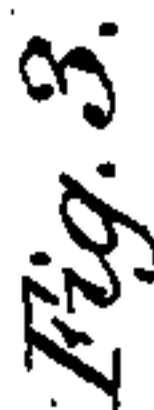


Fireplace Grate.

No. 39,928.

Patented Sept. 15, 1863.



Witnesses:
 Tho Geo Harold
 Chas H Smith

Inventor:
M. B. Pull.

UNITED STATES PATENT OFFICE.

MAURICE C. HULL, OF NEW YORK, N. Y.

IMPROVEMENT IN FIRE-PLACE GRATES.

Specification forming part of Letters Patent No. 39,928, dated September 15, 1863.

To all whom it may concern:

Be it known that I, MAURICE C. HULL, of the city and State of New York, have invented and made a certain new and useful Improvement in Grate and Fire-Place Heaters, and I do hereby declare the following to be a full, clear, and exact description of my said invention, reference being had to the annexed drawings, making part of this specification, wherein—

Figure 1 is a vertical section. Fig. 2 is a sectional plan at the line *x x*. Fig. 3 is a sectional plan at the line *y y*, and Fig. 4 is a sectional elevation at the line *z z*.

Similar marks of reference denote the same parts.

Several kinds of fire-place heaters have heretofore been made, and some with an open grate, as shown in the patent of Samuel S. Bent, October 1, 1861.

My invention is an improvement upon the fire-place heaters heretofore constructed, and consists in a peculiar character of fire-place or grate, whereby a much larger amount of coal can be used than heretofore; also, in an arrangement of flues for passing away the products of combustion, and in an arrangement of flues for directing the air to be heated against the heated flues.

In the drawings, *a* represents the grate-frame, which is to project forward, as seen in Figs. 1 and 3, in order that the grate *b* may set farther out, and that the end pieces, *c c*, of the fire-pot may be introduced. These end pieces, *c c*, curving back behind the grate-frame, increase the size of the fire pot or grate without any enlargement of the opening in the chimney or mantel for the reception of the grate-frame itself, thus utilizing a space that has heretofore been bricked up against the back of the grate-frame. The end pieces, *c c*, unite to or are formed with the back *d*, which in the upper part slopes toward the front, leaving a throat between its upper edge and the grate-frame, opening into a chamber, *g*, between the plates *e* and *f*, and the end pieces, *c*, also slope toward this throat, as at *c'*, and each has a pipe, *h*, passing nearly vertically through the plate *e* into the chamber *g*. The object of these pipes is to cause a draft in the ends of the grate to produce a more perfect combustion of the fuel, and prevent the fire burning too much at the middle part, and at the

same time these pipes *h h* increase the area of surface acting within the inclosing case *k* to heat the air that circulates through that case.

i is a damper in the chamber *g*, which when open allows the products of combustion to escape directly to the flue or chimney *l*, but when said damper is closed the said products of combustion pass in the direction indicated by the dotted arrows, Fig. 4, down through the flues *m m*, up through the flues *n n*, thence down again through *o o*, and up through the flue *p* to the chimney *l*. The extent of heating-surface thus obtained within the case *k* is very considerable, so that the air passing into said case at the opening *q* and at the small holes around the bottom plate at *r*, and coming in contact with such parts, becomes highly heated and ascends through the opening in the top of said case *k*, and is conveyed away by pipes in any convenient manner.

Through the chamber *g*, extending from the plate *e* to the plate *f*, are pipes *s*, *t*, and *u*, that allow the heated air to pass at these points, and these pipes are toward the front part of said chamber *g*, in order that the air as it ascends may be brought in contact as much as possible with the heated back *d* of the grate for simultaneously heating said air and preventing the back *d* becoming too hot. The bottom parts of the end pieces, *c c*, are formed as inclines to direct the ashes into the pan *v*, and as these plates *c* will become heated, I allow a circulation of air through the holes 1 and 2, (see Fig. 4,) whereby I obtain the additional heating-surface of the chamber *d'*, formed at the base of these plates.

In order to clean out the flues *m*, *n*, *o*, and *p*, I provide a door or doors, 3 3, and I would remark that a division is required, as at 4, in these flues, so as to direct the draft through the flues *n* and *o*.

It will be evident that two or more pipes, *h*, may be employed for passing the products of combustion from the ends of the fire to the chamber *g*, and, if desired, the end plates, *c*, may be formed prismatic or of a series of flat surfaces, extending behind the grate-frame, instead of the semicircular or curved surface.

The size or number of the pipes *s*, *t*, and *u* may be varied so long as they are located so as to pass away the air contiguous to the back plate, *d*, for the purposes aforesaid, and the size and shape of the case *k* may be varied

according to circumstances and formed wholly of metal, or it may be formed wholly or partially of brick-work, and, in cases where this heater is not set into a chimney or inclosure, a more or less ornamental case may be employed.

What I claim, and desire to secure by Letters Patent, is—

1. The end pieces, *c c*, of the fire-pot, extending back behind the grate-frame, as set forth, for increasing the size of such grate or fire-pot, as set forth.

2. The pipes *h*, extending from the end pieces, *c*, to the chamber *g*, for the purposes and as specified.

3. The air pipe or pipes *s, t, and u*, passing through the chamber *g*, when said pipes are so located as to cause the air that passes through them to ascend contiguous to the heated back *d* of the grate, as set forth.

4. The chambers *d'*, at the base of the end plates, *c*, for the purposes and as specified.

In witness whereof I have hereunto set my signature this 8th day of July, 1863.

M. C. HULL.

Witnesses:

THOS. GEO. HAROLD,
CHAS. H. SMITH.