No. 834,105. PATENTED OCT. 23, 1906.

A. E. BRONSON, JR.

COFFEE MILL.

APPLICATION FILED JULY 1, 1901.

3 SHEETS—SHEET 1.

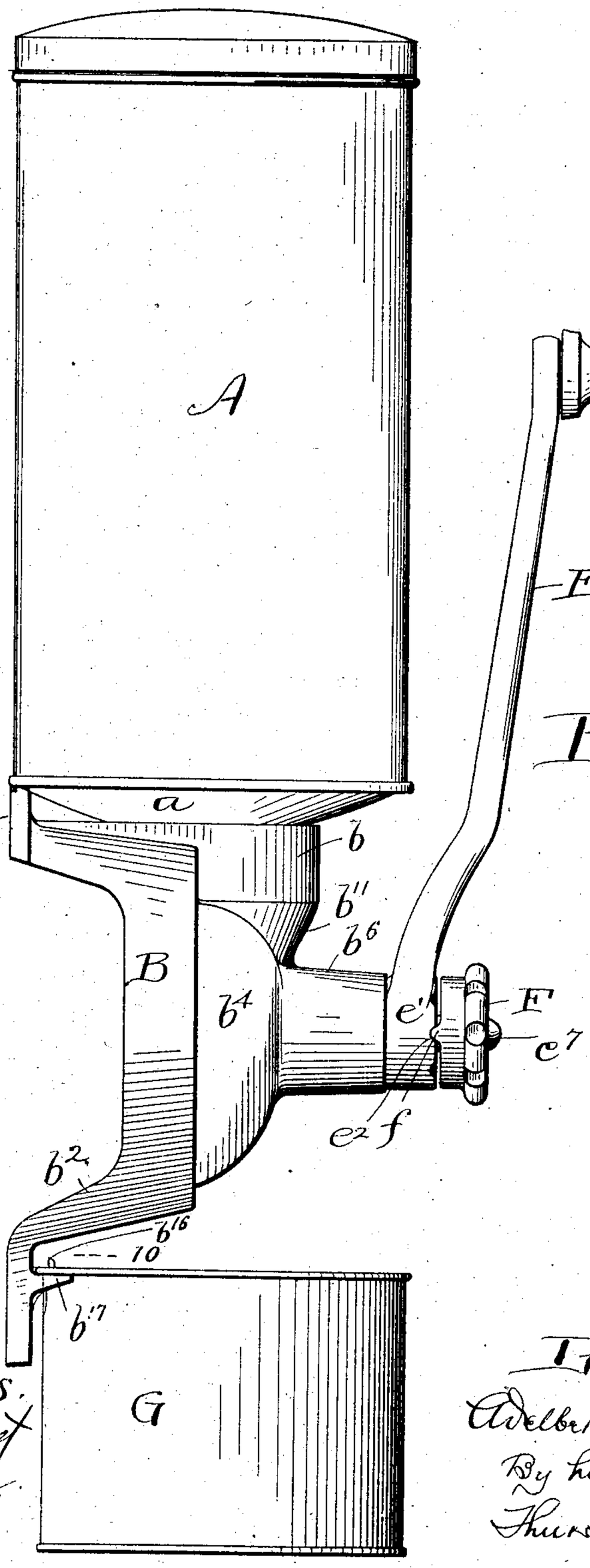


Fig. 1.

Witnesses.
E. B. Gilchrist
H. M. Wise.

Inventor.
Adelbert E. Bronson Jr.
By his Attorneys,
Thurston & Bates.

No. 834,105. PATENTED OCT. 23, 1906.

A. E. BRONSON, JR.

COFFEE MILL.

APPLICATION FILED JULY 1, 1901.

3 SHEETS—SHEET 2.

Fig. 2,

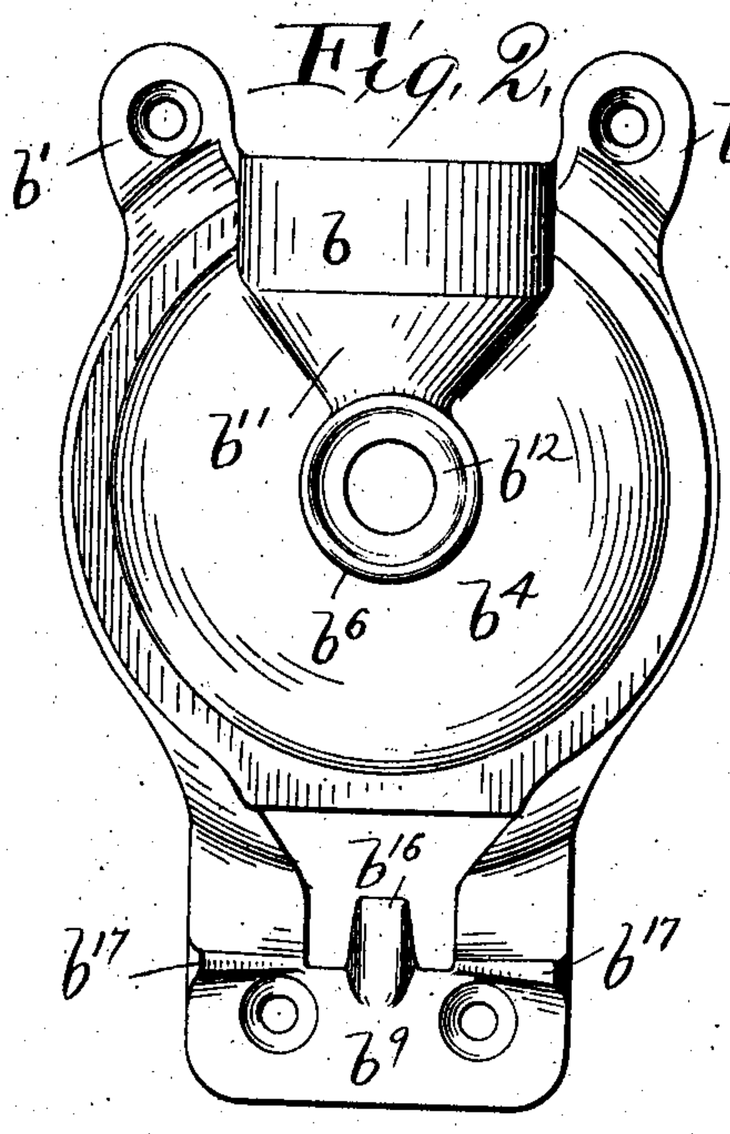


Fig. 3,

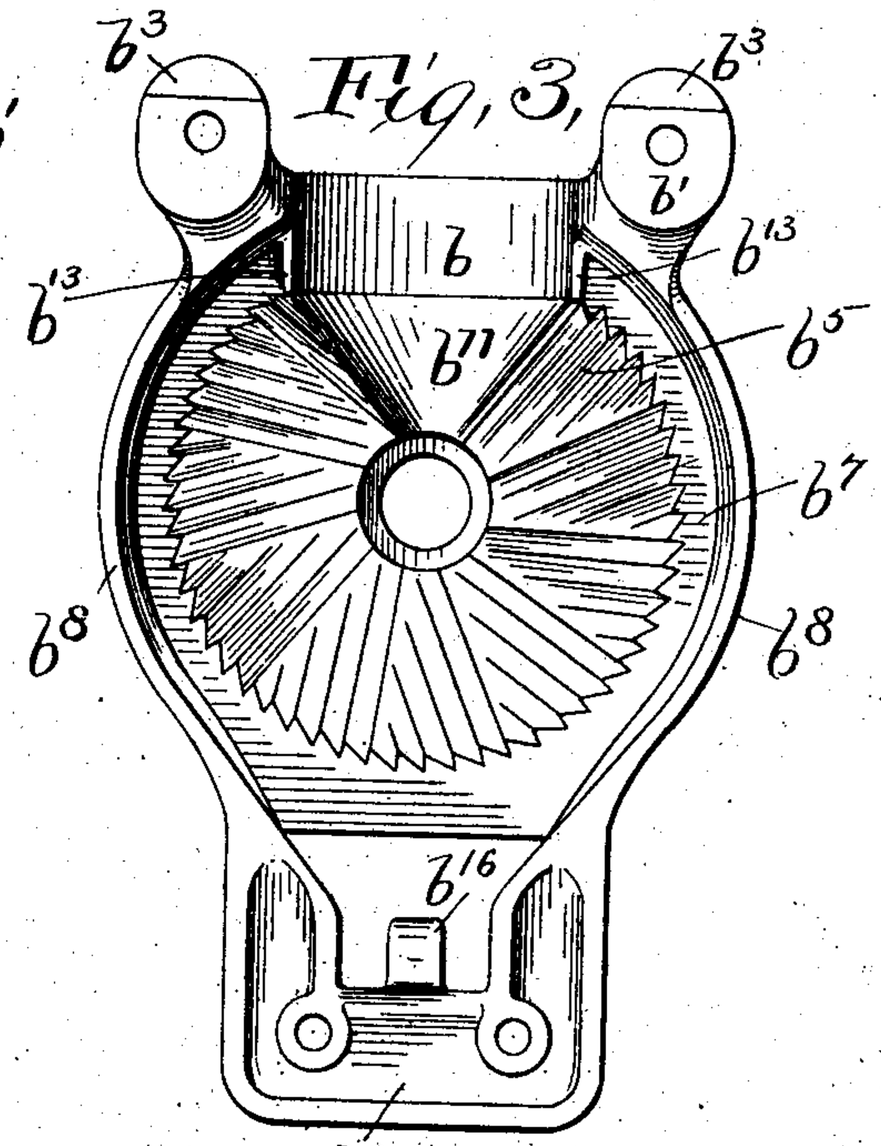


Fig. 4,

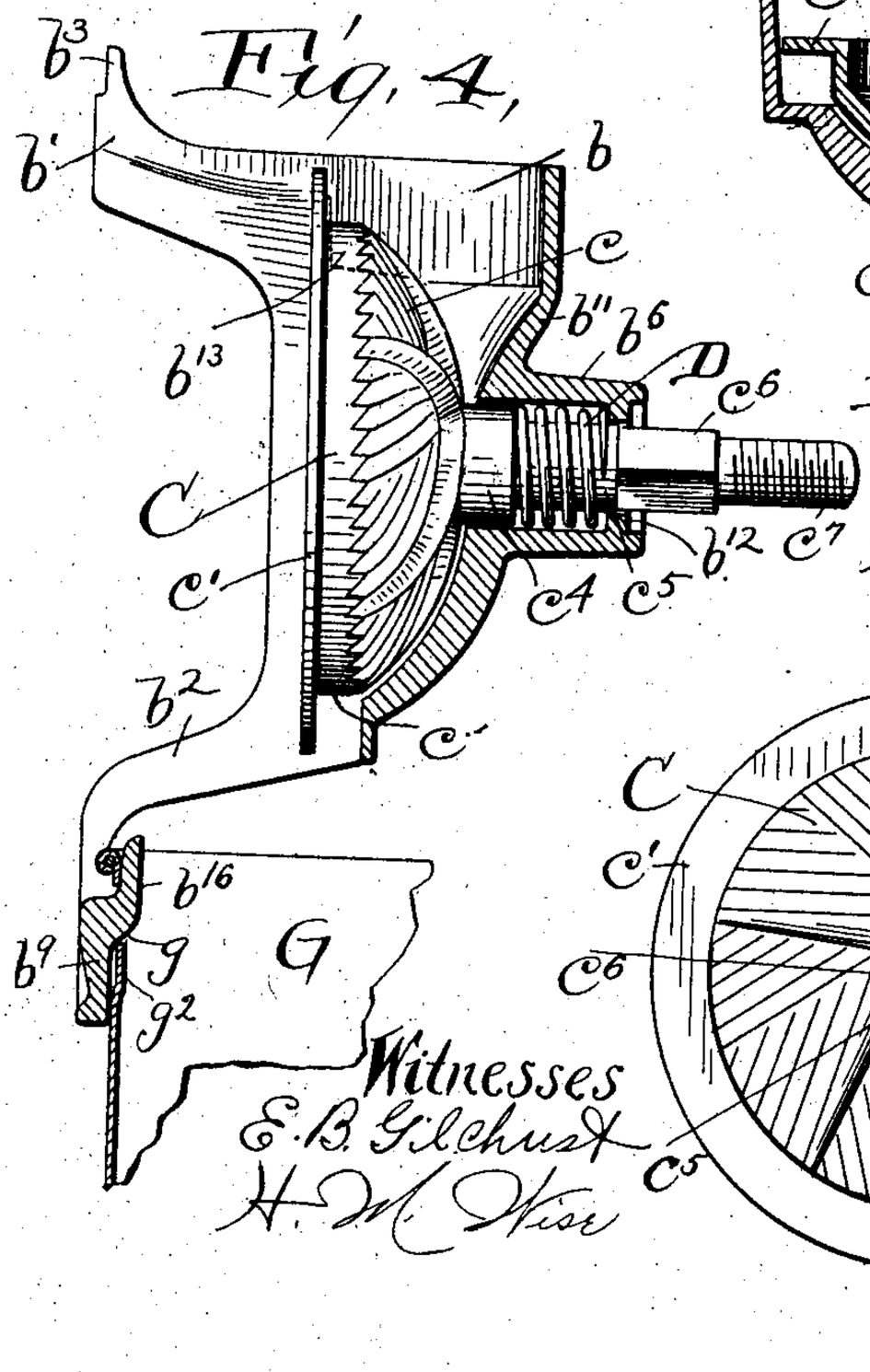


Fig. 5,

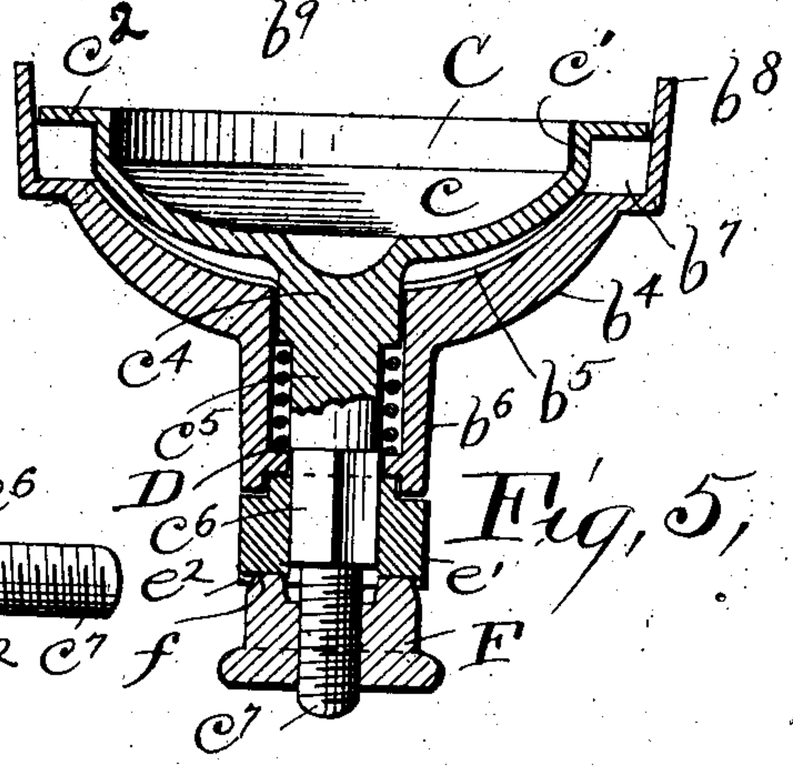
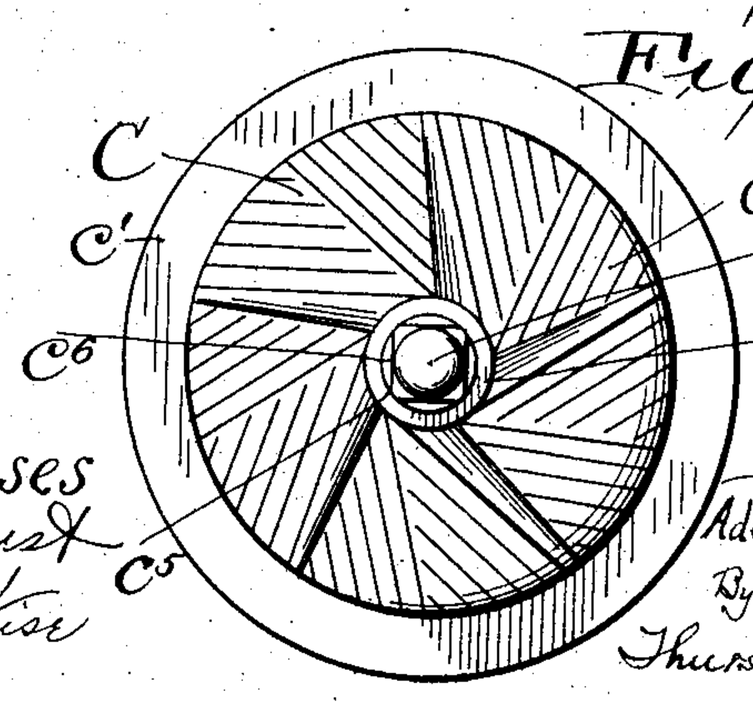


Fig. 6,



Witnesses
E. B. Gilchrist
H. M. Wise

Inventor:
Adelbert E. Bronson Jr.
By his Attorneys,
Thurston & Bates.

No. 834,105. PATENTED OCT. 23, 1906.

A. E. BRONSON, JR.

COFFEE MILL.

APPLICATION FILED JULY 1, 1901.

3 SHEETS--SHEET 3.

Fig. 7,

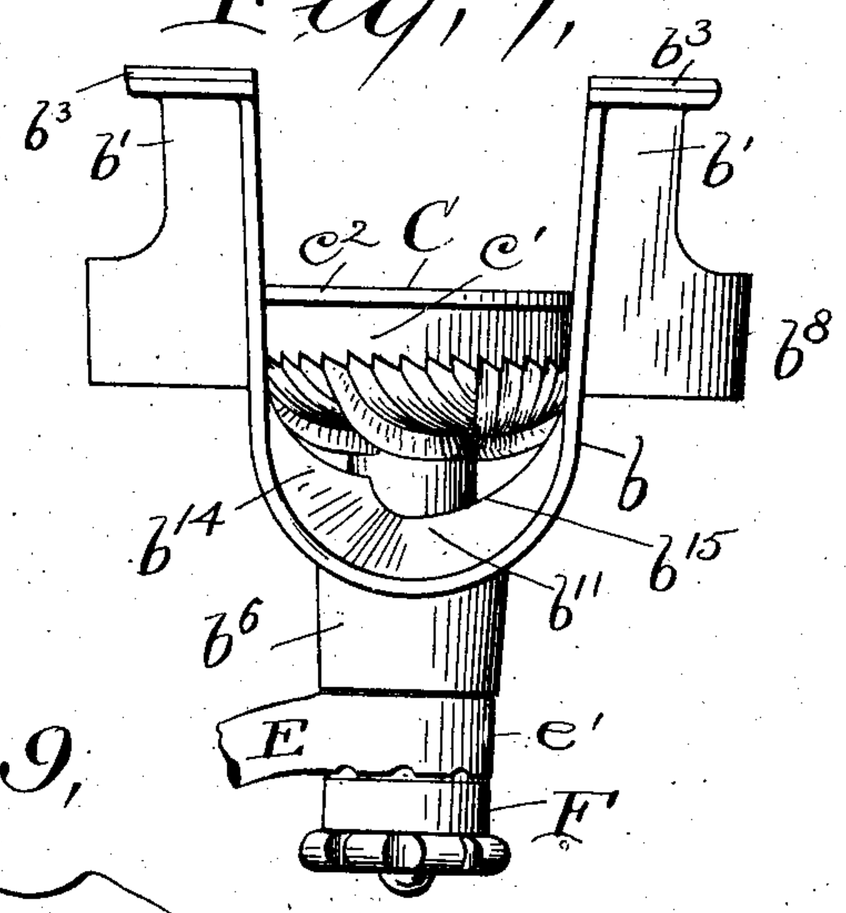


Fig. 9,

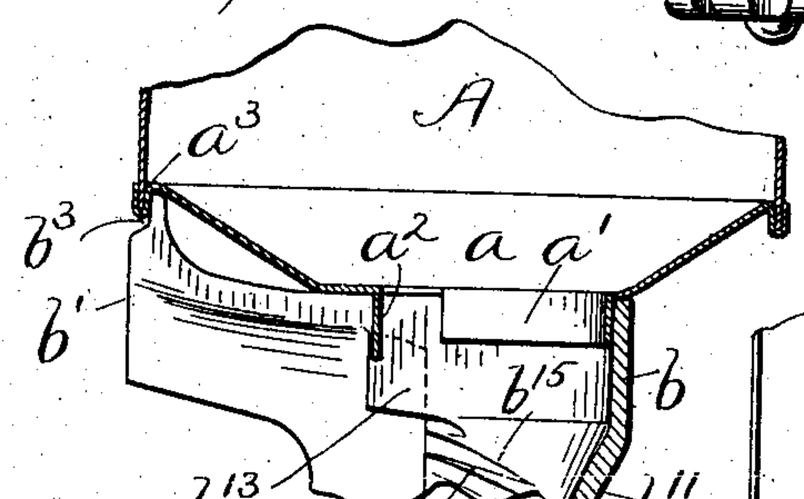


Fig. 8,

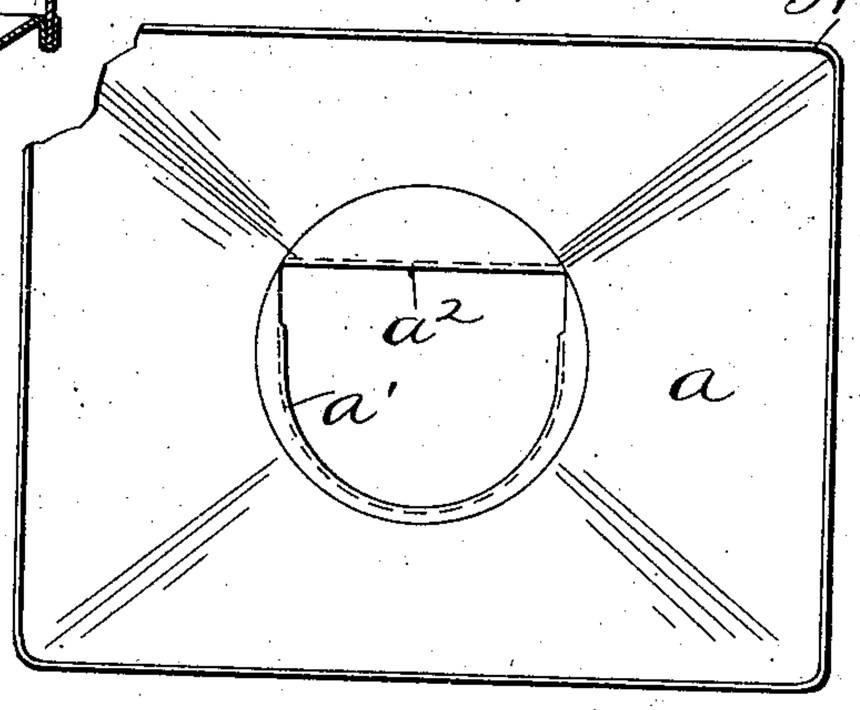


Fig. 10,

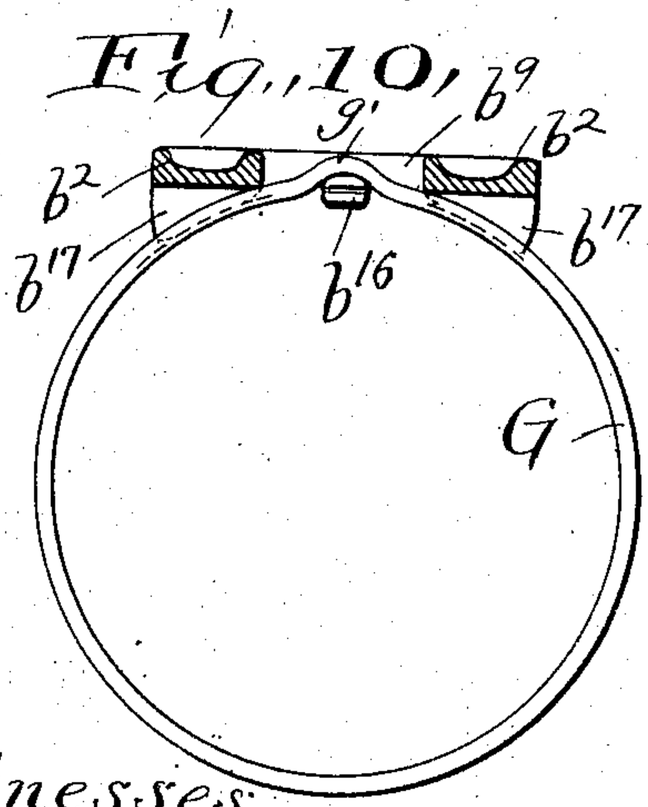


Fig. 11,

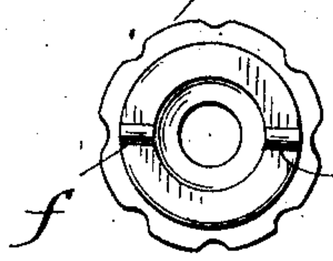
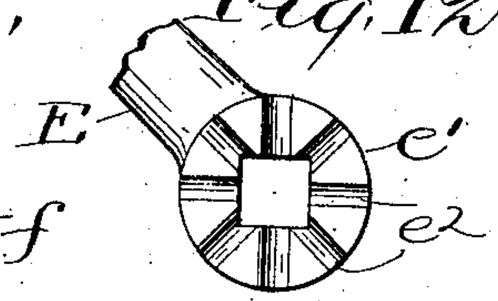


Fig. 12,



Witnesses
E. B. Gilchrist.
H. M. Wise

Inventor,
Adelbert G. Bronson Jr.
By his Attorneys,
Thurston & Bates

UNITED STATES PATENT OFFICE.

ADELBERT E. BRONSON, JR., OF CLEVELAND, OHIO, ASSIGNOR TO THE BRONSON-WALTON COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

COFFEE-MILL.

No. 834,105. Specification of Letters Patent. Patented Oct. 23, 1906.

Application filed July 1, 1901. Serial No. 66,693.

To all whom it may concern:

Be it known that I, ADELBERT E. BRONSON, Jr., a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Coffee-Mills, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The object of this invention is to provide a coffee-mill which shall be efficient and durable in service and at the same time very cheap to construct. The mill includes a shell formed with a stationary bur and a coöperating running bur, a canister for feeding them, and a cup for receiving the ground product.

The present invention is concerned with the arrangement of the running bur, whereby it at once presents a grinding-surface and a back for the machine, with the adjustment of the running bur, and with the arrangements for supporting the supply-canister and the receiving-can. It may be conveniently summarized as consisting in the combinations of elements to the above ends, or some of them, as hereinafter explained and enumerated in the claims.

The drawings clearly show the invention.

Figure 1 is a side elevation of the mill complete; Fig. 2, a front elevation of the shell; Fig. 3, a rear elevation of the shell; Fig. 4, a vertical central section through the shaft of the running bur; Fig. 5, a horizontal section through such shaft; Fig. 6, a face elevation of the bur; Fig. 7, a plan of the shell; Fig. 8, a plan looking into the canister; Fig. 9, a vertical section through the upper portion of the shell and the base of the canister; Fig. 10, a plan of the receiving-cup in place, being sectioned through the legs of the shell as on the line 10 10 of Fig. 1. Figs. 11 and 12 are views of the coöperating faces of the adjusting-nut and crank, respectively.

Referring by letters to the parts shown in the drawings, A represents the canister or receptacle which is adapted to contain the coffee, for example, and may be of any suitable form or material. It has a hopper-like base a, in which there is a hole bounded by a straight line at the back and curved around the front, as shown in Fig. 8. At the edge of this hole are depending flanges a' a^2, formed by turning down the metal of the base. The flange a' is thus of a U shape and engages and makes a close connection with the inner side of the shell B, the upper end of which has the U-shaped wall b, as clearly appears from Fig. 7. The flange a^2 extends across between the two sides of this wall, preventing escape of unground material at the back.

The shell B is supported from a backboard or other suitable vertical support by the two upper legs b' and the two lower legs b^2. These upper legs are recessed at their extreme upper edges, as shown at b^3, and in this recess takes the depending edge a^3 of the canister, which is thus clamped against the backboard or other support. The canister may, if desired, be fastened, in addition, near its upper end by a nail or screw to the backboard.

The shell B is preferably one integral casting. It has a dome-like body b^4, on the inner face of which are grinding-ribs b^5, constituting the stationary bur. Centrally of the body, on the outer side, is a boss b^6, which is hollow. Beyond the outer edge of the grinding-ribs b^5 is the annular flat space b^7, and around the edge of this is the partially-cylindrical wall b^8. This wall b^8 merges at its upper end into the U-shaped wall b and the supporting-legs b' and at its lower end into the legs b^2. The wall is thus discontinued between the legs both above and below to allow free entrance and exit openings. The legs b' above preferably continue separated, while those below are joined by an integral cross-bar b^9. Beneath the forward portion of the U-shaped wall b the dome b^4 becomes hopper-like, as at b'' and merges with the wall.

The running bur is designated C. It has a dome-like body c, roughened or ribbed on its convex side, while at the edge of these ribs is a short cylindrical wall c', at the edge of which is an annular flange c^2. The external diameter of this flange is just slightly less than the internal diameter of the wall b^8 of the shell. The running bur and shell in use occupy the relative position shown in Figs. 4 and 5, and thus the wall b^8 forms a guide for centering the running bur.

Extending from the center of the bur is the shank, which is made in special form—namely, there is first a cylindrical portion c^4, then a cylindrical portion of smaller diameter c^5, beyond this a squared portion c^6, and beyond this a threaded portion c^7. The

shank of the bur is long enough to extend through the boss b^6 and somewhat beyond. Surrounding the portion c^6 of the running-bur shank is a coiled spring D, which in operation is compressed between the shoulder formed by the enlarged portion of the shank and an inwardly-projecting annular flange b^{12}, formed around the bore of the boss b^6. This spring thus when compressed tends to separate the two grinding-surfaces. The portion c^4 of the shank not only forms a bearing-surface for the rotation of the running bur, but keeps the spring out of the way of the coffee being ground. By making the shell and bur in the dome-like form shown a much-more efficient result is obtained than if they were either conical or flat, for by my construction the grinding area near the shank is relatively increased, whereby an increased leverage is obtained for grinding—that is, a greater proportion of the grinding is done near the center, and hence more efficiently.

The running bur is rotated by the crank E, which has the usual handle e at its outer end and at its inner end has a head e' with a squared hole surrounding the portion c^6 of the running-bur shank. A nut F screws onto the threaded end c^7 of the shank and by being turned to various positions adjusts the distance between the two grinding bur-surfaces, the nut drawing the surfaces together and the spring D tending to force them apart. In order to prevent the nut working loose and to obviate the necessity of an additional jam-nut, I provide one or more locking projections f on the inner face of the nut, which are adapted to register with various recesses e^2 on the outer face of the crank. The force of the spring keeps the projection and groove in engagement wherever they may be left, so that the nut will not work loose. The yielding force of the spring, however, allows the nut to be turned in either direction, as desired, to adjust the mill.

The coffee or other coarse material to be ground passes from the supply-canister A through the entrance-passage provided by the walls b and b'' into the space between the grinding-surfaces b^5 and c and is ground as it passes downward and outward between them, the ground coffee passing into the annular conduit provided by the surfaces b^7 b^8 c' c^2, Fig. 5, and discharging between the legs b^2 b^2. In order to prevent it being carried around after being ground, I make the ribbed surface b^5 of the shell in such form that at one side of the entrance-opening it is too close to the running bur to let the ground material pass back into the entrance-opening, while on the other side it is far enough away from it to admit the unground material. Thus in a right-hand mill when the running bur is in place the grinding-surface of the stationary bur at the left-hand side of the entrance-passage b^{14}, Fig. 7, is very nearly in contact with the running bur, while at the right-hand side b^{15} it is a considerable distance from it, and the mill being turned in a right-hand direction to grind the coffee the latter will necessarily pass into the large opening, but when ground cannot pass back into the entrance-opening, but drops into the annular space at the outer edge, a pair of lugs b^{13} projecting rearward at either side of the entrance-opening to the shell, preventing unground material passing into this annular space. The wall b^8 is deep enough so that the flange c^2 of the running bur is within it in all portions of adjustment, the bur thus constituting the back of the mill.

The can G which receives the coffee is very simply supported by the shell as follows: In the rear side of the can, near the top, is made an opening g beneath the wire thereof, and this opening hooks over an integral lug b^{16}, projecting upward from the cross-bar b^9 between the lower legs of the shell, while this can is held in position by the projecting lugs b^{17} b^{17}, standing on each side of the lug b^{16} and having faces inclining thereto, so that these lugs may conveniently engage the cylindrical surface of the can. To make the can hang true, I bend back a little the upper edge and its wire just above the opening g, as indicated at g', Fig. 10. It is of advantage also to slightly bend forward the can just below the opening g, as shown at g^2, Fig. 4.

Having described my invention, I claim—

1. A coffee-mill composed of a vertical shell and a running bur mounted thereon and supported thereby, said vertical shell having upon one face a stationary bur adapted to coöperate with the running bur, a short cylindrical portion extending from the periphery of the running bur having an annular flange extending radially therefrom, a flange on each side of the shell embracing the rear portion of running bur in such manner as to approach the annular flange referred to and form side channels for guiding the ground material downward to a discharge-opening.

2. A coffee-mill comprising a vertical stationary shell having a stationary bur formed on its inner face, a running bur mounted on and supported by said stationary shell and adapted to coöperate with the stationary bur formed thereon, flanges extending from the peripheries of the running bur and stationary shell at an angle to each other and approaching each other closely in such manner as to form guiding side channels for leading the ground material to a discharge-opening, the upper portion of the stationary shell being swelled so as to form a feed-chute, and short walls at each side of the chute extending rearwardly toward and approaching closely to the said flange on the running bur, thereby closing the upper ends of the said side channels so as to prevent entrance thereto of unground material from the chute.

3. In a coffee-mill, a vertical shell having an upwardly-extending swelled wall with a smooth vertical mouth, a running bur having a radially-extending annular flange projecting from its base, said flange forming together with said swelled wall the entrance-passage to the grinding-burs, a canister above said shell having in its base an opening, flanges depending vertically from the edge of said opening, the forward flange fitting the mouth of the swelled wall and the rear flange extending from side to side of the passage-way in front of the annular flange of the running bur, and supporting means on the rear of said vertical shell adapted to form in connection with said front wall a support for the canister whereby the same may be readily removed and attached.

4. In a coffee-mill, a stationary shell having a stationary bur thereon, a rotary bur mounted on the stationary shell and having a radial extension, an open-topped swelled feed-chute on the upper part of the stationary shell having its wall vertical about the edge, a canister above the shell having an opening in its bottom, vertical flanges depending about said opening, the forward flange fitted to the vertical wall of the feed-chute, the rear flange depending in front of the radial extension on the running bur, a rearward projection of the shell having a vertically-walled ledge, and a vertically-depending flange on the canister fitted to said ledge, whereby the canister may be removed and applied to the shell without adjustment of the various parts.

5. In a coffee-mill, a vertical shell adapted to be secured to a support and having an upwardly-extending wall forming an entrance-passage to the grinding-burs, legs projecting from the rear of said wall, shoulders on said legs, a canister above said shell having an opening in its base, flanges depending from the edge of the opening, the forward flange engaging the upwardly-extending wall, the rear flange extending across the feed-passage from side to side, the rear edge of the canister being constructed to engage the shoulders on said legs, whereby the canister may be firmly held in place between the upwardly-extending wall of the shell and the support on which the mill may be mounted.

6. In a coffee-mill, a vertical shell having rearwardly-extending legs, the extreme ends of said legs being recessed at their upper edges, combined with a canister above said shell, having an opening in its base communicating therewith, and a downwardly-extending flange adapted to project into and occupy the recess provided in said legs, substantially as described.

7. In a coffee-mill, a shell having a delivery-orifice for the ground material and an upwardly-extending projection below the delivery-orifice and lateral lugs extending horizontally on each side of said vertical projection, a receiving vessel having an opening adapted to hook over the vertical projection and a bead or flange on each side of said opening adapted to rest on the lateral projecting lugs.

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

ADELBERT E. BRONSON, JR.

Witnesses:
ALBERT H. BATES,
H. M. WISE.