

(Model.)

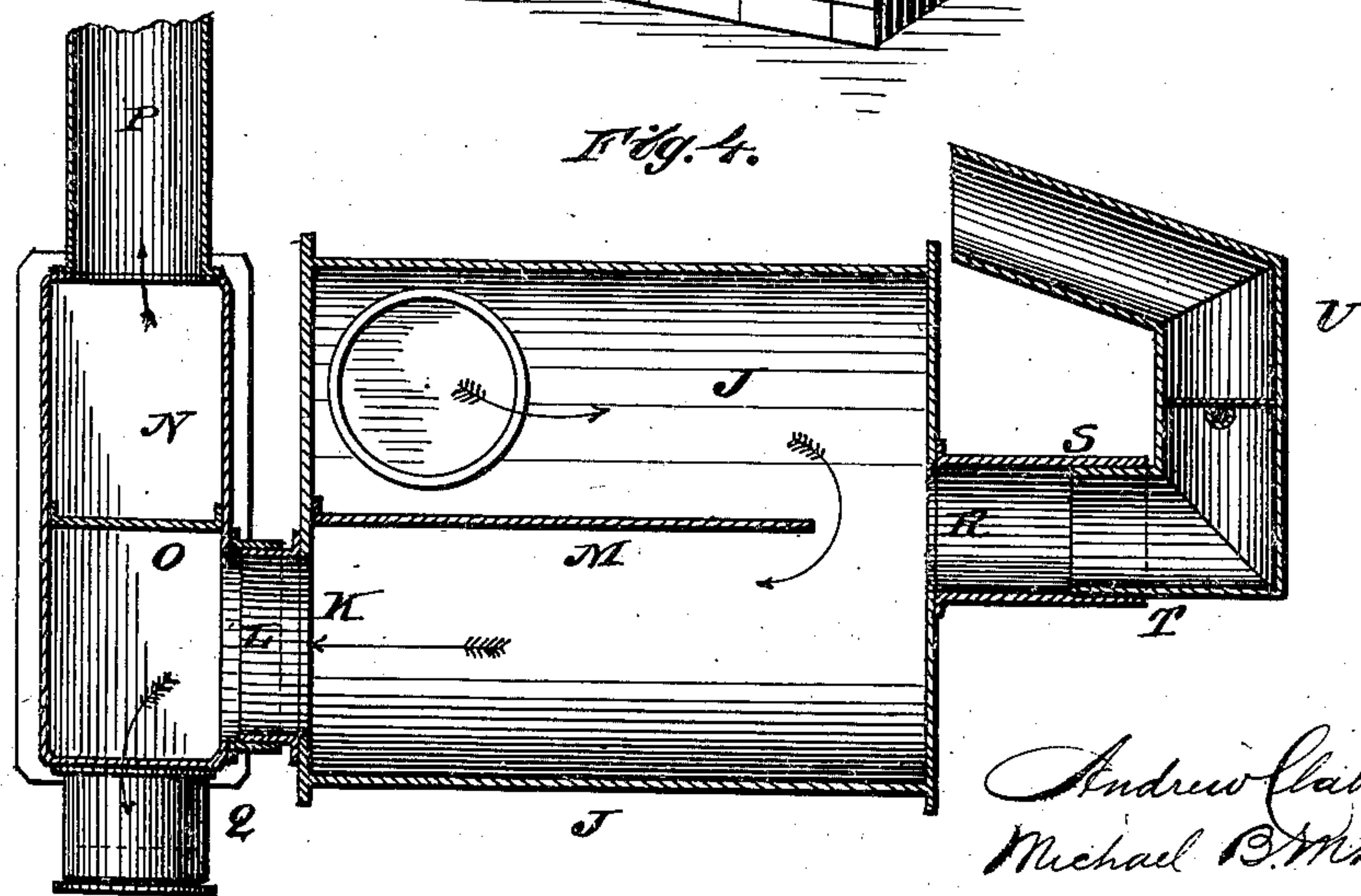
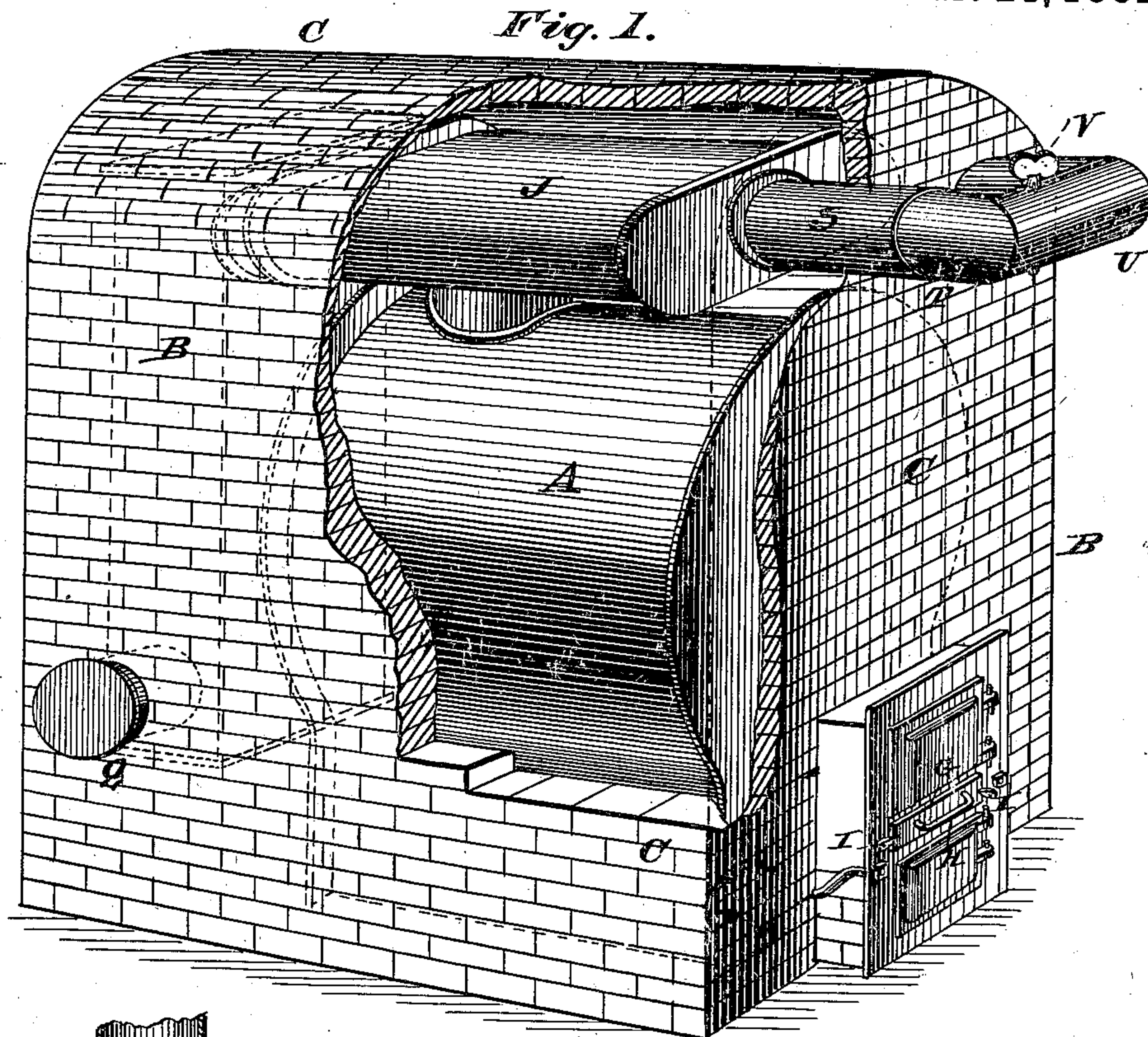
2 Sheets—Sheet 1.

A. CLABAUGH & M. B. McDOWELL.

FURNACE.

No. 255,253.

Patented Mar. 21, 1882.



*WITNESSES*

Mrs. L. Dietrich.  
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by

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(Model.)

2 Sheets—Sheet 2.

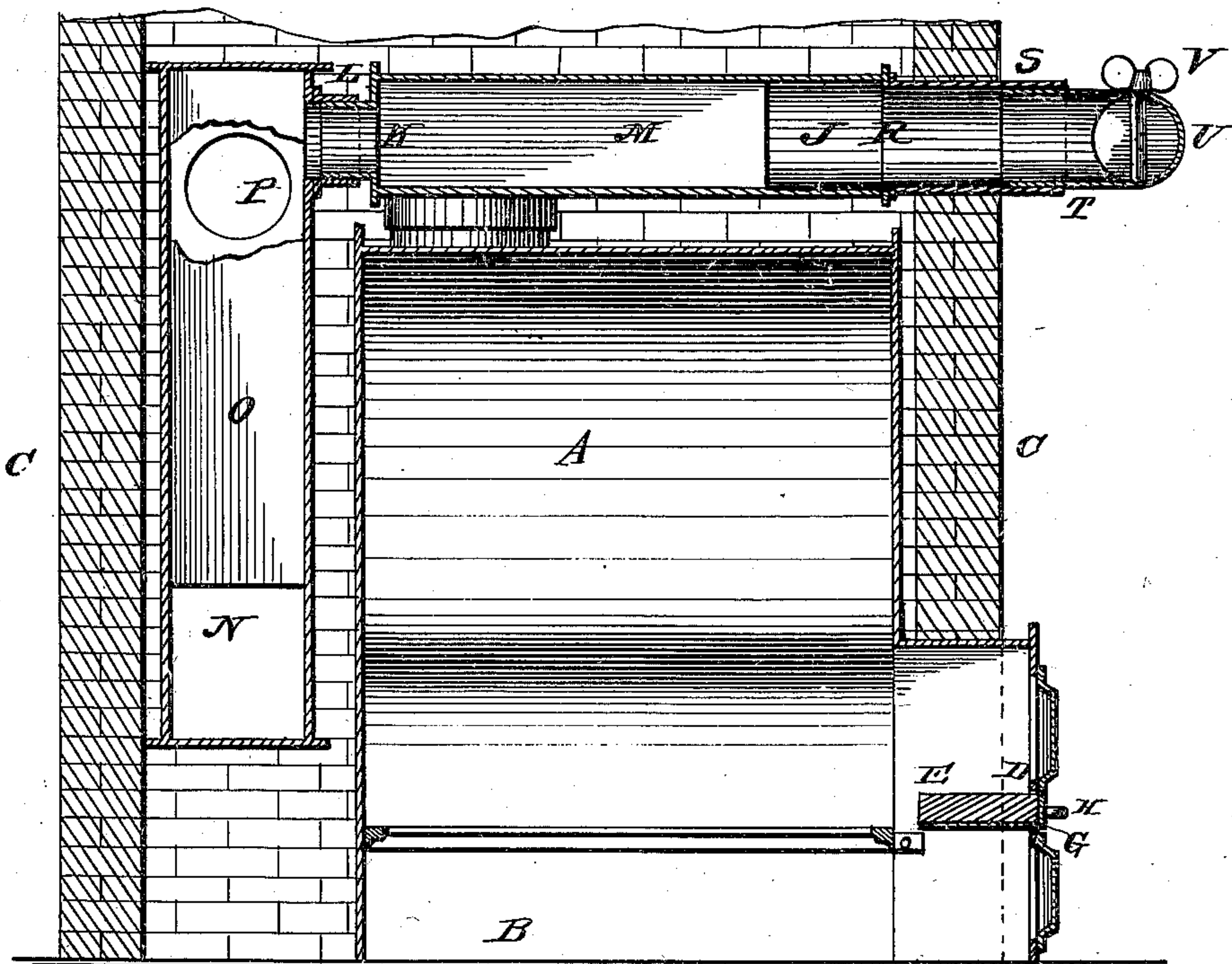
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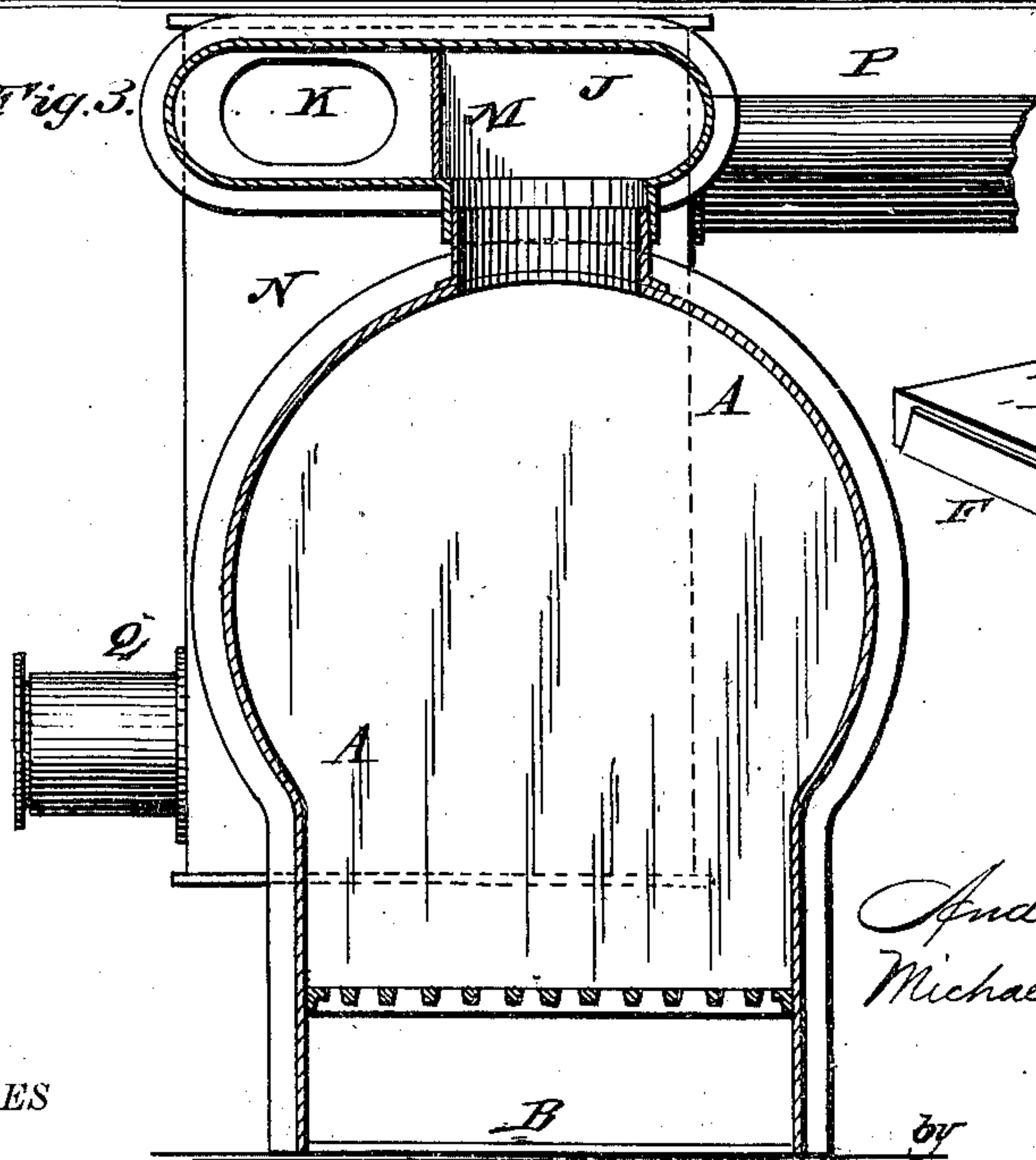
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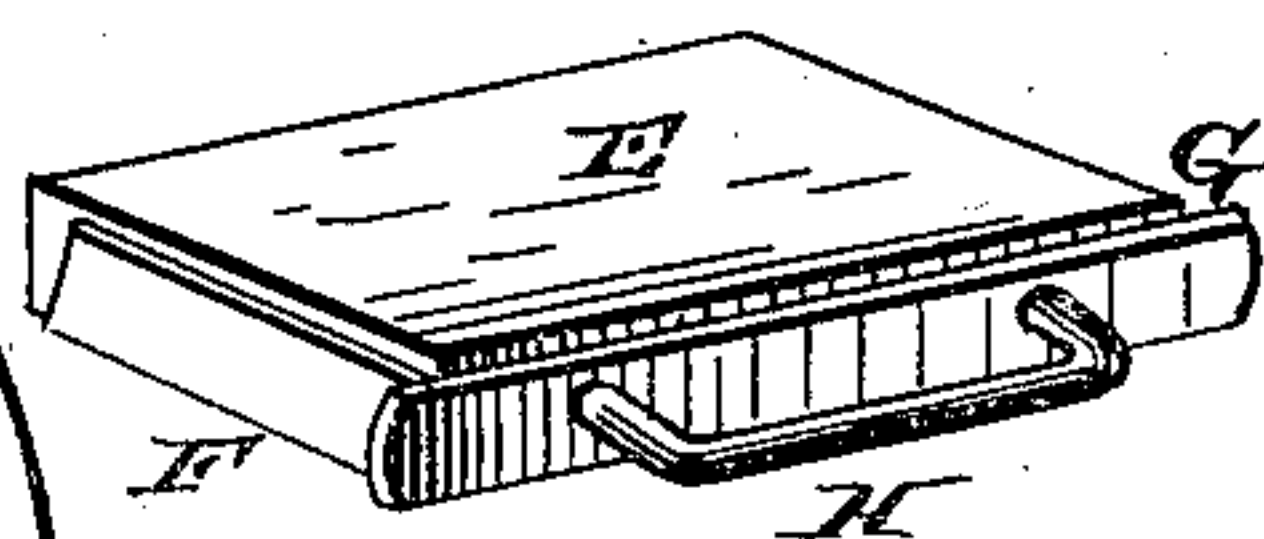
*Fig. 2.*



*Fig. 3.*



*Fig. 5.*



WITNESSES

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# UNITED STATES PATENT OFFICE.

ANDREW CLABAUGH AND MICHAEL B. McDOWELL, OF ALTOONA, PA.

## FURNACE.

SPECIFICATION forming part of Letters Patent No. 255,253, dated March 21, 1882.

Application filed July 30, 1881. (Model.)

*To all whom it may concern:*

Be it known that we, ANDREW CLABAUGH and MICHAEL B. McDOWELL, of Altoona, in the county of Blair and State of Pennsylvania, have invented certain new and useful Improvements in Furnaces; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

Figure 1 is a perspective view of our improved heater or furnace, parts of the wall being broken away in order to show the construction. Fig. 2 is a longitudinal vertical sectional view. Fig. 3 is a vertical cross-section. Fig. 4 is a horizontal sectional view taken through the radiators; and Fig. 5 is a detail view, illustrating the removable fire-brick front of the furnace.

Corresponding parts in the several figures are denoted by like letters of reference.

This invention relates to hot-air furnaces or heaters; and it consists in certain improvements in the construction of the same, which will be hereinafter fully described, and particularly pointed out in the claim.

In the drawings hereto annexed, A represents the furnace, which rests upon a bed, B, of masonry, and is surrounded by a wall, arch, or casing, C, constructed in the usual manner, preferably of brick-work. The furnace is provided in front of the grate-bars with an opening, D, extending to the door-frame, and covered by a flat block or tile, E, of fire-brick, which is supported upon side flanges, F, and a transverse cross-bar, G. The said block E is provided with a handle, H, so as to be readily slid out through the door-opening, and it is, while the furnace is in use, retained in position by pivoted latches I. By this arrangement of the block E clinkers and other obstructions may be readily removed from the grate-bars without removing the latter from the furnace, it being only necessary to take out the said block, rake the obstructions down through opening D into the ash-pit and replace the block, all dust and dirt being thus confined

within the furnace and ash-pit, and much trouble avoided.

J is a radiator, consisting of a flat box or casing arranged horizontally above the furnace, and having an opening, K, surrounded by a collar, L, connected with the smoke-flue of the furnace. Arranged in the radiator is a semi-partition, M, which causes the products of combustion to travel toward the front of the furnace and again back in the direction indicated by the arrows. From the radiator J the products of combustion pass into a second radiator, N, arranged vertically behind the furnace, and having a semi-partition, O, which causes the products of combustion to travel first down, then up and out through the flue P to the chimney, as indicated by arrows. The radiator N is provided near its lower end with an opening, Q, to enable it to be cleaned out when necessary. The radiator J has at its front end an opening, R, surrounded by a collar, S, which extends out through the wall or casing C. The latter has another opening, T, in which is fitted one end of a U-shaped pipe or knee, U, the other end of which is connected with the collar S of the radiator. The pipe U has a centrally-located damper, V.

Suitable provision is made for conveying the hot air from casing C to the registers.

In operation cold air is admitted through suitable openings at the bottom of the casing. By contact with the body of the furnace it is partly heated and caused to ascend, so as to be reheated or superheated by the radiators. The damper V meanwhile remains closed. Should the heat become too great, the damper V is opened, thus permitting the hot air to escape with the smoke through the radiators, the effect of which is twofold, viz: first, to prevent the accumulation of hot air within the casing, such as would be the case were the registers simply closed, to the detriment of the furnace, which would thus much sooner be burned out; second, the draft through the grate is checked, and the fire thus reduced until it is found desirable to close the damper again.

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

In a hot-air furnace constructed substantially as described, the combination of the casing C, the furnace, and the radiators N J, the latter of which is connected by a pipe, U, having damper V, with the inside of the casing, as described, for the purpose shown and specified.

In testimony that we claim the foregoing as

our own we have hereto affixed our signatures in presence of two witnesses.

ANDREW CLABAUGH.

MICHAEL BROWN McBOWELL.

Witnesses:

WILBUR B. BLAKE,

F. H. NICEWONGER.