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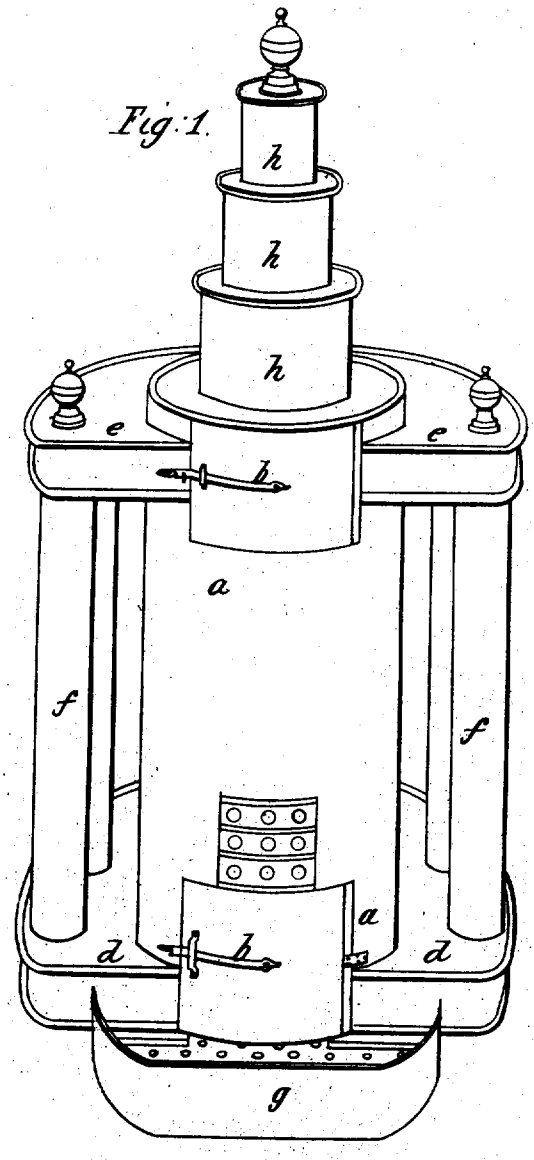
Sheet 1-3 Sheets.

J. Atwater.

Heating Stove.

Patented Aug. 23, 1833.

Fig. 1.



Sheet 2-3 Sheets.

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J. Atwater.

Heating Stove.

Patented Aug. 23, 1833.

Fig. 2.

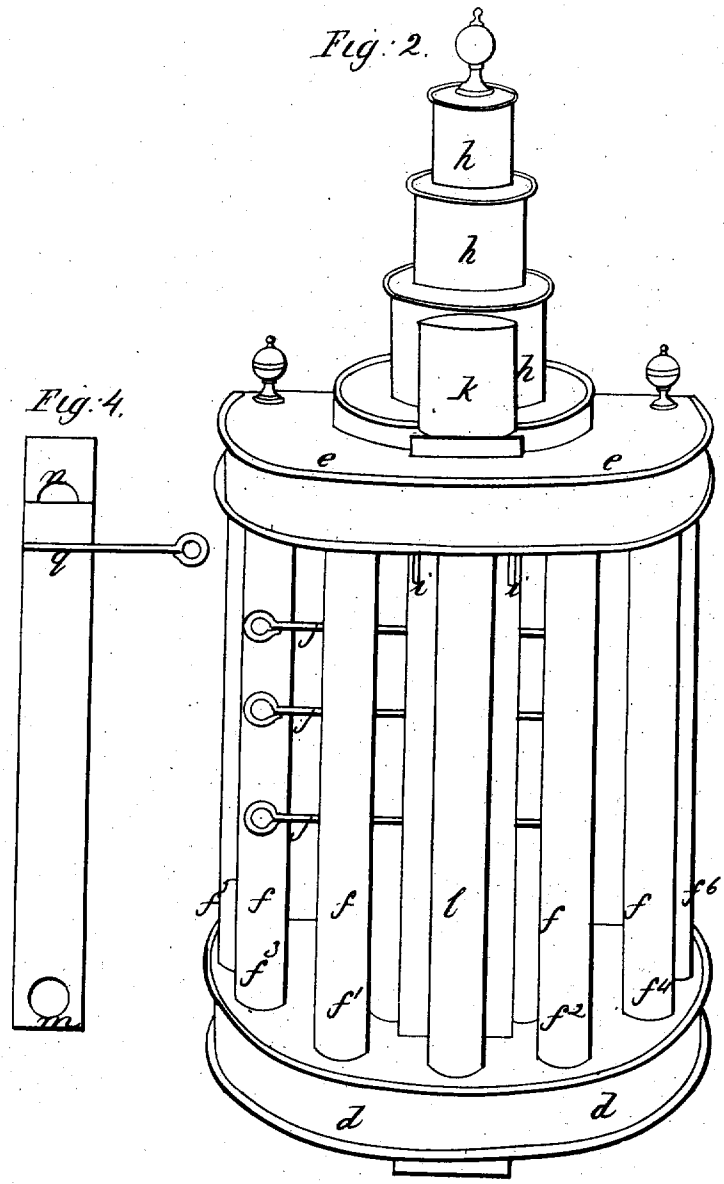
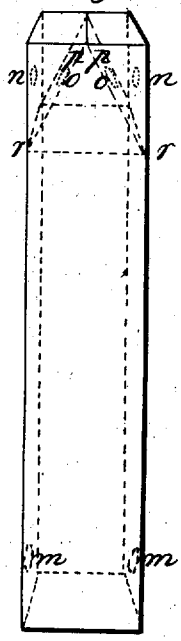


Fig. 4.

Fig. 3.



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Fig. 7.

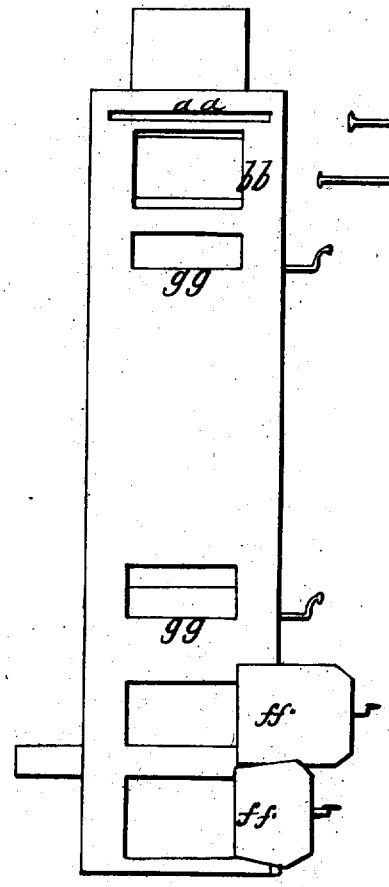


Fig. 8.

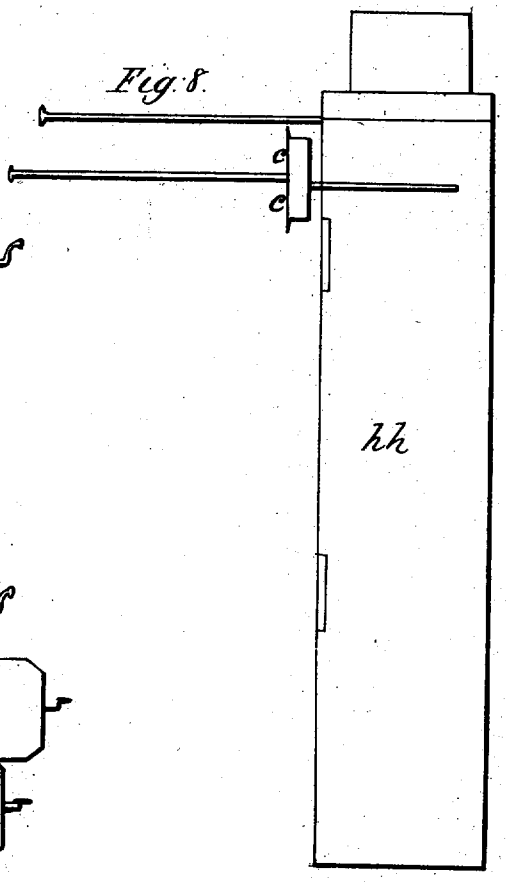
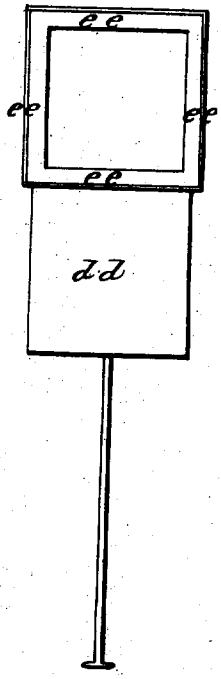


Fig. 9.



Fig's. 5 and 6 unavailable.

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James Alvord
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 James Alvord himself of his improvement in Stoves for burning hard or anthracite coal called "Alvords Combination Stove"

To all to whom these Presents shall come Greeting ——
Know ye that I James Alvord of New Haven in the County of New Haven and State of Connecticut a citizen of said State and of the United States — have invented, made, constructed and brought into use a new and useful improvement in Stoves for burning hard or anthracite coal which I call "Alvords combination Stove" and which I specify and describe as follows — The objects which I have sought to accomplish by means of my improvement are the following 1st To be able to regulate the draught of the Stove and make it stronger or weaker in degree and upward, downward, or horizontal in direction. 2nd To be able to kindle a small quantity of anthracite coal and continue its combustion much longer than in common Stoves 3d To be able to economize the heat after the fire is well kindled by turning the draught through a sufficient quantity of pipe, and thus transmitting the heat into the room. 4th To be able to clear the Stove of ashes and dust without the usual inconvenience of raising a dust in the room, to the injury of the furniture. These objects & some others not particularly mentioned I have accomplished by means of the combination and arrangement of sundry separate parts whether these parts are new or old so as to form a new compound instrument which can be sufficiently described and understood by the following explanations of the annexed drawings — Figure 1 is a front view of a combination Stove. a. a. represents a hollow cylinder with two rows of holes b. b. and a screen C. with slits through which the fire can be seen In the cylinder a. a. is placed a Grate for the coal constructed with a back extending from the bottom of the Grate to the top of the cylinder and

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and with one or more openings in any part of the same regulated with valves, slides or stoppers which can be opened and shut at pleasure. When the three openings are used in the back it will be found best to have one of those openings back of the fuel to be burned and the other two near the top of the back, but as two openings will be found sufficient for ordinary purposes and in some instances only one may be made to answer; it will generally be found best to have them as near the top of the back as they can conveniently be. The back through which the openings are made may be made from iron, brick or stone or any other material which will sustain a high degree of heat. but iron will most commonly be found preferable for that part of the back through which the openings are and to which the valves, slides, stoppers &c are to be attached. a.a. is a hollow base and c.c. a hollow capitol both of which are connected with pipes or hollow columns f.f.f. &c. g is a draw or flue constructed in the usual manner and h.h. &c is an ornamental top. Figure II. is a rear view of the same stove a.a. and c.c. represents the hollow base and capitol. h.h.h. the top as seen in figure I. i.i. represents the chamber in the rear of the grate and hollow cylinder before mentioned. j.j.j. represents the rods which turn the valves which regulate the flues. k. represents the pipe which finally conducts off the smoke and heated air. f.f.f.f. represents the pipes or columns through which the heated air and smoke are made to pass either directly or after they have been made to pass through the pipes f.f. &c. l represents a column which is not used as an air or smoke pipe but is added for symetry and strength. Figure III. is an interior view of the chamber represented by II. in fig 2. m.m. represents two openings in the sides of the chamber through which the heated air and smoke pass to the pipes f.1.4 f.2. Fig 2. Between each of the pipes f.1.4 f.2. & pipes f.3.4 f.4. is a partition on the base a.a. Fig. 2. which prevents the hot air and smoke from passing on to pipes f.3.4 f.4. and causes it to ascend in pipes f.1.4 f.2. to the capital c.c. fig. 2. There is also a partition on the capital c.c. fig 2 which prevents the hot air and smoke from passing on to pipes f.5.4 f.6. fig 2. and causes the same to ascend in

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in portion f. 3. & f. 4. fig 2. to the base d.d. fig. 2. whence the same passes to and ascends in the pipes f. 5. & f. 6. fig 2. to the capital c.c. fig 2. and thence off through the openings n.,n. fig 3. and thence to the smoke-pipe k fig 2— The heat and smoke are made to pass in this direction through the pipes by means of two valves which are so constructed and placed as to close the openings O. O. in the cast plate p partitioning p.p. fig 3. and when these openings are closed the escape of hot air and smoke upwards is prevented & they can only pass through the openings m.m. fig 3. and thence through the pipes as already described. Figure (IV.) shews one of the openings m.& n. in fig 3. and one of the valves q. when it is in the position to close the opening O. fig 3.) If the valves are so placed as to turn at the angles r. r. fig 3. they will if fully turned close the openings m. m. fig 3. whereas they may stop the openings O. O. fig 3. and then the smoke and hot air will pass off freely through the openings O. O. fig 3 into the smoke pipe k. fig 3. the handle of the valve q projects a short distance behind the chamber i. i. fig 2.. The hollow cylinder. the pipes. the base and capital. the top & the pan may be made of any suitable materials. but there is none perhaps better than sheet iron for ordinary use. The cylinder should be lined with soapstone, or fire brick. or cast iron. But cast iron for that part of the back through which the flues or openings are made will generally be found best. and soap stone or fire brick for the rest of the lining. The size of the stove and its parts should vary according to the size of the room. Hall. or church which is to be warmed. Figure V— is a front view of a combination stove in a form convenient to be used in a fire place or other position and can be made at little expence and to answer for all ordinary purposes as the objects sought in this invention are as fully accomplished as when the colonade of pipes and the base the capital & the top as seen fig 1 and the handle. or knobs of the valves q. fig 4. in the rear of the stove as seen d.d. fig 2. are used as already described. The pan or drawer g and the two doors b.b. are the same as seen in fig 1. except the upper door is placed a little lower in fig 5. than in fig 1. in order to make room for the handles of the sliding valves or slides, one of which is to cover the

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the draught through the pipes as present it to pass off directly into the chimney and the other to regulate the draught both of which handles are to be brought out in front above the door. The door D in front of the grate is represented open & the front of the grate also former is to open and thus to make it convenient to clear the grate of coal or fire at pleasure. Iron or tin pipe may be used by lining up and down (sliding) & any other form may then be given to the pipes or a pipe according to the taste or fancy of the manufacturer and the space to be occupied by the stove, until the heat shall have been nearly all of it transmitted into the room & it may then be conducted off direct into the chimney by separate flues or draught holes into any part of the chamber or smoke pipe above the slide which turns the draught as may be found most convenient when a stove is to be set on a fire place the throat of the chimney should be carefully closed, so that no air escapes through it which does not pass through the stove or its pipes. Fig VI— is a side view of the same stove in which the chamber is exhibited with one of its openings m. for the passage of hot air and smoke into the pipes. also the handles n,n, to close the flues and their bearings w, w, and notches x.x. to keep them fast when closed and the handles y, z. to the slides or stoppers next to be mentioned are exhibited in this figure. The upper slide or stopper y, is fitted to pass through the back of the cylinder and into the chamber in the rear by means of an opening a.a. which is represented in Figure VII. This slide is nearly large enough in width & length to close the chamber entirely when the slide is pushed back and then the smoke and heated air must pass downward and through the chamber and through the opening at m. fig 6. into the pipe and through the pipe into the draught which leads off the smoke. The other stopper opening b.b. seen in figure 7. is a flue to which is fitted a stopper or slide to regulate the same and this stopper or slide is seen in fig VIII. C.C. as it appears when withdrawn from the opening in the cylinder and in the chamber. The upper slide or stopper y, as seen in the drawing is placed above all the flues in the back. it may however be placed between the two upper flues

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flue when required. Figure IX is a view of a horizontal section of the chamber as seen from above when the slide d,d. which turns the air and smoke through the pipes is drawn out so as to leave a direct communication into the chimney or other outlet for smoke and soot. The section of the chamber is contracted a little by means of the projections e,e,e,e upon which the slide rests when it is pushed in and closes the chamber. In figure 7. there are two doors fff. fff. near the bottom of the chamber. the lower one being placed as low as possible to make it convenient to remove ashes and dust which collect at the bottom of the chamber. The upper one can be used as a flue when the other flues are all stopped. and the draught will thus be turned downwards through the bottom of the grate ggg. ggg. in fig 7. denotes two flues in the back of the stove opening into the chamber already described and seen in fig 5. l.h. which flues are regulated by valves and moved by the levers slots e,e. in fig 6. a stand or frame for the stove to rest on and a box for ashes & coal. to be placed near the stove in front will be found useful. they may be made from such materials & in such form & size as shall be most convenient. I claim as my invention the combination and arrangement by which the separate parts are adapted to each other and formed into one compound instrument to accomplish the four objects enumerated at the commencement of this specification which separate parts so combined are the following (viz) 1st a cylinder, prismatic or furnace stove with one or more openings in any part of the back thereof, regulated with one or more valves, slides or stoppers, which can be opened and shut at pleasure. 2nd an air and dust chamber in the rear of the back of the grate or stove into which the flues open with two or more outlets for heated air and smoke and one or more doors at the bottom below the grate to remove dust and ventilate the room and apertures of necessary to regulate the draught 3rd a set or collection of one or more pipes in any form, but so arranged as to be connected with the air chamber for the retention and diffusion of heat through the pipes into the rooms. 4th a set of one or more valves, slides or stoppers by which the draught is made to pass through the pipes of the stove or away

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directly & in the usual way. I do not claim any of the separate parts separately taken or any of the particular features of the separate parts as the Patent of my invention. but the combination and arrangement of all the parts whether the parts are new or old to form a whole compound instrument as aforesaid. In testimony that the foregoing is a true specification of my said improvement as above described I have hereunto set my hand and seal this 22nd day of July A.D. 1833.

James Atwater

Witness
Sam'l S. Hitchcock
Chas. A. Ingersoll

(Dr in portfolio)

2565 Wds