R. B. FITTS.

Coffee Mill.

No. 23,298. Patented March 22, 1859.

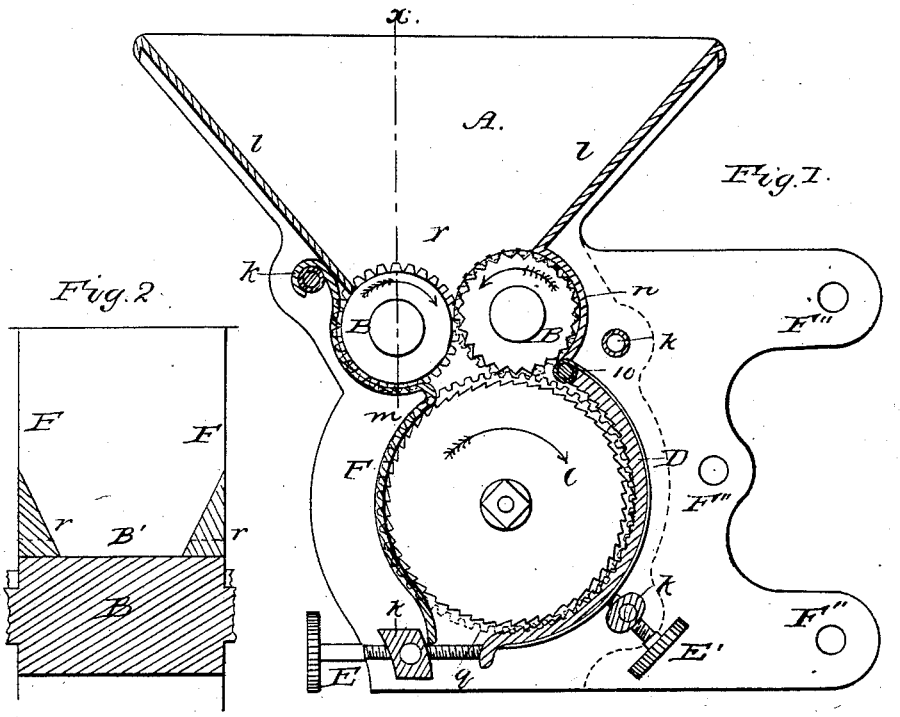
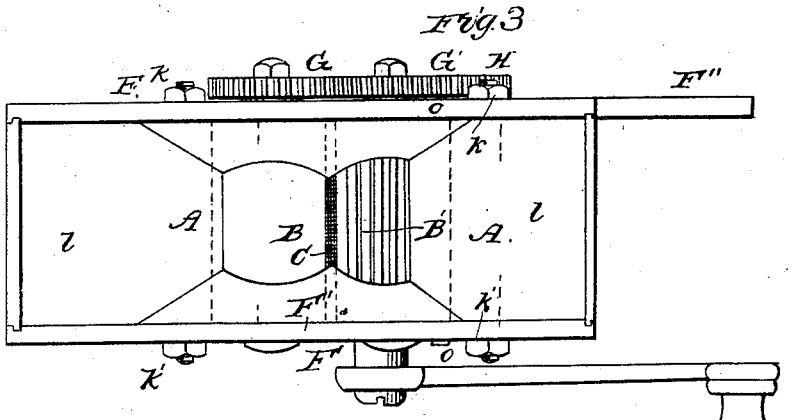



Fig. 1.

Fig. 2




Fig. 3




Witnesses

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R. B. FITTS, OF PHILADELPHIA, PENNSYLVANIA.

## COFFEE-MILL.

Specification of Letters Patent No. 23,298, dated March 22, 1859.

*To all whom it may concern:*

Be it known that I, R. B. FITTS, of the city of Philadelphia, in the State of Pennsylvania, have invented a new and useful Improvement in Coffee-Mills; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a side elevation of the improved mill—the crank handle and front covering-plate being removed, in order to show the interior; Fig. 2 a vertical transverse section of the hopper and crushing cylinders (on the dotted line *x* of Fig. 1): and Fig. 3, a top view of the said mill, like letters in the several figures, indicating the same objects.

The nature of my invention consists in the construction, arrangement and combination of two, horizontal crushing cylinders, placed transversely beneath a hopper whose feed opening is less in width than the length of the said crushing cylinders, and, beneath them, a larger cylinder having a grinding surface and, at one side, a corresponding shell, or concave, which is made adjustable thereto by set screws; the said three cylinders being so geared together, by a spur wheel and two pinions, that their peripheries shall simultaneously move with equal velocities when the larger cylinder is rotated by the crank handle: Whereby I am enabled to grind the coffee much more rapidly, and also without producing the objectionable "flouring," or pulverizing effect to such an extent as is produced in the coffee-mills heretofore used.

In the drawings, A, is the hopper; B and B′ the crushing cylinders; C the grinding cylinder, and D, its shell or concave; E and E′ the set screws for adjusting the shell; F and F′, the back and front side plates of the case; G and G′ the pinions on the crushing cylinders; H, the spur wheel on the grinding cylinder; and I, the crank handle by which the mill is operated.

The back and front plates (F, and F′,) are flat, and form the sides of the case and hopper by being secured together, parallel with each other, by means of the four stretchers, *k*—*k*, and the screw nuts *k′*—*k′*, on their ends; the back plate (F) being extended at one edge (F″), whereby the mill can be secured in a firm position for use; and the length of the cylinders (B, B′, C) and also the width of the shell, or concave grinding plate (D), being nearly equal to the width of the space formed by and between the said plates (F and F′).

The two ends of the hopper (A,) are formed by the inclined plates, *l*—*l*, which are let into grooves made on the inner sides of the plates, as shown in the Figs. 1, and 3; and the ends of the case are closed by the curved plates *m*, and, *n*, and the concave (D), as seen in Fig. 1.

The crushing cylinders (B and B′) are of the same diameter—the one, (B) being smooth on its surface, and the other, (B′) grooved longitudinally—and rotate on journals which pass through the plates (F and F′) and also project sufficiently, from the back plates (F), to have fixed thereon the pinions (G and G′) in gear with each other, as seen in Fig. 3.

The grinding cylinder (C) is made about twice the diameter, or size, of either of the crushing cylinders (B or B′), and rotates upon journals which project, through the plates (F, F′,), sufficiently far to have fixed upon the front one, the crank handle (I), and upon the back one, the spur wheel (H) so that it shall gear into the pinion (G′) of the grooved cylinder B′—the diameters of the said pinions and spur wheel being such as to permit the cylinders (B and B′) to have about an eighth of an inch space between them, and also a like, or somewhat narrower, space between the cylinders B′ and C.

The concave plate or shell (D), hangs on pivots *o*, *o*, which pass through the plates (F, F′) around near one side of the cylinder (C) so as to leave a clear space between it and the said cylinder, of about an eighth of an inch at its upper end, and is adjusted at its lower end, by means of the set screws (E and E′) so as to produce a gradual diminishing of the said space, to the outlet *q*.

The periphery of the cylinder (C) is serrated by longitudinal grooves, and the concave side of the shell (D) is, in like manner, serrated by transverse grooves, as seen in Fig. 1.

The feed opening of the hopper (A) is made in width about two thirds less than the length of the cylinders (B or B′), by means of two blocks *r*, *r*, which are fitted closely around over the said cylinders, and made fast to the side pieces (F and F′,)—

for the purpose of confining the feed to the middle parts of the said crushing cylinders.

Operation: The hopper (A) being supplied with coffee, the mill is put in operation by moving the crank handle (I) so as to rotate the cylinder (C) in the direction of the arrow thereon; thus producing an opposite rotary motion in the cylinder B′,—which, being in gear with the cylinder, B, the two necessarily move together in opposite directions, shown by the respective arrows thereon—and thus take in and crush the coffee grains rapidly—which, falling upon the cylinder (C), is again crushed by being carried by it under the cylinder (B′), and then between the shell (D) and the cylinder (C) it is still further crushed, and finally discharged at the outlet *q*—the degree of fineness required in the crushed particles of coffee, being easily regulated by adjusting the shell (D) in relation to its cylinder (C), accordingly—by means of the set screws, E and E′.

In this mill, the coffee is forced through by the positive action of the crushing and grinding cylinders, and therefore a much larger quantity can be ground by it in the same length of time than by those mills which depend mainly upon the gravitation of the coffee itself, in passing through them, as it is ground; and the grinding, or more properly, the crushing edges of the cylinders in this mill, being horizontal, and also parallel with each other and the axis of the cylinder, the coffee is simply crushed as it is forced through, by the said cylinder, to the outlet, and is therefore but little "floured," or pulverized—which is important, as it renders "clearing" unnecessary in making the infusion for drinking.

Having thus fully described my invention and pointed out its utility, I proceed to state that I am aware that a single crushing cylinder has been employed before, in combination with a horizontal grinding cylinder fitted with an adjustable shell or concave—the said crushing cylinder rotating at a slower speed than the grinding cylinder—for the purpose of crushing and grinding coffee; therefore I do not claim such a combination, but

What I claim as new and desire to secure by Letters Patent is,

The cylinders, B, and B′, in combination with the grooved cylinder, C, and its adjustable concave (D)—the whole being constructed and arranged together beneath the hopper (A), so as to operate in the manner and for the purpose set forth and described.

R. B. FITTS.

Witnesses:

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