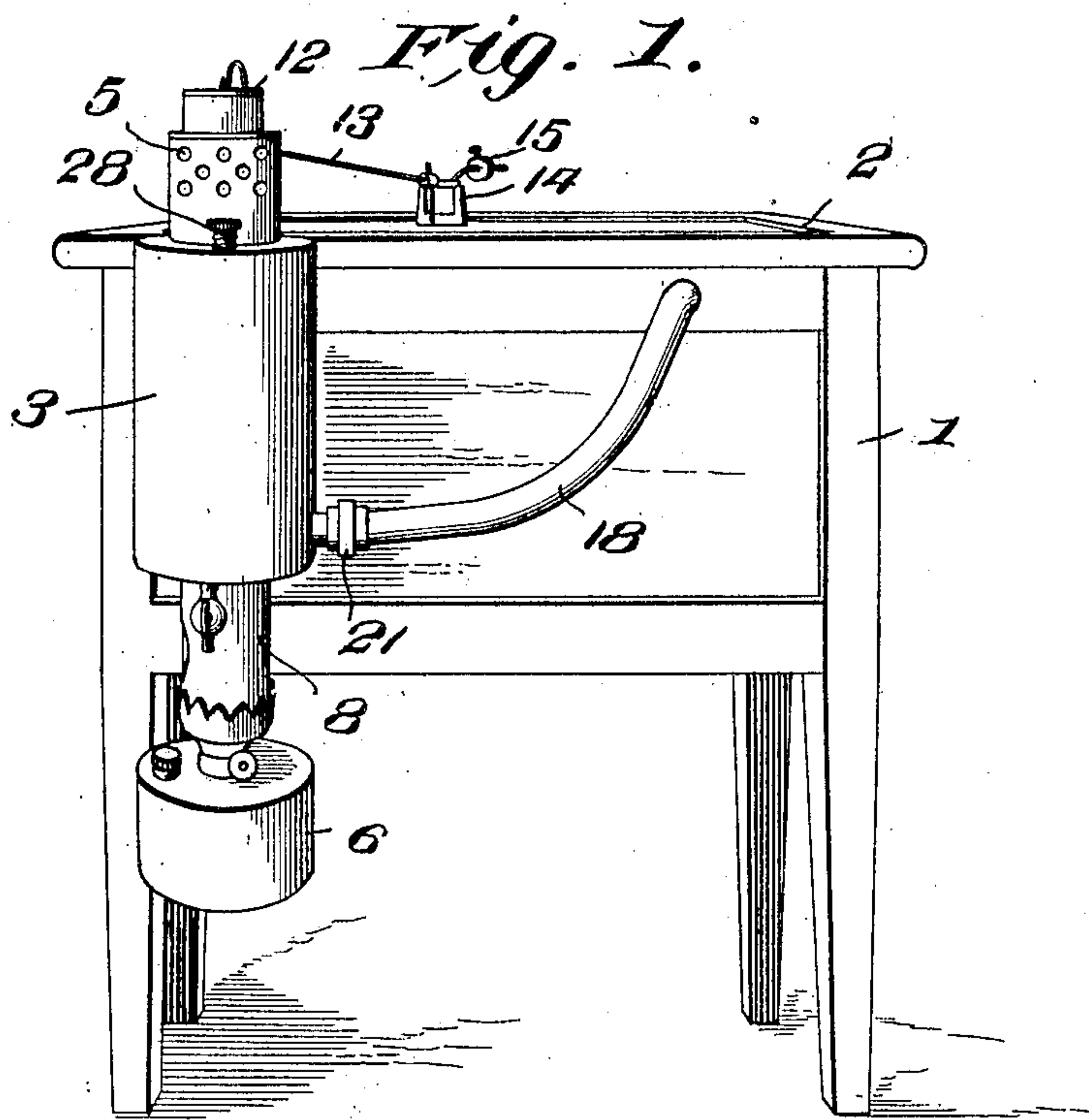


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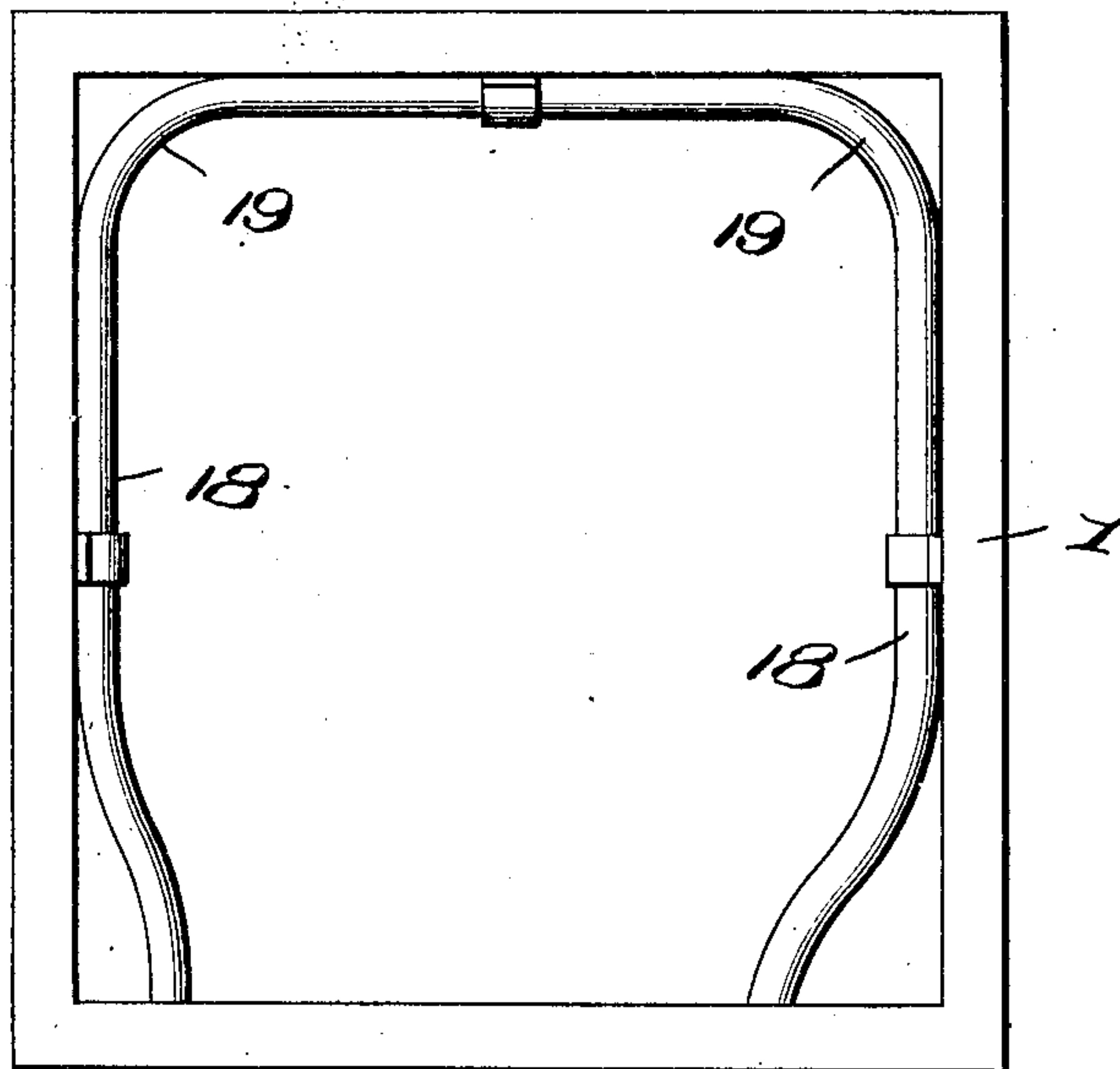
PATENTED JAN. 7, 1908.

R. F. BROOKS.  
INCUBATOR HEATER.  
APPLICATION FILED NOV. 6, 1906.

2 SHEETS—SHEET 1.



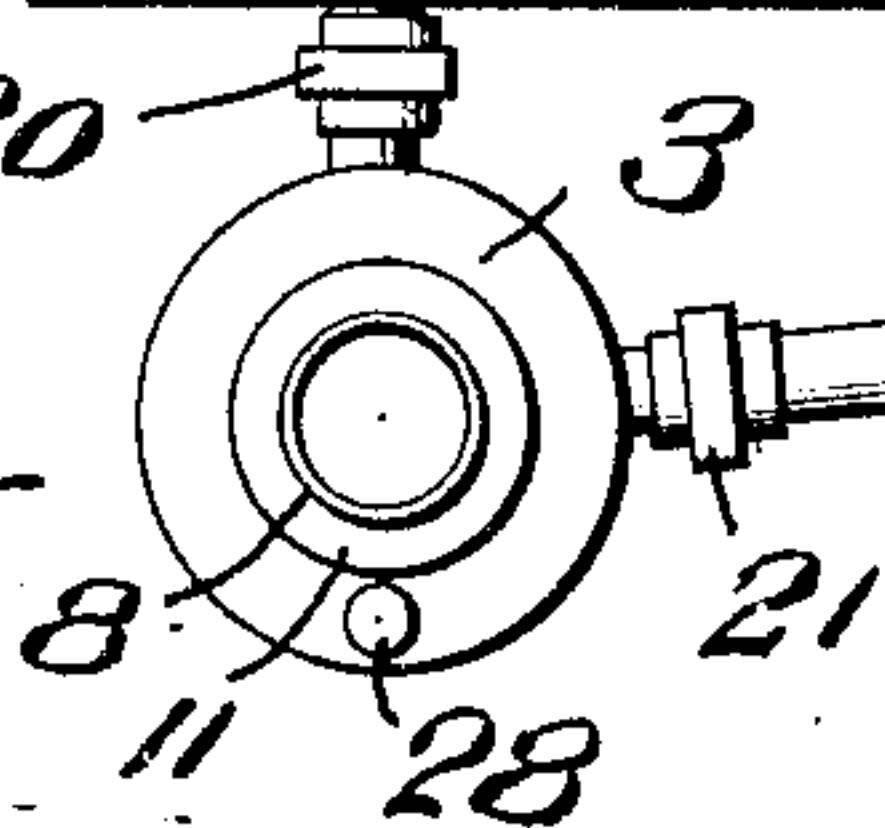
*Fig. 2.*



Inventor

*R. F. Brooks.*

Witnesses  
*Thos. W. Day*  
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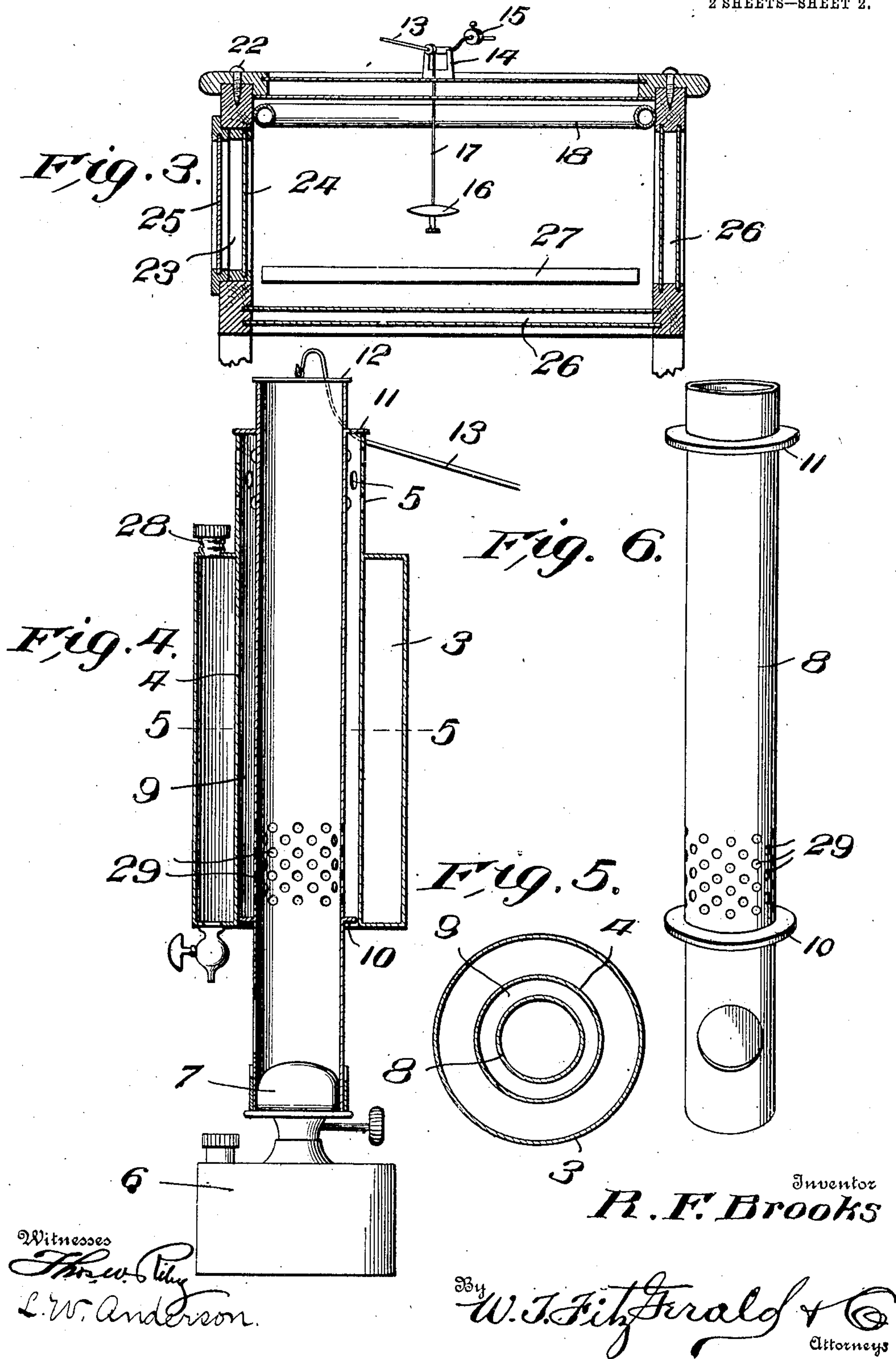
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Attorneys

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2 SHEETS—SHEET 2.





# UNITED STATES PATENT OFFICE.

ROSSELL F. BROOKS, OF LAKE CITY, IOWA.

## INCUBATOR-HEATER.

No. 876,142.

Specification of Letters Patent.

Patented Jan. 7, 1908.

Application filed November 6, 1906. Serial No. 342,295.

*To all whom it may concern:*

Be it known that I, ROSWELL F. BROOKS, a citizen of the United States, residing at Lake City, in the county of Calhoun and State of Iowa, have invented certain new and useful Improvements in Incubator-Heaters; and I do hereby 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.

My invention relates to new and useful improvements in incubators and more particularly to that class adapted to be used in hatching eggs and my object is to provide a suitable heating apparatus whereby the temperature within the incubator will be maintained at a substantially uniform degree.

Other objects and advantages will be hereinafter referred to and more particularly pointed out in the claims.

In the accompanying drawings which are made a part of this application, Figure 1 is a perspective view of an incubator showing my improved heating arrangement attached thereto. Fig. 2 is a plan view thereof with the cover of the incubator removed. Fig. 3 is a transverse vertical sectional view through the incubator. Fig. 4 is a vertical sectional view through the heating apparatus. Fig. 5 is a sectional view on line 5—5 Fig. 4, and, Fig. 6 is a perspective view of a portion of the heating apparatus.

Referring to the drawings in which similar reference numerals designate corresponding parts throughout the several views, 1 indicates the body of my improved incubator over the upper surface of which is disposed a removable cover 2.

Secured at one end of the body 1 is my improved heating apparatus which consists of a tubular boiler 3, the inner wall 4 of which is extended above the upper end of the boiler and is provided with a plurality of openings 5. Disposed below the boiler 3 is any suitable form of heater such as a lamp 6 around the burner 7 of which is disposed a tubular chimney 8, said chimney extending entirely through the central opening 9 in the boiler and protruding beyond the upper end of the inner wall 4.

The chimney 8 is of less diameter than the opening 9 thereby providing a chamber between the chimney and the wall 4 so that the products of combustion from the heater can circulate within the opening 9 and directly

contact the wall 4 of the boiler. The chimney 8 is provided with collars 10 and 11, the collar 10 being disposed around the chimney at a point adjacent the lower end of the boiler, said collar being of sufficient diameter to snugly fit the opening 9 and close the lower end of the same while the collar 11 is disposed around the chimney at a point adjacent the upper end of the chimney and overlaps and closes the projecting end of the inner wall 4, thereby forming a complete chamber around that portion of the chimney extending through the boiler.

Disposed over the upper end of the chimney 8 is a damper 12 which is suspended thereover by means of a rod 13 which is pivotally secured to a bracket 14 carried by the upper face of the cover 2, the rod 13 being extended beyond the pivot point of the bracket 14 and provided with an adjustable weight 15. Disposed within the incubator body is a thermostat 16, which is operatively connected to the rod 13 by means of a rod 17, the connection between the rod and rod 17 being at a point between the bracket 14 and the damper 12 so that as the thermostat expands or contracts the damper 12 will be raised or lowered. Connected to the boiler 3 and extending into the incubator body 1 at a point adjacent the upper edge thereof is a pipe 18 which is preferably constructed of one continuous piece of material and directed around the edges of the body, the pipe being curved at the corners of the body as shown at 19 thereby insuring that the heated water will freely circulate through the body and by curving the pipe as shown any abrupt corners in the pipe which would tend to check the flow of the water passing through is obviated.

One end of the pipe 18 is removably secured to the upper end of the boiler 3 by means of a coupling 20 while the opposite end of the pipe 18 is secured to the lower end of the boiler by means of a similar coupling 21 thereby disposing the joints of the pipe entirely outside of the incubator. This is considered by me to be a very important item from the fact that it has been found that the usual form of pipes having jointed angular corners will in time leak at the joints and the joints being located within the incubator, the leakage will destroy the eggs coming in contact with the water. It will also be seen that by providing the couplings as shown that the boiler can be readily de-



tached from the pipe for purposes of cleaning or repair. The cover 2 is removably secured to the body in any preferred manner as by means of screws 22 so that said cover 5 may be removed for cleaning the incubator or for any purposes desired.

In order to gain access to the interior of the incubator while eggs are contained therein, I have provided an opening 23 in one side 10 thereof which is provided with suitable closures 24 and 25, which are removably secured within the opening. The closure 24 is preferably of glass while the closure 25 is composed of any preferred opaque substance 15 such as veneer so that by removing the closure 25 a clear view of the interior of the incubator may be had through the glass closure 24. The closures can also be entirely removed from the opening so that the tray 20 of eggs can be readily removed from the incubator after turning the same.

As best shown in Fig. 3 of the drawing, the walls of the body of the cover are constructed with air spaces 26 so that when the 25 interior of the incubator is heated the air within the spaces 26 will also become heated and thereby assist in retaining the temperature within the incubator at a uniform degree.

In operation the crate 27 is filled with 30 eggs and disposed within the incubator, after which the boiler 3 is filled with water through a suitable opening 28 in the top of the boiler and the heater then ignited, the products of combustion therefrom arising in 35 the chimney 8 and passing through a plurality of perforations 29 within the chimney 8 and at a point immediately above the collar 10, the products of combustion passing thence upwardly within the central orifice 9 40 and in direct contact with the inner wall 4 thereby rapidly heating the water within the boiler. As soon as the heat reaches the upper end of the central orifice it passes out through the openings 5 in the extended end 45 of the inner wall 4. As soon as the water becomes sufficiently heated a circulation is established through the pipe 18 thereby heating the interior of the incubator. Should the temperature within the incubator increase above a certain degree the thermostat 50 16 will expand and raise the damper 12 from the upper end of the chimney thereby allowing the heat from the burner to pass directly through the chimney instead of through the perforations 29 thereby removing the products of combustion from direct contact with the boiler and allowing the water within the boiler to slightly cool. When, however, as the temperature within 60 the incubator has again become normal the thermostat will contract and allow the damper to again descend and close the upper end

of the chimney and again direct the heat through the perforations in the chimney and into the central orifice 9. After the eggs 65 have been hatched the crate 27 may be removed from the incubator and said incubator used as a brooder. It will now be seen that I have provided a very cheap and economical device for hatching eggs and also 70 one that may be employed as a brooder. It will further be seen that by providing the pipe in one continuous section that there will be no places for the same to leak on the interior of the incubator to spoil the eggs. It 75 will further be seen that the heating apparatus will be automatically regulated to increase or decrease the temperature within the incubator.

What I claim is: 80

1. In an incubator the combination with a body; of a heating apparatus comprising a boiler having a central opening, an extension having a plurality of openings therein at the upper end of said central opening, a chimney 85 disposed through said central opening and extension and having a plurality of perforations therein, there being an annular vertical passage for the products of combustion between said chimney and the inner wall of the 90 boiler, collars surrounding said chimney and adapted to close the ends of said central opening, said perforations being above the lower collar and within said central opening, a heater at the lower end of said chimney, a 95 pipe extending through said incubator and having one of its ends secured to the upper end of the boiler and the opposite end thereof secured to the lower end of the boiler, said pipe being constructed in a single section and 100 having curved portions therein and means to regulate the passage of the products of combustion through said heating apparatus.

2. A heater for incubators comprising a tubular boiler having its inner wall extended 105 above its top and having a plurality of openings, a chimney of less diameter than the axial opening through said boiler there being an annular chamber between said chimney and inner wall, said chimney having perfora- 110 tions near the bottom of said chamber, means for closing the upper end of said chamber and embracing said chimney, secured thereto and resting on the top of said extension, and a collar disposed around said chimney at the 115 lower end of the said chamber and snugly fitting the latter and closing its lower end.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROSWELL F. BROOKS.

Witnesses:

C. H. TOWNSEND,  
E. W. TOWNSEND.