

No. 618,523.

Patented Jan. 31, 1899.

J. RHINO.
COFFEE MILL.

(Application filed June 15, 1898.)

(No Model.)

2 Sheets—Sheet 1.

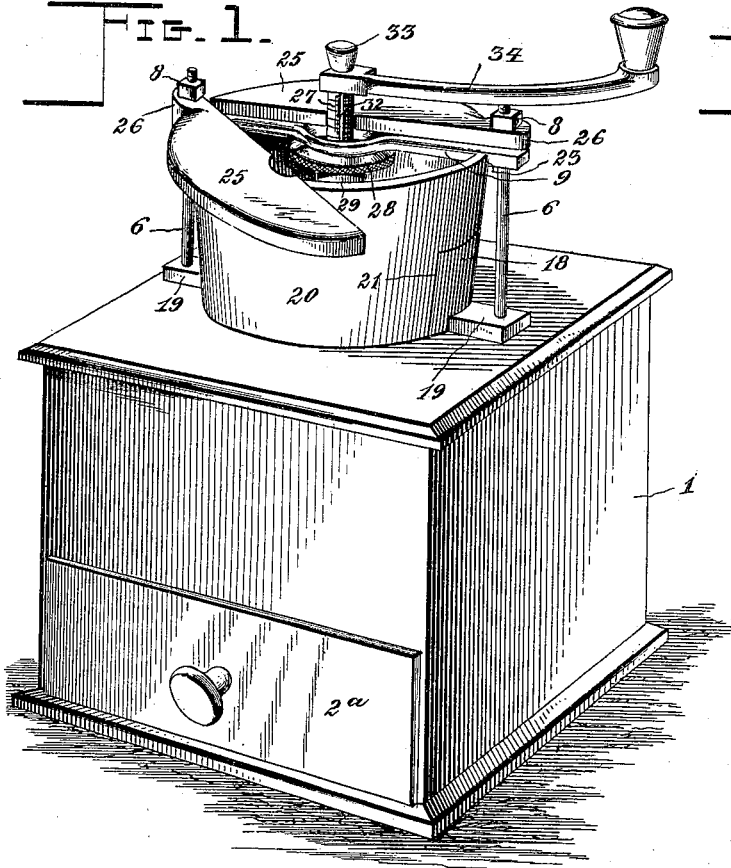


FIG. 5.

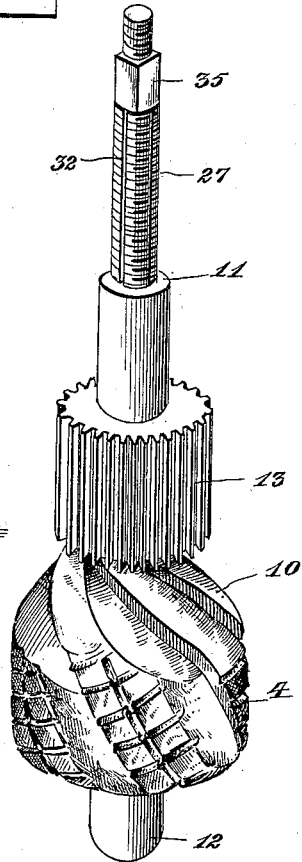


FIG. 6.

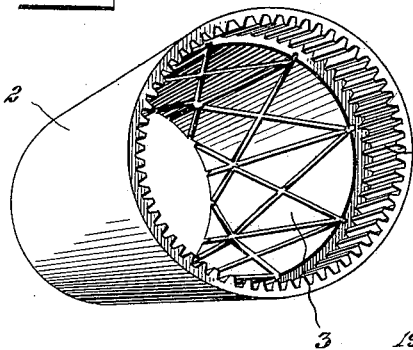
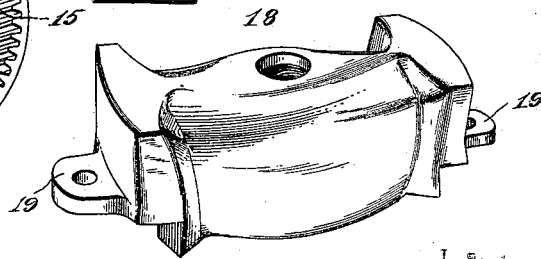


FIG. 7.



Witnesses

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No. 618,523.

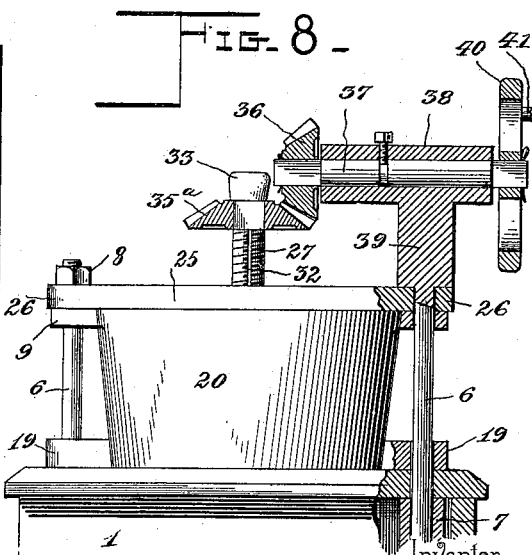
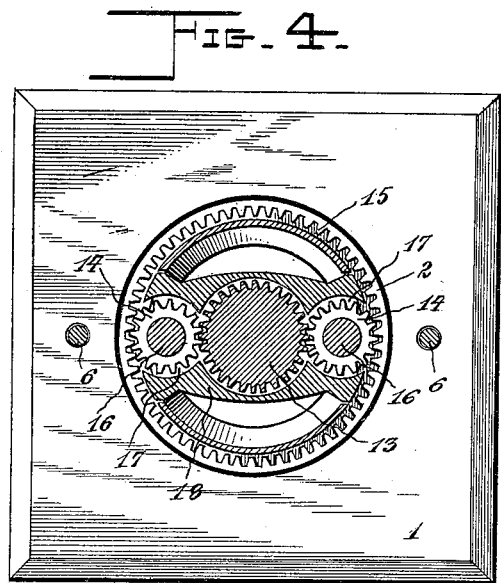
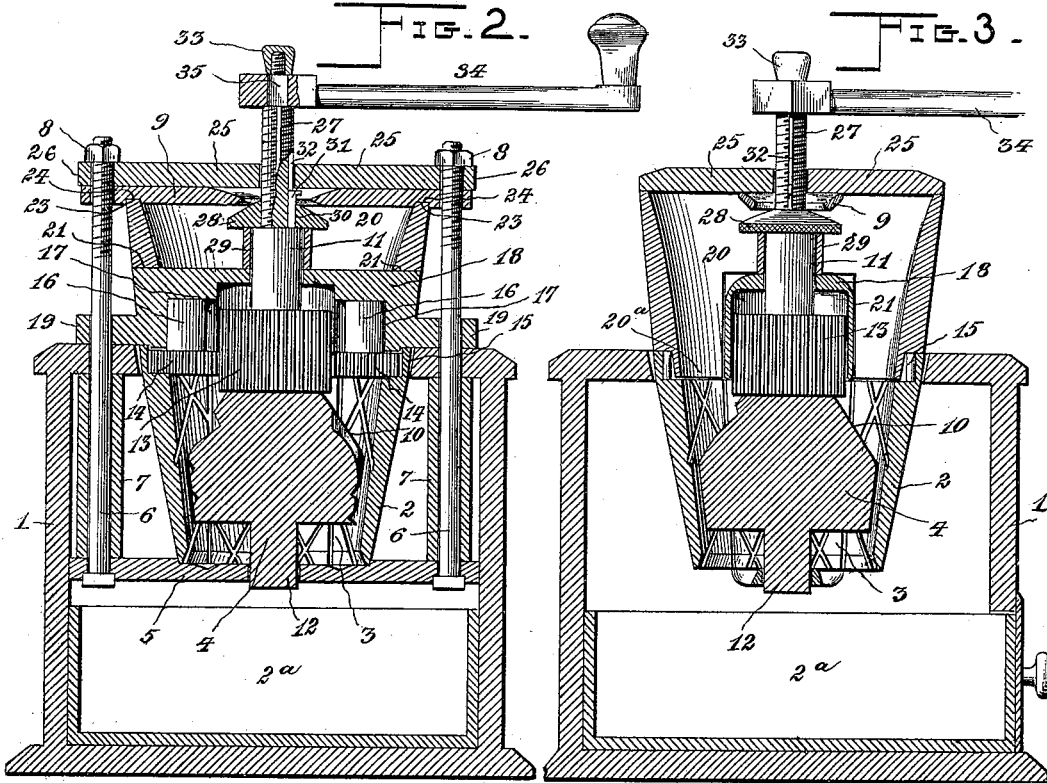
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(Application filed June 15, 1898.)

No Model.)

2 Sheets—Sheet 2.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN RHINO, OF JACKSON, MONTANA, ASSIGNOR OF ONE-HALF TO B. O. FOURNIER, OF SAME PLACE.

COFFEE-MILL.

SPECIFICATION forming part of Letters Patent No. 618,523, dated January 31, 1899.

Application filed June 15, 1898. Serial No. 683,514. (No model.)

To all whom it may concern:

Be it known that I, JOHN RHINO, a citizen of the United States, residing at Jackson, in the county of Beaver Head and State of Montana, have invented a new and useful Coffee-Mill, of which the following is a specification.

The invention relates to improvements in coffee-mills.

The object of the present invention is to improve the construction of coffee-mills and to provide a simple and comparatively inexpensive one adapted to be readily operated and capable of ready adjustment to enable coffee to be ground to the desired degree of fineness.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a perspective view of a coffee-mill constructed in accordance with this invention. Fig. 2 is a central vertical sectional view. Fig. 3 is a vertical sectional view taken at right angles to Fig. 2. Fig. 4 is a horizontal sectional view. Fig. 5 is a detail perspective view of the grinding-cone or runner. Fig. 6 is a detail perspective view of the grinding-shell. Fig. 7 is a detail perspective view of the horizontal casing which houses the gearing. Fig. 8 is a vertical sectional view illustrating another form of operating mechanism.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a box provided in its top with a central circular opening and having at one side a drawer 2^a, arranged to receive the ground coffee in the usual manner. Within the circular opening of the top of the box is supported a rotary grinding-shell 2, of truncated conical form, which is provided at its inner face with a grinding-surface 3 and which cooperates with a grinding-cone or runner 4.

The grinding-shell 2 is supported upon a lower horizontal bar 5, connected with the top of the box by vertical rods 6 and spaced from the said top by sleeves 7, arranged on the lower portions of the rods 6 and interposed between the upper face of the bar 5

and the lower face of the top of the box. The rods 6, which are provided at their lower ends with heads, pass through the top of the box at opposite sides of the opening and have threaded portions which receive nuts 8 and retain an upper horizontal bar 9 on them.

The grinding-cone 4, which is arranged within the outer shell 2, has a lower grinding-face at its sides, and its upper portion is tapered and corrugated and adapted to force the material downward between the lower portion of the cone and the shell, besides serving to crush the coffee. The said cone 4 is preferably formed integral with a vertical shaft or core 11, the lower portion of which depends from the bottom of the cone to form a journal 12, which is arranged in a central opening of the horizontal bar 5 and allows for the necessary vertical movement of the cone in adjusting the same to produce the desired degree of fineness.

The core or shaft 11 is provided at the top of the cone with a vertical cog-wheel 13, which meshes with a pair of pinions 14, located at opposite sides of the vertical shaft 11 and meshing with a cog-rim 15 of the outer shell 2, the upper portion of the latter being reduced at its inner face and provided with the teeth which form the cog-rim. The intermediate pinions 14, which are located between the shell and the cone, reverse the movement of the shaft and cause the shell to rotate in the opposite direction.

The pinions 14 are provided with integral hub extensions or journals 16, which are arranged in bearing-recesses 17 of a transverse casing 18, which is also provided with a central recess for the reception of the cog-wheel 13. The bearing-recesses 17 are enlarged at the bottom of the casing to receive the pinions 14, and the said casing forms a complete housing for the gearing, covering the top and sides thereof and preventing the same from becoming clogged by the coffee. The said casing is provided with a central opening to receive the shaft 11. It has ears 19 at its ends to receive the rods 6, and it is rounded at its top and sides between the ends, as shown, so as not to interfere with the downward passage of the coffee.

The coffee to be ground is placed within a

tapering hopper 20, which is provided at opposite sides with recesses 21 to receive the ends of the casing 18, and its lower edge is circumferentially rabbeted at its outer face to provide depending flanges 20^a at opposite sides of the recesses 21 to form guards to prevent coffee from coming in contact with the teeth of the outer shell 2, said guards being located opposite the teeth and fitting within the shell, as clearly illustrated in Fig. 3 of the accompanying drawings. The upper edge of the hopper is provided at opposite sides with notches 23, which receive the upper bar 9, and the latter has corresponding notches 24 at its lower face for engaging the hopper. The horizontal bar 9 is provided with a central opening to receive the shaft 11, and the nuts on the upper ends of the rods 6 retain sections 25 of a lid or cover on the rods, whereby the said sections 25 are hinged and are adapted to swing from over the hopper, as shown in Fig. 1. The sections 25 of the lid or cover are provided at opposite ends with perforated ears 26, which receive the upper terminals of the rods 6.

The upper portion of the shaft 11 is threaded at 27 and receives a milled nut 28, which is supported above the casing by a sleeve or thimble 29 and which is adapted to raise and lower the cone and vary the fineness of the grinding operation, so as to adjust the mill for grinding coarse or fine coffee. The adjusting-nut is provided at one side of its opening with a notch 30, adapted to receive a key 31, which engages one of a series of longitudinal grooves 32, whereby the nut is held at any desired adjustment. The upper end of the shaft is threaded and is adapted to receive a cap or nut 33, which retains a crank-handle 34 on a squared portion 35 of the shaft, the squared portion being located directly beneath the threaded portion. Instead of employing a crank-handle for operating the coffee-mill a pinion 35^a may be mounted upon the upper end of the shaft 11, as illustrated in Fig. 8 of the accompanying drawings, and the said pinion 35^a is adapted to mesh with a similar bevel-pinion 36 of a horizontal shaft 37, journaled in a suitable bracket or support 38, which is provided with a depending stem 39, adapted to take the place of one of the rods 6. The outer end of the shaft 37 is squared and is adapted to receive a wheel 40, having a crank-handle 41, or an ordinary crank-handle may be provided.

The invention has the following advantages: The coffee-mill, which is simple and comparatively inexpensive in construction, is easily operated and may be readily adjusted to grind coffee either coarse or fine. The adjusting mechanism is arranged within convenient reach, and the gearing, which reversely rotates the shell in the cone, is housed within the horizontal casing and is thereby prevented from becoming clogged with coffee. The hopper fits within the upper portion of the grinding-shell and forms opposite guards

which prevent the coffee from coming in contact with the internal teeth of the shell.

Changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

What I claim is—

1. In a device of the class described, the combination of a grinding-shell provided on its inner face with a grinding-surface and having interior cog-teeth, a hopper, a vertical shaft carrying a grinding-cone arranged within the shell and provided with a grinding-surface, a gear-wheel carried by the shaft, intermediate pinions meshing with the gear-wheel and the teeth of the shell, a horizontal casing extending across the shell and provided at its lower face with recesses receiving and housing the gearing and extending across the lower portion of the hopper, and means for rotating the shaft, substantially as described.

2. In a device of the class described, the combination of a lower rotary grinding-shell provided with internal teeth, a grinding-cone arranged within the shell, a vertical shaft carrying the cone, a horizontal casing open at the bottom and closed at the top and sides and extending across the top of the shell, said casing receiving and housing the gear-wheel, the intermediate pinions housed within the casing and meshing with the gear-wheel and the shell, and a hopper mounted upon the shell, provided at opposite sides with recesses to receive the casing and having depending guard-flanges located at opposite sides of the casing and arranged in front of the teeth of the shell, substantially as described.

3. In a device of the class described, the combination with a box or support having an opening, of rods passing through the box or support at opposite sides of the opening and extending above and depending into the same, a lower horizontal bar connecting the rods at the bottom thereof and provided with a central opening, sleeves disposed on the rods and interposed between the lower connecting-bar and the box or support, a vertical shaft having a grinding-cone and provided with a depending portion or journal arranged in the opening of the lower connecting-bar, a grinding-shell receiving the cone and supported by the lower connecting-bar and arranged at its upper edge in the opening of the box or support, a hopper located above the shell, and a top connecting-bar secured to the upper ends of the rods and extending across the top of the hopper, substantially as described.

4. In a device of the class described, the combination of a box or support having an opening, vertical rods passing through the box or support at opposite sides of the opening, a lower connecting-bar secured to the lower ends of the rods, a grinding-shell supported upon the lower connecting-rod, a hop-

per, a vertical shaft having a grinding-cone and provided with a threaded upper portion, a horizontal casing, gearing housed within the casing and meshing with the shell and
5 connecting the same with the shaft, an upper connecting-bar secured to the rods and located above the hopper, and an adjusting-nut arranged on the threaded portion of the shaft and interposed between the upper con-
10 necting-bar and the casing, substantially as described.

5. In a device of the class described, the combination of a box or support having an opening, vertical rods passing through the
15 box or support at opposite sides of the open-

ing, upper and lower bars connecting the rods, a grinding-shell supported by the lower bar, a horizontal casing connecting the rods between the ends thereof, a hopper mounted above the shell, a vertical shaft, gearing
20 housed within the casing and connecting the shell and the shaft, and means for operating the shaft, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in
25 the presence of two witnesses.

JOHN RHINO.

Witnesses:

ABRAHAM LARIVÉE,
JAMES D. FOX.