(No Model.)

H. J. WATTLES.

HOT AIR STOVE.

No. 525,170. Patented Aug. 28, 1894.

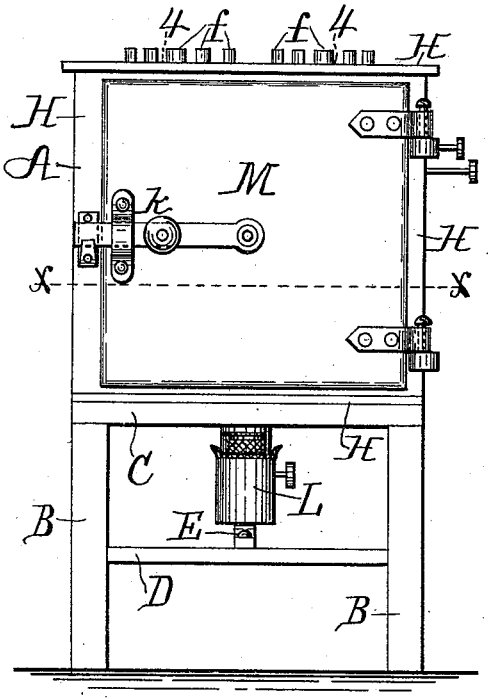

FIG-1-

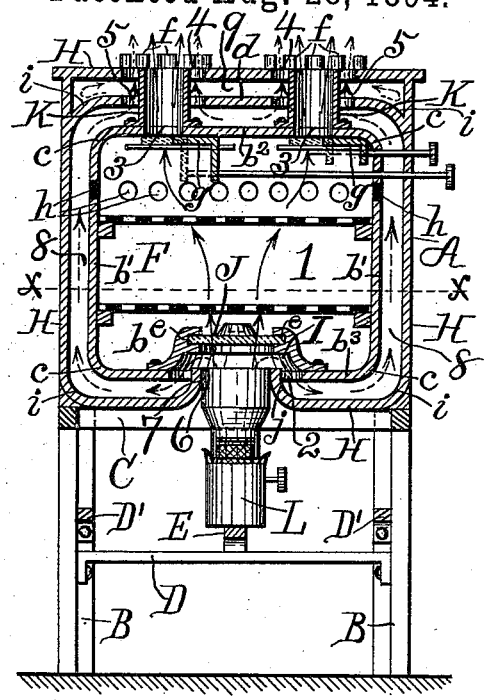

FIG-2-

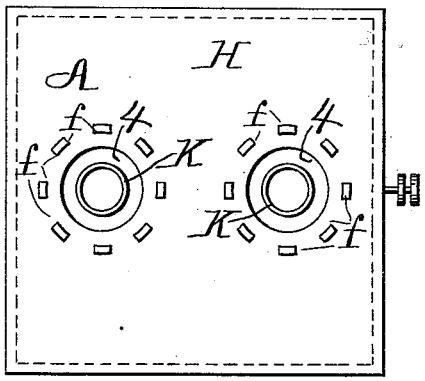

FIG-3-

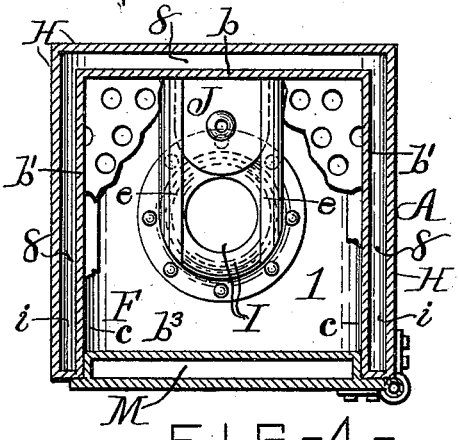

FIG-4-

Witnesses-

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UNITED STATES PATENT OFFICE.

HIRAM J. WATTLES, OF SYRACUSE, NEW YORK.

HOT-AIR STOVE.

SPECIFICATION forming part of Letters Patent No. 525,170, dated August 28, 1894.

Application filed November 7, 1892. Serial No. 451,174. (No model.)

To all whom it may concern:

Be it known that I, HIRAM J. WATTLES, a citizen of the United States, residing at Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Hot-Air Stoves; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation of my improved hot-air stove; Fig. 2 a longitudinal sectional elevation taken vertically central through the same; Fig. 3 a top-plan view; Fig. 4 a horizontal transverse section taken upon dotted line *x*, *x*, Figs. 1 and 2.

Like letters and numerals of reference denote corresponding parts throughout the several views.

My invention relates to heating or cooking stoves utilizing hot air for culinary and other purposes, and wherein illuminating oils, gas, or other satisfactory heat-generating liquids or gases are employed in connection with satisfactory supply sources and requisite lamps or burners.

The object of my invention is, the production of an improved construction of a stove of the species stated embodying such novel features of formation, arrangement, and simplicity of parts as will insure thereto exceeding durability and effectiveness, and thorough adaptability for the purposes wherefor it is designed.

My invention consists in the novel features of construction, operation and adaptation hereinafter described, and which are concisely enumerated in the annexed claims.

It is constructed as follows: A indicates the stove-body *per se*, B the supporting legs or standards thereof, connected with a horizontal rectangular-shaped frame C whereon the stove-body is mounted and suitably retained in position.

D are parallel longitudinal bars or rods connected respectively with the companion legs at the front and back of the structure; D′ similar but shorter bars erected transversely to the body and connected at either end of the stove to the adjacent front and back legs B; E a cross-bar disposed underneath the body A transversely central its length, and upheld at its ends by the bars D, and adapted and calculated as a support for a heating-lamp or lamps, burners, or suitable devices for the retention or conveyance for combustion underneath or within the stove-body of oils, gases and the like, to serve as fuel for the heating of the chambers, &c., of the stove.

The body of my stove is of practically square form, having a chamber or interior portion F suitably sub-divided in the manner hereinafter described.

1 denotes the oven or baker of the stove, said oven being practically rectangular, and created by the back and side walls or partitions b, b', b' respectively, and the horizontal top and bottom walls or plates b^2 and b^3 in the order named; and, preferably, the junction corners of the side and top and bottom walls are somewhat rounded, as designated by the letter *c*, placed at said parts; while horizontally across the oven, at desired intervals, are oven-grates upheld in position in any customary way.

One of the side-walls b' of the oven is disposed a brief distance away from the contiguous end portion of the exterior casing H of the stove-body, and the other side-wall b' a corresponding distance from the contiguous end portion of said casing; while the top-wall b^2 is disposed a corresponding distance from a horizontal wall or partition d erected intermediately between the top boundary of the oven and the horizontal top of the casing H, and which intermediate wall d preferably lies about equi-distant from the top of the oven and the top of the stove's casing; and the horizontal bottom wall of the oven lies a moderate distance from the underneath horizontal bottom portion of said casing H. Said casing extends (except where provided with openings) continuously at its top, bottom, side and end portions, and is of rectangular form. Centrally the bottom wall b^3 of the oven-chamber there is a circular opening 2 of some size, surrounded by a cylindrical collar I standing upwardly a moderate height into the oven, and fastened by its lower annular flanged termination to the bottom of the oven. This portion I in conjunction with the opening it encircles, forms a heat-con-

ductor leading thoroughly into the oven, and the collar arising as shown, and slightly contracting at its top, provides a reliable direct draft upward through the heat-conducting opening I. In suitable guide-ways *e* extending from the diametrical sides of the said opening rearward to the back of the oven, is mounted a slide or shut-off J adapted to be slid forwardly to close the opening I, or rearwardly to open up the same, as requisite; and upon the top surface of said slide is a boss or raised portion having an orifice therein whereby the curved pointed end of any suitable manipulating rod may be inserted therein for the carrying of the slide back or forth by the operator in the proper regulating of said opening. Obviously any satisfactory means may be employed in the manipulating of the slide J, the means shown being simply one expedient selected from among others equally applicable. Although herein a single-casing formation of my oven, except as to its top portion, is illustrated, I may, as is evident, when so desired, continue the double-casing formation both down the sides and back, such variation merely being a duplication of the double casing above the oven 1.

K indicates two cylindrical pipes, disposed vertically, at a suitable distance from each other, secured to the top plate b^2 of the oven 1, bounding the egress openings 3 formed therein, and projecting upward into the stove-holes 4 in the top-plate of the stove flush with said top, and an annular opening created around the pipes K thereat by reason of the diameter of the stove holes being somewhat greater than that of the entering pipes; and the openings 5 created in the intermediate plate *d* for the passage of said exit-pipes, are of similar diameter to that of the overhead stove-holes 4, thus creating thereat about the pipes a corresponding annular opening.

f are brief lugs disposed circumferentially outside the stove holes for the purpose of supporting the culinary vessels that may be placed over said holes such slight degree above the level of the stove's top as will permit of the necessary passage of hot-air from out the same.

g are slides or cut-offs to each of the egress-pipes K, which slides are movably retained in suitable guideways underneath the top-plate of the oven, and respectively provided with rods extending horizontally therefrom out through the oven's side and adjacent casing of the stove, whence by the working of the rod-handles the aforesaid slides may be readily moved. Adjacent the top of the oven I provide the rear and side walls thereof with a series of holes *h* communicating with the space bounding the oven-chamber. When preferred, said holes might be dispensed with. The casing or wall portions directly inclosing the oven are, at their meeting corners slightly rounded, as denoted by the letter *i;* the purpose of the curved corners aforesaid and those in the oven-body being to permit of, and assure, unrestricted and expeditious passage of the hot-air in the space surrounding (or practically) the chamber, it being evident that abrupt corners must, to some degree at least, partially retard the movement of the circulating medium. When wished, the rounding of the corners may, as is obvious, be dispensed with; certainly in such instances where too ready passage of hot air is deemed non-essential.

6 is a fair-sized opening in the bottom-plate of the casing H, located centrally underneath the oven 1, the circular wall 7 of said opening slightly tapered upwardly, continuing up to or slightly above the plane of the bottom-plate of the oven, and being of slightly less diameter than the collar-portion I and opening of the oven bottom obviously centrally occupies but a portion of the area existing thereat, creating an annular passage *j* between the aforesaid.

L is a lamp (of requisite capacity and power) located vertically underneath the opening 6 and supported by a cross-bar E afore referred to, the chimney part of the lamp projecting up into and fitting the tapered opening aforesaid. When desirable, I may duplicate the lamp and the related portions of the oven bottom and the bottom of the underneath casing necessary for the proper application of double lamps and their proper operation. Although, by way of exemplification I illustrate an oil-lamp as the heating-appliance to my stove, it is clear that gas-burners or other satisfactory heat producing devices may be employed.

M denotes the door to the oven 1, affording, when opened, entrance to not only the oven, but admission as well to the surrounding flues or passages; and *k* is a latch or lock wherewith said door is provided; moreover the door is preferably constructed of a double casing for insuring non-radiation of heat from the oven outwardly.

8 is a direct hot-air chamber or flue practically surrounding the oven, and 9 an auxiliary heating-chamber or flue lying on a horizontal plane contiguous the stove's top-plate and at a brief distance above the oven.

Preferably I construct the vertical sides, and back and front of my stove body of sheet iron, and the top and bottom plates of light castings.

The lamp beneath the oven 1 being burning, and the slide at the bottom of the oven-chamber as well as the overhead slides, opened, a direct central draft upward through the oven and out the stove-holes, of the hot air, is attained, whereby thorough cooking of vegetables, &c., contained in utensils located over the stove-holes, is insured.

When it is desired to do baking the slides at the top of the oven and the bottom slide are closed, causing the hot-air or products of combustion to pass around under, up the outer sides, and over the top plate of the

oven-chamber, and, thence externally the pipes leading from the oven to the stove holes, up the annular openings in the intermediate plate created around the afore stated pipes, and out of the stove-holes.

The side openings along the upper part of the oven are calculated for the admission of direct heat into the oven to a moderate degree when the direction of travel of the heated air is around the exterior of the oven.

In the drawings I indicate by full-arrows the direction of travel of the currents of heat when the several slides are in the positions shown by full lines, and by dotted-arrows the direction of travel of the hot-air currents when the slides are closed.

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

1. The combination, in a hot-air stove, of an oven, direct hot-air flues encompassing it at all points except its front, a heat-inlet opening communicating with said flues, a direct draft-opening leading from the aforenamed opening and flues and penetrating into the oven at its bottom, a slide to said opening, heat-exit pipes leading from the top of the oven into the overhead stove-holes and provided with slides, and a free passage externally the aforementioned pipes for permitting the escape of heat from the inclosing hot-air flues of the oven upwardly into the stove-holes of the stove's top, substantially as described and for the purposes set forth.

2. In a hot-air stove, in combination, a baking-chamber or oven having heating flues or chambers substantially surrounding same, a heat-admission opening beneath the oven communicating therewith and with the encompassing flues, a direct-heat admission opening located in the bottom of the oven overhead the first-named opening and provided with a slide or shut-off, heat-exit ducts leading from the upper portion of the oven to the above stove-holes and having slides or shut-offs manipulated from the outside of the stove-body, an auxiliary radiating-flue or chamber for ascending hot-air contiguous the stove's top, and vertical passages exteriorly the heat escape ducts of the oven-chamber, leading from the upper horizontal oven-heating flue to the auxiliary radiating-flue and thence into the stove-holes circumferentially the afore-mentioned heat-exit ducts of the oven-chamber, all arranged and operating substantially as and for the purposes specified.

In testimony whereof I affix my signature, in presence of two witnesses, this 30th day of September, 1892.

HIRAM J. WATTLES. [L. S.]

Witnesses:

CHAS. M. LUKENS,

WM. C. RAYMOND.