

No. 723,308.

PATENTED MAR. 24, 1903.

W. C. REYNOLDS.
HOT AIR FURNACE.

APPLICATION FILED SEPT. 10, 1902.

NO MODEL.

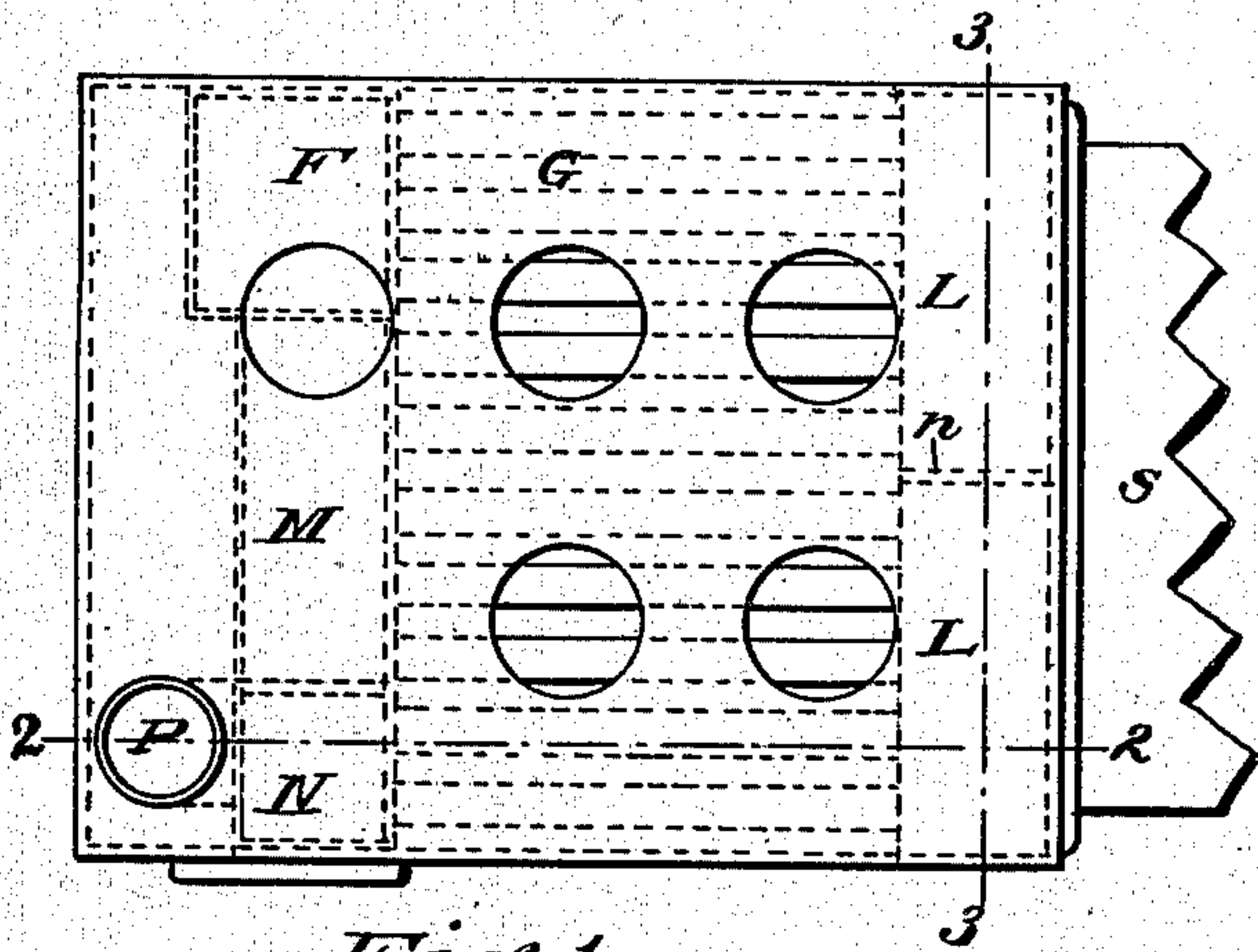


Fig. 1.

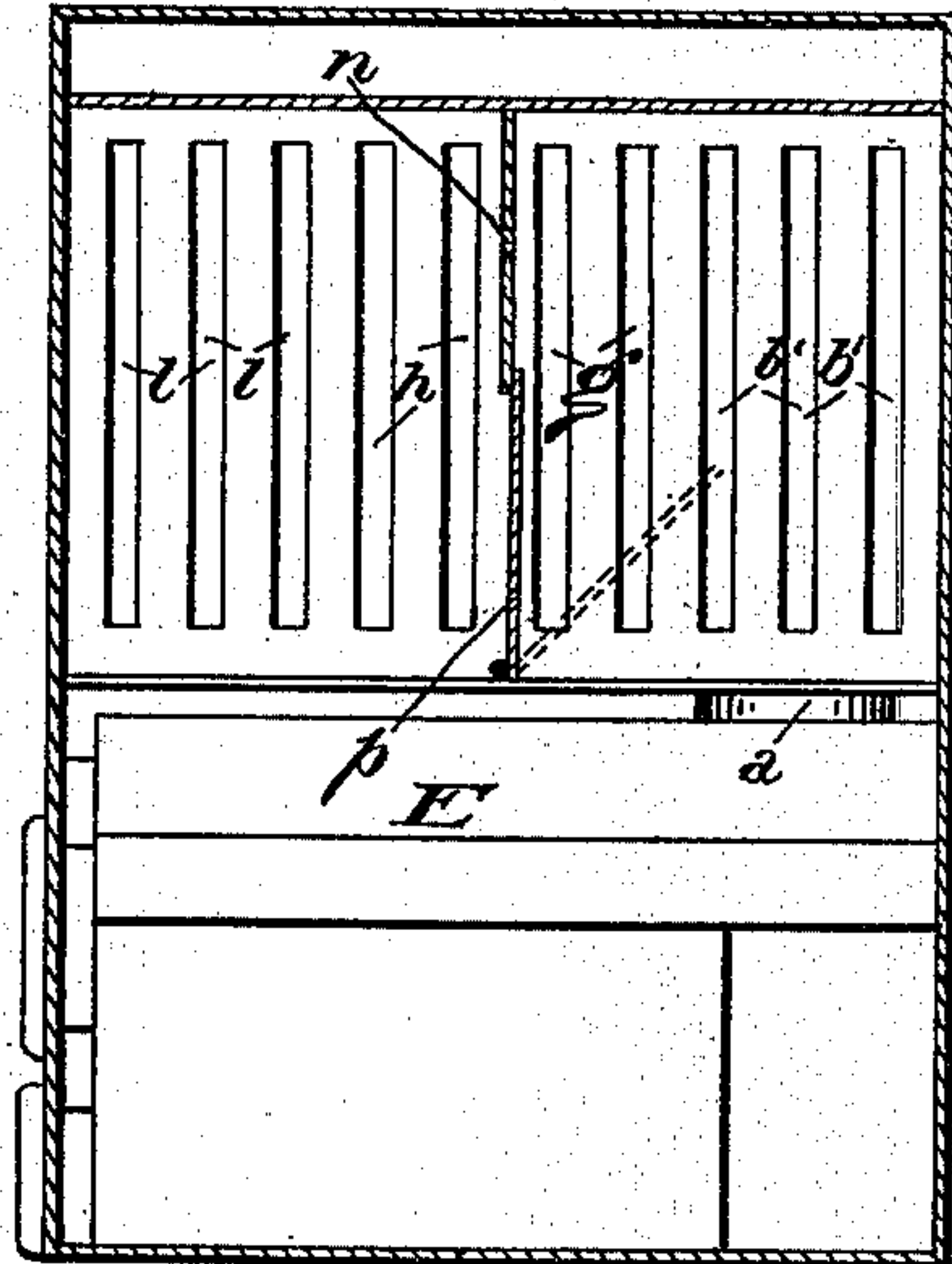


Fig. 3.

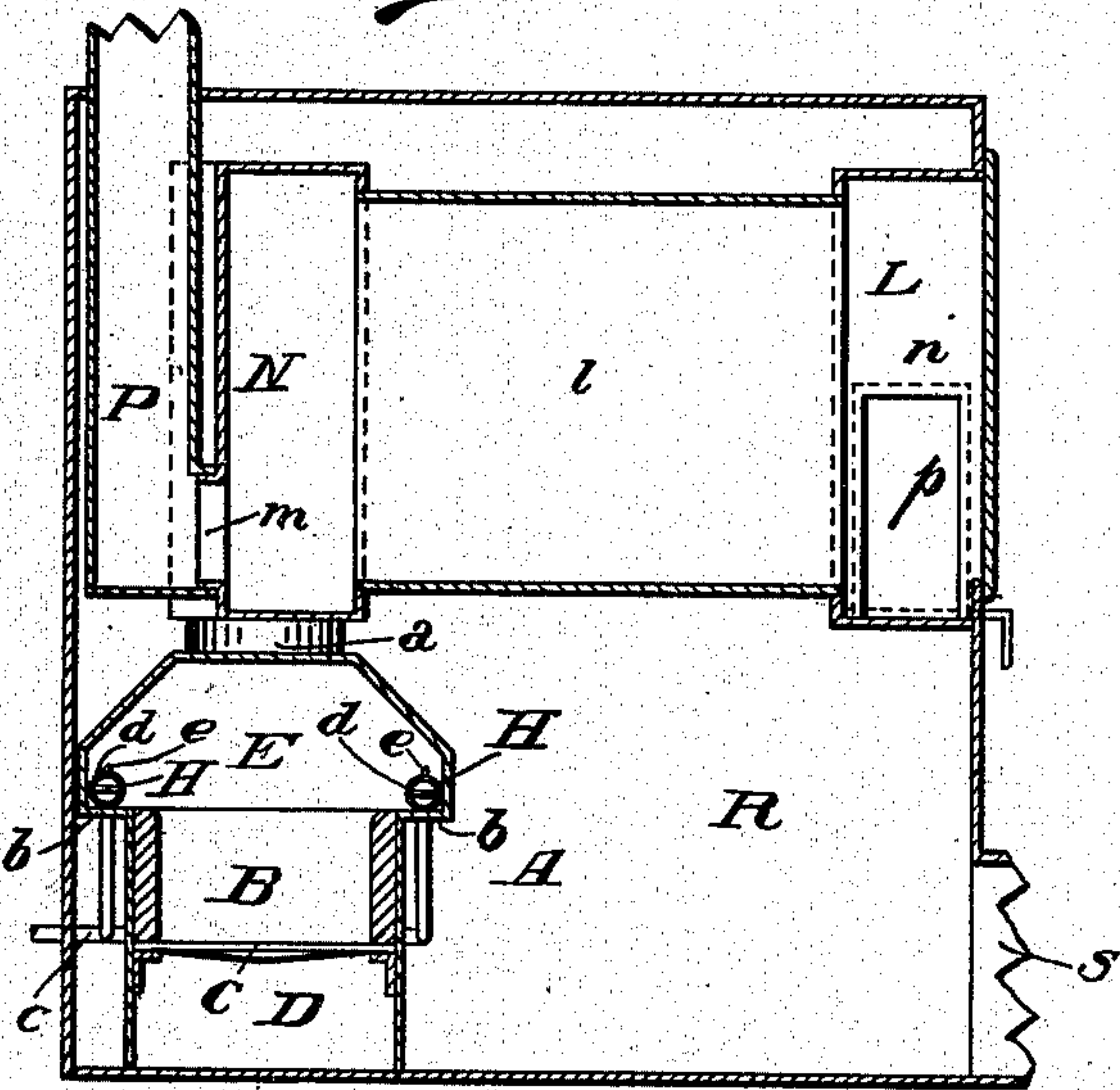


Fig. 2.

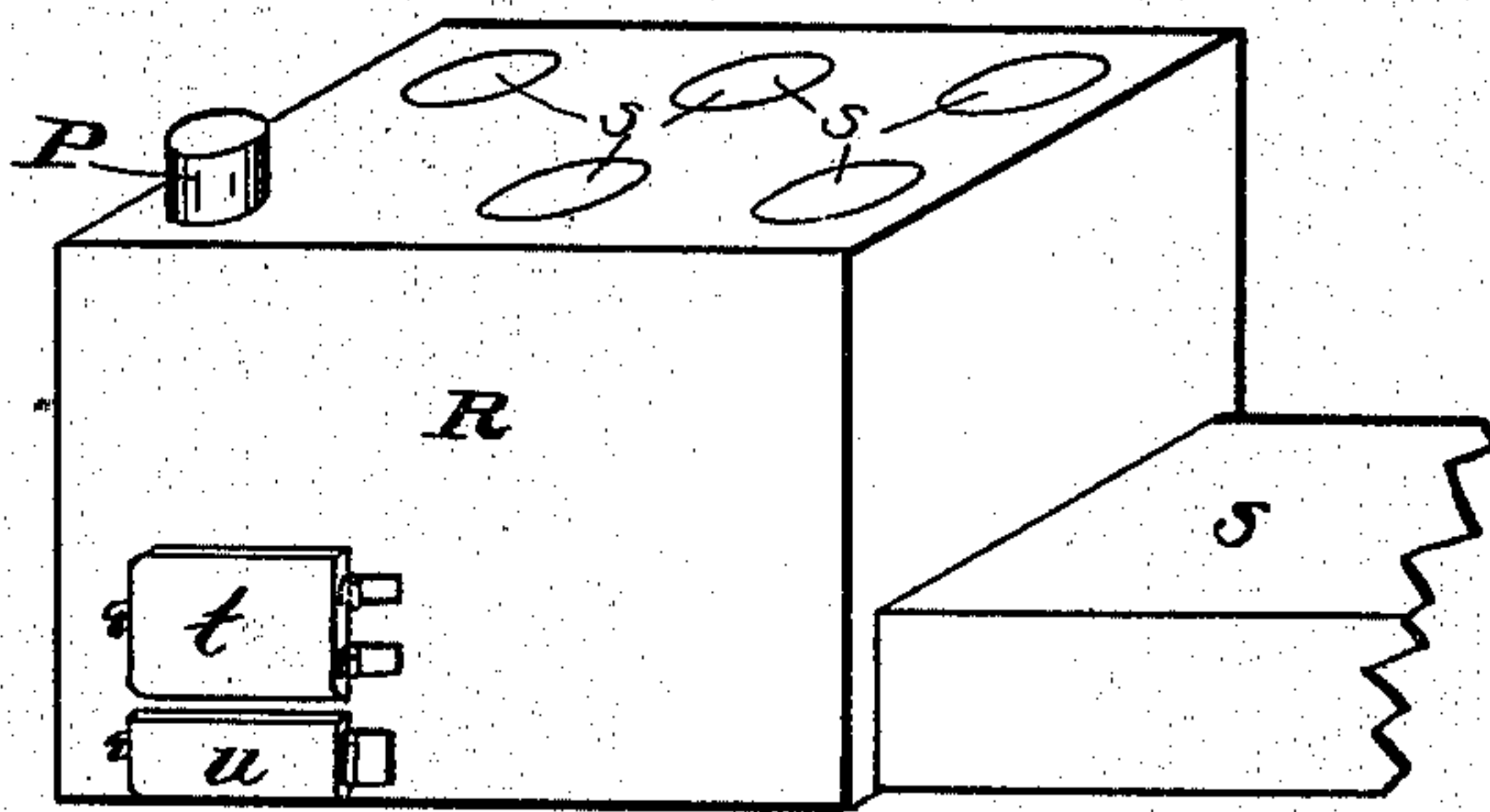


Fig. 4.

Witnesses

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UNITED STATES PATENT OFFICE.

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HOT-AIR FURNACE.

SPECIFICATION forming part of Letters Patent No. 723,308, dated March 24, 1903.

Application filed September 10, 1902. Serial No. 122,767. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. REYNOLDS, a citizen of the United States, residing at Springfield, county of Clark, and State of Ohio, have invented certain new and useful Improvements in Hot-Air Furnaces, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to hot-air furnaces in which either coal or gas can be employed for the heating; and it consists of the certain novel construction and arrangement of parts, to be hereinafter particularly pointed out and claimed.

In the drawings, Figure 1 is a top plan view of my improved furnace, showing the flues in dotted lines. Fig. 2 is a vertical section of same, taken on the lines 2 2 of Fig. 1. Fig. 3 is a similar section taken on lines 3 3 of Fig. 1. Fig. 4 is a perspective view of the furnace and casing.

A is the furnace proper or heater oblong in shape and provided with the fire-pot B, suitably lined, the grate-bars C, and ash-pit D.

E is the combustion-chamber, provided at its rear end with the smoke-collar *a* for conducting the smoke and products of combustion to the chamber F, connected laterally with the smoke-retaining flues G. The combustion-chamber E is constructed somewhat wider than the fire-pot, leaving a shelf *b b* on each side running lengthwise of the chamber, and upon these shelves at each side are located the gas-burners H H. These burners are of any well-known construction, supplied with gas through pipe *c* and provided with a horizontal partition *d*, open at each end to compel the mixture of gas and air to traverse the length of the burner before exit through the series of openings *e*, where it is ignited.

The smoke-retaining flues G consist of a series of narrow rectangular passage-ways *b' b'*, extending vertically the height of the chamber F and leading laterally into the side chamber L. This side chamber L extends the entire length of the furnace and has a series of similar narrow rectangular passage-ways *g g* and *h h*, leading back and opening into the middle chamber M above the combustion-

chamber. At the front end this side chamber L is also connected by similar narrow rectangular passage-ways *l l* with the smoke-flue N, which opens into the smoke-pipe P through the collar *m*. The side chamber L is divided medially by the partition *n*, closed by damper *p*, so that when the damper is closed the smoke and products of combustion travel from the chamber F through flues *b' b'* to chamber L, through flues *g g* to chamber M, then back through flues *h h* to L, and thence through flues *l l* to the smoke-flue N and pipe P. To obtain a more direct draft, the damper *p* is opened to permit the smoke entering chamber L to pass directly through flues *l l* to the smoke-pipe. Doors are provided in the outside wall of the chamber L to permit ready access to the smoke-retaining flues.

The furnace is provided with the casing R, inclosing the heater and smoke-flues, and the cold air is supplied to the interior of this casing through the cold-air duct S, whence it passes around the furnace and up between the smoke-retaining flues and becoming thoroughly heated passes to the hot-air flues through the openings *s s* in the top of the casing R. The casing fits around the openings into the fire-pot and ash-pit of the heater, and then openings are closed by the usual doors *t u*.

By my arrangement and disposition of smoke-flues, under which the heated smoke is compelled to pass back and forth from the compartment L to compartment M before passing into the smoke-pipe, the heat from the smoke and products of combustion is radiated through the thin metallic walls of the smoke-retaining flues, and the superficial area of these flues is so large that practically all the heat of the smoke is utilized in heating the incoming cold air surrounding them.

For the purpose of cleansing the smoke-flues the outside wall of the chamber L is provided with doors to furnish easy access to the flues.

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

1. In a hot-air furnace, the combination with a heater and smoke-pipe therefor, of a

series of narrow, rectangular, laterally-disposed smoke-retaining flues, smoke-chambers at each end of said flues, with partition and damper therefor for compelling the smoke to
5 travel from one chamber to the other and back, said chambers and flues being interposed between the heater and smoke-pipe and a casing for cold air surrounding same, substantially as shown and described.

10 2. In a hot-air furnace, the combination, with an oblong heater, with smoke-exit at the rear end, and smoke-pipe at the front end of smoke-chambers above and at the side of said

heater and a series of narrow rectangular laterally-disposed flues connecting said smoke
15 chambers and pipe and a side chamber connecting with said flues, with partition and damper in the side chamber for compelling the smoke to traverse all of said flues, and a casing for cold air surrounding said flues and
20 chambers, substantially as shown and described.

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Witnesses:

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