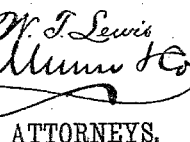


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UNITED STATES PATENT OFFICE.

WILLIAM T. LEWIS, OF RACINE, WISCONSIN.

STOVE.

SPECIFICATION forming part of Letters Patent No. 305,940, dated September 30, 1884.

Application filed April 12, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM T. LEWIS, of Racine, in the county of Racine and State of Wisconsin, have invented a new and Improved Stove, of which the following is a full, clear, and exact description.

My invention relates more particularly to heating-stoves of the class that are intended to heat one or more apartments and effect a ventilation of the apartment in which the stove is located, and the object of my invention is to provide a stove of this class, which combines simplicity of construction with effective operation.

15 The invention consists in a stove constructed with a combustion or fire chamber surrounded at top, bottom, and sides by a space for free circulation of air to be heated, and provided with suitable conduits for the heated air to 20 the apartments to be warmed. The stove is fitted with direct and indirect draft-flues within the air-space, and controlled by dampers for use of either class of flues, as desired, and the ventilating-flues are provided independently 25 of the fresh-air inlets, and are suitably connected with the main draft-flue for exhaust therethrough from the base of the heater or stove of the foul air of the apartment in which the stove is placed; and the stove is also constructed for cutting off the ventilation from 30 the base of the stove and ventilating through the open front of the stove, which is well calculated for thorough heating and ventilation, with economy in the use of fuel, as herein-after fully described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

40 Figure 1 is a broken front elevation of the stove. Fig. 2 is a sectional side elevation of the same, and Fig. 3 is a detail in elevation of the back of the stove-top next the draft-flue. Fig. 4 is a face view of a damper.

45 I shall here describe my improvement as embodied in a stove specially designed for heating purposes; but my improvements may readily be applied to stoves constructed specially for cooking purposes, or for special designs of stoves for heating and cooking combined.

a represents the fire-chamber of the stove, which may be fitted with any approved form of fire-pot, but the sectional fire-pot shown is preferred; and it consists of back and end 55 plates, *b c*, having horizontal studs or flanges *d* at the top and bottom, to preserve an air-space between the fire-pot and the wall of the chamber *a*, to save the latter from the intense heat of the fire.

To the end plates, *c*, I pivot or hang by pins *e* and forked arms *f* the gate-front *g* of the fire-pot, the pins and arms acting with the front edges, *c'*, of plate *c* in holding front *g* in position; and the bottom of the fire-pot consists of 65 the grate *h*, pivoted at *i* in suitable eyes or bearings permitting dumping of the contents of the fire-pot toward the front of the ash-pit below, in which pit any suitable ash-pan, *j*, fitted with the necessary bails or handles may 70 be placed. The front of the fire-chamber *a* is closed mainly by doors *k k'*, suitably hinged at the sides of the outer frame to close against the frame and the central jamb-plate, *l*, the upper doors, *k*, and lower doors, *k'*, closing in 75 pairs and being fitted with mica plates *l'* for a more cheerful fire; or any suitable registers or damper plates may be fitted in either the top or bottom doors, or both, as desired. An air-space, *m*, surrounds the fire-chamber *a*, except 80 at the front, said air-space *m* connecting by the opening *n* with the open air by any suitable inlet, for supplying the necessary quantity of fresh air for free circulation around the fire-chamber to be heated thereby and to be after- 85 ward conducted through one or more register-openings, *o*, in the top *p* of the hot-air space or chamber *m* to the room in which the stove is located, and through the damper-controlled pipes *q* to heat other apartments. The fire- 90 chamber *a* is connected with the main draft-flue *r* by the direct pipes or flues *s* and *t*, controlled, respectively, by dampers *s' t'*, either or both of which dampers may be opened when the fire is started or replenished. The 95 main flue *r* may either lie directly against the fire-chamber wall in the air-space *m*, as shown, or may be separated from the said wall more or less to form an unbroken air-space, *m*, all around the back of the stove, and for a more 100 circuitous course of the products of combustion from the fire-chamber *a*; and for a better

effect in heating the air-supply in space *m*, I provide the indirect-draft flues *u*, preferably one at each side, and connecting at *v* with the fire-chamber *a* and at *w* with the bottom portion of the main flue *r*, so that when dampers *s' t'* are closed the escaping heated gases must pass downward through the flues *u*, which wind through the space *m*, and thus present a larger heating-surface to warm the circulating air; and the inlets *v* being of smaller area than the flues *s t* alone or combined, a closure of dampers *s' t'* reduces the draft for a slower or less intense fire, and the flues *s t* when so closed act as effective radiators of heat to the air in space or chamber *m*; and the inlets *v* may be controlled by any suitably-constructed dampers for contracting their area for closer control of the fire, and to prevent back draft of gases to the ventilating-flue—such, for instance, as is shown in Fig. 4.

For ventilating purposes I fit the stove with a bottom air chamber or space, *x*, which may be formed by the base-flange *y* being suitably perforated at *z*, through which perforations the foul air may be drawn into space *x* and through its connecting flue or shaft *a'*, which opens at *b'* into the main draft-flue *r*.

The damper *t'* may be opened from the fire-chamber *a* in a manner to close flue *r* and shut off the ventilating-draft from conduits *x a'* and the base of the stove, which will be done when it is desired to ventilate the room through the open front of the stove by opening the doors *k* or *k'*; and the dampers *s' t'* being worked independently of each other, the damper *t'* may be closed for front ventilation and the damper *s'* opened suitably for controlling the fire and preventing gaseous back drafts through the flues *u*.

I make the upper part, *p*, of the outer wall or casing of air-space *m* removable from the lower section, *p'*, of said casing, and connect the sections preferably by a tongue-and-groove joint, *p²*; and to permit speedy removal of the section *p* of the casing for cleaning or repairs, that portion of it at *p³* behind the draft-flue *r* is made separate from the rest, and secured in place by suitable buttons or clips, *p⁴*, which, when disengaged, will permit the top section, *p*, of the casing to be lifted off from the front without disturbing the pipe-connections. As here shown, the line of division of the sections

of the outer casing at the front is on the curved or arched line *c'*, which allows placing the rods *d'* of dampers *s' t'* in the fixed front wall or section, *p⁵*, of the outer casing of chamber or space *m*, and presents a better appearance in a heater or stove of a portable character; and preferably just below the joint *p²* of the outer casing I fix to the casing one or more projecting plates, *e'*, Fig. 1, which skirt the air-space *m*, and serve to deflect the rising currents of air therein over toward the dome or head of fire-chamber *a*, for better heating of the air by closer contact with the fire-box.

It is obvious that the special design of my stove or heater may vary with its predetermined uses, and that the relative sizes of the parts may be proportioned to the required heating and ventilating effect.

When the damper in side pipe, *t*, is closed and that in pipe *s* opened, the heat will pass through pipe *s* on the way to the flue, and will quickly heat the contained air in the air-space. When damper in pipe *s* is closed and that in *t* opened, a less amount of heat will be imparted to the air in the air-space, while if the two pipes be closed and the draft forced downward, the least effect will be produced on the air in the air-chamber.

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

1. In a heating-stove, the dome-shaped fire-chamber *a*, having central pipe, *s*, provided with a damper, the side pipe, *t*, leading to flue *r*, and also provided with a damper, said fire-chamber and pipes surrounded by air-spaces within casing *p*, and having air-ducts leading thereto, all in combination, substantially as set forth.

2. The combination, with the arched fire-chamber and flue *r*, of a central pipe having a damper, and a side pipe also having a damper at its mouth arranged to close either pipe or flue, each pipe leading directly to flue *r*, and an indirect pipe, *u*, leading downward from the fire-chamber and opening into said flue *r*, substantially as described.

WILLIAM T. LEWIS.

Witnesses:

F. L. MITCHELL,
E. W. MARCHER.