(No Model.)

G. MADER & H. R. HEINZ.

DEVICE FOR GRINDING SPICE.

No. 455,818. Patented July 14, 1891.

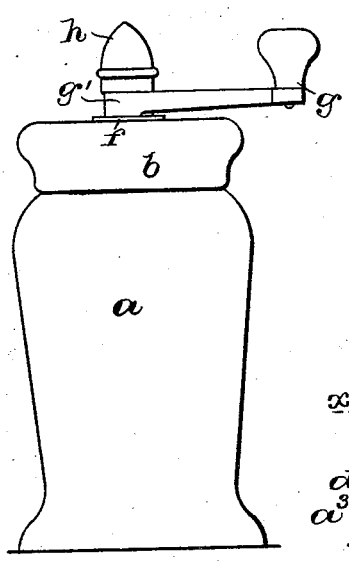

Fig. 1

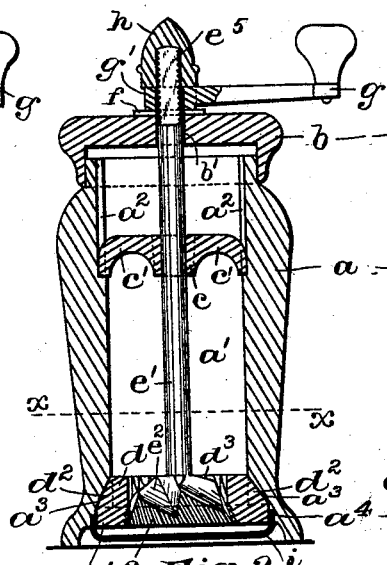

Fig. 2

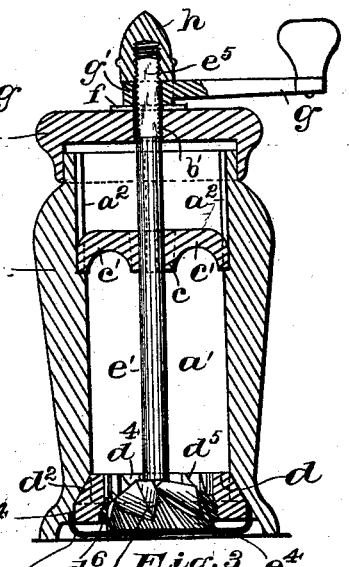

Fig. 3

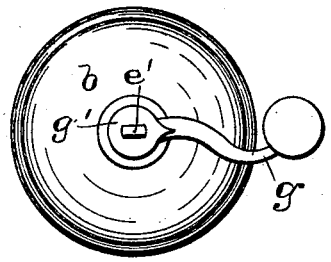

Fig. 4

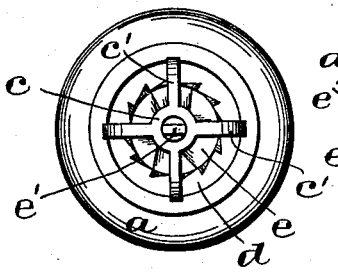

Fig. 5

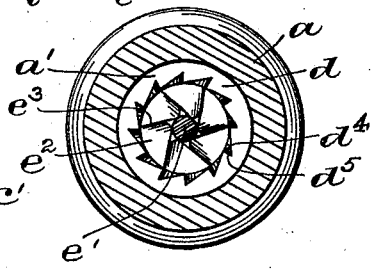

Fig. 6

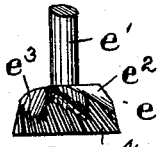

Fig. 8

Fig. 9

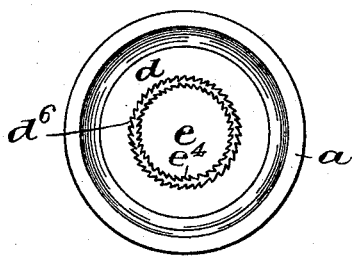

Fig. 7

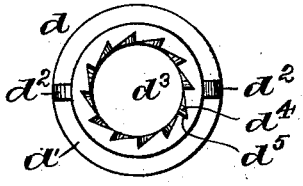

Fig. 10

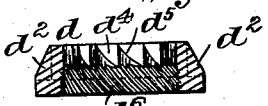

Fig. 11

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UNITED STATES PATENT OFFICE.

GEORGE MADER AND HERMAN R. HEINZ, OF NEWARK, NEW JERSEY; SAID MADER ASSIGNOR TO ROBERT HENSLER, OF SAME PLACE.

DEVICE FOR GRINDING SPICE.

SPECIFICATION forming part of Letters Patent No. 455,818, dated July 14, 1891.

Application filed March 12, 1891. Serial No. 384,786. (No model.)

To all whom it may concern:

Be it known that we, GEORGE MADER, a citizen of Germany, and HERMAN R. HEINZ, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in a Device for Grinding Spices, &c.; and we 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 of reference marked thereon, which form a part of this specification.

The object of this invention is to provide a simple and cheap device for the grinding of spice, such as pepper and mustard, &c., the accompanying drawings illustrating the construction of the same, and the following description indicating the mode of operation of the same, while the claims appended specify those features in the said machine which are novel.

In the said drawings, Figure 1 is a side view of the improved spice-grinding mill, and Fig. 2 is a vertical section of the same, clearly showing the arrangement of the inner mechanism for grinding the material into a fine powder. Fig. 3 is a similar view showing the grinding mechanism in its adjusted position for the grinding the material less fine. Fig. 4 is a plan view of the machine. Fig. 5 is a similar view with the cover removed. Fig. 6 is a horizontal section taken on line x in Fig. 2, and Fig. 7 is a bottom view of the device. Figs. 8 and 9 are a side view and plan, respectively, of the inner grinding-wheel secured to a revolving shaft and clearly illustrating the construction of the same and the arrangement of the milling or grinding surfaces of the wheel. Fig. 10 is a plan, and Fig. 11 a vertical section, of the outer and stationary milling or grinding ring or shell adapted to be fixed within the case.

In said views similar letters of reference are employed to indicate corresponding parts in each of the several views.

In said above-described views, a designates a case of any desirable construction and shape, which may be made of wood, glass, or metal, being provided entirely therethrough with a bore a'.

b designates a cover for the case a. Said case is provided with the downwardly-projecting grooves a^2, into which is snugly fitted a centrally-perforated bearing c, provided with radially-extending arms c', which fit into said grooves and hold the said bearing in position in the bore of said case. Said cover b, as will be seen more especially from Figs. 2 and 3, is also provided with a central perforation b'.

Within the lower part of the case a is arranged a grinding ring or shell d, provided with a circular flange d', having upwardly-extending lugs d^2, which fit into cut-away grooves a^3 in the case, and said ring or shell is firmly pressed into said grooves or recesses, so that said flange d' fits into an annular recess a^4 in the bottom of the case. Said milling ring or shell is provided with a central perforation d^3, provided on its inner surface with large and inwardly-extending cavities d^4, having sharp cutting or breaking edges d^5. Said teeth and the cavities formed in this manner extend about half-way down the inner surface of the hole d^3, from which point on, said hole begins to enlarge, being of the greatest diameter at the lower side of the plate. Said enlarged and flaring perforation is provided with very fine teeth d^6. Said ring d being securely arranged in the lower part of the case forms the bottom thereof. Within said perforated grinding ring or shell d is arranged a grinding-wheel e, secured to a vertical spindle or shaft e', which passes up through the central perforation in the bearing c and through the hole b' in the cover b above the same, as shown. Said grinding or milling wheel e is of a shape so that it can be readily inserted in the perforation d^3 in the ring or shell d, being provided with the large cavities c^2, the sharp breaking-edges e^3, and the fine grinding or milling teeth e^4, as will be clearly seen from Figs. 8 and 9. When said grinding or milling wheel e and and its shaft have been inserted in position, as shown, they are held therein, so as to entirely close the opening in the grinding ring or shell d, and the spice or material to be ground can then be thrown into the case. The cover b is then replaced so that the square

and threaded end e^5 of the shaft extends above the cover. A perforated washer f is then placed upon said cover to encircle the shaft, and a handle or crank g, having a hub g' with a square hole, is fitted upon the squared end e^5 of the shaft. Finally, an adjusting-nut h, preferably formed like an acorn, as shown, is then secured upon the threads of the shaft, so that the grinding-wheel e is drawn up to almost entirely fill up the central opening d^3 in the ring or shell d. Now, when it is necessary to grind some of the material the shaft is revolved by means of the crank, which causes the pepper or other seeds to be drawn down into the cavities in the grinding ring or shell and the milling-wheel, and the sharp edges d^5 and e^3 as they are forced by one another crush the seeds into smaller pieces, which pass down between the fine teeth or serrations d^6 and e^4, and passing out from between them and out of the bottom of the machine as a very fine powder.

In order to grind the spice or other material less fine, by partially unscrewing the nut or acorn h and depressing the shaft the wheel e and the ring or shell can be adjusted so as to widen the space between their grinding-surfaces, and therefore the ground material will be much coarser, as will be evident from Fig. 3.

When it becomes necessary to clean the several parts of the device, the adjusting-nut h at the upper end of the shaft, which also serves as a connection to hold together the case, the handle, the top, the shell, and the grinding-cone can be removed, which releases each of the parts so assembled, and they can be thereby separately cleaned. The grinding cone or wheel e is broader at its base than the interior of the shell is at its top, which prevents the cone from being forced entirely through the grinding-shell. When the cover has been taken off, the grinding-wheel e and its vertical shaft are prevented from dropping out of the case by the cross-wire i, arranged in the bottom of the case, as shown in Figs. 2 and 3.

By this invention a device has been secured for the grinding of spice when required, and is of great utility for table and kitchen use, as thereby only the requisite amount of spice is ground and the aroma of the material is not lost, as in spices which have been ground in large quantities and stored away for some time.

Having thus described my invention, what I claim is—

1. In a combined spice or pepper box and grinder, the combination, with the casing having an open bottom and a removable and perforated cover, of a centrally-perforated grinding ring or shell provided with lugs which fit into grooves in the bottom of said case, a vertical shaft and a grinding-cone thereon which is broader at its base than the interior of the grinding-shell at its top, said shaft extending up through said perforated cover, a handle on said shaft, and an adjusting-nut for raising and lowering the grinding-cone in its grinding-shell, and said shaft and nut also serving as a connection to hold together the case, the handle, the cover, and the grinding-cone and grinding-shell, substantially as and for the purposes set forth.

2. In a device for grinding spice, &c., the combination, with the casing provided with longitudinal grooves or recesses a^2 and a cover, of a grinding ring or shell d, arranged in the bottom of the case, said shell or ring being provided with a circular flange and upwardly-projecting lugs thereon, which fit into grooves a^3 in said case, and a bearing c in said grooves or recesses a^2, a shaft in said bearing, a grinding-wheel e on said shaft, operating with said grinding-plate, substantially as set forth, said shaft extending up through a hole in said cover, a crank or handle on said shaft, and an adjusting nut or acorn on the end of the shaft, all of said parts being arranged substantially as and for the purposes set forth.

In testimony that we claim the invention set forth above we have hereunto set our hands this 10th day of March, 1891.

GEORGE MADER.
HERMAN R. HEINZ.

Witnesses:
FREDK. C. FRAENTZEL,
WM. H. CANFIELD, Jr.