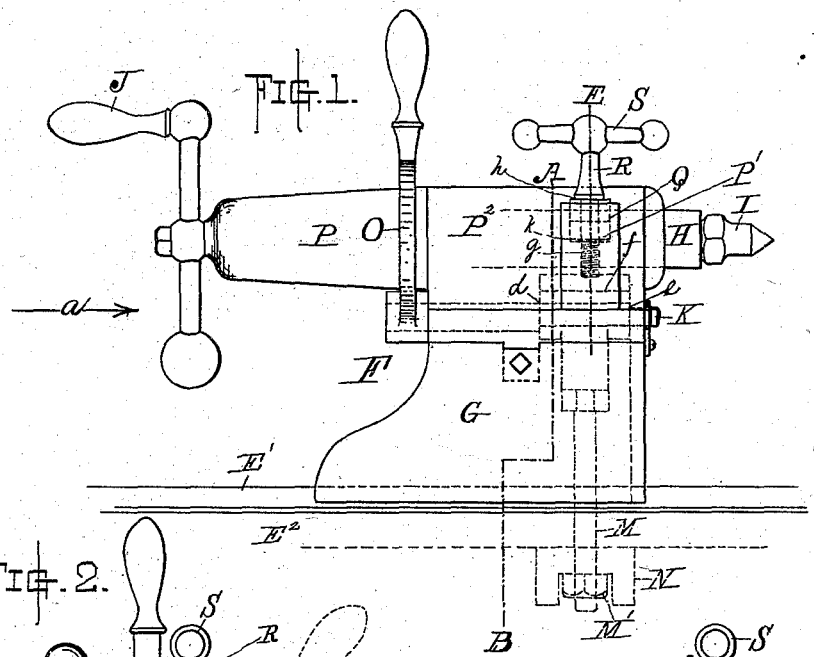
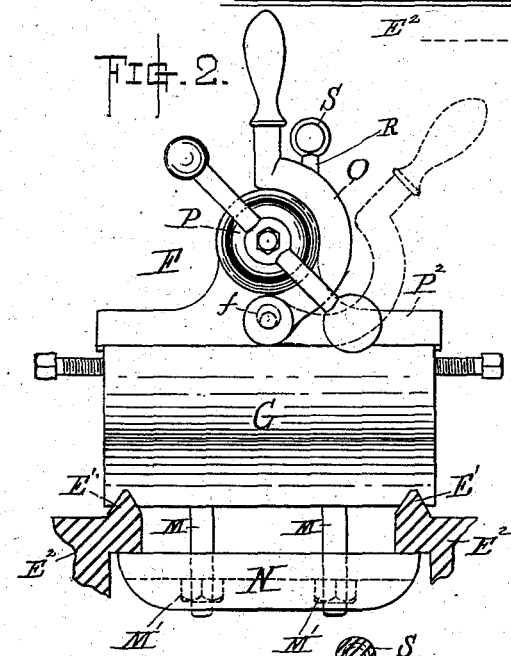
(No Model.)

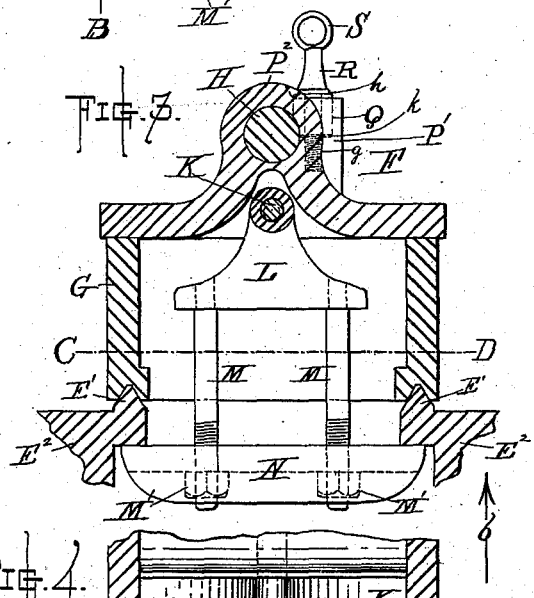
M. F. McMAHON.

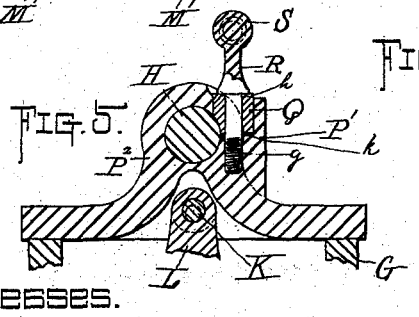
TAIL STOCK FOR LATHES.

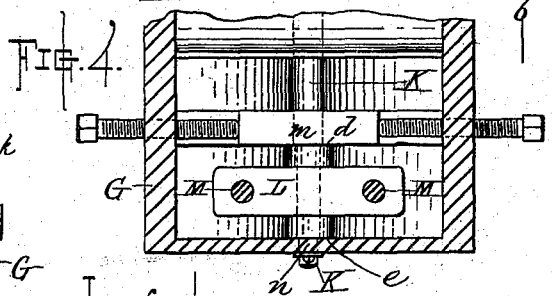
No. 257,883. Patented May 16, 1882.











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TAIL-STOCK FOR LATHES.

SPECIFICATION forming part of Letters Patent No. 257,883, dated May 16, 1882.

Application filed September 26, 1881. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL F. McMAHON, of the city and county of Worcester, and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Tail-Stocks for Lathes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 represents a side view of a lathe tail-stock embracing my aforesaid improvements upon the same. Fig. 2 represents a cross-section through the ways and part of the bed of a lathe, showing an end view of the tail-stock shown in Fig. 1, looking in the direction indicated by arrow *a* of said Fig. 1. Figs. 3, 4, and 5 represent sections through the tail-stock, taken on lines A, B, C, D, and E, respectively, showing in detail my aforesaid improvements, which will be hereinafter more fully described.

My invention relates to improvements in the manner of binding or clamping the tail-stock proper to the bed of a lathe and of binding the spindle of a tail-stock.

To enable those skilled in the art to which my invention belongs to make and use the same, I will proceed to describe it more in detail.

In the drawings, the parts marked E′ represent the ways, which are formed on the bed E^2 of a lathe for the tail-stock F to slide back and forth upon.

G represents the cricket-block of the tail-stock, which is grooved upon its under side to fit upon said ways E′ E′, and made hollow or in shell form, as represented in Figs. 3 and 4, to receive the tail-stock binding or clamping device, hereinafter described.

The tail-stock is clamped to the bed of the lathe, so as to rigidly hold the same in position when in use by means of a rocking cam-shaft or spindle, K, (shown by dotted lines *c* in Figs. 1 and 2, and full lines, Figs. 3, 4, and 5,) hanger L, rods M M, binding-shoe N, and curved handle O. The part of spindle K between the points *d* and *e* being formed upon an eccentric, and hanger L fitted upon the same, it will be seen that by turning handle O up into the position represented by full lines in Figs. 1 and 2 the binding-shoe N will be raised so as to clamp or bind the tail-stock to the lathe-bed, said eccentric being off of center upon the same side and same radial line from the center of the spindle as handle O, as is represented by dotted lines *f* in Figs. 1 and 2. As will be observed by Fig. 4, the cam-spindle K has a bearing at both sides of hanger L, thereby greatly stiffening and strengthening it over the old method of providing a bearing only at *m*, with no bearing at the end of the spindle at *n*.

In practice handle O is made of the proper form to fit the surface of the part P when swung up to lock or clamp the tail-stock, as before described. Therefore it will be seen that the cam-spindle K may be stopped when the handle is thus swung up at exactly the right place every time to properly clamp said tail-stock, whereas by the use of the old form of handle considerable care has to be taken to stop the spindle at the right place and not to draw over the handle so far as to pinch the fingers between the same and the tail-stock or knock the knuckles against the latter, which has been quite a serious objection in the old form of tail-stocks.

The spindle H, in the end of which is held the center I, is operated forward and back by means of handle J in the ordinary manner. It is held rigidly in the part P, when in use, by means of a friction-block, Q, which is forced against the surface of the spindle, one side of said block being cut away to fit the curved surface of the spindle, as is fully represented in Fig. 5. Said block Q is pressed against the spindle by means of a holding and compressing bolt, R, which is provided with threads *g* upon its lower end, so as to turn up and down in the part P′ of spindle-casing P^2, and with a shoulder, *h*, for bearing upon the upper side of block Q when said bolt is turned down by means of its handle S. In practice friction-block Q is fitted against the spindle, with a hollow space, *k*, between its lower end and part P′, so that as its curved surface wears away it may drop down and continue to fit the surface of the spindle.

The old method of holding the spindle H has been to split one side of the part P for a considerable distance from the end and spring the parts together, so as to bind and hold said

spindle by means of a similar compressing hand-turning spindle to that before described for pressing friction-block Q against the spindle. This method, although it answers the purpose, is not entirely satisfactory, for the reason that in a comparatively short time the spindle and its casing will wear away so as to bring the spindle and its center out of its true central line, as is well understood by those using said lathes.

My invention is more especially designed for engine-lathes, although it is equally as applicable in the construction of other lathes.

I am aware that a tail-stock-binding device similar to mine, yet different in construction, has already been patented, a patent having been granted to S. W. Putnam, June 19, 1877, No. 192,129, for "metal-working lathes," which, although producing the same results, is different in construction (as will be seen) from that hereinbefore set forth. I therefore make no claim broadly to a tightening device with two binding-bolts, but limit myself to the construction and combination of parts substantially as shown and described. In the said Putnam patent it will be noticed that there is no hanger employed at all upon the horizontal longitudinal spindle of the tail-stock, which corresponds with the spindle K before described; neither is said spindle in the Putnam patent made a cam-spindle. It is instead provided upon its end with a "worm-screw, *g*," which turns a "pinion, G," which is fastened to a short laterally-arranged horizontal spindle. Instead of there being a hanger suspended from the longitudinal spindle, as before described, another additional and differently-arranged "eccentric-shaft, *f*," is suspended from hangers formed on the body of the tail-stock. It will thus be seen that there are not only more parts employed in the Putnam patent (which has the greatest similarity to my invention of any device now patented) than in my binding device, but said parts are differently constructed and combined together.

Having described my improvements in tail-stocks for lathes, what I claim therein as new and of my invention, and desire to secure by Letters Patent, is—

1. The combination, with the part P′ of spindle-casing P^2 and spindle H, of friction-block Q and its holding and compressing bolt R, substantially as shown and described, for the purpose stated.

2. The combination of a horizontal longitudinal cam-spindle, K, provided with a turning-handle, O, and so formed as to raise and lower a hanger, L, when said spindle K is turned, tie-rods M M, and binding-shoe N, substantially as shown and described, for the purpose stated.

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