(No Model.) 2 Sheets—Sheet 1.

J. B. OLDERSHAW.

HOT AIR FURNACE.

No. 449,693. Patented Apr. 7, 1891.

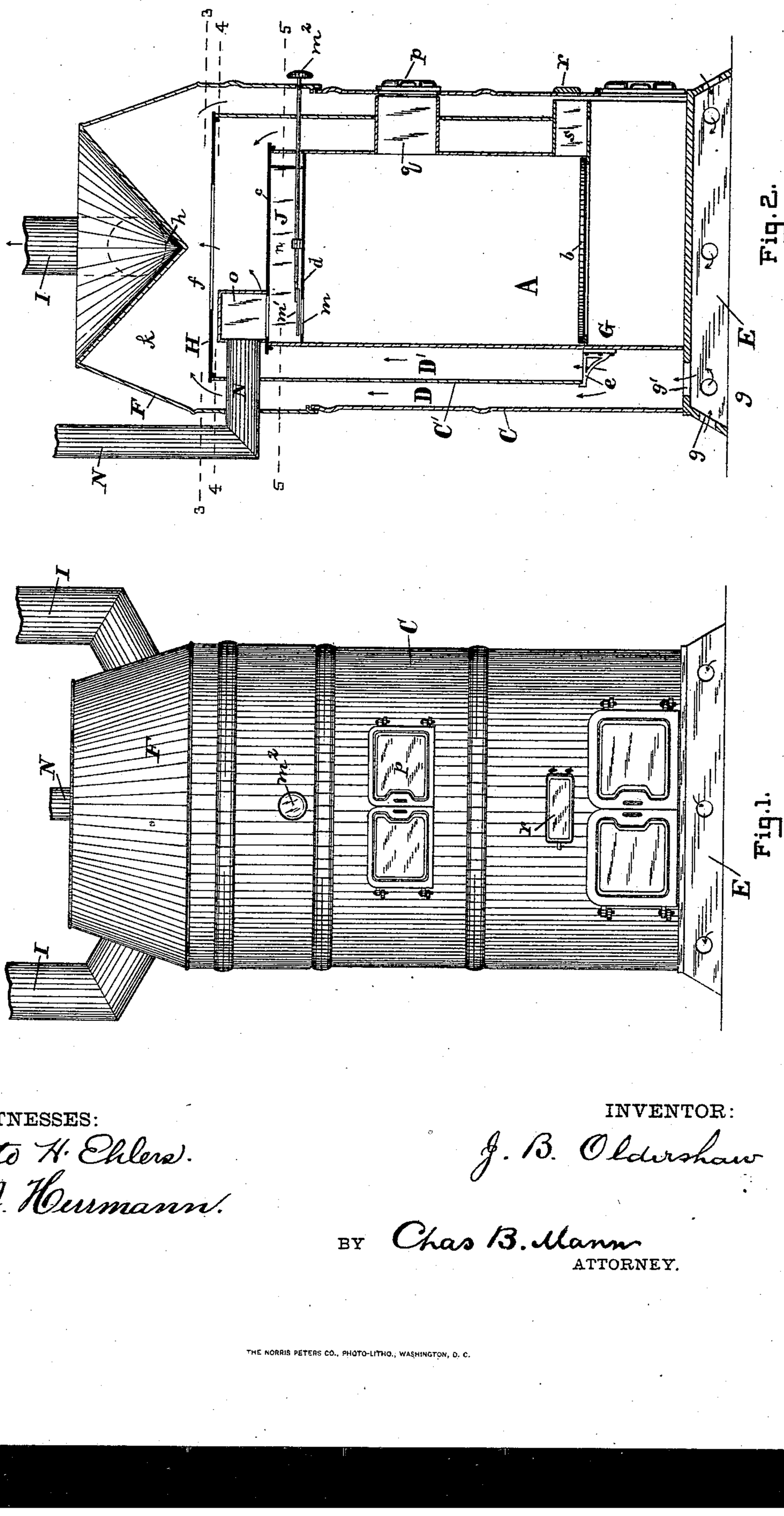

Fig. 2.

Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

J. B. OLDERSHAW.

HOT AIR FURNACE.

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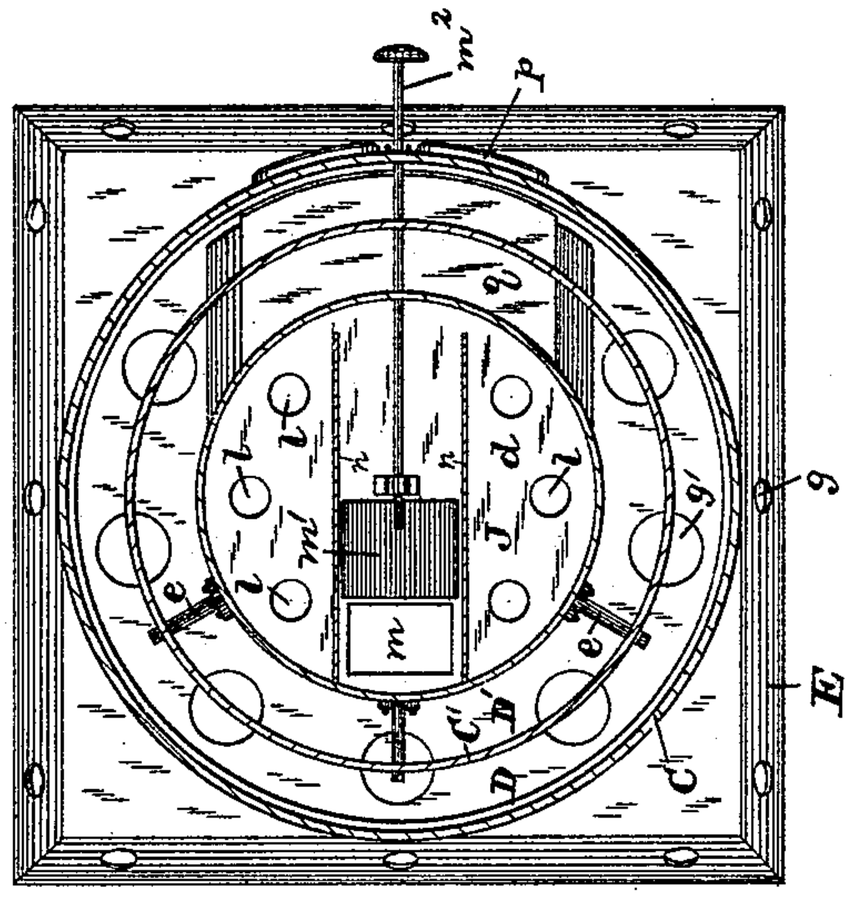

Fig. 5.

Fig. 3.

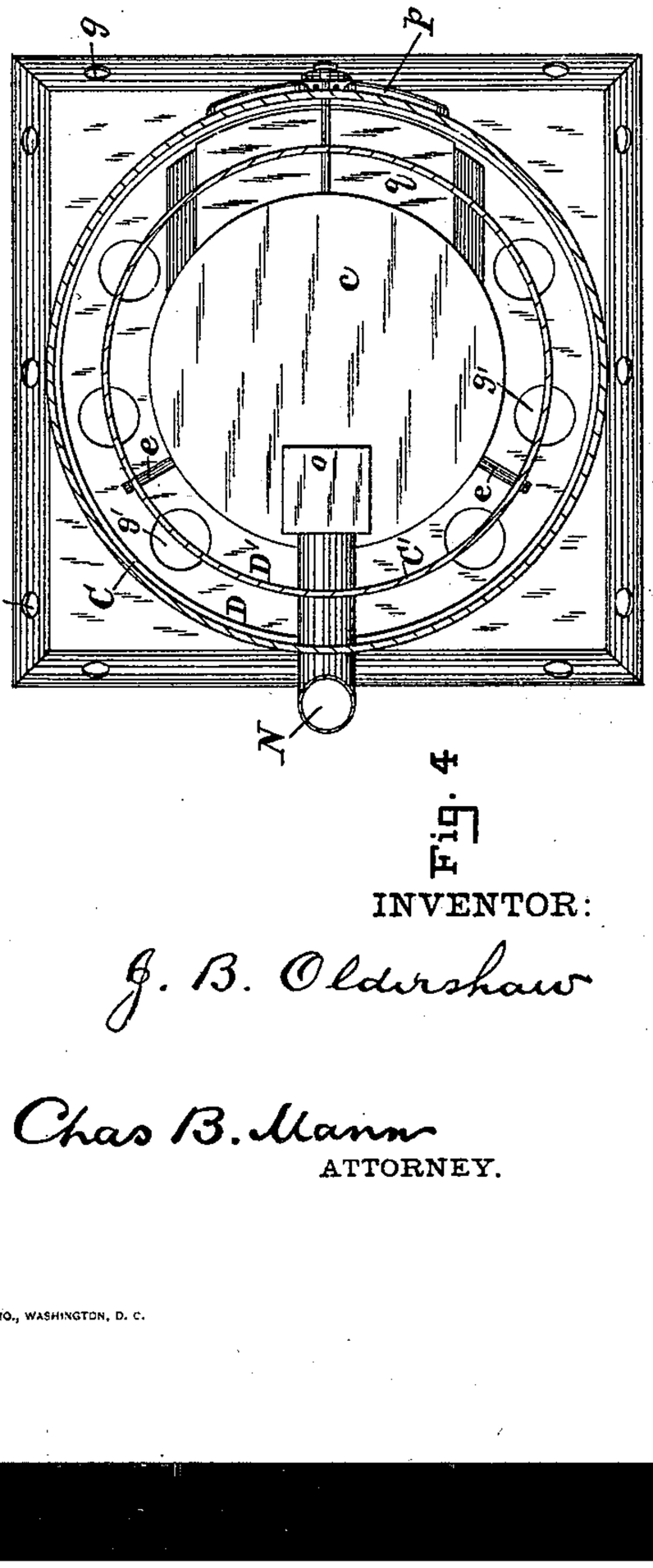

Fig. 4.

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UNITED STATES PATENT OFFICE.

JOHN B. OLDERSHAW, OF BALTIMORE, MARYLAND.

HOT-AIR FURNACE.

SPECIFICATION forming part of Letters Patent No. 449,693, dated April 7, 1891.

Application filed July 26, 1890. Serial No. 359,995. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. OLDERSHAW, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Hot-Air Furnaces, of which the following is a specification.

This invention relates to a furnace for producing hot air for heating houses.

The invention is designed to avoid the diffusion of heat within the cellar or room where the furnace may be set.

The invention is shown in the accompanying drawings, in which—

Figure 1 is a side elevation of the furnace. Fig. 2 is a central vertical section of same. Fig. 3 is a horizontal section of the furnace on the line 3 3. Figs. 4 and 5 are also horizontal sections on lines 4 4 and 5 5, respectively.

The letter A designates the fire-pot and combustion-chamber; *b*, the grate; *c*, a top plate, and *d* a draft-regulating plate below the top plate.

C designates an outer jacket or case, and C′ an inner jacket between the walls of the combustion-chamber and the outer jacket. These two jackets or cases form two annular spaces D D′ around the combustion-chamber. The outer case C extends, as usual, from the base E to the covered top F; but the inner case C′ commences at the top of the ash-pit G, where supporting-brackets *e* are secured. This inner case rests on these brackets and therefrom extends upward to a top deflecting-plate H, which extends above and partly covers the combustion-chamber and has a large central opening *f*.

The base E has air-inlets *g g′*, which allow cold air to enter the two annular spaces D D′. The annular space D′ next to the combustion-chamber will contain the hottest air and the outer annular space D will contain air more or less heated, but not heated as highly as the other. The covered top has a central cone-shaped depression *h*, the lowest point of which comes down toward the central opening *f* in the deflecting-plate H. Hot-air-conveying pipes I are attached to the top at a point above the inside deflecting-plate H. By this construction of parts air will enter the base-inlets *g g′*, and the current will divide and parts will pass up each of the two spaces D D′. That which passes up the inner space D′ will come against the top deflecting-plate H, and thereby will be forced over the top plate *c* of the combustion-chamber toward the center opening *f* of said deflecting-plate, through which it will pass up into the top space *k*, where it will meet the other current of heated air that passes up the outer space D. The two currents will commingle in the top space *k* and then pass to the pipes I. These two separate spaces D D′ maintain so low a temperature of the outer case C as to prevent the diffusion of heat therefrom into a cellar or room where the furnace is set up.

The draft-regulating plate *d*, below the top plate *c* of the combustion-chamber, has indirect openings *l* near its perimeter, which lead up to a gas-chamber J, which is divided into compartments by means of the vertical deflecting-plates *n n*. This plate *d* also has a direct opening *m* near or under a dome *o* on the top plate *c*, with which dome a smoke-pipe N connects. A damper *m′*, between the plates *n n*, guards the direct opening, and a rod m^2 operates the damper. When the damper *m′* is closed, the products of combustion will have to pass through the indirect openings *l*, which are near the hot wall of the combustion-chamber, and into the top chamber J, and then to the dome *o* and smoke-pipe N. This indirect route of passage serves, first, to more highly heat the products of combustion before reaching the gas-chamber J, and, second, it affords time for the heat of these products to be absorbed by the top plate *c*, which latter then diffuses it or gives it off to the air-currents.

The door *p* guards the feed-passage *q*, and the door *r* a passage *s* on a level with the grate, through which the poker may be inserted.

Having described my invention, I claim—

1. A hot-air furnace having, in combination, the combustion-chamber A, a jacket or case C′, surrounding said chamber and leaving an annular space D′ between, an outer jacket or case C, surrounding the jacket first mentioned and leaving an annular space D between, a top deflecting-plate H, forming a close connection with the said inner jacket and which extends above and partly covers the combustion-chamber, and a covered top F, closely

connected with the said outer jacket and having a central cone-shaped depression *h*, the lowest point of which comes down toward the central opening in the deflecting-plate, as set forth.

2. A hot-air furnace having, in combination, the combustion-chamber, the top of which is provided with a gas-chamber having direct and indirect openings thereto from the combustion-chamber, deflecting-plates in the gas-chamber forming communicating compartments therein, a smoke-pipe communicating with one of the compartments, and a damper in that chamber for guarding the direct opening therein, substantially as described.

3. A hot-air furnace having, in combination, an inclosing jacket, a combustion-chamber having a top plate provided with a smoke-pipe dome *o*, a plate *d* below the said top plate, forming a gas-chamber J and provided with a direct opening *m*, leading to said dome, and with indirect openings *l* near its perimeter, and a damper guarding said direct opening, as and for the purpose set forth.

In testimony whereof I affix my signature in the presence of two witnesses.

JOHN B. OLDERSHAW.

Witnesses:

A. O. BABENDREIER,

JNO. T. MADDOX.