

(No Model.)

H. EKELUND. COKING OVEN.

No. 471,692.

Patented Mar. 29, 1892.

Fig. 2.

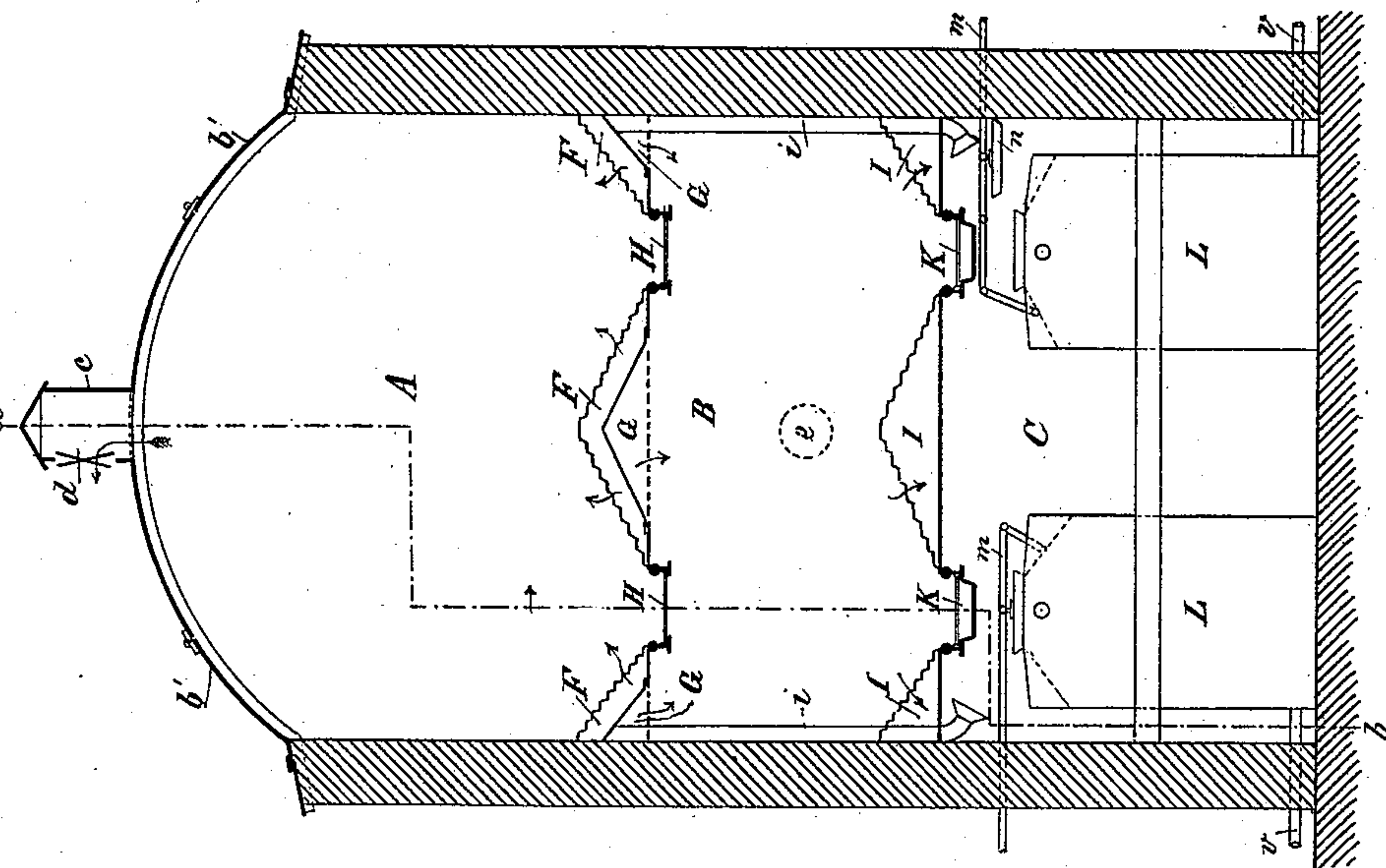
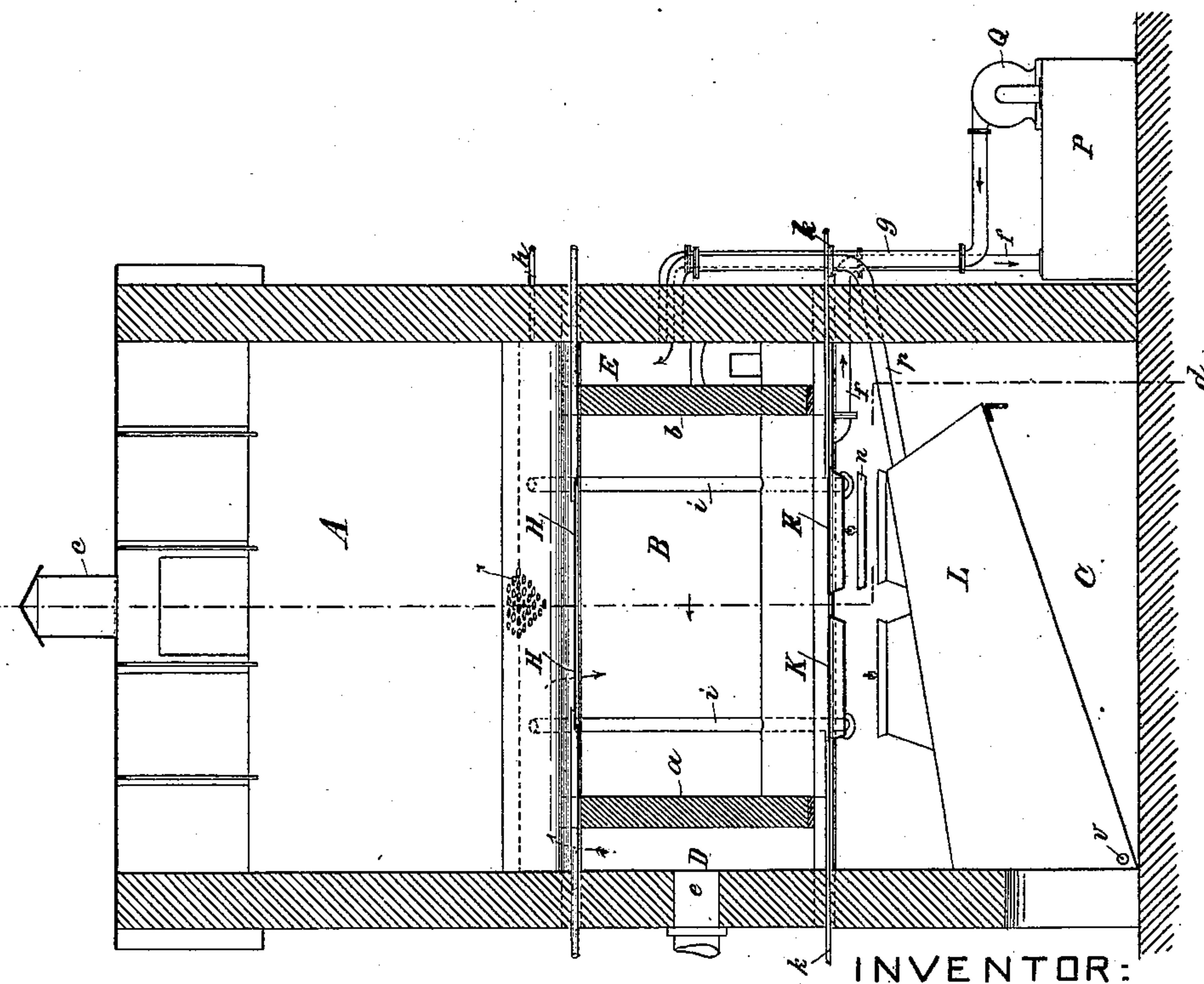


Fig. 1.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HERMAN EKELUND, OF JÖNKÖPING, SWEDEN.

COKING-OVEN.

SPECIFICATION forming part of Letters Patent No. 471,692, dated March 29, 1892.

Application filed March 18, 1890. Serial No. 344,321. (No model.) Patented in Germany January 5, 1890, No. 53,617, and in England March 1, 1890, No. 3,306.

To all whom it may concern:

Be it known that I, HERMAN EKELUND, a subject of the King of Sweden and Norway, residing at Jönköping, in the Kingdom of Sweden, have invented a new and useful Coking-Oven, (for which I have obtained Letters Patent in England March 1, 1890, No. 3,306, and in Germany January 5, 1890, No. 53,617,) of which the following is a specification.

My invention relates to improvements in furnaces for charring, roasting, baking, or coking wood, coal, or other material; and it consists of an improved furnace hereinafter fully described, in which the aforesaid operations may be carried on continuously or uninterruptedly and with great economy of fuel and labor.

In the annexed drawings this furnace is represented in two vertical sections, Figures 1 and 2 on the respective lines *a b* and *c d*.

This furnace consists of three principal chambers or compartments A, B, and C and of certain details hereinafter fully described, of which chambers, A is for drying and heating, B for baking, charring, roasting, or coking, and C for extinguishing and cooling the roasted, charred, or coked materials received from chamber B. The chamber or compartment B is separated at its ends by partition-walls *a* and *b* from the adjoining compartments D and E. The compartments A and B are separated from one another partly by double-vaulted floors containing two channels F and G and partly by sliding doors H, by which the openings or passages between the compartments may be opened or closed. The compartments B and C are separated by vaulted floors, containing each only one channel I, and by the sliding doors K in said floors. In the compartment C the iron tanks or cisterns L are placed. The furnace is covered by a vaulted roof or cover provided with the doors *b'*, the funnel or chimney *c*, and the exhaust-fan *d*. The compartments A and B are to be filled with the materials to be operated upon. From a fire-place situated outside of the furnace the heat is conducted through the opening *e* into the compartment D, from which the same enters, as indicated by the curved arrow in Fig. 1, through openings into the lower channels G, passes thence downward through

holes in the bottoms of the said channels, as indicated by dotted lines in Fig. 2, into the compartment B, and effects there the charring, baking, roasting, or coking of the materials placed in said compartment B. The gases produced thereby pass through the perforated or grate-shaped vaulted bottoms of the compartment B into the channels I, and from these through pipe *f* into the tank or cistern P, the circulation being maintained by means of a fan Q, placed upon the latter. The gases proceed then through the pipe *g* into the compartment E, the latter constituting a fire-place, where the gas is ignited. Water and tar are condensed in the tank or cistern P. From the compartment E the gases are conducted up into the channels F and through openings in their roof into the compartment A. To avoid crowding the drawings, only a few of the perforations of the floors are represented. (See perforations in the floor of compartment A in Fig. 1.) From compartment A the vapors are drawn off and discharged by the exhaust-fan *d*. The apparatus having been once well heated, no further firing in the fire-place in compartment E is required, as the gases will be ignited by the heated walls in the channels F, into which air is conducted partly from without through pipes *h* and partly from the compartment C through the pipes *i*. If it is not desired to condense the water and the tar, the gases may be conducted from the channels *l* directly into the compartment E through any suitable conduit. The mass in the compartment B having been sufficiently baked, charred, roasted, or coked, the doors K are then to be opened by means of the levers *k*, whereupon the material contained in chamber B will fall down into the tanks or cisterns L. The doors K are then to be closed and the material, previously dried and heated in the compartment A, let down through the doors H into the compartment B. After the doors H have been again closed a new charge may be admitted through the doors *b'* into the compartment A, and the charring or coking may thus be continued uninterruptedly. By means of the jointed levers *m*, which are pivoted to the tanks L and to which are attached the cover N, the said tanks L may be closed. A steam-jet through the pipe *v* is ad-

mitted into the tanks L for extinguishing and cooling off their contents. The gases produced in the said tanks L are conducted through pipes *p* into the compartment E. The
 5 heat radiating from the tanks L into the compartment C is conducted through the pipes *i* up into the channels F. The materials in the tanks L, having been extinguished and cooled, are to be taken out through doors at the lower
 10 ends of the said tanks. The coking in the compartment B is thus carried on by means of the gases streaming in from the compartment D and with the addition of the heat, which, during the extinguishing of the ma-
 15 terials, is radiated into the compartment C. The drying and the heating in the compartment A is produced partly by means of heat arriving from the compartment B and partly by means of the gases, which are conducted
 20 up from the compartment E and the hot air which streams in through the pipes *i* up from the compartment C.

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

1. A furnace for continuous coking, characterized by three superposed compartments A, B, and C, the middle compartment B adjoining two lateral compartments D and E, of
 30 which compartments the upper one A and the middle one B are separated by vaulted floors, each provided with channels, one channel in each floor communicating with the lateral compartment D and the middle compartment
 35 B and the other in each floor with the other lateral compartment E and the top compart-

ment A, while the middle compartment B and the lower one C are separated by a vaulted floor containing single channels communi-
 40 cating with the compartment B, which channels by means of pipes communicate with the lateral compartment E, each of the floors being also provided with openings and sliding doors, all with the view of being able to fill the
 45 middle compartment B from the top compartment A and empty the same into the lower one C, and that heated air conducted into the lateral compartments may pass through the middle compartment and, together with the
 50 gases produced there, mount through compartment E to the top compartment A.

2. In a coking-furnace, the combination of three superposed compartments A B C, the upper and middle ones being separated by
 55 vaulted floors having passages and the middle one provided with outlet-openings, affording communication between the middle and lower compartments, the compartment E to one side of compartment B, connections be-
 60 tween the passages in the floors and the chambers A, B, and E, the tank in the compartment C, the lids therefor, the pipe leading from the tank to chamber E, and means for
 65 supplying hot products of combustion to the chamber B, all substantially as specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

HERMAN EKELUND.

Witnesses:

NERE A. ELFWING,
 ERNST SVANQVIST.