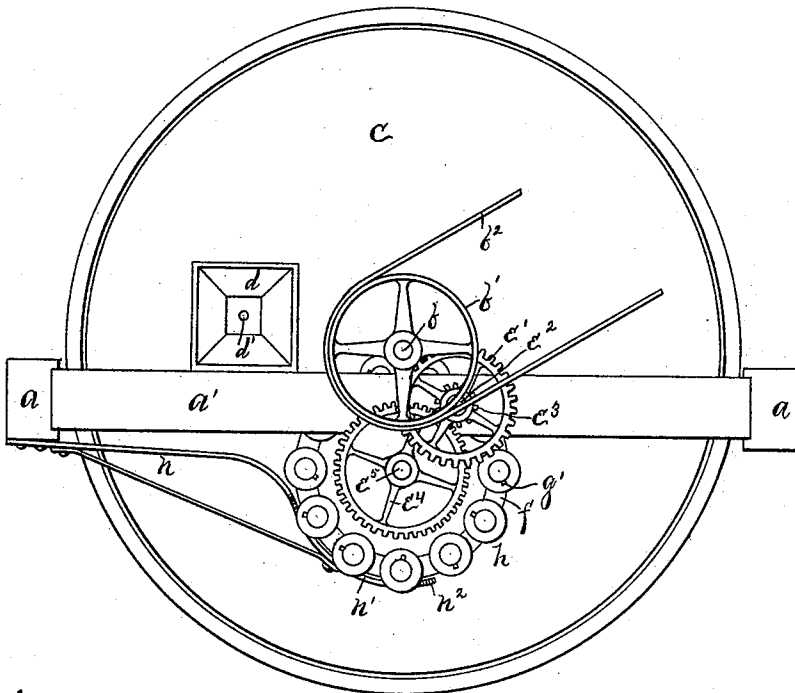
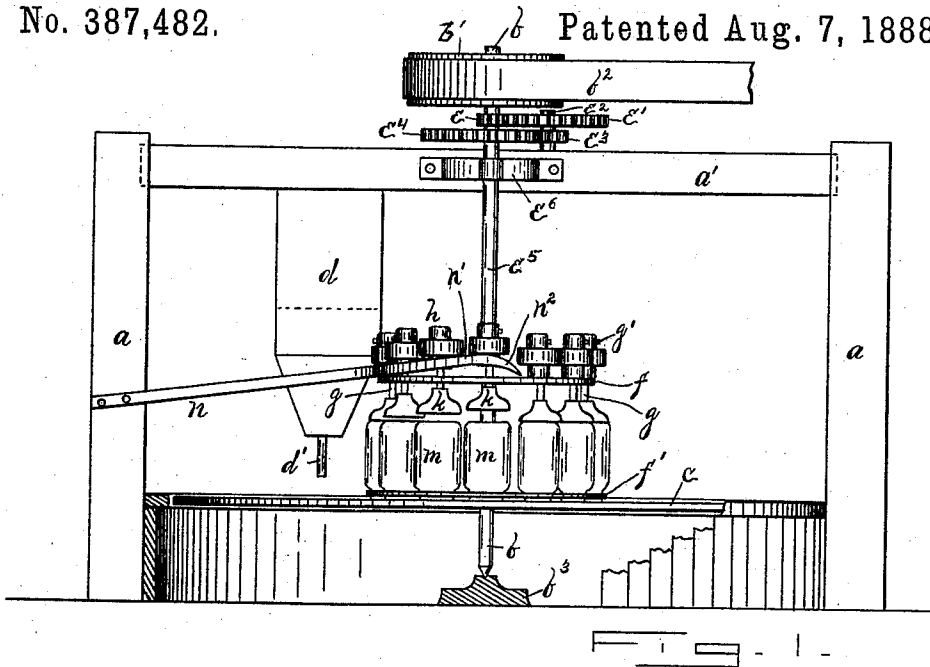


E. B. BALL.
GRINDING MACHINE.

No. 387,482.

Patented Aug. 7, 1888.



Witnesses:
Otto Hoddick.
George Behn.

Inventor,
Edmund B. Ball.
By W. F. Miller,
Attorney.

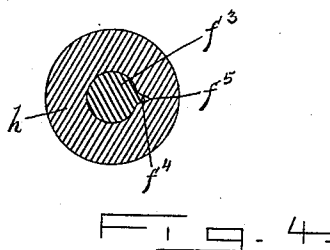
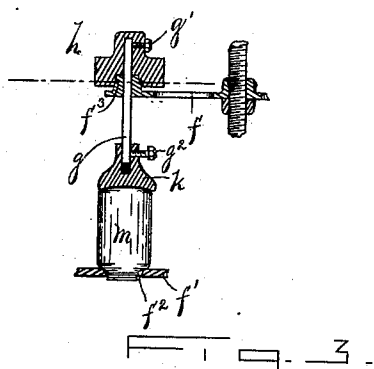
(No Model.)

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UNITED STATES PATENT OFFICE.

EDMUND B. BALL, OF BUFFALO, NEW YORK.

GRINDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 387,482, dated August 7, 1888.

Application filed September 20, 1887. Serial No. 250,226. (No model.)

To all whom it may concern:

Be it known that I, EDMUND B. BALL, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Grinding-Machines for Glassware; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to apparatus for grinding glassware especially adapted for fruit or other jars; and it consists in a certain novel combination and arrangement of parts by means of which the weights which hold the jars down upon the grinding-surface are automatically manipulated.

I will now proceed to describe the manner in which I propose to carry out my invention.

In the drawings, Figure 1 is an elevation, and Fig. 2 is a top plan view, of my improved apparatus. Figs. 3 and 4 are detached detail views.

Referring to the drawings, *a a* are the uprights and *a'* the cross-piece, which form the frame-work.

b is a shaft, to the upper end of which is keyed the pulley *b'*, over which passes the driving-belt *b²*, which furnishes the power. The pointed lower end of the shaft *b* rests in the socket *b³*.

c is a flat metallic disk rigidly secured to the shaft *b* and revolving with it. The upper surface of this disk *c* is the surface upon which the grinding is done.

d is a hopper for the reception of sand, which is fed therefrom through spout *d'* upon the disk *c* to facilitate the grinding of the jars.

Upon the shaft *b* below the pulley *b'* is the small gear-wheel *e*, which intermeshes with the large gear-wheel *e'*, mounted upon the shaft *e²*, secured to the cross-piece *a'*. Upon the shaft *e²* is the small gear-wheel *e³*, which in turn intermeshes with the large gear-wheel *e⁴*, mounted upon the long shaft *e⁵*, secured in bearings *e⁶* upon the side of the cross-piece *a'*. The shaft *e⁵* has rigidly secured thereto the up-

per rack, *f*, for carrying the weights and holders, and the lower rack, *f'*, for carrying the jars or other glass vessels to be ground. The upper rack, *f*, has a series of holes at intervals around its circumference, through which loosely work the rods *g*. At the tops of these rods *g* are the weights *h*, and at the bottom are the holders *k*. The lower rack, *f'*, is provided with a series of openings, *f²*, (see Fig. 3,) adapted for the reception of the rough mouths of the jars *m* to be ground.

The mechanism substantially as just described is of old and well-known construction, and the weights and holders *h* and *k* are to be lifted by hand to insert or remove the jars in the operation of grinding. I propose to arrange a novel construction of parts by means of which the weights and holders are automatically raised and lowered, making it necessary to handle the jars alone. To effect this, I have secured to the side upright a stiff metallic bar, *n*, which has a curved inner end corresponding to the circumference of the rack *f* and adjacent thereto. The bar *n* has the long upwardly inclined plane *n'*, with its extreme inner end curved abruptly downward, as at *n²*. The weights *h*, as they strike the inclined plane *n'*, rise gradually until they reach the downwardly-curved end *n²*, when they fall to their normal position upon the rack. To overcome the friction upon the incline, I have so arranged the weights that they revolve with respect to their own axes while on the incline and remain stationary during the rest of their travel. In explanation, it will be seen by referring to Fig. 3 that the rack *f* is provided with a series of circular inclined seats, upon which the socketed weights *h* rest loosely when in their normal position, as seen in Fig. 3.

The seats *f³* have side ribs, *f⁴*, which rest in grooves *f⁵* when the weights rest upon their seats, thus preventing the weights and their holders *k* from revolving while holding jars down upon the grinding-surface *c*. When the weights *h* are lifted off the seats as they are traveling up the incline *n'*, they are free to revolve, thus materially reducing the friction.

The rod *g*, to which the weights and holders are attached, is removably and adjustably secured thereto by the set-screws *g'* and *g²*, by means of which they can be removed and the

holders can be adjusted up or down for jars of different heights.

The operation of my improved apparatus is as follows: The polishing-disk *c* and racks *f* and *f'* being set in motion by the mechanism described, the weights *h*, and with them the holders *k* as they reach the incline, are successively lifted and then dropped again as they pass down the curved end *n'*, thus enabling the operator to take out the jars already ground and substitute fresh ones to be ground without necessitating the manipulation of anything but the jars. As the weights rise from their seats *f*³ upon the rack *f*, they are free to revolve, as already described.

I claim—

1. The combination, with the grinding-machine having the revolving grinding-disk *c*, the revolving rack *f* for the jars, and the re-

volving rack *f*, having seats *f*³ and carrying the series of movable weights *h*, and holders *k*, of the rod *n*, having the long curved incline *n'* and the curved end *n'*², substantially as and for the purpose stated.

2. In a grinding-machine for glass jars, &c., the combination, with the inclines *n'* *n'*², of the rack *f*, on which are the seats *f*³, the weights *h*, and holders *k*, the weights *h* being provided with grooves *f'* to receive the ribs *f'*⁴ of the seats *f*³, substantially as and for the purpose stated.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDMUND B. BALL.

Witnesses:

OTTO HODDICK,
W. T. MILLER.