C. DION.

STOVE.

No. 191,319. Patented May 29, 1877.

FIG. 1

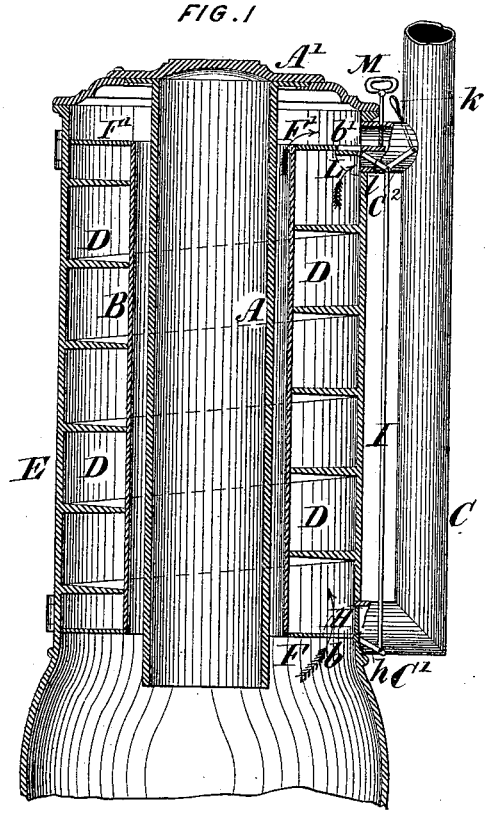



FIG. 3

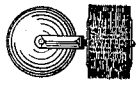
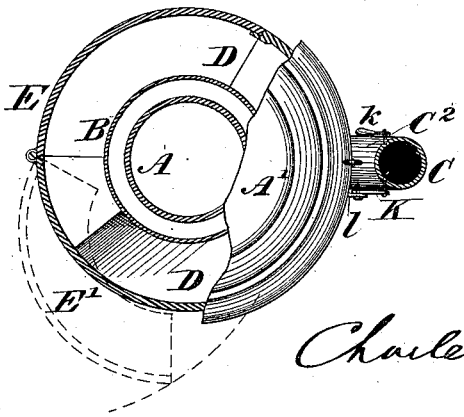


FIG. 2

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# UNITED STATES PATENT OFFICE.

CHARLES DION, OF CHAMBLY BASIN, QUEBEC, ASSIGNOR OF ONE-TWENTIETH PART OF HIS RIGHT TO RENÉ AUGUSTE RICHARD HUBERT, OF MONTREAL, CANADA.

## IMPROVEMENT IN STOVES.

Specification forming part of Letters Patent No. **191,319**, dated May 29, 1877; application filed March 21, 1877.

*To all whom it may concern:*

Be it known that I, CHARLES DION, of the village of Chambly Basin, in the county of Chambly and Province of Quebec, Canada, have invented certain new and useful Improvements in Stoves and Furnaces; and I do hereby declare that the following is a full, clear, and exact description of the same.

The object of my invention is, by the improved construction of stove which I have devised, to obtain from an equal amount of fuel greater heating-power than can be afforded by a stove of any of the ordinary types now in use, or, in other words, to more thoroughly utilize the products of combustion before they are carried off by the smoke-flue.

In conjunction with the apparatus for this purpose I have invented certain devices for controlling and diverting the course of the heated air; but for fuller explanation reference must be had to the annexed drawings, in which—

Figure 1 is a sectional elevation of my invention applied to a base-burning stove. Fig. 2 is a horizontal section of the same. Fig. 3 is a detail of cleaner.

Similar letters of reference indicate like parts.

A is the central drum or chute down which the coals are fed to the grate, A′ being the cover, of any usual form. Round this inner drum A, and concentric with it, is placed a cylinder or drum, B, between these being left a small space which forms a passage for the escape of the heated gases. Round the drum B, and inclosed by the outer cylinder or casing of the stove E, runs a spiral partition or diaphragm, D, which may be of any twist and length of turn desired, and communicates, both at top and bottom, with the smoke-flue C, F′ and F being plates forming, respectively, the top and bottom of the spiral, in the lower plate, F, being arranged an opening, *b*, and in the upper, F′, a similar aperture, marked *b′*.

In the lower neck $C^1$ of the flue C is pivoted a door, H, moving in a quarter-circle, and operating either to open the spiral chamber to the fire-chamber, as in the drawing, or, by closing up the opening *b*, to place the spiral at its lower end in communication with the smoke-flue. This door H is operated by a lever, *h*, placed outside the smoke-flue and connected by a rod, I, with the pivoted lever K, to which is secured, as shown at *k*, a weighted handle. The opening *b′* in the top of the spiral is closed by a door or damper, L, pivoted in the upper neck $C^2$ of the smoke-flue, and operated by a crank or lever, *l*, connected with the lever K. If desired, the weighted handle *k* may be attached to the lever *l*, with the same result as in its present position—*i. e.*, that of holding up the parts when they are in the contrary position to that shown in the drawings.

As just described for the damper H, the door L acts to close the upper end of the spiral to the heated air passing up between the drums A and B, and to place it in communication with the smoke-flue C.

These cranks *h* and *l* are so arranged that when the fire-chamber is in communication with the spiral chamber at its lower end, through the opening *b*, the door L closes the opening *b′*, and thereby cuts the upper end of the spiral from the stove, connecting it directly with the smoke-flue, as shown in the drawings, and vice versa.

As shown by dotted lines at E′, Fig. 2, a section of the outer cylinder may be made to open, so as to get at the spiral chamber for cleaning purposes, or when the spiral D is cast in one with the outer cylinder E, the part E′ immediately attached thereto may be arranged to open with it.

The operation of my invention is as follows: The fire having been lighted, and it being desired to have at first a direct draft to the chimney, a damper, M, also placed in the upper neck $C^2$, is opened and remains so as long as convenient. When this is closed the handle *k* may be operated so as at one and the same time to allow the products of combustion to pass through the opening *b′* into the upper end of the spiral, and, by the action of the door L, to cut off this end of the spiral from connection with the chimney-flue C. Simultaneously with this and by the same move-

ment of the handle the door H shuts the opening *b* in the lower head of the spiral flue, and opens the branch $C^2$ of the stove-pipe, the result of this being that the products of combustion passing up between the drum A and cylinder B enter the spiral at the top, and traversing its whole course downward pass, at its lower end, into the flue, thus evolving a very large amount of heat. By moving the handle in the opposite direction this current of air may be reversed, the products of combustion being taken into the spiral at its lower end, which is by the same movement cut off from the chimney-flue, while, at the same time, the opening *b'* is closed, and the upper end of the spiral placed in communication with the chimney-flue, so that the products of combustion in this case pass upward through the length of the spiral chamber, entering the flue at its upper end. This course is adopted when a somewhat less degree of heat is required.

To clean the stove the section E may be opened, thus exposing a portion of the spiral chamber; but, for the purpose of preventing the accumulation of soot, &c., in those parts which are not easily accessible, I provide a cleaner, consisting of a ball, N, of a diameter less than the interior of the spiral, to the axle of which is pivoted the forked stem of a brush, O. This ball on being slipped into the spiral will roll down, drawing the brush after it, and thus effectually cleaning the flue. Any other suitable device, such as a brush mounted on one end of a wire, may be used, if desired, for this purpose.

The spiral may, in some cases, be formed with the inlet opening from the heating-chamber at its lower end alone, and the outlet to the flue at its upper, or vice versa, the passage of the heated air through the inlet being controlled or cut off by proper valve or door in either case.

Although the invention is shown as applied to a base-burning stove, it must be understood that I do not confine myself to this form alone, as my improvement may be used with great advantage in every kind of stove and with every description of fuel.

When wood is to be burned, the central drum A is, by preference, omitted, and the fuel is contained within the drum B, which then forms the stove proper, the spiral, &c., first described being arranged horizontally around it.

Having thus described my invention, what I claim is as follows:

1. The combination, substantially as specified, of the fire-chamber, the coal-reservoir, the annular flue surrounding the same, the encircling spiral flue covered by heads at bottom and top, the stove-pipe, having branches $C^1$ and $C^2$, and valves for controlling openings in the heads of the spiral flue and the branches of the stove-pipe.

2. In combination with the spiral chamber D, the doors H and L, rod I, cranks *h* and *l*, and lever K, all as and for the purposes herein set forth.

CHARLES DION.

Witnesses:
FRAS. HY. REYNOLDS,
ROBT. ARTHUR KELLOND.