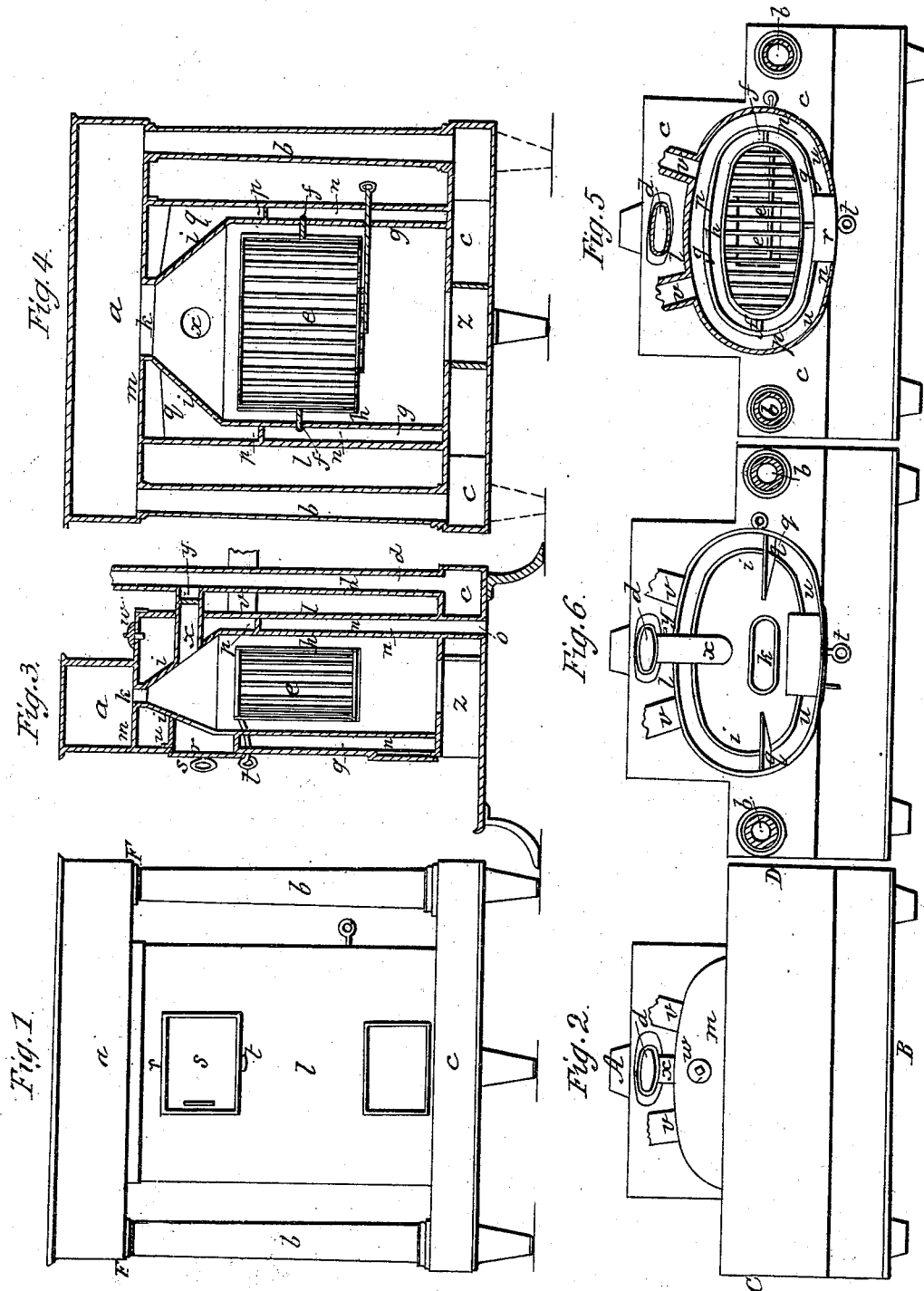


G. NELSON.
Heating Stove.

No. 2,778.

Patented Sept. 17, 1842.



UNITED STATES PATENT OFFICE.

GEORGE NELSON, OF BOSTON, MASSACHUSETTS.

STOVE.

Specification of Letters Patent No. 2,778, dated September 17, 1842.

To all whom it may concern:

Be it known that I, GEORGE NELSON, of Boston, in the county of Suffolk, in the State of Massachusetts, have invented new and useful Improvements in Stoves for Warming Buildings, of which the following description, taken in connection with the accompanying drawings, forms a full and exact specification.

In the same I have set forth the nature and principles of my invention by which they may be distinguished from others of like character, together with such parts or combinations therein as I claim and for which I solicit Letters Patent.

Of the drawings above mentioned Figure 1, represents a front elevation of a stove of the kind to which my improvements are peculiarly adapted. Fig. 2, is a top view of the same. Fig. 3, is a vertical section, taken on a line from A to B Fig. 2. Fig. 4, is another section taken at right angles to the latter or on the line from C to D Fig. 2. Fig. 5, is a horizontal section taken in the plane of the top of the grate or fuel basket. Fig. 6, represents the appearance of the interior or the top part of the fuel chamber, when the entablature and top plate of the stove is removed, or in other words is a horizontal section taken on the line from E to F Fig. 1.

The exterior of this heating apparatus presents the appearance of the ordinary column stove, and so far as the outer case is concerned, it is substantially the same. The smoke and volatile products of combustion on escaping from the furnace, are received into the entablature *a*, Figs. 1, 3, and pass from thence, down the side columns *b*, *b*, into the box or base *c*, from which they rush into the upright pipe *d*, and from thence into the chimney or discharge flue. The grate which I use is an elongated basket *e*, Figs. 3, 4, 5, of cast iron or other suitable material, its sides and bottom being composed of vertical or horizontal bars, or being otherwise constructed according to the taste or fancy of the manufacturer. The said grate or basket is suspended at its ends on journals *f*, *f*, Figs. 4, 5, each being situated about midway between the top and bottom of the grate, the said journals resting in bearings attached, or connected, to the inner surface of a sheet iron casing *g*, which extends entirely around the grate, at a distance of about two inches therefrom, so as

to form a space *h* for the circulation of air between said casing and the basket or grate.

The bottom of the casing *g* rests upon the top plate of the chamber or base *c* while the upper part of the same, or that which is above the grate, converges as it rises above said grate as seen at *i i*, Figs. 3, 4, 6, and terminates in a small elongated throat or pipe *k* Figs. 3, 4, 6, by which the space within said casing, which I denominate the fire chamber is connected with and opens into the entablature or mantel *a*.

Between the casing *g* and the external case *l* of the stove there should be an air flue or space *n*, or these two casings should be situated apart from each other a distance of about four inches. The exterior casing *l* also rests upon the top plate of the base *c* and is covered on its top by the plate *m*. A pipe *o*, Fig. 3 inserted in the bottom of the air space *n* conveys cold air from the external atmosphere into the said space *n*. A horizontal partition *p p p* Fig. 5, *p p* Fig. 3, and *p p* Fig. 4, is inserted between the casings *g* and *l*, the said partition being situated at about the height of the journals or bearings of the fire grate and extending rather more than half the distance around the casing *g*, as seen in Fig. 5, and having each of its extremities connected to one of the vertical partitions *q*, *q*, Figs. 4, 6 the latter of which rise upward, between the fire-chamber and the external casing *l*, to within about four inches of the top plate *m*, as seen in Fig. 4. The grate is supplied with fuel through a square or rectangular opening pipe *r* Figs. 1, 3, leading through the casings *g* and *l*, and suitably connected to each where it joins them, the mouth or front of said opening pipe being closed whenever necessary by a door *s* arranged in the usual manner.

The front part of the top of the grate or basket has a rod *t*, Fig. 3 suitably connected to it, which extends and slides freely through the casings *g* and *l*, and has its external end bent around into a circular or elliptical eye or handle. On taking hold of said handle, the grate may be vibrated in its journals or shaken, so as to cause the loose ashes to drop from it into the ash pit below. When the grate is thus shaken it strikes at the top and bottom of the front and rear sides against the casing *g*, thus producing a sufficient jar to sift the ashes from the basket.

The current of cold air which passes through the pipe *o* into the space *n*, rises upward therein and is deflected by the horizontal partition *p, p, p* or caused to pass 5 around into that part of the space *n* in front of the fire, and thence to pass upward through the vertical passages *u, u*, Figs. 5, 6, into the space in front of the vertical partitions *q, q*. From thence it courses over 10 the tops of the partitions *q, q*, into the space in rear of them, and is carried from thence to such apartments as may be requisite by the pipes *v, v* inserted in the rear part of the outer case *l*, just above the horizontal partition *p, p, p* or it may be introduced into the 15 room in which the stove is situated by closing the pipes *v, v*, by dampers and opening a suitable valve *w* Fig. 3, placed in the top plate *m*. As the air thus circulates in contact with the exterior of the fire chamber 20 it becomes heated and by the convergence of the top of the fuel chamber a greater heating surface is produced on its top, than would be, if its sides were carried upward, vertically until they met the top plate *m*. Besides, the inclination of the top of the fire-chamber causes the smoke and heat ascending from the fire to impinge directly against it, thereby imparting a great degree of heat 30 to it; and as the external air circulates in contact with the exterior surface of this part of the fire chamber, the vertical partitions *q, q*, cause it to pass completely over this surface, or much more so, than would be 35 effected did they not exist and provided the horizontal partition only was used, as the air in this latter case would take the most direct course to the discharge pipes, and therefore would not be brought into contact, 40 for so long a period of time, with a heated surface, or with one heated to so great a degree, as it does, when the vertical partitions are arranged in combination with the

converging top of the fire chamber as above set forth. 45

A pipe *x* Fig. 3, having a damper *y* in it connects the upper part of the fire chamber with the discharge flue or pipe *d*, by which the smoke may be caused, at any time, to pass directly into the discharge flue, instead 50 of circulating through the side columns and base. The cold air with which the fire is supplied, passes into the fire chamber from the ash pit *z*. A portion of cold air from the ash pit circulates in the space between 55 the grate and the casing *g* and as the casing *g* has a current of air passing over its exterior surface, the combined operation of the two currents is such as to prevent the fire in the grate from materially injuring the 60 bars thereof, thus enabling the basket grate to be used without any luting or lining of fire brick or soap stone.

Having thus explained my invention, I shall claim— 65

Forming the upper part of the fire-chamber converging as set forth, in combination with the vertical partitions connecting the fire chamber (so constructed) with the external casing, by which arrangement of the 70 above parts air to be heated is brought into contact with a greater extent and degree of warming surface than would be obtained were the fire-chamber continued vertically to the top plate of the apparatus as heretofore described. 75

In testimony that the foregoing is a true description of my said invention and improvements I have hereto set my signature this seventeenth day of May in the year 80 eighteen hundred and forty two.

GEORGE NELSON.

Witnesses:

R. H. EDDY,
EZRA LINCOLN, Jr.