J. W. SAUER.

HEATER FOR INCUBATORS.

APPLICATION FILED SEPT. 24, 1909.

950,245. Patented Feb. 22, 1910.

2 SHEETS—SHEET 1.

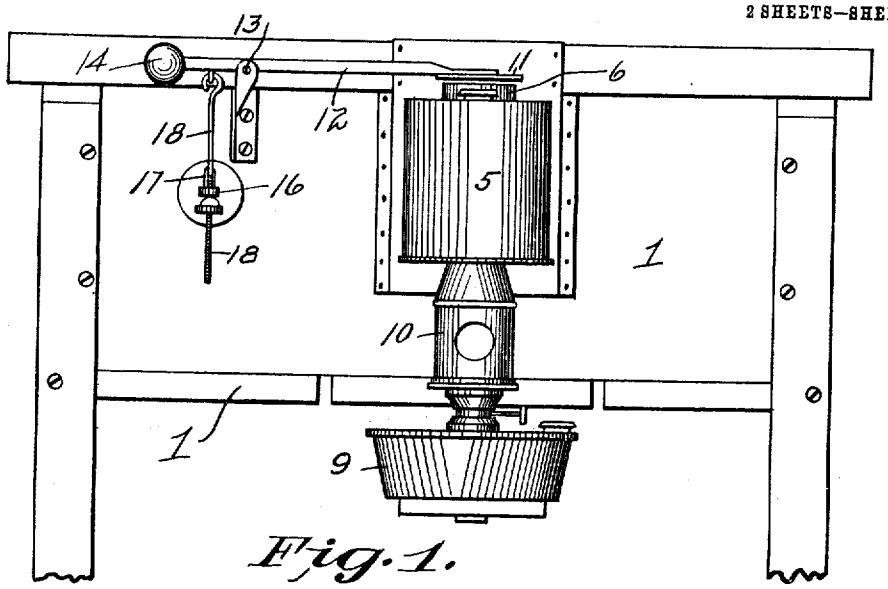

Fig. 1.

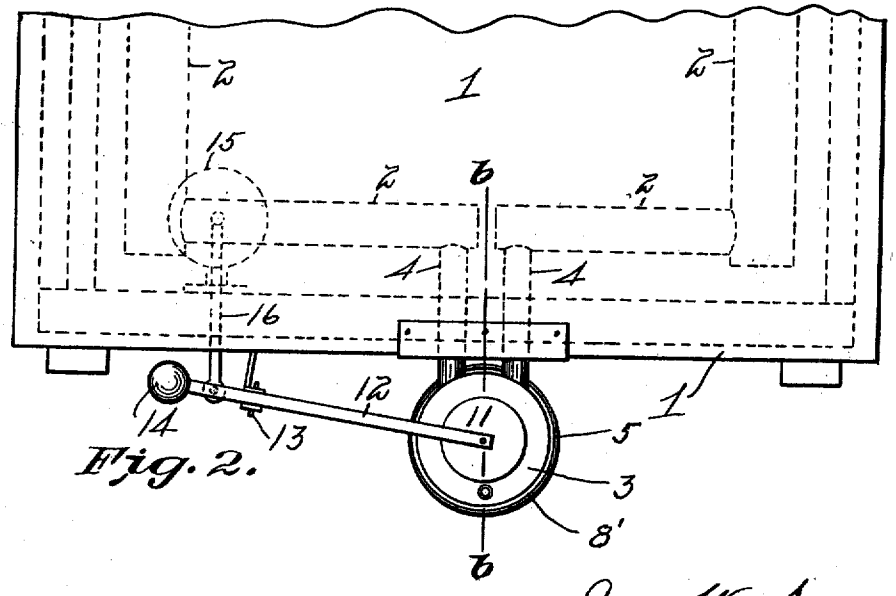

Fig. 2.

Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

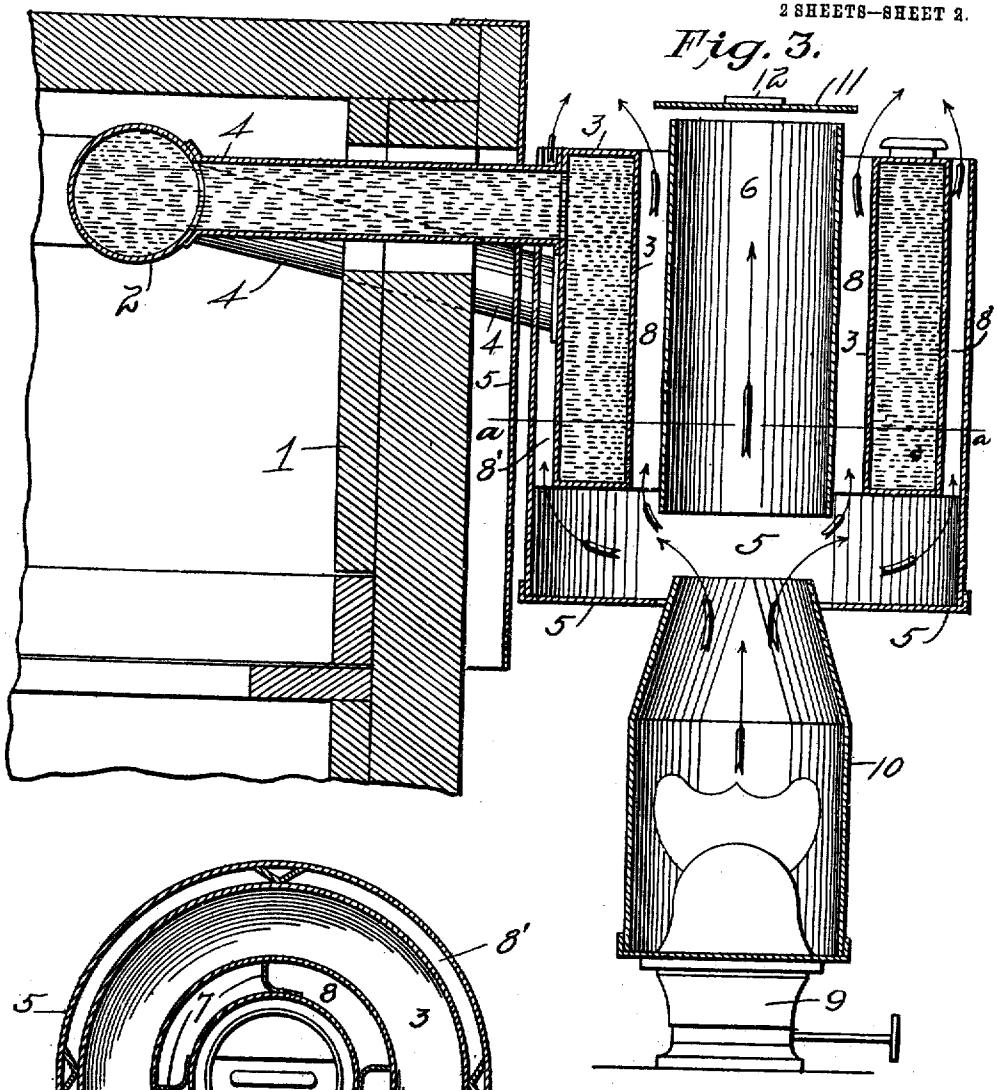

Fig. 4.

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UNITED STATES PATENT OFFICE.

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HEATER FOR INCUBATORS.

950,245. Specification of Letters Patent. Patented Feb. 22, 1910.

Application filed September 24, 1909. Serial No. 519,366.

To all whom it may concern:

Be it known that I, JOHN W. SAUER, a citizen of the United States, residing at Trotwood, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Heaters for Incubators; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in heaters for incubators, and has for its object means for heating the incubator which enables the passage of the products of combustion from the lamp or heater to be conducted directly to the water column from the upper end of the lamp chimney, or directly to the outlet flue, the said passage being automatically controlled by a thermostat which is located on the interior of the incubator.

A further object of the invention is to provide a heater in which the lamp is so located that the heat passing from the chimney thereof will at no time be deflected back into the lamp chimney or in the direction thereof.

These objects as well as other beneficial objects will be referred to in the specification to follow, and in connection with the accompanying drawings, of which—

Figure 1, is a side elevation of the incubator, the legs being broken off. Fig. 2, is a top plan view of the side appearing in Fig. 1. Fig. 3, is an enlarged sectional view on the line *b b* of Fig. 2. Fig. 4, is a cross sectional view through the water column and the smoke flue on the line *a a* of Fig. 3.

In a detail description of the invention, similar reference characters indicate corresponding parts.

The body 1 of the incubator is constructed of suitable proportions and contains the usual appliances common to incubators, and which it is not deemed essential to either show or describe herein.

On the interior of the casing 1 is arranged the water-circulating tube 2 shown in Fig. 2 in dotted lines, and shown in Fig. 3 to connect through branches 4 with an annular water column 3 located on the exterior of the incubator proper. Water is heated in the column 3 for circulation through the pipes on the interior of the casing.

5 designates a casing above the lamp, said casing is suitably supported with the water column 3 on the pipes 4. An annular chamber 8 lies between the column 3 and the flue 6, and an annular chamber 8′ lies between the outer side of the column 3 and the casing 5.

The smoke flue 6 is supported on the water column 3 by a series of flanges 7 which extend between said smoke flue and the inner surface of said water column 3. The said smoke flue 6 is of a diameter which provides the annular space 8 between the outer surface of the flue and the inner surface of the water column before referred to, and through which and the space 8′, the heat or products of combustion generated in the lamp may or may not pass. The lamp chimney 10 is supported upon the lamp 9; there is sufficient space between the upper end of said chimney to permit of the products of combustion to be diverted into said annular spaces 8 and 8′ or into the escape flue 6.

Above the flue 6 is a damper 11 which is attached to an arm 12 pivoted at 13 and having a suitable balancing weight 14 on its free end. This arm or lever 12 is controlled by a well-known form of thermostat 15 shown in dotted lines in Fig. 2, and located on the interior of the incubator. A suitable connection 16 extends from the thermostat through a slot 17 in the side of the incubator and connects at its outer end with a depending link 18 which connects with the arm of lever 12. As the temperature increases or decreases within the incubator, the damper 11 above the flue 6 is accordingly operated either to close the upper end of the flue 6 and divert the products of combustion into the annular spaces 8 and 8′ to heat the water in the column 3, or to cease heating said water by permitting the products of combustion to escape through the flue 6. As the damper is shown in Fig. 3, it is in its intermediate position, a portion of the products of combustion escaping through the flue 6 and a portion through the annular passages 8 and 8′. When the dam-

per is closed upon the top of the flue 6, all of the products of combustion will be deflected into the heat passages 8 and 8′.

I claim:

1. In a heater for incubators, an annular water column, a flue mounted within said water column, a casing mounted on the outside of said water column, said flue and said casing forming passage ways on the inner and outer sides of said water column, a lamp mounted below said flue with intervening space between the upper end of the lamp chimney and the lower end of the flue, a damper mounted above the flue and adapted to close the outlet of the flue and to direct the products of combustion from the lamp into both of said passage ways simultaneously, and means for controlling said damper, substantially as described.

2. In a heater for incubators, an annular water column, a flue inclosed by said water column and providing an annular passage way between the interior of the water column and the exterior of the flue, a casing below said water column, said casing having an annular wall extending therefrom around the exterior of the water column and providing a passage way around the outer side of the water column, a lamp mounted below said casing, the chimney of said lamp being extended into the casing a suitable distance below said flue and adapted to discharge the products of combustion into the lower portions of the annular passage ways on the interior and exterior of the water column or to the flue, and a damper above the flue and controlling the passage of the products of combustion from the lamp.

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

JOHN W. SAUER.

Witnesses:

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C. M. THEOBALD.