

(No Model.)

C. H. HENDERSON.
GRINDING MACHINE.

No. 404,787.

Patented June 4, 1889.

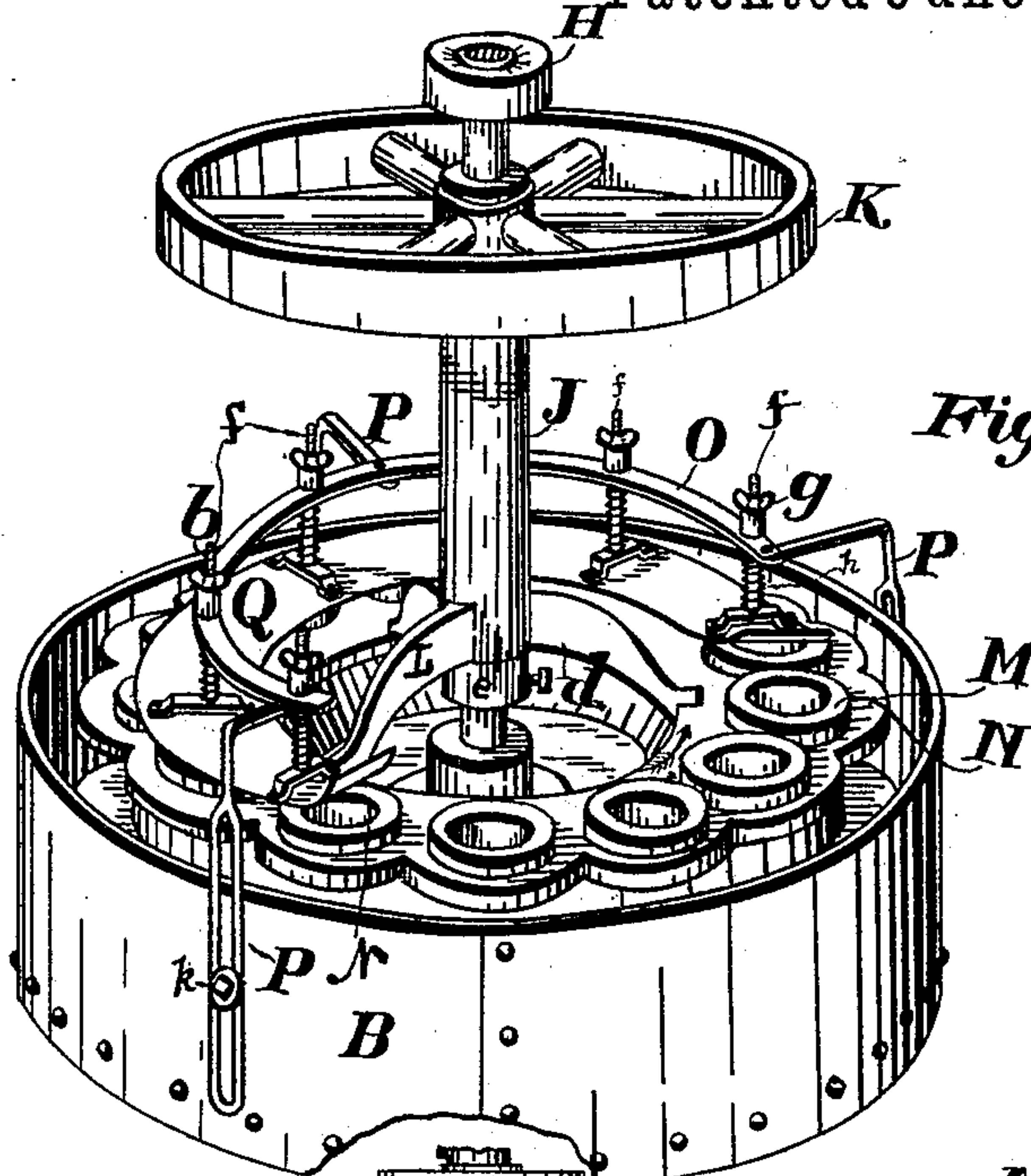
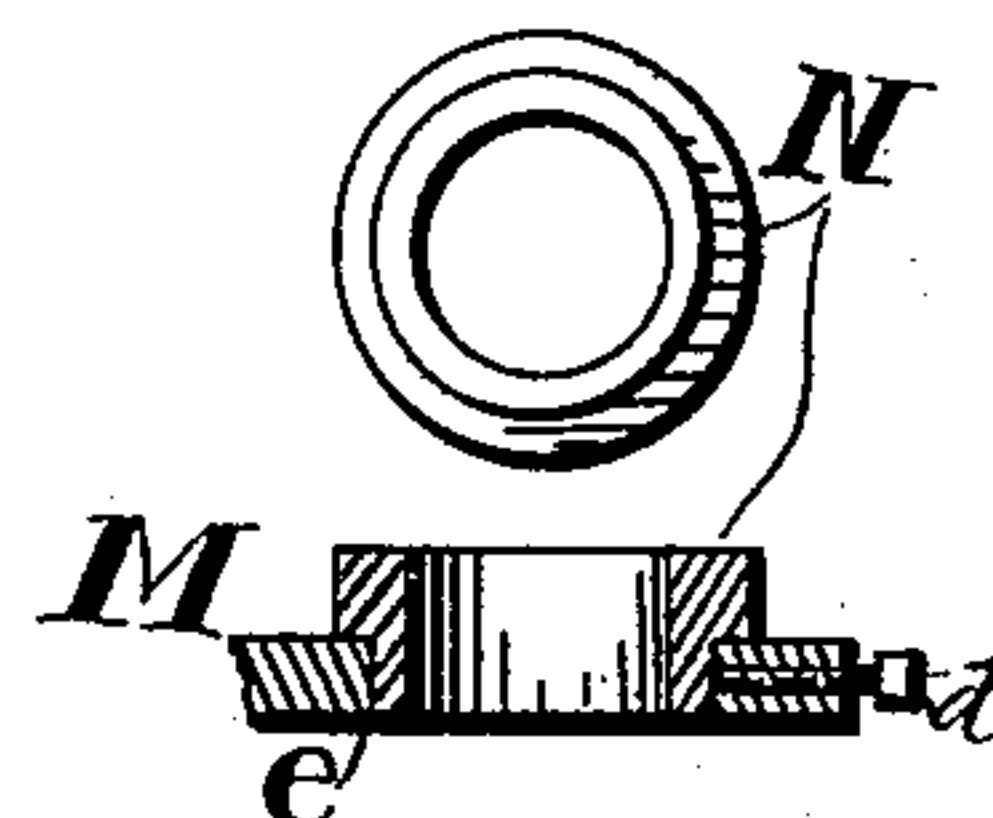


Fig. 1.



K Fig. 3.

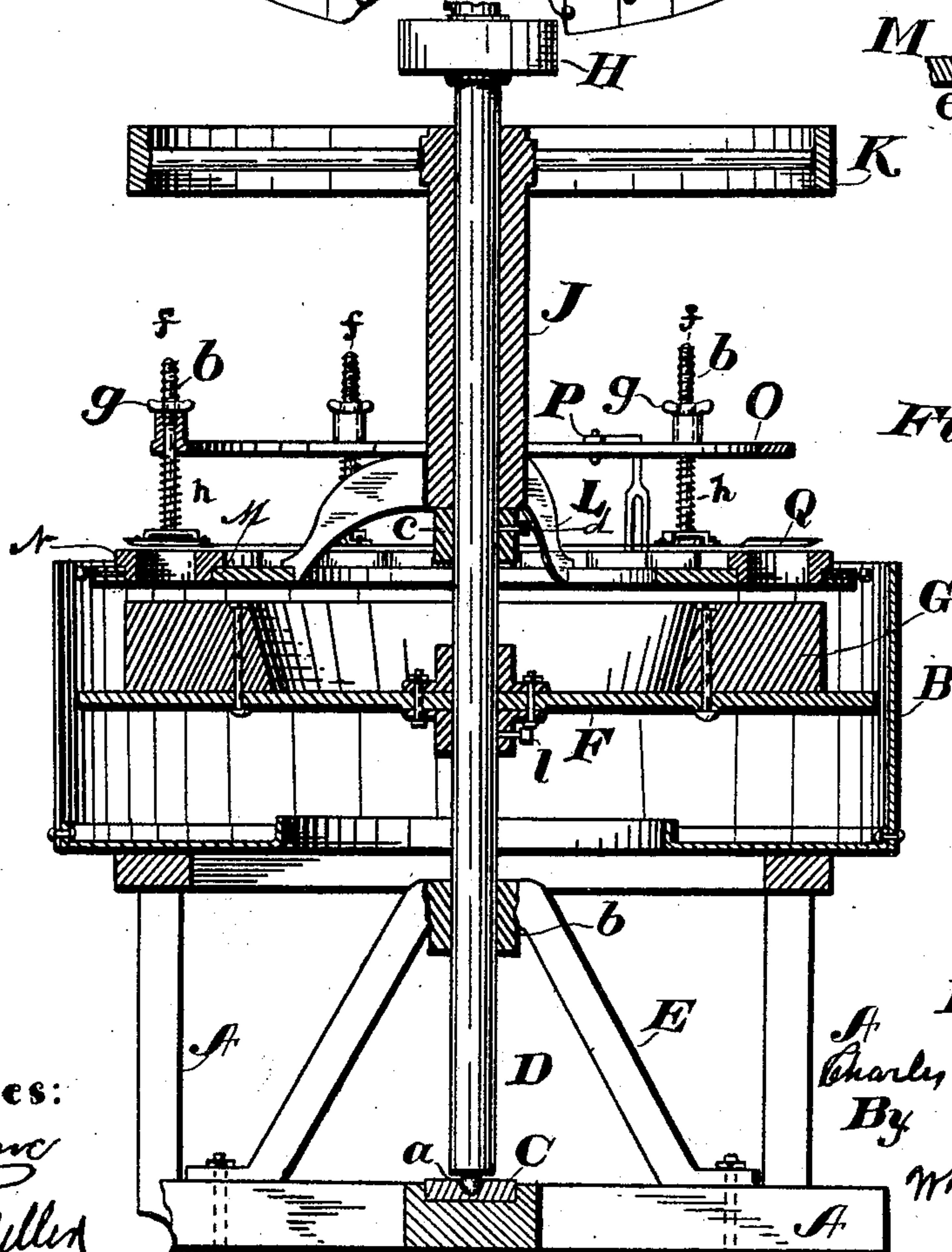


Fig. 2

Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES H. HENDERSON, OF CANTON, OHIO, ASSIGNOR TO THE CANTON GLASS COMPANY, OF SAME PLACE.

GRINDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 404,787, dated June 4, 1889.

Application filed June 8, 1888. Serial No. 276,448. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. HENDERSON, a citizen of the United States, and a resident of Canton, county of Stark, State of Ohio, have invented a new and useful Improvement in Grinding-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

The invention relates to improvements in grinding-machines especially adapted for grinding glass and other wares.

It has for its object to provide a machine which shall be of such construction that the work will be greatly facilitated and cost reduced.

With these ends in view the invention consists in the improved construction and combination of parts of the same, as will be hereinafter more fully set forth.

In the accompanying drawings, in which like letters of reference denote corresponding parts, Figure 1 is a view in perspective of the upper portion of a grinding-machine. Fig. 2 is a vertical sectional view, and Fig. 3 is a detail view, of parts hereinafter fully described.

Though the machine is adapted for grinding a great variety of articles, it is herein illustrated and described for the grinding of tumblers.

A designates a supporting-frame, upon which rests a circular inclosing-case B. Placed in the center of the middle sill of the supporting-frame is a step-box C, for the reception of the trunnion *a* of the shaft D, which is further supported by a journal-box *b*, which may be secured in a cross-strut, or by a frame, as E, as clearly shown in Fig. 2. If desired, the upper end of the said shaft may be further supported by suitable means independent of the machine.

On the shaft D within the case B is secured a metal plate F, as shown in Fig. 2. A grinding-stone G is secured on said plate. Near the upper end of the shaft D a pulley H is provided. An adjustable collar *c* is also provided upon the intermediate portion of the shaft D, and is held in place by a set-screw *d*. The upper end of the shaft D is embraced by a

hollow shaft J, which rests with its lower end upon the collar *c*, and is provided at its upper end with a pulley K of a greater circumference than the pulley H, and at its lower end with outwardly and downwardly projecting arms L. To the outer ends of these arms is secured an annular disk M, having about its outer edge a series of apertures *e*, into which are seated holders N, which may be of different dimensions to conform with tumblers of a greater or less size.

A semicircular frame-piece O is supported above the disk by the arms P, which are connected to said frame O with their upper ends, and are slotted at their lower ends to engage bolts *k*, by means of which the said frame O may be vertically adjusted. A thin plate of iron, as Q, is suspended by threaded rods *f* from the frame O, the said plate being made vertically adjustable by the nuts *g* upon the ends of the said threaded arms. About each of the rods *f* and between the frame O and plate Q is a coil-spring *h*, the energy of which is exerted downwardly to resist the vertical movement of the plate Q, the nuts *g* regulating the distance to which the plate may be depressed by the springs to provide against uneven grinding, while the upper movement of the plate Q is caused by the insertion of the tumblers into their holders as they are passed beneath the said plate.

From the above description it will be observed that the frame O and the plate Q may be adjusted vertically in unison by the slotted arms P and bolts *k*.

The plate F may be adjusted vertically by the set-screw *l*, and the disk M, by raising the collar *c* on shaft D, may also be vertically adjusted by the set-screw *d*.

The difference in the circumference of the pulleys H and K will indicate that the shaft D, with its grinding-stone G, will rotate at a greater speed than the shaft J, carrying the disk M, the object of which is not only to facilitate the grinding, but to do the work in a more satisfactory manner.

Having fully described the machine, I will now proceed to set forth its operation.

The tumblers are placed in the holders N, which are adapted to the size of the tumblers

to be ground, the movement of the disk being in the direction indicated by the arrow and at such speed as may be desired, while the grinding-stone is rotated in the opposite
 5 direction at a rate of speed suitable to the work to be done. The tumblers, while in their holders, engage with their bottoms the grinding-stone, being held in their position by the spring-actuated plate Q, and are carried under the spring-actuated plate Q on the
 10 right-hand side and conveyed around and out at the left-hand side, when they are removed.

Having thus described my invention, I claim—

15 1. In a grinding-machine for glass and other wares, the combination, with the shaft D and the grindstone secured thereto, of a hollow shaft J, sleeved upon shaft D, a frame O, a plate Q, having a yielding connection
 20 with the said frame, means for adjusting said plate and frame in unison, and a disk for holding the ware to be ground, said disk secured to the shaft J, substantially as set forth.

25 2. In a grinding-machine for glass and other wares, the combination, with the shaft D and a grindstone secured thereto, of a hollow shaft J, sleeved upon said shaft D, a disk for holding the ware to be ground, an adjustable frame O, a plate Q, having a yield-
 30 ing engagement with said frame, means for adjusting said plate and frame in unison,

and means for adjusting said disk independently of said frame and plate, substantially as set forth.

3. In a grinding-machine for glass and other wares, the combination, with a vertical shaft D and a horizontal grinding-stone adjustably secured thereto, of a hollow shaft J, embracing and rotating about said shaft D, disk M, secured to the shaft J, and pulleys H
 40 and K, by which the stone G and disk M may be rotated at different speeds, substantially as set forth.

4. In a grinding-machine for glass and other wares, the combination of the support-
 45 ing-frame A, inclosing-case B, vertical shaft D, a plate F, adjustably secured to said shaft, a grinding-stone G, secured to said plate, a collar C, adjustably secured to shaft D, a hollow shaft J, embracing shaft D, a disk M, 50 secured to said hollow shaft, holders N, secured to said disk, frame O, adjustably secured to the case B, pressure-plate Q, and pulleys H and K, by which the grinding-stone and the plate F may be rotated at different
 55 rates of speed, substantially as set forth.

In testimony whereof I have hereunto set my hand this 5th day of May, A. D. 1888.

CHARLES H. HENDERSON.

Witnesses:

CHAS. J. BOCKIUS,
 W. K. MILLER.