(No Model.)

O. J. RANGE.

COFFEE MILL.

No. 272,584. Patented Feb. 20, 1883.

Fig. 1.

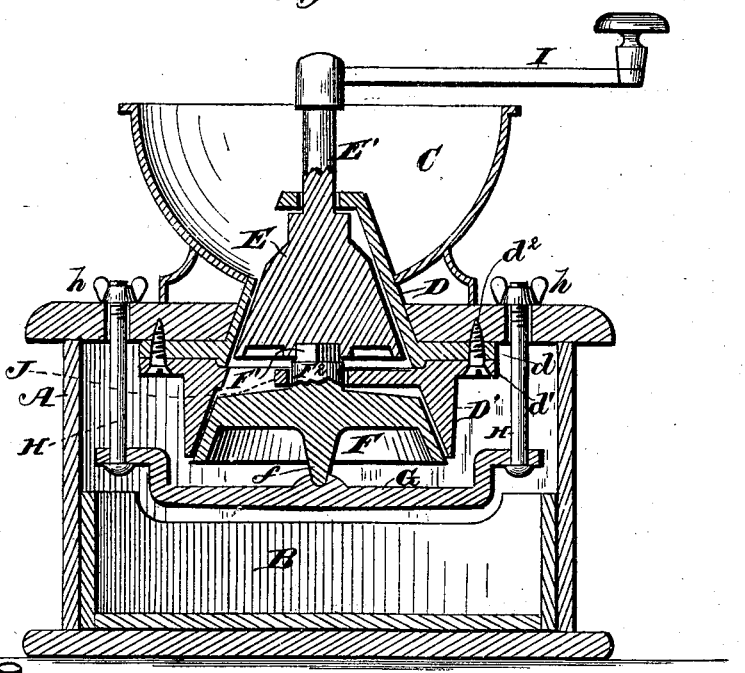

Fig. 2.

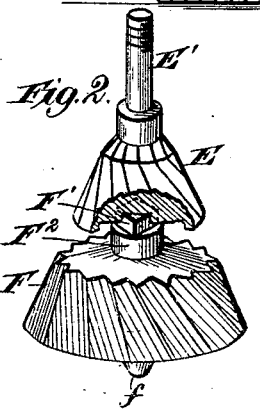

Fig. 3.

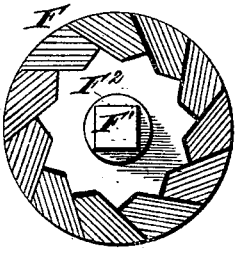

Fig. 4.

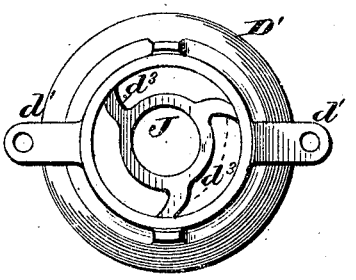

Fig. 5.

Witnesses.
Robert Everett.
Harry G. Davis

Inventor.
Otis J. Range.
By Wm H Babcock
Atty.

UNITED STATES PATENT OFFICE.

OTIS J. RANGE, OF MERIDEN, CONNECTICUT, ASSIGNOR TO THE CHAS. PARKER COMPANY, OF SAME PLACE.

COFFEE-MILL.

SPECIFICATION forming part of Letters Patent No. 272,584, dated February 20, 1883.

Application filed November 18, 1882. (No model.)

To all whom it may concern:

Be it known that I, OTIS J. RANGE, a citizen of the United States of America, residing at Meriden, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Coffee-Mills; 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.

This invention relates to coffee-mills of the sort in which two runners are employed, one above the other, the two interlocking so as to run together, and the grinding being effected between their outer conical faces and the corresponding inner face of a metallic shell or casing.

The said invention has for its object to insure the regular rotation of the runners without swaying from side to side—a defect in operation to which the lower runner is especially liable when the interlocking parts of the runners wear loose, and which leads to uneven and imperfect grinding. This object I effect by providing a part of the lower runner with a fixed annular guide or brace, which is preferably formed with the grinding-casing.

In the accompanying drawings, Figure 1 represents a vertical central section through a grinding-mill for coffee, spice, or other fine articles. Fig. 2 represents a perspective view of the two runners interlocked, the upper being partly broken away to show the interlocking portion of the lower. Fig. 3 represents a plan view of the lower runner. Fig. 4 represents a plan view of the lower section of the shell or grinding-casing, my annular guide or brace forming part thereof; and Fig. 5 represents a similar view of the step or cross-bar on which the lower runner rests, the annular guide or brace being formed therewith.

A designates the box of my mill, and B the removable drawer in the bottom thereof. The coffee or other material to be ground is fed through a hopper, C, which is attached to and supported on said box, to the interior of a hollow conical grinding shell or casing, consisting of an upper section, D, and a lower section, D′, the former being permanently attached to said hopper or cast therewith, and constituting a casing for the upper runner, E, while the other section is detachable, and constitutes a casing for the lower runner, F. These sections D D′ fit exactly together, and are provided with external annular meeting flanges *d d′*, through which pass screws d^2, which enter the under side of the top of box A. The two runners are of cone-frustum shape, and of slightly less diameter than the corresponding parts of the shell, and their sides are fluted or corrugated in the usual manner to insure the proper grinding of the material which passes down over them. The upper or driving runner is provided with a cylindrical stem, E′, which rises through a bearing formed with or on the upper part of section or upper casing, D, and has its top adapted to receive a handle, I, whereby the mill is operated. The lower end of the lower runner, F, is provided with a tapering stem, *f*, which is stepped into a supporting cross-bar, G, that is detachably but rigidly suspended from the top of box A by means of bolts H and their nuts *h*. The two runners are interlocked by means of a prismatic projection, F′, which rises from the top of lower runner, F, and enters a similar recess in the under side of upper runner, E. The projection and recess may be transposed, or each runner may be formed with both a projection and a recess, the projection of one runner fitting into the recess of the other, and the projection of the latter fitting into the recess of the former, and their form and arrangement, like those of all the foregoing parts, may be varied considerably without affecting my invention.

I do not claim any novelty in anything thus far described; but when the runners and adjacent parts are constructed and combined as above it is obvious that there will be considerable strain at the points where said runners interlock, as it is there that the upper runner communicates its motion to the lower one. The result is a tendency to independent or reverse swaying motions on the part of said runners within the casing, and this becomes

more noticeable as the interlocking projection or projections wear loose in the recesses which receive them. In consequence of this swaying motion some of the coffee or other material is ground more finely than the remainder, and accuracy of adjustment to any required degree of fineness becomes impracticable. To prevent this uneven operation of the runners, I employ a ring, J, which is preferably cast in one piece with the casing D′ of lower runner, F, short horizontal bars or arms d^3 extending inward to said ring J from the upper edge of said casing. This ring encircles a cylindrical block, F^2, which forms the base of projection F′, so that said ring forms an annular guide or brace therefor, and prevents said lower runner from swaying in any direction as it rotates. The wear of said projection in its recess is thereby greatly lessened and the upper runner or driver, E, is prevented from swaying. Thus both of the runners are held steadily to their work, and uniform and perfect grinding is the result.

The annular guide J may be formed on or with the upper section or casing, D, or it may be attached to either of these casings instead of making one piece therewith. Sometimes, as shown in Fig. 5, it may be found advisable to form said guide in step or cross-bar G, stem *f* being extended through the latter. This construction may be adopted as an auxiliary device to the guide or ring formed with the casing, or it may be used as a substitute (though not a very perfect one) therefor. The cross-bar G may also be provided with a raised cylindrical piece, which sets into the bottom of the lower runner, as a substitute for construction above described.

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

1. A pair of interlocking grinding-runners and their casing and bearings, in combination with a fixed ring or annular guide surrounding a cylindrical part of one of said runners to prevent swaying, substantially as set forth.

2. A pair of interlocking grinding-runners, in combination with a casing consisting of sections D D′, one of the said sections having an annular guide attached to or formed with it, for the purpose set forth.

3. The casing or casing-section D′ for the lower driving-runner, the same having a ring, J, and bars d^3 cast with it at the upper end thereof, in combination with the upper and lower runner, the latter having a cylindrical part, F^2, at the base of its interlocking projection F′, for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

OTIS J. RANGE.

Witnesses:
DEXTER W. PARKER,
RALPH A. PALMER.