

(No Model.)

S. R. THOMPSON.

COMBUSTION DEVICE FOR STOVES OR OTHER HEATERS.

No. 544,870.

Patented Aug. 20, 1895.

FIG. 1.

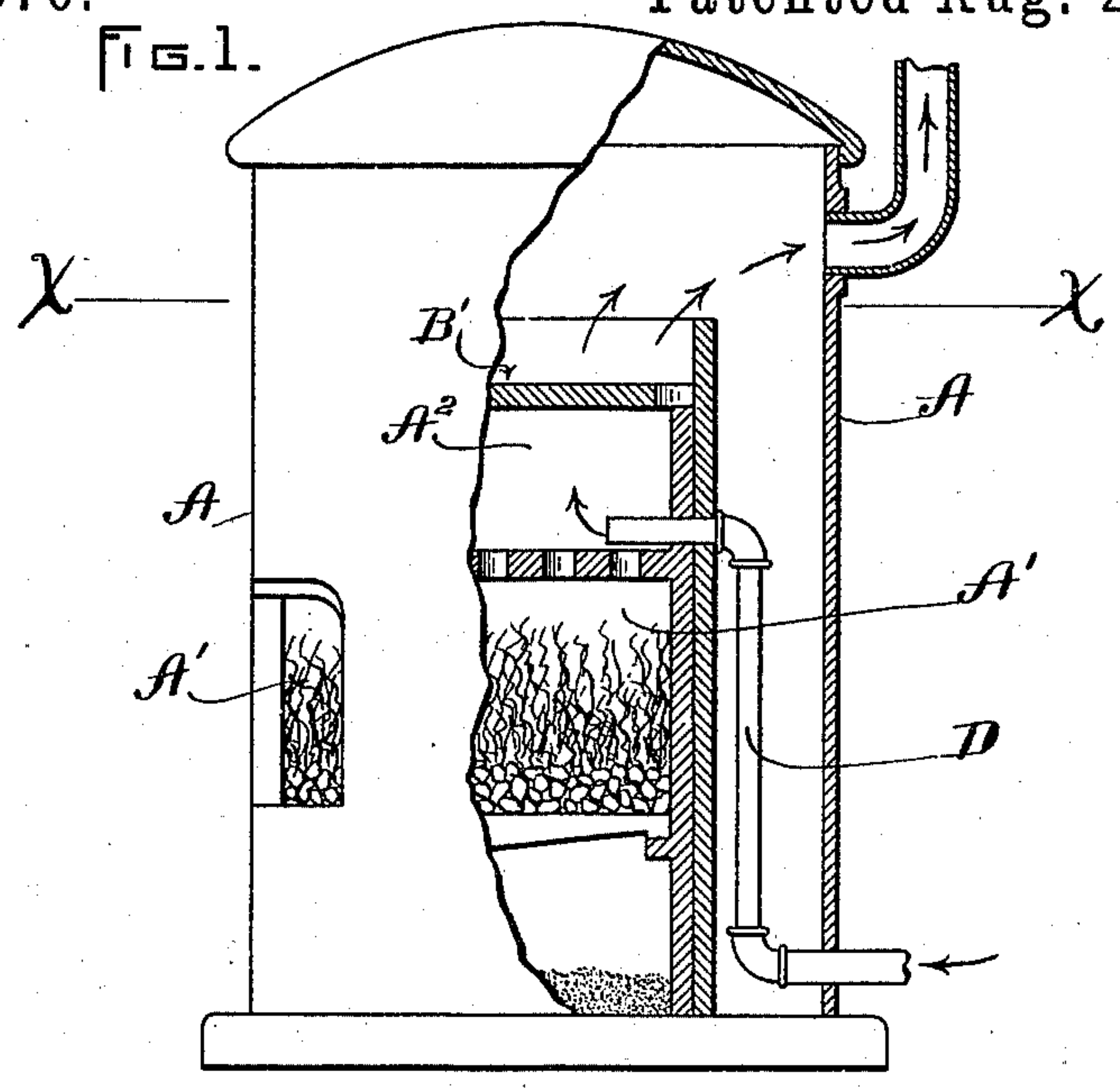


FIG. 2.

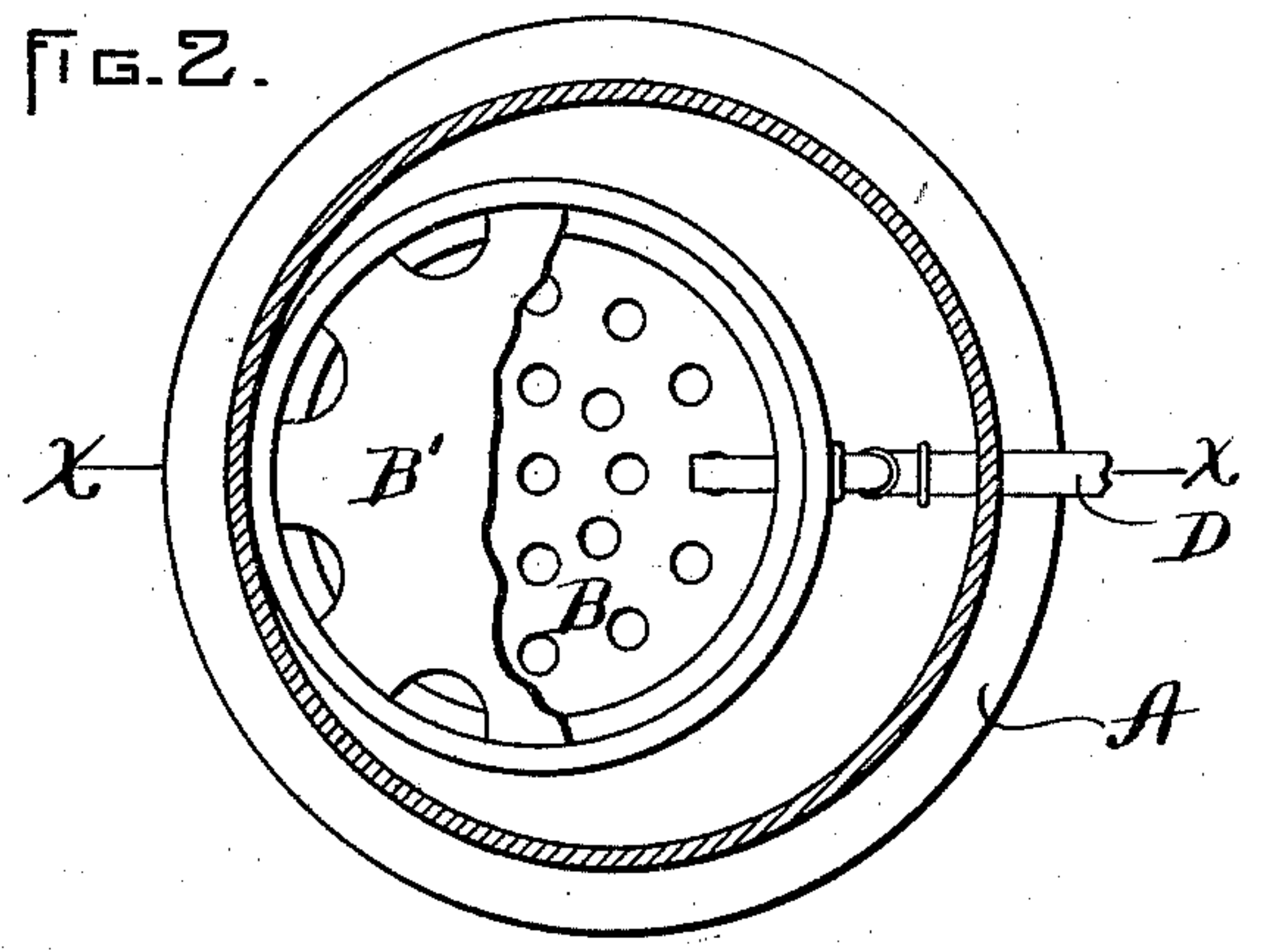


FIG. 3.

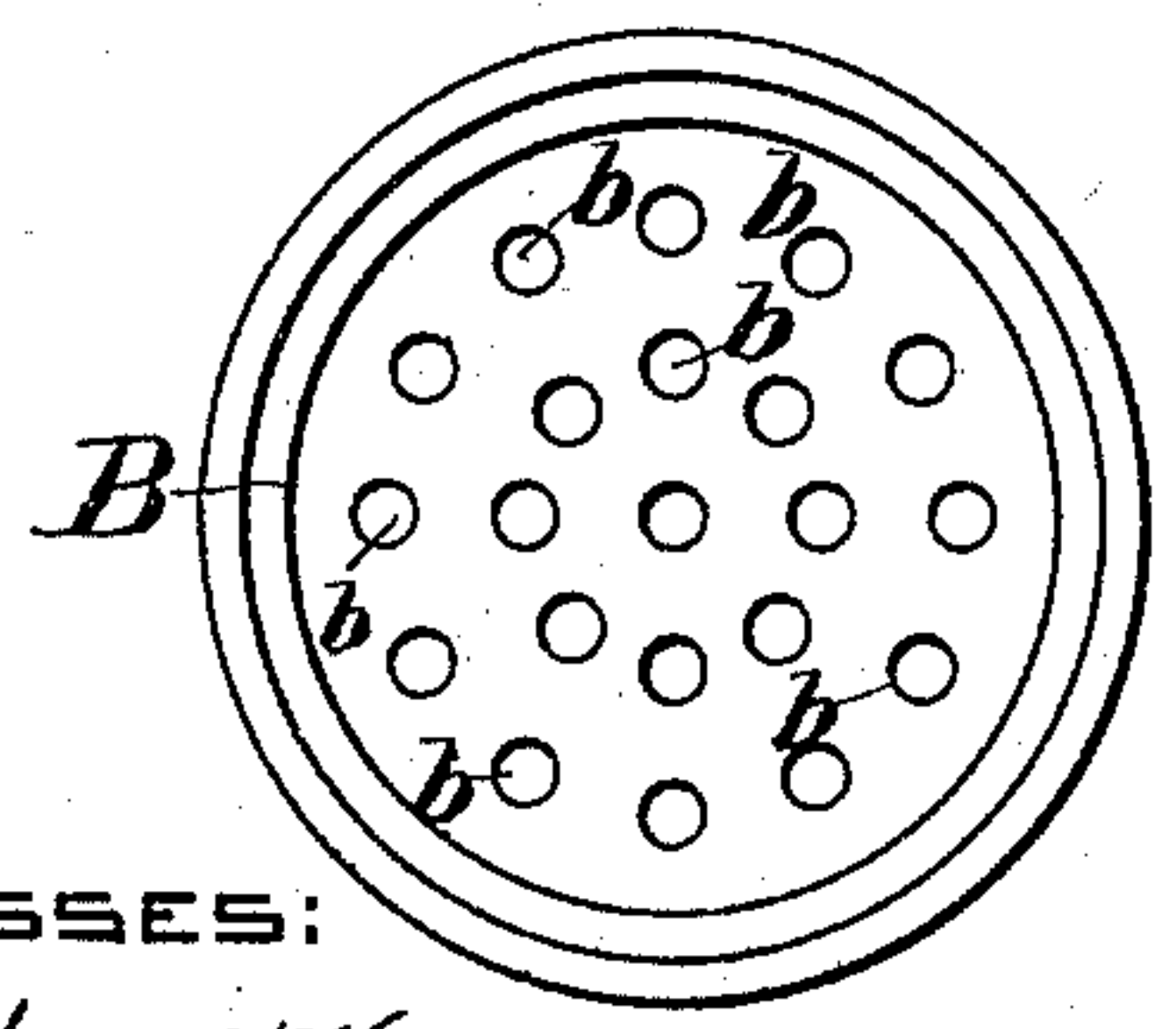
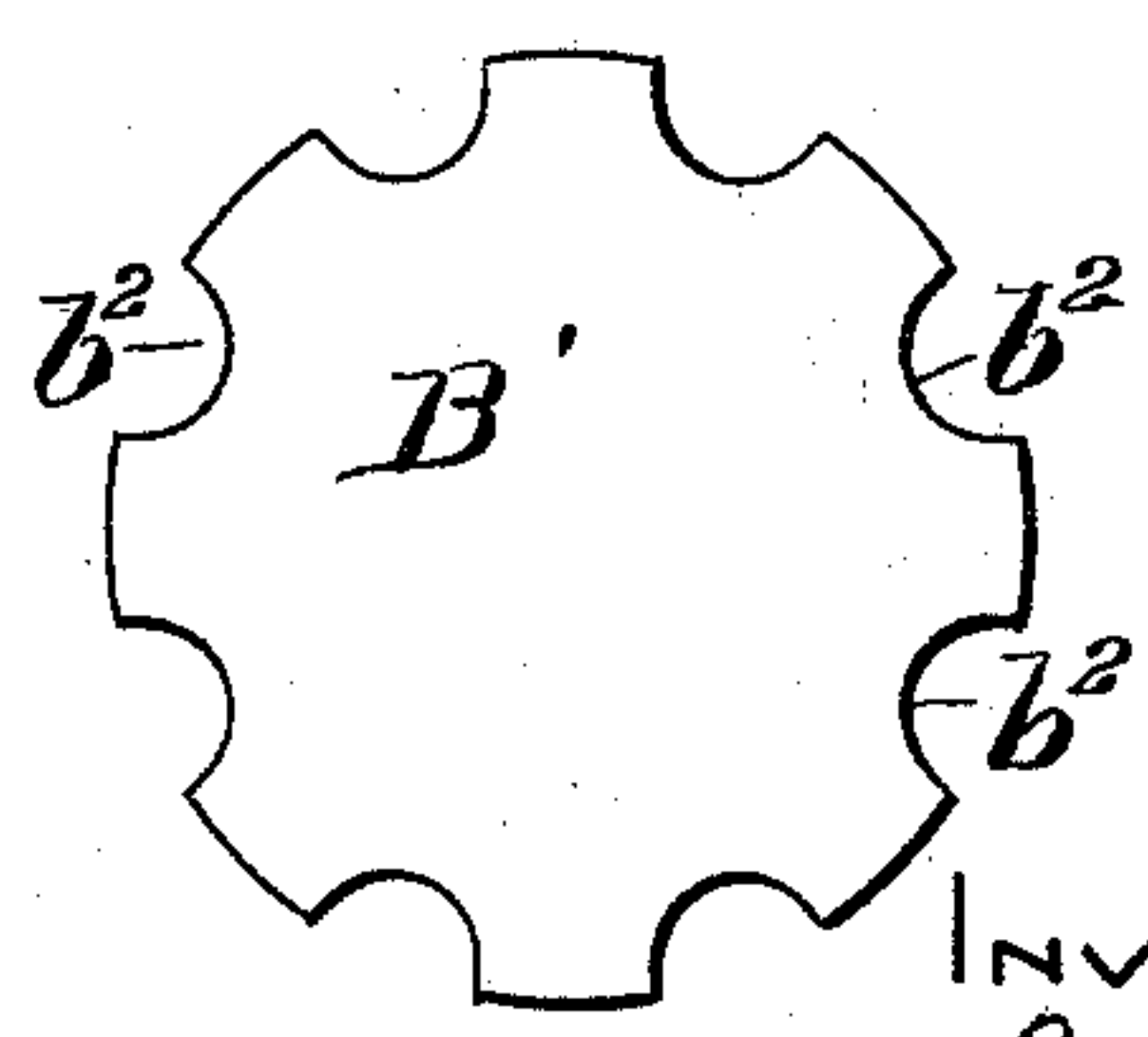


FIG. 4.



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UNITED STATES PATENT OFFICE.

SAMUEL R. THOMPSON, OF WINCHESTER, MASSACHUSETTS, ASSIGNOR TO THE THOMPSON FUEL SAVING AND SMOKE CONSUMING COMPANY, OF BERWICK, MAINE.

COMBUSTION DEVICE FOR STOVES OR OTHER HEATERS.

SPECIFICATION forming part of Letters Patent No. 544,870, dated August 20, 1895.

Application filed August 24, 1894. Serial No. 521,182. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL R. THOMPSON, of Winchester, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Combustion Devices for Stoves and other Heaters, of which the following is a specification.

My invention consists in providing in a heater a chamber constructed of fire-brick, asbestos, or similar material adapted to receive and radiate heat, and in combining therewith means for supplying fresh air to said chamber to aid in the consumption of the gaseous products of combustion.

The purpose of my invention is to secure economy in consumption of fuel, with increased resultant heat. I locate in a heater immediately over the fire-box, and preferably nearly in line with the top of the fire-door casing, a diaphragm of fire-brick or asbestos or similar refractory material. This diaphragm I securely fasten in place, and it forms the base of a hot-air chamber, the sides and top of which I construct of the same material as the diaphragm. The top or cover is preferably removable and is provided with small notches around its edge or with orifices through its body. I prefer the notches. The diaphragm is provided with numerous perforations, through which the heated air passes from the fire-box to the hot-air chamber. I connect the hot-air chamber with the outer air by means of a tube or pipe extending out through the side of the heater at a point near its base. This pipe conveys fresh air from without the heater into the hot-air chamber, where it assists in the more complete consumption of the gases there collected.

In the accompanying drawings, Figure 1 is an elevation, partly in section. Fig. 2 is a top plan view on line $x x$ of Fig. 1. Fig. 3 is a top plan of the diaphragm. Fig. 4 is a top plan of the air-chamber cover.

Similar letters of reference indicate like parts in all the drawings.

A represents the casing of the heater, having an outlet-flue A^3 in its upper portion.

A' represents the fire-box located in the lower portion of the casing.

A^2 represents an intermediate combustion-

chamber located immediately over the fire-box and provided with a base or bottom wall B and a removable top wall or cover B' , said bottom and top walls being made of fire-brick, asbestos, or similar refractory material and constituting partitions extending across the casing. The base or diaphragm B is provided with numerous perforations or orifices $b b b$, and the cover B' is provided with similar orifices or preferably with notches $b^2 b^2$ in its outer edge, so that the supplementary combustion-chamber communicates with the fire-box below it and with the casing above it. The pipe or conductor D extends from the air-chamber out through the outer casing of the heater and opens outward to the fresh air at a point preferably near the bottom of the heater.

In practical operation of my invention, the several parts described being assembled substantially as set forth, when the fire is first started in the fire-box A' the products of combustion will pass through the perforations $b b$ into and through the chamber A^2 and cover B' out into the escape-flue, the damper being open to give full draft. When the coal is well ignited, the damper may be nearly closed and air admitted through the pipe D to the chamber A^2 to mingle with the unconsumed gases collected therein. The perforated base or diaphragm B and the walls and top of the chamber A^2 being highly heated act upon the mingled air and gases and insure the nearly complete consumption of the gases, so that if the casing of the stove would be removed or opened at the top immediately over the chamber and fire-box no odor of gas would be perceptible. The fire may now be allowed to burn slowly with only sufficient draft to carry off the very slight amount of gas that may remain unconsumed, and the radiation from the heated diaphragm B will keep the coals brightly ignited, as if under a strong draft.

I have found that when the fire is burning slowly and the heater is supplied with fresh air above the perforated diaphragm B, as described, as much heat is obtained as would usually attend the more rapid combustion of fuel in a heater of ordinary construction. I find also that when the dampers and the lower

drafts of the heater are completely closed the radiation from the diaphragm will burn the coal, thereby saving and utilizing the heat which in other forms of heater is permitted to escape up the chimney. Again, with my invention the coal is entirely consumed, and so evenly and steadily that absolutely no clinkers are found in the fire-box of the heater. This is of the greatest advantage in the burning of soft or bituminous coals.

It is obvious that modifications of the form of the heater can be made without departing from the principle or sacrificing the advantages of my invention.

I prefer to make the perforations in the cover or top wall larger than those in the base or bottom wall, so that the perforations in the top wall accommodate not only the gases from the fire-box, but also the added volume of air that enters the chamber between said walls.

I claim as my invention and desire to secure by Letters Patent—

A stove or furnace having above the fire-box a supplementary combustion chamber enclosed by fire-brick, asbestos or similar material and provided with a removable notched or perforated cover or top wall and a perforated base or bottom wall, the perforations in the base being smaller than those in the cover, and means for admitting air to said chamber, the products of combustion being made to pass through said chamber whereby the escaping heat will be retained and desirable downward radiation of heat will be secured in the fire-box, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 13th day of August, A. D. 1894.

SAMUEL R. THOMPSON.

Witnesses:

WILLIAM QUINBY,
WALLACE G. WEBBER.