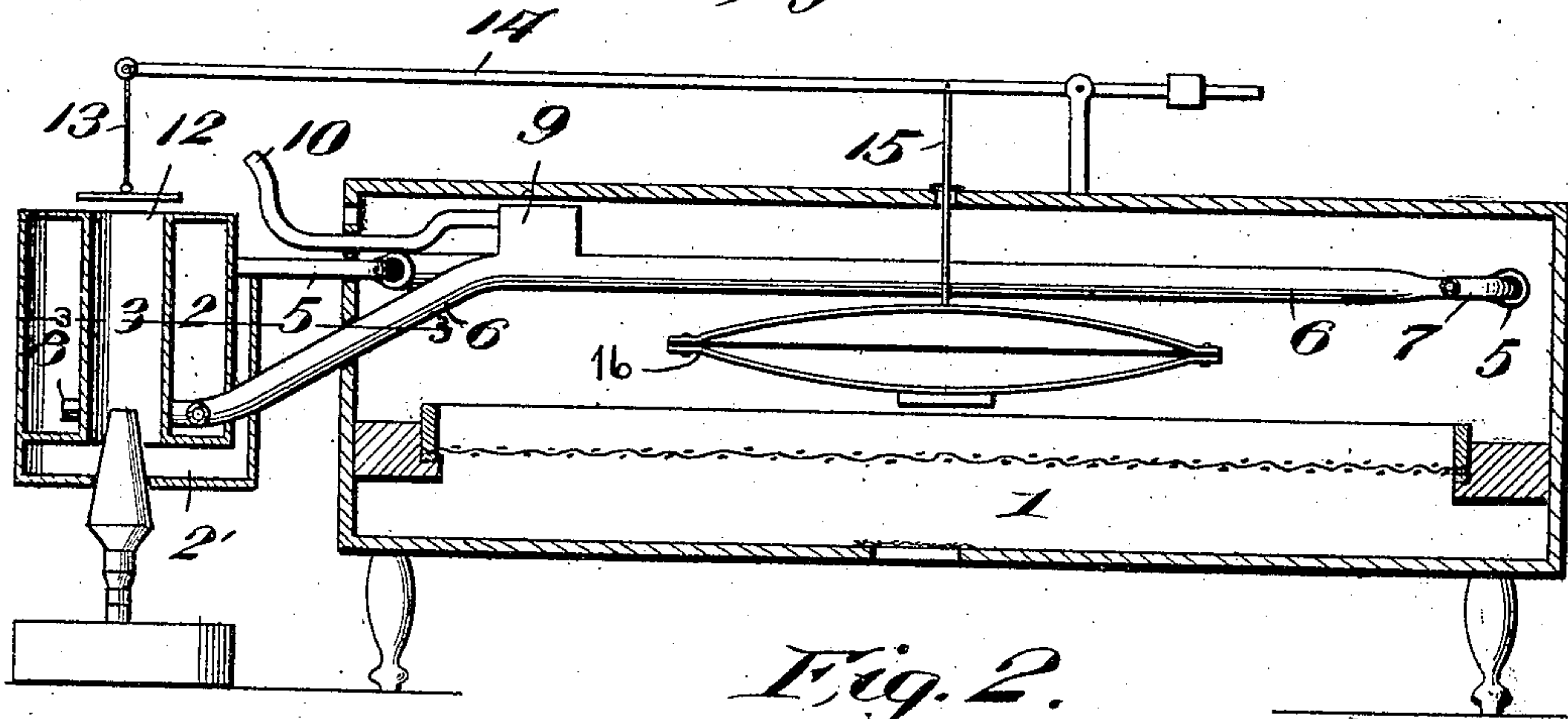


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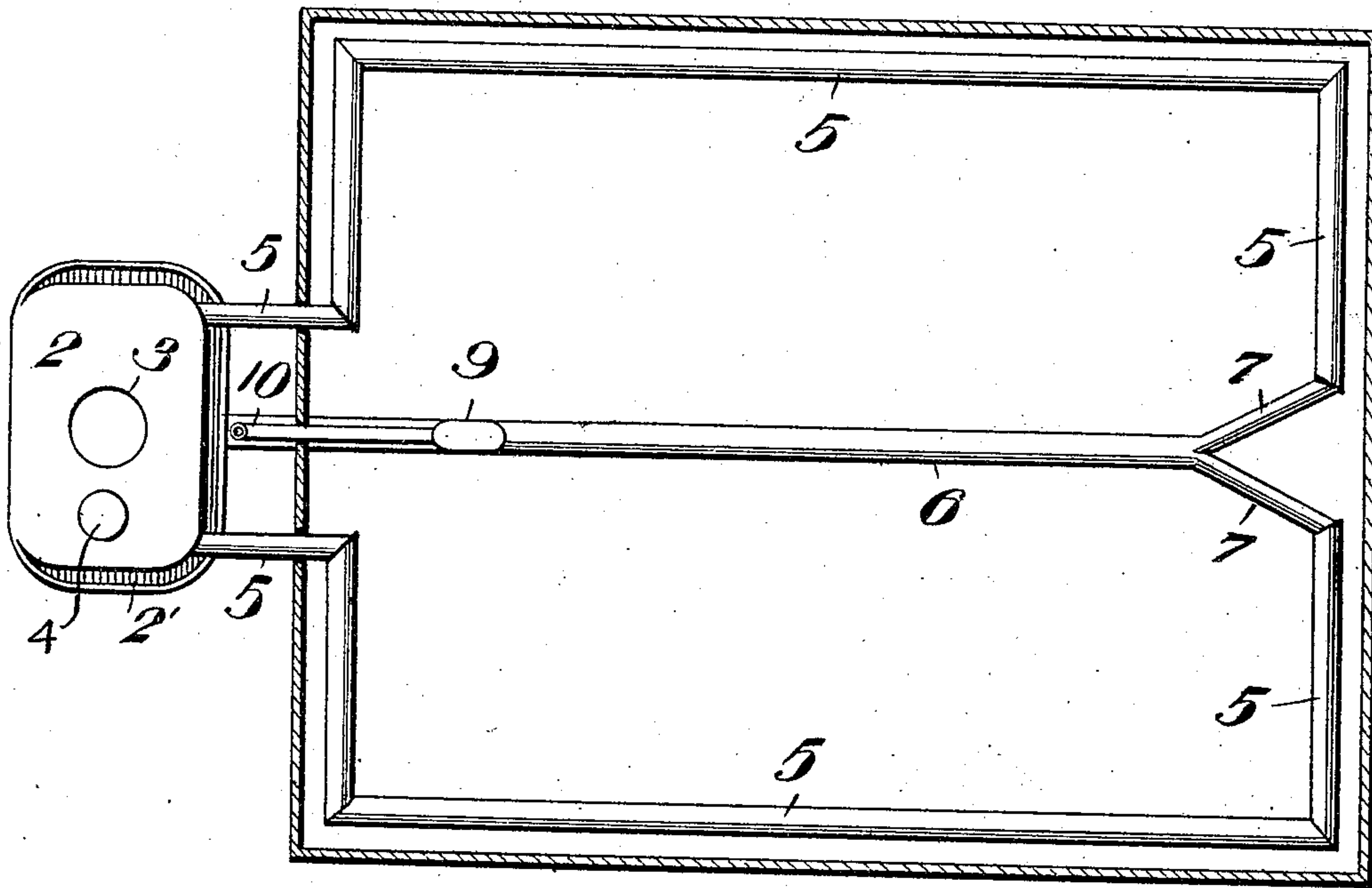
PATENTED MAR. 26, 1907.

J. V. LINDSEY.  
HEATING SYSTEM FOR INCUBATORS.  
APPLICATION FILED DEC. 7, 1905.

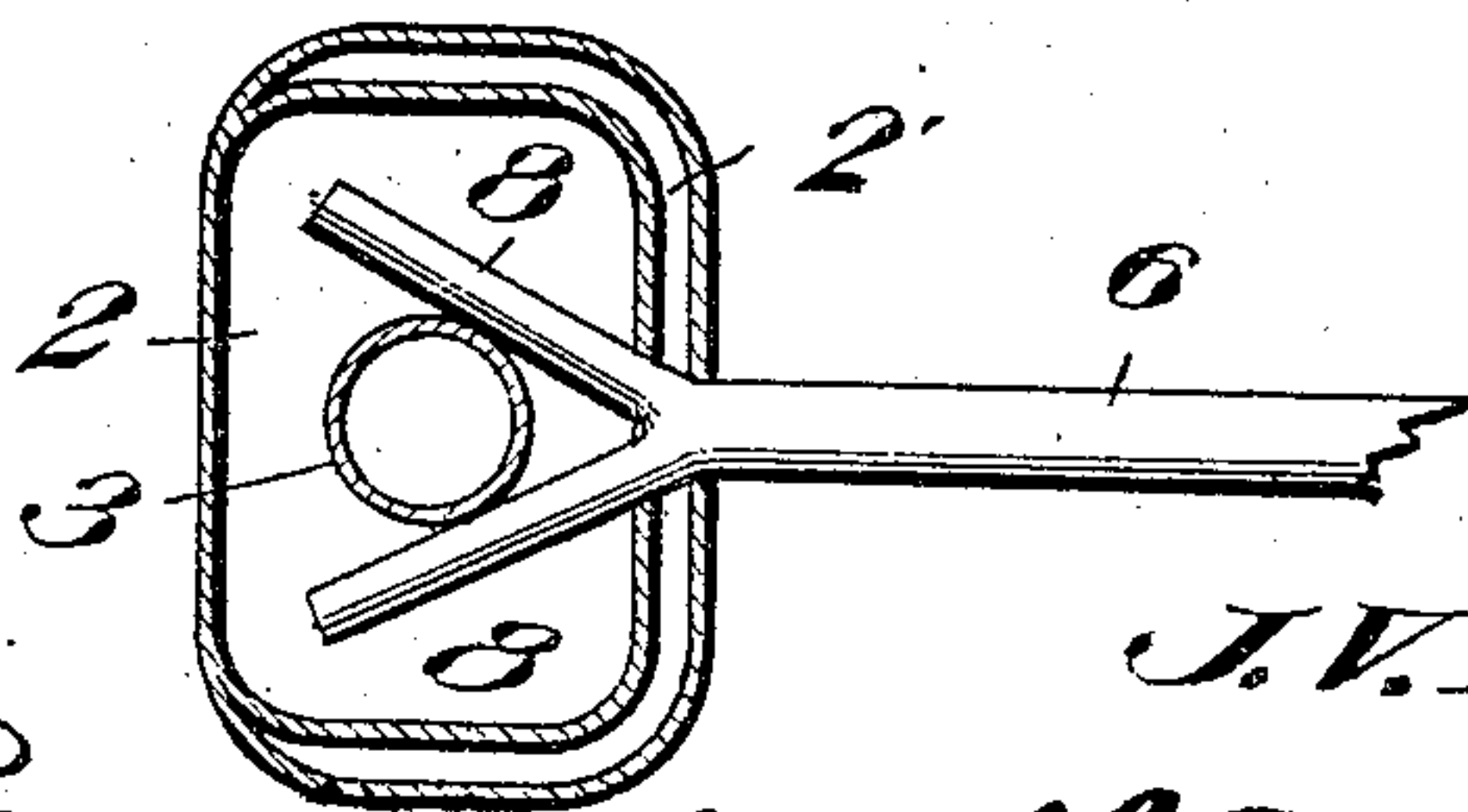
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



Witnesses

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# UNITED STATES PATENT OFFICE.

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## HEATING SYSTEM FOR INCUBATORS.

No. 848,313.

Specification of Letters Patent.

Patented March 26, 1907.

Application filed December 7, 1905. Serial No. 290,772.

*To all whom it may concern:*

Be it known that I, JOHN V. LINDSEY, a citizen of the United States, residing at Fairfield, in the county of Clay and State of Nebraska, have invented certain new and useful Improvements in Heating Systems 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.

This invention relates to improvements in incubators.

The object of the invention is to provide an incubator in which a continuous circulation of hot water and steam will be automatically kept up, means being provided to automatically regulate the heat in the incubator.

A further object is to provide a novel arrangement of the water-heating tank, whereby the heat of the lamp will be applied to both the inner and outer sides of the tank.

With these and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a vertical longitudinal sectional view of an incubator, showing the application of the invention thereto. Fig. 2 is a horizontal sectional view through the same, showing the heating system in top plan view with the damper mechanism removed. Fig. 3 is a detail horizontal sectional view through the heating-tank on the line 3 3 of Fig. 1.

Referring more particularly to the drawings, 1 denotes an incubator, which may be of the usual or any desired construction. Near the top of the incubator is arranged a heating system which consists of a tank 2, suitably supported on the outer side of one end of the incubator, said tank having arranged on its lower end a jacket 2', which extends around three sides and below the bottom of the tank and communicates with a central vertically-disposed heat-tube 3, arranged in the tank and into which the upper end of the heating-lamp chimney is inserted. The upper end of the tank is closed by a cover through which the tube 3 projects, and in said cover is arranged a filling-opening normally closed by a plug 4.

Connected with the upper end of the tank

are the outer ends of two right-angularly-formed water-circulating tubes 5, the right-angularly-formed inner ends of said tubes being connected to the inner end of a centrally-disposed return-tube 6 by means of obliquely-disposed branch pipes 7, which extend from the circulating-pipes 5 to the return-pipe 6. The opposite or outer end of the return-pipe curves downwardly and enters the tank near its bottom, said ends being forked or branched, as shown at 8, whereby the return water therefrom will be quickly mixed with the hot water in the tank, and thereby reheated.

On the return pipe or tube 6, near the downwardly-curved outer end of the same, is arranged a steam-dome 9, with which is connected a steam-discharge pipe 10, which curves upwardly and projects through the end of the incubator, thus preventing an excess of steam-pressure in the heating-tank 2.

In order to regulate the heat within the incubator, a damper-plate 12 is provided, said plate being adapted to normally rest on top of the tank and to close the heat-tube 3. The plate 12 is connected by a link 13 to a rod or lever 14, which is pivotally mounted on the top of the incubator, and at a point intermediate the ends of said rod is connected a link 15, which extends down into the incubator and is connected to a thermostat 16, arranged in suitable position in the incubator, whereby when the heat therein reaches a certain point the thermostat will expand and cause the lever 14 to raise the plate 12, thus allowing the heat of the lamp to escape from the tank, as will be understood. When the plate 12 is closed, the heat from the lamp passes out of the heat-tube at the bottom and between the walls of the jacket 2', thereby heating both the inside and outside of the tank. The thermostat 16 comprises two expansible members secured upon opposite sides of a tie member, the lower expansible member being connected to the casing of the incubator and the upper expansible member being connected to the link 15. Any other suitable form of thermostat may be employed.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be



resorted to without departing from the principle or sacrificing any of the advantages of this invention as defined by the appended claims.

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

1. In an incubator-heating system, the combination with a heating-tank comprising  
10 a heating-tube and an outer heat-conducting sleeve, of hot-water-circulating pipes communicating with said tank and extending into the incubator, a return-pipe extending into the tank and having therein diverging  
15 branches in communication therewith, obliquely-disposed pipes, each communicating at one end with one of the circulating-pipes and at the other end with the return-pipe, a steam-dome on the return-pipe, a steam-dis-  
20 charge pipe leading from said dome to prevent excess steam-pressure in said pipes, a damper arranged on said heating-tank to retain the heat therein and a thermostatic damper-operating mechanism to automatic-  
25 ally raise said damper and thereby regulate the heat in said tank, substantially as described.

2. In an incubator-heating system, the combination with a heating-tank comprising a centrally-disposed heating-tube and a heat-  
30 conducting sleeve or jacket arranged around the same, of hot-water-circulating pipes communicating with said tank and extending into the incubator, a return-pipe extending into the tank and having therein diverging  
35 branches in communication therewith, obliquely-disposed pipes each communicating at one end with one of the circulating-pipes and at the other end with the return-pipe, a steam-dome on the return-pipe, a steam-dis-  
40 charge pipe leading from the dome, a damper-plate disposed above said tank, a lever connected to said damper-plate, and a thermostatic heat-regulating device in the incubator and connected to said lever, substan-  
45 tially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOHN V. LINDSEY.

Witnesses:

W. E. RIGGS,  
W. L. SHEETS.