



C. L. HALL.  
Coffee Roaster.

No. 231,486.

Patented Aug. 24, 1880.

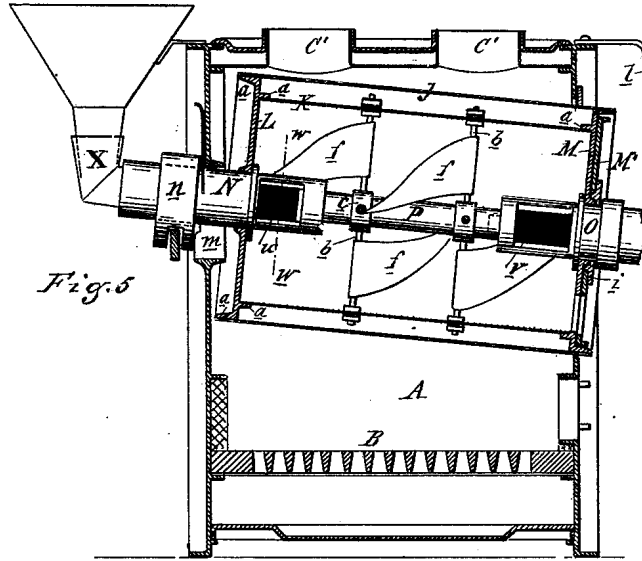
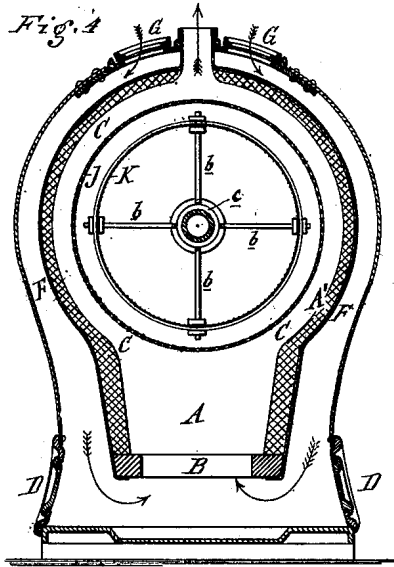


Fig. 6

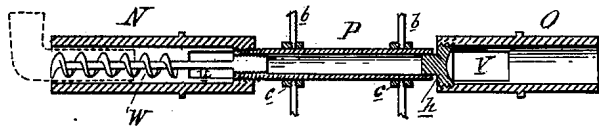
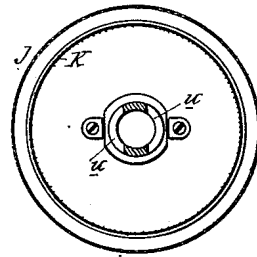


Fig. 7



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# UNITED STATES PATENT OFFICE.

CASSIUS L. HALL, OF YPSILANTI, MICHIGAN.

## COFFEE-ROASTER.

SPECIFICATION forming part of Letters Patent No. 231,486, dated August 24, 1880.

Application filed December 15, 1879.

*To all whom it may concern:*

Be it known that I, CASSIUS L. HALL, of Ypsilanti, in the county of Washtenaw and State of Michigan, have invented an Improvement in Coffee-Roasters, of which the following is a specification.

The nature of this invention relates to certain new and useful improvements in the construction of coffee-roasters; and the invention consists in the peculiar construction, arrangement, and combinations of the various parts, all as more fully hereinafter set forth.

In the drawings, Figure 1 is a front perspective view. Fig. 2 is a rear perspective. Fig. 3 is an elevation of the rear end with the gearing removed. Fig. 4 is a vertical cross-section through one of the smoke-flues. Fig. 5 is a central vertical longitudinal section. Fig. 6 is a longitudinal central section of the shaft with hopper removed. Fig. 7 is a cross-section on line *w w* in Fig. 5.

In the accompanying drawings, which form a part of this specification, A represents the furnace-chamber, B the grate, C the furnace, and D the ash-doors, which allow easy access to the ash-pit.

The furnace-chamber extends all around the roasting-cylinder, and is provided at top with two exit-flues, *C' C'*, which are so located at each end as to distribute the heat evenly by carrying the hot gases of combustion away from the center, and thus prevent central overheating, as is generally the case where but one central smoke-flue is provided.

The furnace-chamber A is lined on the sides from top of grate to the base of smoke-flues with a fire-proof composition, A', of sufficient thickness to prevent the destruction of the oven by the direct heat when the draft-flues are closed.

F is an air-chamber, which surrounds the furnace-chamber on both sides, and is provided on top, each side of the smoke-flues, with the dampers G, through which the air is fed under the furnace below. By this arrangement I prevent a great loss of heat from radiation to the outside, while the air, which in its downward course impinges against the heated walls of the furnace-chamber, is fed in a highly-heated condition.

The roasting-cylinder, consisting of an outer

shell, J, and inner shell, K, both attached to the heads L and M and mounted on a central shaft, is made to rotate freely inside the cylindrical portion of the furnace-chamber, leaving room enough for the heated gases of combustion to pass around said cylinder on all sides. Thus when the roasting-cylinder is properly rotating I prevent all chances of burning the roasting material by presenting the entire surface of the roasting-cylinder in succession to the action of the heat.

The outer shell, J, of the roasting-cylinder is preferably made of sheet metal, and may or may not be provided with perforations to allow the exit of steam and other gases liberated by the process of roasting. The inner shell, K, of the roasting-cylinder is made of wire-cloth or perforated sheet metal. Both the outer and inner shells of the roasting-cylinder are attached to the heads L and M by means of the flanges *a*, cast thereon, and are also stayed by the radial stays *b*, which are screwed into the collars *c c*, and confine the wire-cloth between an outer and inner nut screwed on the outer ends of the stays, a circular band being interposed between the wire-cloth and outer nut. By this arrangement I prevent all sagging or vibration of the wire-cloth.

The stays *b* are also used for attaching the stirring-wings *f*, which extend in the intervals between the stays and stays and heads, and are made of strips of sheet metal, making one-quarter turn from one point of attachment to the other.

The roasting-cylinder is mounted on a shaft which consists of the two slotted sections N and O, joined by the section P, which is of smaller diameter, so as to screw at one end into the section H, while the other end is supported by a plug, *h*, projecting from the end of the section O, on which it can freely turn.

By this arrangement the shaft can readily be lengthened and the wire-cloth thereby be stretched, as is always found necessary to do after the latter has been put in place.

The front head, M, is slotted, and is provided with a circular damper, M', similarly slotted, and arranged so as to close or disclose the slots in the head, as may be desired.

This damper is held in its position and its pressure upon the head M is regulated by

means of a washer-plate, *i*, which slips over the portion O of the shaft, and is secured in place by bolts or screws passing through the same and threaded into the head.

5 The outer end of the shaft O is held in its position by the box K', in which it is also properly journaled, said box being secured in the lower end of a hanger, *l*, projecting from and secured to the top of the outer casing, as shown  
10 in Figs. 5 and 1.

The portion N of the shaft of the roasting-cylinder projects through a vertical elongated opening, *m*, in the end wall of the case, and receives on its end a box, *n*, and a geared  
15 wheel, R, which meshes with a smaller geared wheel or pinion, S, rigidly secured to a shaft, T, and journaled in the boxes *p p*, which are adjustably secured to and project from the side of the machine. A lever, *u*, sleeved upon one  
20 end of the box *p*, passes beneath the box *n*, and engages at its opposite end with the short arm of a lever, V, pivoted to the side of the outer case, and having for its object the raising or lowering of the rear end of the roasting-cyl-  
25 der.

A slide-gate, *r*, keeps the elongated opening *m* in the rear end of the case closed when the cylinder is lowered, while the half-ring *s*, piv-  
30 oted to the front side of the case, does the same function for the opening in front of the case, through which the roasting-cylinder projects, and which is also slightly elongated to give the necessary play to allow the raising and lowering of the roasting-cylinder.

35 Upon one end of the shaft T is secured a crank-handle, by means of which said shaft, and through its connections, the roasting-cylinder is rotated.

In the portion N of the shaft I secure a worm-  
40 feed, W, which revolves with the shaft. The spout X of a hopper is inserted in the shaft N, surrounding the worm-feed, and is so secured that it will not revolve with it. This causes the worm to draw in the material to be roasted  
45 and deposit it within the cylinder through the opening *u* in the shaft.

This end of the cylinder may be elevated, if desired, to accelerate the feed; but it is not  
50 necessary.

When the material introduced is sufficiently  
55 roasted the rear end of the roasting-cylinder is elevated, the damper-slide in the front end opened, and the material, by continued rotations of the cylinder, is expelled.

If it is desired to test the material during  
the operation of roasting the tryer or scoop-

plug (not shown) is withdrawn, and with it a small portion of the material in the roasting-cylinder, which finds its way into the hollow shaft O by the slots or openings *r r* therein. 60

What I claim as my invention is—

1. A coffee-roasting device provided with a hollow shaft, substantially as described, and a worm-feed, W, for delivering the material to be roasted to the cylinder, substantially as  
65 specified.

2. In a coffee-roasting device, the flues lead-  
ing from or near the top thereof to the ash-pit below the grate, for carrying heated air there-  
70 to, and surrounding the shell A', which incloses a revolving cylinder, substantially as and for the purposes set forth.

3. A coffee-roaster provided with a holder for the unroasted coffee and a revolving cyl-  
75 nder, K, having one of its journals mounted in vertically-adjustable bearings, whereby its inclination may be changed to regulate the feed of the coffee from said holder into the cylinder, substantially as described.

4. The combination, with the cylinder K and  
80 journals N O, of the adjustable bearing *n*, levers *u V*, and catch *a'*, substantially as described.

5. The combination of the cylinder K, hav-  
85 ing journals N O, with the swinging bearing K', adjustable bearing *n*, levers *u* and V, and catch *a'*, all constructed and arranged substantially as specified.

6. In a coffee-roasting device, the shaft, con-  
90 sisting of three sections, N O P, constructed and operating as described, in combination with the cylinder-heads of the roasting-cylinder K, for the purpose of expanding endwise the said cylinder when necessary, substan-  
95 tially as set forth.

7. A coffee-roaster provided with a cylin-  
der, K, having a hollow journal which has an opening into the cylinder, and a feeding  
100 device arranged, substantially as described, to feed through the journal, substantially as specified.

8. A coffee-roaster provided with a cylin-  
der, K, having two hollow journals, N O, each provided with an opening into the cylinder, one for the journal which admits the coffee to  
105 the cylinder and the other for removing the contents for examination, substantially as specified.

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Witnesses:

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