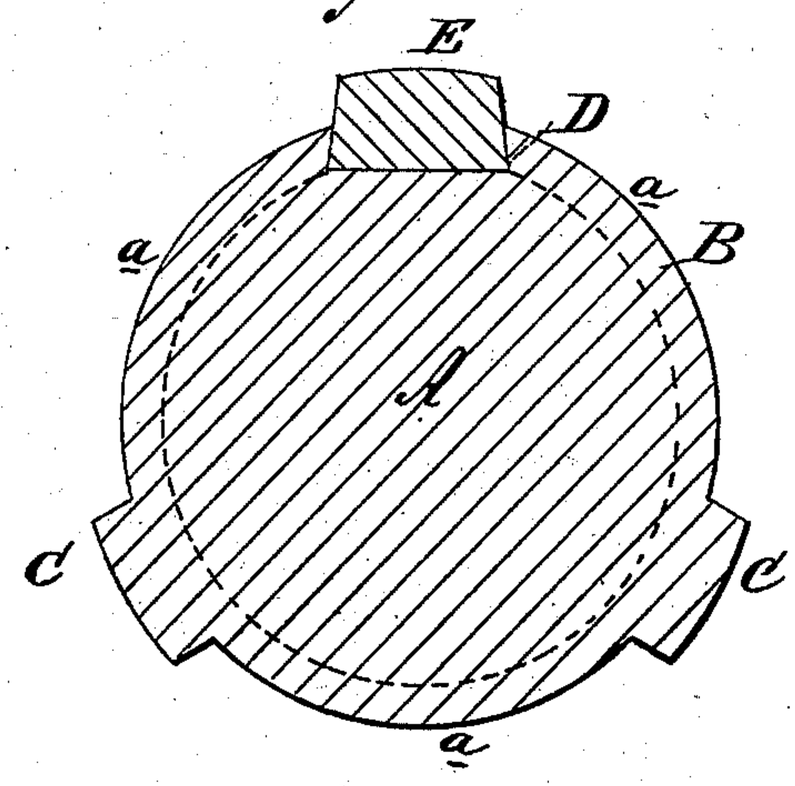
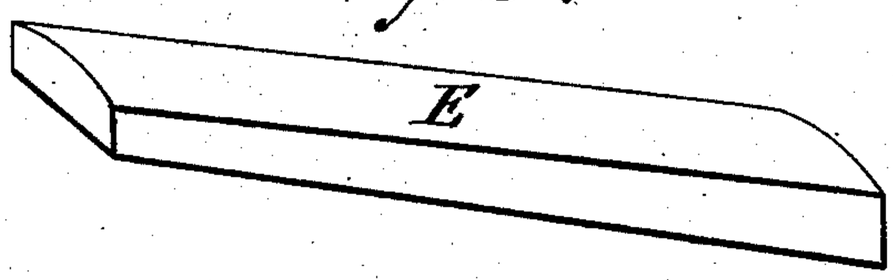


Fig: 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN A. WILDE, OF HUDSON, NEW YORK.

MANDREL.

SPECIFICATION forming part of Letters Patent No. 239,006, dated March 15, 1881.

Application filed November 20, 1880. (Model.)

To all whom it may concern:

Be it known that I, JOHN A. WILDE, of Hudson, in the county of Columbia and State of New York, have invented a new and Improved Mandrel, of which the following is a specification.

The object of this invention is to provide a mandrel that may readily be inserted in and withdrawn from the hole in the piece of work to be turned, that shall furnish a parallel bearing the full length of the hole or any part thereof, and thereby be secure against turning in the hole, and that will remain "true" through long-continued use.

The invention consists of a mandrel having an enlargement or boss in the middle of its length, or at either end, that is cut away so as to form two raised parallel longitudinal bearings and a corresponding groove, which are at equal distances apart, the said groove being deeper at one end than at the other, and being designed to receive the third bearing, which consists of a corresponding key that is to be forced into the groove to secure the mandrel in place in any piece of work.

Figure 1 is a side elevation of the mandrel. Fig. 2 is a sectional end elevation of the same on line *x x*, Fig. 1. Fig. 3 is a perspective view of the key.

Similar letters of reference indicate corresponding parts.

In the accompanying drawings, A represents the mandrel-body provided with a boss, B, in the middle of its length or on either end, which ends may be made tapering or with parallel sides, as may suit the fancy or convenience of the operator. This boss B, in small mandrels, is to be turned to nearly the diameter of the hole it is to fit; and for large mandrels—say of a diameter of four inches and upward—the end or ends A may be turned any convenient size smaller—say from three-quarters to an inch smaller than the diameter of the hole it is to fit. Said boss B is then spaced off into three circumferential divisions and cut away, as shown at *a*, forming two parallel raised ribs or bearings, C C, and a groove, D, all of which are equidistant from each other and extend the full length of the said boss B, the groove D being cut deeper at one end, *b*, than at the other end, *c*, to correspond with the wedge-shaped key E, that is designed to be driven in the direction of the arrow, Fig. 1, when the mandrel is being fitted to a wheel, cylinder, or any other work, so that whatever distance the said key E, which serves as the third bearing-point of the mandrel, is forced in the groove D, the face of said key E will be always true and parallel with the faces of the ribs or bearings C C; and when said key E is forced for its full length into the groove D, so as to fill the latter, it (the said key E) projects above the face of the boss B to the same height as the fixed ribs or bearings C C. Said key E is made so as to move freely in the groove D, and is constructed preferably of hardened steel.

In using this mandrel the key E is removed from the groove D and the mandrel then inserted into the hole of the wheel or other work as far as required, and the key E is then replaced and driven home with a few blows of a light hand-hammer.

The first object of the improved mandrel is gained by removing the key E entirely from the groove D, whereby said mandrel can be readily inserted into and withdrawn from the work. The second object is gained by making the groove D deeper at one end than at the other, and entering the wedge-shaped key E with its thin point into the deeper part of the groove D, and moving it in the direction of the arrow, Fig. 1; and the third object is gained because the key E alone being driven by a light hammer the ends of the mandrel are not upset by blows of a heavy hammer or sledge, as is usually the case in inserting and withdrawing mandrels, and the truth of its center thus impaired.

This mandrel is especially designed for work in which the holes are nearly uniform in size—such as car-wheels, pump-sleeves, small cylinders, &c.; and by turning the boss B to fit the hole it may be applied to tapering holes, if desired.

I am aware that so-called expanding mandrels provided with segmental wedges that all move lengthwise together upon the mandrel which has three or more of its sides tapered and flattened, are not new; but the objection to this form, as well as to that of the solid mandrel, is that the mandrel must be

driven into or withdrawn from its work by blows upon its end, whereby it soon becomes useless for work that must be accurately turned.

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

A mandrel composed of a solid body, A, provided with a boss, B, of the length of the hub to be operated on, and furnished with ribs or bearings C, sloping groove D, and tapering wedge-shaped key E, substantially as described.

JOHN ALLEN WILDE.

Witnesses:
GEO. E. REID,
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