(No Model.)

O. E. WINGER.

Coffee Mill.

No. 243,338. **Patented June 21, 1881.**

Fig. 1.

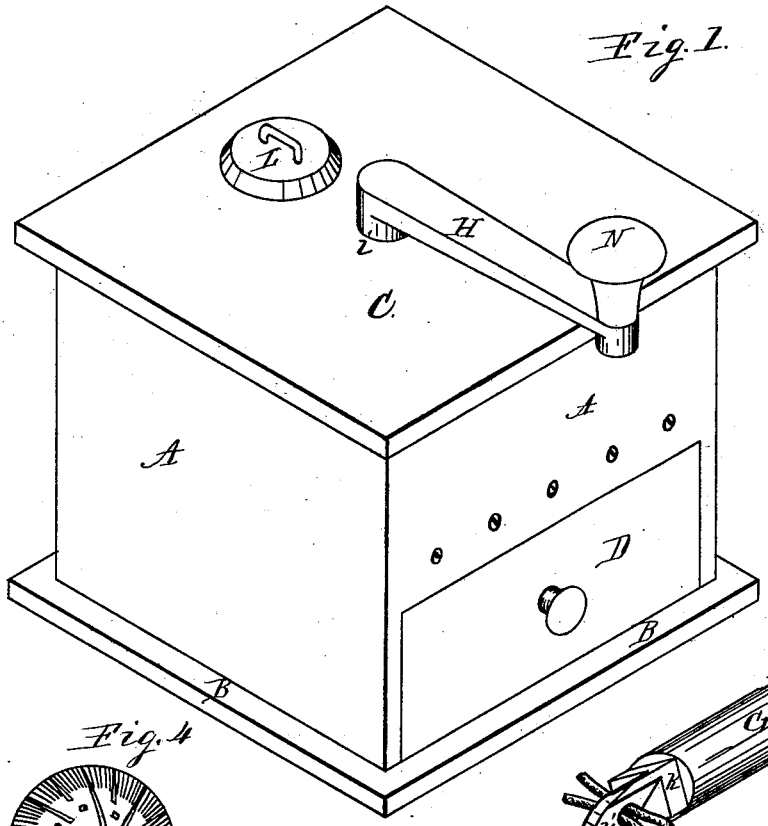


Fig. 4

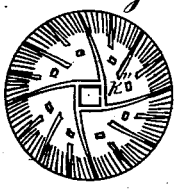


Fig. 5

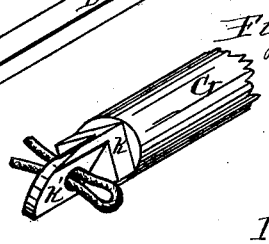


Fig. 2.

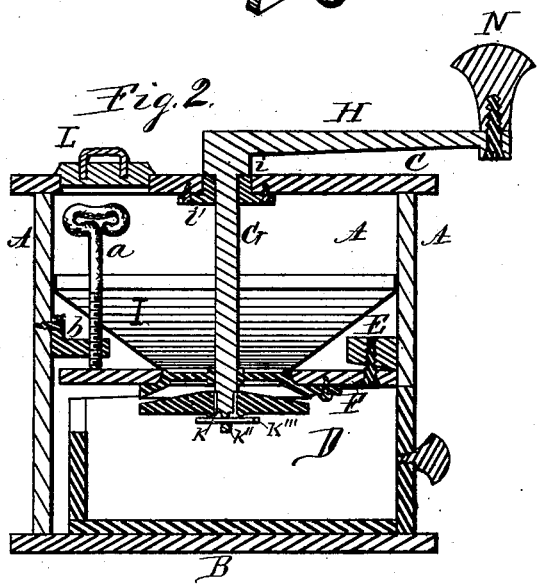
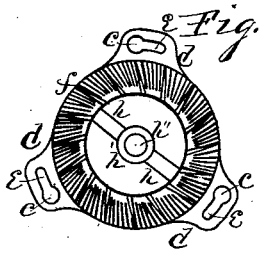


Fig. 3.



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OSWALD E. WINGER, OF FREEPORT, ILLINOIS.

COFFEE-MILL.

SPECIFICATION forming part of Letters Patent No. 243,338, dated June 21, 1881.

Application filed February 7, 1881. (No model.)

To all whom it may concern:

Be it known that I, OSWALD E. WINGER, a citizen of the United States, residing in the city of Freeport, in the county of Stephenson and State of Illinois, have invented certain new and useful Improvements in Coffee and Spice Grinding Mills, of which the following is a specification.

My invention relates to grinding-mills used for grinding coffee, spices, and other like articles, employing metallic grinding-plates; and it consists in the devices, their construction and arrangement, and in the combinations thereof, all of which will be hereinafter more fully explained.

In the accompanying drawings, Figure 1 is an isometrical representation of a cubical box-like frame containing my improvements, of which Fig. 2 is a central vertical section cut in the lengthwise direction of the crank-arm. Fig. 3 is an under-face view of the fixed upper grinding-plate. Fig. 4 is the upper-face view of the runner or under grinding-plate. Fig. 5 is an isometrical representation of the lower end portion of the vertical spindle.

In the figures, A represents the sides, B the bottom, and C the top, all of which are suitably joined to each other, producing a cubical box-like frame. The lower portion of this frame is provided with a drawer, D, of ordinary construction, opening on one side of the frame.

At E is represented a bar, of suitable dimensions and of proper length to be admitted within the box-frame, fixed to the drawer-side a suitable distance above the drawer-opening by means of sufficient screws or otherwise. The under side of this bar is beveled, inclining upward from its connection with the frame.

At F is represented a diaphragm of suitable material, and of such dimensions as to be freely received within the frame. This diaphragm is placed transversely in the frame immediately under the bar E, to which it is connected by means of suitable screws operating to cause its free end to rise.

At *a* is represented an adjusting-screw received in a screw-nut, *b*, fixed to the side of the frame in a suitable position, so that the end of the screw depending from the screw-nut will engage the free end of the diaphragm at or near its free end, preferably about the center of its width. The diaphragm is provided with a central opening, in which is placed the fixed or bed plate of the grinders, in this instance removably connected therewith by means of suitable screws properly located in the diaphragm, with their heads depending therefrom, adapted to enter and pass through the enlarged portion *c* of the opening in the flanged ears *d*, which project laterally from the periphery of the grinding-plate. The plate is then turned in the direction to cause the edges of the slotted portion *e* of the openings to pass under the screw-heads and hold the plate in position on the diaphragm. This upper fixed grinding-plate is of ring-plate form, as at *f*, having its grinding-face conical, inclining inward and upward, and is corrugated or notched in the usual form of preparing such grinding-faces. The central opening of this grinding-plate ring is spanned by a radial bar, *h*, connected with the inner edges of the plate. The center of this bar is provided with a hub, *h'*, having an axial opening, *h''*, to receive the lower rounded end portion of the spindle G, to revolve therein snugly. The spindle G and crank-arm H, in this instance, are in one piece. The spindle is of shaft form of uniform size, and extends into the box-frame. The portion of this spindle above the box-frame, as at *i*, is enlarged, forming a shoulder to rest on the upper surface of a collar-bearing, *i'*. The bearing *i'* is fixed in the center of the box-frame cover, and also forms the bearing for the vertical spindle.

The lower end of the vertical spindle G, as at *k*, is rectangular in cross-section, and is of a length sufficient to receive the runner or lower grinding-plate, below which it is reduced to plate form, as at *k'*, on a plane diagonal with the rectangular portion. This plate portion is provided with a transverse hole immediately below the shoulders formed in producing the plate portion, and is adapted to receive a cotter or other suitable key.

The upper surface of the runner is slightly conical, having its upper or grinding face corrugated, notched, and ribbed, and provided with upward-projecting grinding-teeth, substantially in the manner common in such metallic grinding-plates. This grinding-plate is provided centrally with a rectangular opening,

k'', fitted to receive the lower rectangular portion, k, of the spindle, and when the plate is in place thereon a suitable cotter or key, k''', is passed through the hole in the plate portion of the spindle, to hold it in position thereon in such a manner as to permit it to adjust itself to the upper fixed grinding-plate.

The upper portion of the box above the diaphragm is provided with inclined bottom portions, I, on all sides, producing a hopper inclining on all sides toward the center.

At L is represented a removable lid employed to close a corresponding opening formed in the top plate of the box-frame, which, when removed, reveals an opening to admit the material to be ground. This opening is centrally over the adjusting-screw a, and when the lid L is removed the screw is accessible, to be turned in either direction to adjust the grinding-plates.

The crank-arm or winch H projects laterally from the upper enlarged portion of the spindle, and at right angles to its axis, extending horizontally over the upper surface of the frame, and having its outer end provided with a hand-knob, N, of suitable dimensions.

The mill is regulated to grind coarse or fine by means of the adjusting-screw a, which, when turned to the right, will depress the free end of the diaphragm, which will carry with it the grinding-plate fixed thereto, causing it to approach the grinding-surface of the runner, which action will cause the mill to grind finer, and the reverse movement of the adjusting-screw will permit the free end of the diaphragm to rise by means of its spring action produced by its connection with the box-frame, which movement will carry the fixed grinder with it, causing the grinding-surfaces to separate, and will consequently produce a coarser grade of grinding.

In use the lid L is removed, and the material to be ground is then passed through the opening into the hopper in contact with the grinders, the runner of which is made to revolve by means of the crank-arm. This movement, in connection with the fixed grinding-surface, will cause the coffee or other article placed in the hopper to be crushed or ground, the grade of which can be regulated by means of the adjusting-screw, as hereinbefore stated.

By this construction and arrangement of parts I produce a mill having an incased hopper to inclose the material to be ground and exclude the dust, and produce a capable mill at small cost, readily adjusted to vary the grade of grinding within the limits of the machine, having a capacity capable of embracing the grades found useful in practice.

I claim as my invention—

1. The combination, with the hopper of a grinding-mill, of a yielding diaphragm secured to the frame at one side of the lower end of the hopper, a grinding-ring located under the bottom of the hopper and secured to the yielding diaphragm, and devices for adjusting the free end or side of the yielding diaphragm, substantially as set forth.

2. In a grinding-mill, the combination, with the hopper and a yielding diaphragm located below the hopper, a grinding-ring secured to said diaphragm, and devices for raising and lowering the free end or side of the diaphragm, of a spindle extending through the fixed grinding-ring and a rotary grinding-plate secured to the lower end of said spindle, substantially as set forth.

3. In a grinding-mill, the combination, with a yielding diaphragm having a grinding-ring secured thereto, and adjusting devices connected with the free side or end of the diaphragm, for raising and lowering the same, of a spindle extending through the fixed grinding ring or plate, and a rotary grinding-ring mounted on the lower end of the spindle and loosely fitted thereto, so as to be self-adjusting and accommodate itself to the position of the fixed grinding-ring, substantially as set forth.

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