

(No Model.)

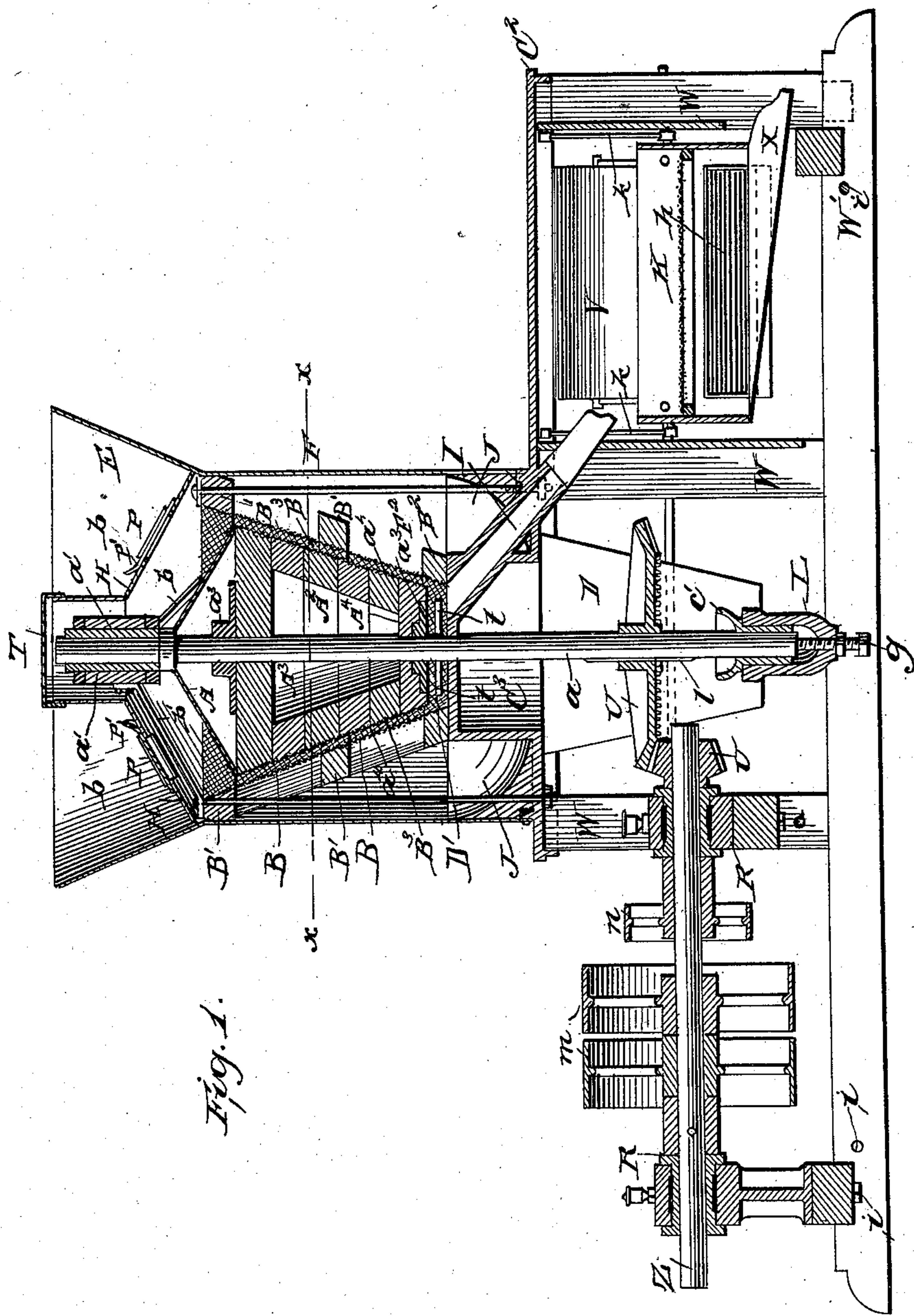
3 Sheets—Sheet 1.

A. GALLARDO.

MACHINE FOR PEELING, POLISHING, AND CLEANING COFFEE.

No. 402,318.

Patented Apr. 30, 1889.



WITNESSES:

W. R. Davis.
Ch. Sutgwick

INVENTOR:

A. Gallardo
BY *Munn & Co.*
ATTORNEYS.

(No Model.)

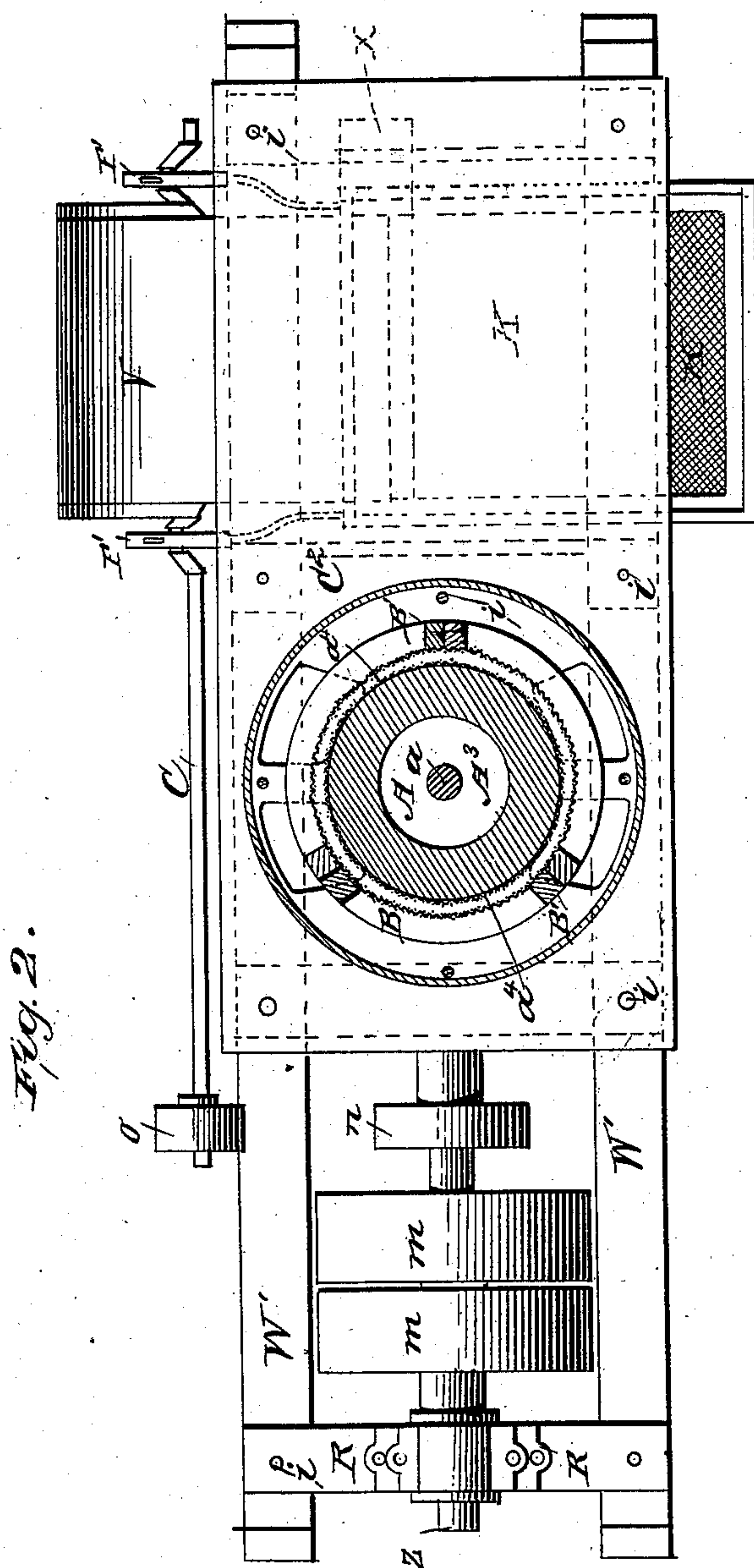
3 Sheets—Sheet 2.

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W. R. Davis,
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INVENTOR:

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ATTORNEYS.

(No Model.)

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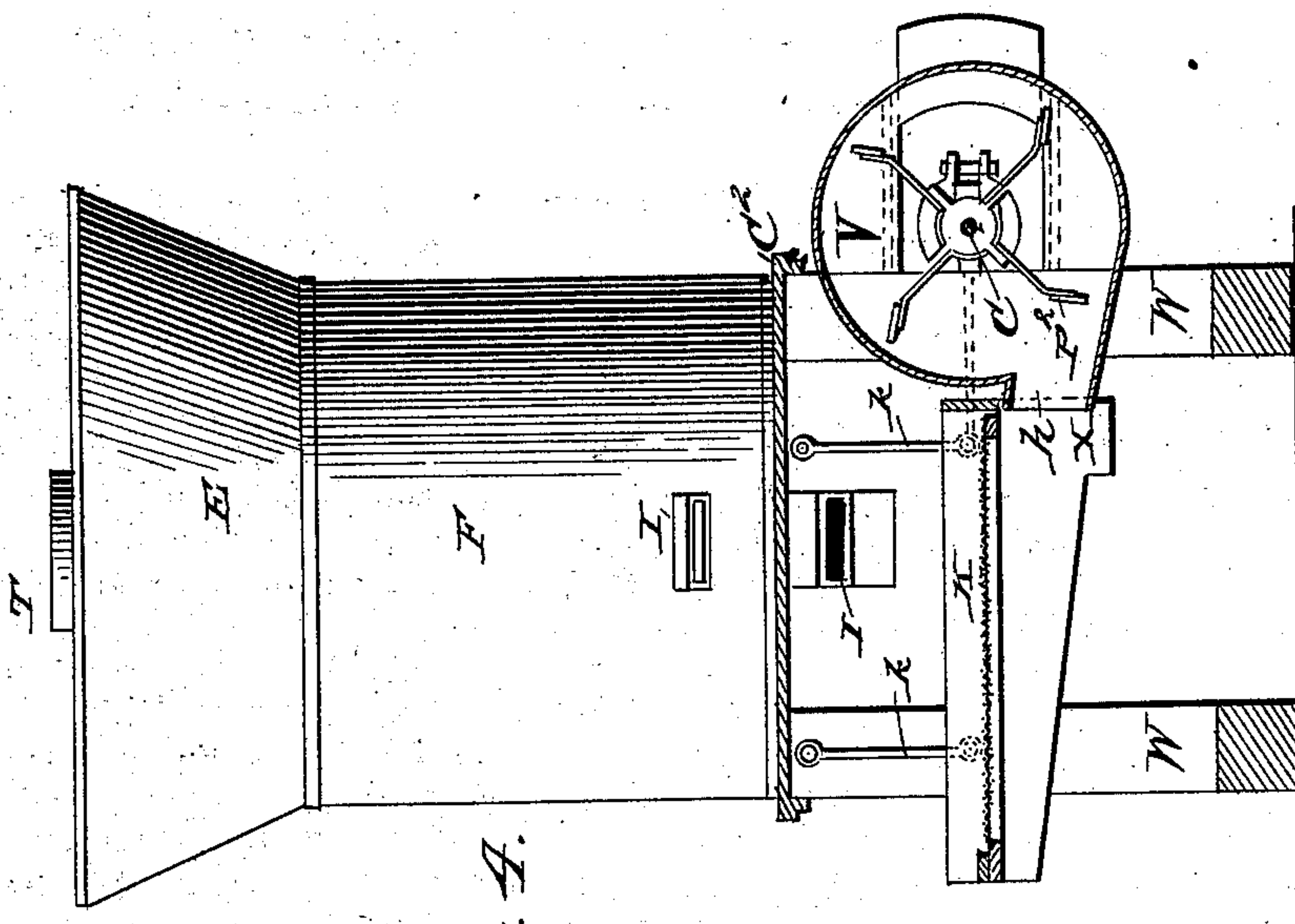


Fig. 4.

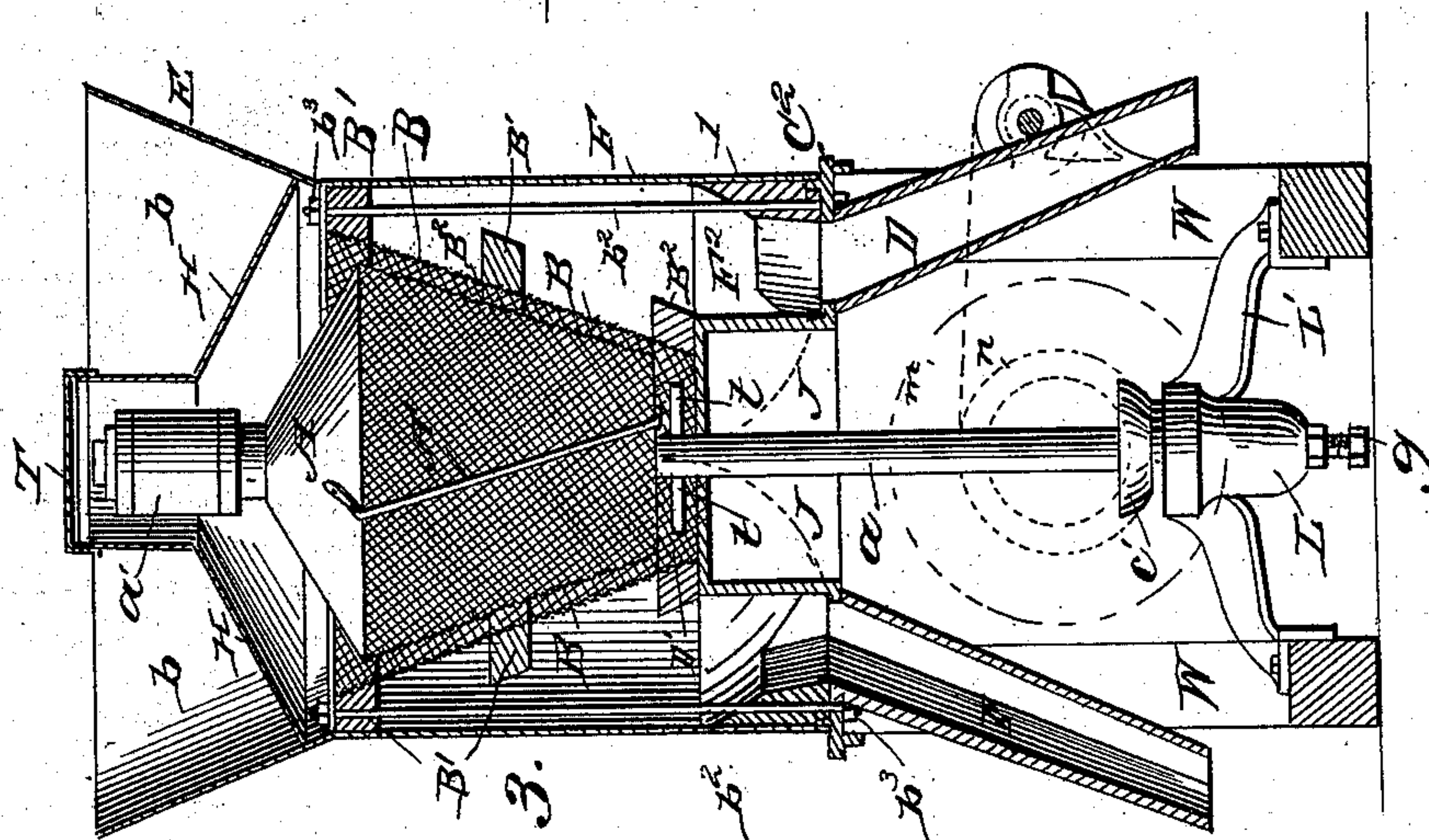


Fig. 3.

WITNESSES:

W. R. Davis.
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INVENTOR:

A. Gallardo

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Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

AUGUSTO GALLARDO, OF SAN JOSÉ, COSTA RICA.

MACHINE FOR PEELING, POLISHING, AND CLEANING COFFEE.

SPECIFICATION forming part of Letters Patent No. 402,318, dated April 30, 1889.

Application filed October 20, 1887. Serial No. 252,893. (No model.) Patented in Costa Rica July 29, 1887.

To all whom it may concern:

Be it known that I, AUGUSTO GALLARDO, a citizen of the Republic of Costa Rica, Central America, residing at San José, Costa Rica, have invented a new and useful Machine for Peeling, Polishing, and Cleaning Coffee, (for which I have obtained a patent from the government of Costa Rica, Decree No. 52, dated July 29, 1887,) of which the following is a specification.

My invention relates to the particular construction and combination of parts, as hereinafter fully described, and pointed out in the claim.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the views.

Figure 1 is a vertical section of the machine, showing the power mechanism and a fan or winnowing apparatus. Fig. 2 is a section on the line $x x$, Fig. 1. Fig. 3 is a view of the peeling and polishing apparatus with the casing and hopper in vertical section, and Fig. 4 is a view of the casing and hopper with the vibrating screen and fan-casing in vertical section.

In setting forth the construction of the machine I will commence with that portion thereof in which the coffee is fed to the machine and is peeled and polished. For this purpose the casing F, preferably of sheet metal, is mounted on a platform, C^2 , supported by uprights W, resting in a base-frame, W' . The platform C^2 is formed with an elevated portion, C^3 , through which passes a shaft, a , having its upper end mounted in a sleeve, a' , supported by arms or brackets b' , and its lower end resting in a sleeve, c' , mounted in a bearing, L, supported by the arms L' .

Within the casing F an inverted cone-frustum, A^2 , is mounted on the shaft a by means of the collars a^3 , secured to the solid frame A^3 , upon which is stretched a web or wire netting, a^4 , of suitable fineness, attached at its upper edge to a tapering top, A, preferably of metal, and at its lower edge to a base-piece, A^4 . The cone-frustum A^2 is adapted to rotate within and is concentric with a fixed cone-frustum, B, of wire-netting of suitable texture and fineness, which is mounted upon

a frame-work, B' , having its base B^2 resting on the elevated portion C^3 of the platform C^2 . The upper part of the frame-work B' is braced by means of rods b^2 , connecting it with the platform C^2 , and secured by nuts b^3 . The cone-frustums A^2 and B are located, relatively to each other, so as to form a space, B^3 , between them for the passage of the coffee. The cone-frustum A^2 is provided on its outside with diagonally-extending rods A' , for a purpose hereinafter explained.

It will be seen that the cone-frustums are surrounded by a hollow space, F^2 , within the casing F, the bottom of which is formed of curved blocks J, of wood or other suitable material, which are provided with openings d , connecting with conduits D, for the passage of the material dropping from the cone-frustums.

The upper part of the casing F is provided with flaring sides, forming a hopper, E, which has an inclined bottom, H, provided with openings P and slides P' , which admit the coffee. The upper ends of the shafts a are covered and protected by means of the extended portion of the bottom H, provided with the cap T. It will be seen that the arms or brackets b' are secured to the upper part of the frame B' .

Below the base A^4 of the cone-frustum A^2 is a space, D' , in which stirrers or arms t , mounted on the shaft a , are adapted to rotate and stir the coffee descending between the cone-frustums. The space D' connects by means of a conduit, I, with a vibrating screen, K, mounted on swinging arms k , pivoted to the frame-work and having an inclined chute, X. The vibrating screen K is actuated by means of eccentric-rods F' , mounted on the shaft C, having a suitable band-pulley, o , (see Fig. 1,) the shaft C carrying the fans P^2 within the casing V, whereby a current of air is driven through the opening h beneath the vibrating screen K.

The shaft a is driven by any suitable mechanism. For the purpose of illustration I have shown it driven by a bevel-gearing, U, actuated by a shaft, Z, mounted in cross-pieces R of the base-frame, and provided with band-pulleys m and n .

The cone-frustum A^2 is adjusted by means

of a set-screw, *g*, bearing against the lower end of the shaft *a*, whereby the space between the cone-frustums may be increased or diminished, so as to allow a greater or less amount of coffee to be located therein. The shaft *a* passes freely through the gear-wheel *U*, so as to allow it to be raised or lowered to adjust the cone-frustum *A*², and the said gear-wheel is locked to the shaft by the spline *l* on the said shaft.

The operation of my device is as follows: The coffee is placed in the hopper *E* and its flow through the outlets *P* is regulated by means of the slides *P'*. The coffee, passing through the space *B*³ between the cone-frustums *A*² and *B*, is rubbed between them by means of the cone-frustum *A*², rotating on the shaft *a*, and by means of the diagonal arms *A'*, and on reaching the space *D'* is agitated by the stirrers *t*, and passes off by means of the conduit *I* onto the vibrating screen *K*. In its passage between the cone-frustums *A*² and *B* the dust and a majority of the parchment fall through the netting of the cone-frustum *B* into the chamber *F*² and onto the curved bottom *J* thereof and passes off through the conduits *D*. The coffee, falling upon the shaking-screen *K*, is cleaned by the vibration thereof and the winnowing action of the fans *P*² in the casing *V*. The dust, falling through the screen *K*, drops onto the chute *X* and is carried along by its vibration.

By this machine I utilize the pressure of the mass of coffee entering through the openings *P* and produce harder or lighter rubbing of the grains upon each other and the walls of the inner and outer cone-frustums, which pressure and rubbing can be increased or diminished in intensity in two ways—first, by opening or closing (more or less) the slides *P'*, and, second, by raising or lowering the inner cone-frustum, thus enlarging or diminishing the space between the two cone-frustums. The inner cone-frustum, rotating from the time the grains of coffee enter the space between the two cone-frustums, and the cone-frustum being of conical form, various beneficial effects are produced upon the coffee in its transit to the outlet below by reason of the following considerations: First, the grains of coffee

in contact with the face of the rotating inner cone-frustum tend to fall outward; second, the grains of coffee in contact with the outer cone-frustum tend to go upward, and would do so if the walls of the outer cone were smooth; and, third, the grains of coffee pressed down by the weight of the mass of coffee above are forced to descend gradually, the inner cone-frustum being large above and small below. The coffee when it first enters the machine, following the motion of the said inner cone, travels in a diminished spiral. Consequently the coffee moves faster at the top than below, the speed gradually lessening as it descends. As the result of these diverse tendencies, there is friction among the grains of coffee and against the walls of the two cone-frustums, producing the desired result of peeling—that is, rubbing off the parchment or skins and polishing all the grains of coffee, whatever may be their varying sizes.

Coffee after being dried has three coatings or parchment-like skins—first, a thick exterior parchment, which contains both half-grains of the berry; second, a secondary parchment covering each separate half-grain, and, third, a thin parchment below the parchment last mentioned. With my machine the coffee with all three of its parchments can be readily treated.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In a machine for cleaning and polishing coffee, the combination, with a casing provided with a hopper at its upper end and with openings in its bottom, of a stationary inverted cone-frustum of wire-gauze, supported on the casing, a rotary inverted cone-frustum covered with wire-gauze, arranged within the stationary cone-frustum with a space between them, and provided with diagonal rods on its outside, and a spout leading from the space between the said inverted cone-frusta, substantially as herein shown and described.

AUGUSTO GALLARDO.

Witnesses:

LÉON DE GATSKOFFSKY,
CARLOS VON BÜLOW.