

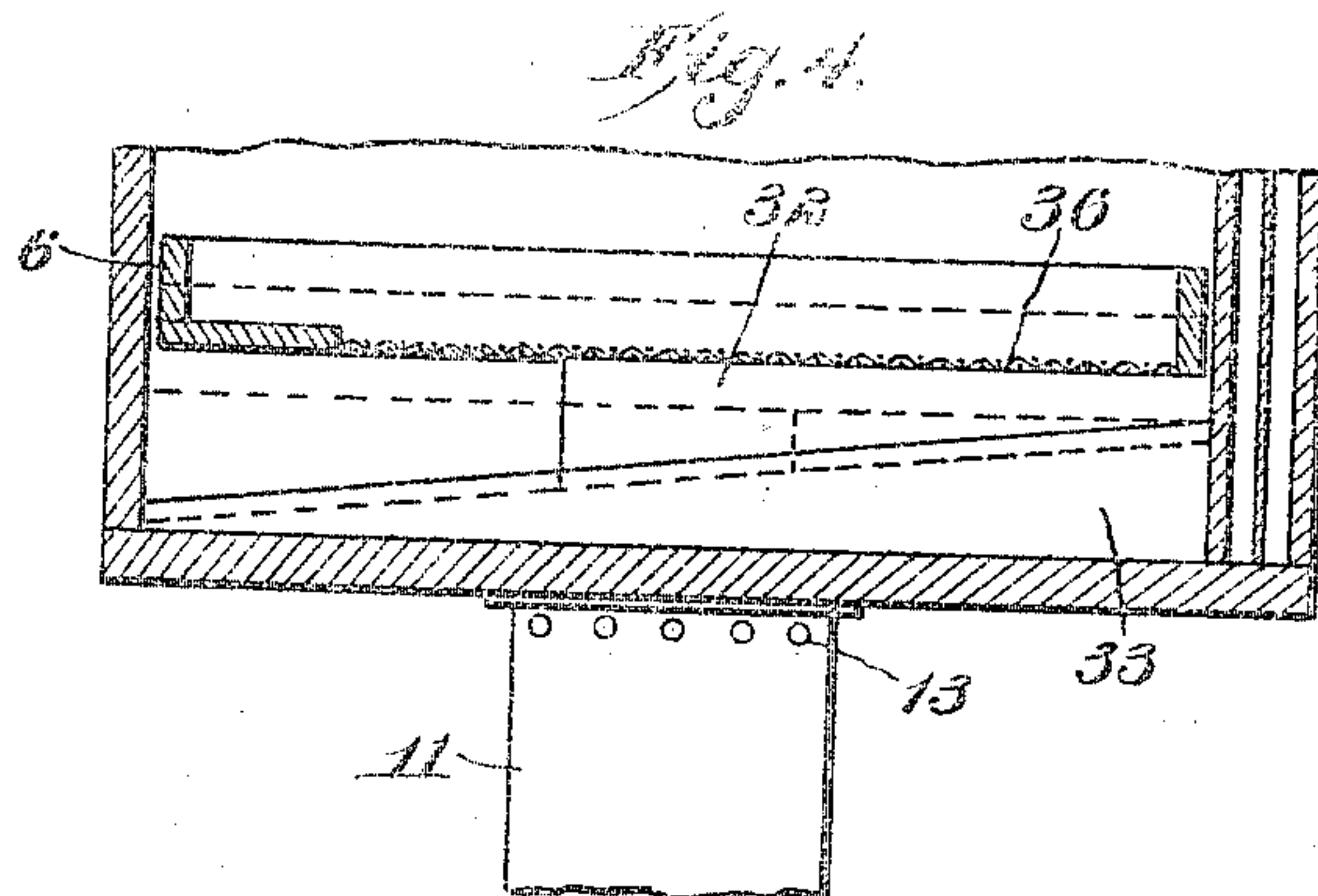
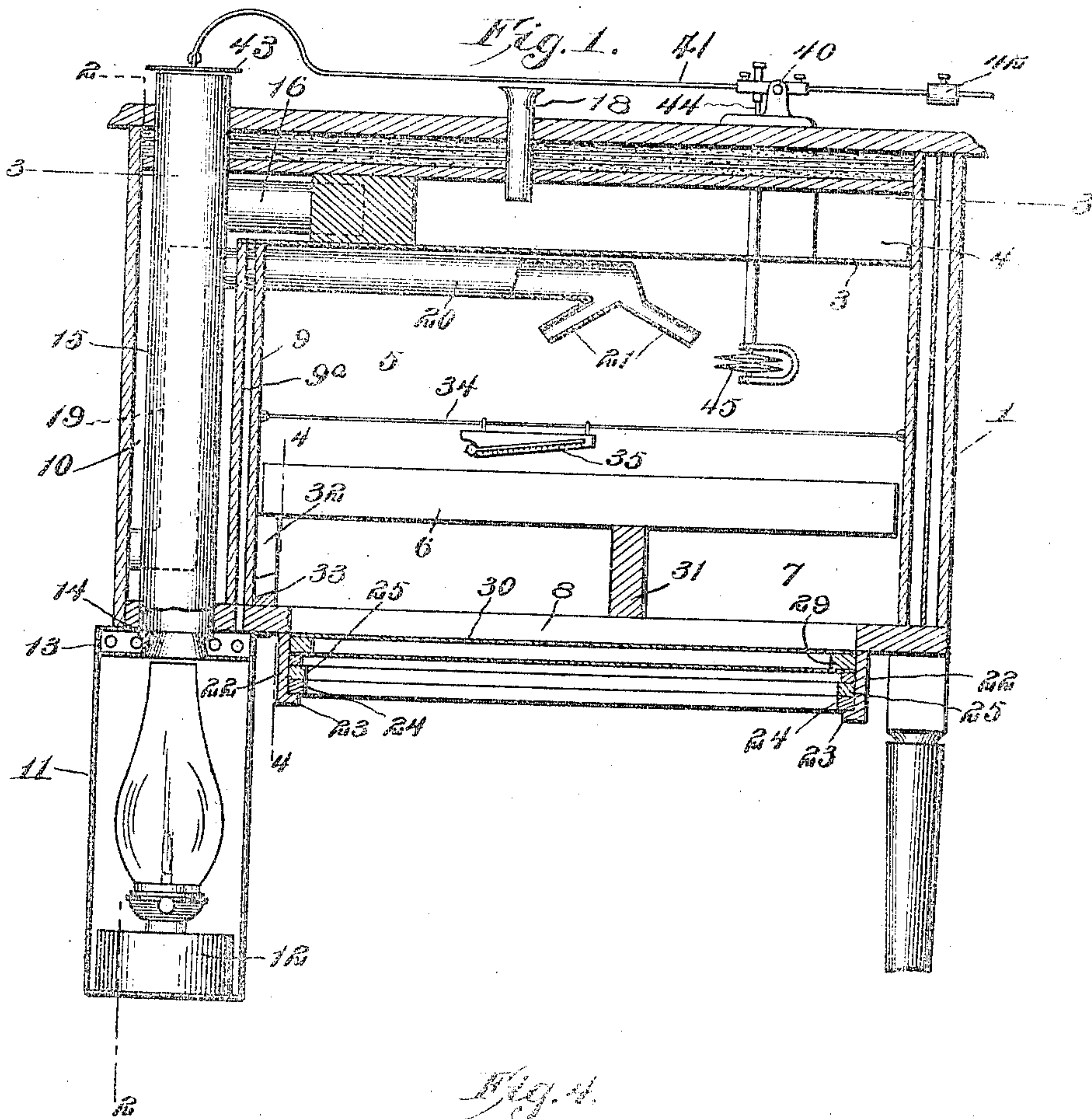
No. 898,229.

G. KUTZ.  
INCUBATOR.

PATENTED SEPT. 8, 1908.

APPLICATION FILED NOV. 14, 1907.

2 SHEETS—SHEET 1.



Witnesses

Louis R. Hennrichs  
P. J. Elmore

George Kutz <sup>Inventor</sup>

Victor J. Evans

Attorney



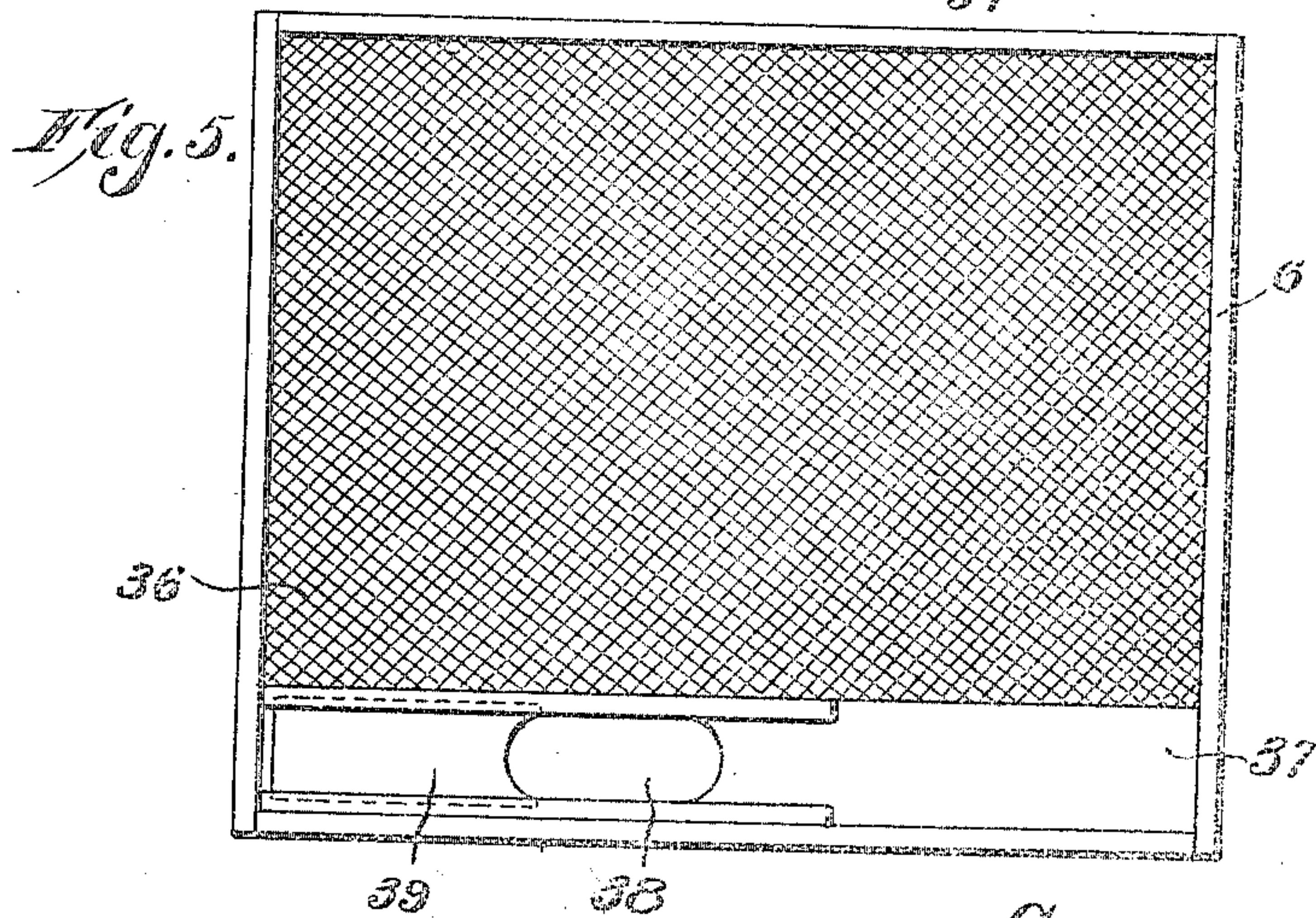
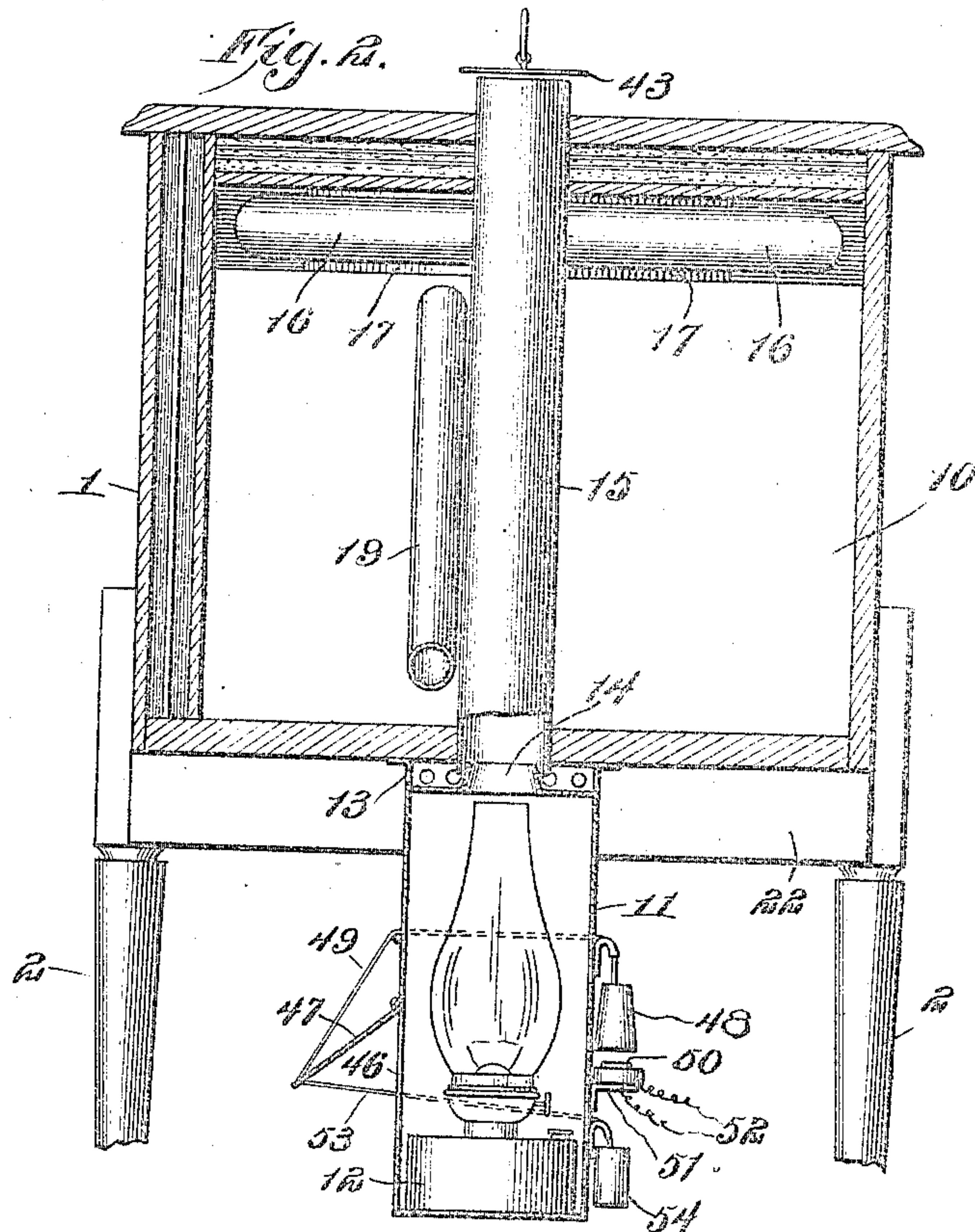
No. 898,229

G. KUTZ.  
INCUBATOR.

PATENTED SEPT. 8, 1908.

APPLICATION FILED NOV. 14, 1907.

3 SHEETS—SHEET 2.



Witnesses

*Louis R. Heinticks*  
*F. J. Elmore*

By

*George Kutz* Inventor  
*Victor J. Evans* Attorney

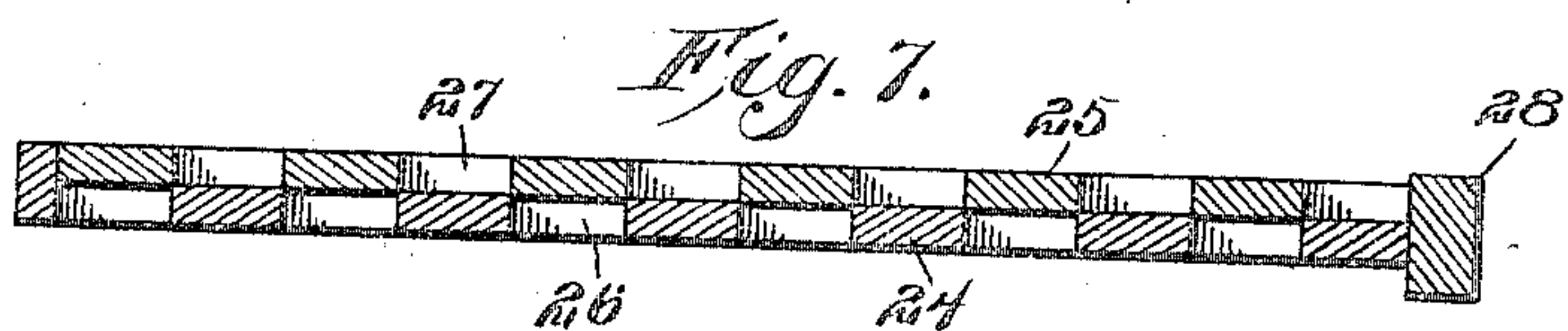
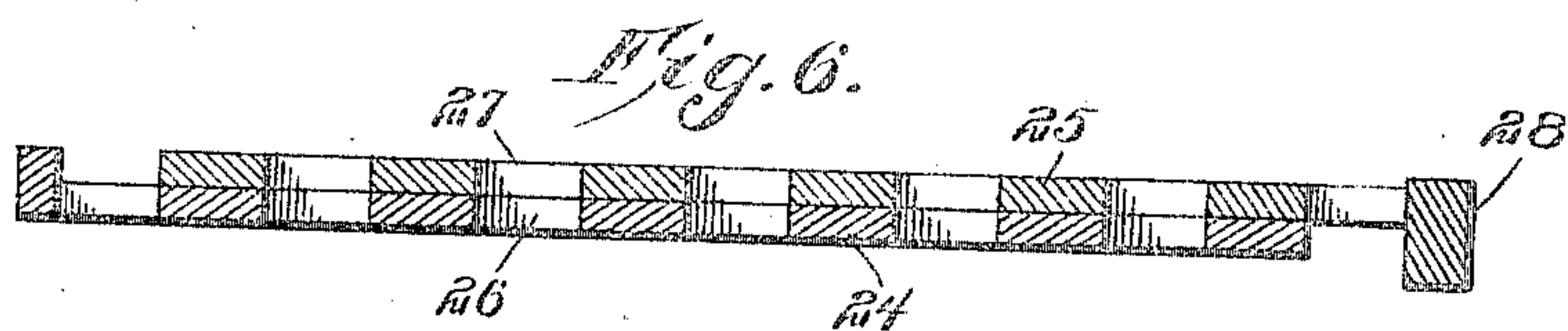
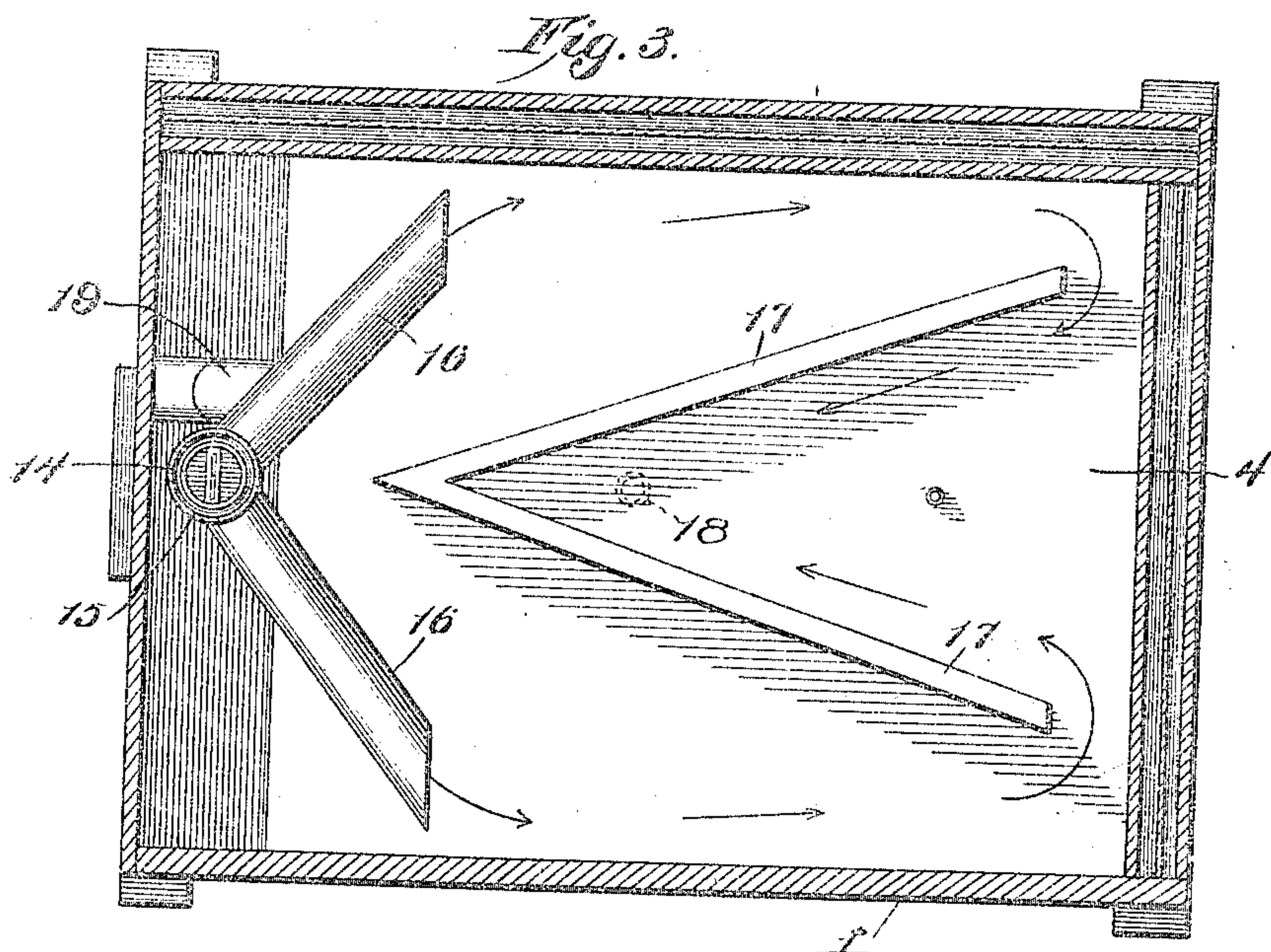
No. 898,229.

G. KUTZ.  
INCUBATOR.

PATENTED SEPT. 8, 1908.

APPLICATION FILED NOV. 14, 1907.

3 SHEETS—SHEET 3.



Witnesses

Louis R. Heinrich  
J. J. Elmore

George Kutz

Inventor

By

Victor J. Evans

Attorney



# UNITED STATES PATENT OFFICE.

GEORGE KUTZ, OF EASTON, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO ELLA O. HARTZELL, OF EASTON, PENNSYLVANIA.

## INCUBATOR.

No. 898,229.

Specification of Letters Patent.

Patented Sept. 8, 1908.

Application filed November 14, 1907. Serial No. 402,099.

*To all whom it may concern:*

Be it known that I, GEORGE KUTZ, a citizen of the United States, residing at Easton, in the county of Northampton and State of Pennsylvania, have invented new and useful Improvements in Incubators, of which the following is a specification.

This invention relates to incubators and embodies in its organization a box or casing provided with an incubating chamber and an underlying brooding chamber, together with a heating apparatus through the medium of which the air within the casing is properly heated for hatching the eggs.

The invention has for its objects to provide a comparatively simple, inexpensive device of this character wherein the heated air will be properly circulated over the incubating chamber, one in which the amount of heat admitted to the casing will be automatically controlled and regulated, and one wherein fresh air will be continuously admitted to and properly circulated in the incubating chamber for ventilating the same, the ventilating air being properly warmed during its admission to the chamber for obviating improper chilling of the eggs.

A further object of the invention is to provide a device of this character wherein the egg receiving tray may be readily adjusted for turning the eggs and to accord with the degree of heat within the chamber, one in which the chickens may, when hatched, pass readily from the incubator to the brooding chamber, one wherein fresh air will be properly admitted to and for ventilating the last named chamber, and one in which the quantity of air admitted to the brooder may be readily regulated.

A further object of the invention is to provide a device of this character wherein the lamp included in the heating apparatus will be properly ventilated, one wherein the ventilating door leading to the lamp casing will be normally maintained in open condition, and one which, in the event of the lamp radiating an undue amount of heat, the door will be automatically closed and an alarm sounded.

With these and other objects in view, the invention comprises the novel features of construction and combination of parts more fully hereinafter described.

In the accompanying drawings: Figure 1 is a vertical section taken centrally and longitudinally through an incubator em-

bodying the invention. Fig. 2 is a vertical transverse section taken on the line 2—2 of Fig. 1. Fig. 3 is a horizontal section taken on the line 3—3 of Fig. 1. Fig. 4 is a detail, sectional view taken on the line 4—4 of Fig. 1, showing the manner of supporting the egg tray. Fig. 5 is a plan view of the egg tray. Fig. 6 is a detail sectional view taken longitudinally through the cooperating ventilating slides, showing the same open. Fig. 7 is a similar view, showing the slides closed.

Referring to the drawings, 1 designates a box or casing sustained by suitable supporting legs 2 and having upon its interior a horizontal partition 3 forming a heating chamber 4 and an incubating chamber 5, in which latter there is sustained an egg receiving tray 6 spaced from the bottom of the casing to form a brooding chamber 7, it being noted in this connection that the bottom of the casing is provided with an enlarged opening 8, for a purpose which will hereinafter appear.

Formed at the forward end of the casing by means of a vertical partition 9 is a flue 10 which opens at its upper end into the heating compartment 4. Said partition is hollow to provide a dead air space 9<sup>a</sup> and hence increase the efficiency of said partition as a non-conductor of heat. Attached to the bottom of the casing immediately beneath the flue is a metal lamp box or case 11 containing a lamp 12 and having at its upper end a series of air inlet openings 13 and an exit port or mouth 14 disposed immediately above the upper end of the lamp chimney and in turn communicating with the lower end of a metal heating tube or duct 15 extended vertically through the flue 10 and having its upper open end projected slightly above the top wall of the casing 1, while connected for communication with the duct 15 at a point adjacent its upper end is a pair of divergent, horizontal branch tubes or ducts 16 which discharge into the forward end of the chamber 4 respectively on opposite sides of a V-shaped deflector 17, the rear ends of which terminate short of the adjacent wall of the casing, said deflector serving to direct the heated air rearwardly in the chamber and thence forwardly to an escape tube or duct 18 which opens through the top wall of the casing.

Opening outward through the front wall of the flue 10 at a point adjacent its lower end is a ventilating pipe or duct 19 provided at its upper end with a horizontal portion which projects into the incubating chamber



5 and terminates in a pair of reversely inclined discharge portions 21 which direct the incoming air toward opposite ends of the chamber 5, it being observed that the pipe 19 extends in close proximity to the heating tube 15, whereby the fresh air taken in through the ventilating tube will be properly warmed before entering the chamber 5.

Fixed beneath the open bottom of the casing 1 is a pair of guide rails 22 having inturned horizontal supporting flanges 23 adapted to sustain a pair of superposed ventilating slides 24, 25, provided respectively with longitudinal openings or slots 26 and of which the slide 25 is movable relative to the slide 24 for bringing the openings 26, 27, into and out of register, there being formed on the slide 25 an end rail 28 constituting an abutment for limiting the relative movement of the slides when the openings therein are in non-register, while seated above and spaced from the uppermost slide 25 is a frame 29 covered with a pair of spaced sheets 30 of burlap or other pervious fabric and serving as a pervious closure for the opening.

The tray 6 is supported between its ends on a vertical bearing rail 31 and at its forward end by means of a wedge-shaped supporting block 32 arranged for movement on an inclined rail 33, it being noted that the rail 31 is positioned in rear of the center of the tray whereby the forward end thereof is overbalanced and may, when the block 32 is moved downward on the rail 33, swing downward at its forward end for a purpose which will hereinafter appear, there being disposed above the tray a guide wire 34 on which is suspended and for movement longitudinally of the wire a thermometer 35 designed for determining the temperature of the air circulating over the eggs. The tray 6 which has a bottom 36 composed of wire gauze or other suitable reticulated material is provided at its forward end with a section or ledge 37 onto which the chickens pass from the reticulated fabric and which in turn has an escape opening 38 normally closed by a slide 39 and which when open allows the chickens to drop from the tray into the brooding chamber 7.

Pivoted adjacent its rear end in a bearing 40 is a rod 41 extended horizontally above the top of the casing and having in rear of its pivot an adjustable weight 42 adapted to counterbalance the forward end of the rod which carries a valve 43 disposed above and for closing the upper end of the heating tube 15, while connected with the rod 41 at a point immediately in advance of its pivot is a vertically depending rod 44 extended downward through the top of the casing into the chamber 5 and provided at its lower end and within the latter with a rheostat 45 of usual form adapted through expansion to raise the forward end of rod 41, thus to move the disk

43 away from the upper end of the pipe 15 and decrease the amount of heat entering the chamber 4.

In practice, the tray 6 having the eggs arranged therein is positioned in the incubating chamber and the lamp 12 is lighted, whereupon the heat will pass upward through the duct 15 and thence through the branch ducts 16 into the heating chamber 4 through which the heated air will be circulated by means of the deflector 17, as heretofore explained, thus to heat the incubating chamber, to which fresh air will be admitted for purposes of ventilation through the ventilating pipe 19, the air passing through said pipe being warmed prior to entrance into the chamber 5 owing to the proximity of said pipe to the heating pipe 15, as heretofore explained. Should the heat within the chamber 5 reach beyond a predetermined degree the rheostat 45 will be expanded under the action of the heat, thus raising the rod 41 and lifting the valve 43 from the upper end of the pipe 15, whereby the quantity of the heated air will escape freely from the pipe 15, thus decreasing the quantity of heat entering the chamber 4 and lowering the temperature of the incubating chamber 5, it being evident that as the temperature falls the rheostat will, under contraction, allow the rod 41 to move downward, thus closing or practically closing the upper end of the pipe 15, whereupon the heat will again enter the chamber 4. If the temperature at the forward end of the tray which owing to its location near the flue 10 is subjected to the greatest amount of heat becomes too great the block 32 may be moved downward on the inclined track 33, thus allowing the adjacent end of the tray to descend for equalizing the heat. It may be mentioned in this connection that the forward end of the tray may also be lowered in the operation of turning the eggs and after the eggs have hatched for causing the chickens to pass downward onto the ledge 37 through the opening 38 into the brooding chamber. The chamber 7 is ventilated by air percolating through the burlap sheets 30, the uppermost of which forms a soft foundation on which the chickens rest, it being understood that the quantity of air passing into the chamber through the burlap may be regulated or wholly cut off by proper relative adjustment of the slides 24, 25.

The lamp casing 11 is provided with an air inlet opening 46 adapted to be closed by a valve 47 normally maintained in open position through the medium of a weight 48 connected with the valve by a flexible element 49 composed of a highly fusible metal and arranged for travel between its ends over suitable guide ways, there being disposed beneath the weight 48 a push button 50 arranged over a contact member 51, which together with the button is electrically connected



connected to a suitable alarm, not shown, by means of wires 52, while arranged for closing the valve 47 and connected therewith through the medium of a flexible element 53 is a weight 54.

In the operation of the device if the lamp radiates an undue degree of heat the element 49 will fuse, thus allowing the valve 47 to close under the action of weight 54 for cutting off the supply of air to the lamp casing and at the same time permitting the weight 48 to descend upon the push button 50, thereby pressing the same into contact with the member 51 and completing the electric circuit for sounding the alarm, thus to advertise the fact that the lamp requires attention.

Having thus described my invention, what I claim is:

1. In a device of the class described, a casing containing an incubating chamber and an overlying heating chamber, a deflector arranged in the heating chamber for directing heated air outwardly and rearwardly therein, a heating device, and a heating duct leading therefrom and provided with branch ducts extended into the heating chamber and arranged to deliver the heated air at opposite sides of the deflector.

2. In a device of the class described, a casing containing an incubating chamber and a heating chamber, a substantially V-shaped deflector arranged in the latter and presenting rearwardly divergent deflecting portions,

a heating apparatus including a heat conveying duct, and branch ducts leading from the latter into the heating chamber and arranged to discharge at opposite sides of the deflector.

3. In a device of the class described, a casing containing an incubating chamber and a heating chamber and having a flue opening into the latter, a deflector arranged in the heating chamber and formed to distribute the heat in the chamber, a heat conveying duct disposed in the flue and having branch ducts extended into the heating chamber for discharge at opposite sides of the deflector and a heater sustained at one end of the duct for communication therewith.

4. In a device of the class described, a casing containing an incubating chamber, means for heating the same, an inclined rail fixed in the casing, an adjustable bearing block sustained for movement longitudinally of the rail, a bearing rail arranged in the casing, and a tray sustained between its ends on the bearing rail and supported at one end on the bearing block, the latter being adapted through movement upon the inclined rail to raise or lower the adjacent end of the tray.

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

GEORGE KUTZ.

Witnesses:

E. L. BROWN,  
J. McC. SNYDER.