

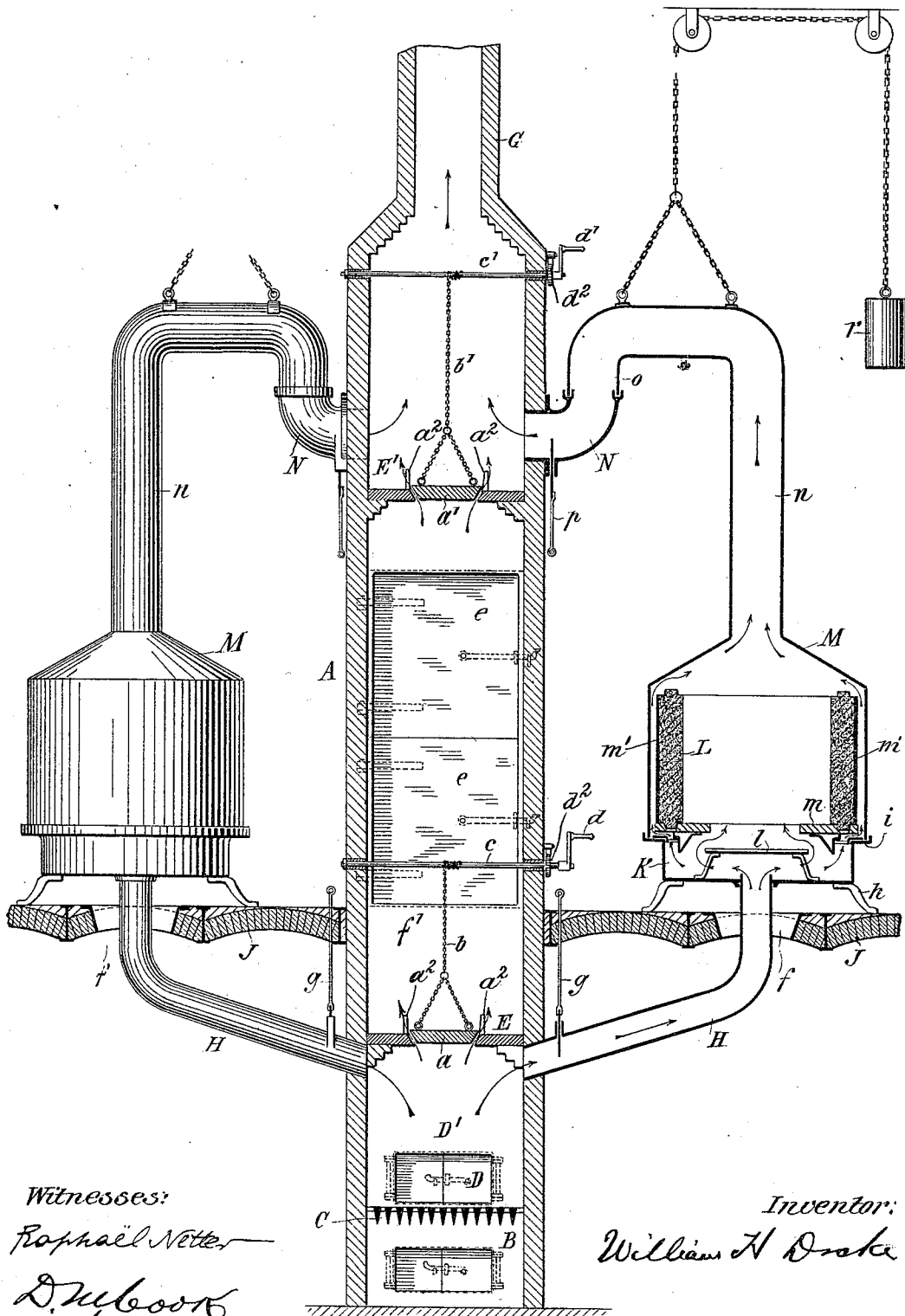
(No Model.)

W. H. DRAKE.

APPARATUS FOR THE MANUFACTURE OF CORES FOR CASTING.

No. 526,101.

Patented Sept. 18, 1894.



Witnesses:

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR THE MANUFACTURE OF CORES FOR CASTING.

SPECIFICATION forming part of Letters Patent No. 526,101, dated September 18, 1894.

Application filed August 9, 1892. Serial No. 442,566. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. DRAKE, a citizen of the United States, and a resident of Hackettstown, in the county of Warren and State of New Jersey, have invented certain new and useful Improvements in Apparatus for the Manufacture of Cores for Casting, of which the following is a specification.

This invention relates to apparatus for the manufacture of cores for casting, and more especially to apparatus for drying or baking the cores.

The object of the invention is to dispense with the necessity for removing the core from the place where made to the drying oven, thereby avoiding the many inconveniences attendant upon such transfer of the cores in their green state. In making cores for the larger castings their transfer to the oven for purpose of drying or baking them is attended with much difficulty as well as great inconvenience to the workmen. It is usual to transport such cores from the place where they are made to the oven on cars constructed for the purpose and adapted to be pushed into the oven, rendering it necessary for the workmen to enter the oven to properly adjust the cores and to remove the core-boxes. This necessitated the cooling to some extent of the oven and hence the loss of heat, which in point of economy was objectionable. Where the cores are of considerable size it is found impracticable to remove the core-boxes before transferring the cores to the oven, as the cores when in a green state and not supported by the core boxes are liable to collapse in the transportation.

By my invention I overcome the above enumerated disadvantages and save quite one-half the labor, besides insuring a large saving in the heat employed.

In carrying out my invention I employ a number of receptacles, preferably suitably elevated above the floor of the core-room and adapted to support the core-boxes. The cores are prepared in the usual way and the heat, from any suitable source, is applied directly to the cores, which avoids all necessity for transferring the cores to the oven as heretofore, with the resultant advantages above enumerated. When the heat is applied for drying the core the latter is inclosed by a

suitable casing or hood so that the heat may be concentrated on the core, the said casing being adapted to be readily removed so that progress of the curing process may be observed from time to time, the heat being adapted to be turned off however when it is desired to examine the core. This mode of drying or baking the cores avoids all waste of fuel, and results in material saving of time and labor.

In the practice of my invention I find it advantageous to provide for the connecting of the several receptacles, which support the core-boxes, to a furnace or in general to a main heating flue, and I have illustrated such an arrangement in the accompanying drawing which represents a sectional elevation of a furnace and oven and a series of core-box-supporting receptacles in communication with the same. The drawing also illustrates a hood or casing adapted to inclose the core-box and core, or the core after the core-box has been removed, for the purpose of concentrating the heat on the core. This is a desirable arrangement, and economical where it is necessary to maintain an oven for the purpose of curing the smaller cores that are readily adapted to be placed in an oven.

While I have shown in the drawing means for conducting the heat from a furnace, it is obvious that the heat for drying the cores in the manner proposed by me may be derived from any other suitable source. For example, there may be located beneath the core-supporting receptacle a gas flame or a portable stove; or the furnace may communicate directly with the core-supporting receptacle. The employment of the furnace or oven shown is not therefore necessarily essential to the carrying out of my invention.

Referring to the drawing, A, represents a furnace which is preferably built of brick.

B is the ash-pit provided with a suitable door; C, the grate, and D the door through which the fuel is passed into the fire-chamber D'.

E indicates an arch or plate built above the fire-chamber D' and provided with an opening or openings through it to allow the heat and gases to pass from the fire chamber into the oven *f'*. The openings through the arch E are adapted to be closed, in whole or in

part, by any suitable means. I have shown a damper *a* suspended by a chain *b* from a transverse rod *c* having bearings in the walls of the oven with one of its ends projecting outside for the reception of a crank *d* by which the rod is operated to wind the chain in lowering or elevating the damper or valve *a*.

A pawl and ratchet arrangement *d*² may be applied to the winding and unwinding means to hold the rod *c* fixed when the valve or damper *a* has been elevated to the proper position.

It will be understood from the above that the passage of heat from the fire-chamber *D'* into the oven *f'* may be regulated at will. The oven may also be used for the reception of small cores to be baked, and it is also provided with doors *e e* for access thereto.

Above the oven *f'* there is a second arch or plate *E'* likewise provided with an opening or openings for the passage of heat and gas from the oven into the chimney or stack *G*. The passage or passages through the arch *E'* are controlled by means similar to the means described for regulating the admission of heat and gas from the fire-chamber into the oven, there being employed a damper or valve *a'*, a chain *b'* suspending said damper from a rod *c'* which is operated by a crank *d'*.

The purpose of the damper *a'* is to regulate the temperature within the oven, *f'*. Vertical rods *a*² may be secured in the arches *E, E'* to serve as guides for the valves *a, a'* in descending.

The function of the damper *a* is primarily to shut off the passage of heat from the fire-chamber into the oven when it is desired to conduct the heat to the core-supporting receptacles hereinbefore mentioned. For conducting the heat to said receptacles from the furnace *D'* the pipes *H* are employed. These pipes pass through the walls of the furnace as shown immediately beneath the arch *E*, and at their opposite ends pass through openings *f* in the floor of the core-room as shown. The pipes *H* are provided with dampers *g* to regulate the flow of heat through said pipes.

The floor of the core-room is indicated by *J*, and consists of brick-work adjacent to and surrounding the oven.

In the drawing the receptacle or support for the core, the hood or casing and connecting pipe are shown in elevation on the left and in section on the right. The receptacle or core support is indicated by *K* and may be of any suitable construction, preferably of the form shown. It is fitted with legs *h* by which it is supported above the floor *J* and at its upper edge is provided with an offset *i* provided with a vertical ledge. The hood or casing *M* is adapted to rest upon said offset *i* when lowered or closed to inclose the core. The pipe *H* is connected at its outer end through the center of the platform *K*, and immediately above said central opening is supported a deflecting plate *l* for the purpose of more evenly distributing the heat. The

core box, of any construction, is adapted to be supported on a platform *m* which rests on the offset at the top of receptacle *K*, the said platform *m* having perforations or a large central opening and openings near its edge to permit the heat to pass around the core. The core is formed in a core-box and when the latter has been removed the core is left supported on the platform *m* as shown in the drawing at the right. The core is indicated by *L*.

The platform *m* may be the bottom of the core-box and serve to support said box which is indicated by *m'* in the drawing. After the core is formed and in its green state a portion of the core-box—for example the central pattern—is removed and the hood or casing *M* placed in position and the heat turned on for a short time to dry the core sufficiently to permit it to support itself. Then the hood is removed and the rest of the core-box (*m'*) removed leaving the core supported on the platform *m*, which as stated may be the bottom of the core-box. The hood *M* is then replaced and the heat again turned on to complete the drying process.

The hood or casing *M* is made of sheet iron. It is adapted to be placed over the core for the purpose of concentrating the heat on the latter during the baking operation. This hood or casing is provided with a conical top extended into a pipe *n* suitably curved so that its upper end *o* is adapted to fit into a channel in the outer edge of the elbow *N* fitted through the wall of the oven *F*, and communicating with the space above the arch *E'*. By this means the gases are conducted from the hood or casing *M* into the chimney or stack, *G*. The elbow *N* is provided with a damper *p* for controlling the discharge of the heat and gas from the hood or casing *M* into the chimney *G*. The hood or casing *M* may be arranged to be lifted or taken off the receptacle *K* by any suitable mechanism. I show a pulley and chain arrangement with a counterbalancing weight *r*, which is well adapted for the purpose. The hood or casing *M* may be made in sections so that it may readily be placed in position by the workmen. It is however preferably made as shown.

Any convenient number of core-supporting receptacles or platforms with their necessary accessories for carrying on the core-baking process may be made use of, and as already explained the heat may be derived from a source other than a furnace, which is here shown, with its connections, as one mode of carrying into practice my invention. When a portable stove or a gas flame is made use of to supply the necessary heat for baking the core the hood or casing *M* may connect with any suitable outlet for carrying off the heat.

The platform *m*, or its equivalent, which is adapted to support the core, may rest directly on the floor of the core-room, and the heat for baking the core conducted thereto in the manner herein stated. Furthermore, when a sup-

port such as K is made use of it need not be of the precise construction shown and described, and may not be provided with the legs *h*.

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

1. In an apparatus for manufacturing cores, in combination with the main flue for conducting heat, a sectional return flue connecting therewith, a removable hood or casing forming one of its sections, a damper for closing its admission port and a core box protected by said hood or casing, substantially as set forth.

2. In an apparatus for manufacturing cores, in combination with the main flue for conducting heat, a sectional by-pass or return flue comprising two dampers, and a removable hood or casing forming one of its sections, such dampers placed one on each side of said hood or casing, and a core box protected by the same, substantially as set forth.

3. In an apparatus for manufacturing cores, in combination with the main flue for conducting heat, a damper inserted therein, a sectional by-pass around said damper, including a removable hood or casing forming one of its sections, a damper between the main flue and the admission port to the hood or casing and a core box protected by the same, substantially as set forth.

4. In an apparatus for manufacturing cores, in combination with the main flue for conducting heat, a damper inserted therein, a sectional by-pass around said damper including a removable hood or casing forming one of its sections, and a damper on each side of such hood or casing and a core box protected by the same, substantially as set forth.

5. In an apparatus for manufacturing cores, in combination with the main flue for conducting heat, a sectional return flue including a removable hood or casing forming one of

its sections, a sectional core box protected by the same, and a damper between the main flue and the admission port to the hood or casing, whereby part of the surface of the core may be exposed to the direct influence of the heating gases, while another part of such surface remains covered, by a section of such core-box, substantially as set forth.

6. In an apparatus for manufacturing cores, in combination with the main flue for conducting heat, a sectional return flue connecting therewith, a removable hood or casing forming one of its sections and a damper for closing its admission port, substantially as set forth.

7. In an apparatus for manufacturing cores, in combination with the main flue for conducting heat, a sectional by-pass or return flue comprising two dampers, and a removable hood or casing forming one of its sections, such dampers placed one on each side of said hood or casing, substantially as set forth.

8. In an apparatus for manufacturing cores, in combination with the main flue for conducting heat, a damper inserted therein, a sectional by-pass around said damper, including a removable hood or casing forming one of its sections, and a damper between the main flue and the admission port to the hood or casing, substantially as set forth.

9. In an apparatus for manufacturing cores, in combination with the main flue for conducting heat, a damper inserted therein, a sectional by-pass around said damper including a removable hood or casing forming one of its sections, and a damper on each side of such hood or casing, substantially as set forth.

Signed at Hackettstown, in the county of Warren and State of New Jersey, this 6th day of August, A. D. 1892.

WILLIAM H. DRAKE.

Witnesses:

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D. M. COOK.