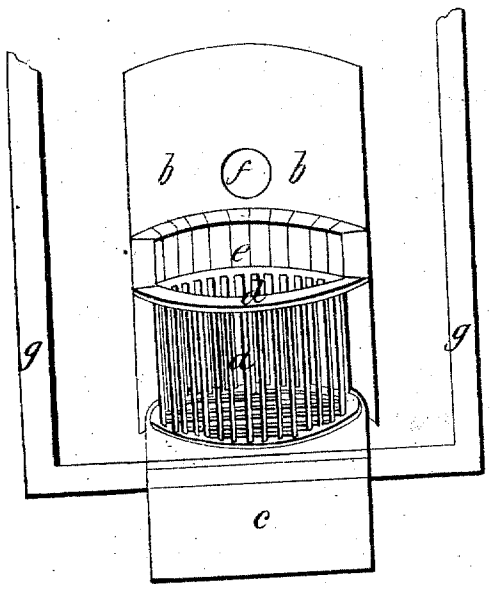
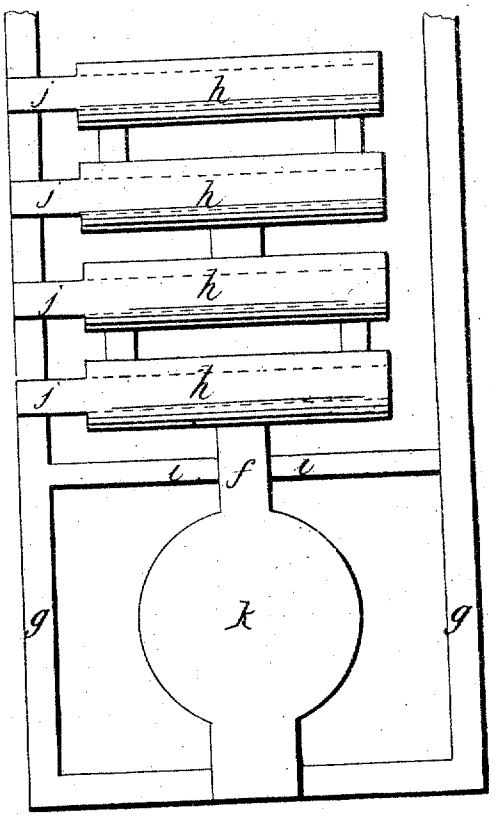
7327X

D. Steinhauer.

Grate.

Patented Dec. 13. 1832.





7327x Dec. 13, 1832 425

Daniel Steinhauer, of Pennsylvania in the United States

Letters Patent.

The schedule referred to in these Letters Patent, and making part of the same, containing a description in the words of the said Daniel Steinhauer, himself of his improvement in the construction of heat from the smoke of air heaters, & in the mode of applying Basket Grates to such heaters.

In meditating on the best plans, in an economical point of view of heating houses by warm air & from actual experiments made upon the subject, I have satisfied myself fully, that by far the most durable of all fireplaces is a Basket Grate for the fire when suspended in a cylinder or air heater of large diameter, in such a way that the bottom of the grate and the bottom of the cylinder form the top of the ash pit, allowing the air thence to play freely in the space between the grate & the cylinder, round the fire, yet checking its ascent in that space beyond the top of the grate, by a ring or flange, closing said space effectually at such height, whence a single range of the bricks may conveniently be applied for the protection of the cylinder in the immediate vicinity of the fire; while the rush of air below such ring or flange will sufficiently cool the sides and bottom of the basket grate, to prevent their being injured by the heat of the fire, though the air may attain such a temperature as will maintain the radiating glow of the fuel facing the lower part of the cylinder, aiding at the same time the combustion, instead of ascending unobstructed at a lower temperature to the injury of the heat evolved above.

I have in the same way fully satisfied myself that the violent combustion, brought about in air furnaces by high chimneys, is by no means necessary for the limited object of heating with a moderate temperature. Dispensing therefore in such cases with high chimneys & ranging the smoke or gas from the fire place in an

an horizontal direction, by the original impulse from the combustion, kept up by a continuation of its operation. I find that the heat of the smoke or gases may be abstracted to any desirable extent by a system of double cased cylindrical smoke drums, placed sideways in succession as gas retorts, inclosed in a walled air chamber, the one drum receiving the smoke from the other, each having a separate draft of cold air from without passing thro' the interior, while a draft from below is provided for taking up the heat from the exterior of the drums, which various currents of variously heated air will mix together and form a medium temperature, either by themselves, if the air chamber containing them be entirely separate, or with the air heated by the main body of the stove. If the separation be made by a lower partition only, the whole to be distributed thro' in the house by pipes or flues from the air chamber. But tho' the entire heat of the smoke may in this way be rendered available yet local circumstances, & more particularly the height of the chimney by which the smoke is to escape, must necessarily be taken into consideration in determining the extent to which it may be advisable, or even practicable to carry the saving of heat above alluded to. What I claim as my invention for the heating of houses by warm air, the abstraction of heat to any desirable extent from the smoke of air heaters, by a system of double cased cylindrical drums, placed horizontally and in succession as gas retorts inclosed in a walled air chamber, either entirely separate from the air chamber of the main body of the air heater, or forming part of it by a partition only, not carried higher than the drums, each drum having a separate cold air flue thro' its entire & a separate or common draft from below to strike the entire casing of each, so as to produce a separate current of air thro' & from around each drum, differently heated of course, according to the different temperature of the smoke in the respective drums, but mixing above into one body

for

of a medium temperature for further distribution in the house by pipes or flues from the air chamber. And with regard to the fire place itself. I claim as my invention the particular application of a basket grate, in suspending it in a cylinder or air heater of larger diameter so as to allow the air to play freely in the space between the grate and the cylinder round the fire, yet checking its ascent in that space beyond the top of the grate by a ring or flange, closing said space effectually at such a height.

Witnesses
E. Newman
B E Sawyer

D. Steinhauer

Cert.
Hyl.