(No Model.)

C. BARNHART.

HEATING STOVE.

No. 598,840. Patented Feb. 8, 1898.

Fig. 1.

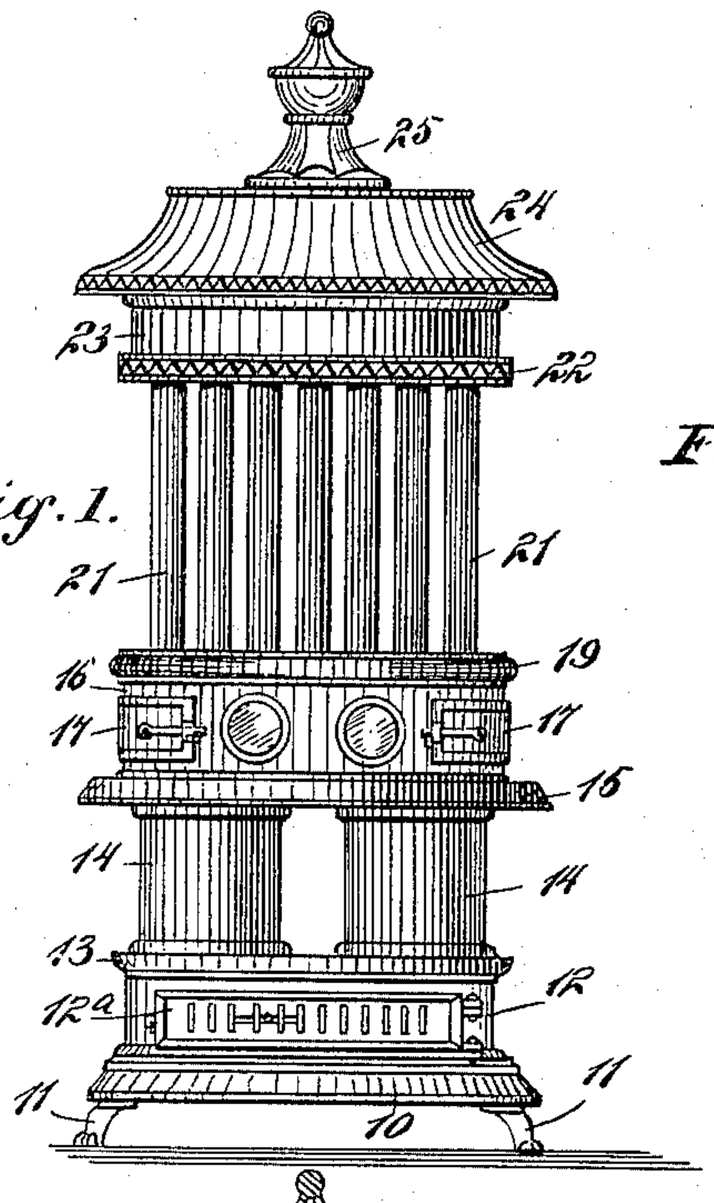


Fig. 2.

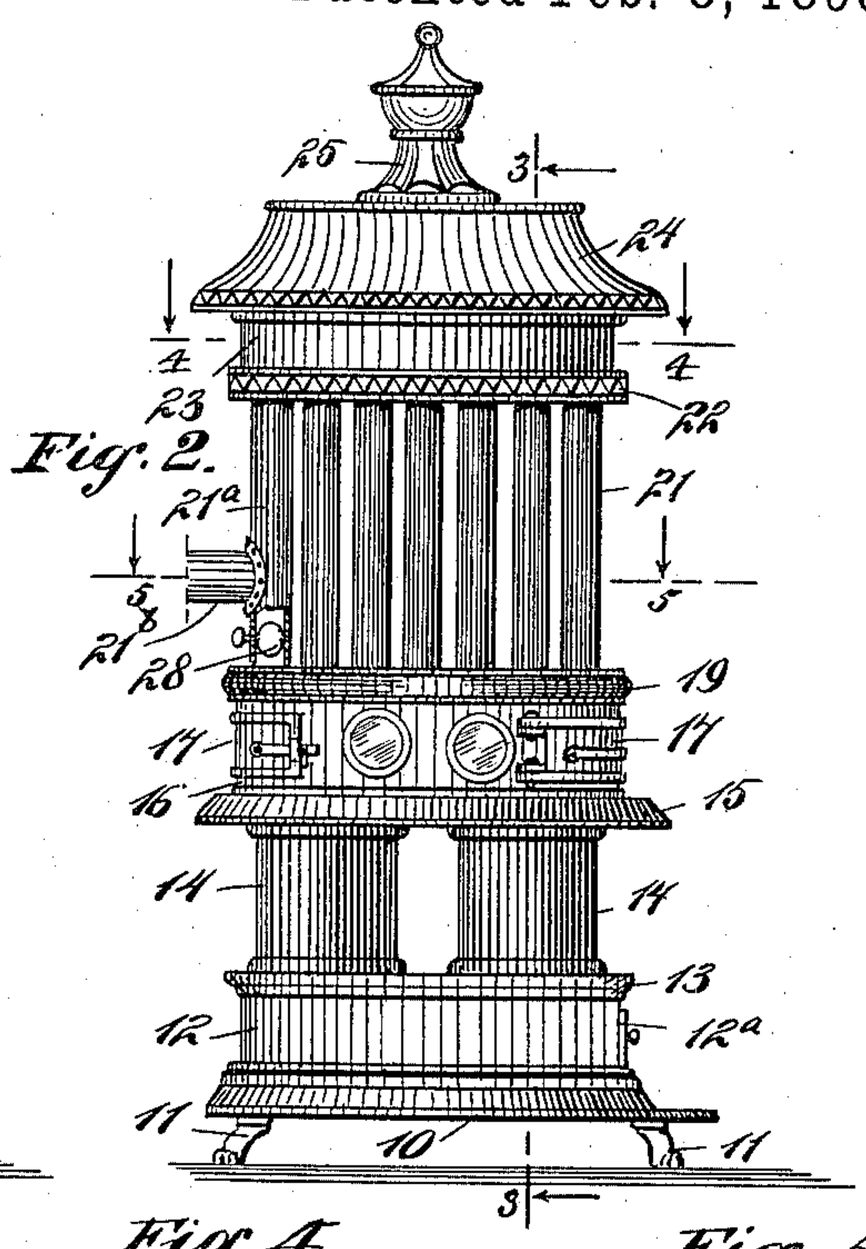


Fig. 3.

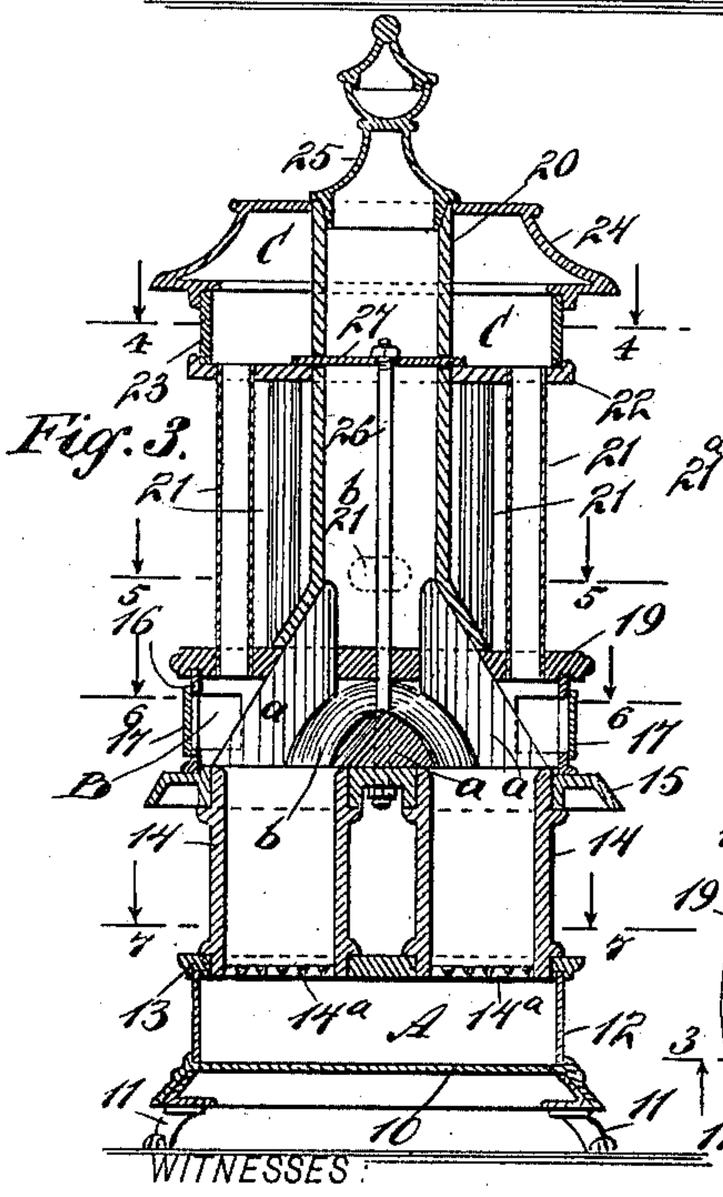


Fig. 4.

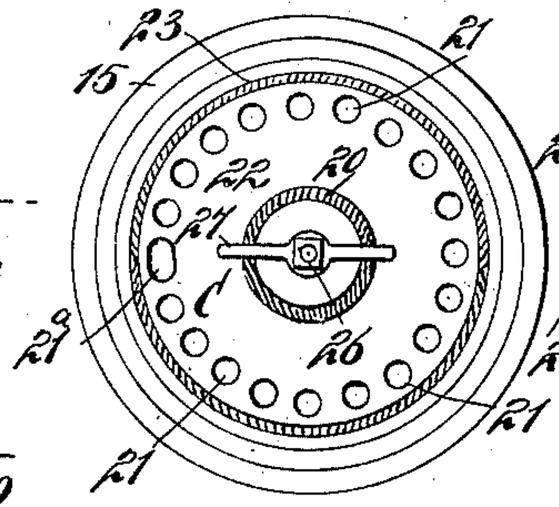


Fig. 5.

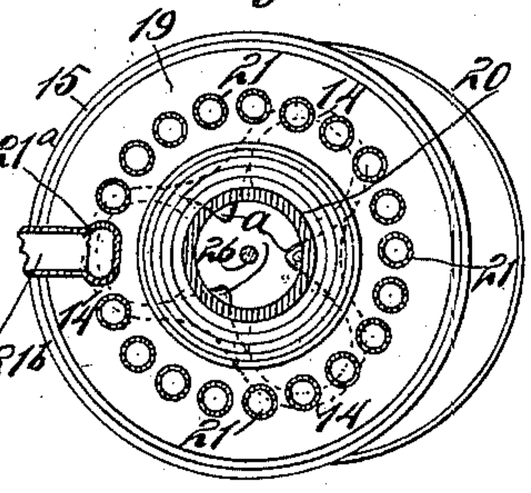


Fig. 6.

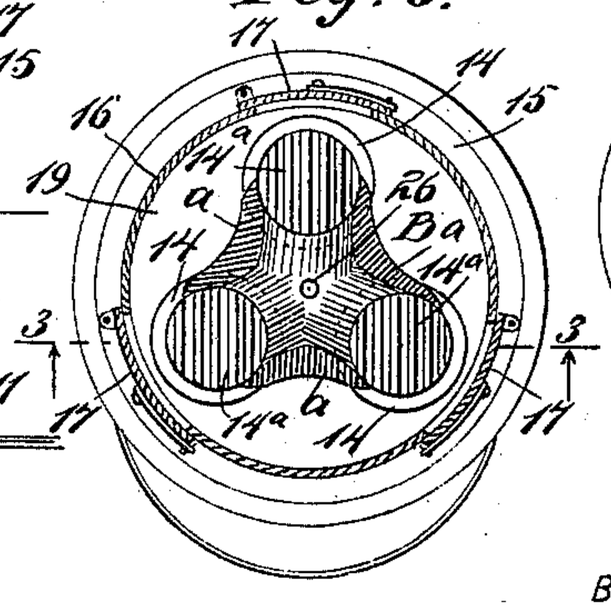
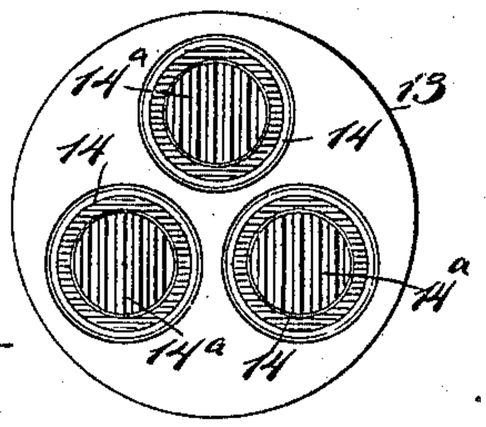


Fig. 7.



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UNITED STATES PATENT OFFICE.

CORNELIUS BARNHART, OF WALKER VALLEY, NEW YORK.

HEATING-STOVE.

SPECIFICATION forming part of Letters Patent No. 598,840, dated February 8, 1898.

Application filed June 4, 1897. Serial No. 639,370. (No model.)

To all whom it may concern:

Be it known that I, CORNELIUS BARNHART, of Walker Valley, in the county of Ulster and State of New York, have invented a new and Improved Heating-Stove, of which the following is a full, clear, and exact description.

This invention relates to a class of stoves employed for the generation and diffusion of heat in the rooms of residences, and has for its object to provide novel features of construction for a stove of the indicated character which will afford an increased diffusion of heat therefrom by provision of increased radiating-surface, whereby economy of fuel and greater efficiency of service are attained.

The invention consists in the novel construction and combination of parts, as hereinafter described, and defined in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of the improved heating-stove. Fig. 2 is a side elevation of the same. Fig. 3 is a vertical sectional view substantially on the lines 3 3 in Figs. 2 and 6. Fig. 4 is a sectional plan view essentially on the lines 4 4 in Figs. 2 and 3. Fig. 5 is a sectional plan view on the lines 5 5 in Figs. 2 and 3. Fig. 6 is a sectional plan view on the line 6 6 in Fig. 3, and Fig. 7 is a sectional plan view on the line 7 7 in Fig. 3.

In the drawings representing an embodiment of my invention a base-plate 10 is provided having feet 11, whereon the stove may be supported in an upright position. On the base-plate 10 the wall 12 of the ash-pit A is seated and may be secured by any preferred means. Usually the weight of superimposed parts of the structure may be utilized for the indicated purpose.

The top plate 13 of the ash-pit A seats upon the wall 12, being preferably flanged at the edge to produce a depending rib, which encompasses the upper edge of the wall 12, so as to prevent lateral displacement, as clearly shown in Fig. 3. A draft-controlling register of ordinary form is placed in the ash-pit door 12^a.

The improved stove is preferably furnished with three fire-pots 14 in cylindrical form, and these fire-pots may advantageously be spaced and arranged as shown in Figs. 5, 6, and 7, two of said cylinders being disposed in the same transverse plane at the front and one cylinder at the rear of the front cylinders and equally spaced therefrom. Any suitable style of grates 14^a may be provided for the fire-pots 14, and these grates are held in the bottoms of the fire-pots for the support of fuel over apertures in the top plate 13, as indicated in Fig. 2. On the upper portions of the fire-pots 14 a diaphragm 15 is sustained, and said diaphragm 15 serves to support the annular wall 16, wherein apertures are formed above the fire-pots, said apertures being normally closed by doors 17. Between the doors 17 other orifices are formed in the wall 16, and said orifices may be protected by mica sheets that afford a view of the fire burning in the fire-pots 14.

Within the annular wall 16, which forms an inclosure for what may be termed the "combustion-chamber" B of the stove, a spider-frame is seated upon the diaphragm 15. The spider-frame consists of three spaced upright walls *a*, integral with an arched crown-plate *b* and radially disposed on said plate, each of said walls being curved so as to produce an obtuse angular surface on the inner side, and the walls and crown-plate together afford three chutes that incline downwardly from the apex of the crown-plate. Each chute lies opposite the open top of one of the fire-pots 14, so that material falling on the apex of the crown-plate *b* will be conducted down the three chutes into the respective fire-pots, this construction of parts being represented in Figs. 3, 5, and 6.

The outer edges of the upright walls *a* of the spider-frame slope upwardly and inwardly, and upon said outer edges the concentrically-apertured cap-piece 19 of the combustion-chamber B is located, which cap-piece is also seated upon the upper edge of the annular wall 16, which wall may be embedded in a groove formed in the lower side of the cap-piece, near its outer edge. An upright tubular conduit or magazine 20 is seated over the outer edges of the wing-walls *a*, above the cap-piece 19, said magazine having its lower end portion flared sufficiently to adapt it for engagement with the wing-walls, as is clearly shown in

Figs. 3 and 5, the fire-pots and spider-frame being represented by dotted lines in Fig. 5.

A series of upright heat conduits or flues 21 have their lower ends introduced within the cap-piece 19, the flues being concentrically disposed with regard to the central magazine 20. The upper ends of the flues 21 are secured in a circular spaced row of orifices formed to receive them in the flue-sheet 22, through which the fuel-magazine 20 upwardly projects.

A hot-air chamber C is formed above the flue-sheet 22 by providing an annular wall 23, that seats on said flue-sheet, the hot-air chamber being completed by the dished top plate 24, having a depending flange near its periphery, which encircles the upper edge of the wall 23. The upper extremity of the magazine 20 projects into a central orifice in the top plate 24, and the open upper end of the magazine is normally closed gas-tight by the depending end of a water-urn 25 or other equivalent means.

The flue-sheet 22 and other parts located between said sheet and the diaphragm-plate 15 are held securely bound together by the clamping-bolt 26, that passes down through the magazine 20. The bolt 26 penetrates a cross-bar 27, transversely disposed in opposite perforations in the wall of the magazine and having its extremities rested upon the flue-sheet 22. The lower end of the bolt 26 projects down through a central perforation in the diaphragm-plate 15, and both ends of the bolt may have threaded engagement with nuts, whereby the diaphragm-plate and flue-sheet may be drawn toward each other and the intermediate parts be clamped so as to render the structure substantial.

One of the series of flues 21 is somewhat enlarged diametrically, as shown at 21^a in Figs. 2, 4, and 5, to adapt it for service as a direct-draft flue, and this flue, which is preferably positioned at the rear of the stove, has a lateral outlet, over which a thimble or branch draft-pipe 21^b is secured, whereon a pipe extension may be placed to conduct away waste products of combustion into a chimney or other place of discharge.

Between the branch pipe 21^b and cap-piece 19 a damper-gate 28 is introduced within the direct-draft flue 21^a, and this gate is hung upon a pintle-bolt projecting exteriorly of the pipe and provided with the usual thumb-piece to adapt it for control of the damper-gate in the usual way. The gate or damper 28, if open or in the position shown in Fig. 2, permits the escape of smoke and other products of combustion from the fuel burning in one or more of the fire-pots 14 out of the branch pipe 21^b and thence to the chimney, this provision being advantageous when fire is first started in the stove.

It is to be understood that coke or coal of suitable kind is used as the regular fuel for combustion in either or all of the fire-pots 14. An important advantage is afforded by the provision of the plurality of fire chambers or pots 14 and the series of upright heat-radiating flues 21.

It will be apparent that if but a small amount of heat is required to warm a room fire may be placed in but one of the fire-pots 14, and the heat evolved therefrom will traverse all the flues 21 and enter the hot-air chamber C, the side walls of which, as well as the flue 21^a, radiate heat, from which flue the products of combustion pass into the branch pipe 21^b, the closure of the damper 28 being previously effected to cause all the products of combustion to traverse the flues 21 before escaping from the stove. When occasion requires, two fire-pots may have fire placed in them, or the maximum heating capacity of the stove may be utilized by the introduction and maintenance of fuel combustion in all three of the fire-pots 14.

It will be seen that from the relative construction and arrangement of parts a considerable supply of fuel, such as coal or coke, may be placed in the magazine 20 and will be automatically fed by gravity to either or all of the fire-pots 14.

It is manifest that the exposure of the cylindrical fire-pots 14 adds their exterior radiating-surface to that of the combustion-chamber B, the flues 21, and the hot-air chamber C, so that a large percentage of the heat evolved in the combustion of the fuel is radiated from the stove for warming the room or house.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A heating-stove, comprising an ash-pit, a plurality of fire-pots supported from the top of said ash-pit, a combustion-chamber into which the tops of the fire-pots open, a feeding-magazine adapted to convey fuel to all the fire-pots automatically, heat-radiating flues leading from the combustion-chamber into a hot-air chamber, and a draft-flue leading from the hot-air chamber to a point of discharge, substantially as described.

2. A heating-stove, comprising a supported ash-pit, cylindrical fire-pots mounted on the top of the ash-pit over apertures therein, a diaphragm-plate seated on the fire-pots, the latter passing through apertures in said plate, a spider-frame having feed-chutes adapted to convey fuel to all the fire-pots, an upright fuel-magazine seated on the wings of the spider-frame to convey fuel through the chutes of the said frame, a series of heat-radiating flues around the magazine, a combustion-chamber surrounding the spider-frame and intersected by the flues, a hot-air chamber engaged by the upper ends of the flues, and a direct-draft flue leading from the hot-air chamber, substantially as described.

3. A heating-stove, comprising an ash-pit, a plurality of cylindrical fire-pots mounted on the ash-pit, a combustion-chamber having the bottom wall thereof intersected by the

tops of the fire-pots, a fuel-magazine adapted to convey fuel into all of the fire-pots by gravity, a series of heat-radiating flues around the fuel-magazine and tapping the combustion-chamber, a hot-air chamber the bottom wall of which is intersected by the upper ends of the heat-radiating flues, a direct-draft flue having its ends respectively connected with the combustion-chamber and hot-air chamber, a damper in the draft-flue below a lateral outlet therein, and means for sealing the upper end of the fuel-magazine, substantially as described.

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