

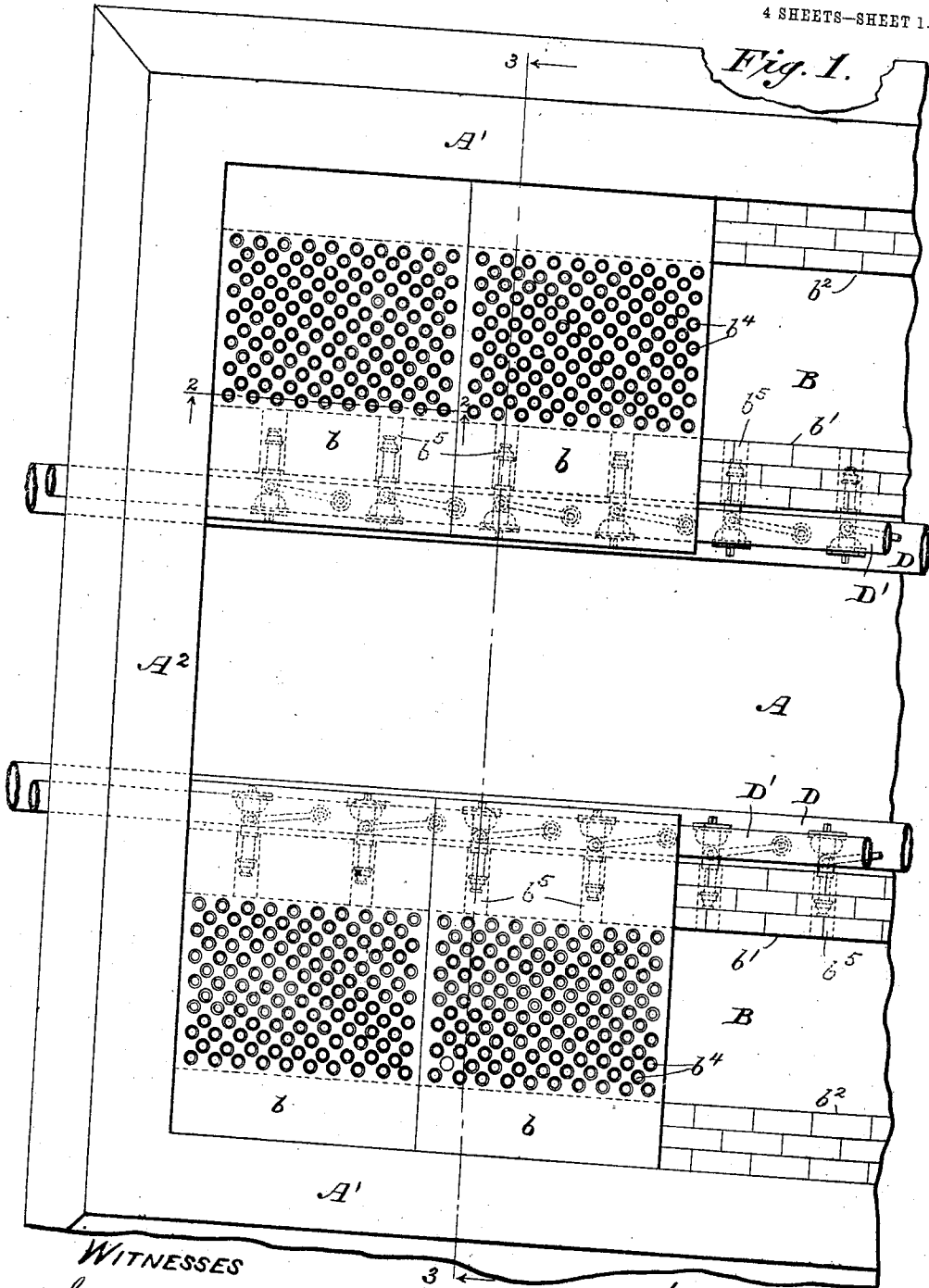
No. 826,147.

PATENTED JULY 17, 1906.

H. A. CROXTON.
APPARATUS FOR DRYING PIPE MOLDS.

APPLICATION FILED SEPT. 13, 1905.

4 SHEETS—SHEET 1.



WITNESSES
G. W. Saywell
Jno. T. Oberlin

INVENTOR:
Herbert A. Croxton
by his attorney
J. B. Fay.

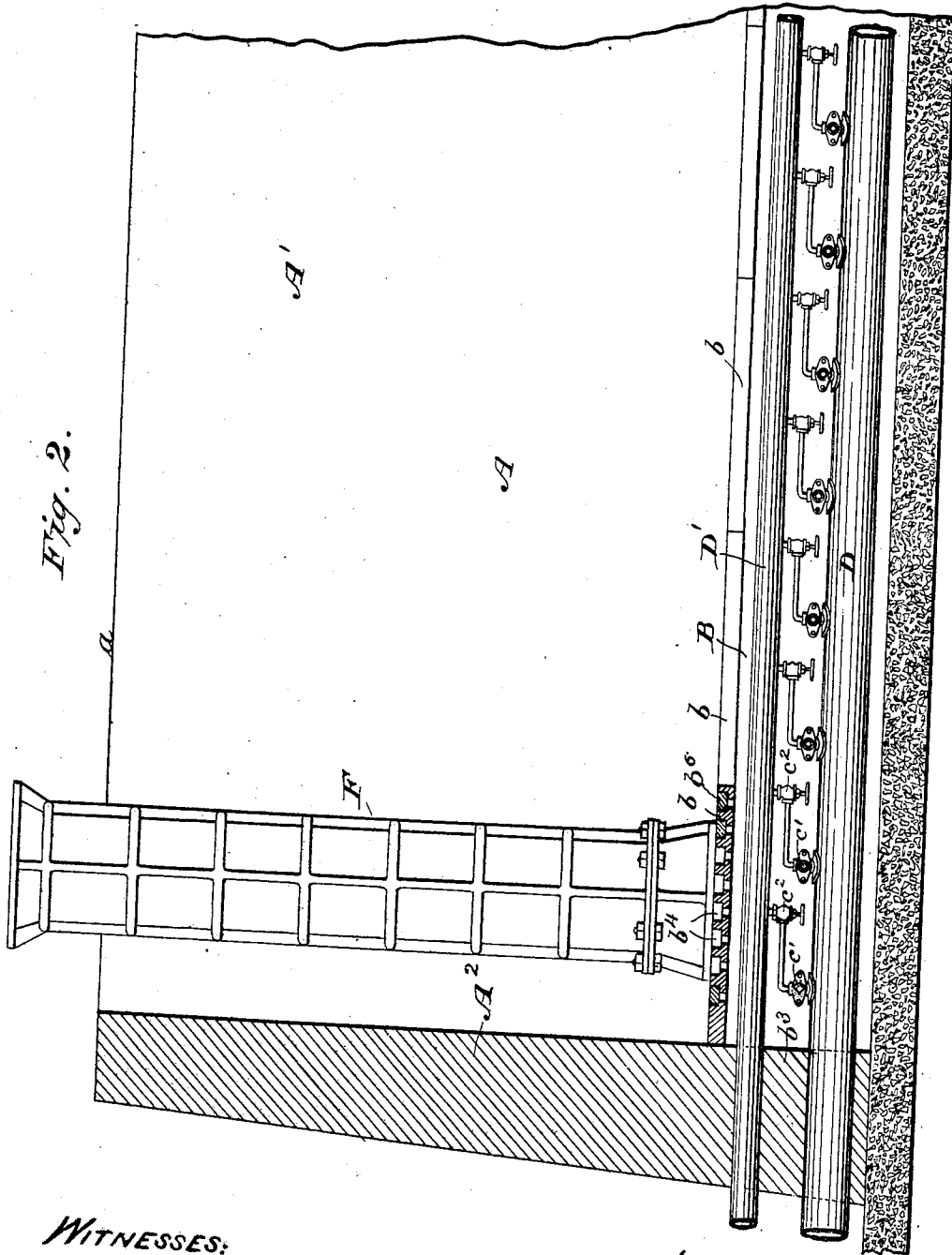
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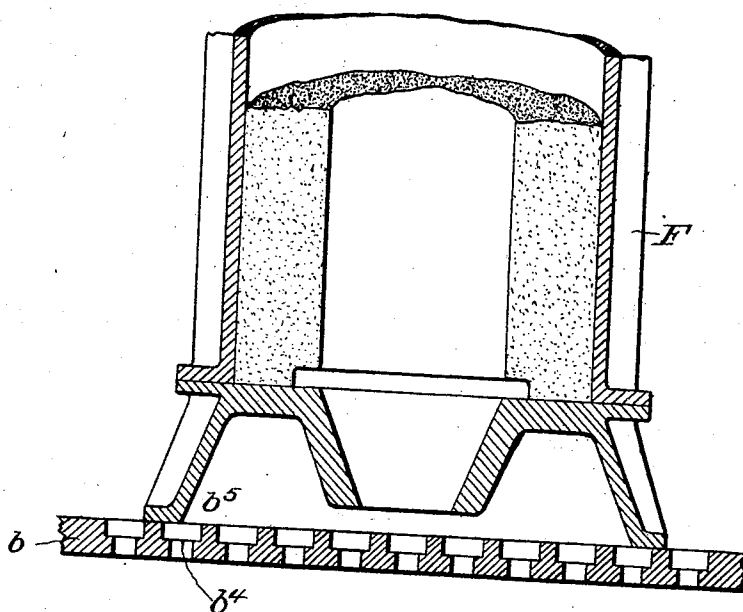
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Fig. 4.



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UNITED STATES PATENT OFFICE.

HERBERT A. CROXTON, OF MASSILLON, OHIO.

APPARATUS FOR DRYING PIPE-MOLDS.

No. 826,147.

Specification of Letters Patent.

Patented July 17, 1906.

Application filed September 13, 1905. Serial No. 278,234.

To all whom it may concern:

Be it known that I, HERBERT A. CROXTON, a citizen of the United States, and a resident of Massillon, county of Stark, and State of Ohio, have invented a new and useful improvement in Apparatus for Drying Pipe-Molds, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

My invention relates to apparatus for drying the interior of molds used in metal-founding, and particularly to the drying of molds for the casting of all sizes of water and other cast-iron pipes, the object of said invention being to provide apparatus for the above-named purpose which will embody economy of operation and maintenance in the greatest possible degree.

Said invention consists of means hereinafter fully described, and particularly set forth in the claims.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings, Figure 1 represents a plan of one end of a casting-pit including apparatus embodying my invention and showing a portion of the combustion-chambers uncovered. Fig. 2 represents a vertical section of the pit, taken upon the plane indicated by line 2 2 of Fig. 1, also showing one of the cover and supporting plates in vertical section and supporting a pipe-mold and flask of one particular size. Fig. 3 represents a transverse vertical section of the pit and apparatus, taken upon the plane indicated by line 3 3, Fig. 1, showing flasks of different sizes supported by and in position upon the top plates. Fig. 4 represents an axial section of the lower end of one of the flasks and contained mold, together with a section of a portion of the supporting-plate.

The general construction of the casting-pit is that usually employed in pipe-casting work and includes a pit A, depressed below the level of the foundry-floor *a* and having its sides and ends supported by retaining-walls A' A' and A², Figs. 1, 2, and 3. Along each side-retaining wall A' is built an elongated combustion-chamber B, including a multi-

plicity of perforated removable top plates *b*, of heavy cast-iron construction, together with suitable front and rear walls *b'* and *b''* of fire-brick and end walls *b³*, formed by the retaining-walls A².

Resting loosely upon the front and rear walls *b'* and *b''* are the supporting-plates *b* and, as previously mentioned, are provided with a multiplicity of perforations *b⁴*. Each perforation is comparatively small in diameter and has an enlarged or countersunk portion *b⁵* at its upper end, as shown. Upon these plates the flasks F are placed and supported. It will be seen that any size flask may be placed upon the plates and have proper communication with the interior of the combustion-chamber. It will also be further noted that the flask may contain one or more mold-cavities without necessitating a removal of the plate, as will be readily understood. Such perforations as are not covered by the flask are stopped by means of iron buttons *b⁶*, as shown in Fig. 2.

Heretofore the required heated gases have been generated in the combustion-chamber by means of coal or coke fires or by means of gas-burners in the chamber directing their gases upwardly and deriving the necessary air for forming the required combustible mixture directly from the atmosphere and without regulation. In these cases it has been found that the cover-plates become warped and deteriorate rapidly. The drying operation is unevenly performed and requires a comparatively long time for its completion. I have found, however, that by placing the burner-nozzles in a horizontal position, supplying compressed air for the forming of the combustible mixture, and providing valves for controlling the influx of air and gas independently I effect a marked economical effect in the operation of drying pipe-molds. Such arrangement permits me to regulate the heat required, so that the most advantageous temperature may be obtained. The destructive effect of the heat upon the plates *b* is thereby greatly reduced and a marked economy in the maintenance of the device results. In fact, the destructive effect upon the plates is so greatly reduced that I am enabled to use plates of considerably less thickness than heretofore. By directing the stream of gas into the chamber horizontally the destructive effect upon the plates is still further reduced and I am enabled to remove the nozzle end from beneath the perforation

in the plates. This latter feature is advantageous from the fact that during the casting operation which follows the drying and which is effected without removing the flasks from plates *b* (such of the perforations in the plates being closed as may be required) the molten metal not infrequently leaks through and discharges into the combustion-chamber. The nozzles being disposed as described are protected against injury which would otherwise result from contact with the leaking metal. In carrying out this feature of my invention I provide the front wall *b'* of the chamber with a multiplicity of openings *b^s*, into which project horizontally-disposed gas-burning nozzles *C*. Each nozzle is attached to a valve-chamber and mixing-chamber *C'*. The bottom of the latter is connected with the top of an air-supply pipe *D*, connected with a suitable source of compressed air or air under pressure, and its top is connected with the bottom of a gas-supply pipe *D'*. In chamber *C'* is a valve *c*, which controls the influx of air and is provided with a valve-stem having a squared end *c'*, projecting outside the chamber, so that by means of a wrench the valve may be turned to control the influx of air as required. A valve *c²* controls the influx of gas into the mixing-chamber. The structure of the valve and mixing-chamber forms the subject-matter of a separate application for United States Letters Patent filed even date herewith. By causing the valve and mixing-chamber to communicate with the top and bottom, respectively, of pipes *D* and *D'* the latter may be brought into substantially the same vertical plane, in this manner economizing as much as is possible the horizontal space required for this part of the structure.

Having thus described my invention in detail, that which I particularly point out and distinctly claim is—

1. In mold-drying apparatus, the combination of means forming a combustion-chamber and including a perforated top-plate; means for directing a stream of gas into such chamber in a direction substantially parallel with said plate; and a source of combustible gas connected with said directing means.
2. In mold-drying apparatus, the combination of means forming a combustion-chamber and including a removable perforated top plate; means for directing a stream of gas into such chamber in a direction substantially parallel with said plate, and a source of combustible gas connected with said directing means.

3. In mold-drying apparatus, the combination of side and end walls and a plurality of horizontal removable perforated top plates forming an elongated combustion-chamber; a plurality of gas-nozzles horizontally disposed and adapted to direct the gas into such chamber; and a source of gas-supply connected with such nozzles.

4. In mold-drying apparatus, the combination of side and end walls and top member forming a combustion-chamber; air and gas supply pipes upon the exterior of such chamber; a valve-chamber; said chamber communicating with said two pipes at points in the vertical axial planes thereof respectively, and a burner-nozzle connected with said valve-chamber.

5. In mold-drying apparatus, the combination of side and end walls and top member forming a combustion-chamber; air and gas supply pipes upon the exterior of such chamber; a valve-chamber seated upon the top of said air-supply pipe and communicating therewith, said chamber connected with the bottom of said gas-supply pipe; and a burner-nozzle connected with said valve-chamber.

6. In mold-drying apparatus, the combination of means forming an inclosed combustion-chamber having for its upper inclosing element a perforated removable member, means for directing a stream of mixed air and gas into said chamber immediately beneath such member, a source of gas and a source of compressed air connected with said directing means, and means for controlling the flow of such gas and air independently.

7. In mold-drying apparatus, the combination of an inclosed combustion-chamber having for its dome or roof a plurality of removable perforated iron plates, the front wall of such chamber being provided with a plurality of horizontal openings leading into such chamber, a supply of gas, a supply of compressed air, a plurality of burner-nozzles connected with said gas and air supply, and means for regulating the flow of gas and air through said nozzles independently, each such aperture containing one such nozzle, the tip of each nozzle being located without said chamber.

Signed by me this 17th day of August, 1905.

H. A. CROXTON.

Attest:

W. W. WEBB,
JNO. J. DONAHUE.