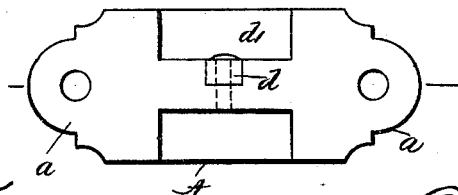
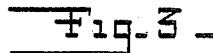
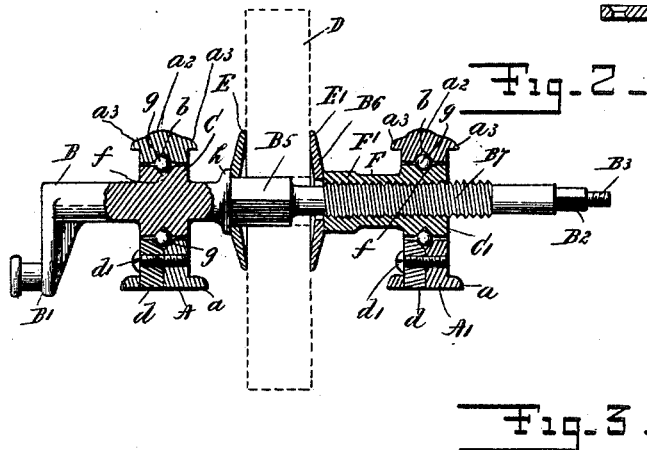
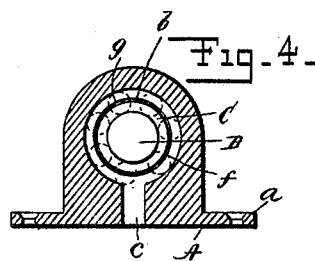
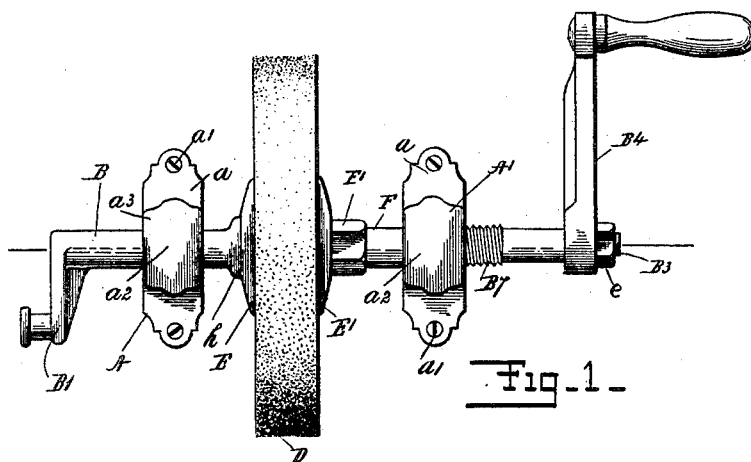


Patented Apr. 17, 1900.

### OPERATING MECHANISM FOR GRINDSTONES.

(Application filed Oct. 9, 1899.)

(No Model.)



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# UNITED STATES PATENT OFFICE.

NILS NILSEN, OF NEW YORK, N. Y.

## OPERATING MECHANISM FOR GRINDSTONES.

SPECIFICATION forming part of Letters Patent No. 647,578, dated April 17, 1900.

Application filed October 9, 1899. Serial No. 733,072. (No model.)

*To all whom it may concern:*

Be it known that I, NILS NILSEN, a citizen of the United States, residing at New York, (Green Point,) in the county of Kings and State of New York, have invented certain new and useful Improvements in Operating Mechanism for Grindstones, of which the following is a full and complete specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to operating mechanism for grindstones, and has for one object to provide a device of this character by means whereof a stone of any desired width may be securely clamped in position, preventing accidental removal or insecurity or looseness of retention, by means of which the stone may be revolved and operated for the purpose of grinding implements with the expenditure of appreciably less power than hitherto and with a certain increase of accuracy due to smoothness of running, a further object of the invention being to produce such a device as will be extremely simple, strong, and durable in its construction.

The invention consists in the novel features of construction and arrangement of parts hereinafter fully described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which like letters of reference denote like parts in the several views, and in which—

Figure 1 is a plan view of a grindstone and operating mechanism embodying my invention. Fig. 2 is a partial vertical section through the center thereof, portions being in elevation. Fig. 3 is an enlarged plan view of one of the bearings, and Fig. 4 is a side elevation of the same.

In the practice of my invention I provide a pair of bearings A and A', provided with base-flanges *a*, by means of which they may be secured to any suitable support or table (not shown) by means of screws *a'*. These bearings are formed of a single casting of iron or other suitable metal and are each provided with a central interior conical or V-shaped groove *b* and with a central slot *c*, formed in the under side of the bearing and communicating with the groove *b*, the said slot *c* ex-

tending in depth approximately to the center of the said groove *b* and being, therefore, of about half the thickness of the bearings A and A'. This slot is normally closed by means of a metallic block or plug *d*, secured by a screw *d'* passing therethrough and through the bearing. The tops *a*<sup>2</sup> of the bearings are partially dome-shaped and formed with laterally-ranging flanges *a*<sup>3</sup>. Mounted in these bearings A and A' is the shaft B, provided at one end with the short crank B', preferably formed integrally therewith, and provided at the opposite end with a squared shank B<sup>2</sup> and with a reduced screw-threaded extension B<sup>3</sup>, and upon this squared shank is mounted the main crank or operating handle B<sup>4</sup>, which is screwed in position by means of a nut *e*, secured upon the threaded end B<sup>3</sup>. That portion of the shaft immediately adjacent the short shank B' is provided with an annular enlargement C of a size to fit loosely in its bearing A and provided with a central annular V-shaped groove *f* corresponding to the groove *b* in the bearing, in which grooves *b* and *f* are placed a ring or series of balls *g*.

Inwardly of the bearing A the shaft B is provided with an integral collar *h*, and inwardly thereof is centrally squared, as shown at B<sup>5</sup>, to receive a grindstone D thereon. Beyond this squared center B<sup>5</sup> the shaft B is reduced in diameter at B<sup>6</sup>, intervening which portion and its opposite or operating end the said shaft is provided with an enlarged screw-threaded portion B<sup>7</sup>. Mounted upon the squared center of the shaft is a metallic slightly concaved or dished disk E, centrally apertured to fit tightly upon the said shaft and adapted to receive the grindstone D against the same. Mounted upon the reduced portion B<sup>6</sup> of the shaft is a similar disk E' and upon the screw-threaded enlarged portion B<sup>7</sup> is mounted an internally-threaded bushing F, one end of which bears against the outer face of the disk E' and is formed into an externally-squared head F', and the opposite or outer end of which is provided with an annular enlargement C', fitting within the bearing A' and provided with a central annular V-shaped groove *f*, between which and the corresponding groove *b* of the bearing A' are inserted a ring or series of balls *g*.

The operation of the device will be readily understood from the foregoing description when taken in connection with the accompanying drawings. The shaft is first inserted through the bearing A and the series of balls *g* are dropped therein through the slot *c*, which is then closed by securing the block *d* in position through the medium of the screw *d'*. The disk E is then placed upon the squared central portion B<sup>5</sup> of the shaft closely against the collar *h*. The grindstone is then mounted upon the shaft, tightly engaging said squared portion B<sup>5</sup>. The disk E' is brought into engagement with the outer face of the grindstone and the tubular bushing is mounted upon the threaded portion B<sup>7</sup> of the shaft and screwed up tightly through the medium of the squared head F' until it forces the disk E' against the grindstone and rigidly clamps the same in position. The bearing A' is then mounted upon its bushing and the balls *g* inserted in the grooves *b* and *f* of said bearing and bushing, being secured in position by the block *d*, as before described, whereupon the crank B<sup>4</sup> is secured upon the end B<sup>2</sup> of the shaft, and the device, when set or secured to any suitable support or table, is ready for rotation and use.

By the construction hereinabove described and illustrated, which is best shown in Fig. 2, I form the enlargement C', which operates in the bearing A', integrally with the bushing F. When it is desired to adjust the grindstone from time to time when the same through constant operation has a tendency to become loose, this can be quickly accomplished by engaging the head F' with any suitable tool or wrench. If a measurably great adjustment of this bushing is effected, the bearings A A', or either of them, may properly be readjusted in their relative positions upon the support or table on which they may be mounted. In practice, however, it will be found that there is appreciable wear upon the grooves *b* and *f*, formed in the bearings, and in the enlargements C C', and by reason of forming the said bushing F integrally with the enlargement C', which operates within the bearing A', I am enabled to adjust or compensate for the wear of the ball-bearings at the same time and with the same movement that I tighten the stone, this being accomplished by leaving the bearings secured in their customary or original position relative to their support and screwing up the bushing, as just described, whereby accordingly, in addition to the tightening of the disks E E', the enlargements C C' will be brought nearer together, thereby tightening the ball-bearings, as will be readily understood.

It will be noted that in the operation of the grindstone, during which customarily there is more or less spray of mineralized water off the periphery of the stone, any such water is practically prevented from getting in the ball-bearings by reason of the partially-dome-shaped top  $\alpha^2$  and the laterally-projecting

flanges  $\alpha^3$ , by means whereof such water is deflected away from the inside of the bearings.

The advantages of my invention will be obvious to those skilled in the art to which it appertains. By means of the construction of shaft, disks, and bushing I am enabled to securely attach a grindstone of any desired width within the customary limits in which such articles are generally manufactured, while yet the securing means are more than ample and may be adjusted from time to time so as always to maintain the tightness and rigidity thereof. Moreover, without complicated structure I produce a very light-running and speedy-operating mechanism, and finally I accomplish these ends by means of a mechanism at once simple, strong, and durable, it being noted that the bearings A and A' are secured to the enlargements C C' through the agency of the balls *g* when once the latter are maintained within the grooves by securing the blocks or plugs *d* in position. It is also to be noted that this device is very readily taken apart and put together, as hereinabove described.

I do not desire to confine myself to the exact shape or formation of the various parts of my invention as hereinabove set forth and as shown in the drawings, nor imperatively to the precise relative arrangement of all of the same; and I reserve the right to make any and all alterations and modifications thereof as may fairly come within the scope of the invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An operating mechanism for grindstones, comprising a shaft centrally adapted to receive the stone thereon and formed near one end with an annular enlargement, and with an integral collar; a disk mounted upon said shaft against said collar, a second disk mounted upon the shaft whereby the stone will be received between said disks, a tubular bushing mounted upon the shaft beyond said latter disk, said shaft and said bushing being screw-threaded whereby the bushing may be adjusted to force the adjacent disk against the stone and rigidly clamp the same, and said bushing being provided with an annular enlargement; a pair of detachable ball-bearings mounted upon the enlargement of the shaft and of the bushing, said bearings being provided with means for obtaining access thereto, and means for closing the same; and a crank mounted upon the said shaft whereby the same and the grindstone may be rotated in said bearings.

2. An operating mechanism for grindstones, comprising a shaft centrally adapted to receive the stone thereon, means mounted upon said shaft for engaging the opposite faces of the grindstone, detachable ball-bearings mounted in relation to the said shaft; means for adjusting the grindstone-holding means and for simultaneously tightening the ball-

bearings; and a crank mounted upon the said shaft whereby the same and the grindstone may be rotated in said bearings.

3. An operating mechanism for grindstones, comprising a shaft centrally adapted to receive the stone, means mounted upon said shaft for engaging the opposite faces of the grindstone, a detachable ball-bearing mounted upon one end of said shaft and an adjustable bushing mounted upon the opposite end of the said shaft, and carrying a ball-bearing thereon; and a crank mounted upon said shaft whereby the same and the grindstone may be rotated in said bearings.

4. An operating mechanism for grindstones, comprising a shaft centrally adapted to receive the stone thereon, means upon said shaft for engaging the opposite sides of the stone, an adjustable bushing mounted upon the shaft and adapted to engage the grind-

stone-holding means, said shaft and said bushing being screw-threaded; enlargements formed integrally with the shaft and with the bushing; detachable ball-bearings mounted in engagement with said enlargements where- by wear of the grindstone-holding means and of the ball-bearings may be simultaneously taken up by adjusting the bushing; and a crank mounted upon the said shaft whereby the same and the grindstone may be rotated in said bearings.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 5th day of October, 1899.

NILS NILSEN.

Witnesses:

F. A. STEWART,  
V. M. VOSLER.