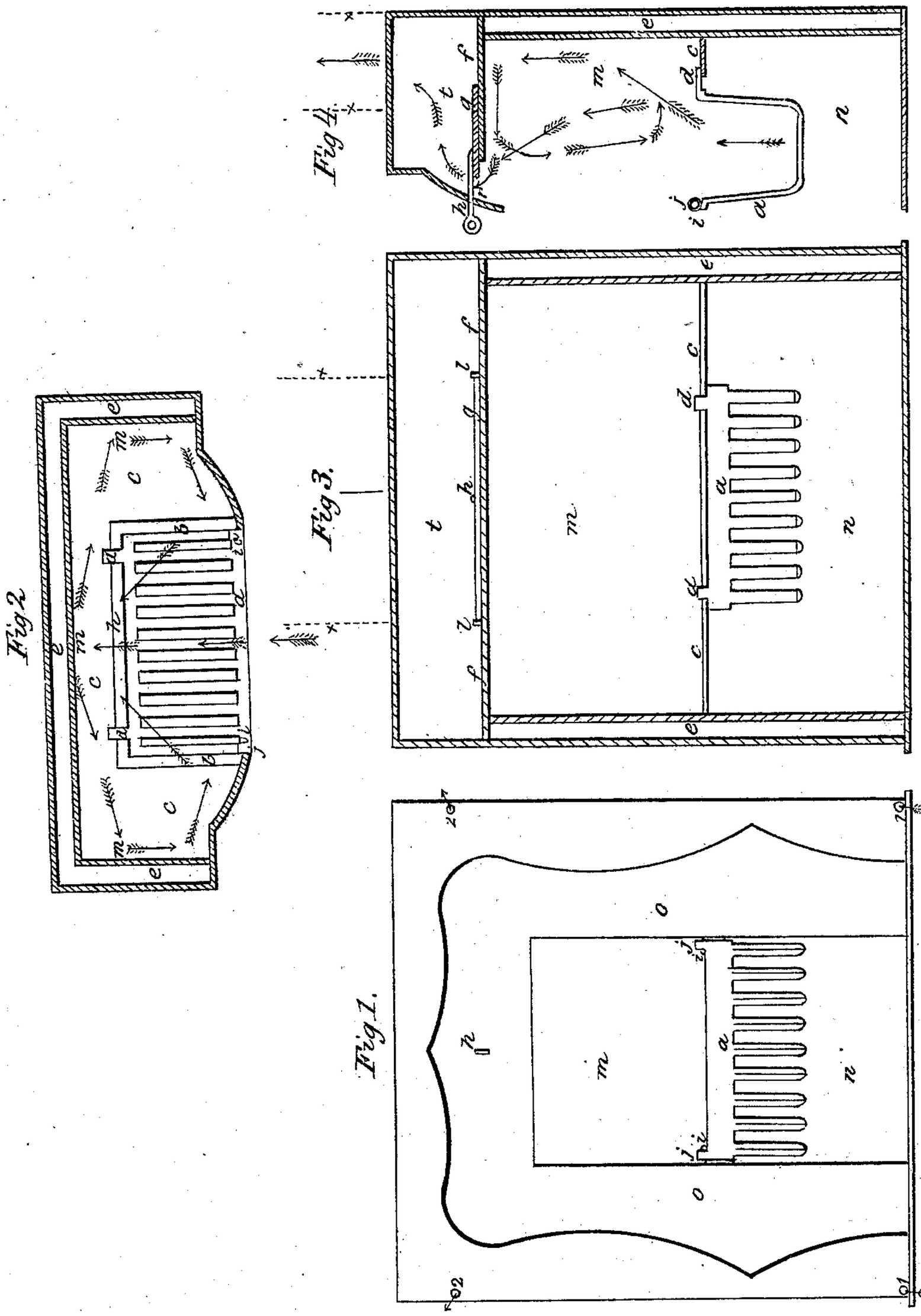
J. R. HENDRICKSON.

Fireplace

No. 33,349. Patented Sept. 24, 1861.



Witnesses:

James F. Johnston

James Hiller

Inventor.

J. R. Hendrickson

UNITED STATES PATENT OFFICE.

JAMES R. HENDRICKSON, OF McKEESPORT, PENNSYLVANIA.

IMPROVED FIRE-PLACE.

Specification forming part of Letters Patent No. **33,349**, dated September 24, 1861.

To all whom it may concern:

Be it known that I, JAMES R. HENDRICKSON, of McKeesport, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Fire-Places; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon.

The nature of my invention consists in the combination and arrangement of a series of air-chambers with the ordinary fire-grate for the purpose of consuming the smoke, avoiding dust, increasing draft, heat, and the saving of fuel, the whole being combined, arranged, constructed, and operated as hereinafter described and represented.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In the accompanying drawings, Figure 1 is a face view of the fire-place. Fig. 2 is a cut or sectional view crosswise above the grate. Fig. 3 is a cut or sectional view representing the air-chambers at the sides of grate. Fig. 4 is a cut or sectional view representing the air-chambers back of the grate.

a is the fire-grate, which is furnished with hooks *j*, which are secured on the lugs *i* of the grate-front *o*. On the back part of the grate *a* are two lugs *d*, which rest on the plate *c*. Above and around the sides and back of the grate *a* is an air chamber or oven *m*, and below and around the grate is placed an air-chamber *n*, which is divided from the air-chamber above the grate by means of the plate *c*. The chambers *m* and *n* are connected with each other by means of the narrow air-passage *b*, which surrounds the sides and back of the grate *a*. The chambers *m* and *n* are surrounded with another air-chamber *e*, which is furnished with openings 1 for the ingress of cold air and openings 2 for the egress of heated air.

f is the top of the air-chamber *m* and divides the air-chamber *m* from the draft-chamber *t*.

r is an opening leading into the draft-chamber and may be diminished by means of the damper *g*, to which is attached a rod *h*.

l are guides for the damper *g*.

The dotted lines *x* represent the chimney or flue of the fire-place.

My arrangement of air-chambers and draft-chamber may be constructed of cast-iron plates, brick, or any other suitable material.

The operation of my improvement is as follows: The fire is placed in the grate *a*, which will heat the oven or air-chamber *m* and cause a partial vacuum to be formed on each side of the grate and fire, and the air around the grate in air-chamber *n* becomes heated and passes up through the narrow air-passage *b* and comes in contact with the current of air which enters the chamber *m* above the grate, thereby forming an eddy in the chamber *m* on each side of the grate and fire. The smoke is drawn into these eddies and is there kept in motion until it becomes sufficiently heated and rarefied. It then passes along the top of the chamber to the center, and is then drawn down into the fire and is consumed, and that portion of the air and all the gases which are not inflammable will rise up and pass into the draft-chamber *t* and out through the flue or chimney. The draft of the chimney or flue is increased by the top *f* of the chamber *m* becoming heated, which will cause the cold air to rush up through the opening *r* into the draft-chamber *t* and chimney. The dust is prevented from flying out into the room by the use of the chamber *n* and the narrow air-passage *b*, in combination with the oven or air-chamber *m* and the draft-chamber *t*. The draft may be diminished by drawing the damper out over the opening *r*, which leads into the draft-chamber.

The red arrows represent the currents of air and smoke.

Having thus described the nature, construction, and operation of my improvement, what I claim as of my invention, and desire to secure by Letters Patent of the United States, is—

The arrangement of the air-chambers *m*, *n*, and *e*, the narrow air-passage *b*, and draft-chamber *t*, when used in combination with the ordinary fire-grate, as herein described, for the purpose set forth.

J. R. HENDRICKSON.

Witnesses:

JAMES J. JOHNSTON,

A. SPENHOCKER.