P. Maltby.

Mandrel.

No. 60,214. Patented Dec. 4, 1866.

Fig: 1

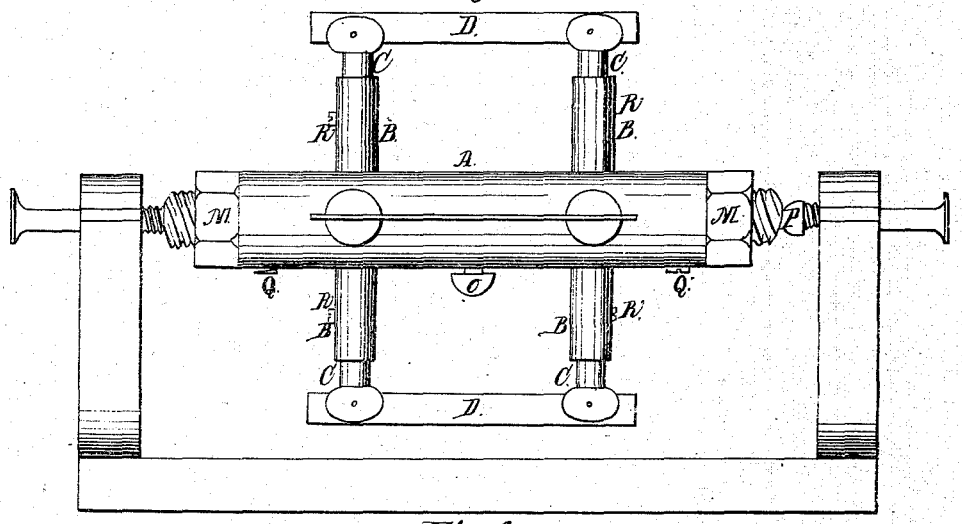


Fig. 2.

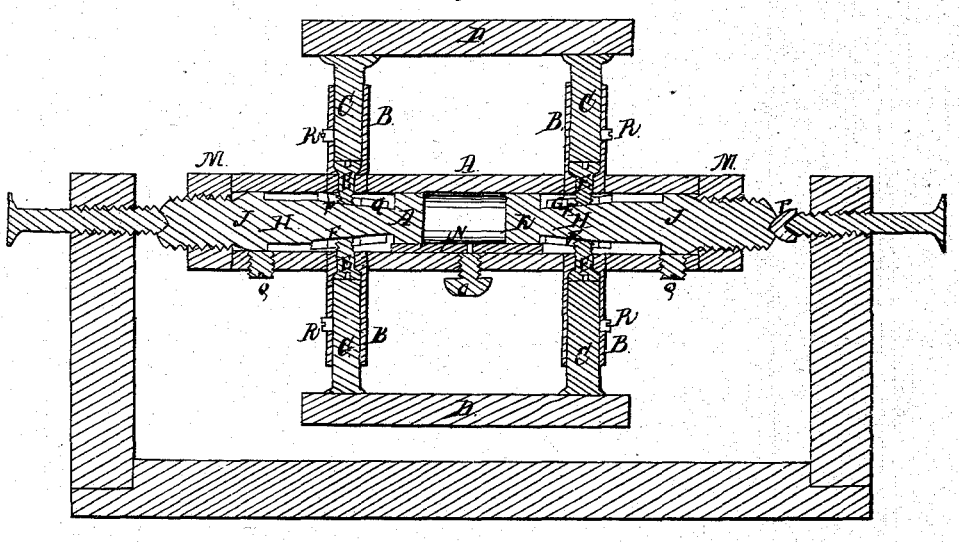
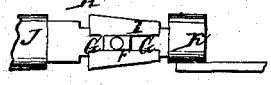


Fig: 3.



Witnesses;
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E. E. Waite

Inventor;
Phila Maltby

United States Patent Office.

IMPROVEMENT IN EXPANDING CYLINDERS.

PHILO MALTBY, OF KENT, OHIO.

Letters Patent No. 60,214, *dated December* 4, 1866.

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, P. MALTBY, of Kent, in the county of Portage, and State of Ohio, have invented a certain new and improved Chucking Mandrel; and I hereby declare that the following is a full and complete description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side view.

Figure 2 is a longitudinal vertical section.

Figure 3 is a detached section.

Like letters refer to like parts in the several views.

The nature of my invention relates to an adjustable chucking mandrel for the purpose of boring out cylinders, turning the outside of cylinders, packing rings, &c., constructed as hereinafter described. When the mandrel is in operation, it is hung upon the ordinary centre of a lathe and revolved from the head block, or by other similar means. From the cylinder, A, extend eight sockets, B, two on each side opposite each other; these sockets are tubular and connected to the cylinder, which receive the arms or slides C, each pair of arms being attached to the cross-bar, D, and the lower ends rest upon the head of the screws E, as seen in fig. 2. The screws E pass through the lower end of the socket and screw into a slide F. Each of these slides is fitted into a dovetail groove G, in the centres H, as shown in figs. 2 and 3, so as to allow the centres to move laterally in the cylinder. The sides of the grooves are parallel to each other, but the bottom upon which the slides rest are tapering corresponding to the taper of the head, I, of the centre. J and K represent enlarged portions of the centres, which fill up and fit closely to the bore of the cylinder, so as to have the parts work firmly together. At the outer ends of the centres are screws; on each is fitted a nut, M, figs. 1 and 2. Near the middle of the cylinder is placed a gib, N, fig. 2, which extends or laps on to the enlargements K, one side of which being cut away to receive the ends of the gib. The set-screw O passes through the cylinder and presses upon the gib, by which means the inside ends of the centres are firmly secured in place with the cylinder. P is an auxiliary centre bush fitted to the cavity of the centre, and which is placed upon the dead centre of the lathe or machine operating the mandrel. By these means the main centres are prevented from wearing as the centre bush turns with the mandrel upon the dead centre. When the centre bush is worn out a new one can replace it without injury to the main centre, which is thereby kept true at all times. In turning the outside of rings, cylinders, &c., the mandrel is passed into the bore of the same, so that the article will hang or rest upon the bars, D; this leaves the outside free from obstruction for being turned. If the bars are to be extended to fill the bore, the nuts M are turned back from the ends of the cylinder, and then by means of the centre and screw mandrel of the foot-rest the centres H H are forced toward each other in the cylinder. By these means, and the action of the inclined grooves G in the tapering head I, the arms C are forced out by the screws E on all sides, and at the same time uniformly and simultaneously, as these planes of the grooves all coincide with each other for this purpose, and also for contracting the mandrel for smaller bores. When it is desired to contract the mandrel, the nuts M are screwed up against the ends of the cylinders, which withdraw the centres from each other, and the dead centre of the foot-block being withdrawn also in the same degree to allow the centres H H to recede. In case the mandrel is to fit a tapering bore, only one of the nuts M need be released, and either side of the mandrel may be expanded or contracted in the way before described, while the opposite centre need not be disturbed. The cross-bar D is so connected to the arms C, by means of a pin or bolt, as to allow the mandrel to fit a tapering bore by adjusting either end for the purpose as stated. For the purpose of more firmly securing all the parts together when in operation, the set-screws Q are screwed into the slides, and in the sockets B are set-screws R, to aid in holding the arms C in place when set. In boring out cylinders the cutter or tool is fastened to the cross-bars by any desirable means, or a cutter head may be secured to the mandrel. For all these uses the mandrel is expanded and contracted in the same way.

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

1. The grooved centres H, in combination with the cylinder A and nuts M, substantially and for the purpose set forth.

2. The cylinder A and sockets B, in combination with the arms C and bars D, substantially as and for the purpose described.

3. The grooved centres H and slides F, in combination with the screws E, sockets B, and arms C, substantially as and for the purpose specified.

4. The gib N and centres H, in combination with the set-screws O and cylinder A, as and for the purpose set forth.

PHILO MALTBY.

Witnesses:

W. H. BURRIDGE,

E. E. WAITE.