

No. 742,033.

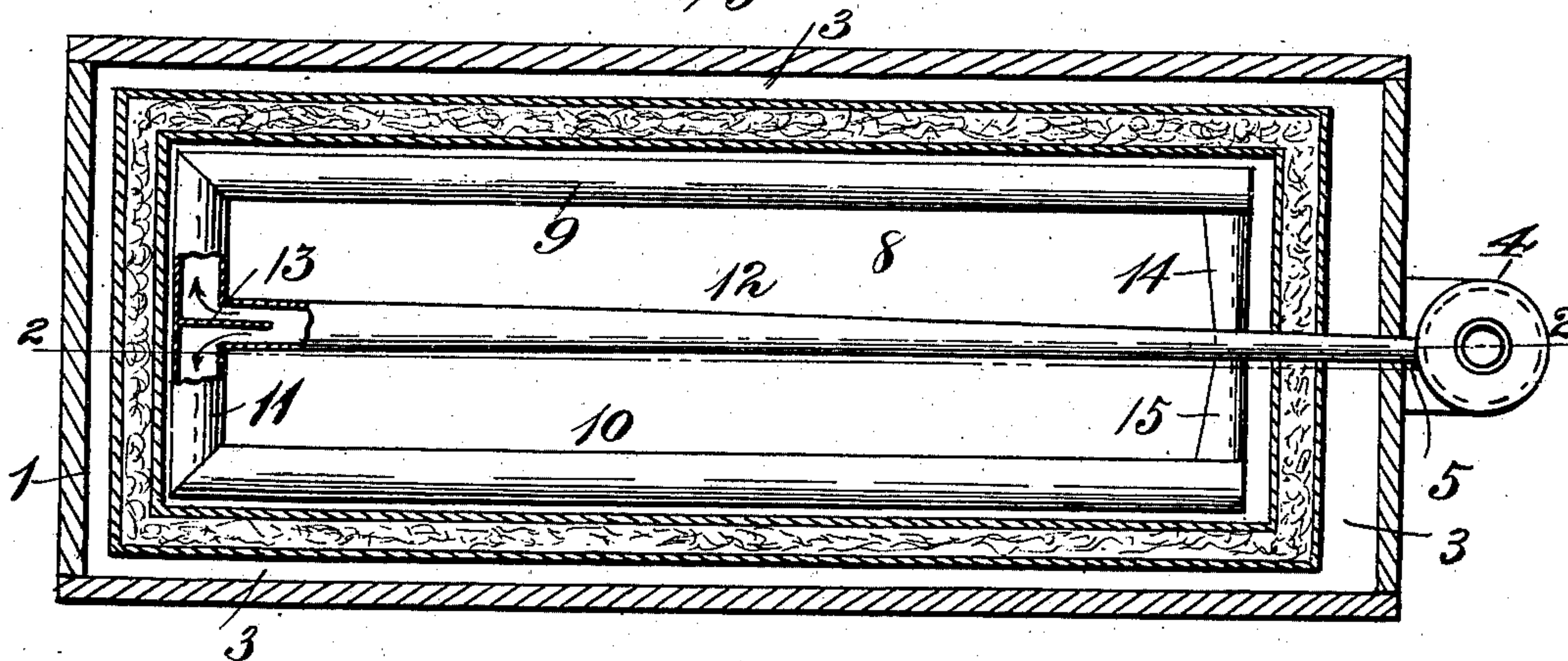
PATENTED OCT. 20, 1903.

M. M. JOHNSON.  
HOT WATER HEATING SYSTEM FOR INCUBATORS.

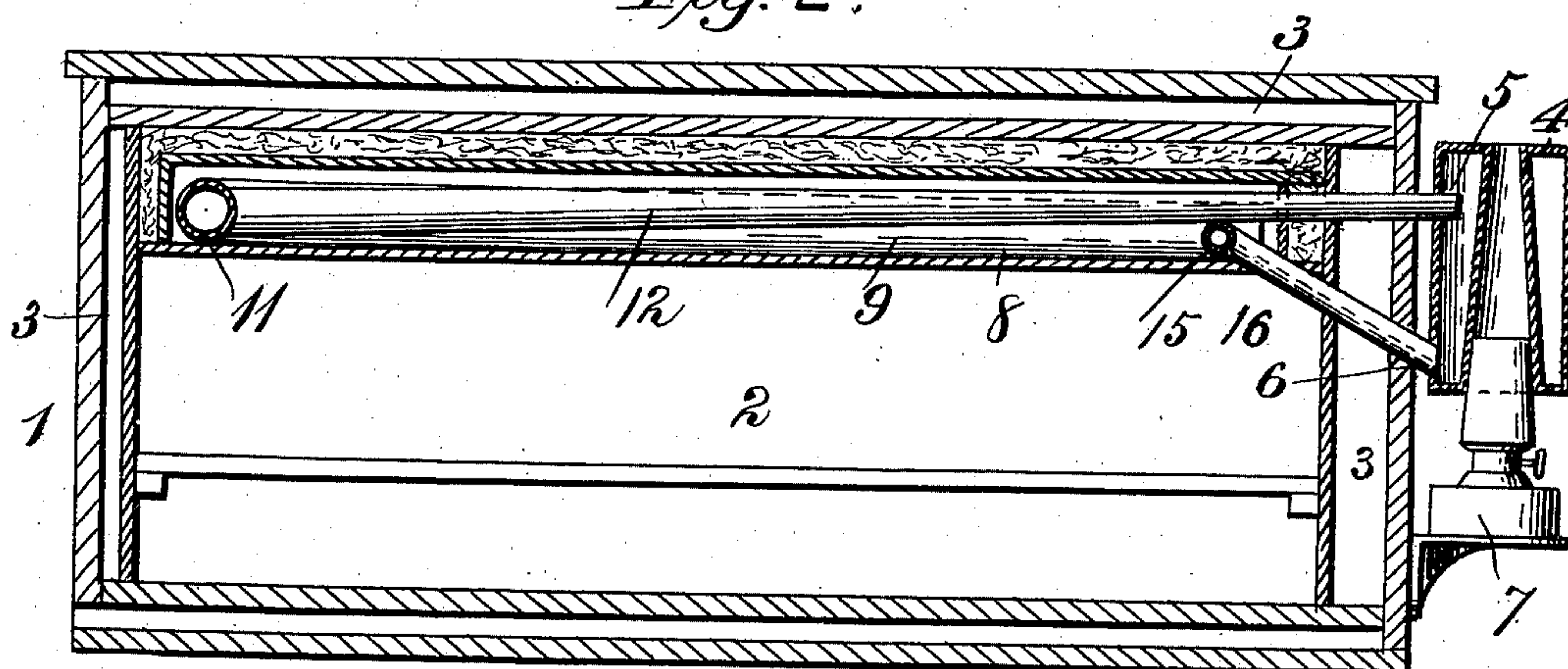
APPLICATION FILED AUG. 6, 1903.

NO MODEL.

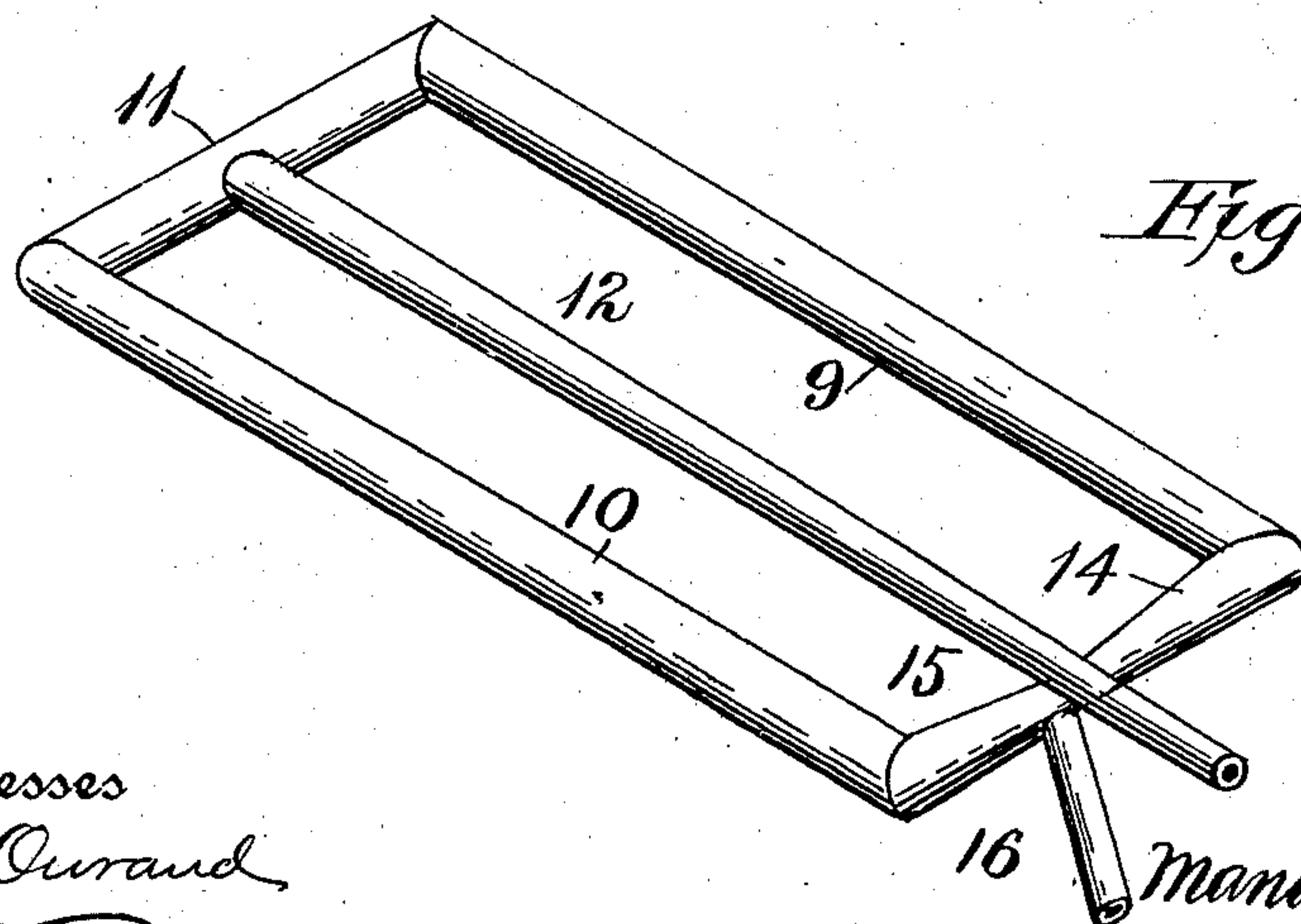
*Fig. 1*



*Fig. 2.*



*Fig. 3*



Witnesses  
F. L. Curand

*Curand*

Inventor

Manander M. Johnson

by *H. Blawie*  
Attorney



# UNITED STATES PATENT OFFICE.

MANANDER MOTT JOHNSON, OF CLAY CENTER, NEBRASKA.

## HOT-WATER HEATING SYSTEM FOR INCUBATORS.

SPECIFICATION forming part of Letters Patent No. 742,033, dated October 20, 1903.

Application filed August 6, 1903. Serial No. 168,521. (No model.)

*To all whom it may concern:*

Be it known that I, MANANDER MOTT JOHNSON, a citizen of the United States, residing at Clay Center, in the county of Clay and State of Nebraska, have invented certain new and useful Improvements in Hot-Water 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 certain new and useful improvements in hot-water-pipe heating systems for incubators, brooders, &c.

The object of the invention is to provide a system of this character which will be simple and comparatively inexpensive to manufacture and which will cause an equal distribution or radiation of heat throughout the entire egg-chamber or other compartment to be heated.

With this 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 horizontal sectional view through the upper portion of an incubator, showing the application of my invention thereto. Fig. 2 is a vertical longitudinal sectional view taken on the line 2 2 of Fig. 1. Fig. 3 is a detail perspective view of the system of hot-water pipes removed from the incubator.

Referring to the drawings more particularly, the numeral 1 denotes the body of an incubator, which may be of any well-known or preferred construction and which, as here shown, has an egg-chamber 2 and a surrounding dead-air space 3. A hot-water heater or boiler 4, which may be of any desired construction, is preferably supported from one end of said body and is provided with the usual hot-water-discharge opening 5 at its upper end and a return-opening 6 adjacent to its bottom. A lamp or other heating device 7 is supported below said boiler 4 to heat the contents of the same.

Located in the upper portion of the egg-chamber 2 is my improved system of hot-wa-

ter pipes 8, which comprises two pipes 9 and 10, which are disposed longitudinally at each side of the egg-chamber and have their ends farthest from the boiler united by a transversely-disposed pipe 11. A tapering discharge-pipe 12 connects the center of said pipe 11 with the discharge-opening 5 in the upper portion of the boiler. Said tapering pipe 12 has its larger end communicating with the pipe 11, and a centrally-disposed divider 13 projects from the pipe 11 into the pipe 12 to cause the water to flow equally into both of the branches of pipe 11. The ends of pipes 9 and 10 adjacent to the end of the incubator at which the boiler is located are in communication with the large ends of downwardly-inclined and inwardly-projecting tapering pipes 14 and 15, which have their small inner ends connected to one end of a short return-pipe 16, the opposite end of which communicates with the return-opening 6 in the lower end of the boiler 4. The pipes 14 and 15 lie directly below the pipe 12, being inclined downwardly, as stated, to assist the return of the water to the boiler.

The operation and advantages of my invention will be readily understood upon reference to the drawings. As shown by the arrows in Fig. 1, the hot water from the top of the boiler 4 enters the small end of the tapering pipe 12 and is discharged from the large end of the same into the two branches of the cross-pipe 11. It then returns from pipe 11, through the pipes 9 and 10 and the tapering pipes 14 and 15, to the short pipe 16, which returns it to the lower portion of the boiler to be reheated. It will be seen that as the hot water is discharged from the boiler it passes directly to the opposite end of the incubator through a tapering pipe in which the heat-radiating surface increases as the water cools, thus evening the radiation of heat throughout the length of the same. The small ends of the pipes 14 and 15 being at the junction of said pipes with the return-pipe 16 provide less heat-radiating surface at this point, which is directly above the hottest part of the discharge-pipe 12, so that the egg-chamber will not be overheated at this end. The tapering and inclining of the pipes 12, 14, and 16 also lessens the friction and increases the



circulation of the water, as will be readily understood.

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.

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

1. The combination with a boiler, having discharge and return openings, of a tapering discharge-pipe having its small end communicating with the discharge-opening of said boiler, a transversely-disposed pipe connected intermediate its ends to the large end of said discharge-pipe, longitudinally-disposed pipes communicating with the said transversely-disposed pipe, a return-pipe communicating with the return-opening in said boiler, and tapering pipes connecting said longitudinally-

disposed pipes with said return-pipe, substantially as described.

2. The combination with a boiler, having discharge and return openings, of a tapering discharge-pipe having its small end in communication with the discharge-opening in said boiler, a transversely-disposed pipe connected intermediate its ends to the large end of said discharge-pipe, a divider in said transversely-disposed pipe at the junction of said discharge-pipe therewith, longitudinally-disposed pipes, connected to the ends of said transversely-disposed pipe, a return-pipe communicating with the return-opening in said boiler, and downwardly-inclined tapering pipes having their large ends connected to said longitudinally-disposed pipes and their small ends connected to said return-pipe, substantially as described.

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

MANANDER MOTT JOHNSON.

Witnesses:

R. C. BONNEY,  
NORA O'DONNELL.