AUSTIN F. CUSHMAN.

Improvement in Chucks for Metal-Turning Lathes.

No. 121,494. Patented Dec. 5, 1871.

Fig 1.

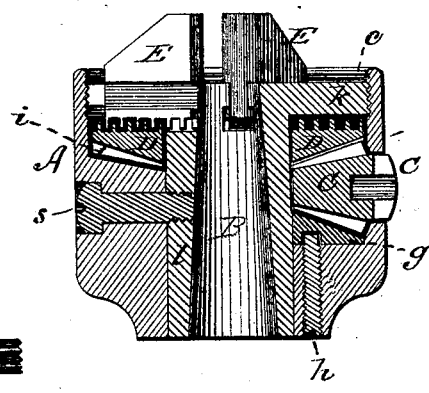


Fig 5.

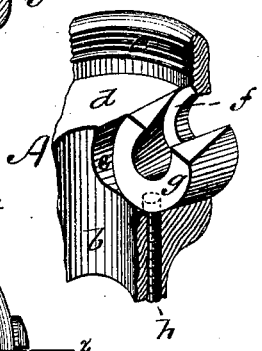


Fig 3.

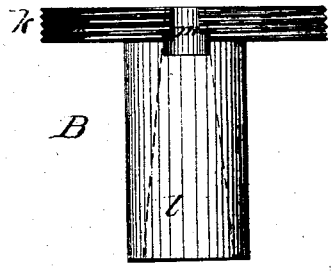


Fig 2.

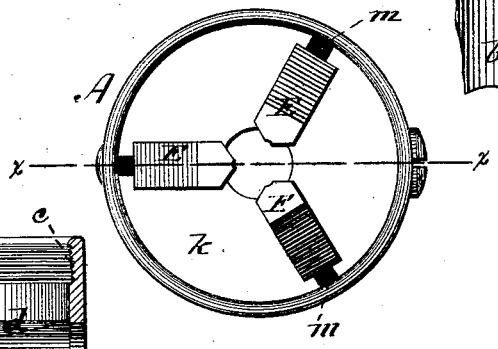


Fig 4

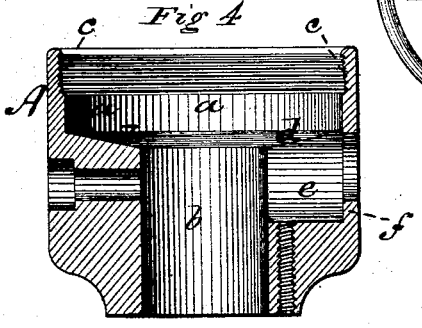
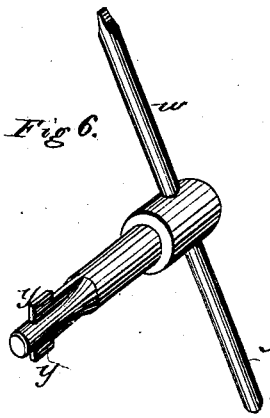


Fig 6.



Witnesses.

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UNITED STATES PATENT OFFICE.

AUSTIN F. CUSHMAN, OF HARTFORD, CONNECTICUT.

IMPROVEMENT IN CHUCKS FOR METAL TURNING-LATHES.

Specification forming part of Letters Patent No. 121,494, dated December 5, 1871.

To all whom it may concern:

Be it known that I, AUSTIN F. CUSHMAN, of Hartford, in the county of Hartford and State of Connecticut, have invented certain Improvements in Lathe-Chucks, of which the following is a specification, reference being had to the accompanying drawing.

The invention relates to that class of scroll-chucks in which the scroll-plate is provided with teeth and operated by pinion; and the invention consists in an improved manner of constructing the chuck whereby it is cheapened and simplified; and also in a key or wrench of novel construction for turning the pinion.

Figure 1 is a longitudinal section through the center of my improved chuck on the line *x x* of Fig. 2. Fig. 2 is a face view of the chuck. Fig. 3 is a side view of the central body or hub detached. Fig. 4 is a longitudinal central section of the outside shell or body. Fig. 5 is a perspective view of a portion of the outside shell, showing the seat or bearing for the pinion. Fig. 6 is a perspective view of the key.

In constructing my chuck I first make an outside body or shell, A, of cylindrical form and in a single piece, as shown in Figs. 1, 2, and 4. In the front end of this body I form a large circular recess or opening, *a*, extending about one-third of the way through the same, and from this recess through the back end of the body I make a central hole, *b*, of less diameter than the opening, as shown in Fig. 4. Around the inside of the recess or opening *a* I form a screw-thread, *c*, as shown in Figs. 4 and 5. The annular shoulder *d*, which is formed where the hole *b* enters the recess *a*, I make inclined inward and backward, as shown in Fig. 4, so as to form a seat for the scroll-plate, as hereinafter described. From the hole *b* outward through the side of the body A I bore a hole or recess, *e*, the extreme outer end of which is of smaller diameter than the remainder, so as to leave a shoulder, *f*, as shown in Figs. 4 and 5, the recess being so located that its front side opens or cuts through the shoulder *d*, as shown. I next provide the bevel-pinion C, having a neck on its large end, and insert it through the hole *b* into the recess *e*, as shown in Fig. 1, with its neck extending out through the small end of the recess and its side projecting above the shoulder *d*. Into the inner end of the recess *e* I insert a ring or thimble, *g*, having its inside conical so as to fit around the inner end of the pinion and support and hold it in place, the ring being shown in position around the pinion in Fig. 1, and separate from the pinion in Fig. 5. Through the back end of the body A I insert a screw, *h*, which enters a hole in the side of the ring *g* and holds the same in place. In this manner the pinion is held securely, but at the same time permitted to turn freely. I next provide the scroll-plate D, having the usual scroll on its face and bevel cog-teeth *i* around its back, and having also an opening through its center of the same diameter as the hole *b* in the shell. This plate I drop into the recess *a* of the shell or body A, when its teeth will bear on the annular shoulder *c* and engage with the pinion C, as shown in Fig. 1. A central hub or body, B, shown in Fig. 3, is next provided. It consists of a front plate, *k*, provided with a screw-thread around its outer edge to engage into the thread *c* in the body or shell A and with radial slots *m*, shown in Fig. 2; and also of a stem or neck, *l*, with a tapering hole through it to fit into the hole *b* of the body or shell A, as shown in Figs. 1 and 4. In the slots *m* of the front plate the usual jaws E are mounted, having teeth on their inner sides to engage with the scroll. The neck *l* of the body B is then inserted into the hole *b* of the shell or body A, and the front plate *k* screwed down into the recess *a* until the teeth of the jaws E engage in the scroll D, as shown in Fig. 1. A screw, *s*, is then inserted through the side of the body A into the stem or neck *l*, which serves to hold the inner body B in place and prevent it from turning. The inner end of the pinion and its thimble bear against the hub *t* so that the pinion cannot be forced inward so as to wedge fast. In the outer end of the pinion there is formed a central hole and a cross-slot, as shown in Fig. 1, and the key for turning it is provided with a neck or end to fit into said hole and two side blades or lips, *y*, to fit into the slot, as shown in Fig. 5. The key is provided with the usual cross-rod or handle *w* by which to turn it, and one end of this handle is fashioned into a screw-driver, as shown, which forms a very convenient tool for taking the chuck apart and for general use about the lathe. Upon inserting the key into the pinion and turning it the pinion turns the scroll-plate, which in turn moves the jaws in their slots in the usual manner.

By constructing the chuck as above described it is rendered very simple and strong, and owing to the peculiar forms of the various parts I am enabled to manufacture it at a much less cost than when made on any of the various plans now in use. The key and recessed pinion are also cheaper and in other respects preferable to those in use.

Having described my invention, what I claim is—

1. The shell A having the pinion C inserted from the inside and held in place by the sleeve *g* and screw *h*, the said parts being constructed and arranged substantially as described.

2. In combination with the outer shell A and body B, the screw *s* when inserted, as described, for the purpose of holding the parts in place.

3. The combination of the outer shell A, thimble *g*, pinion C, and screws *h* and *s* with the scroll-plate D, jaws E, and body B, constructed substantially as and for the purpose set forth.

4. The combination of the shell A, pinion C, and key or wrench, all constructed and arranged to operate as set forth.

AUSTIN F. CUSHMAN.

Witnesses:

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