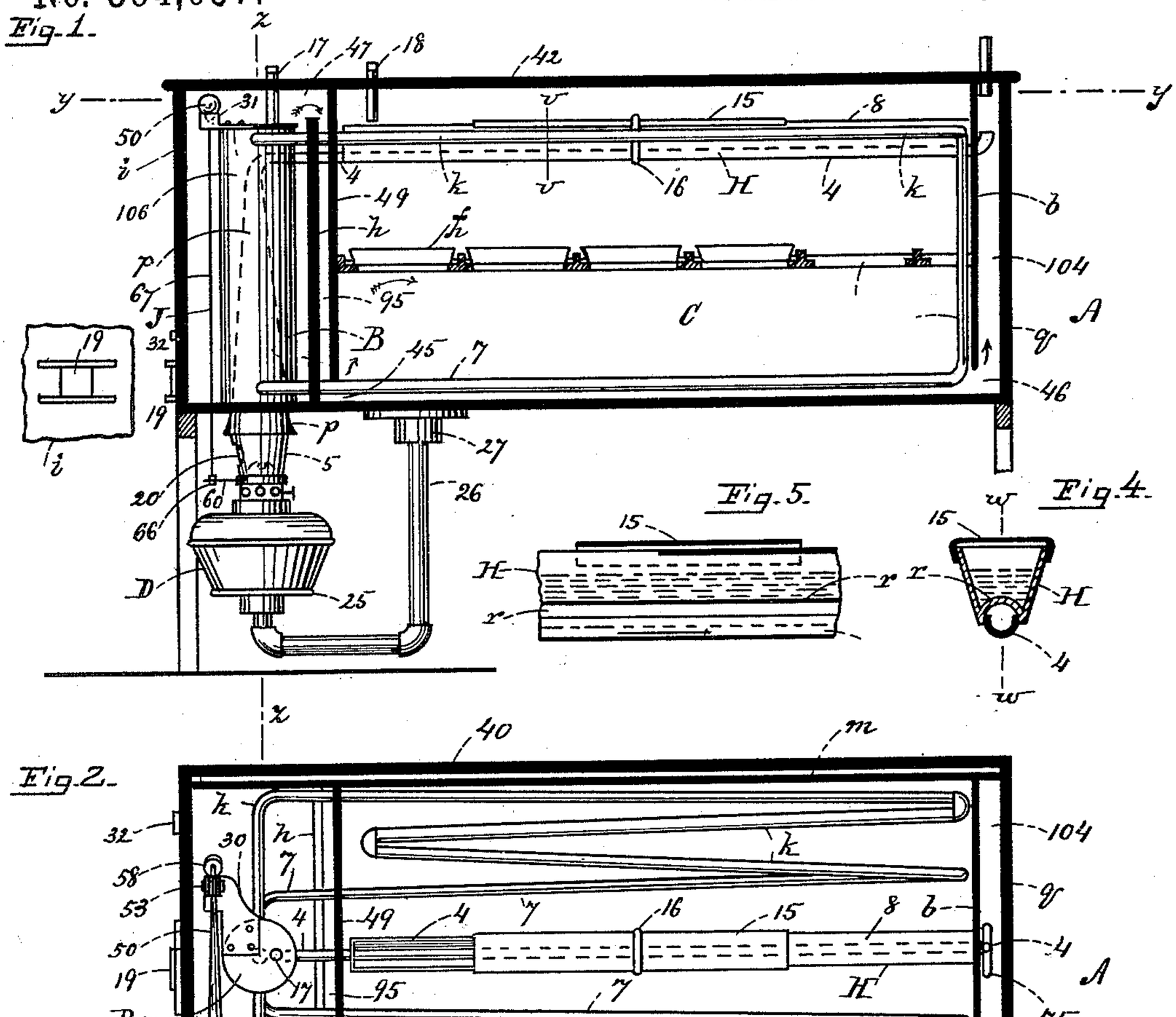
(No Model.)

J. F. CARR.

HEAT REGULATOR FOR INCUBATORS.

No. 394,057. Patented Dec. 4, 1888.

Fig. 1.



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JOHN F. CARR, OF TIVERTON, RHODE ISLAND.

HEAT-REGULATOR FOR INCUBATORS.

SPECIFICATION forming part of Letters Patent No. 394,057, dated December 4, 1888.

Application filed July 2, 1888. Serial No. 278,814. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. CARR, of Tiverton, in the county of Newport, State of Rhode Island, have invented a certain new and useful Improvement in Heat-Regulators for Incubators, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical longitudinal section of an incubator containing this improved regulator, taken on line *x x* in Fig. 2, certain parts being shown in side elevation; Fig. 2, a top plan view, certain parts being shown in section, on line *y y* in Fig. 1; Fig. 3, a vertical transverse section taken on line *z z* in Fig. 1, some of the parts being shown in side elevation; Fig. 4, an enlarged vertical section of the moisture-pan, taken on line *v v* in Fig. 1; Fig. 5, an enlarged vertical section taken on line *w w* in Fig. 4; Fig. 6, an enlarged vertical section taken on line *t t* in Fig. 7, showing certain parts of the regulating device; Fig. 7, an enlarged side elevation, partly in section, on line *s s* in Fig. 6; Fig. 8, an enlarged side elevation of a portion of the lamp-burner; and Fig. 9, an enlarged top plan view of the burner, partly in section, on line *r r* in Fig. 8.

Like letters and figures of reference indicate corresponding parts in the different figures of the drawings.

My invention relates to heat-regulators for that class of incubators in which hot water is employed as a heating medium; and it consists in certain novel features, as hereinafter fully set forth and claimed, the object being to produce a more effective and otherwise desirable device of this character than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following explanation:

In the drawings, A represents the body or case of an incubator; B, the boiler or heating device; C, the egg-chamber, and J the hot-air or boiler chamber. A bent lever, 60, is pivoted at 61 to the plate 62 of the lamp-burner, said lever passing loosely through eyes 63 of the sleeve 64, thereby enabling said sleeve to be raised or lowered, as desired, by correspondingly depressing or elevating the long arm of said lever. A horizontally-arranged cone-shaped pipe, 50, having its outer end, 51, closed and its inner end bent, as shown at 98, (see Figs. 3, 6, and 7,) has its curved end firmly secured between clamping-plates 52 by screws 28, said plates being rigidly attached to a short mandrel, 31, which is journaled in the outer end of a horizontally-arranged bracket, 30, projecting from the top of the boiler B. A short tube or nipple, 55, is inserted in the side of the boiler, as shown in Fig. 3, said nipple being connected with the smaller end of the conical tube 50 by a flexible pipe, 56, which permits the conical tube to oscillate on its pivotal support. A pendent counterbalancing-arm, 57, is secured to the clamping-plate 52, said arm being provided with one or more weights, 58, as required, which are adjustably secured thereon by a nut, 59. A vertically-arranged rod, 67, connects the pivoted conical pipe 50 with the bent lever 60, and when said pipe is elevated or depressed the flame of the lamp will be correspondingly increased or diminished, as the case may be, the sleeve 64, bent lever 60, rod 67, pivoted conical tube 50, counterbalancing-arm 57, and the pipe 56, which connects said conical pipe with the boiler B, constituting the essential features of the flame or heat regulating device of the incubator.

The lever 60 and sleeve 64 constitute an extinguisher for the lamp, and their construction may be varied as desired, provided they perform their functions properly in connection with the other parts of the regulator.

A vent-hole, 90, is formed in the upper side of the conical pipe 50 near its outer end for the escape and admission of air as the water is forced into or withdrawn from said pipe.

The object in making the pipe 50 conical is to maintain an air space or chamber at all times near its larger end when the smaller end is filled with water, and thereby enable the pipe to fill rapidly when the water is suddenly heated; also, to adapt said pipe to contain a greater amount of water at its outer than at its inner end, and by thus "weighting" it increase its leverage and enable it to exert sufficient force on the lever 60 to raise the

sleeve 64 under all circumstances, or in case said sleeve should at any time become accidentally clogged or stuck and require the application of more than ordinary power to move it.

When the temperature of the water in the boiler becomes greater than is required to properly heat the egg-chamber, water will be forced through the nipple 55 and flexible pipe 56 into the conical pipe 50, causing said conical pipe to fall and force down the long arm of the lever 60, thereby raising the sleeve 64, diminishing the size of the flame, and reducing the temperature of the water, and as the temperature of the water in the boiler falls the water in the conical tube 50 will run back into the boiler again, permitting the counterbalancing-arm 57 to elevate said tube and actuate the lever 60 to lower the sleeve 64, and thereby increase the flame of the lamp and temperature of the water in a manner that will be readily understood by all conversant with such matters without a more explicit description.

Having thus explained my invention, what I claim is—

1. The combination of two pivoted clamping-plates provided with corresponding semicircular grooves on their meeting faces, a tubular lever clamped between said plates in said grooves, and a counterbalancing-lever attached to one of said plates.

2. In a heat-regulating device for incubators, the conical pipe 50, closed at its larger end and provided with the vent-hole 90, the clamping-plates 52, secured to said pipe near its smaller end and provided with the mandrel 31, the bracket 30, in which said plates are pivoted or journaled, the counterbalancing-arm 57, connected with said plates, the boiler B, provided with the nipple 55, the flexible pipe 56, connecting said nipple with the smaller end of the pipe 50, the lamp D, provided with the wick-tube 65, the lever 60, pivoted to said lamp and connected with said wick-tube, and the rod 67, connecting said lever and the pipe 50, all combined and arranged to operate substantially as set forth.

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