

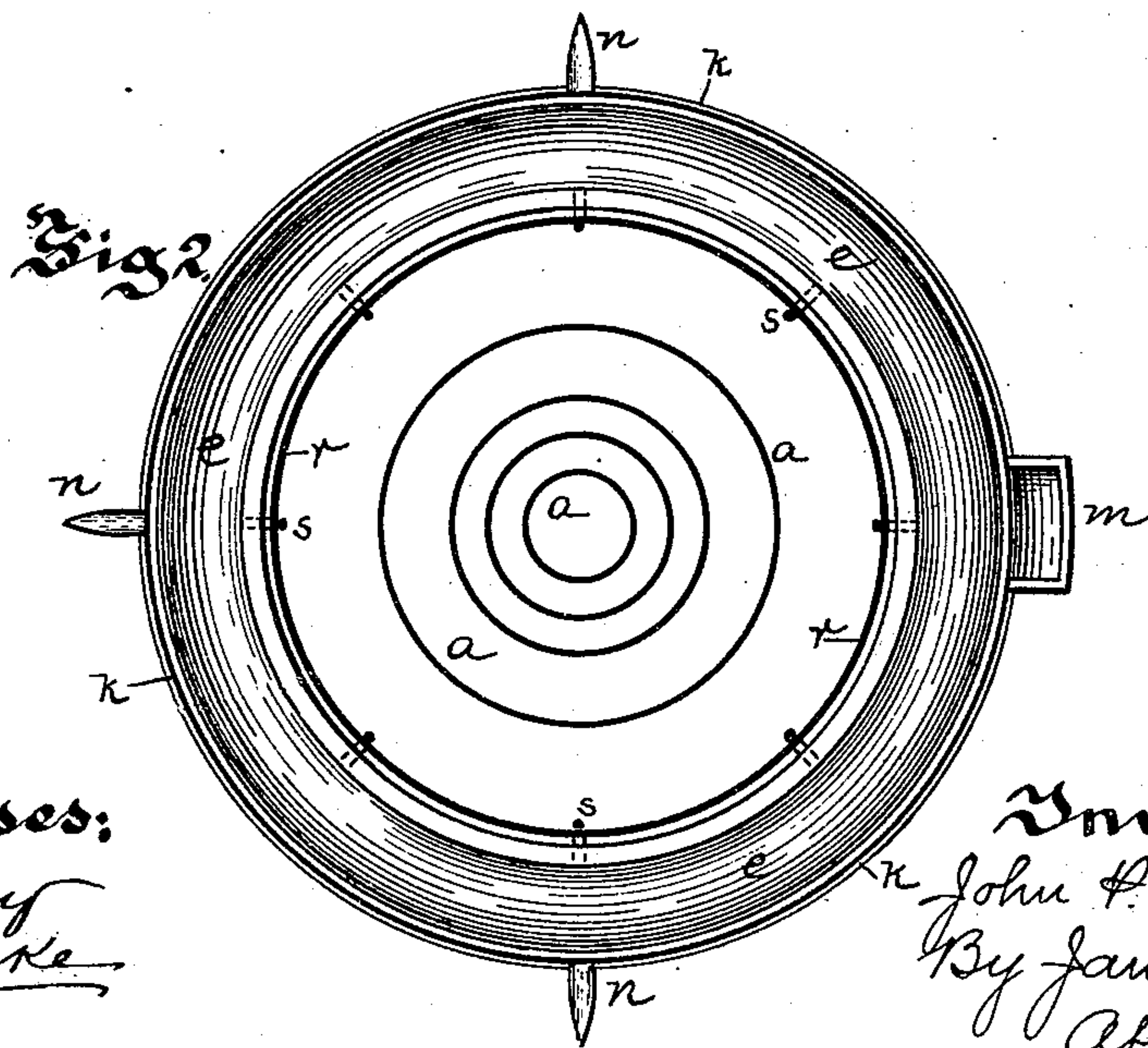
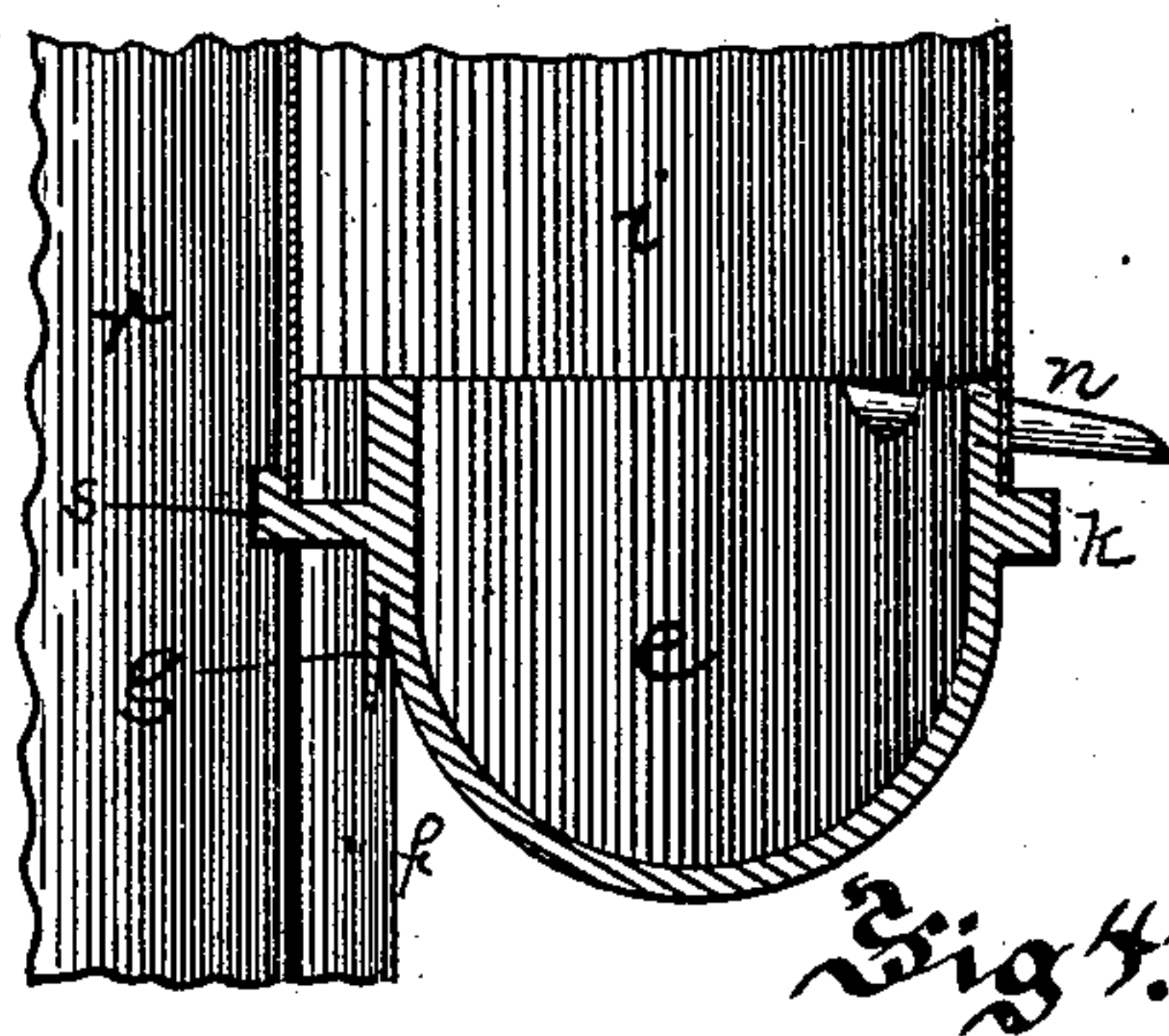
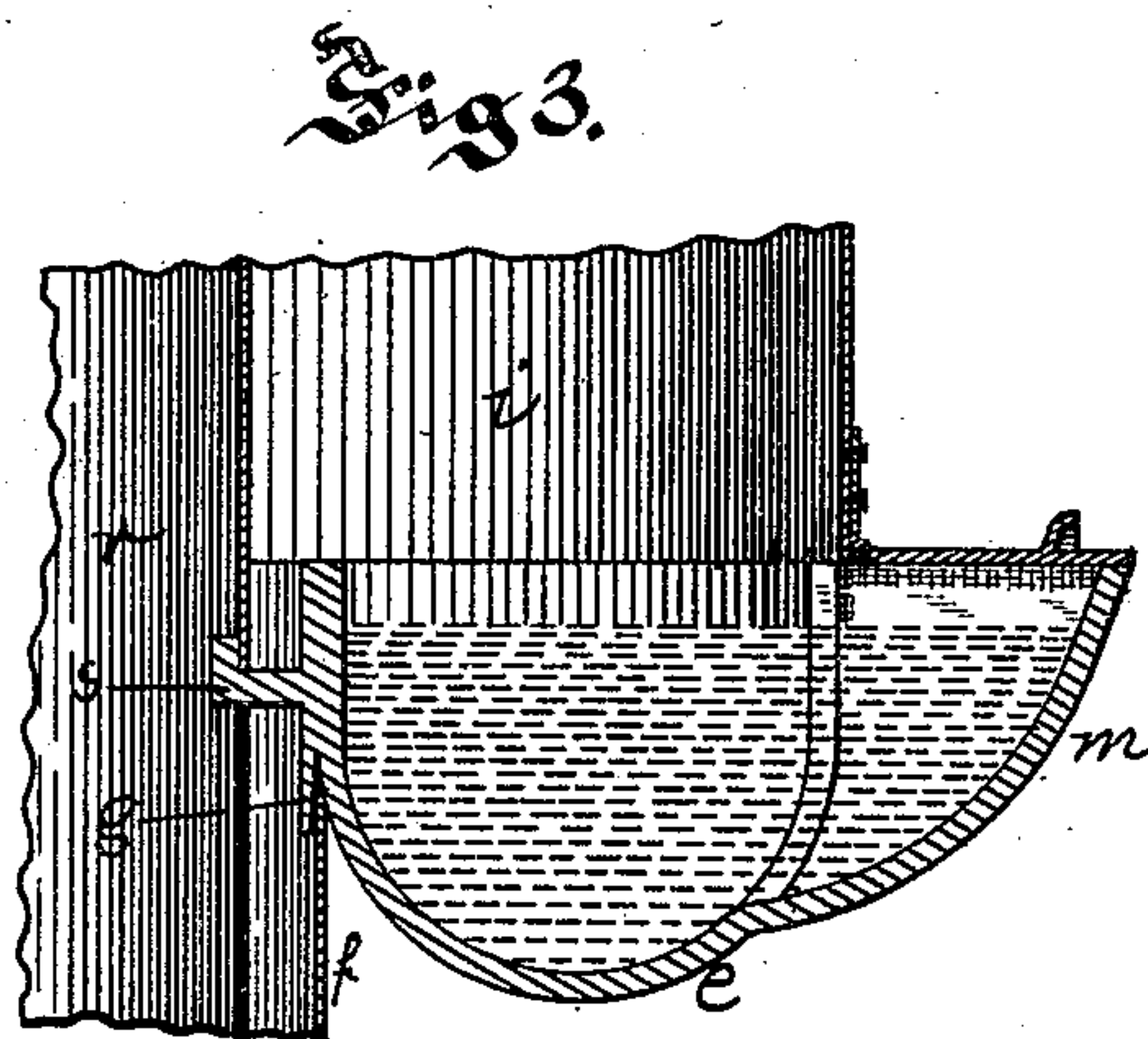
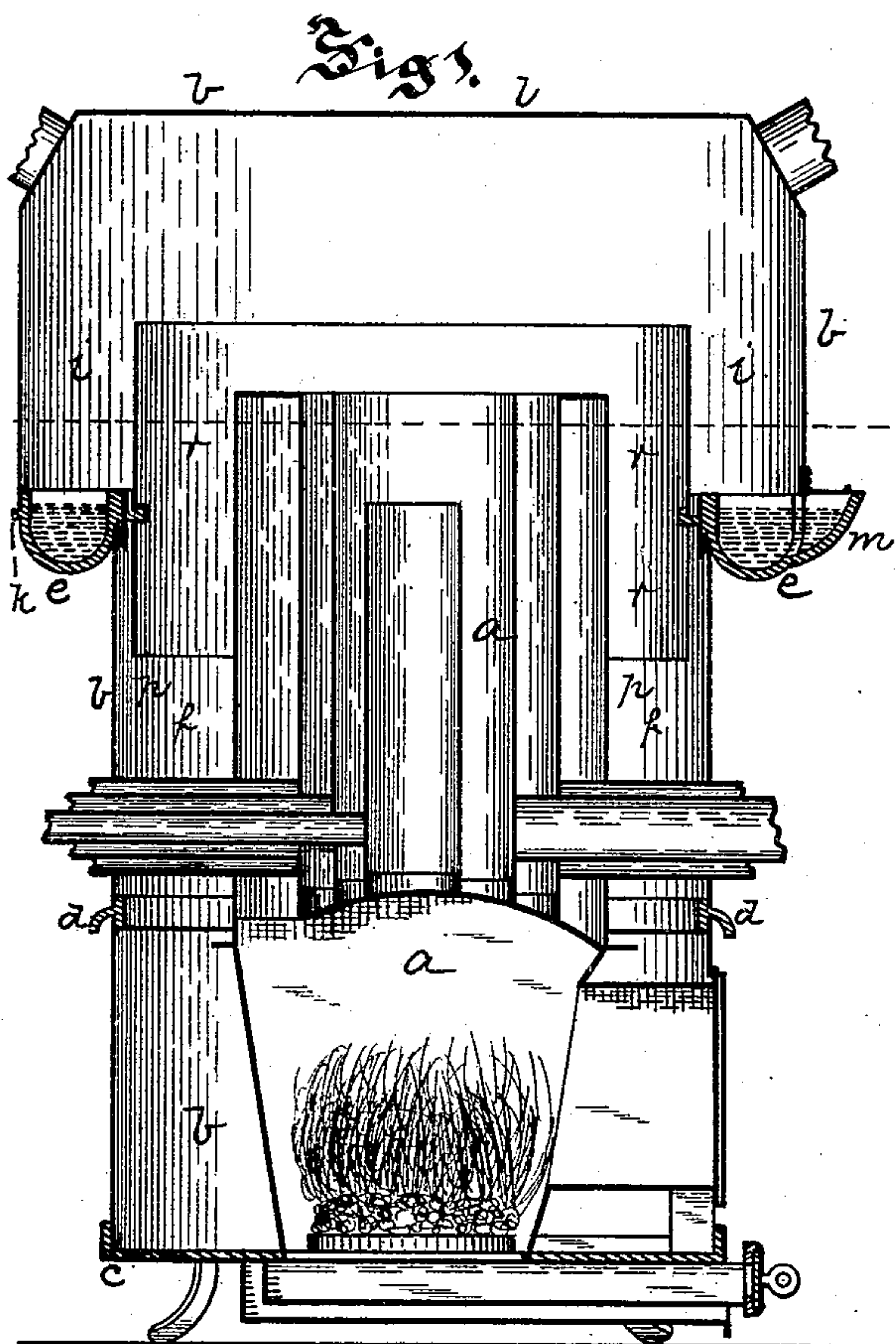
(No Model.)

J. P. SCHAFFER.

VAPOR PAN FOR HOT AIR FURNACES.

No. 361,551.

Patented Apr. 19, 1887.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN P. SCHAFFER, OF PITTSBURG, PENNSYLVANIA.

VAPOR-PAN FOR HOT-AIR FURNACES.

SPECIFICATION forming part of Letters Patent No. 361,551, dated April 19, 1887.

Application filed July 7, 1886. Serial No. 207,291. (No model.)

To all whom it may concern:

Be it known that I, JOHN P. SCHAFFER, of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Vapor-Pans for Hot-Air Furnaces; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to hot-air furnaces employed for heating dwellings, stores, and other buildings. In order to moisten the air heated in these furnaces it has been customary to place within the hot-air chamber a pan containing water, which would be vaporized by the heat, and the vapor mingling with the air would moisten it, so preventing any deleterious effect of the heated air upon the occupants. These vapor-pans were generally formed of a square pan at one side of the furnace, and it is evident that the vapor rising from such pan could not moisten all the air heated in the furnace, especially where there was a strong draft through the hot-air chamber when all the heat was being utilized. The proper moistening of the air is found of great importance in furnaces heated by natural gas, as the gas in burning has an avidity for moisture, and it has been found necessary to employ vaporizing apparatus in all rooms heated through grates or furnaces by this gas.

The object of my invention is to provide a vapor-pan by means of which all the heated air may be moistened.

It consists, generally, in an annular vapor-pan surrounding the body of the furnace proper and inclosed within the outer casing or walls, the pan being so placed that its walls are not directly exposed to the hot air, but the surface of the water is heated thereby, by which a sufficient amount of vapor is thrown off to moisten the air without causing the water to boil in the pan.

It also consists in combining this annular vapor-pan with the casing-ring of the ordinary portable furnace, so that the casing supports the vapor-pan, and the pan at the same time connects the upper and lower part of the casing.

To enable others skilled in the art to make and use my invention, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a vertical central section of a hot-air furnace illustrating my invention. Fig. 2 is a cross-section on the line X X, Fig. 1; and Figs. 3 and 4 are enlarged sections of the vapor-pan and casing at different parts therein.

Like letters of reference indicate like parts in each.

The furnace *a* may be of any desired construction, that shown being only as an illustration of any ordinary heating-furnace. Surrounding this furnace is the outer casing, *b*, which, in the stationary furnace, is generally built of brick, but in the portable furnace is formed of sheet metal, as shown, the casing being supported on the annular extension *c* at the base of the furnace *a*. The casing *b* is supported by suitable cast-metal casing-rings, as at *d*, which serve to brace the casing and hold it to shape. The number of such rings depend on the height of the casing and the width of the sheets of metal forming the sections of the casing.

My improved annular vapor-pan is shown at *e*, this pan surrounding the furnace and being supported by the casing thereof, and the pan being trough-shaped to retain the desired quantity of water. When employed with the sheet-metal casing, as shown, the vapor-pan serves as a casing-ring, the section *f* of the casing below the pan fitting between the body of the pan and the downwardly-extending annular lip *g*, and the annular vapor-pan being thus supported on the section *f* of the casing.

If desired, the annular vapor-pan may extend inwardly from the part of the casing supporting it; but I prefer the construction shown, for the reason that the vapor-pan is not brought so close to the furnace, and the liability of the too rapid vaporization of the water is prevented. The casing-section *i* rests on an annular bead, *k*, around the vapor-pan, the top *l* of the casing being supported thereby.

The annular vapor-pan is provided with a filling-chute, *m*, and with one or more overflow-spouts, *n*, by means of which it is filled and the water prevented from running into the hot-air space *p* between the furnace *a* and the casing *b*, the casing-section *i* being cut away where the chute *m* and spouts *n* are formed.

In order to protect the vapor-pan from the direct radiation from the furnace, and to pre-

vent the rapid vaporization of the water therein, I prefer to employ the annular shield *r* between the pan and the body of the furnace, this shield being supported on lugs *s*, extending inwardly from the pan, and if the shield extends below the pan, as is desirable, slots extending from the base upwardly may be formed in the shield the distance it extends below the pan, the lugs *s* resting on these slots.

10 When the furnace having my improved vapor-pan is in use, the air enters at the base of the furnace and passes up in the space *p* between the furnace-body and casing, and in some cases through the body of the furnace, and the heated air causes the vaporization of the water within the annular pan, the vapor rising therefrom around the body of the heated air and becoming intermingled therewith in such manner as to moisten the heated air, the air necessarily passing through the annular body of vapor surrounding it before it can pass out of the casing. When the shield *r* is employed, it protects the water in the pan from the direct radiation of heat from the furnace-body, only a portion of the heated air passing between the shield and the casing, and this portion acting on the water in the pan to cause the vaporization of a sufficient quantity to properly moisten the air. Practical use has

25 proven that much better results are obtained with my improved vapor-pan than when the ordinary pan at one side of the furnace is employed, the entire body of heated air being evenly moistened. In the portable furnace

the annular pan also acts as a casing-ring to brace the sheet-metal casing, acting as a combined casing-ring and vapor-pan.

What I claim as my invention is—

1. An annular vapor-pan for hot-air furnaces, surrounding the furnace-body and supported entirely outside the walls of the furnace by the outer casing of the furnace, substantially as described.

2. In a hot-air furnace, the combination of a lower outer casing and an upper outer casing of larger diameter than the lower with an annular vapor-pan having its inner side secured to the lower casing and its outer side to the upper casing, substantially as and for the purpose set forth.

3. The combination, with an outer casing composed of two parts of unequal diameter, of the annular vapor-pan having the lip *g* on its inner side and the annular bead *k* on the outer side connecting said parts, substantially as and for the purpose set forth.

4. In combination with the annular vapor-pan surrounding the furnace-body, the annular shield supported between the furnace-body and the pan, substantially as and for the purposes set forth.

In testimony whereof I, the said JOHN P. SCHAFFER, have hereunto set my hand.

JOHN P. SCHAFFER.

Witnesses:

JAMES I. KAY,
J. N. COOKE.