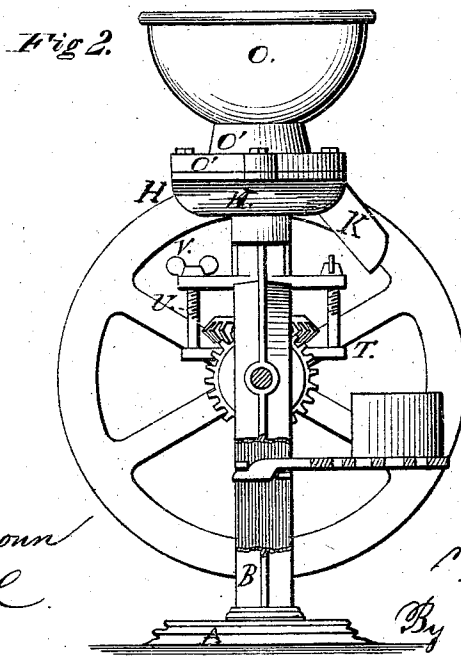
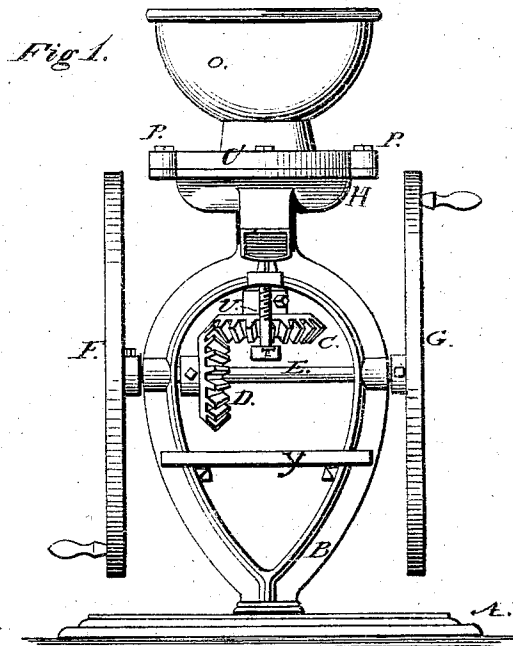


W. J. & J. G. LANE.
Grinding-Mills.

No. 152,655.

Patented June 30, 1874.



Witnesses.

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S. M. Pool

Inventors.

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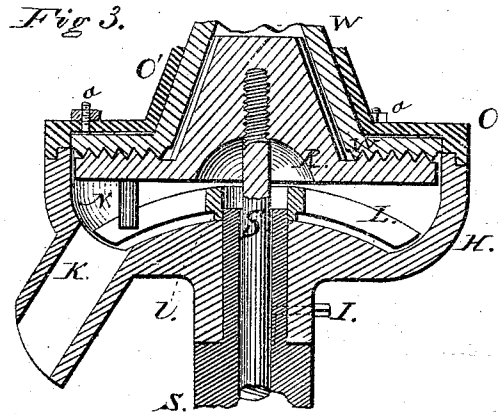
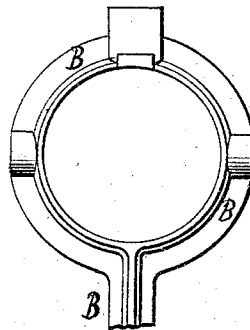


Fig 4.



Witnesses.

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S. McPool



Fig. 5.

Inventors.

Wm. J. Lane
John G. Lane
By *Daniel Breed* Atty

UNITED STATES PATENT OFFICE.

WILLIAM J. LANE AND JOHN G. LANE, OF MILLBROOK, NEW YORK.

IMPROVEMENT IN GRINDING-MILLS.

Specification forming part of Letters Patent No. 152,655, dated June 30, 1874; application filed January 6, 1873.

To all whom it may concern :

Be it known that we, WILLIAM J. LANE and JOHN G. LANE, of Millbrook, in the county of Dutchess and State of New York, have invented certain new and useful Improvements in Coffee-Mills; and we hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

In the accompanying drawings, Figure 1 is a front view of our improved coffee-mill. Fig. 2 is a side view of the same. Fig. 3 is a vertical section of the mill proper, showing the interlocking-teeth upon the two grinding-surfaces. Fig. 4 represents a modified view of a portion of the standard or frame; and Fig. 5 is a horizontal cross-section of the standard.

Grinding-mills have usually been constructed with a frame, tripod, or other broad base for supporting the burrs. In case a single standard has been used, the horizontal axle was supported entirely on one side of the perpendicular center of said standard, which is thus not well balanced, and therefore not easily prevented from rocking or shaking while grinding.

One object of our invention is to remedy this difficulty; and to this end our invention consists of an ovoid mill-standard having an interior space for the gearing and rims of metal on either side thereof, which support the horizontal axle on two bearings, one of which is on each side of the perpendicular center of said standards; and it also consists of other improvements, hereafter fully described and claimed.

In the accompanying drawings our improved mill-standard is shown in Fig. 1, at B, resting on a separate pedestal, A, to which it is connected by a screw-joint. The axle E is supported on two bearings in the rim of the standard B, one of said bearings on each side of the perpendicular center of said standard, which is thus balanced, and therefore not so liable to tremble in grinding. The gear-wheels C and D are placed in the central space of the ovoid rim of the standard, nearly above the supporting-shank, resting upon the pedestal. The two balance-wheels G and F are placed

upon opposite sides of the standard, thus tending to keep the standard balanced; and the back of the mill, the burrs or grinders, and the hopper, are all supported on the central neck of the standard, so as to equalize, as near as possible, the weight on opposite sides. The back H of the mill is connected to the neck of the standard B by means of a smooth joint and set-screw, I, as shown in Fig. 3. The inner surface of this back is convex near the central shaft S, as seen in Fig. 3, so that the ground coffee has a tendency to fall downward and outward, away from the shaft, and pass freely out of the spout K. To facilitate the clearing of the mill, a sweep, L, is employed, the same being made to revolve with the runner R, by means of projection N. This sweep has a narrow flange, *l*, upon which it rests and revolves easily without click or noise, which is very desirable. The hopper O and front or upper part of the mill O' are cast in one piece. But the upper or stationary grinding-surface W is cast in a separate piece, and then fastened to the front of the mill by stud-bolts and nuts *a*, Fig. 3. By this arrangement the grinding-surfaces when worn may be easily and cheaply replaced, and the grinding-teeth are prevented from being thrown out of place by the shrinkage in cooling the castings. The runner R is also cast separately, and the shaft S driven into a taper hole bored into the runner; also, all the gear-wheels are cast separately. The shaft S is very short and stepped upon the bar T, which serves to adjust the shaft vertically, by means of screw-bolts U and nuts V, for the purpose of regulating the fineness of the ground coffee. The upper and central portion of the runner is conical, and has the usual mill-dress intended for breaking the kernels of coffee. But the main portion of the runner has a horizontal grinding-surface, which is provided with what is known as the Swift mill-dress, the teeth being set in a series of circles of different diameters, with grooves between the circles of teeth to receive the points of the teeth of the stationary grinder W, which has a corresponding dress. Thus the teeth of the two opposing grinding-surfaces interlock, as seen in Fig. 3, and this mill-dress is consequently self-sharpening. In connection with the circular series

of teeth already described, the teeth are also set in obliquely radial rows; but the relative position of the teeth in the different circles may be varied without departing from the main feature of the Swift mill-dress.

In setting up the mill, it is necessary to have the circles of teeth in the stationary grinder perfectly concentric with the similar circles of teeth in the runner. Now, if the stationary grinder were cast in the same piece with the hopper and upper part of the mill, the shrinkage in cooling the castings would render the circles of teeth eccentric or untrue, and thus destroy the efficiency of the mill. But by casting the parts separately, as above described, we prevent these difficulties.

In putting the parts of the mill together, we first secure the back H in position upon the standard. Then the runner is put into place, and the stationary grinding-plate placed upon the runner with the two sets of teeth interlocking, as seen in Fig. 3. The hopper and front are next placed upon the back and secured by bolts P. Then, finally, the nuts *a* are turned home to fasten the stationary grinder in the position determined by the position of the runner and the interlocking teeth, the large holes for the bolts *a* allowing the stationary grinder to adjust itself to the runner before

being screwed up. A removable shelf, Y, supported by projections on the standard B, serves to hold the box to receive the ground coffee. Motion may be given to our mill by the cranks W, or other suitable means.

The standard B is cast with ribs, as seen in Fig. 5, which is a cross-section of said standard, in either the shank, neck, or one side of the rim of metal, in order to give greater strength without an increase of metal. The rim of the standard may be circular, as seen in Fig. 4, or of any other suitable form, for one of which forms we are seeking a separate patent for a design which is not herein claimed.

Having thus fully described our invention, we claim—

1. The above-described ovoid mill-standard, having a rim with two bearings for the axle E, and a central space for the gear-wheels, substantially as and for the purposes set forth.

2. In combination with the back of the mill, the sweep L, provided with the narrow flange *l*, substantially as and for the purposes set forth.

WILLIAM J. LANE.

JOHN G. LANE.

Witnesses:

JACOB DEUEL,

JOSEPH DUBOIS.