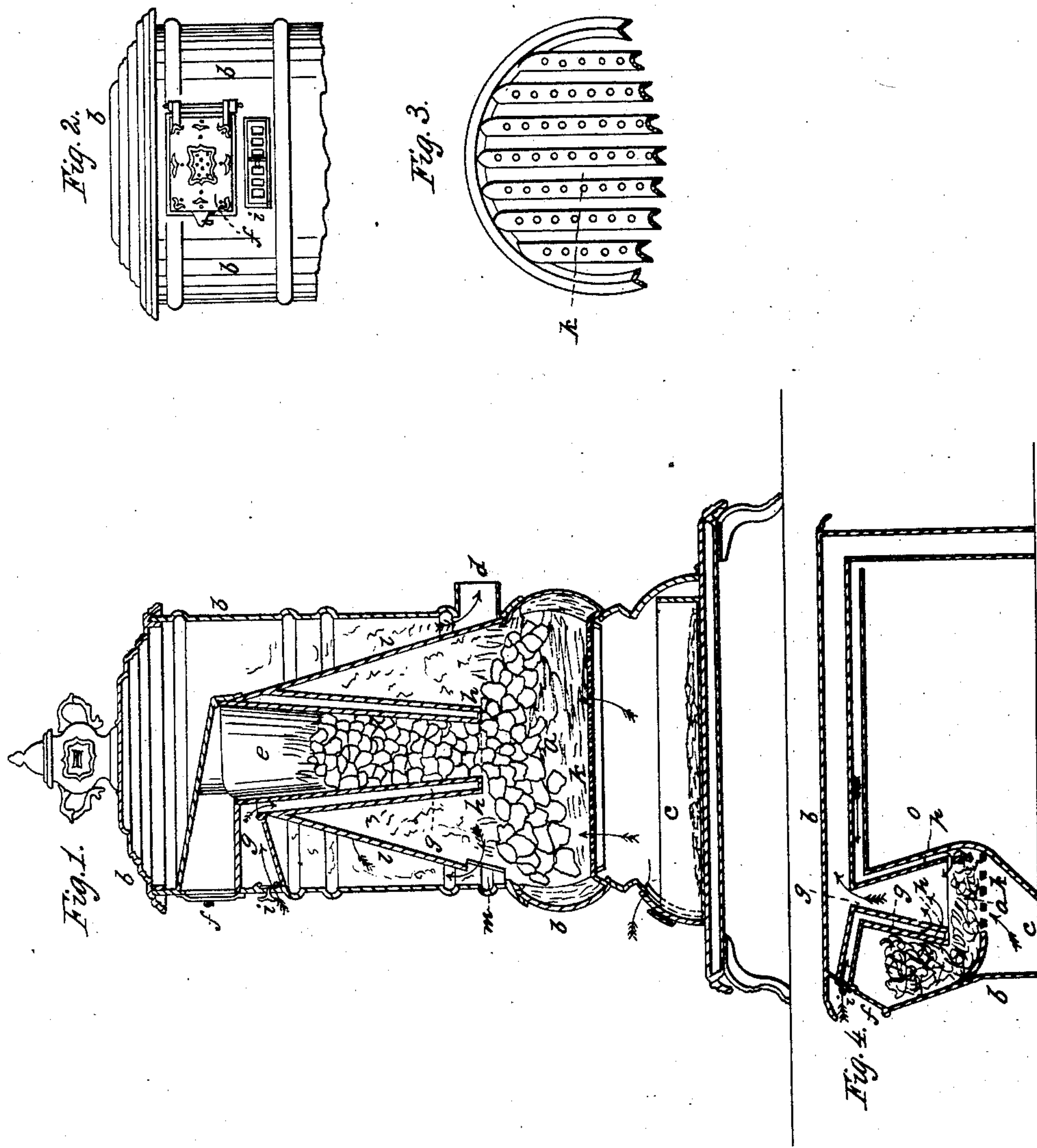


J. C. HENDERSON.

Stove.

No. 28,482.

Patented May 29, 1860.



Witnesses:

Lemuel W. Small
Chas. Geo. Harold

Inventor:

J. C. Henderson

UNITED STATES PATENT OFFICE.

JOSEPH C. HENDERSON, OF ALBANY, NEW YORK.

STOVE.

Specification forming part of Letters Patent No. 28,482, dated May 29, 1860; Reissued June 29, 1869.

To all whom it may concern:

Be it known that I, JOSEPH C. HENDERSON, of the city and county of Albany, in the State of New York, have invented, made, and applied to use certain new and useful Improvements in Stoves; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing, making part of this specification, wherein—

Figure 1, is a vertical section of my improved stove. Fig. 2, is a front elevation of a portion of the same, and Fig. 3, is a plan of the grate.

Similar marks of reference denote the same parts.

Several instances are known of, in which the fuel has been placed in a hopper or receptacle above the grate so as to supply the fire as the coal was consumed. Such a plan is particularly advantageous in preventing the fire being deadened by too much coal put on at one time, and also as preventing the fire burning out too fast from lack of fuel. In all instances however with which I am acquainted one of two difficulties or both arise, viz., the fuel ignites in the hopper or receptacle from the great heat and confined position, or else the gases passing off from the mass are entirely lost and unconsumed from lack of oxygen as said gases are generated above the fire.

The nature of my said invention consists in admitting a current of air to pass through a casing or chamber between the fire and the supply of coal, said current of air coming out into the fire above the grate, so that by said chamber and current of air I effect three objects: first, said air tends to keep the supply of coal as cool as possible; second, the air in so doing becomes heated and better adapted to supporting combustion, and, third, said air passing off into the fire chamber near where the supply of coal unites with the fire, combines with the gaseous matters evolved from the coal rendering the combustion perfect and preventing the waste of these gaseous substances in consequence of the absence of oxygen.

In the drawing *a*, is the fire place *b*, the casing or plates; *c*, the ash drawer; *d*, the escape or smoke pipe all of which may be of any desired size shape or character.

e, is a hopper into which the fuel is entered by the door *f*.

g is an air space between said hopper and the fire terminating at the openings *h*, *h*, and *i*, is a register to admit a regulated supply of air to the fire through said space.

I have represented my hopper *e*, as circular or conical, and directly over the center of the grate *k*, but it will be evident that the shape of this hopper might vary, according to the character of stove, in all instances the air in passing through the space between the supply of fuel and the fire acts to keep the said fuel as cool as possible, and pass in a heated state into the fire at the point so necessary for perfect combustion because said heated air comes directly in contact with the gaseous matters evolved from the fresh coal as it passes down to supply the fire. By this mode of supplying fuel I avoid many difficulties that arise, particularly with soft coal in stoves, where in it has been found practically that a supply of fresh coal, deadens the fire down, the parts become cool, the gaseous matters thrown off instead of inflaming are in the form of smoke, condensing on and becoming thick soot around the stove, and when these matters are thrown off and the fire commences to burn briskly the stove is apt to be forgotten until the coal is almost consumed, and then a fresh supply repeats the difficulty. And with anthracite coal, the addition of considerable at one time is apt, on account of the heat acting on the whole mass, to evolve sulphurous fumes, which are detrimental to health, and all benefits from the same in combustion are lost. By the use of my feeder and air supply, all the foregoing difficulties are entirely removed and the fire kept constant and uniform with either soft or hard coal, and all loss of gaseous matters or obstruction to the stove are prevented, and the addition of large quantities of coal at one time does not dampen check or obstruct the fire.

The cone *l*, is introduced around my hopper, and the gases pass out from the opening *m*, the object of this being to retain heat and insure a perfect combustion the same as in my patent of May 18, 1858.

The grate *k*, is formed of a series of hollow triangular bars, as shown in Fig. 3, there being a row of holes in each bar, the object being to prevent the grate becoming heated and

burned out and preventing the obstruction of the draft by ashes, for the ashes settle down between the bars on the inclined sides of the same, protecting the grate, while the
 5 air passes through the holes at the top of the bar into the fire, and said draft is heated by contact with said grate bar in passing through it.

If the air space *g* was dispensed with and
 10 fire brick substituted the operation of the parts would be analogous if air was admitted within the chamber above the fire from some other openings.

In Fig. 4, I have represented the mode in
 15 which I have contemplated the application of my invention to cooking stoves; in this case the operation of each part corresponds with that of the parts in Figs. 1, and 2, having the same letter of reference; and *o*, represents the oven, and *p*, an air space between the oven and the fire: The great advantage
 20 of this invention as applied to the furnace of a cooking stove, range, heater or boiler of any character will be apparent, for the soft coal (with which my invention is specially useful) being contained in the hopper
 25 *e*, gradually heats and cokes and the gaseous products pass off therefrom into the fire chamber *a*, over the incandescent fuel, and
 30 being detained by the contraction at *q*, are thoroughly combined with the oxygen of the air and inflamed so that no smoke passes away, only the gaseous products of a perfect
 35 combustion. The coal may be pushed down from time to time as the fire burns away and

the fresh coal added does not cool the stove or deaden the fire but there is an uniform combustion and steady heat, free from the smoke and soot heretofore existing where
 40 soft coal was used.

It will be seen that my present invention is additional to that set forth in my patent of May 18th, 1858, and extends the application thereof, and its practical efficiency.

Having thus described my said invention
 45 I remark that I do not claim a hopper or feeder supplying coal to fire as that is well known, but,

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

1. The air space *g*, for a descending draft between the fuel-hopper and the combustion chamber, said draft entering the combustion chamber at the lower end of said air space, as set forth; whereby the descending draft
 55 keeps the hopper cool and enters the combustion chamber in a heated state as specified.

2. The combination of a hopper for feeding the fuel with a cone *l*, or contracted chamber (as at *q*.) for detaining the products of combustion and retaining a sufficient
 60 heat for insuring perfect combustion as set forth.

In witness whereof I have hereunto set my signature this third day of April 1860.

J. C. HENDERSON.

Witnesses:

LEMUEL W. SERRELL,
 THOS. GEO. HAROLD.