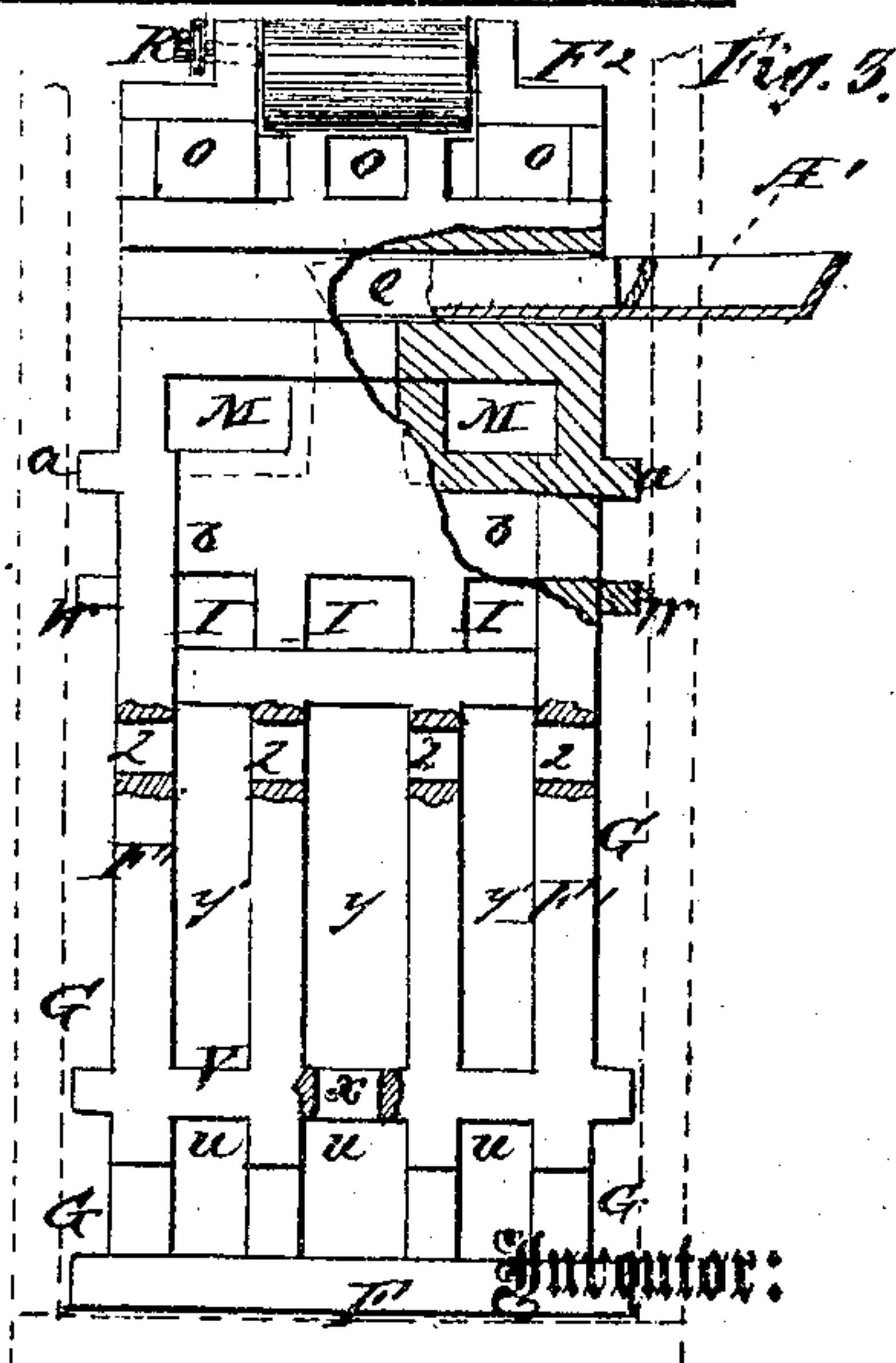
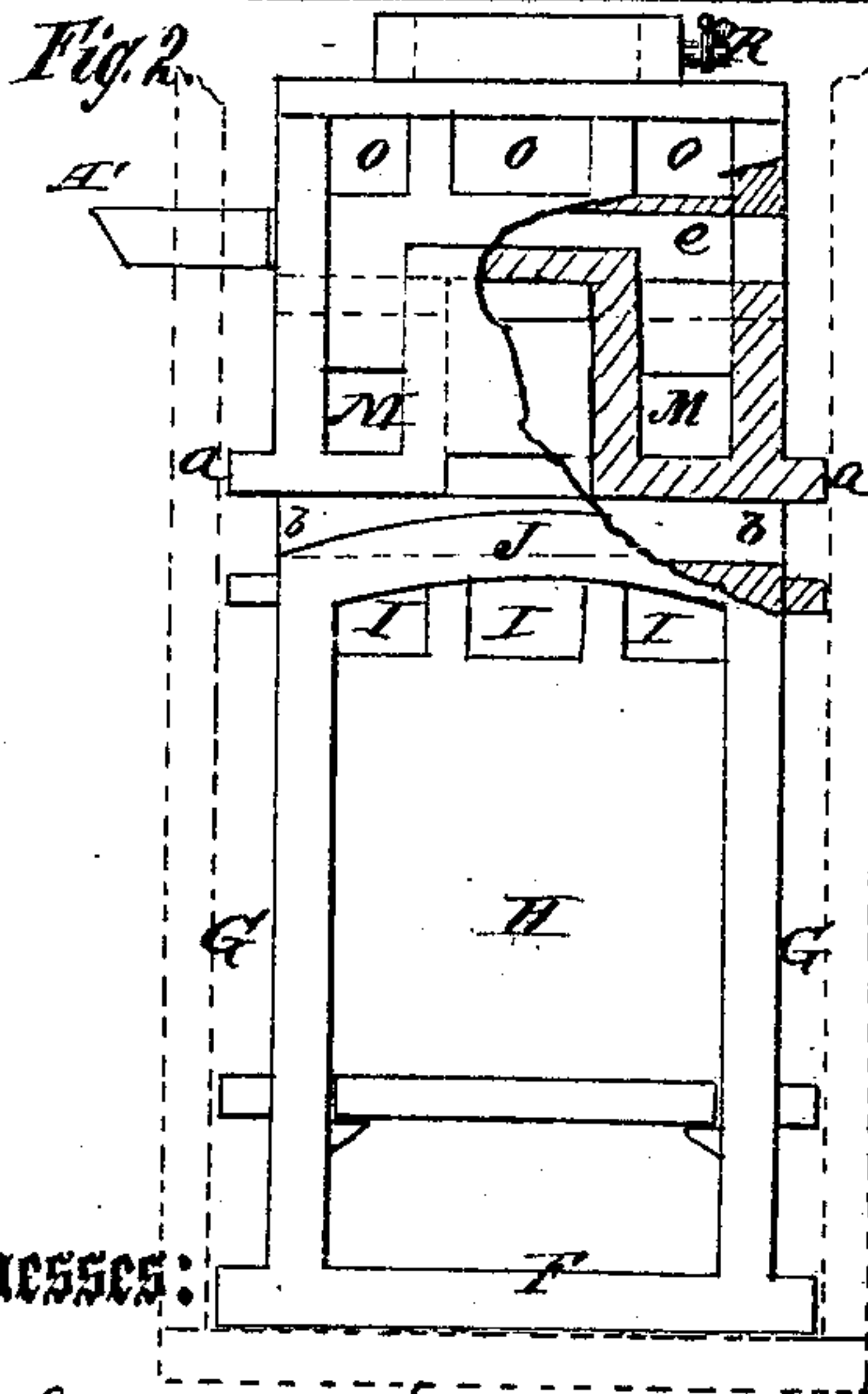
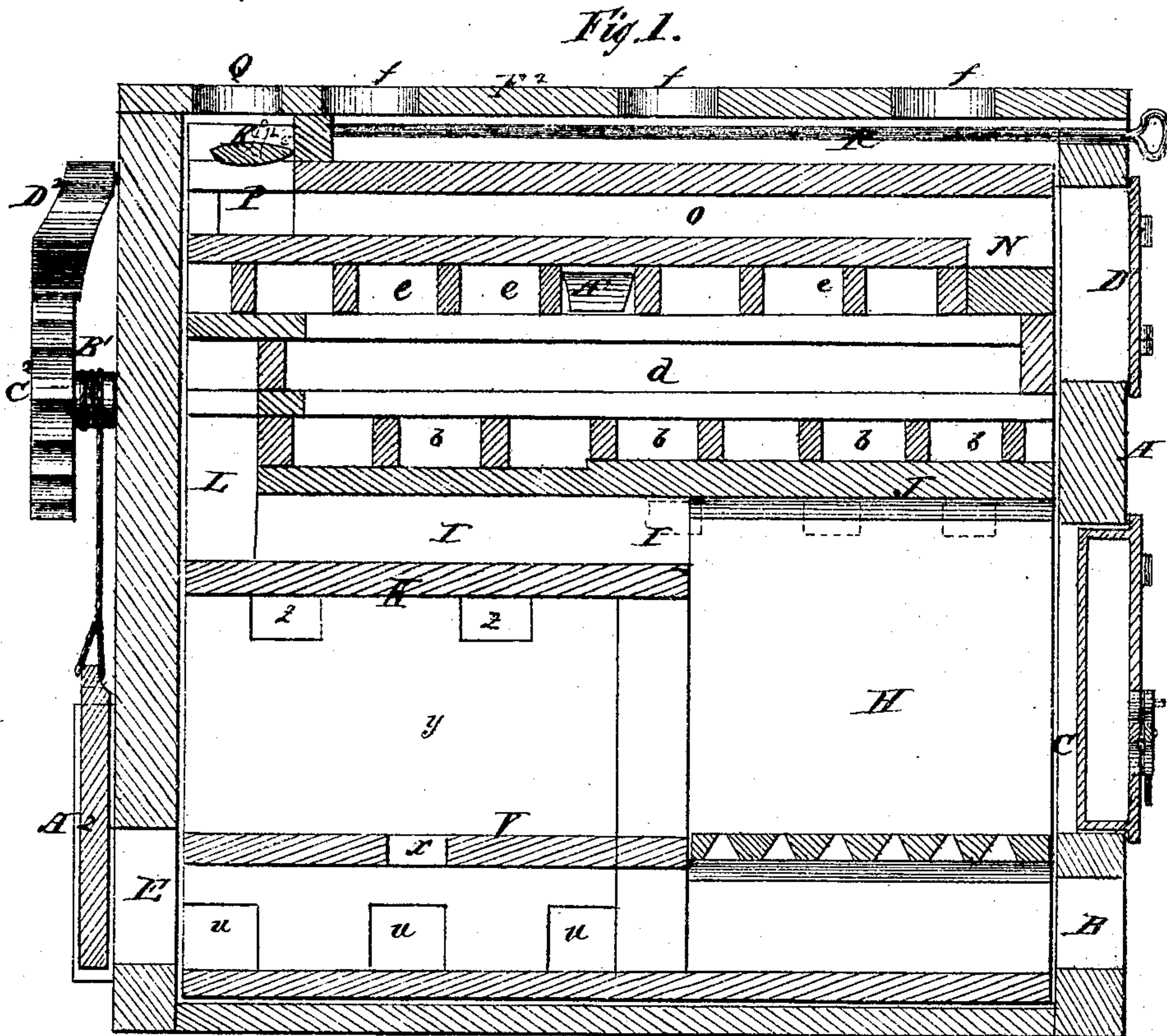


J. MEALEY.  
Hot-Air Furnace.

No. 128,555.

Patented July 2, 1872.



Witnesses:

Alex. J. Roberts  
Francis McArdle.

Inventor:

PER

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# UNITED STATES PATENT OFFICE.

JOHNSTON MEALEY, OF OGDENSBURG, NEW YORK.

## IMPROVEMENT IN HOT-AIR FURNACES.

Specification forming part of Letters Patent No. 128,555, dated July 2, 1872.

Specification describing a new and Improved Hot-Air Furnace, invented by JOHNSTON MEALEY, of Ogdensburg, in the county of St. Lawrence and State of New York.

My invention is an improvement in hot-air furnaces made principally of brick, more especially upon that patented by John Gwynn May 8, 1869. Accordingly I fully disclaim whatever is shown or described therein, and desire to restrict myself to the improved construction which is hereinafter described.

Figure 1 is a central longitudinal sectional elevation of my improved furnace. Fig. 2 is a front elevation with the outer wall removed and with a part broken out; and Fig. 3 is a similar rear elevation.

Similar letters of reference indicate corresponding parts.

A is the outside structure, of rectangular form, made of brick, with three openings, B, C, and D, in the front for the ash-pit, fire-door, and opening to the flue-space, respectively, and the cold-air opening E at the rear. F represents the bottom, F<sup>1</sup> the sides, and F<sup>2</sup> the top walls, of an inside structure, also of brick, in which the fire-pot, smoke-flues, and some of the cold-air flues and chambers are arranged, the ends of said walls fitting closely against the end walls of the outside structure, so that they constitute the end walls of the inside structure also. The said structure is considerably narrower than the interior width of the outer structure, so that a heating-space, G, is provided between the walls F<sup>1</sup> and the side walls of A. H is the fire-chamber, from which the smoke-flues I extend over the wall K to the space L behind, from which two flues, M, extend back to the front to the space N, from which there are three flues extending back to the space P, from which the smoke escapes through the top to smoke-pipe Q, and wherein a damper, R, is arranged to regulate the discharge, said damper being operated by the rod R extending through to the front. The cold air enters to the spaces U below the wall V, and spreads laterally through the dividing walls to the spaces G, where it is checked against rising immediately upward by the ribs W, and caused

to move backward along the side walls F to take up the heat thereat before rising. Some of the cold air passes up through passages X, shown in Figs. 1 and 3, to the middle space Y between the walls V and K, thence through the passages Z Z, taking the heat of chambers Y' to the spaces G, in which the ascent is wholly cut off by the long ribs *a*, extending the whole length of the side walls, to divert the air to the lateral passages *b*, through which it goes to the long central longitudinal heating-chamber *d*, from which it escapes to the spaces G again, above the ribs *a*, and thence passes to the space *e* at the top, from which to be conducted away through the hot-air pipes *f*. The heating-chamber *d* is arranged between the two smoke-flues M, and the lateral passages *b* are between said flues and the flues I and the top wall J of the furnace. The upper lateral passages *e* are between said flues and the top flues O. A<sup>1</sup> represents a water-trough, extending through the outside wall into one of the upper lateral passages *e*, for generating vapor to mix with the heated air just before the latter leaves the furnace, so that the walls are exposed to the vapor but little. This trough will have a swinging gate in it, so arranged as to allow the water which is poured in at the outer end to flow through, and will prevent the escape of vapor. The fire-hole walls may be made of fire-brick if desirable, but may be of common brick; but when so made they will be lined with sheet-iron. The damper A<sup>2</sup>, for the cold-air inlet-passages E, is hung from a shaft, B', pivoted on the end wall of the outer structure, and having a ratchet-wheel, C<sup>2</sup>, which, being held by a pawl, D<sup>2</sup>, provides an easy way of adjusting it.

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

In the improved furnace herein described, the arrangement of the cold-air passage E, passage X, chambers Y Y' Y', passages Z Z, spaces G, and dividing ribs, the passages *b b*, central longitudinal heating-chambers *d*, and the spaces *e e* arranged with the respective combustion chambers or passages, all as

shown and described, whereby the cold air, upon entering the furnace, is divided into two currents, one passing up through the center of the furnace, and the other passing between the outer and inner walls to a common or converging point, whence the united currents pass through an inner chamber between

two combustion-passages to reach the discharge-openings, as specified.

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Witnesses:

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