

A. F. Cushman,

2. Sheets, Sheet 1

Lathe Chuck.

No. 110,903.

Patented Jan. 10, 1871.

Fig. 1.

m

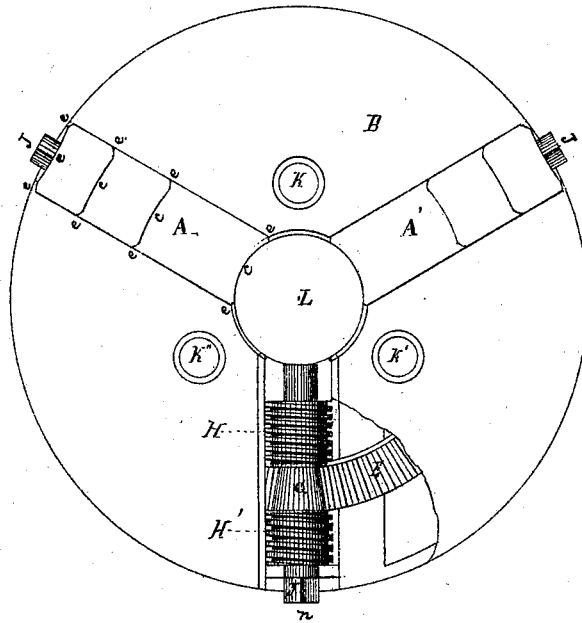
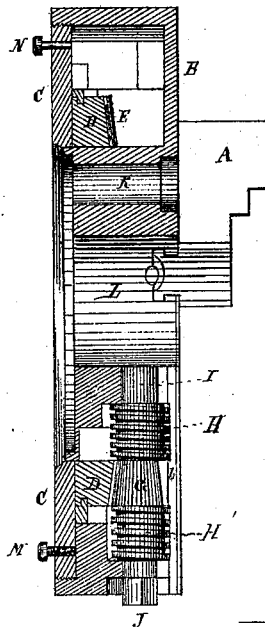


Fig. 2.



Witnesses.

Theo. G. Ellis

W. E. Simonds

Inventor.

Austin F. Cushman

A. F. Cushman, 2. Sheets, Sheet 2.

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Fig. 3.

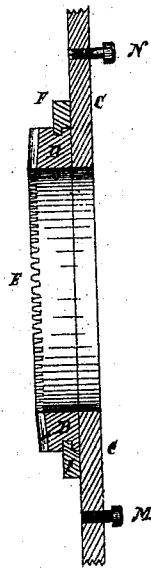
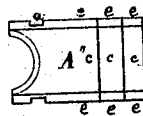
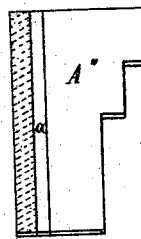


Fig. 4.



Witnesses

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United States Patent Office.

AUSTIN F. CUSHMAN, OF HARTFORD, CONNECTICUT.

Letters Patent No. 110,903, dated January 10, 1871.

IMPROVEMENT IN LATHE-CHUCKS.

The Schedule referred to in these Letters Patent and making part of the same.

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.

Nature and Objects of the Invention.

My invention relates to chucks for lathes; and

The invention consists in a novel construction of a combined pinion and screw for moving the jaws, and in a novel method of supporting said screws and pinions in the shell.

It further consists in providing the shell with an annular disk, so arranged as to serve as a cover for the back side of the shell, and also as a means of connecting and disconnecting the several screws and pinions by a circular rack mounted on said disk, all as herein-after more fully explained.

Description of the Accompanying Drawing.

Figure 1 shows a top view of my improved lathe-chuck, with one jaw and a part of the face removed to show the interior construction.

Figure 2 is a section of the same on the line *m n* of fig. 1.

Figure 3 is a section of the back plate of the chuck, removed.

Figure 4 shows a side and end view of one of the jaws.

General Description.

A A' A" are the jaws, which have grooves *a* to slide on the projections *b*, in and out, upon the center of the chuck.

The backs of these jaws are cut into a gear or rack which works upon the worms H H'. These jaws can slide out and be reversed, to use either end.

The inner and outer ends of the jaws and the several faces of the projections are each turned off to two different curves, *c* and *c'*, one to be used when one end of the jaw is toward the center and the other when reversed, and are so arranged that either projection can be used either for an inside or an outside support for the work.

B is the front plate or body of the chuck, into which all the parts are fitted, and which has the holes K K' K" through it for the purpose of bolting it to the face-plate of a lathe, also a hole L through the center.

C is the back-plate, which has a screw-thread cut around its rim and screws into the back edge of the body B.

D is an annular movable collar, turning on a central core which forms part of the body B, and lying against the back-plate C, to which it is confined by the slips F, moving in a groove in the outer edge of the collar D. These allow the ring or collar to turn freely, but hold it closely in contact with the plate C.

On the front of D is cut the circular rack E, in which works the three pinions G under the jaws.

These pinions are cut on the arbors I, which rest in semicircular bearings in the body B, and have a key-square, J, at the outer end.

The worm H H' is formed of two parts screwed onto the arbor I and secured by a pin.

The worm is then cut continuously through the two parts H H', and fits into the screw-thread in the back of the jaw.

The worm and pinion, with the arbor, resting in the half-circle bearings, can be easily removed and replaced through the opening in the face when the jaw is taken out.

M is a set-screw for holding the back-plate C in any position.

N is a handle for assisting in turning the back-plate out or in on the screw-thread cut in its rim.

When the jaw A" of the chuck, shown as removed, is replaced in the same position as A and A', and a key is applied to either of the heads J of the arbors I, the motion is conveyed, by means of the rack E, to the other arbors, and the worms move the jaw out or in together, forming a universal chuck.

If it is desired to have the jaws move independently to fit an irregular piece of work, the set-screw M is loosened and the back-plate C is unscrewed until the rack E is raised out from the teeth of the pinions G, when the plate C can be reclamped. Each of the jaws can then be moved separately by the key applied to the square of the worm-arbor.

If it is desired to have the jaws move out and in eccentrically, they are placed in the proper relative position while the rack is ungeared. It is then replaced in the pinions by screwing in the back-plate C, when the key applied to one of the arbors will move the jaws out and in with the same relative position.

Claims.

I claim as my invention—

1. The combined screw and bevel pinion, consisting of a rod having the pinion G formed thereon, and the screws H and H' secured upon the rod on opposite sides of the pinion, substantially as set forth.

2. The shell B, having a recess formed underneath the sliding jaws with semicircular bearings at each end, in combination with the combined screw and pinion having corresponding journals at its ends, and the jaw A having a continuous screw-thread cut in its under side, all arranged to operate as herein described.

3. In combination with the subject matter of the second claim, the plate B, screw-threaded on its periphery, the annular rack D, and the clips F, as described.

AUSTIN F. CUSHMAN.

Witnesses.

THEO. G. ELLIS,
W. E. SIMONDS.