No. 826,080.

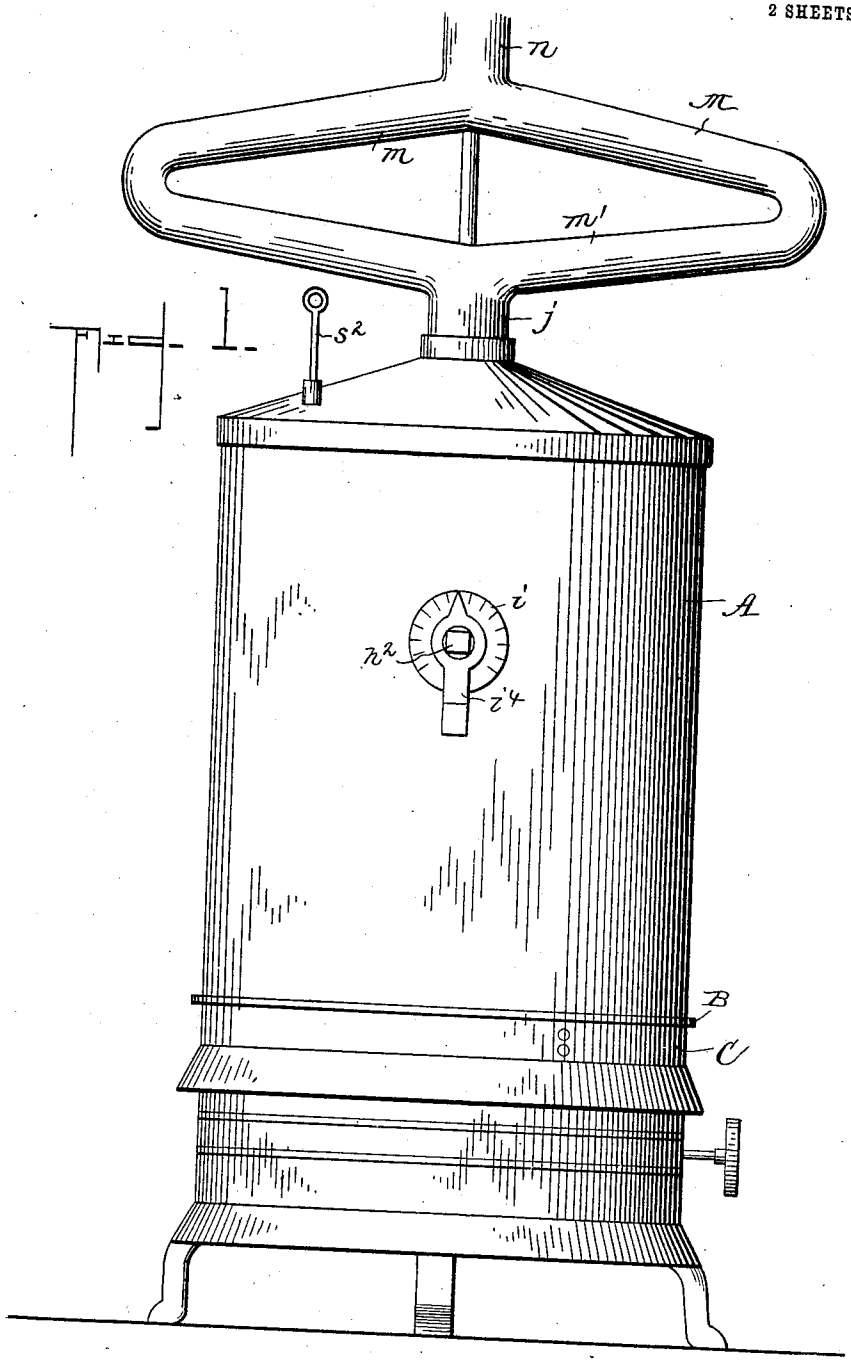
PATENTED JULY 17, 1906.

U. S. ALZ.

HEAT MULTIPLYING APPARATUS.

APPLICATION FILED SEPT. 2, 1905.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 2.

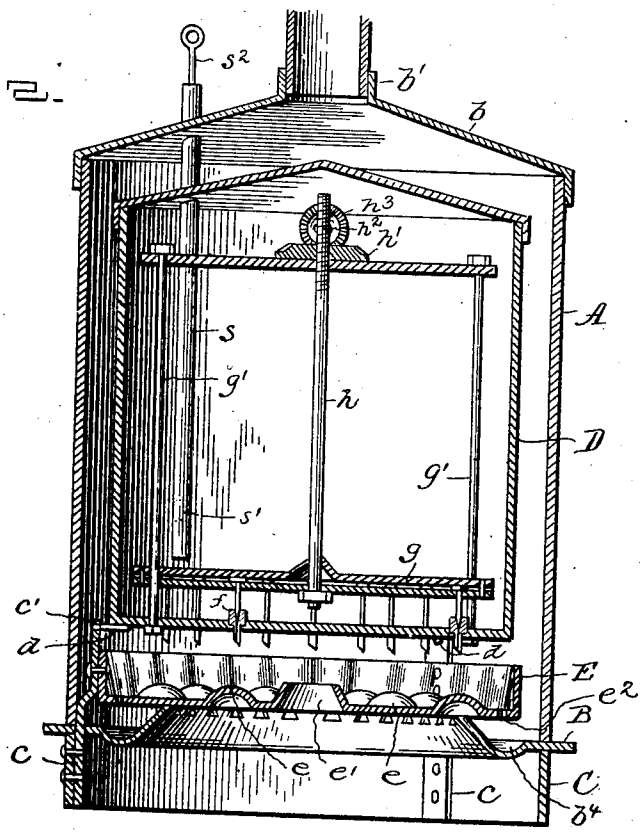


Fig. 3.

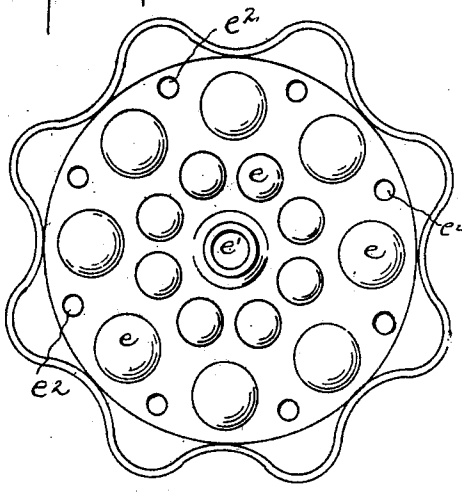
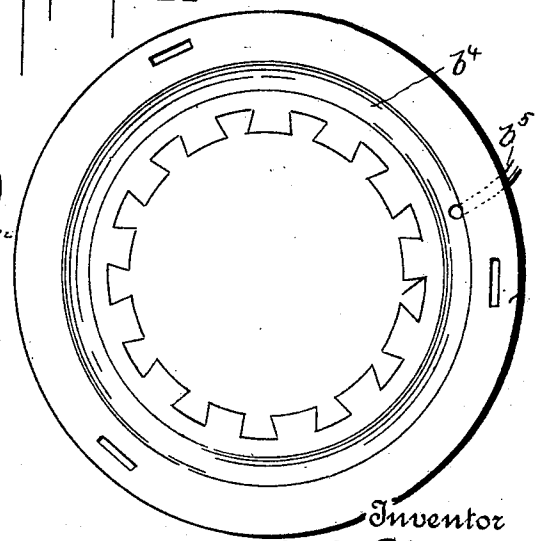


Fig. 4.



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UNITED STATES PATENT OFFICE.

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HEAT-MULTIPLYING APPARATUS.

No. 826,080. Specification of Letters Patent. Patented July 17, 1906.

Application filed September 2, 1905. Serial No. 276,872.

To all whom it may concern:

Be it known that I, URBAN S. ALZ, a citizen of the United States, residing at Mount Washington, in the county of Baltimore and State of Maryland, have invented a Heat-Multiplying Apparatus, of which the following is a specification.

This invention is an improvement in apparatus for heating dwelling-houses, stores, factories, and all other structures, and relates more especially to the class of portable heating devices adapted for use in connection with stoves employing any kind of fuel.

The primary object of the invention is to provide for greatly multiplying or increasing the heating capacity of an ordinary stove in a simple and economical manner and so that such heat may be conducted to other rooms, if desired, for the purpose of heating them.

The invention embodies a novel principle in heating systems in that it produces an intense heat or practically a superheated air-current by the application of dropping water to a highly-heated surface.

In the present instance I have shown a certain construction of apparatus for carrying out my invention; but it will be obvious that the form of apparatus and detail parts thereof may be changed without sacrificing any of the advantages or departing from the spirit of my invention.

In the drawings, Figure 1 is a front elevation of a heating apparatus constructed in accordance with my invention and showing the same applied to an ordinary oil-stove and including a radiator-section connected thereto. Fig. 2 is a vertical sectional view through the apparatus. Fig. 3 is a detail plan view of the plate which is to be heated by the stove and upon which water is dropped from the tank or reservoir. Fig. 4 is a detail plan view of the channeled ring or annular plate adapted to receive the water from the pan or plate located thereabove.

Like letters and numerals of reference indicate like parts in all the views of the drawings.

Though I have shown the present apparatus in connection with an ordinary oil-stove, it is my intention to adapt such apparatus for any style of stove, and in some instances it may be made of such size as to be applied over one of the holes in the top of an ordinary cook-stove. Furthermore, as will be obvious, it is readily applicable to a furnace.

Referring to the drawings, the letter A designates the outer casing or drum, which is adapted to rest upon an annular plate B, supported by a ring C, said casing being closed at its upper end by a top *b*, which latter is provided centrally with a collar *b'* for connecting thereto the heat-conducting pipes which lead to the radiators hereinafter mentioned. This casing or drum is for the purpose of confining the heat, so that it may be conducted to other rooms, though in some instances it may be dispensed with where it is desired to heat only the room in which the apparatus is located.

Within the casing or drum A is located a water-tank D, which is supported upon uprights *c*, riveted to the inner side of the ring C and extending upward through the annular plate B, said uprights having recesses *c'* to receive the lugs *d*, projecting outward from the bottom of the aforesaid tank. Located below this tank and directly above the annular plate B is a pan or plate E, which is riveted to the uprights *c*, so as to properly position the same with respect to the tank for the purpose hereinafter stated.

The pan or plate E is of less diameter than the drum, so as to permit the air to pass up at the sides of said pan, and such sides are preferably fluted, as shown, so as to increase its heat-radiating surface. The bottom of this pan or plate is provided with a number of raised or convex surfaces *e* and centrally with an opening *e'*, having a surrounding raised wall, from which latter the said bottom is slightly inclined to its outer edge. Near the outer edge of the pan or plate E and between the outer convex surfaces *e* are holes e^2, and these holes are located directly above a channel b^4 in the annular plate B, so that the latter may catch any water that may drip from the pan or plate E, and any overflow from the annular plate is carried off by a drain-tube b^5.

The inner edge of the annular plate B is flared upward, as shown, and the upper part thereof is suitably cut away to permit of the passage of hot air from the stove to the bottom of the pan or plate E.

In the bottom of the tank D are valves *f*,

corresponding in number to and located directly above the convex surfaces *e* of the plate or pan E, and said valves are adapted to drop the water from the tank directly onto said convex surfaces. These valves are preferably of the needle-valve type and are operated or adjusted simultaneously by means of the devices I shall now proceed to describe.

Located in the tank D is a follower-plate *g*, to which the valve-stems are connected, said follower-plate being guided by rods *g'* and raised and lowered to open and close the valves by means of a rod *h*, which latter is threaded into a bevel gear-wheel *h'*, turned by an operating-rod and pinion h^2 and h^3, respectively, the said operating-rod extending through the drum for convenience in operation. I prefer that the outer end of the operating-rod h^2 be squared or key-ended, so as to require a key in turning it, and thereby prevent the same being tampered with. In connection with this mechanism for operating the valves I provide an indicator comprising a graduated plate or disk *i* and indicator-finger i^4, the latter being attached to the operating-rod h^2. The follower preferably comprises two plates, through the lower one of which the valve-stems pass and are headed and retained by the upper plate, both of said plates being secured to the lower end of the aforesaid rod *h*. This permits of a loose connection for the valve-stems and insures the proper seating of the valves without binding. It will be seen that the valve-stems are tapered to a point at their lower ends and close in corresponding seats in the valve-casings, as is usual in this style of valve.

The water-tank is provided with an open-ended tube *s*, in which works a float *s'* and rod s^2, the latter projecting upward beyond the drum and will indicate the amount of water in the tank.

Connected to the top of the drum A is a heat-conducting pipe *j*, which leads to one or more radiators M, which latter may be of any of the usual forms, but is preferably of the shape herein shown—that is to say, it consists of upper and lower pipe-sections *m* and *m'*, the pipes of the upper section inclining downward from the center and at their ends are connected to the pipes of the lower section, the latter pipes being inclined downward to their connection with the heat-conducting pipe *j*. This construction of radiator provides for the return of any condensation into the tank D, and for this purpose the upper end of said tank is left open. Though I have shown but one radiator, it will be understood, of course, that any number may be employed, also that such radiators may be located in several rooms. The uppermost radiator is connected by a pipe *n* to a chimney, if desired, so as to produce a draft through the apparatus. However, when the apparatus is used in connection with an oil-stove, where no smoke passes through the drum, the tube or pipe *n* may discharge directly into an upper room, and in this event sufficient draft would be provided to drive the heat through the radiators.

In the operation of the apparatus it is placed upon the stove with the valves all closed and the tank supplied with a quantity of water. After the plate or pan E is thoroughly heated the valves are opened by means of the operating-rod h^2, and the water, dropping upon the convex heated surfaces *e*, will produce a superheated steam, which will greatly increase the heating capacity of the hot air, which passes up through the annular plate B and around the edges of the pan or plate E, such highly-heated air being confined by the drum and conducted to the radiators. The drops of water which run off from the convex surfaces pass through the holes e^2 and collect in the channel of the annular plate B, and this water is converted into low-pressure steam, owing to the proximity of said plate to the stove or heating medium. This results in producing a very intense heat in the drum or casing, and the draft will carry it to the radiators.

By practical application I have found that the heating capacity of a stove is very greatly increased with my apparatus applied, and in the case of an oil-stove it not only heats the room in which the stove is located more satisfactorily than heretofore, but also heats other rooms that are provided with radiators connected to said apparatus. Furthermore, when applied to an oil-stove the gases or offensive odor which is usually thrown off by such a stove is drawn up through the drum and passes off through the chimney.

The apparatus is very compact and simple and being portable can be readily removed and stored when not required for use.

Having thus described my invention, I claim—

1. In a heating apparatus, the combination with a stove, of a plate or pan heated thereby, a water-supply, a series of valves for dropping the water on the heated plate or pan, and means for operating the valves simultaneously.

2. In a heating apparatus, the combination with a stove or other heating medium, of a water-tank having outlet-valves in the bottom thereof, a plate located below the tank and having a number of raised surfaces located below the valves, and means for operating the valves simultaneously.

3. In a heating apparatus, the combination with a stove or other heating medium, of a water-tank having valves in the bottom thereof, a pan or plate having convex surfaces corresponding in number with and located directly below the aforesaid valves, means for operating said valves simultane-

ously, and a drum inclosing the plate and tank.

4. In a heating apparatus, the combination with a stove or other heating medium, of a water-tank having valves in the bottom thereof, a pan or plate having convex surfaces corresponding in number with and located directly below the aforesaid valves, an annular drip-plate located below the aforesaid plate or pan, and a drum inclosing the tank and plates.

5. In a heating apparatus, the combination with a stove or other heating medium, of a water-tank having valves in the bottom thereof, means for operating said valves simultaneously, a pan or plate having convex surfaces corresponding in number with and located directly below said valves, an annular drip-plate located below the aforesaid pan or plate, a drum inclosing the tank and plates, and radiators connected to said drum.

6. In a heating apparatus, the combination with a stove or other heating medium, of a water-tank having valves in the lower end thereof, a tube, float and indicator in the upper part of the tank, means for operating the valves simultaneously; together with a plate located below the tank and valves and having convex surfaces below the latter, an annular drip-plate having a channel which receives the water from the pan, and a drum surrounding the tank and plates.

7. In a heating apparatus, the combination with a stove or other heating medium, of a water-tank having valves in the lower end thereof, a plate located below the tank and having a number of raised surfaces which are heated by the stove and receive the water from the valves, said plate having fluted sides and holes adjoining the latter, a channeled annular drip-plate receiving the water from the aforesaid plate, and a drum surrounding the tank and plates.

8. In a heating apparatus, the combination with a stove or other heating medium, of a water-tank having valves in the bottom thereof, a follower-plate connected to the valves, a rod attached to the follower-plate and threaded through a gear-wheel, a pinion in mesh with said gear-wheel, an operating-rod for said pinion, and an indicator device; together with a plate located below the tank and provided with raised surfaces disposed below the valves, a drum inclosing the tank and plate, and radiators connected to said drum.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

URBAN S. ALZ.

Witnesses:
W. B. BRENIZE,
EMIL R. DENHARD.