

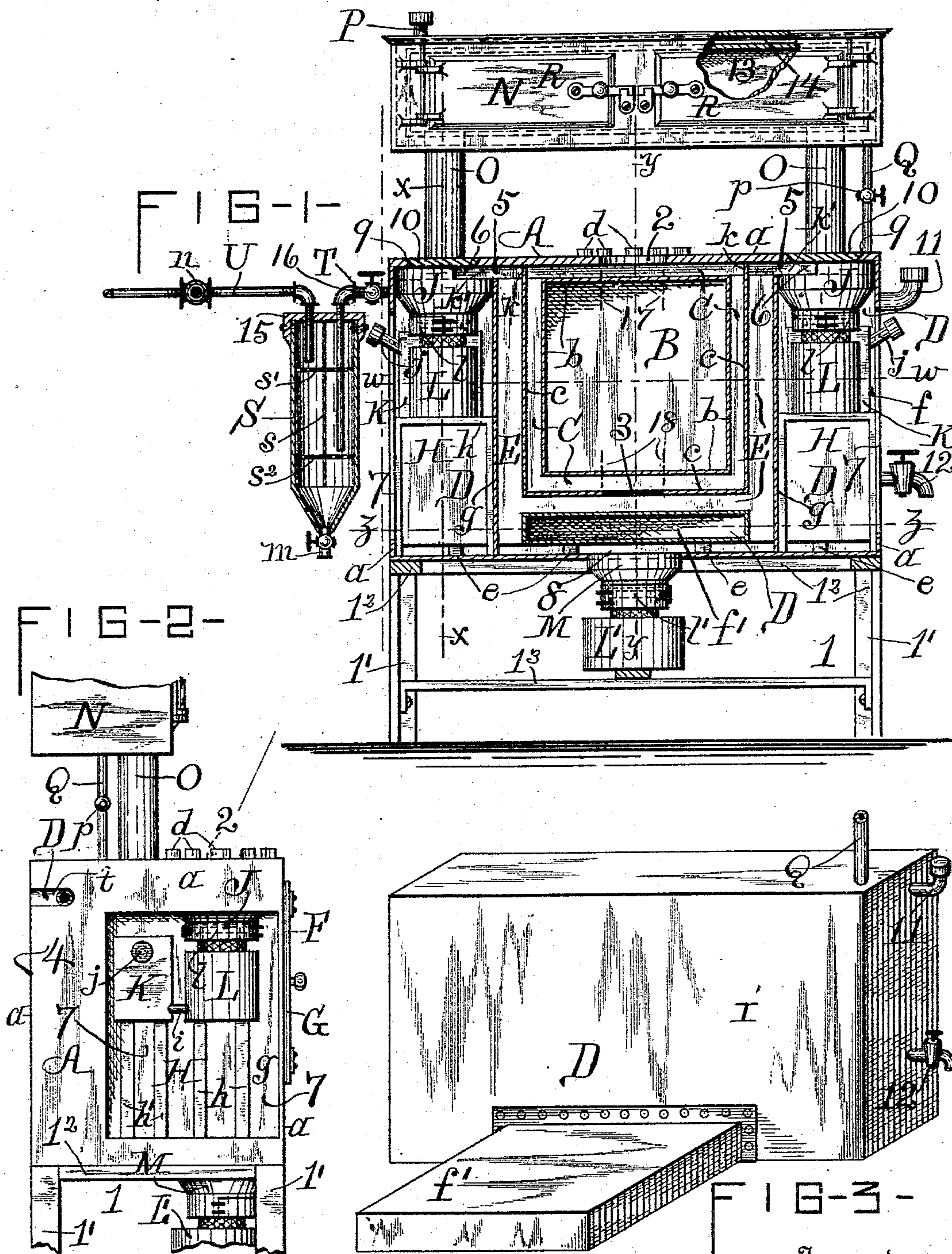
(No Model.)

2 Sheets—Sheet 1.

H. J. WATTLES.  
COOKING RANGE.

No. 515,415.

Patented Feb. 27, 1894.



Witnesses—  
*E. J. [Signature]*  
*C. W. Marvin*

Inventor—  
*Hiram J. Wattles*  
By  
*Wm. C. Raymond*  
his Attorney



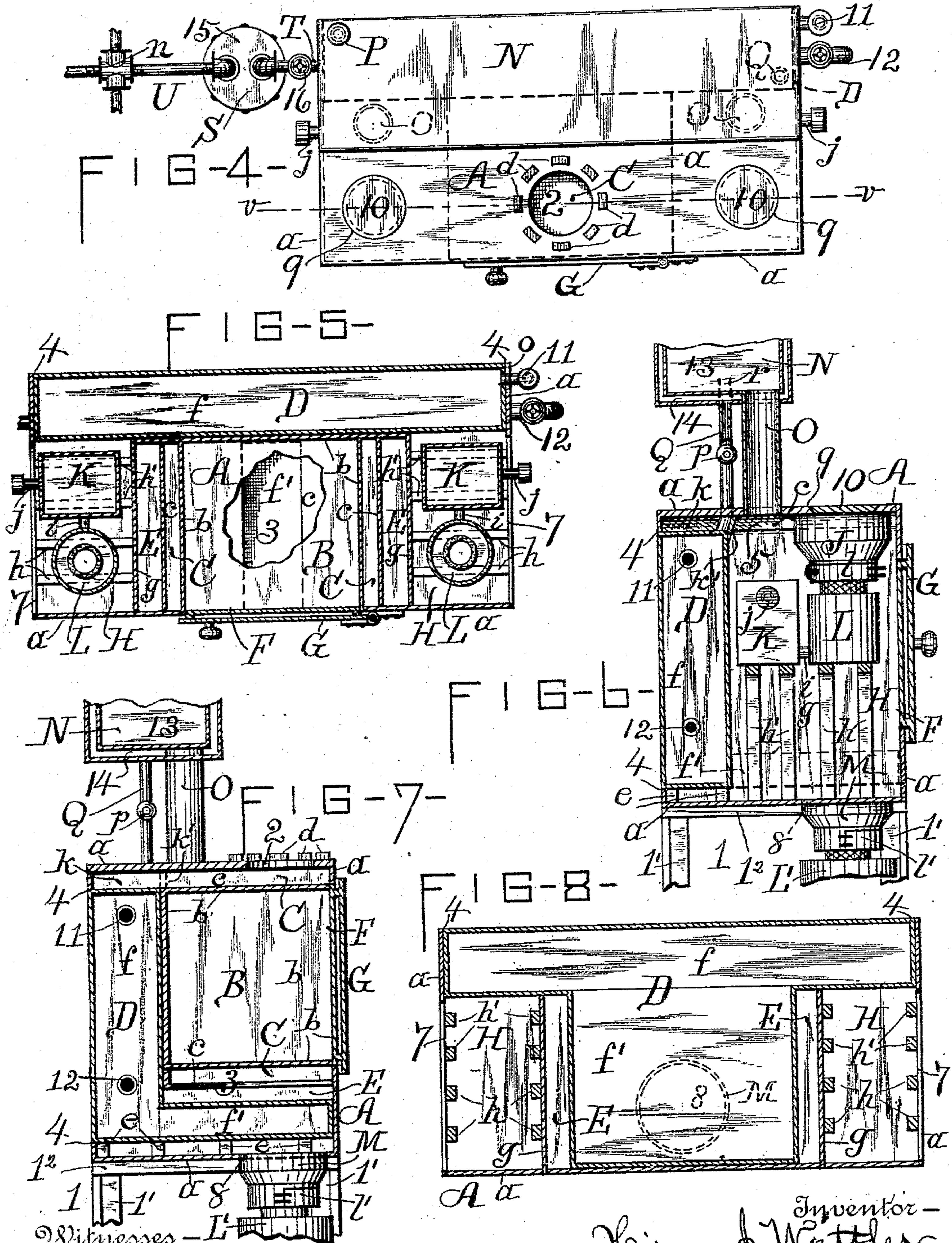
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# UNITED STATES PATENT OFFICE.

HIRAM J. WATTLES, OF SYRACUSE, NEW YORK.

## COOKING-RANGE.

SPECIFICATION forming part of Letters Patent No. 515,415, dated February 27, 1894.

Application filed January 23, 1893. Serial No. 459,468. (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 Cooking-Ranges; 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 longitudinal sectional elevation of my improved cooking range, which vertical section is taken on a line passing centrally through the series of stove holes, and indicated by dotted line *v, v*, in hereinafter referred to Fig. 4 of the drawings; Fig. 2 an end elevation of my range; Fig. 3 an isometric view of the combination hot-water and steam tank or reservoir appertaining to my range formation, as detached from its position in the range body; Fig. 4 a top plan of the cooking range; Fig. 5 a longitudinal horizontal section thereof, taken upon dotted line *w, w*, Fig. 1 of the drawings; Fig. 6 a transverse vertical section of my device, taken on dotted line *x, x*, Fig. 1 of the drawings; Fig. 7 a transverse vertical section of said range, taken at dotted line *y, y*, Fig. 1; and Fig. 8 is a longitudinal horizontal section taken upon dotted line *z, z*, Fig. 1.

Similar letters and figures of reference denote corresponding parts throughout the several views of the drawings.

My invention relates to that class of calorifics or heating devices denominated ranges, and which as is obvious includes under such designation stoves and analogous devices particularly adapted for cooking and baking purposes.

The object of my invention is the production of a device appertaining to the class described, of improved and advantageous construction and operation; non-complex and inexpensive of manufacture as compared with the common forms of ranges and stoves; of exceeding utility combined with great economy in utilization of space of the component parts entering into the formation of the complete range; that is susceptible of disposition in any desired portion of a room; that will

boil, bake, steam, &c., satisfactorily and with exceeding dispatch; that utilizes in lieu of coal or wood for fuel, refined petroleum, gas, or other liquid or gaseous products for the production of requisite heating powers at a virtually nominal expense and, in novel details of construction and combination thereof imparting great efficiency and satisfactory working to a cooking range of the species designated.

My invention consists in the novel features of construction, combination of co-operative parts, and operation and adaptability as hereinafter fully described, and specifically set forth in the annexed claims. It is constructed as follows:

*a*, indicates the exterior casing of the main body portion A of my cooking-range, which casing, rectangular in form, closes the top, bottom, sides and ends of the aforesaid body except at such points where the casing is perforated or cut away in the manner and for the purposes later to be set forth; said casing creating the interior portion of the range that is subdivided into chambers and flue portions later to be described.

1 denotes the supporting framework for the range body, comprising vertical legs or standards 1' disposed at the four corners of the body, boundary side and end rails 1<sup>2</sup> connected with the upper termination of the legs, and upon which rectangular railing the body A. is suitably mounted, and tie-bars 1<sup>3</sup> extending from leg to leg, one of which serves as a support for a lamp or analogous heat-generating medium, as later particularly referred to.

B is the rectangular oven or baking chamber of my device, situated longitudinally central within the space inclosed by the casing *a* of the range body, and perpendicularly located much nearer the top of the range than the bottom; and C a hot-air flue chamber or jacket space surrounding the aforesaid oven at its bottom, ends and top, and created conjointly by the rectangular non-perforated casing *b* forming the oven chamber and the end walls and bottom plate comprising the casing *c* located a brief distance from the oven walls afore mentioned in connection with the top-plate of the external casing *a*, situated a brief distance from the top of the oven.



2 is a circular stove-hole in the top-plate of the range directly over the oven, and which is invariably retained unobstructed by any stove-griddle or lid, and circumferentially surrounding said central stove hole are lugs *d*, adapted for the support over the same of a kettle, spider or other culinary appliance to secure all requisite heat and yet form no obstruction to the egress of the heat or products of combustion escaping through it; and 3 is an elongated slotted opening formed in the bottom plate of the casing *c*, directly underneath the oven, and extending from the front of the range body rearwardly to a point approximating the back of the overhead oven.

D denotes a combined hot-water and steam-generative tank, the main upright portion *f* whereof is rectangular and of a size when erected in its place in the range body, and seated upon blocks *e* located on the bottom plate of the exterior casing *a*, to extend vertically from within a brief distance of the bottom plate aforesaid to within a brief distance of the top-plate of the external casing, while longitudinally extending the length of the stove and, the back wall of the casing *a* being cut away throughout its length and throughout its height except adjacent the top and bottom of the range body, an opening 4 of required size is allowed whereby the tank D. is readily insertible into its seat within the casing *a* of the range, slipping into place between the end walls of the external casing and occupying by its upright portion *f* a space transversely about one-third the width of the rectangular body A, its front wall standing against the rear wall of the oven-chamber B and endwise projecting portions of said back wall of the oven, while those portions of the front wall of the upright part of the tank afore mentioned that project longitudinally beyond either end of the oven-chamber serve as back walls to the lamp or combustion-chambers located at each end of the range body. Forwardly and centrally the vertical portion *f* of the tank D terminates with a flattened horizontally lying hollow portion *f'* communicating throughout its interior diameter with the hollow upright part *f*, which laterally horizontal projecting portion *f'* is water and steam-tight as is the vertical part *f*, and firmly connected with the vertical part aforesaid by riveting, soldering or other satisfactory manner. The vertical portion *f* of the tank D is perforated and provided with tubular connections at certain points as and for the purpose hereinafter mentioned. The flattened rectangular-shaped hollow extension *f'* of the tank D lies, when the tank is mounted in position in the range body underneath the bottom of the oven B at a medium distance therefrom, extending from its junction with the upright portion *f* contiguous the back termination of the oven forwardly the oven's width, and in width occupying an area coinciding to the length longitudinally of the oven chamber. The oven B extends from its point

of contact with the vertically standing part of the tank D, forwardly to the front wall of the casing *a*.

*g, g*, are transverse vertical partitions located respectively at either end of the oven, and a brief distance outwardly from the end walls of the casing *c* (as well as end walls of the projecting portion *f'* of the tank D'), which partitions extend from the front wall of casing *a* rearwardly to the forward wall of the upright portion of the water and steam tank, and extending vertically from the bottom of the range body upward to a point horizontally lineal with the top of the said tank and the oven, creating above the top termination of the partitions *g, g* elongated openings 5 located between the open tops and the overlying top-plate of the range. The rear wall forming the back of the oven chamber B extends such distance beyond either end thereof as to form a back wall to the flue chamber C, and to the flue chamber E; which last named chamber is conjointly created by the partitions *g, g*, adjacent interiorly located end-walls of the casing *c*, the top, bottom and end walls of the horizontally projecting portion *f'* of the tank D, and the bottom plate of the external casing of the body of the range, the portion *f'* of the aforesaid tank lying practically midway between the bottom plate of the chamber C, and bottom plate of the casing *a*, and centrally a brief distance from the partitions *g, g*, whereby an unobstructed passage is afforded entirely around the outside of said part *f'* of the tank as well as that afforded between the partitions *g, g*, and the adjacent inner lying end walls of the casing *c* of the flue chamber C. The front portion of the casing *a* is cut away at but one point, and that where it faces the oven chamber, which opening F is of corresponding diameter to the oven and provided with a double-cased hollow door G, suitably hinged at a side and having a knob or other suitable grasping or locking device.

L, L, denote oil burning lamps, (or other satisfactory heat-generating devices,) respectively disposed within the lamp chambers H, H, created at either extremity of the range or stove body by the partition *g, g*, in conjunction with the opposite end walls of the external casing *a*, said lamps being mounted in position contiguous the upper portion of their respective chambers, and upheld in place by means of bridge like supporting bars *h*, disposed substantially as shown, or by other desirable ordinary supporting means, said lamps (if oil is utilized) being provided with burners, wicks and other requisite accessories of a perfect working heat generator, and J, J, designate the chimneys of the aforementioned lamps, which chimneys extending to the under side of the range top, are at their top partially cut away at that side facing the center of the range creating respectively openings 6, 6, that respectively communicate with the openings 5, 5, existing above



the tops of the partitions *g, g*. The lamp chimneys at their bottom part are provided at that side adjacent the ends of the range body with a suitably sized opening closed by a door *l*, properly hinged and secured in place, whereby when wished the lamp body and its burner may readily be removed from position in the lamp or combustion chamber, without disturbance of its overhead secured chimney portion, by merely opening the hinged door *l*, thereby facilitating the conjoint removal of the lamp and its otherwise non-laterally movable burner portion.

*K, K* denote the oil supply reservoirs for the aforesaid lamps, which are situated slightly back of the lamp bodies and their interiors communicating with the usual reservoirs of the lamp bodies by means of tightly connected feed-ducts *i, i*; and *j, j* are filling tubes for the oil supply reservoirs, provided with a screw-cap, or analogous device. The oil-supply reservoirs *K*, are mounted similarly to the lamps *L*, upon bridge-like supporting bars *h'* whereby the individual lamps and their securely connected supply reservoirs *K* may readily be drawn along their supports out of the lamp or combustion chamber or concurrently pushed into position, egress or ingress of the burner of the lamp from or into the chimney being permitted by the opening of the door in the lower part of the chimney. Perfect freedom of movement for the insertion or withdrawal of the lamps *L* into or out of the lamp chambers is attained by means of the permanent large square openings *7, 7*, existing in the respective end-walls of the external casing *a*, of the range body, providing ample room for the insertion or removal of the lamps and connected adjacent reservoirs, and concurrently designed to permit of abundant entrance of cold air, into the lamp chambers insuring coolness thereof and thus obviating liability of undue heating of the lamp reservoirs; besides creating a splendid draft and insuring good and satisfactory combustion of the oil when the lamps are burning. The end walls of the casing *c* continue rearwardly through integral strip-like extensions over the vertical portion *f* of the tank *D* thereby completely separating vertically from front to back of the range body the flue-chamber *C* from the outer lying flue portions, said overhead extensions being indicated by the letter *k*. and *k', k'*, denote longitudinal partitions projecting from the top plate of the range, in line with the front wall of the vertical division *f* of the tank *D*, said pendent partitions extending, at the localities indicated, from the respective end walls of the casing *c* to the contiguous range ends, and thereby fully separating thereat the fore lying portions of the range from the adjacent chamber portions located directly over the vertically standing part *f* of the tank *D*.

*L'* indicates an oil lamp (or other heat producing appliance) of large capacity, located directly beneath the circular opening *8* in the

bottom-plate of the casing *a*, and directly beneath the flat contracted extension portion *f'* of the tank *D*, the lamp body being supported at its integral reservoir portion by being mounted on a tie-bar *1<sup>3</sup>* of the supporting framework of the range body, as illustrated. The aforesaid lamp, having usual burner, &c., is provided with a chimney *M* fastened to the overhead bottom of the range, and fitting the periphery of the opening *8*, said chimney at its lower portion being provided with an opening at its front side closed by a door *l'*, permitting when opened of the lateral insertion or withdrawal of the burner portion of the lamp concurrently with coincidental manipulating of the lamp body. Obviously said door is provided with a suitable latch to insure the door's suitable fastening when closed.

*9, 9*, are stove holes in the top plate of the range body adjacent to the ends thereof, and located diametrically over the end lamps *L, L*, afore referred to, which holes are normally retained closed by means of lids or griddles *10, 10*, although when advantageous to one or both the griddles may be removed—but occasion for such procedure will rarely, at the utmost arise, except when a kettle, frying pan or other cooking utensil is to be disposed over the open stove holes, in which case, as is evident, the closing of the holes by a culinary appliance insures the closing thereof in the same degree that the stove lids otherwise attain.

*11* denotes a supply or filling tube projecting from an end of the combination hot water and steam tank *D*, and projecting thereat adjacent the top part of the standard portion *f* thereof, which tube communicating with interior of tank is used for filling the tank about two thirds full of water; which tube is provided with a screw-cap or other suitable stopper.

*12* is a faucet located at an end of the aforesaid mentioned tank adjacent the bottom of its upright portion, and whereby hot water for culinary or other purposes may readily be obtained from said tank. Obviously the end portion of the external casing *a* is slotted from the rear portion such distance as to admit of the passage of the aforementioned supply tube and faucet into place when the tank is slid into position in the range body, as indicated to some extent at *o*, Fig. 5 of the drawings.

*N* indicates a warming-oven located over the rear portion of the top-plate of the range body at a suitable distance therefrom, and supported in position by means of large-sized vertical pipes *O, O*, erected adjacent to the opposite end portions of the top of the range body, and which respectively communicate with the interior of the main range body and the interior of the warming-oven, and whereby hot-air passes upward into the aforesaid oven. Said warming-oven comprises a large central chamber *13*, and a surrounding flue compartment *14*, created by a rectangular inner casing *n*, disposed at all points a brief distance



from the external casing *o*, of the said oven. The hot-air pipes *N* communicate at their lower ends with the hot-air compartment portion existing beneath the range-top and rearward of the side lamps, and at their upper ends with the central receptacle chamber of the warming-oven.

*Q* is a steam-supply pipe leading vertically from the top portion of the steam and hot-water tank *D*. upward into the steam compartment 14 of the warming oven, and provided with a steam regulating valve *p* for regulating the flow of steam into said compartment. If so desired, the upper end of the steam pipe *Q* may be so constructed as to enter the central chamber of the oven as indicated by dotted work *r*, Fig. 6 of the drawings, whereby said central chamber 13 is thereby converted into a steamer or steaming oven in lieu of an ordinary warming oven heated by exteriorly circulating hot air. By my primary form of arrangement the hot air pipes retain the central chamber of the warming oven warm by the dry hot air entering therein, while the steam entering the steam compartment through the steam supply pipe, and circulating around the exterior surface of the central chamber serves as an auxiliary heating medium besides retaining requisitely moist the contents of the central warming-chamber.

*P* is a steam escape-pipe located at the top of the warming oven adjacent that corner thereof diagonally opposite where the steam enters, which escape pipe leading from the steam compartment is utilized for permitting the exit of any undesirable amount of steam in the warming-oven, said steam escape having a screw-cap to stop or permit of the escaping of the steam, through a suitable perforation at the top portion of the said pipe. The warming chamber of the warming-oven *N* has an opening or openings at its front provided with one or two doors *R* suitably hinged and provided with ordinary fastening devices, whereby articles of food may be, when doors are opened expeditiously deposited within or removed from the warming chamber.

*S* is an automatic steam-drying cylinder appertaining to my improved construction of cooking range, suitably supported adjacent to the main range body, which cylinder (represented in the drawings as standing vertical is closed at its otherwise open top by a flanged head 15 detachably secured in place, and at its conical bottom portion with a valved outlet pipe *m*, leading therefrom, the cylindrical portion of the cylinder's interior having a fine sieve or meshed wire fabric *s* arranged centrally vertical therein and extending from the top to the bottom of the chamber, and extending across from side to side of the circular interior, while at a point a distance beneath the top, and at a point a distance above the bottom of the chamber are circular fine sieves or meshed wire fabric *S'* *S''* respectively, of the diameter of the chamber, suit-

ably held in place; the vertical transverse sieve intersecting the circular cross-sieves as illustrated.

*T* is a steam-supply pipe leading to an end of the body of the range, by suitable connection from the upper portion of the interior of the steam and hot-water tank *D*, and provided with a regulating valve 16 adjacent the range body, which pipe by a bend vertically downward enters through the head of the steam-drying cylinder *S* and passes through the first cross-sieve *s'* down nearly to the lower cross-sieve *s''* whence it terminates, said pendent pipe portion being located to one side of the vertical sieve *s*.

At the opposite side of the cylinder *S* is a steam feed-pipe *u* provided outwardly with a T-coupling *n*; and inwardly, by a bend extending vertically downward through the cylinder-head into the chamber of the steam drying cylinder at that side of the vertical sieve *s* opposite to that where the first-named pipe is stationed which pipe *u* projects only a brief distance down, terminating contiguous the top face of the first cross-sieve *s'*.

At that end of the range body where the steam pipe leading from the tank *D* to the cylinder *S* enters the casing *a*, a slot extending therefrom rearward to back of the range body is formed as indicated at *t*, whereby no barrier is presented to the admission thereof incidental to the sliding of the tank *D* into operative position within the casing *a*.

My purpose in having the steam supply pipe leading from the tank *D* through the end of the external casing of the range body outward, is to furnish requisite steam heat, to any auxiliary attachments such as steaming appliances or other devices which it may in practice appear advantageous in certain instances to make use of, and the object of the steam drying cylinder *S* forming a component part of my invention, is to insure as thoroughly dry steam as possible for whatever auxiliary appliances the steam may enter. The function of the said sieve-provided cylinder in conjunction with the inlet and outlet steam feed pipes extending therein, being to automatically dry the entering and passing steam through the separation of the water from the steam, the meshes of the fine sieves intercepting and collecting the water of condensation and practically dry steam being resultant. Obviously in the passage of the steam through the perforated barriers adherence of a large amount of excess moisture to the meshes must evidently occur.

For the removal of the water of condensation accumulating in the bottom portion of cylinder the valved discharge at its conical termination is employed.

Whenever so preferred the steam drying cylinder may be disposed on a slightly upward incline from a horizontal plane, in which case its water discharge-pipe would be arranged to communicate with the tank *D* at such location that the water of condensation



would, through gravitation, flow into the tank and mingle with the water therein. Obviously, variations in the incline or location of the cylinder S may be made without effecting the material construction of such portion, the position and location being governed by preferences or circumstances.

The operation, briefly stated, of the main body portion embodied in my improved construction of cooking range, is as follows:—  
The heat generated by the central lower lamp (or other suitable heat-generating appliance) passes upward through the opening in the bottom of the external casing, underneath, around, and over the horizontal low-lying projecting portion of the combined hot water and steam tank, heating the contents, and thence upward through the overhead central opening into and up through the flue chamber directly inclosing the oven, circulating around outside said oven and passing over it escaping through the central normally open stove hole in the top plate of the range directly over the oven chamber; while concurrently the heat from the upper lamps arranged at the opposite extremities of the range body, passes through the centrally facing openings in the lamp chimneys then through the elongated openings existing above the top termination of the contiguous flue chamber walls, and downward the interior of said chamber to and over the underneath located extended portion of the steam and water tank, whence the heat passes upward through the overhead opening into the flue-chamber inclosing the oven, and thence upward around the casing of the oven and through the central opening in top of the range body, the commingling of the heat or products of combustion arising from the burning central and end lamps insuring thorough heating of the oven and the subjacent tank, and all direct and indirect radiation fully attained. By the indirect radiation of heat from the flue chambers and the oven when contiguous to the front wall of the hot water and steam tank, said tank is at its vertically standing part thoroughly heated. Moreover the direct heat passes over the top of the said upright portion of the tank at its middle portion, and to some degree underneath the same.

Whenever deemed advisable or advantageous to so do, I slightly modify or vary the construction of the main body portion of my range, by dispensing with the casing directly inclosing the casing forming the oven, coincidentally continuing the side walls of the oven upwardly to the top-plate of the range body and terminating said extensions rearwardly lineal with the front face of the combined hot-water and steam tank, while conjointly circular openings (as indicated by dotted lines 17, 18, Fig. 1), are formed in the top and bottom of the oven casing.

In my aforescribed modified form of construction, the heat from the lower central lamp passes up through the opening in the

bottom of the external casing, under around and over the projecting horizontal portion of the hot-water and steam tank, and thence directly upward through the oven chamber (instead of circulating around), and passing out through central overhead opening in the top-plate of the range body. Concurrently the heat from the end lamps passes inward striking the outer surface of the end walls of the oven casing, and passing downward and under the oven commingles with the hot air arising from the lower central lamp, and entering the lower opening in the oven casing, circulates upward through the oven and passing through its top opening is discharged through the central overhead stove hole in the top plate of the range body.

The manifold advantages of my improved construction of a cooking range for baking, cooking and steaming purposes, &c., by reason of its novel and thoroughly operative formation is readily apparent.

Obviously, if so wished, the construction of my range may be so modified that the large body portion *f* of the tank D shall occupy in the range body that portion occupied by the oven in my primary construction, while the flattened projecting portion *f'* of the tank will project horizontally rearwardly—a reversal of position of the tank, and the oven thereby lying at the back portion of the range body and having openings and doors at either end for access thereto.

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

1. A cooking range comprising a central oven, a combined hot-water and steam tank, a portion whereof extends underneath the oven, a warming oven located a distance above the oven and communicating by means of vertical supporting pipes with the heat circulating portions contiguous the lower heating oven, hot air flues or chambers communicating with the exterior of the lower oven, and directly with the warming oven, and suitable heat-generating devices substantially as described.

2. A cooking range comprising an oven-chamber, a combination hot-water and steam supply tank contiguous thereto, a portion thereof lying beneath the oven chamber, hot-air chambers communicating with suitable heat-supplying devices and capable of concurrently heating the oven, the tank, and top plate of the range, a warming compartment over the top-plate of the main body of the range, hot air pipes communicating therewith, and a steam feed pipe leading from the tank into or about the aforesaid warming oven, substantially as described.

3. A cooking range comprising a central oven, a combined hot water and steam tank arranged adjacent to said oven and having a portion extending under the same, a heat generating device arranged below said tank and oven, heat-generating devices arranged



at the ends of the oven, flues extending from the lower central heat-generating device around the central oven and the tank, and flues extending upward from the end heat-generating devices.

4. A cooking range comprising a casing having its top plate provided with a central normally non-closed opening and normally closed openings at its ends, a central oven within the casing, a hot water and steam tank arranged adjacent to said oven and having a portion extending beneath the same, a heat-generating device arranged below said tank

and oven, hot-air flues extending from said heat-generating device and circumscribing the oven and tank, heat-generating devices arranged at the ends of the casing, and auxiliary flues leading therefrom and communicating with the aforesaid hot-air flues.

In testimony whereof I affix my signature, in presence of two witnesses, this 10th day of December, 1892.

HIRAM J. WATTLES. [L. S.]

Witnesses:

CHAS. M. LUKENS,  
WM. C. RAYMOND.