G. L. HARRISON, Jr.

PROCESS AND APPARATUS FOR THE MANUFACTURE OF CHARBON ROUX.

No. 184,963. Patented Dec. 5, 1876.

Fig. 2

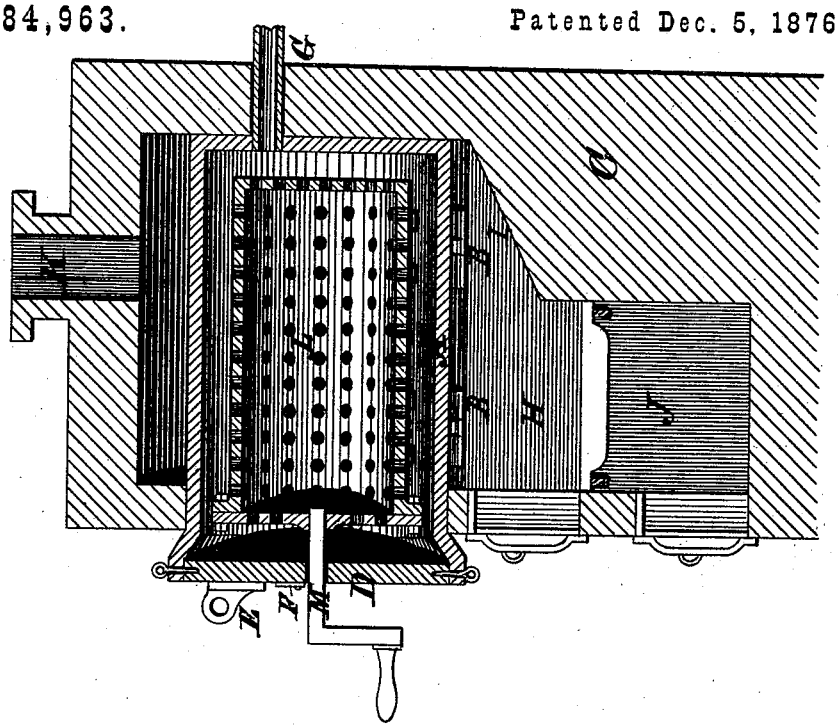
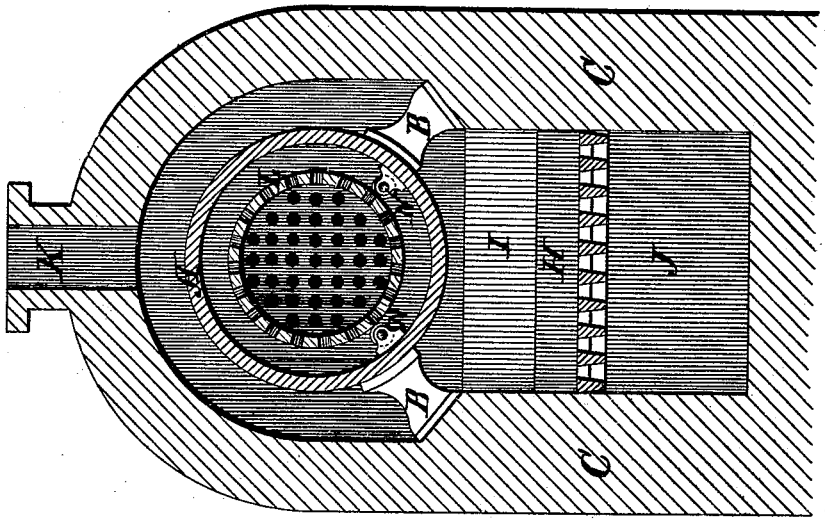


Fig. 1.



Witnesses

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By

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UNITED STATES PATENT OFFICE.

GEORGE L. HARRISON, JR., OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HARRISON BROS. & CO., OF SAME PLACE.

IMPROVEMENT IN PROCESSES AND APPARATUS FOR THE MANUFACTURE OF CHARBON-ROUX.

Specification forming part of Letters Patent No. **184,963**, dated December 5, 1876; application filed March 9, 1876.

To all whom it may concern:

Be it known that I, GEORGE LEIB HARRISON, Jr., of the city and county of Philadelphia, in the State of Pennsylvania, have invented a new and useful Process for the Manufacture of the Fuel known as "Charbon-Roux," and apparatus for giving effect to the same, of which the following specification is hereby declared by me to be a full, clear, and precise description, reference being had to the accompanying drawing, which forms part of the specification, both the figures of which represent, in section, a convenient form of apparatus for giving effect to my process—

Figure 1 being a transverse central sectional elevation, and Fig. 2 a similar longitudinal view.

Similar letters of reference indicate corresponding parts in both the figures.

My invention relates to the manufacture of the French fuel or kindling-wood known as "charbon-roux," which consists of wood darkened and browned throughout its fiber by the application of heat to an extent stopping short of carbonization; and consists in subjecting sticks of wood, cut up to suitable size, in a perforated cage or chamber, continuously or intermittently rotated, to the action of heat radiated upon the cage from a circumscribing chamber and furnace; and, further, consists in the apparatus for effecting the same, hereinafter described and claimed.

For the better information of the public, I will describe in detail the construction of forms of my invention obviating the existing defects.

A is a cylindrical or other shaped chamber, supported and fixed upon rests B within, or itself built into, an inclosing brick or other furnace, C, in such manner as to leave a free space for flame all around its sides and top. It is closed up upon its outer end by a movable but close-fitting head-plate, D, provided with an eye, E, for manipulation by a crane, and a small central trap and door, F, for the passage of the shaft of a crank, M. G is an escape-pipe, for the exit of the acetic-acid vapor and hydrocarbon gases evolved from the charge. H is the fire-pot of the furnace; I, a bridge-wall; J, the ash-pit, and K the stack. Within the chamber A, and resting upon friction-rollers N therein, is a rotatable perforated cage, L, provided also with a removable head-plate, the axis of which is concentric with that of the trap F, and which is provided with a boss, cubically recessed to receive the squared extremity of the crank-shaft for the rotation of the cage.

The cage may be provided inside with ledges or diaphragms for the agitation of the charge, and the rollers N may be eccentric, or other mechanism may be employed to oscillate, vibrate, or otherwise agitate or shake the cage itself; and convenient mechanism to rotate may take the place of the crank.

Such being the construction of my apparatus, the charbon-roux is produced by removing and charging the cage with sticks of wood, replacing it to be subjected to the action of radiated heat from the chamber A, which can be made red-hot by the direct action of the flame upon it, and rotating it continuously or at intervals.

As a modified form of the above, enabling me to dispense altogether with the circumscribing chamber A, I employ a rotating chamber alone, supported and rotated by any fit means, and perforated, as most convenient, for the escaping vapor and gases, the perforation being, in effect, secured by a loose-fitting head-plate, a hollow trunnion, or the like.

The position of my whole apparatus may, with proper mechanical modifications, be changed from horizontal to vertical without altering the material character of my invention, of which rotation or agitation, as opposed to rest, are the vital constituents.

The advantages are the readiness and ease of charging and uncharging by removal of the cage or rotating chamber; the thorough agitation of the entire charge by rotation, which the shrinkage of the sticks permits, even though the cage or rotating chamber be at first packed absolutely full, insuring even and complete browning of the whole, and an absolute avoidance of top layers of charcoal; and, finally, the great capacity of the apparatus, readily yielding, as it does, four charges of charbon-roux in twenty-four hours.

Heretofore charbon-roux has been manufac-

tured by heating billets of wood in stationary retorts or chambers; but it has practically been found impossible to obtain in this way a uniform product. The billets nearest the walls of the retort were converted into charcoal, while those in the center were but very slightly scorched. By my process this difficulty is obviated, and a uniform product is obtained.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. The process of making charbon-roux herein described, which consists in subjecting billets of wood to heat under agitation, substantially as described.

2. The combination of the furnace C, retort A, and revolving cage L, substantially as described.

3. The combination of the retort A, having removable head-plate D, and pipe G, with the revolving cage L and furnace C, substantially as described.

In testimony whereof I have hereunto set my hand.

GEO. L. HARRISON, JR.

In presence of—
J. BONSALL TAYLOR,
JOHN JOLLEY.