N. EDWARDS.

Heating Stove.

No. 22,416. Patented Dec. 28, 1858.

Fig. 3,

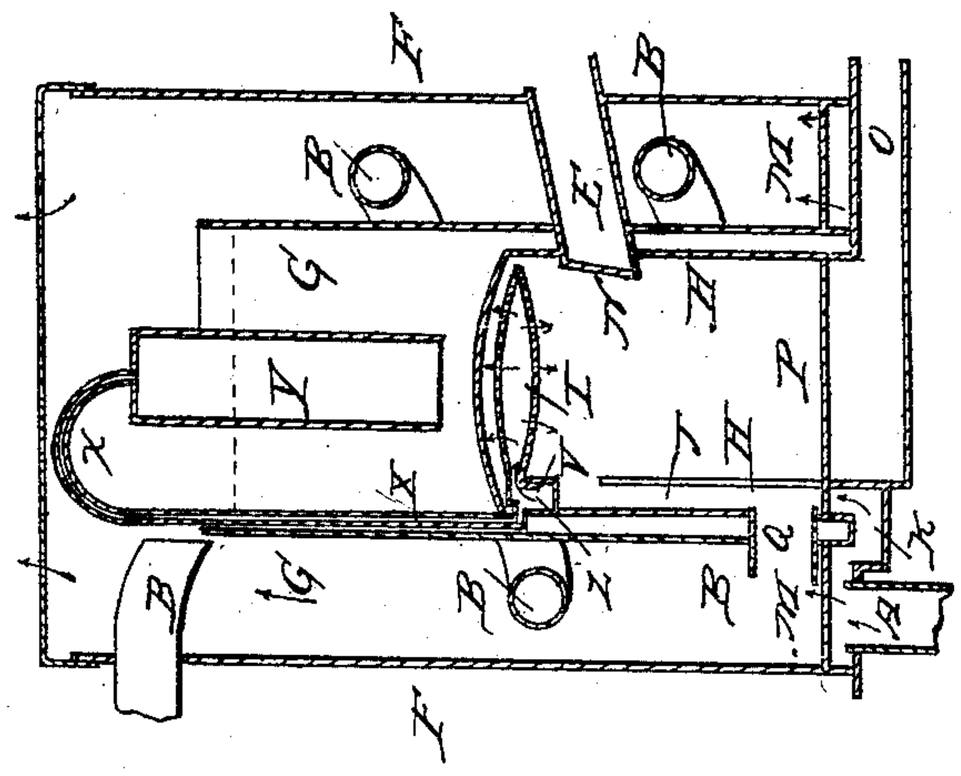


Fig. 5,

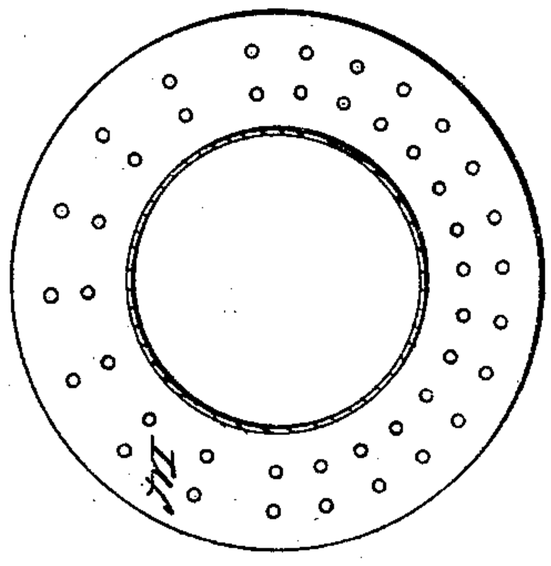


Fig. 4,

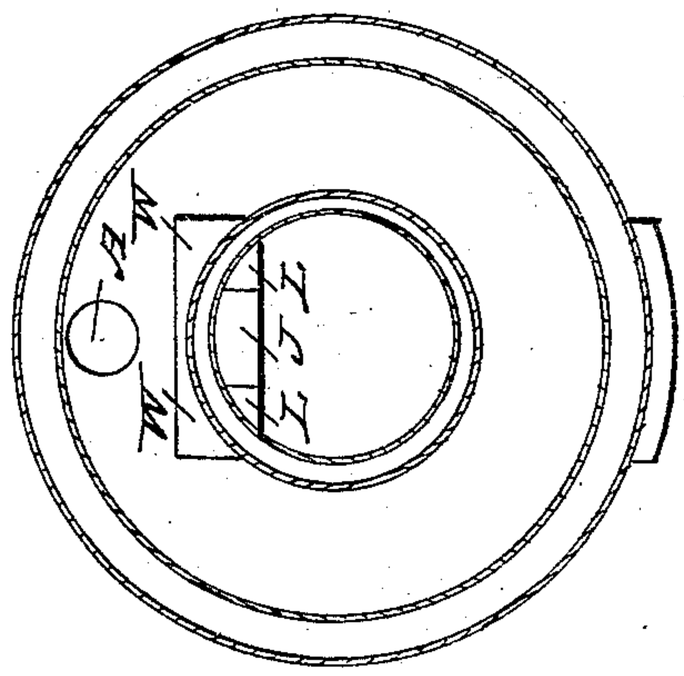


Fig. 2,

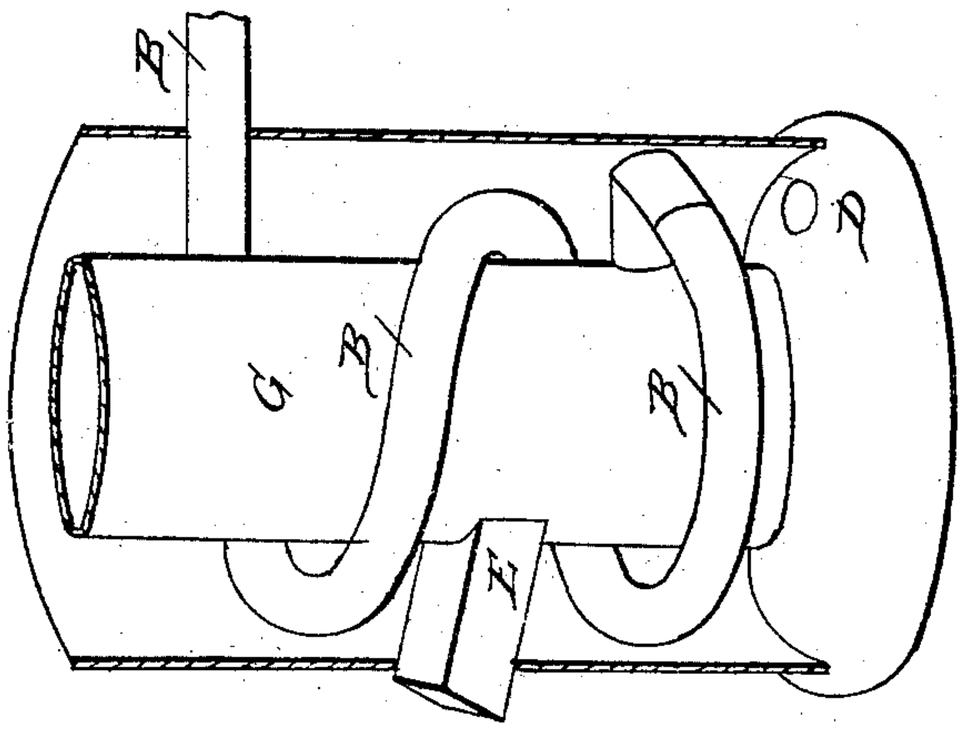


Fig. 6,

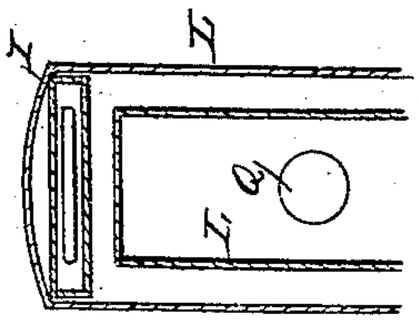


Fig. 7,

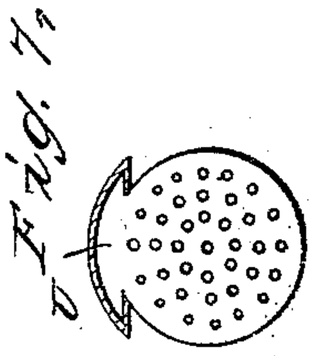
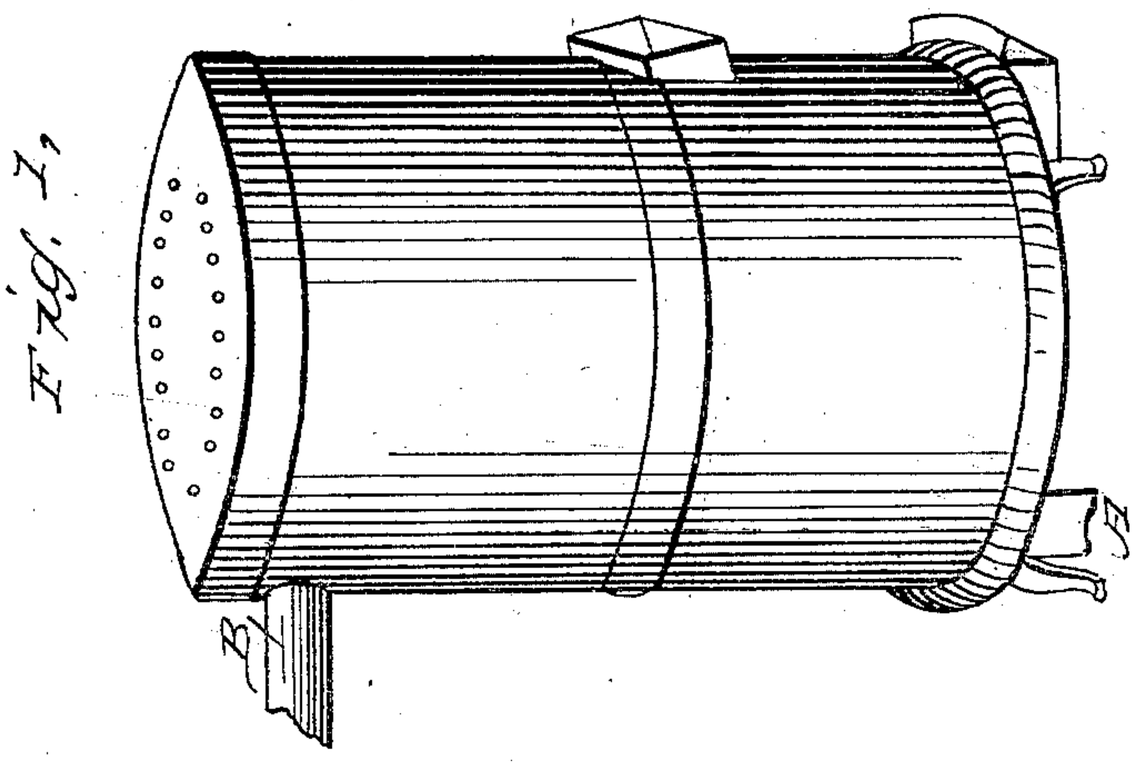


Fig. 1,



# UNITED STATES PATENT OFFICE.

NELSON EDWARDS, OF CHITTENDEN COUNTY, VERMONT.

## STOVE.

Specification of Letters Patent No. 22,416, dated December 28, 1858.

*To all whom it may concern:*

Be it known that I, NELSON EDWARDS, of Chittenden county, State of Vermont, have invented an Improved Combination-Stove for Heating and Ventilating Rooms and Buildings and for the Economizing of Fuel; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 in said drawings is an external view of my improved combination stove, showing apertures in its top for the emission of heated air. It also shows a section of an atmospheric ventiduct A entering the pipe-chamber through the bottom of the stove. It also shows a section of the smoke-pipe B, emerging from the external wall of the stove.

Fig. 2 in said drawings exhibits a sectional view of the external wall of the stove, and a front elevation of the water reservoir G, and the spiral pipe B, B, B, emerging therefrom and leading around it one or more times and then emerging from the stove as described in Fig. 1. This figure also shows the mouth of the ventiduct at D where it discharges its atmospheric air into the pipe chamber. It also gives a view of the fuel-port E penetrating two of the walls of the stove.

Fig. 3 exhibits sectional views of the external wall F, F, of the stove, of the walls of the reservoir G, G, and of the wall of the furnace H, H. "I," in this figure shows a sectional view of an apparatus which I will designate an improved hydro-atmospheric jet whose office is to dispense in small jets through orifices in its surfaces, combined atmospheric air, and watery vapor among the exsiccated gases that rise into the gas chamber—the gas chamber is that part of the furnace above the smoke flue and fuel-port in which the apparatus is situated—and thus by furnishing a limited but constant supply of watery vapor to the gases, convert them into hydro-carbons, and by a rich supply of oxygen from the watery vapor, and also from the air enable them to burn up and yield an amount of heat instead of passing away by the draft unconsumed. The hydro-atmospheric jet obtains its watery vapor from the reservoir through a small tube, represented in the drawings by the round curved wire X, X, and which receives the vapor from the inverted receiver Y, a sectional view of which is seen in Fig. 3, and delivers it to the jet at Z.

The jet receives its air primarily from the ventiduct through a space that opens into the pipe-chamber and leads under the walls of the water reservoir, and into the air passages that rise on either side of the flue J, and communicate with the jet I, as partly illustrated at K and V, in Fig. 3 and partly at L, L, in Fig. 4. M, M in Fig. 3 illustrates a transverse section of a thin plate of metal of which Fig. 5 is a full view. The purpose of this plate of metal is to partition off a portion of the pipe chamber above the mouth of the ventiduct, so that the air may be made to flow equally on all sides of the pipe chamber by being compelled to find its way through graduated holes made in the plate of metal. A in Fig. 3, shows a section of the ventiduct entering the pipe chamber below the partition or graduated plate of metal. N, is a self adjusting flap or fly door opening into the furnace. E is a sectional view of the fuel-port penetrating all the walls of the stove. O, shows the draft of the stove. P, represents the grate of the stove. B, B, B, B, B, show severed parts of the smoke-pipe. Q is an aperture in the back of the smoke flue into which the smoke-pipe fits.

Fig. 4 gives a face view of the bed plate of the stove with short sections of its walls. A is the mouth of the ventiduct where it enters the pipe chamber. J is the bottom of the smoke-flue W, W indicate a space through which air passes to the jet I, as seen in Fig. 3.

Fig. 5 represents the metal-plate partition with its graduated holes described under the head Fig. 3 and will need no further description.

Fig. 6 is designed to exhibit a somewhat magnified view of the inside of the back wall of the smoke-flue marked J, in Figs. 3 and 4. The aperture through which the smoke escapes into the pipe is represented at Q in this figure. Fig. 6 also exhibits a sectional view of the air passages L, L, which supply the hydro-atmospheric jet, I, described in Fig. 3 and their junction above the flue into which fits the jet, I, as partly seen at V, in Fig. 3. This is all that this figure is expected to illustrate.

Fig. 7 exhibits a full view of the jet, I,

with its orifices for the emission of jets of air and vapor; it also exhibits a top view of its shoulder U by which it is attached to the top of the air-flue as shown at V, in Fig. 3.

The rationale of my improved combination stove is as follows: The stove like other stoves may be made of any material, size, or form desired. But my stove has three walls, forming as many compartments one within another. The inmost compartment is the furnace, the next outer, a water-reservoir which also covers the top of the furnace, and the outmost compartment is a pipe chamber or an air chamber. Now the smoke-pipe receives the smoke of the furnace from its flue near the base of the stove, and passes through the water reservoir into the pipe chamber, when it coils one or more times around the reservoir, and furnace in a spiral manner, and emerges from the stove near its top. Into this pipe chamber, an atmospheric ventiduct discharges a copious stream of atmospheric air, which flows about the heated pipe on every side, and absorbs a portion of its caloric, and thereby rarefied is forced upward and over the wall of the reservoir—which does not reach to the top of the stove—and over the surface of the exposed water of the reservoir, mingling with its vapor and out at the top of the stove, and into the room where its heat, absorbed from the pipe, becomes available instead of passing away by the draft as in ordinary stoves.

Out of the pipe chamber proceeds an opening W, W, in Fig. 4, leading under the walls of the reservoir, and connecting with the air passages rising on either side of the smoke-flue above which the air thus conveyed is received by the jet, I, as seen in Fig. 3. In Fig. 3 is also an inverted receiver Y, suspended from the wire X, X, and reaching some distance into the water of the reservoir and also projecting some way above it, its lower end open, and its upper end closed, and when the water in the reservoir becomes heated that portion of its surface under the receiver sends its vapor through the tube represented by the wire X, X, and into the jet, I, in combination with the atmospheric air; the jet, I, then discharges through its minute apertures into the gas chamber, and among the gases, its combined air and vapor. The watery vapor combining with the exsiccated gases, forms them into hydro-carbons, and the oxygen from the vapor and the air enables the gases thus transformed to burn up; and thus they are made to yield more heat than when burned without the admixture of watery vapor. Wherefore I maintain for my stove a greater economy of fuel, than characterizes any other stove. I also claim for it more complete ventilating powers than other stoves possess.

I am aware that a "gas-consuming stove" exists, and am told a patent was obtained therefor June 22, 1858, but there is no similarity between it and mine by which the claims are made to conflict so far as I am able to judge. Certainly the dissimilarities are numerous enough, and too obvious perhaps to require special notice, but I will mention that the stove that I allude to has an apparatus for the admission of air, but it has no vapor branch or tube connected with its air apparatus, whereas mine is a combination of a vapor and an air tube. The apparatus in that stove is placed below the smoke-flue, and has no gas chamber. My apparatus or jet is placed above the flue and is combined with a gas chamber. That is funnel shaped, and surrounds the gases. Mine is a flattened sphere, and is surrounded by the gases. In that stove when the gases fail to ignite, because of their sparseness, they pass away into the flue and are lost, whereas in my stove, when they generate equally slowly, they still accumulate in the gas chamber, until they collect in sufficient quantity to ignite.

What I claim as new and useful in my invention, is—

1. The application to a stove of an improved combined hydro-atmospheric jet, and gas chamber.

2. I also claim the stove-contained coiled smoke-pipe in its combination with the plurality of stove walls substantially as described.

NELSON EDWARDS.

Witnesses:
ROBT. DAY,
E. G. DAY.