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J. WILSON.

Heating-Stoves.

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Patented Sept. 12, 1834.

Fig. 1.

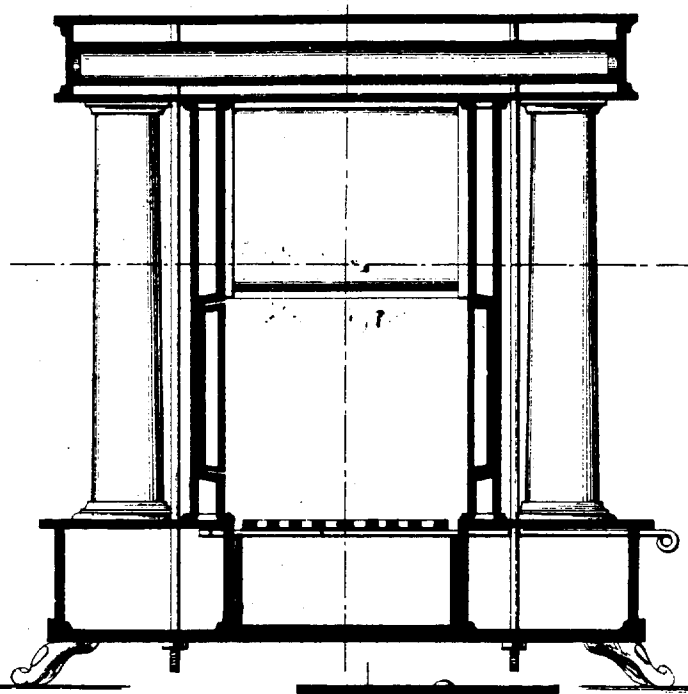


Fig. 3.

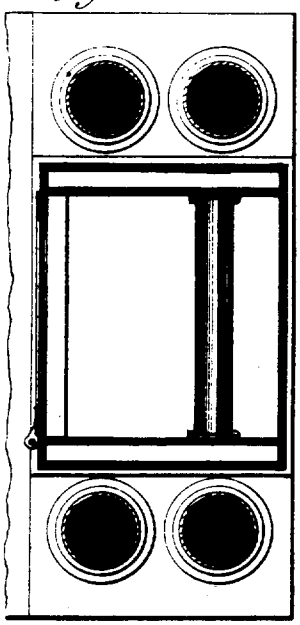
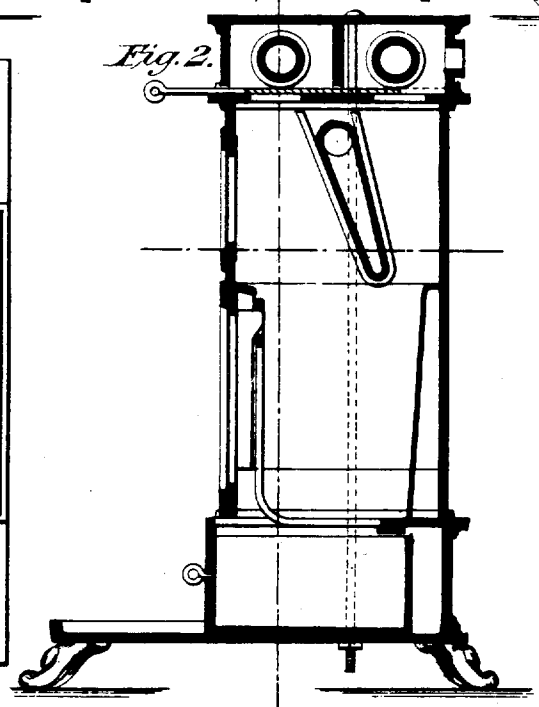


Fig. 2.



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Sept. 12. 1834

The Schedule referred to in these Letters Patent & making part of the same, containing a description in the words of the said James Wilson himself of his improvement in the construction of the union or double grate connected with Stoves of various forms & kinds for burning Anthracite & Bituminous coal for heating Rooms &c.

Wilsons, Improved Patent Pyramid Hot air Guards Plate for union or double grate Stoves for burning all the various kinds of Anthracite Coal & all other Flamable Substances with the greatest economy adapted to all the varieties of Situations such as meeting Houses, Halls, Steamboat, Selling Rooms, Counting Houses, Kitchen Stoves, Cabins &c &c on an entirely new principle never before known or used, in the United States.

Description of Improvement. The four corners of the Stove inside may be formed into hollow squares by means of right angular cast Iron Heaters with triangular Flanges on the inner edge forming projections for receiving the linings entirely preventing them from inclining towards the centre & may be inserted at any time without taking the Stove down, on the surface of which the action of the fire is intense the linings may be made of clay, soapstone, or any other suitable material to fall sizes and forms, one, two three or four flues may be made at the same time to suit various situations, the flues commencing either in the rear of the fire or sides, or a level with grate, below or above, causing the air of the room to pass directly through the fire, thereby generating the greatest possible draft either with or without a blower or damper & consumes all the flamable portions of the air. In the upper part & second chamber of the stove, is a dovetail damper or valve air tight, which is opened & shut at pleasure to let the smoke & gas pass into the flue in kindling a fire; & when open to cause all the coal to ignite & burn at the same time; & when shut to stop ignition above the opening in the flue below the cast iron plain or dove-tail but in connection with the clay lining. The form of the

plates connected with the back or ends of the stove, may be square, oblong, rounded, half R.t one fourth or one eighth of a circle, or any other shape or figure that will preserve an open cavity between the surface & guards plates which are within to receive the radiance of the fire & prevent injury to the outside plates or in the least diminishing their beauty. These are openings in the outside plates back of the flue to admit a free circulation of cold air which is heated by means of the guards dovetailed plates or box & other passages Freely into the room; or it may be constructed by adding a hollow tube passing round the inner surface of the stove receiving the heated air from the dovetail flues at the four corners of the stove or hollow square, or any form of heaters; it may then be conveyed to any apartment of the building heating with it fumes any portion or portions of the same with less expense & fuel than any thing heretofore known or used. The fronts of the different forms & sizes of the above described stoves may be open, giving the most beautiful fire, equal to the most approved parlour grates & retaining the same economy as the stove above mentioned, having an open fire with a door or blower in the form of a window sash resting on hinges or suspended in any other way & may be removed at pleasure, retaining when in its places all the advantages of those less open by filling the cavities with mica through which the rays of light may be emitted. The stove may be of any size form or pattern, the most approved is an oblong square or round, with one or more shelves with arms or spiral ribs, the linings may in both the cases be of iron or clay, united or detached with dovetail flanges to receive the clay or known with the iron. Description of the union or double grate stove is made in two parts of cast or wrought iron or any other suitable materials, the one half of the bars are connected to the shaft on the centre on which the grate when painted with the other half rests, & is made a part of the same by fastenings either of screws or points, or by any other means of uniting them firmly together, & yet permit the grate shaft to vibrate in the outer gudgeon that passes through the face or front, or is separate from the main shaft, receiving the latter by means of a hollow square resting on a collar made fast to the side

by screws or rivets to be removed with ease in order to insert & remove the grate without taking the stove in pieces, by a crank on the side of the stove &c may be used in front with a lever or any other purchase sufficient to detach the ashes from the coal & drop them into the ash pit attached to the shaft by which being moved one fourth of a circle, the coal will be agitated the whole length of the grate at once & the ashes be caused to drop into the pan below, without perverting or wasting the coals as is the case with most other grates & on removing the fastenings to the frame part of the grate the whole contents of the chamber of combustion is made to drop into the pan below, by giving the crank a motion equal to one fourth of a circle, & it may be suspended on centres in the form of a right angle, the bals of the grate may be flat or concave.

Summary. I claim as my invention first the union grate as before described, also the manner of discharging the same by describing the quarter of a circle or any segment thereof, or by means either of a swing or drop grate, the same having been used for containing fuel or discharging it by one motion into the ash pan, resting on the centres with or without half circle, triangular or concave bars, the latter being greatly preferred for strength & convenience of moulding the same being lighter & stronger than the half circle, oblong, or any other form. Secondly. I claim as my invention the opening in the sides or other surface of the stove for the admission of air to prevent the iron bars or grates from being destroyed by the intensity of heat from anthracite or other coal. Thirdly. I claim as any invention & improvement the moveable damper or valve sliding under ovens to prevent extra heat & giving direction to the flames of heat & passing the same up the extra or back flue, at or near the bottom or at the junction of the upper outlet, through the body of the stove into the back flue or chimney; giving a perfect direction to the fire entirely preventing by closing the damper or moveable plate, the surplus heat so much complained of in all other stoves heretofore in use without the damper & casting

guard plates or box. Fourth: I claim as my invention the cast iron guard plate or box, either round, square, or any other form, which are separate from the sides or back of the stove & make a part of the same by being separated & fastened either by screws, rivets or any other way so as to make the same air tight, which may be of a circular form or any segment of a circle; & which when united to the sides or back will form an open cavity for the circulation of air to obtain the heat in the room without destroying the guard plates or box; and prevent any injury to the surface plates, as well as keep any thing from burning that may chance to come in contact with the outside of the stove, & also preventing the same beautiful surface as the other plates. Also in connection with the above described movable plate or damper. I claim the upper damper in the Chamber of combustion to let off the smoke & gas in making a fire, & to cause the whole contents of the stove to be ignited at the same time if desired. The chamber of combustion may be made a part of the said stove or separate, so as to be removed at pleasure & of any form or size desired, observing, that the same be made air tight that combustion may be prevented when the damper is closed. The hopper or urn may be made large enough to contain a sufficient quantity of fuel to keep up combustion for days if required. By raising or lowering the tube made of iron, clay or soapstone, of any form & suitable size to discharge the coal at or near the grate, preserving a sufficient distance from the floor or grate of the furnace to graduate the quantity of coal to be consumed to any degree of heat wished for. By means of this tube less than one quart of nut coal can be made to burn & the consumption of fuel confined to any given quantity by raising or lowering the same & thus regulating it at pleasure. By one part of the tube being movable & sliding upon the outer or inner surface of the main tube connected with the hopper, receiver or urn, which may be raised or lowered to increase or diminish the quantity of fuel to be consumed, observing at the time of using the tube to keep the upper damper in the chamber of combustion closed to prevent the air

flow passing through the tube if possible; which can be effected only by having the valve or damper airtight & keeping it constantly closed, especially in the use of the fine or nut coal & when combustion is designed to be kept up for a length of time without replenishing the fuel, & the hopper or arm may be sufficient in size to keep up any given temperature for days. The same construction of Hopper as described in the within specification except that the feeders are on the outside of the furnace instead of the centre or inside in order to increase the quantity of fuel to last a length of time if required to keep up the fire without constantly charging the same as in the case with all other furnaces now in use. By which means three or more kinds of coal can be injected to any given point below the mouth of the furnace or cupola, to wit, charcoal in the lower part, coke or Liverpool in the centre, & anthracite at the top or mouth, or any other suitable material can be used. The ore or metal to be melted is suspended over the top of the furnace or cupola in a hopper or reservoir to receive the fire from the top of the furnace heating & drying the ore the better preparing it for the furnace or cupola, as it diminishes the quantity of fuel, gives greater facility in fusing & melting; & producing greater uniformity in the quantity of the ores. By the aid of machinery attached to the hopper at the top of the furnace, the ore can be kept constantly discharging from the hopper into the top of the furnace, & the supply increased or diminished to supply the wants of the furnace, working fast or slow. The same constructed hopper or receiver can be used in or on the outside of any stove for culinary purposes as well as for the purposes above, may be made of any suitable material either sheet or cast iron, copper, tin or of any other substance that may answer.

No. 1 Improvement in the management of heat, as applied to cooking stoves of every form & kinds, for all culinary purposes in the use of wood or coal, in applying the same to the oven & boilers in the most economical manner, never before known or used, without the usual destruction of the oven plates & dampers, sliding under or

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revolving outside of said oven, giving a more perfect direction to the flame conveying it to the entire outside of the boiler increasing & diminishing the quantity of heat by shoving the guard plate sliding under the oven from 2 to 4 Inches, the same to be moved at pleasure or remain stationary, to suit the point of heat in the oven for baking boiling, roasting or any other purpose. the above guard plate resting on flanges cast on the inner loweredge of the side oven plate sufficient distance from the bottom oven plate to pass all the flame, or fumes of heat between the guard plate & the bottom oven plate if required or any part of it, the guard plate giving perfect direction to imparting any portion of fire for the purpose above named, by means of a shuttle piercing through the outside of the stove, or may be moved by any other suitable instrument resting on or between the flanges cast on the under side of the guard plate for that purpose, near the front lower side the same sliding dampers is used in tining sheets of copper directing the fire to & from the sheets in its passage in the sheet cumtube & having discovered the great inconvenience of the former plan & expense of the former sliding dampers under the ovens of cooking stoves, & destruction by intense heat to which they were exposed & the manner they were made to act under the oven, have substituted the following sliding or revolving dampers resting on a side flange cast on & making a part of the upright side oven plate from one & six inches more or less, at right angles, with the upright side oven plates, themselves forming an impenetrable guard plate to the dampers sliding or revolving on the upper side of the same the fire passing under the guard projecting wing of the upright side oven plates, the said projecting part of said plate to extend to nearly the outer surface of the stove conveying the flame or fumes of heat to the outside of the boiler, thereby consuming much less fuel than any other stove of like construction known or used before, & by inches or stops cast on the sides of the stove to receive the dampers as it revolves, any given quantity of heat may be applied to the boiler by its motion if required, and by

passing the fire under the surface of the projecting ring of the upright side oven plate is heated more effectually than formerly, with great economy in carrying the flame & fumes from the fire more equally to the outside of the boiler, the same right angle plate cast on & making a part of the top & bottom oven plate, to all kinds of coal stoves plate, such as store bottom backs &c, when the action of the fire is confined to a certain & small portion of the plate moveable oven plate forming at pleasure an inclined plane to convey the coal from the feeder in the side near the front of stove. the improvement herein described consists, first, in the casting & placing guard plate cross & lengthways of the oven in cooking stoves on flanges cast on the inside upright oven plates one & more inches below the bottom of oven, leaving sufficient space to pass the flames & fumes of heat between the oven plate & dampers, the heat to the bottom & diminishing it at pleasure by the motion of the plate from two to four inches from front to rear under the oven, the same damper is used in turning ashes. connected with said upright side oven plate is a right angle or wings cast on & making a part of said side oven plates upon which the sliding damper rests on the upper side of the flames, saving the damper from injury by fire as heretofore, giving direction to the fire to the outside of the boilers, consuming much less fuel procuring a regular degree of heat to the oven not before known or used.

Having recently discovered by various experiments that cast iron plates upon which the fire acts upon a part of the surface is soonest worn from breakage by turning it the thickness of the plate on the inside bottom of all kinds of stoves for cooking & 8 & 9 plate stove stoves, bottom, all fire plates & backs to franklins, hearths with straight & level plates, by turning them are entirely prevented from breakage by fire as heretofore, the same right angle plates are attached to the top & bottom oven plate forming an entire fire plate in front of all coal & wood cooking stoves, gives additional heat to the top & bottom oven plate in baking & frying.

Having discovered the great advantage in burning anthracite coal in all Pyramid stoves, of all sizes & forms especially the oblong square

by attaching the flues to the ring of fire pot for the purpose of combustion & gases passing between them for the purpose of forming a chamber for the circulation of air to be heated & to remove for the consumption of fuel & to prevent entirely pressure together melting with fire by natural experiments recently made I have discovered a new plan & for the formation of all cast iron plate which the action of the fire so intense in some part or section of it, & not all of the surface such as round bottoms to cook stoves &c. by carrying the surface of the same at least the thickness of the plate by expansion & moving it entirely returns again to its former state without breakage or the least injury to the plates, such is not the case with all other cast plates exposed part to the action of the fire heretofore made with a flat or straight surface are now made convex or inclined to prevent breakage as heretofore.

Summary

No 3 I claim as my invention & improvement the invention of guarding the rim of all cooking stoves from burning at bottom by a stationary or movable plate under rim for all culinary purposes giving any portion of heat to the same in baking, frying &c. 2d I claim as my invention & improvement the flange or ring at right angles with the upright side rim plate extending outward from one to six inches more or less to carry the fire to the sides of the boiler, & to provide for the heating of the upright part of said side rim plate by the action of the fire under the surface & projecting part of said plate, the revolving damper resting on the same & preventing its destruction by fire. 3d I claim the application of said sliding guard plate in connection with a movable, flush rim or any other formed face for turning flush & proper, thereby regulating the action of the fire to the same at pleasure. 4th I claim as my invention & improvement the guard & projecting plate making a part bottom or top rim to upright side rim as above forming a double new protection to the sliding or revolving guard plate & damper, saving the same from the usual destruction by heat passing to & upper surface shielding the same

from fric. 5th I claim as my invention & discovery the saving from breakage all stones or cast iron plates by cutting the same at least the thickness of the melting of the outer surface plate of each division by opening the sides of the plates or in the bottom of top plates

James Wilson

Witnesses
C. A. Van Vorhis
Isaac Adriance

Exd. W.G.C.

(3800 words)

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