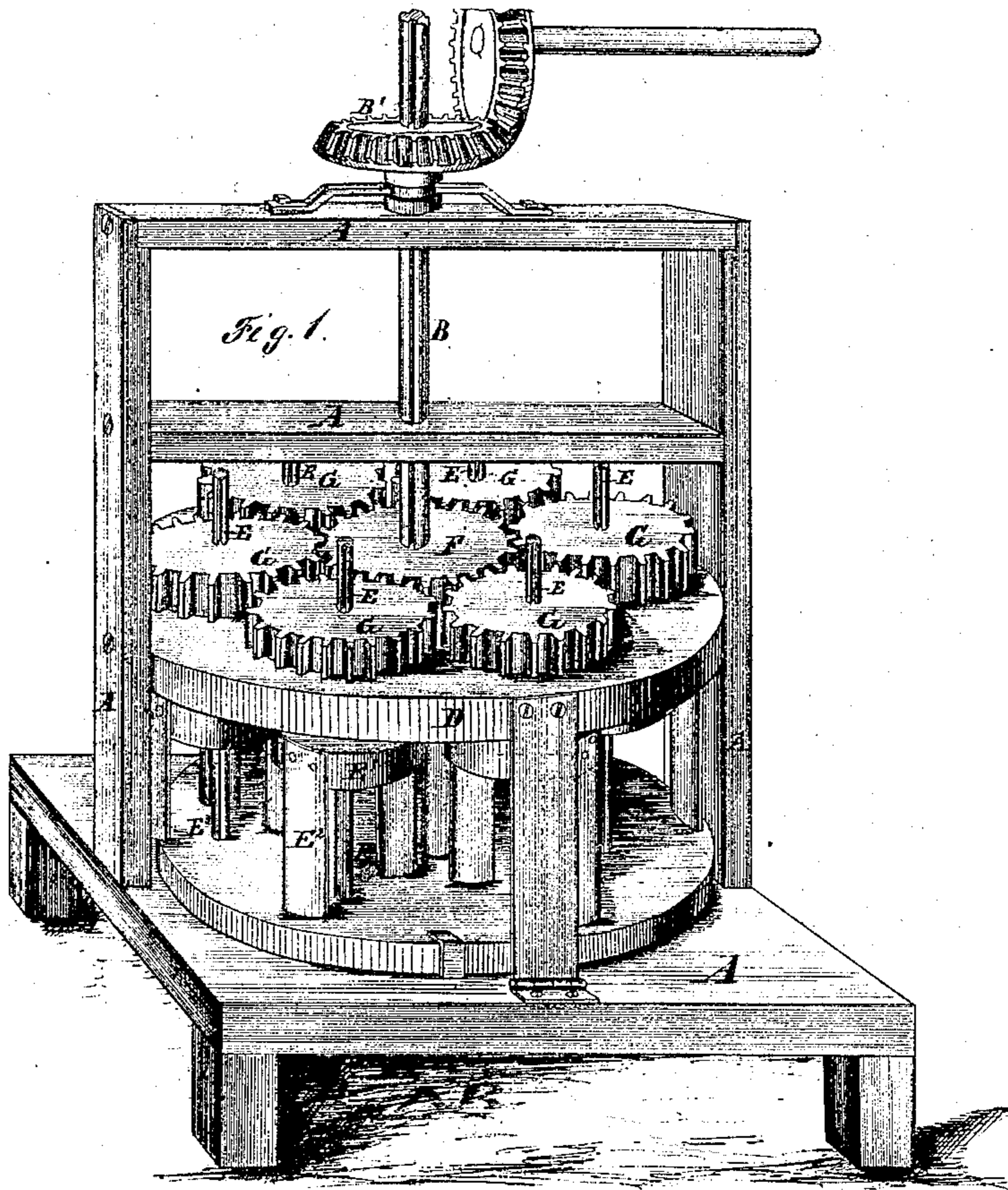


*J. E. Mitchell,*

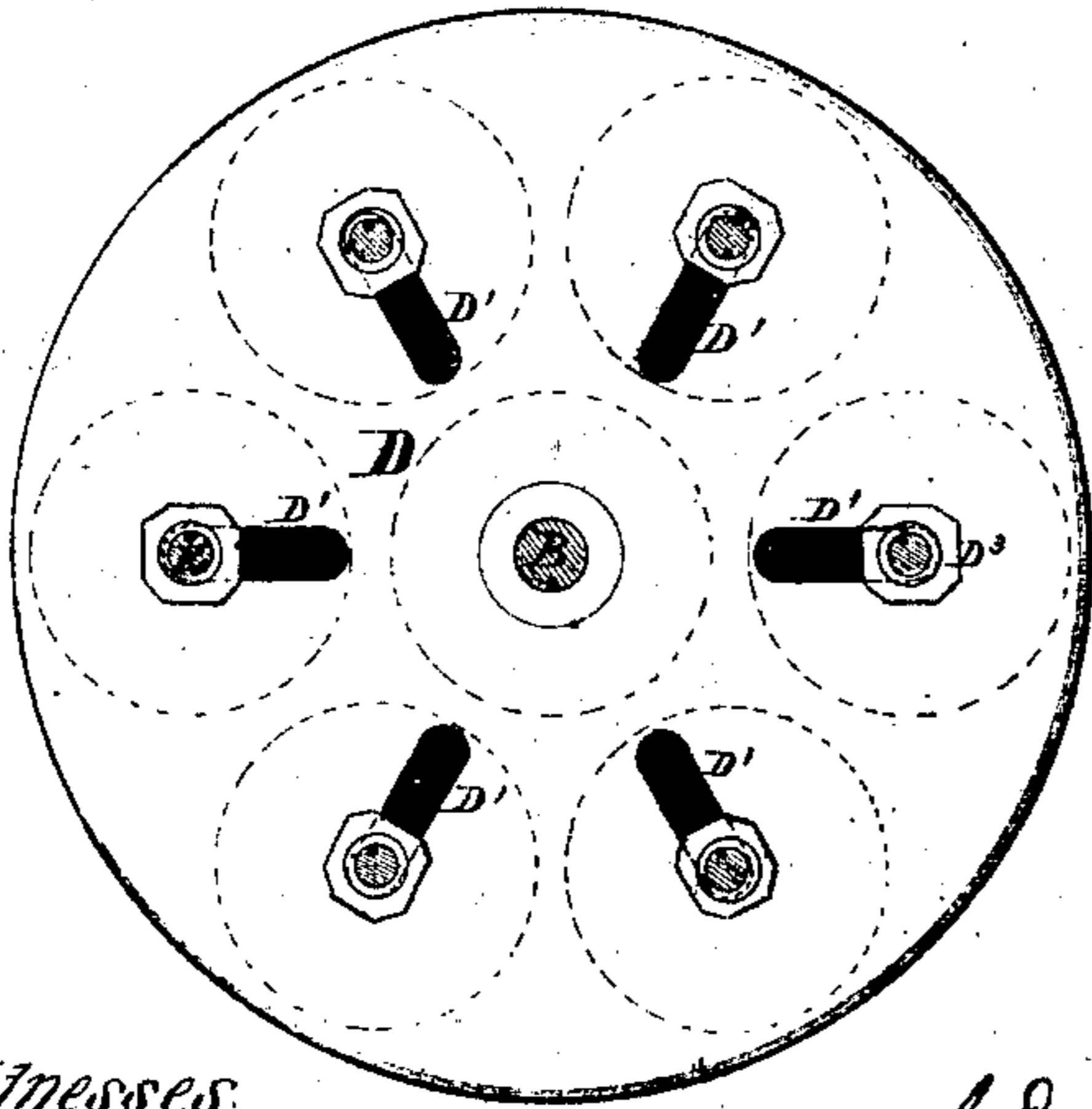
*Dressing Stone.*

*No. 103,912.*

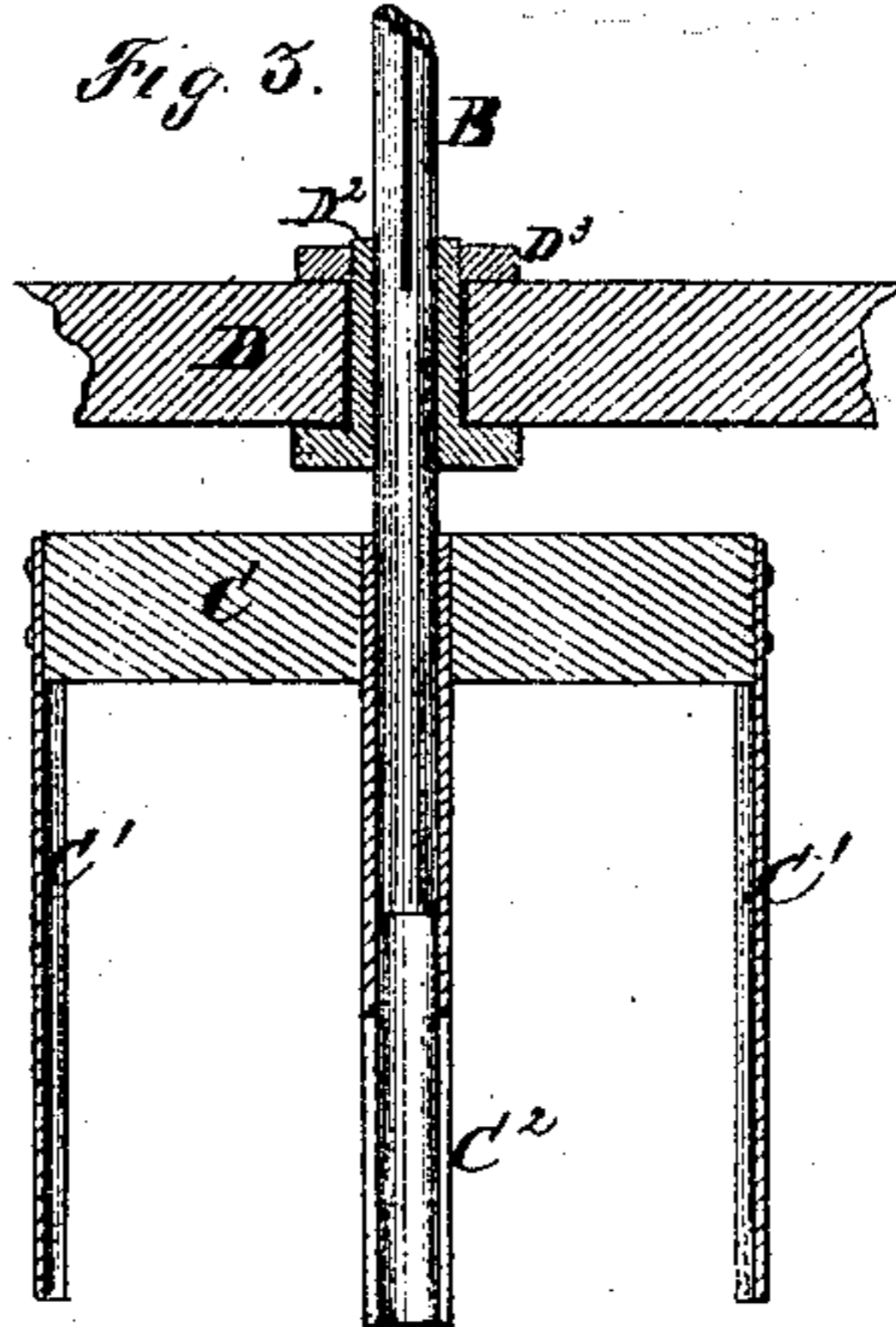
*Patented June 7, 1870.*



*Fig. 2*



*Fig. 3.*



*Witnesses*  
*Fred K. Kachel*  
*A. P. Rathbun*

*J. E. Mitchell* *Inventor.*

# United States Patent Office.

JOSEPH E. MITCHELL, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 103,912, dated June 7, 1870.

## IMPROVED MACHINE FOR CUTTING OUT GRINDSTONES.

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, JOSEPH E. MITCHELL, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain Improvements in Machines for Cutting out Circular Stones; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the annexed drawing making part of this specification, in which—

Figure 1 is a perspective view of my machine, constructed to cut out a series of stones at one operation.

Figure 2 is a plan view of the plate, in which the the annular series of cutter-shafts have their bearings, showing the radial slots to permit the shifting of such bearings and shafts.

Figure 3 is a vertical section of one of the cutters and its shaft.

The same letters are used in all the figures in the designation of identical parts.

This invention relates to a machine for cutting or sawing out grindstones, or other circular stones; and

My improvements consist in the combination and arrangement of various parts thereof, as will more fully appear from the following specification and claims.

To enable those skilled in the art to make and use my improvements, I will now proceed to describe their construction and operation.

In the annexed drawing—

A represents a stout frame, consisting of a bed-plate, upon which the stones to be cut are secured by clamps, and uprights and cross-beams for the support of the operating mechanism.

B is a vertical shaft, arranged in the center of the frame so as to permit it to slide freely up and down.

It is revolved by means of a pulley or wheel, B', by any convenient power, such wheel being provided with a key fitting in a seat in the shaft, so that, although revolving together, the latter may have the vertical movement above mentioned.

C is a disk of about the diameter of the stones to be cut out, and firmly secured to the lower portion of the shaft.

Upon its periphery two or more downwardly-projecting cutters, C<sup>1</sup>, are fastened, and in its center it carries a drill, C<sup>2</sup>, which may be slightly longer than the cutters, so as to center the stones before the cutters begin to operate upon it.

Both cutters and drill I propose to arm with diamond points upon their cutting-edges, to prevent their rapid wear.

The drill I prefer to construct in the form of a tube, slotted upon its lower end, as clearly shown, so that it will cut a hole of the proper size in the center of the grindstone, leaving a core.

D represents a horizontal plate of cast-iron or other suitable material, secured to the uprights of the frame the proper distance above the bed-plate.

It has a central aperture, with bearing for the passage of the shaft B, and a series of radial slots, D<sup>1</sup>,

in which the bearings D<sup>2</sup> are arranged, such bearings being made sufficiently long to give a steady support to the shafts which revolve therein.

The bearings consist of a flanged sleeve or box fitting snugly in the slots in the plate, in which they can be secured at any desired point by a tightening-nut, D<sup>3</sup>, screwed upon the end of the sleeve after it is passed through the slot, its flange abutting against the opposite side of the plate.

E E, &c., represent a series of vertical shafts sliding freely up and down in the bearings D<sup>2</sup>, and provided, upon their lower ends, with cutter-heads E<sup>1</sup>, cutters E<sup>2</sup>, and drills E<sup>3</sup>, similar, in all respects, to such parts as described in connection with the shaft B.

These shafts are driven by the central shaft B through the intermediate spur-wheel F on the latter, and spur-wheels G G on the former, and, in order that all the shafts may rotate at the same velocity, I propose always to use wheels of equal diameter upon all.

These wheels are supported upon the end of the bearings in the plate D, and are attached to their shafts by a feather and spline, as shown.

The operation of the machine may be described as follows:

One or more slabs of stone having been sawed to the requisite thickness, are secured upon the bed-plate of the frame under the cutters which rest upon the upper one.

The central shaft B is then revolved at the proper speed, causing all the cutters to revolve in the same manner, and to gradually cut up the stones under them into a number of perfectly round stones, with eyes in their center, with the least possible waste.

The cutters, while operating on the stones, feed by their own weight and that of the shafts to which they are attached, but if that is not sufficient they may be further weighted.

Water, or water and sand, must be supplied to the cutters in some convenient manner while thus operating.

Various sizes of circular stones can be cut out by this machine by simply removing the wheels and cutters shown, and substituting larger or smaller ones, and shifting the bearings D<sup>2</sup> to suit the new conditions.

When it is intended to cut stones without a central aperture, the drills are removed.

Having thus described my invention,

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

1. The combination of the shaft B with cutters C C<sup>1</sup> C<sup>2</sup>, series of shafts E with similar cutters E<sup>1</sup> E<sup>2</sup> E<sup>3</sup>, and intermediate spur-wheels F and G, substantially as and for the purpose set forth.

2. In combination with the shaft C and bearings D<sup>2</sup>, the radial slots D<sup>1</sup> in the plate D, substantially as and for the purpose set forth.

Witnesses:

J. E. MITCHELL.

FREDK. KACHEL,

A. P. RUTHERFORD.