(No Model.) 2 Sheets—Sheet 1.

R. G. SHACKELL.

STOVE.

No. 347,649. Patented Aug. 17, 1886.

Fig. 1.

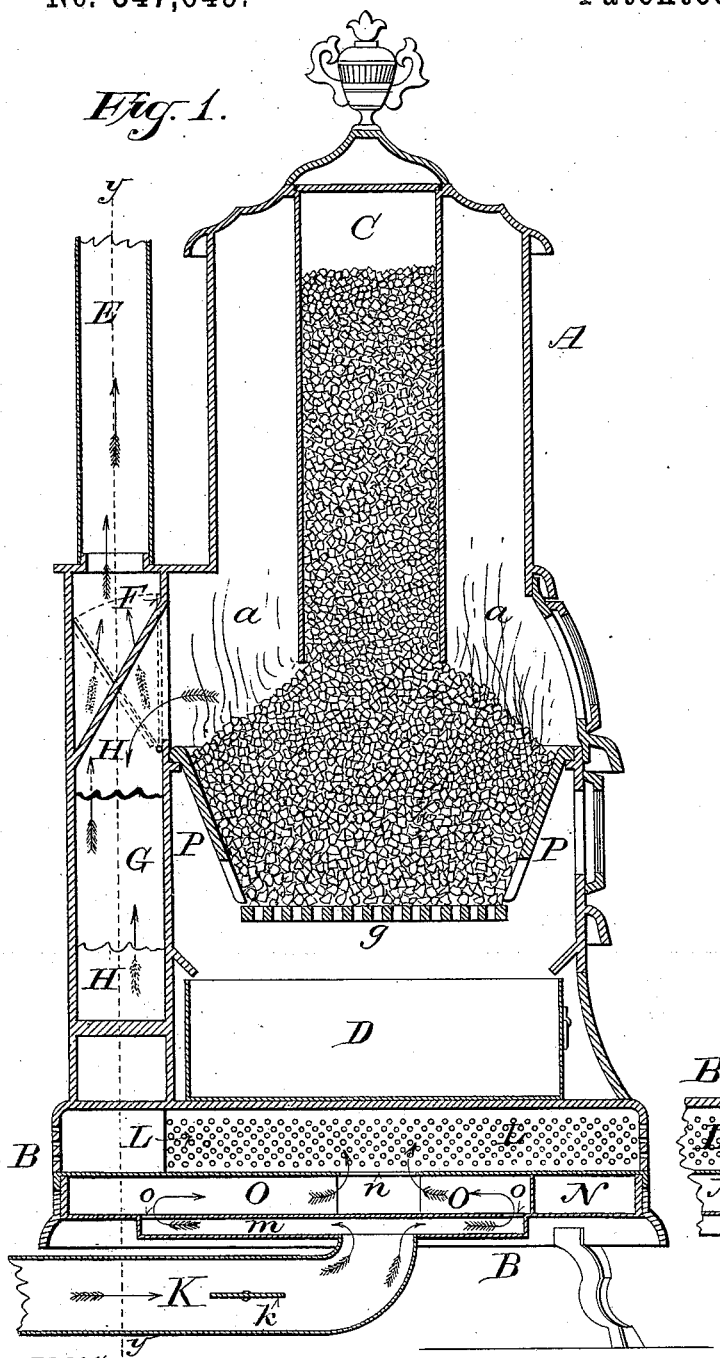
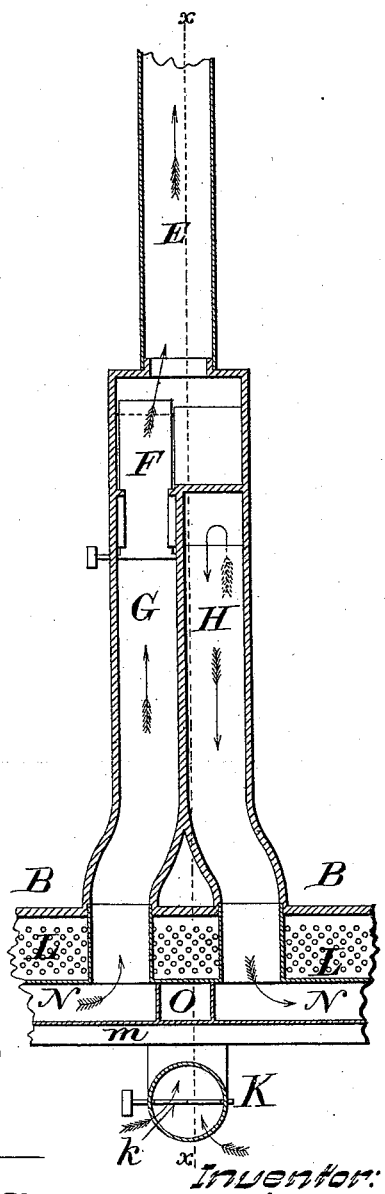


Fig. 2.



Witnesses:
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Inventor:
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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

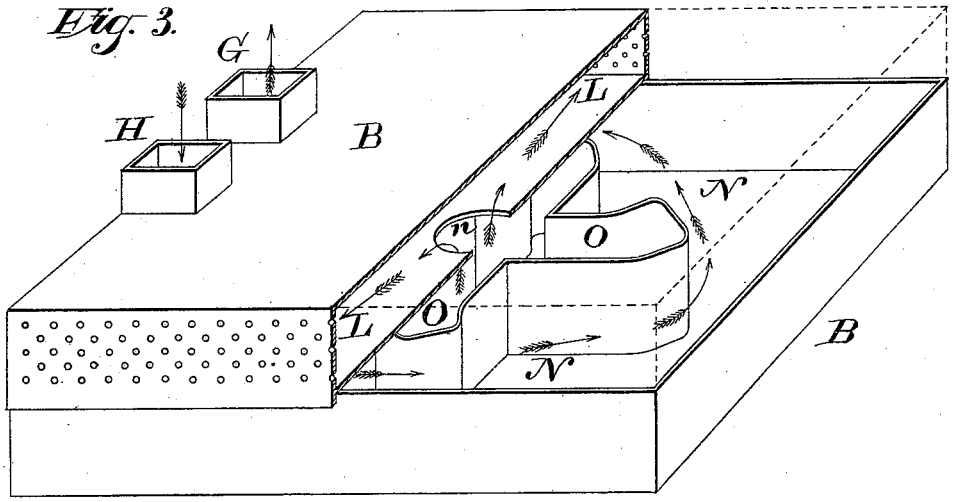
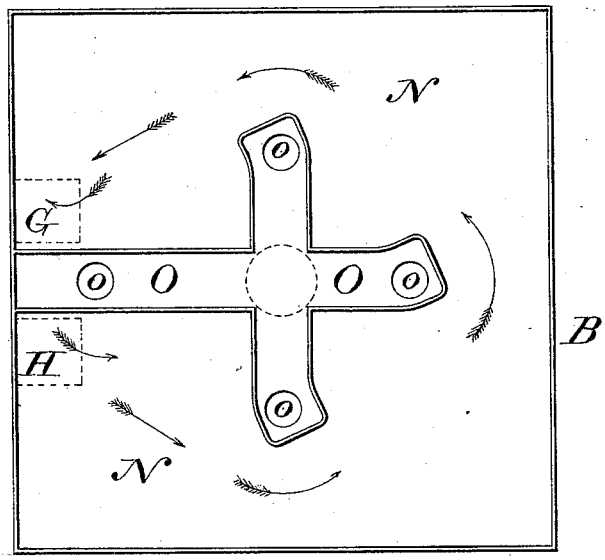


Fig. 4.



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UNITED STATES PATENT OFFICE.

RICHARD G. SHACKELL, OF PORTAGE, WISCONSIN.

STOVE.

SPECIFICATION forming part of Letters Patent No. 347,649, dated August 17, 1886.

Application filed October 19, 1885. Serial No. 180,267. (No model.)

To all whom it may concern:

Be it known that I, RICHARD G. SHACKELL, of Portage, in the county of Columbia and State of Wisconsin, have invented certain new and useful Improvements in Stoves; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates particularly to improvements in that class of stoves in which an indirect draft is established through the base.

Its objects are, first, more ventilation; second, to increase the heating capacity of stoves to which it is applied; and, third, the better and more economical distribution of heat.

It consists, essentially, of a base having an air-chamber into which fresh air is introduced from without, and smoke-flues or a heating-chamber adjacent to said air-chamber, communicating through suitable flues with the combustion-chamber and chimney, and a distributing-chamber communicating with said fresh-air chamber, and also through suitable openings or lattice-work with the apartment in which the stove is placed.

In the accompanying drawings like letters refer to similar parts in the several figures.

Figure 1 is a vertical medial section on the line *x x*, Fig. 2, of the stove to which my improvements are applied. Fig. 2 is a transverse vertical section of the smoke-flues and a portion of the base on the line *y y*, Fig. 1. Fig. 3 is a detached perspective view of the base, a portion of which is cut away to disclose the internal arrangement; and Fig. 4 is a plan view of the lower section of the base, showing the smoke flue or chamber and the fresh-air flues or heating-chamber.

A represents a stove of the ordinary style and construction, having the fuel-magazine C, combustion-chamber *a a*, fire-pot P, grate *g*, and ash-pit D. The combustion-chamber *a* communicates at the rear of the stove above the fire-pot P with a flue, H, leading to the base of the stove, and a main smoke-flue, E, leading to the chimney. The opening into the latter is controlled by a damper, F, by means of which the direct draft up the smoke-flue E may be closed and an indirect draft established through the downward flue H into and about the base of the stove, thence up through the flue G, communicating therewith and with smoke-flue E into the chimney.

B represents my improved base, which may be cast in convenient sections, as shown in the drawings. It is divided horizontally into a principal distributing-chamber, L, and a lower chamber, which is subdivided by suitable partitions into the smoke chamber or flue N and the air chamber or flue O. The smoke flue or chamber N communicates upon opposite sides of the dividing-flue O with the downward and upward smoke-flues H and G at the back of the stove. Underneath said lower chamber or air-flue, O, is formed a flue or chamber, *m*, which communicates with the fresh-air-supply pipe or flue K, which in turn communicates with the exterior air at some convenient point where an abundant and pure supply can be obtained. The chamber or flue *m* communicates through suitable openings, *o o*, with the chamber or flue O, which in turn communicates through a central opening, *n*, with the distributing-chamber L, the walls of which are perforated with suitable openings to permit the passage of the fresh-heated air into the room or apartment in which the stove is located. The walls of chamber L may be formed of ornamental open-work, thus improving the appearance of the stove. The air-flue K is provided with a damper or shut-off, *k*, by means of which the supply of fresh air to the base of the stove may be regulated. When practicable, it is desirable to run the flue K underneath the floor, where it will be out of the way and not exposed to view.

The construction and arrangement of the base B and the arrangement, size, and location of its various smoke and air flues may be variously modified without departing from the spirit of my invention. Said base may be formed integrally with the stove to which it is applied, or as a separable attachment. Various suitable materials may also be employed in its construction—such as tin, cast and sheet iron.

The operation of my improvements may be briefly described, as follows: The fuel in the fire-pot having been properly ignited the di-

rect opening from the combustion-chamber A into the main smoke-flue E is closed by damper F. The smoke and other heated products of combustion are then conducted from said combustion-chamber down through flue H into the chamber or flue N in base B, thence around the walls of the air-chamber or flue O into the upward flue G, whence they escape into the upward flues G and E, and from thence into the chimney. Fresh air is in the meantime supplied through flue K to the chamber *m*, whence it is distributed through openings *o o* to different parts of the flue or chamber O, where it is heated by contact with the walls separating it from the smoke-flues or the chamber N. From the chamber O the heated air passes through the central opening, *n*, into the distributing-chamber L, where it is further heated by contact with the walls separating said chamber from said smoke-flue N, and thence delivered through the perforated sides of said chamber L into the room. The air may be tempered and the room thoroughly ventilated by a proper regulation of the damper *k* in the air-supply pipe K, and of the dampers controlling the combustion of the fuel in the stove.

From the foregoing description it will be obvious that a large amount of heat ordinarily escaping with the smoke through the chimney is utilized to heat fresh air which is delivered into the room near the floor where it is most desirable.

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

1. The combination, with a stove provided with chambers L and N beneath the same, of the chamber O, of irregular shape, and joined to one wall of the base B within the chamber N, and dividing the same, flues connecting the chamber N with the combustion-chamber of the stove and with the smoke-pipe on opposite sides of said chamber O, and an inlet-pipe, K, communicating with the chamber O, substantially as and for the purposes set forth.

2. In combination with a stove having the base B, provided with the chamber L, which has one or more perforated sides, and the adjacent hot-air chamber N, and flues connecting said chamber with the combustion-chamber of the stove and with the smoke-flue, and the flue K, communicating with said chamber L and the outside air, whereby fresh air is supplied to said base, heated therein, and distributed therefrom to the room near the floor, substantially as and for the purposes set forth.

3. The combination of a stove having the chamber N, and an interposed air flue or chamber, O, dividing-chamber N, smoke-flues G and H, communicating with said chamber N on opposite sides of the interposed chamber O, and connecting it with the combustion-chamber and the smoke-flue, air-supply flue K, communicating with chamber O through openings *o o*, and the distributing-chamber L, above chamber N, having perforated sides and communicating with chamber O through opening *n*, substantially as and for the purposes set forth.

4. The combination, in a stove, of the base B, divided horizontally into chamber L, which has a perforated side or sides, and the chamber N, air-flues O, dividing said chamber N, flues G and H, communicating with said chamber N on opposite sides of flue O, and connecting it with the combustion-chamber and with the smoke-flue, and an air-supply flue, K, connecting flue O and the outside air, substantially as and for the purposes set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

RICHARD G. SHACKELL.

Witnesses:
FRED F. HICKOX,
GEO. SHACKELL.