

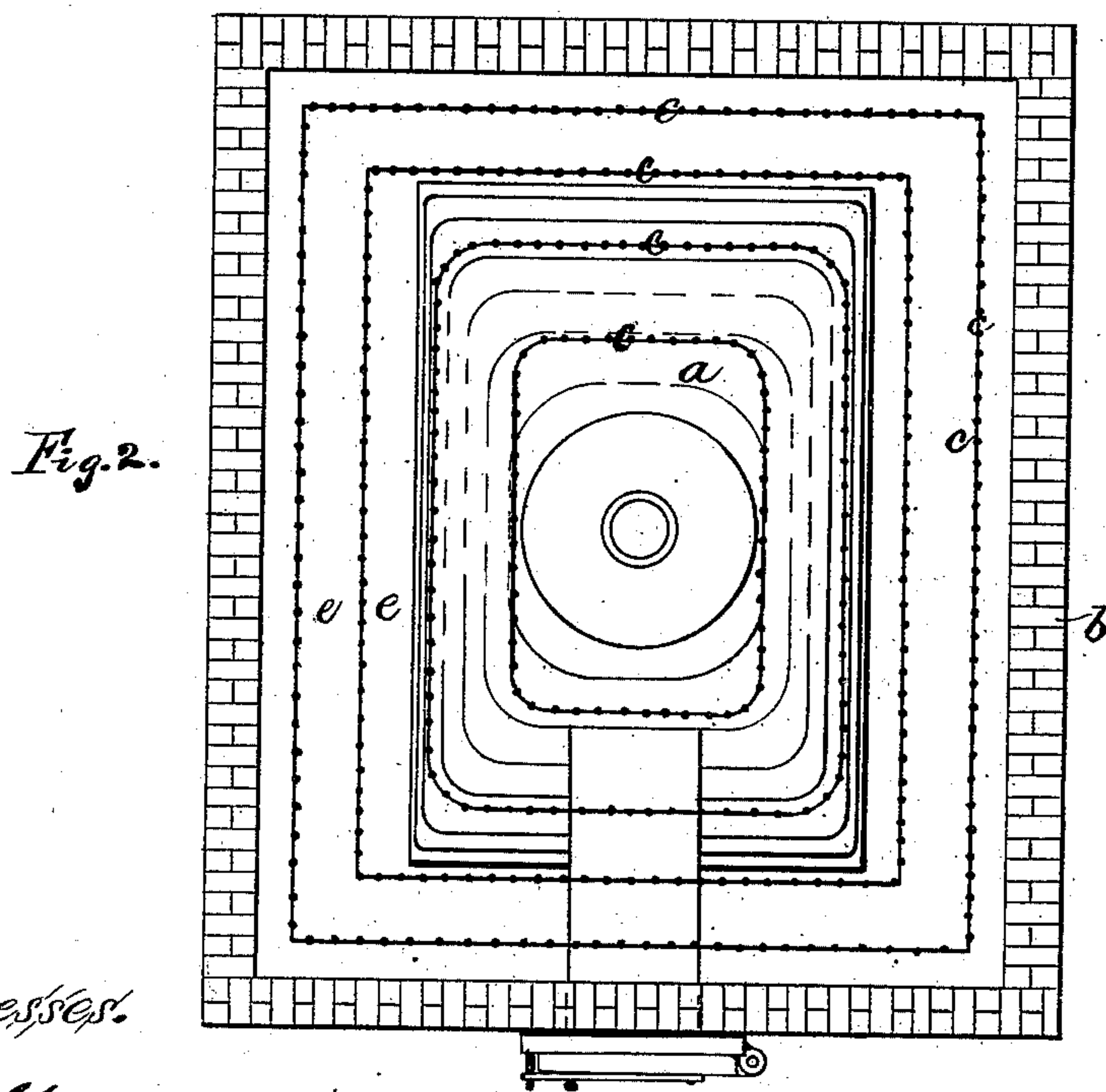
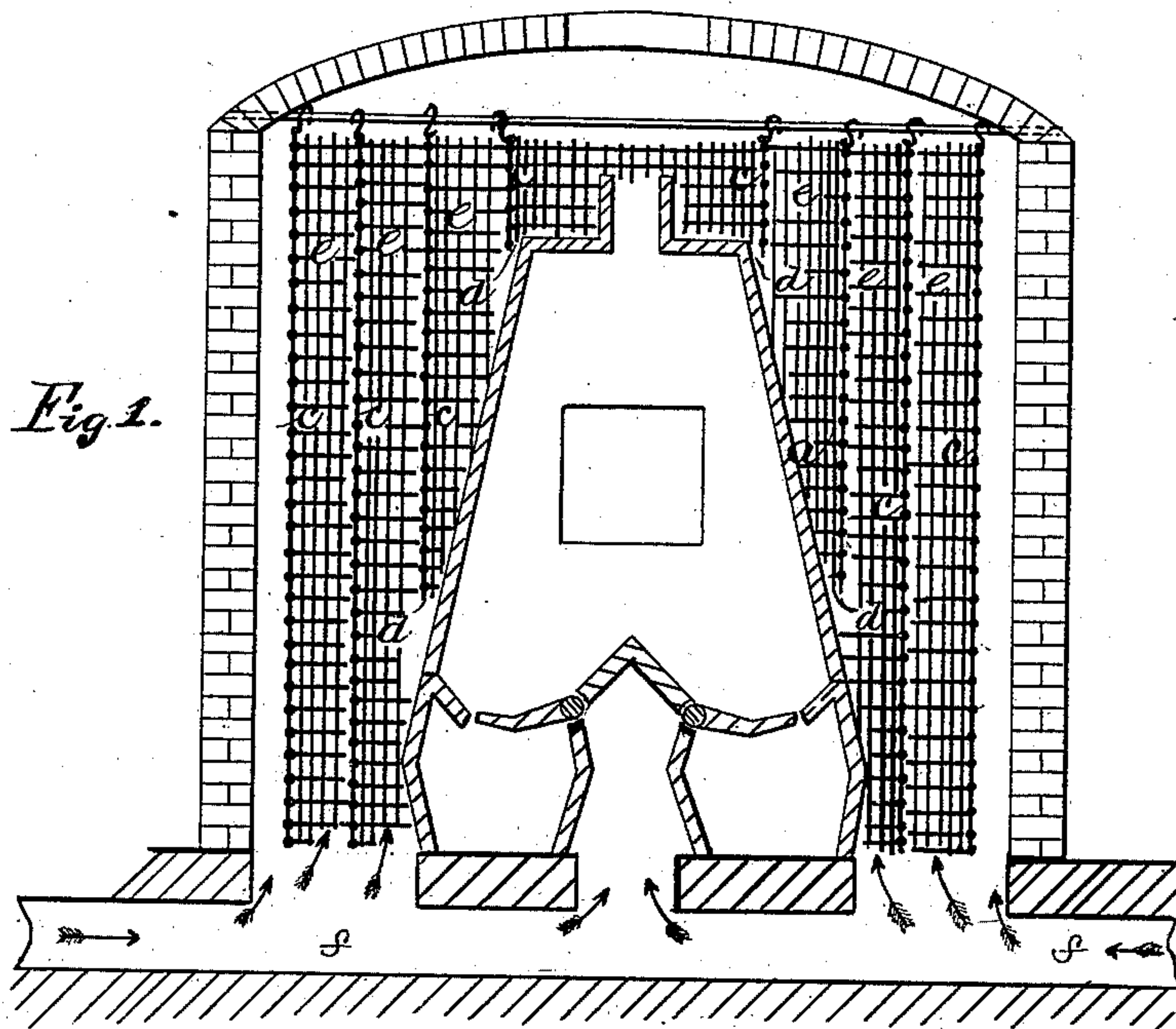
(No Model.)

E. A. TUTTLE.

HOT AIR FURNACE.

No. 311,152.

Patented Jan. 20, 1885.



Witnesses.

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EDWARD A. TUTTLE, OF NEW YORK, N. Y.

HOT-AIR FURNACE.

SPECIFICATION forming part of Letters Patent No. 311,152, dated January 20, 1885.

Application filed November 14, 1883. (No model.)

To all whom it may concern:

Be it known that I, EDWARD A. TUTTLE, a citizen of the United States, residing at New York city, in the county and State of New York, have invented a new and useful Improvement in Hot-Air Furnaces, of which the following is a specification.

My invention consists of one or more jackets or inclosures of woven wire surrounding the body of the furnace inside of the wall that incloses the air-space, preferring a series of said wire jackets, one within another, to intercept the radiant heat of the furnace and heat the air-currents rising up between and passing through them to better advantage than can be done by sheet-metal jackets or inclosures, because of more equal distribution of the heat, and also because of better effect on the air due to its free circulation through the meshes of the wire, and the air-currents have better action, because of not being confined in those spaces between the jackets that they may enter at the bottom, but may pass through the jackets from one space to another, and the air impinges much more effectively on the projections and transverse wires of the woven fabric than on the surfaces of metal plates, all as hereinafter fully described, reference being made to the accompanying drawings, in which—

Figure 1 is a sectional elevation of a furnace having a series of woven-wire inclosing-jackets surrounding it, and Fig. 2 is a top view of the same with the cover of the inclosing-wall removed.

The body of the furnace, *a*, may be of any approved form or construction, also the inclosing-wall *b*. In this case I have represented a furnace having an oblong base and gradually changing to a round form at the top, which I have surrounded with a series of four woven-wire jackets, *c*, of about the same form in cross-section as that of the furnace, and of different sizes, enabling them to be located one within the other, as shown. The jackets that are larger than the base of the furnace will rest on the ground; but those of smaller size will be suspended over the tapering sides of the heater, and a little above said sides, as shown at *d*, to allow free passage of air along up the sides and under the lower ends of the suspended jackets to pass into the interior spaces of the inner jackets.

The jackets suspended over the sides of the furnace may be supported in any approved way, either by being attached to the cover of the furnace, or they may be supported by those larger jackets that rest on the ground by any suitable connection to them. The air may enter the heating-space through any suitable opening, or by a conductor or conductors, *f*, discharging the air under the jackets, to supply them alike, or nearly so, and, if desired, the jackets may extend above the top of the furnace.

It may be seen that heat-rays passing through the meshes and intercepted by the first jacket may be lodged in the next, and others passing through two or more jackets may be lodged on the outer ones, and the air will be measurably divided into separate currents, according to the spaces *e* between the jackets, which will be heated about in the proportion of their distance away from the furnace, so that all or nearly all the heat will be taken up, and none or but very little will be absorbed by the furnace-walls. At the same time the air will pass back and forth through the meshes more or less, so as to have contact with the wires, in addition to that of the directly-rising currents, calculated to have the best effects.

It is to be understood that the essential object of the invention is to divide the space between the shell of the furnace and the walls inclosing the said space by webs of woven wire arranged parallel to the said shell of the furnace and the inclosing-walls, and forming corresponding annular spaces, in which the air rising between said webs will be effectually heated—some of it by direct action of the lateral heat-rays from the shell of the furnace, and some by contact with the wires, which are heated by some of the heat-rays intercepted by them, it being intended to employ a sufficient number of wire webs to intercept all the heat-rays and prevent any from reaching the inclosing-walls by direct contact; and it is an essential part of the arrangement that the annular and vertical spaces between the wire webs and between them and the shell of the furnace and inclosing-walls shall be free and clear, to afford as little obstruction as possible to the upward flow of air.

I am aware that coils of sheet-iron and loose pieces of metal have been placed radially and vertically in the air-heating space, to in-

tercept the heat-rays and become heated for heating the air flowing up along the intervening spaces; but such arrangements require much greater quantity of metal, are not as symmetrical, and offer much greater obstruction to the upward flow of the air than my arrangement, in which the series of successive webs together completely cover the walls and present a continuous and effective barrier to all lateral rays of radiant heat with but little mass of material, and at the same time afford but little obstruction to the upflow of the air.

I am also aware that wire webs have been set edgewise radially to the furnace, together with an annular horizontal web of similar material at top of the radial webs; but these do not cover the walls, and are but slightly effective for intercepting the heat-rays and preventing the heat from being wasted in the walls, and the horizontal webs have but very little effect upon the air passing through the meshes.

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

1. A hot-air furnace having one or more surrounding jackets or webs of woven wire arranged within the wall inclosing the air-space parallel to the furnace-shell and inclosing-walls, to intercept the heat-rays and heat the air, substantially as described.

2. In a hot-air furnace having a series of surrounding jackets of woven wire arranged within the inclosing-wall, one or more of said jackets suspended above the sides of the furnace, with a free space, *d*, between the furnace and the lower end or ends of the jacket or jackets, for the free passage of air under and into the said jacket or jackets, substantially as described.

EDWARD A. TUTTLE.

Witnesses:

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