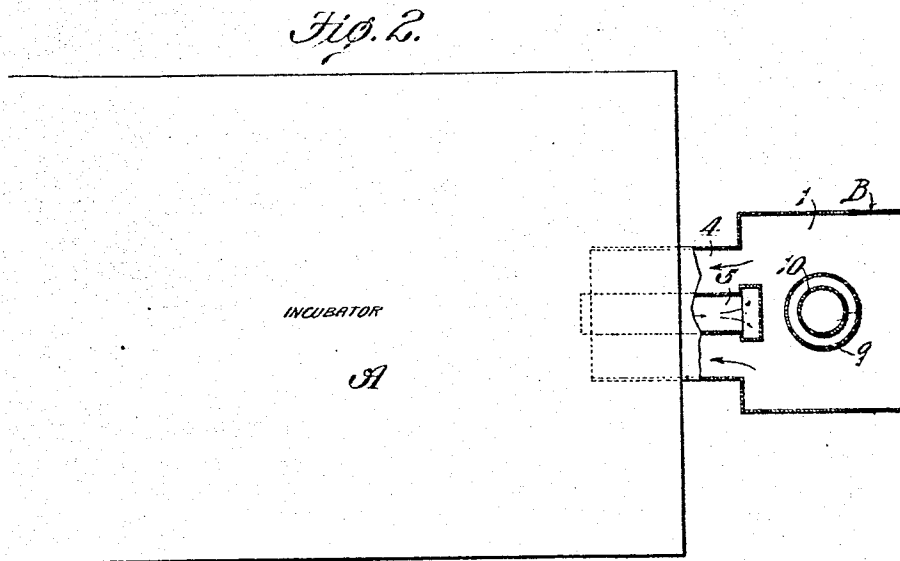
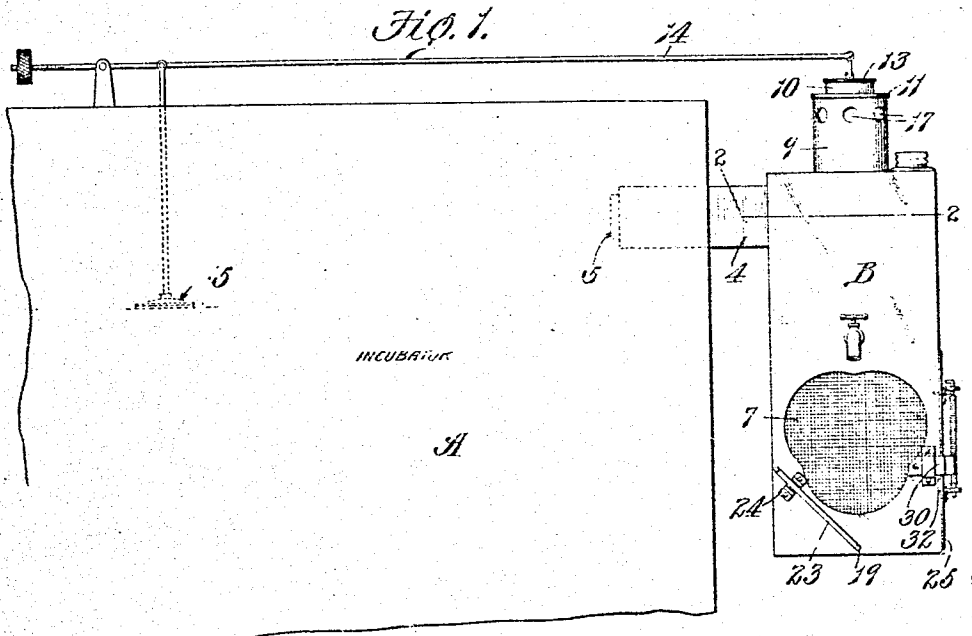


G. H. STAHL.
INCUBATOR HEATER.
APPLICATION FILED JULY 13, 1909.

Patented Jan. 10, 1911.

2 SHEETS-SHEET 1.

981,324.



Witnesses:

Geo. R. Johnson
Nelson Church

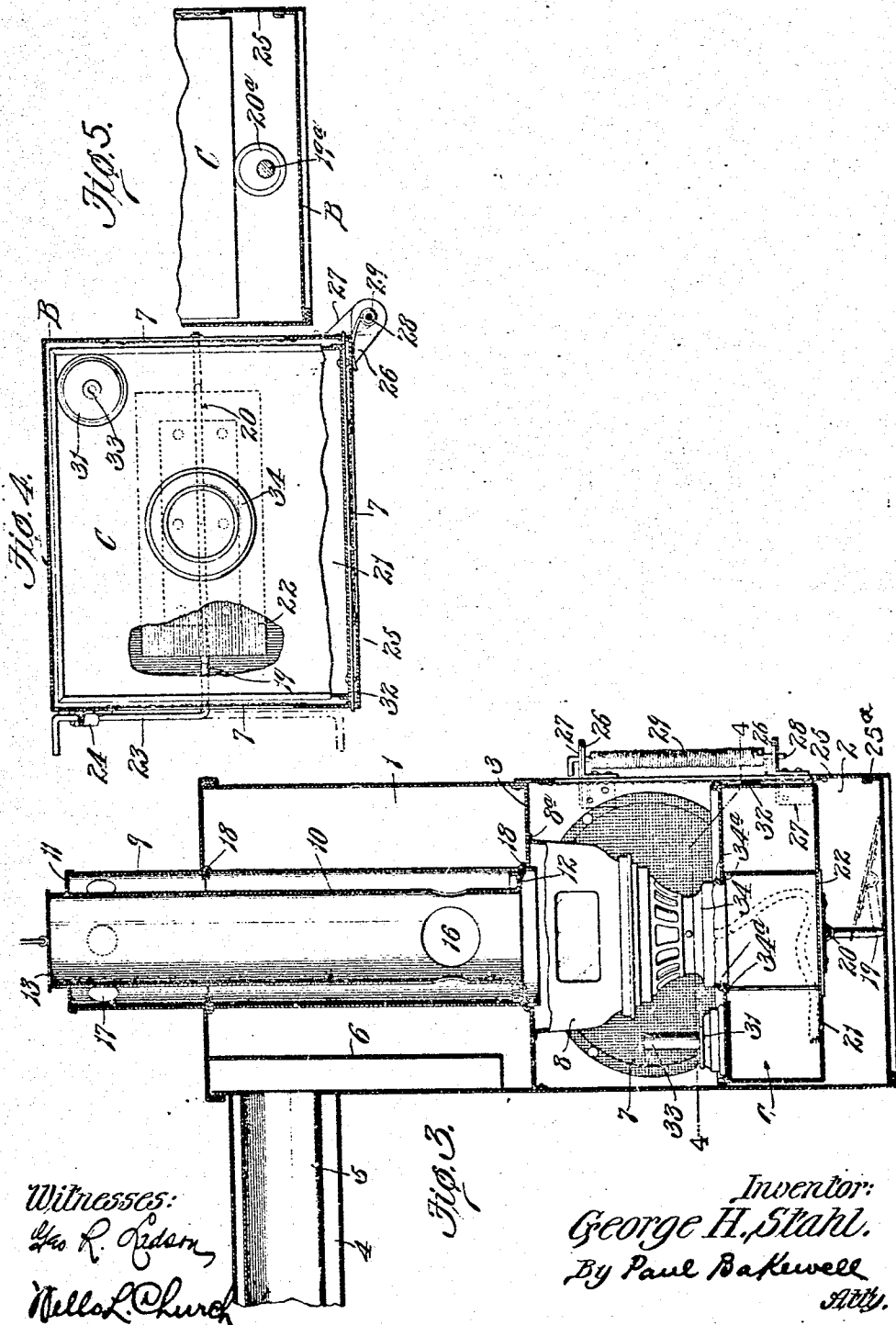
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UNITED STATES PATENT OFFICE.

GEORGE H. STAHL, OF QUINCY, ILLINOIS.

INCUBATOR-HEATER.

981,324.

Specification of Letters Patent. Patented Jan. 10, 1911.

Application filed July 13, 1909. Serial No. 507,331.

To all whom it may concern:

Be it known that I, GEORGE H. STAHL, a citizen of the United States, residing at Quincy, Illinois, have invented a certain new and useful Improvement in Incubator-Heaters, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to incubator heaters, and particularly to heaters of that type which comprise a lamp for heating the water that circulates through the radiator of the incubator.

The main object of my present invention is to provide an incubator heater of the type referred to that is fireproof so that the incubator or the building in which it is located cannot catch on fire even if the lamp of the heater becomes afire.

Another object is to provide an incubator heater which is so constructed that the lamp cannot be filled while it is arranged in operative position. And still another object of my invention is to provide an incubator heater of simple construction that is compact and which can be manufactured at a low cost.

Other objects and desirable features of my invention will be hereinafter pointed out.

Figure 1 of the drawings is a side elevational view of my improved incubator heater; Fig. 2 is a horizontal sectional view taken on approximately the line 2-2 of Fig. 1; Fig. 3 is an enlarged vertical sectional view of the heater; Fig. 4 is a horizontal sectional view taken on approximately the line 4-4 of Fig. 3; and Fig. 5 is a detail vertical sectional view illustrating another means that can be employed for retaining the lamp of the heater in operative position.

Referring to the drawings which illustrate the preferred form of my invention, A designates an incubator of any preferred type, and B designates the casing of my improved heater. This casing B is preferably constructed of sheet metal and the interior thereof is divided into a water reservoir 1 and a lamp-compartment 2 by means of a horizontally disposed partition 3. A lamp C is arranged inside of the compartment 2 for heating the water in the reservoir 1, and a supply pipe 4 and return pipe 5 establish communication between the water reservoir 1 and the radiator of the incubator so as to permit the heated water to pass from the

reservoir 1 into the radiator and thence return to the radiator through the pipe 5. The return pipe 5 is preferably arranged inside of the supply pipe 4, as shown in Figs. 2 and 3, and a baffle 6 is arranged inside of the reservoir adjacent the terminal of the pipe 5, as shown in said figures, so as to cause the cooler water, which returns through the pipe 5, to pass downwardly into the bottom of said reservoir. The baffle 6 herein shown is of substantially channel shape in cross section and is of less diameter than the supply pipe 4 so that it will not interfere with the circulation of the water, the upper end of said baffle being closed and the lower end thereof being open.

One or more of the side walls of the lamp compartment 2 are provided with pieces of woven wire or screening 7 so as to ventilate the lamp compartment and also prevent the flames from escaping therefrom in case the lamp becomes afire. A short chimney 8, preferably formed of metal, is connected to the burner of lamp C so as to protect the flame from drafts, and a double chimney, which extends through the water reservoir 1, is arranged in alinement with the burner of lamp C to carry off the products of combustion. Any suitable type of double chimney can be used but I prefer to use the construction herein shown which consists of an outer tubular-shaped member 9 having both of its ends open, and an inner flue pipe 10 arranged inside of said tubular-shaped member and provided adjacent its upper and lower ends with flanges 11 and 12, respectively, that terminate at the tubular-shaped member 9. The upper end of the inner flue or chimney 10 is normally closed by a damper 13 connected to a rod 14 which is controlled by a thermostat 15 of any preferred type, and openings 16 and 17 are formed in the lower and upper ends of the flue 10 and the tubular-shaped member 9, respectively, so as to permit the products of combustion to pass through the openings 16 into the annular space between said members and then escape through the openings 17 into the atmosphere when the damper 13 is closed. When the temperature in the incubator rises above a certain degree the rod 14 will be actuated and thus raise or open the damper 13 so that the products of combustion can pass directly up through the flue pipe 10 into the atmosphere. The object of having the products of combustion pass between the

flue 10 and the tubular-shaped member 9, of course, is to heat said member to a high degree and thus quickly heat the water in the reservoir 1 that comes in direct contact with the member 9, and the object of opening the damper 13 when a certain temperature has been attained is to permit the products of combustion to escape to the atmosphere without coming in direct contact with the member 9. The flange 11 at the upper end of the inner flue pipe 10 rests upon the upper edge of the tubular-shaped member 9 and thus sustains the inner flue in position, and as there is no direct connection between said inner flue and the member 9 said flue can be removed by simply withdrawing it from the tubular-shaped member 9. The tubular-shaped member 9 can be secured to the top wall of the casing B and to the partition 3 inside of said casing in any suitable manner but I prefer to solder said parts together, and also provide the member 9 with beads 18 that bear against said top wall and partition, as shown in Fig. 3, so that the joints between said parts will not open up even if the solder should melt.

The upper edge of the short chimney 8 on the burner of the lamp is preferably flanged laterally at 8^a, and means is provided for holding the upper edge of said chimney in intimate engagement with the partition 3 inside of the casing B so as to form a tight joint between said parts. The means shown in Fig. 3 for holding said parts in engagement with each other consists of a horizontally disposed shaft 19 journaled in the side walls of the casing B and provided with a bent portion or arm 20 that bears against the under side of the oil-reservoir 21 of the lamp when said shaft is turned in one direction, said arm operating to move the lamp upwardly and hold the flanged upper edge of the short chimney 8 tightly against the under side of the partition 3. If desired, a plate 22 can be secured to the arm 20 on the shaft 19 so as to prevent said arm from rubbing on the bottom of the oil-reservoir of the lamp, this plate 22, of course, being journaled on the arm 20 or connected thereto in such a manner that it can move relatively thereto when the shaft 19 is turned in a direction to raise or lower the lamp. The shaft 19 is provided at one end with a handle 23, as shown in Figs. 1 and 4, and a retaining device 24 is secured to the side wall of the casing for receiving said arm and locking it in position. When it is desired to remove the lamp from the lamp-compartment 2, the handle 23 is grasped by the operator and moved into the position shown in dotted lines in Fig. 4, thereby causing the arm 20 to move downwardly into the position shown in dotted lines in Fig. 3. The lamp C will, of course, move downwardly when the arm 20 moves down-

wardly, and when the lamp is moved downwardly far enough for the upper edge of the chimney 8 to clear the lower end of the member 9 which projects into the lamp-compartment, the lamp can be removed through the opening in the lamp-compartment which the door 25 closes. This door 25 is provided at one edge with arms 26 that project laterally beyond the casing B, and the casing is also provided with cooperating laterally projecting arms 27 arranged in vertical alinement with those on the door. A vertically disposed rod 28 passes through said cooperating arms, as shown in Fig. 3, so as to pivotally connect said arms together, and a coiled spring 29 is mounted on said rod for moving the door into its closed position, one end of said spring bearing against the casing and the opposite end bearing against the front face of the door.

The object of hinging the door in the manner above described is to produce a construction in which the door forms the entire front wall of the casing, thus enabling a lamp to be used which is provided with an oil reservoir that extends the entire width of the casing B. As soon as the operator releases the door the spring 29 moves it into its closed position, and a spring catch 30 is secured to one of the side walls of the casing for locking the door in its closed position. If desired, the casing B can be provided with a strip or wall 25^a that extends across the lower edge of the door opening, as shown in Fig. 3, so as to prevent the oil from running out of the casing in case the lamp leaks.

If desired, a shaft 19^a provided with a cam or eccentric 20^a can be provided for moving the lamp C upwardly in the lamp-compartment, this modification being illustrated in Fig. 5.

To overcome the possibility of the operator filling the lamp while it is arranged in operative position inside of the lamp-compartment, I have constructed the lamp in such a manner that it can only be placed in the lamp-compartment when the filling cap 31 of the oil-reservoir is located at the rear of the casing. One means for accomplishing this result consists of a bar 32 connected to the front wall of the oil-reservoir of the lamp and being of greater length than the width of the lamp-compartment so as to form lateral projections which contact with the front edges of the side walls of the lamp-compartment when the lamp is arranged in operative position, as shown in Fig. 4. The front edges of the side walls of the lamp-compartment are preferably provided with notches for receiving the bar 32 so that said bar will lie flush with the front edges of said side wall and thus not interfere with the door 25 of the lamp-compartment. In view of the fact that the bar 32 is longer than the width of the lamp-

compartment, it will be impossible for the operator to insert the lamp front end first in the casing B, and as the filling cap 31 is located at the rear side of the oil-reservoir of the lamp it will be impossible for the operator to fill the lamp when it is arranged in operative position.

The filling cap of the oil-reservoir is preferably provided with a vent tube 33, and the burner of the lamp is detachably connected to a screw-threaded collar 34 which is secured to the oil-reservoir of the lamp by means of beads 34^a and also solder, the upper bead on said collar bearing upon the outer surface of the top wall of the oil-reservoir, and the lower bead or flange projecting laterally underneath said top wall, as shown clearly in Fig. 3, thus producing a joint that will remain tight even if the solder melts.

An incubator heater of the type above described is perfectly fireproof for the lamp is completely incased in a metal housing or casing provided with vent openings that are covered by wire screening or gauze which prevents any flames from escaping from said casing. The various parts of the heater are connected together by combined beaded and soldered joints so that said parts will not separate even if the solder melts, and as the oil-reservoir of the lamp is so constructed that it can only be introduced into the lamp-compartment rear end first, it will be impossible to place the lamp in the lamp-compartment in such a manner that the filling cap 31 can be removed to fill the oil-reservoir while the lamp is in operative position, thus reducing the liability of an explosion caused by filling the lamp when it is burning. The door of the lamp-compartment is hinged in such a manner that it will not interfere with the lamp when said lamp is removed, and as the upper edge of the short metal chimney 8 on the lamp burner is clamped tightly against the horizontal partition 3 inside of the casing B, the flame from the lamp burner will be protected from drafts.

The heater is compact and presents a neat and ornamental appearance, and as it comprises only a few sheet metal parts, it can be manufactured at a low cost.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. An incubator heater provided with a metal casing that forms a water reservoir and a lamp-compartment, a hinged door for said lamp-compartment, an oil lamp arranged inside of said lamp-compartment, and lateral projections on said fuel tank that engage the sides of said door opening and thus prevent the lamp from being arranged in the lamp-compartment in such a position that the filling opening in the fuel tank is

near enough the door opening to permit said tank to be filled.

2. An incubator heater comprising a casing provided with a partition that divides the interior space of the casing into a water reservoir and a lamp-compartment, a lamp arranged in said compartment and provided with a short chimney whose upper edge bears against the under side of said partition, a chimney extending through the water reservoir for carrying off the products of combustion, a manually-operated shaft projecting into said lamp-compartment and provided with an arm for moving said lamp upwardly, and a wear plate journaled on said arm for engaging the bottom of the fuel reservoir of the lamp so as to prevent the arm on said shaft from contacting directly with the bottom of the reservoir.

3. In an incubator heater, a casing or housing formed of non-combustible material and provided with a water reservoir that communicates with pipes through which water circulates, a door in one of the side walls of said casing that forms a closure for a lamp-compartment, a lamp arranged inside of said lamp-compartment and provided with a short chimney that is adapted to bear against the under side of the water reservoir, means extending through said water reservoir and arranged in alinement with the chimney on said lamp for conducting the products of combustion to the atmosphere, a movable device inside of the lamp-compartment for supporting said lamp, an operating member arranged outside of the casing for actuating said device so as to bodily raise and lower the lamp, and means cooperating with said operating member for holding it in a certain position.

4. In an incubator heater, a housing or casing formed of sheet metal and provided with a partition that divides the interior thereof into a water reservoir and a lamp-compartment, a chimney extending through said water reservoir and communicating with said lamp-compartment, a lamp arranged inside of said lamp-compartment, means for ventilating said lamp-compartment, a horizontally disposed shaft journaled in said casing and provided with means for causing the lamp to bodily move upwardly or downwardly when said shaft is turned a handle on said shaft arranged outside of the casing, and means carried by the casing and cooperating with said handle for locking said shaft in a certain position.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this 9th day of July 1909.

GEORGE H. STAHL.

Witnesses:

J. C. GLENN,
E. K. STONE.