

L. Coes,

Metal Chuck.

No. 103015.

Patented May 17, 1870.

Fig. 3

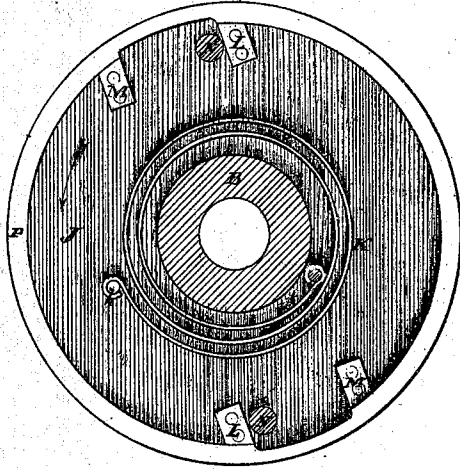


Fig. 4

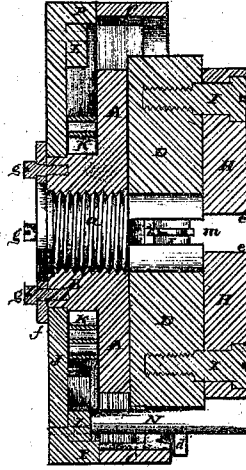


Fig. 1

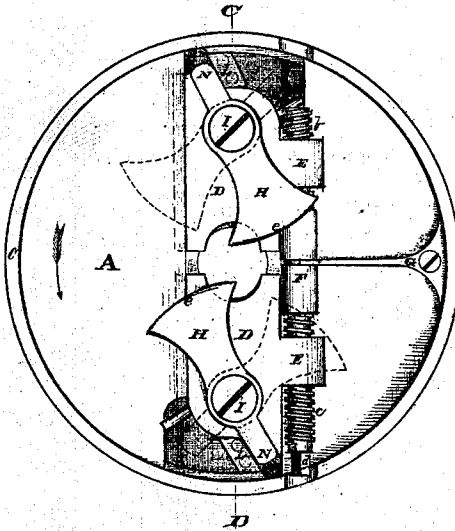
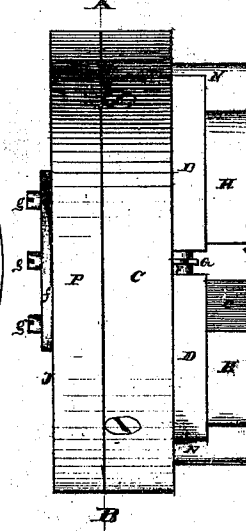


Fig. 2



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LORING COES, OF WORCESTER, MASSACHUSETTS.

Letters Patent No. 103,015, dated May 17, 1870.

## IMPROVED AUTOMATIC FRICTION DOG LATHE-CHUCK.

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

To all whom it may concern:

Be it known that I, LORING COES, of the city and county of Worcester, and Commonwealth of Massachusetts, have invented certain new and useful improvements in Automatic Friction Dog Lathe-Chucks; 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, in which—

Figure 1 represents a side view of my automatic friction dog lathe-chuck;

Figure 2 represents a front view of the same;

Figure 3 represents a vertical section on line A B, fig. 2; and

Figure 4 represents a central section on line C D, fig. 1.

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.

The nature of my invention consists—

First, in the arrangement, upon the body of the lathe-chuck, of radial sliding blocks, and, upon the said blocks, eccentric clamp-dogs, substantially as hereinafter described, in virtue of which said dogs may be made to operate conjointly, and grasp the rod placed between them on opposite sides.

Second, in the combination, with the lathe-chuck, radial sliding blocks and eccentric clamp-dogs, of a double adjusting screw, as hereinafter described.

Third, in the combination with the lathe-chuck, radial sliding blocks, eccentric clamp-dogs, and double adjusting screw, of a centering spring, as hereinafter described.

Fourth, in the combination with the body of the lathe-chuck and eccentric clamp-dogs, of a friction disk and return spring, for operating said dogs, as hereinafter described.

Fifth, in the combination with the friction disk and eccentric clamp-dogs, of starting tugs and a return spring, as hereinafter explained.

In the drawings—

The part marked A is the body of the chuck, the hub, B, of which is provided with a suitable screw-thread, *a*, to screw onto the spindle of the lathe.

A rim, C, surrounds the body A, and a channel is formed across its central part, from side to side, in which work a pair of sliding blocks, D D.

The edges of the blocks D are fitted to dovetail, or other shaped grooves, formed along the inner sides of the channel in such a manner that the slide blocks D are retained firmly to the body A, but can be moved radially in the said grooves from the center toward the circumference of the chuck, and *vice versa*, as desired.

Projections E are formed at one side of the slide

blocks D, through which is arranged a double adjusting screw, F, having, at one end, a right-hand thread, *b*, and, at the other, a left-hand thread, *c*, so that when the screw F is turned the slide blocks D will be caused to advance toward or recede from each other, according to the direction in which the screw F is revolved.

The screw F may be turned by means of a key placed upon the square end *d* of said screw, or in any other suitable manner.

A centering spring, G, is secured to the body A of the chuck, as indicated in fig. 1. One end of said spring G works in an angular groove around the central part of the screw F, and the action of the spring keeps the slide blocks D in the proper relative position, as regards the center of the chuck, when said blocks are in any adjusted position.

Clamp-dogs H are pivoted on screws or bolts I to the outer side of the slide blocks D, as indicated in the drawings.

The faces *e* of the dogs H are formed on curves eccentric to their pivot centers, so that when said dogs are swung back, the distance between the face of one and the other is greater than when they are swung forward to the position indicated in the drawings, thereby forming eccentric clamps, between which a round bar of iron or other material may be firmly held. The curved faces *e* are serrated or notched parallel with the axis of the spindles, to prevent them from slipping when used on smooth surfaces.

A friction disk, J, is hung upon the hub B of the chuck at the back part thereof, and secured by means of an annular plate, *f*, which is secured by screws *g* to the rear end of the hub B, with its edge projecting over the edge of the disk J, as indicated in fig. 4 of the drawings.

The disk J is allowed to turn upon the hub, and a volute spring, K, is arranged between said disk and the body A of the chuck, and the expansive force of the spring K tends to keep the disk J in the position shown in the drawings.

Lugs L L M M are formed on the disk J for operating the dogs H, the shanks, N, of which extend past the ends of the slide blocks D, and back far enough to be acted upon by the lugs L and M when the disk J is turned on the hub B of the chuck. The lugs L and M, being arranged at either side of the shanks N, prevent the disk J from turning any further than is necessary to operate the dogs H, and said lugs are placed at some distance apart, so that they will strike the shanks with a shock similar to a blow from a hammer, the more readily to start the dogs in case they are clamped very firmly upon the work.

The disk J may be operated by means of a friction band applied to its periphery, and worked by the foot

of the operator, or the friction may be applied to the side of the disk J by means of any suitable devices.

A center point is arranged in the end of the spindle of the lathe in the ordinary manner, the top of which is just at the back of the dogs H, at the position marked *m* in fig. 4 of the drawings.

The operation is very simple and effective. Supposing the lathe to be in motion, the chuck revolving in the direction indicated by the arrow, and it is desired to place a round bar of iron in the chuck, the operation is as follows:

The operator places his foot upon the treadle or stirrup of the friction device, which presses the band or pad upon the disk J with sufficient force to counteract the force of the return spring K, and thereby retard the motion of the disk J, when the shanks of the dogs H, which are carried forward by the body of the chuck, are brought in contact with the lugs M with sufficient force to swing back the dogs H to the position shown in dotted lines, fig. 1. The operator then places the end of the bar of iron upon the center point and removes the friction from the disk J, which latter is immediately thrown forward by the return spring K, bringing the lugs L in contact with the shanks N, and thereby swinging forward the dogs H, which clamp the bar of iron between their curved faces *e*, where it is firmly held during the operation of turning.

The eccentric faces of the dogs H act in opposition to the turning tool in such a manner that the greater the resistance upon the bar the more firmly will it be clamped by the dogs H.

To remove the bar from the lathe, the operator applies the friction to the disk in the manner before described, and the shanks N, coming in contact with the lugs M, throw back the dogs H. The momentum acquired while the shanks N are passing across the space between the lugs L and M produces a shock when the shanks strike the latter, sufficient to loosen their clamping faces *e* from the bar to which they are clamped.

Thus it will be seen that the work may be readily placed in the lathe and removed therefrom without stopping the motion of the spindle, thereby saving much time and labor.

In lieu of making the chuck with a rim, C, around the body A, the rim P of the friction disk J may be made broad enough to cover both parts, and the lugs L M may be formed upon said rim, if preferred.

The eccentric clamp-dogs H H may, if desired, be pivoted directly to the body A of the chuck.

It will be apparent to those skilled in the art to which my invention belongs, that the chuck is well adapted for holding irregular shaped bars or pieces of material as well as those of cylindrical form.

The body of the chuck may be made in a different form, if desired, and I contemplate making it in rectangular form for very large and heavy work, in which case, however, a hand-lever will have to be used for operating the eccentric dogs. I also contemplate making the sliding blocks D wide enough to permit of the adjusting screw passing through the main part of the blocks, thus dispensing with the side projections E. Instead of a single centering spring G, two may be employed, one combined with each sliding block, although I prefer the arrangement shown in the drawings.

Having described my improved automatic friction dog lathe-chuck,

What I claim therein as new and of my invention, and desire to secure by Letters Patent, is—

1. The arrangement, upon the body of the chuck, of the radial sliding blocks, and upon said blocks the two eccentric clamp-dogs, substantially as described, in virtue of which said dogs may be made to operate conjointly and grasp the rod placed there, on opposite sides, as set forth.

2. The combination, with the chuck-body A, radial sliding blocks D, and eccentric clamp-dogs H, of the adjusting-screw F, as herein shown and described.

3. The combination, with the chuck-body A, the radial sliding blocks D, the eccentric clamp-dogs H, and the double adjusting-screw F, of a centering spring G, substantially as and for the purposes set forth.

4. The combination, with the chuck A and eccentric clamp-dogs H H, of the friction disk J and return spring K, substantially as and for the purposes set forth.

5. The combination, with the friction disk J and eccentric clamp-dogs H H, of starting lugs L L and M M, and spring K, substantially as and for the purposes set forth.

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Witnesses:

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