P. FISCHER.

GAS HEATING STOVE.

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1,066,394. Patented July 1, 1913.

Fig. 1

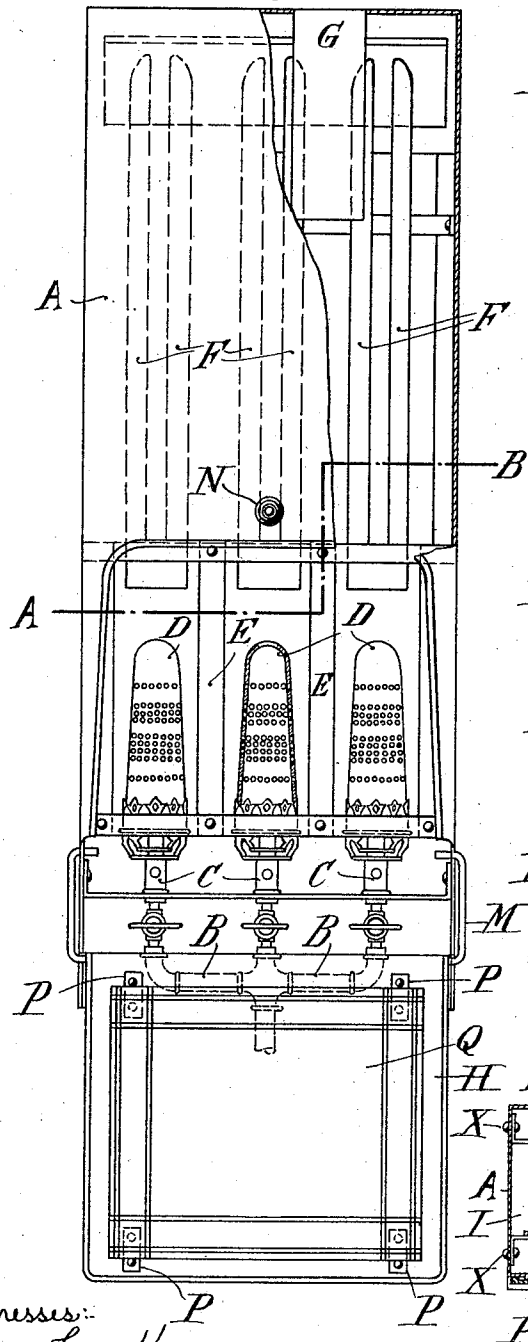


Fig. 2

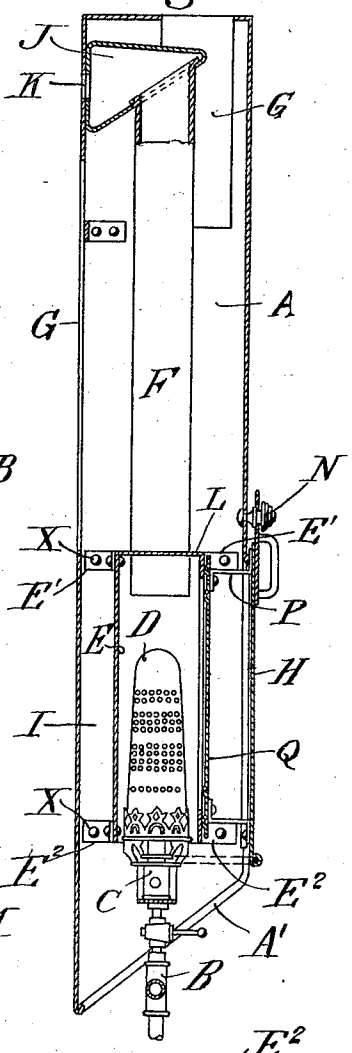
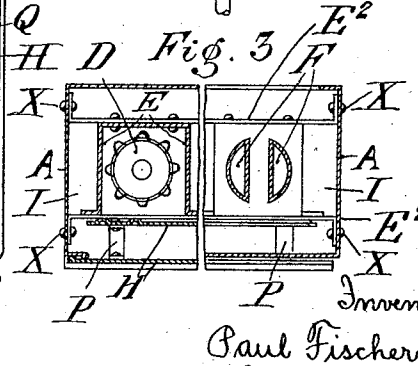


Fig. 3



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GAS HEATING-STOVE.

1,066,394. Specification of Letters Patent. Patented July 1, 1913.

Application filed November 23, 1912. Serial No. 733,060.

To all whom it may concern:

Be it known that I, PAUL FISCHER, a subject of the Emperor of Germany, residing at Stuttgart, Wurttemberg, Germany, have invented certain new and useful Improvements in Gas Heating-Stoves, of which the following is a specification.

In the gas heating stoves as at present in use, the air of the room to be heated is either sucked through the stove so that it is heated in the interior of same, whereafter it escapes into the room in a heated state; or the air is heated at the outer surface or surfaces of so called radiators, the inner surface or surfaces of which is or are heated by the gas flames. In either case the heat produced by the burning gas is first of all transmitted to the air which comes in contact with the stove and this air then flows upward to the ceiling, distributes itself along and over the same, cools off slowly, and while thus cooling off slowly sinks to the bottom. Owing to this manner of operation, the heating effect of the stoves in question is but small. There are also known stoves in which pieces or bodies of a fireproof substance are heated to a red heat by means of Bunsen burners, said pieces or bodies heating the room containing the stove by slowly giving off their heat to the air in that room. This heating of the air or of the room respectively, is effected comparatively quickly, but there are the drawbacks that the room is heated solely in the neighborhood of the stove and that the possibility of regulation is insufficient.

The present invention relates to an improved gas heating stove in which the two heating systems before mentioned are combined, the arrangement being moreover such, that the stove may be used if desired solely as an air heating stove, or air heater respectively.

The particular features of my novel stove reside in this that glowing or incandescent bodies, which may be of known construction, are arranged over Bunsen burners situated inside the stove casing, and that reflectors of polished metal are arranged on three sides of said bodies this arrangement being such that the heat taken up and distributed by the said bodies is reflected horizontally or nearly horizontally to the front of the stove. Furthermore, the construction of the glowing or incandescent bodies is such that shafts or vertical channels in which the air may be heated, are formed between adjacent incandescent bodies. If the apparatus is intended for use as an air heater proper the heat radiating from the incandescent bodies is intercepted at the front of the apparatus by a double wall or walls or by a flap or the like, vertical channels being formed in such a case, which are closed at all sides, except at the bottom and at the top. Radiators may be arranged over the glow bodies and the hot air may be made to pass through the same, whereas the gases streaming forth from said bodies are conducted to a chimney or the like.

My invention is illustrated in the accompanying drawing, in which—

Figure 1 is a front elevation of the device partly in section. Fig. 2 is a vertical section through the device at right angles to Fig. 1. Fig. 3 is a horizontal section on the line A—B of Fig. 1, the wall or flap being in position to intercept the heat radiating from the incandescent bodies.

A is the casing or shell of the stove, suitably mounted on any desired support (not shown), B is the gas conduit, C are Bunsen burners situated inside the casing and connected to the gas conduit, and D are the glow bodies, which resemble truncated cones with rounded heads; these cones are hollow and their walls are perforated and intensely heated by the flames of the burners. A reflector E is arranged around the glow bodies, made of polished metal or the like, the shape of the reflector being such that each glow body is inclosed at three sides, but sufficiently large spaces for the circulation of air are left free. These reflectors E may be supported in any suitable manner within the casing A and as a means for supporting these reflectors I have shown the straps E′ and E² whose ends may be bolted or otherwise secured to the casing A, as at X, the reflectors being bolted or otherwise secured to the straps. The reflectors E being thus supported are spaced from the walls of the casing A and form air-channels I therewith. The casing A is preferably open at the bottom as at A′ so

that the air may pass up through the channels I and around the reflectors as will be obvious.

The greatest part of the heat accumulated by the said glow or incandescent bodies is reflected to the front of the stove, whereas the air present around the reflector and above the same is indirectly heated first at these parts and then at and by radiators or tubes F which conduct the gases of combustion to the receiving chamber J, whence they may escape as through the opening K and conducted by any suitable means, if desired, to the flue or chimney (not shown). The radiator tubes F have their lower ends projecting through or into openings in suitable plates L, which form the upper wall or closure for the top of the radiators E, as shown in Figs. 2 and 3. Any number of these radiator tubes F may be employed above each glow or incandescent body D, but I prefer to employ a pair of radiators for each body, as shown in the drawings, the radiator tubes of each pair being spaced to permit air to circulate between them. The tubes F may be of any suitable shape, but it is preferable to make them of segment shape, in cross-section to obtain greater radiating surface. The air heated by the tubes F, etc., may escape through a suitable outlet G into the room in which the heater is located, or, if desired, the heated air may be carried off by any suitable conducting means to another apartment.

This form of construction of the stove is thus a combined stove for radiant heat and an air heating stove, and in order to be able to employ it solely as an air heating stove, a double walled flap or closure H is provided, which is intended to intercept the heat radiated outwardly in a substantially horizontal path. The lower end of the front wall of the casing A may be cut away as at O, opposite the glow or incandescent bodies D and the movable wall or flap H is adapted to close this opening to prevent radiation of heat horizontally from the glow bodies D, as above mentioned. The movable wall H has secured to it as by the straps P, a plate or supplemental wall Q, which is spaced from the wall H so that when the wall H closes the opening O the space between the walls H and Q will act as an air passage to conduct air to the upper part of the casing A. This closure or movable wall H is pivotally supported by the links M from the casing A, as shown, and may be secured in front of the glow or incandescent bodies by any suitable means such as the catch N. The closure H upon releasing the catch N may be lowered when desired, and will then be suspended by the links M. When the closure or movable wall H is in position in front of the glow bodies only the air passing through the stove casing is heated, this air entering the casing at the bottom and leaving it at the top and on its way through the casing coming in contact with the radiator tubes F, whereby a very intense circulation is effected.

What I claim as new and desire to secure by Letters Patent is:

1. A gas heater provided with a casing open at its lower end and provided with an opening in its front wall, burners in the casing opposite the opening in the front wall, incandescent bodies around each burner, reflectors behind the incandescent bodies for reflecting the heat through the opening in the front wall of the casing, said reflectors being spaced from each other and from the walls of the casing to provide air channels in communication with the opening in the lower end of the casing, radiator tubes disposed above the incandescent bodies for carrying off the products of combustion, said radiator tubes being located in the upper portion of the casing, said tubes being segmental in cross section and arranged in pairs with the chordal sides facing and spaced from each other, there being a pair of said tubes extending above each of the incandescent bodies, and a receiving chamber connecting the upper ends of the radiator tubes and means for carrying off the products of combustion from the receiving chamber.

2. In a gas heater, a casing open at its lower end and provided with an opening in its front wall, burners in the casing opposite the opening in the front wall, radiator tubes above the burners for carrying off the products of combustion, said radiator tubes being disposed in the upper portion of the casing and spaced from the walls thereof, reflectors surrounding each of the burners on three sides thereof for reflecting the heat out through the opening in the front wall of the casing, means for supporting the reflectors in spaced relation to each other and to the walls of the casing to provide air channels connecting at their lower ends with the opening in the bottom of the casing and at their upper ends with the upper portion of the casing containing the radiator tubes, and a closure for the opening in the front wall of the casing, said closure being provided with spaced walls constituting an air passage when the closure is in closed position.

3. In a gas heater, a casing open at its lower end and provided with an opening in its front wall, burners in the casing opposite the opening in the front wall, radiator tubes above the burners for carrying off the products of combustion, said radiator tubes being disposed in the upper portion of the casing and spaced from the walls thereof, reflectors surrounding each of the burners on three sides thereof for reflecting the heat out through the opening in the front wall

of the casing, means for supporting the reflectors in spaced relation to each other, and to the walls of the casing, to provide air channels connecting at their lower ends with the opening in the bottom of the casing and at their upper ends with the upper portions of the casing containing the radiator tubes, and a closure for the opening in the front wall of the casing, said closure having a plate spaced therefrom to provide an air channel for the passage of air when the closure is in closed position in front of the opening in the front wall of the casing, said plate closing the open fronts of said reflectors when the closure is in closed position.

In testimony whereof I affix my signature in presence of two witnesses.

PAUL FISCHER.

Witnesses:

ALBERT CONZELMANN,

ERNST BENZ.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."