

(No Model.)

C. E. WILLIAMS & J. F. CARR.

INCUBATOR.

No. 364,073.

Patented May 31, 1887.

Fig. 1.

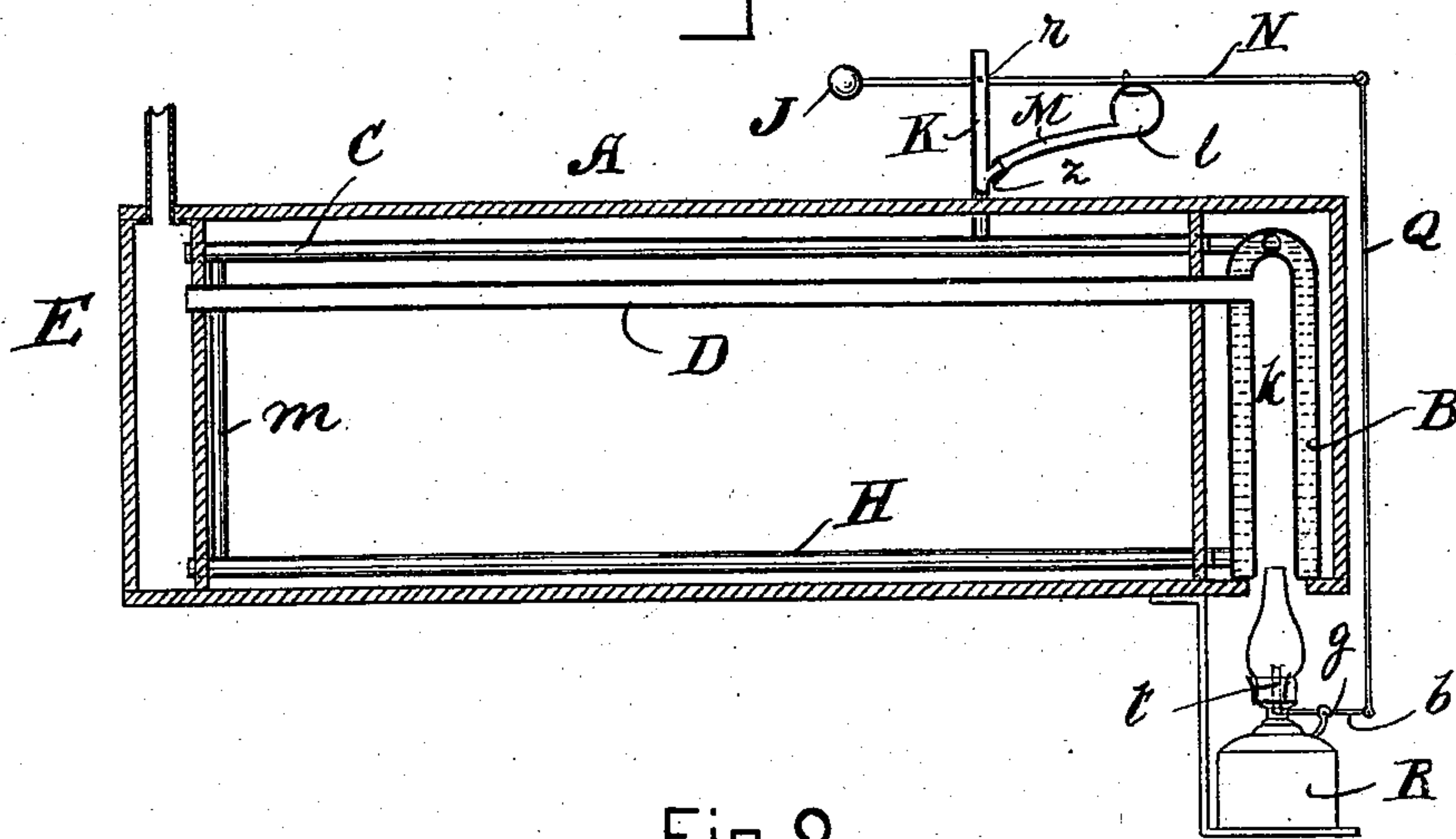


Fig. 2.

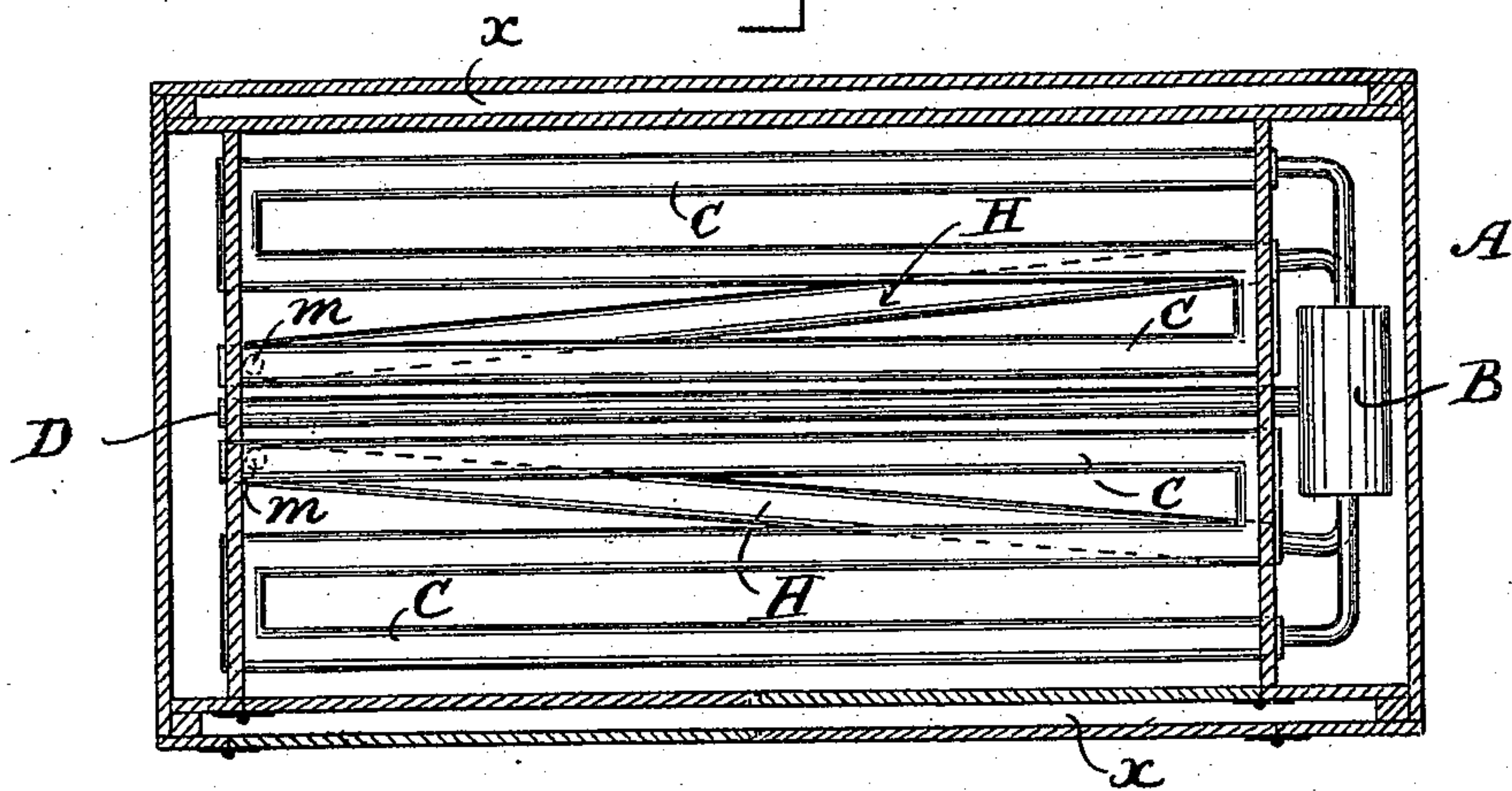
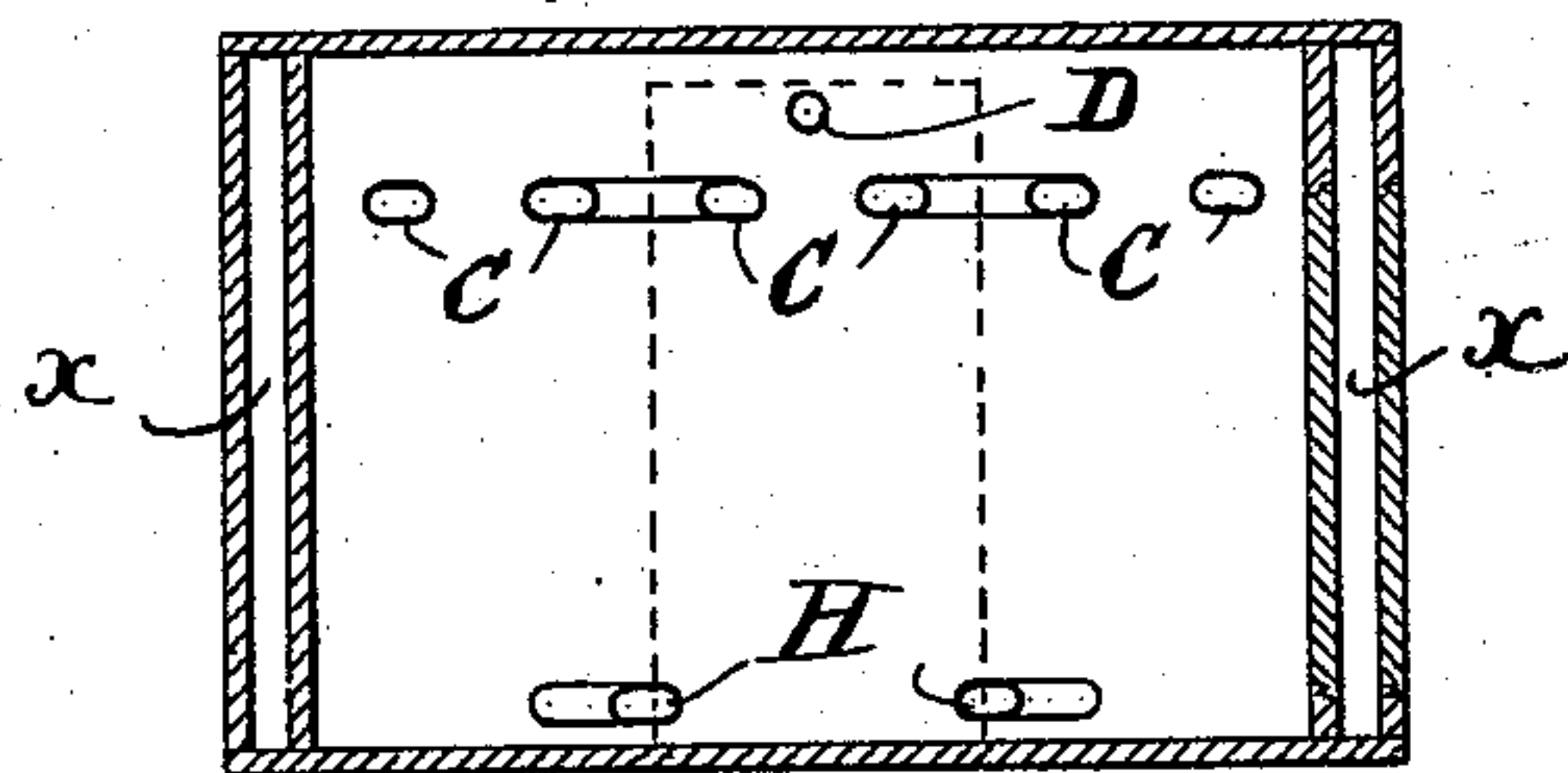


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

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INCUBATOR.

SPECIFICATION forming part of Letters Patent No. 364,073, dated May 31, 1887.

Application filed November 15, 1886. Serial No. 218,846. (No model.)

To all whom it may concern:

Be it known that we, CHARLES E. WILLIAMS, of Fall River, in the county of Bristol, State of Massachusetts, and JOHN F. CARR, of Tiverton, in the county of Newport, State of Rhode Island, have invented a certain new and useful Improvement in 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 showing the heating device of our improved incubator, some of the parts being represented in side elevation; Fig. 2, a top plan view of the same, and Fig. 3 a vertical transverse section.

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

Our invention relates more especially to that class of incubators in which hot water is employed for maintaining heat in the hatching-chamber; and it consists in certain novel details of construction, as hereinafter fully set forth and claimed, the object being to produce a more effective 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, which is provided with the usual air-spaces or insulating-chambers, *a*. A \cap -shaped boiler, B, is disposed in one end of the body, and provided at the top with a series of education tubes or flues, C, and at the bottom with induction-tubes H, through which the heated water circulates. A smoke flue or pipe, D, leads from the upper portion of the boiler directly through the side walls thereof, said pipe extending horizontally along the body A and opening into the chimney E.

Vertically-arranged pipes *m* connect the education-pipes C with the induction or return pipes H, near the chimney E. A vertically-arranged pipe, K, is connected with one of the

tubes or flues C, into which it opens, said pipe being provided with a short branch pipe or nipple, *z*. A flexible rubber tube, M, is attached to the nipple *z*, said tube being provided at its outer end with a cup, *l*.

Pivoted at *r*, in the upper end of the pipe K, with its long arm secured to the cup *l*, there is a horizontally-arranged lever, N, provided at one end with a counterbalance-weight, J, and jointed at its opposite end to a vertically-arranged rod, Q. A lamp, R, is disposed beneath the boiler B in such a position that the hot air and products of combustion from its chimney will pass up into the chamber *k* in said boiler, and thence through the pipe D into the chimney E. A horizontally-arranged lever, *b*, is pivoted in an arm, *g*, on the lamp R, the outer end of said lever being jointed to the rod Q and the inner end connected with a sleeve, *t*, which is fitted to slide vertically on the wick-tube of the lamp.

In the use of our improvement, the lamp R being lighted, the water in the boiler will be heated and pass through the education-tubes C, down through the tubes *m*, and thence through the return-tubes H into the boiler again to be reheated.

In case the water in the boiler becomes too hot, or the heat in the incubator too great, the water will be forced into the pipe K, and thence through the nipple *z* and tube M into the cup *l*, the cup being so arranged that the long arm of the lever N, which is secured thereto, will rise and fall as the cup is raised or depressed. It will be obvious that when the temperature rises and a sufficient quantity of water is forced into the cup to depress it the lever will fall accordingly, thereby depressing the outer end of the lever *b*, forcing the sleeve *t* upward over the lamp-tube, and reducing the flame of the lamp.

The flame of the lamp being reduced, as described, the temperature of the water in the boiler will fall, and the water in the cup *l* flow out of the same, thereby permitting the cup and lever N to be raised by the counterbalance-weight J, the rod Q being at the same time drawn upward, the sleeve *t* depressed, and the flame of the lamp increased. It will therefore be seen that the pivoted levers N *b*,

counterbalance-weight J, sleeve t, rod Q, pipe K, and elastic tube M, provided with the cup l, constitute a device by which the heat or temperature of the water in the boiler and pipes
5 is regulated automatically.

By constructing the boiler with the air-chamber k, and carrying the pipe D from said chamber through the body A, the heat generated by the lamp is utilized to the best advantage.

10 An auxiliary spring may be used in connection with the tube M, if necessary, and the tube K be inserted directly in the boiler, instead of in the pipe C.

As our improvement relates especially to
15 the construction and arrangement of the boiler and its pipes, and to means for automatically governing the temperature of the water, it is not deemed essential to show any other parts of the incubator than are represented in the
20 drawings.

Having thus explained our invention, what we claim is—

The combination, in an incubator, of the incubating chamber or case A, an inverted-U-shaped boiler at one end thereof, said boiler 25 being open at the bottom, circulating-pipes within said case connected with said boiler, a chimney-flue at the opposite end of said case, and a smoke-pipe connected with the upper end of said inverted-U-shaped boiler, said 30 smoke-pipe passing through said case into the chimney-flue, substantially as described.

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Witnesses:

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