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H. A. BROOKS.

INCUBATOR OR BROODER AND HEAT CONTROLLING DEVICE THEREFOR.

APPLICATION FILED FEB. 4, 1902.

NO MODEL.

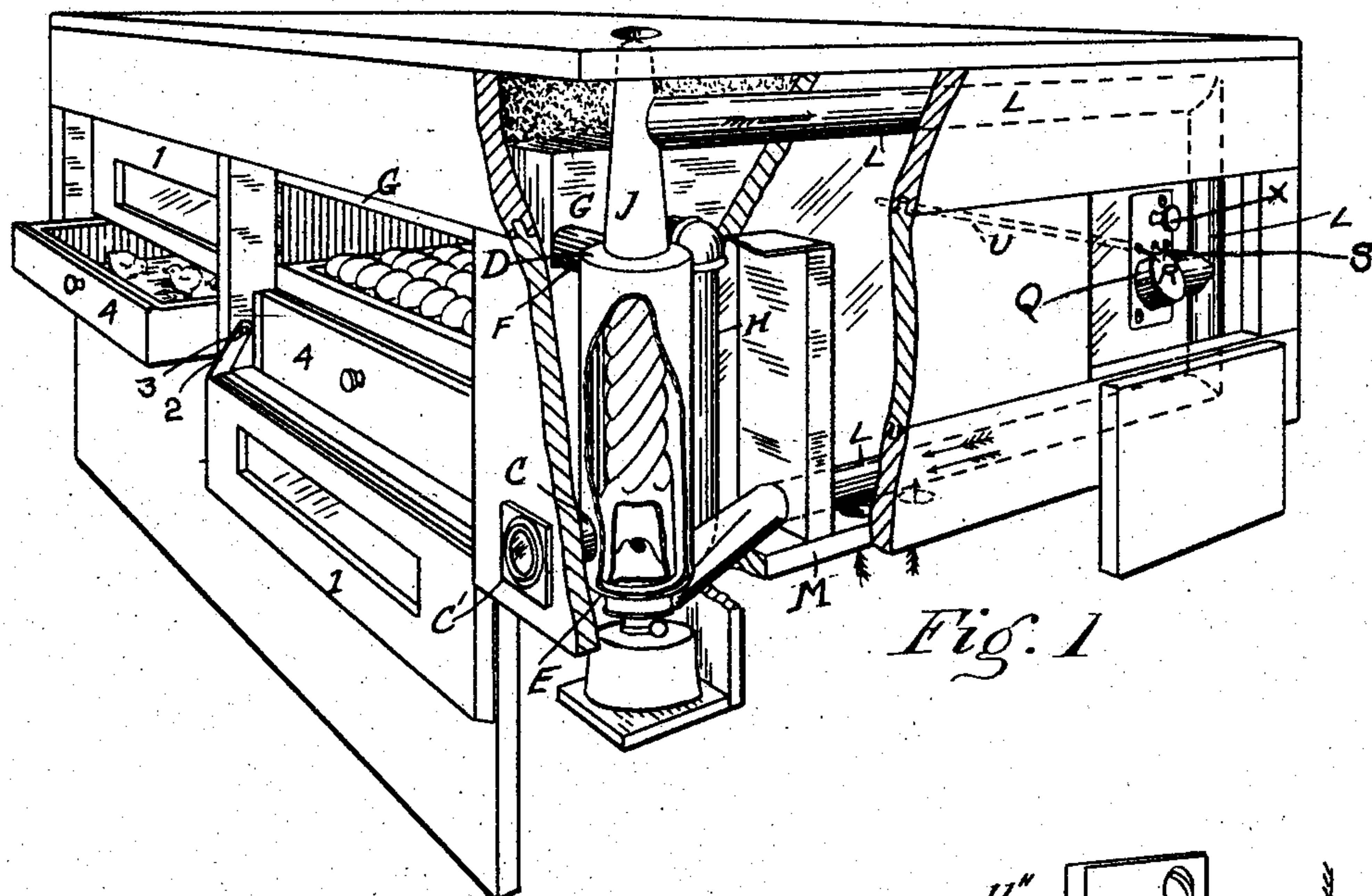


Fig. 1

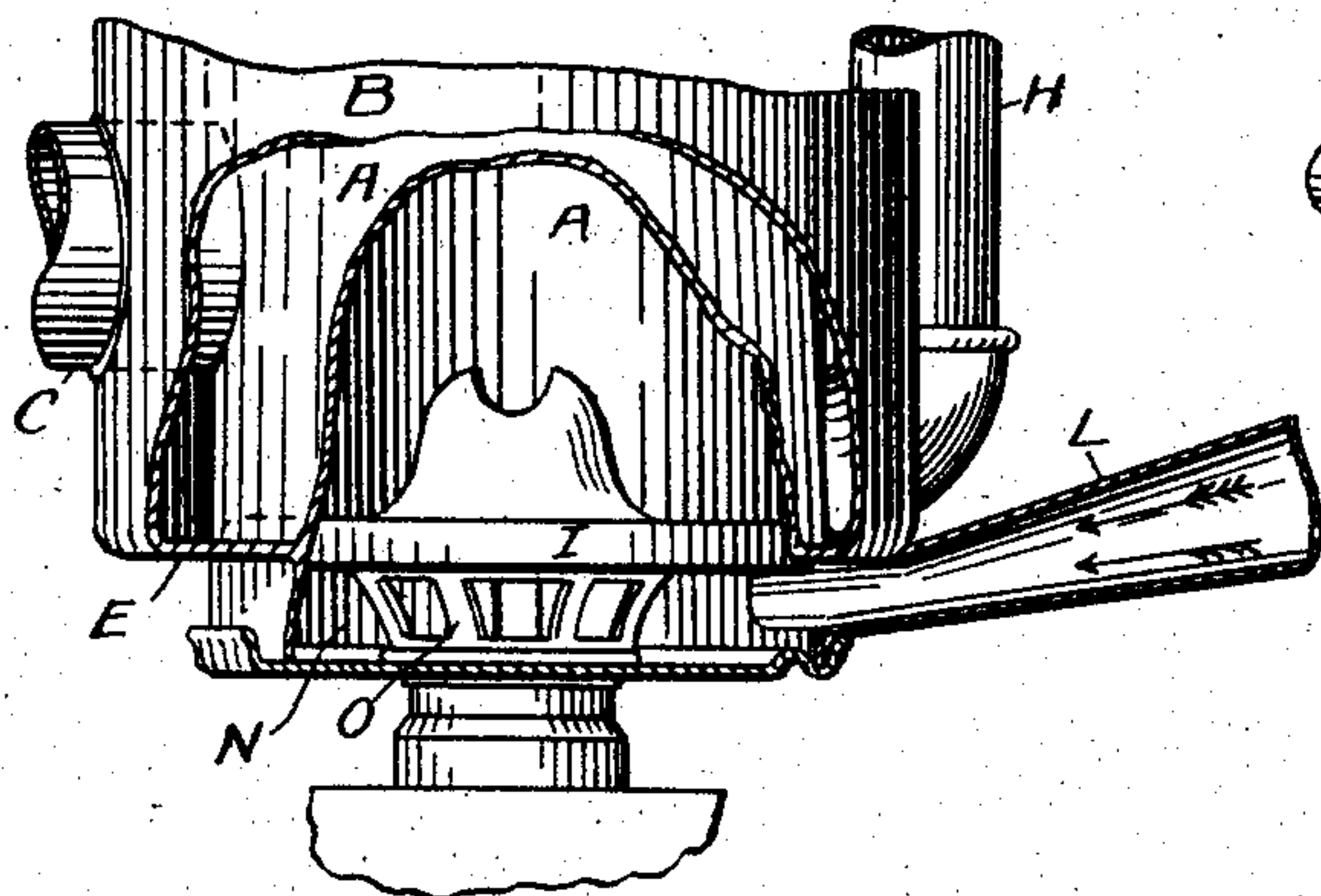


Fig. 2

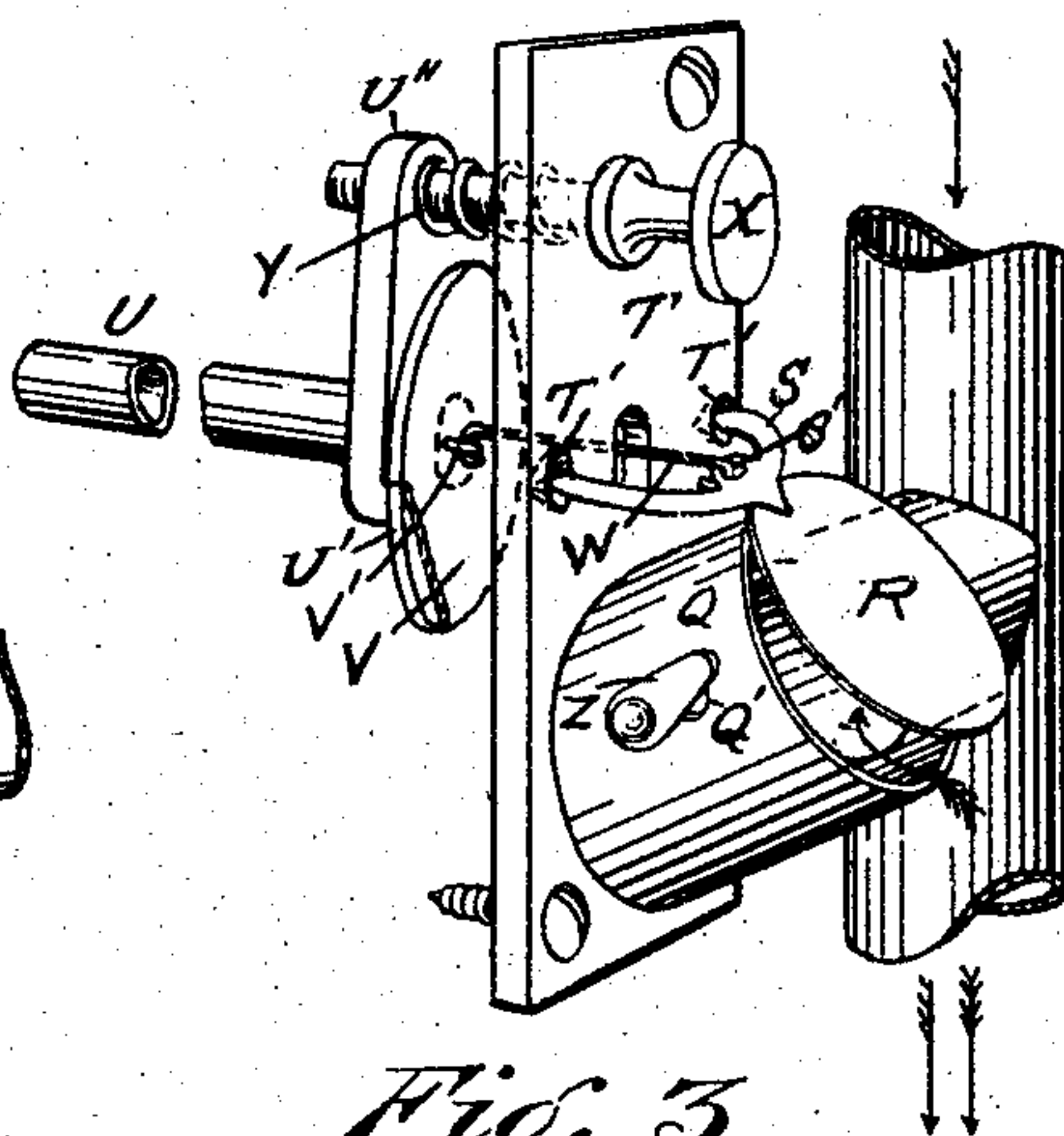


Fig. 3

Witnesses

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UNITED STATES PATENT OFFICE.

HARRY A. BROOKS, OF LOS ANGELES, CALIFORNIA.

INCUBATOR OR BROODER AND HEAT-CONTROLLING DEVICE THEREFOR.

SPECIFICATION forming part of Letters Patent No. 772,866, dated October 18, 1904.

Application filed February 4, 1902. Serial No. 92,599. (No model.)

To all whom it may concern:

Be it known that I, HARRY A. BROOKS, a resident of Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Incubators or Brooders and Heat-Controlling Devices Therefor, of which the following is a specification.

This invention relates to incubators; and some of the objects of the invention are to provide an apparatus of this character which is simple in construction and positive and effective in operation.

Another object of the invention is to provide an apparatus of this character wherein heat is supplied by and distributed from a heated liquid or other medium and to avoid friction as much as possible.

It is also an object of this invention to provide an apparatus constructed to economize the use of fuel and not subject to disarrangement and wherein the heater is under control at all times.

With these and other objects in view the invention consists, essentially, in the construction, combination, and arrangement of parts substantially as more fully described in the following specification and as illustrated in the accompanying drawings, forming part of this application, in which—

Figure 1 is a perspective view of the entire apparatus, showing same partly broken away and partly opened up. Fig. 2 is a fragmental and detail view of the heater employed, showing same partly broken away; and Fig. 3 is a perspective detail view of the thermostat.

Similar characters of reference designate corresponding parts throughout the several views.

Referring to the drawings, and particularly to Fig. 1 thereof, there is illustrated an incubator and brooder provided with doors 1, one whereof is illustrated in a closed and the other in an open position, and these doors are preferably hung or connected with the incubator by means of hinges 2, pivotally connected at 3 with the incubator and rigidly at-

tached at the opposite ends thereof to the edges of the doors, substantially as illustrated, and by means of the peculiar construction of the hinges 2 the drawers 4 may be opened or drawn out while the doors 1 are shut as well as when the same are open in the manner illustrated.

Referring now particularly to the heater shown in Figs. 1 and 2 of the drawings, reference character A indicates an inner shell, which is preferably corrugated substantially as illustrated in Fig. 1, and connected with the shell A by means of heads D and E is an outer shell B, the whole constituting a boiler having an annular water-space between the inner shell A and the outer shell B and the heads D and E, essentially as shown.

A sight-tube C may be secured in the shells A and B and may be provided upon the outside of the incubator-frame with an observation-port C', Fig. 1 of the drawings.

A heating chamber or tank G may be provided communicating with the upper portion of the water-chamber by means of a pipe F and with the lower part of said chamber by means of a pipe H, and by means of this construction the heated water rises through the pipe F into the heating-chamber G and returns therefrom by gravity through the pipe H back to the lower portion of the water-chamber, whereby a complete cycle of the heating medium is effected and a continuous circulation of the heating medium secured, as will be readily understood.

A lamp or other heating device may be provided with a flange 1, constructed to enter lower portion of the boiler, Fig. 2, and the burner O of the lamp or heating device is provided with apertures or openings and is inclosed by the lower extension or flange of the boiler, which rests upon a circular plate or disk below the burner, whereby an annular chamber N is formed with which communicates a pipe L, preferably extending along the incubator above the floor and returning to the stack or chimney J upon the upper portion or end of the drawings.

The pipe or tube L is preferably provided with a lateral extension communicating with the chamber Q, provided with a valve or cover R, connected with the yoke S, with which is
 5 connected a link or pull-rod W, attached to the center of a diaphragm V upon the enlarged end of a pipe U, preferably containing alcohol or other liquid having a high coefficient of expansion, and the pipe U preferably
 10 extends some distance into the egg-chamber and is designed to be moved longitudinally therein to a limited extent, so that the position of the valve R may be adjusted by means of a thumb-screw X, working in a
 15 threaded bearing-piece U'', attached to the tube U and forced inwardly by a spring Y on said thumb-screw.

The chamber Q is preferably provided with an air-inlet port Q', having a pivoted cover Z
 20 to regulate the quantity of air admitted into the chamber to prevent the lamp or heating device from becoming extinguished when the valve R is closed.

The valve R is first opened, so as to admit
 25 air into the chamber Q, from which the air passes through the pipe L into the chamber N below the burner or lamp for the purpose of supporting combustion, as will be readily understood, and the water-chamber
 30 between the inner shell A and the outer shell B of the boiler becomes heated by the heat produced by the burner or lamp, and as soon as the liquid in said boiler shall have become heated in this manner the liquid therein rises
 35 to the top of the boiler and passes to the heating-chamber G through the pipe F, and when the liquid in said chamber shall have become cooled it returns from said chamber by way of the pipe H to the lower portion of the
 40 boiler, whereby a complete cycle of the heating medium is effected and a continuous circulation of such medium is secured, as will be readily understood by those skilled in the art to which this invention appertains. The
 45 heated air and products of combustion from the burner rise from the inner shell through the stack or chimney J and pass through the pipe L along the incubator and back to the annular chamber N below the burner, and
 50 during such passage the fresh air is admitted through the valve R, is mingled with the current of heating-air, and carried therewith to the burner. When the heat in the egg-chamber becomes too great or an excessive temperature obtains therein, the fluid in the pipe
 55 U will expand, and thereby dilating the diaphragm V extend the pull-rod W and lower the valve R, thereby shutting off the supply of fresh air to the burner, consequently decreasing the supply of oxygen thereto, with
 60 resulting decrease of heat emitted from the burner.

It is not desired to limit this invention to

the specific construction, combination, and arrangement of parts herein shown and described, and the right is reserved to make all
 65 such changes in and modifications of same as come within the spirit and the scope of the invention.

I claim—

1. An incubator provided with a heating device, a chimney therefor, and connection
 70 between the upper part of said chimney and the lower part of said device, whereby the products of combustion pass from said chimney through said connection and back to said
 75 device and a thermostat in communication with said connection.

2. An incubator provided with a heating device, a chimney therefor, a connection between the upper part of said chimney and
 80 the lower part of said device, whereby the products of combustion pass from said chimney through said connection back to said device.
 85

3. An incubator provided with chambers, drawers in said chambers and doors having extended hinges pivoted to the incubator to permit the withdrawal of the drawers when
 90 the doors are in either an open or closed position and means for heating the incubator.

4. An incubator provided with a heating device, a boiler upon said device having a stack, return connection between said stack and said device, a warming-chamber, connections
 95 between the upper and lower portion of said boiler and said chamber and a sight-tube in the boiler.

5. An incubator provided with a heating device, a boiler upon said device having a stack, connection between said stack and said
 100 device, a warming-chamber and connections between the upper and lower portion of said boiler and said chamber and an automatic valve for controlling the admission of air to
 105 the first-mentioned connection.

6. An incubator provided with a heating device having a chimney or stack, connection between the upper portion of the stack and the lower portion of said device, an outlet in
 110 said connection, a valve for said outlet, and thermostatic means for operating said valve.

7. An incubator provided with a heating device, connection between the upper and lower parts of said device, whereby the products of combustion pass from said device
 115 through said connection and back to the device and means in said connection for supplying fresh air to said device.

8. An incubator provided with a heating device, connection between the upper and lower parts of said device, whereby the products of combustion pass from said device
 120 through said connection and back to the device and automatic means in said connection
 125 for supplying fresh air to said device.

9. An incubator provided with a heating
device, connection between the upper and
lower parts of said device, whereby the prod-
ucts of combustion pass from said device
5 through said connection and back to the de-
vice and thermostatic means for supplying
fresh air to said device.

In witness that I claim the foregoing I have
hereunto subscribed my name this 31st day of
July, 1901.

HARRY A. BROOKS.

Witnesses:

G. E. HARPHAM,
MATTIE MCGINNIS.