No. 771,182. PATENTED SEPT. 27, 1904.

W. S. SMALL.

BROODER.

APPLICATION FILED NOV. 23, 1903.

NO MODEL.

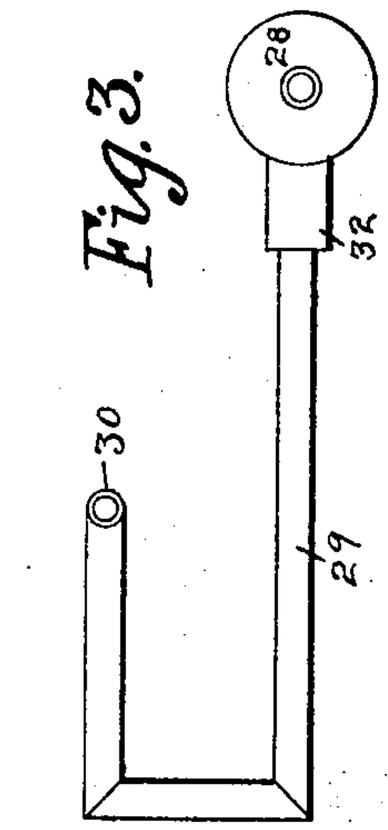

Fig. 3.

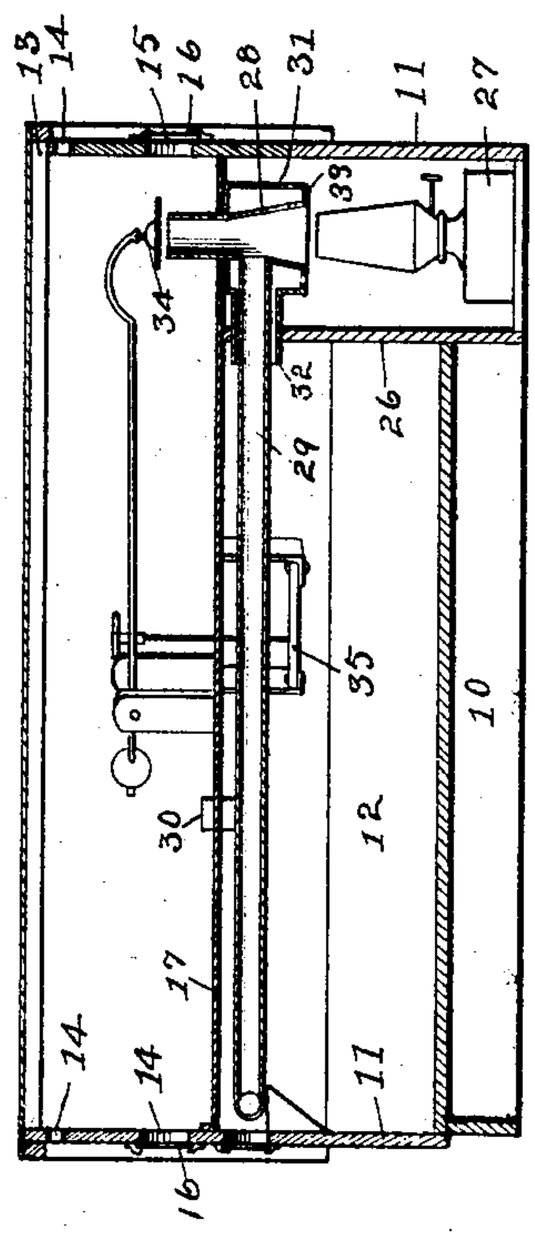

Fig. 2.

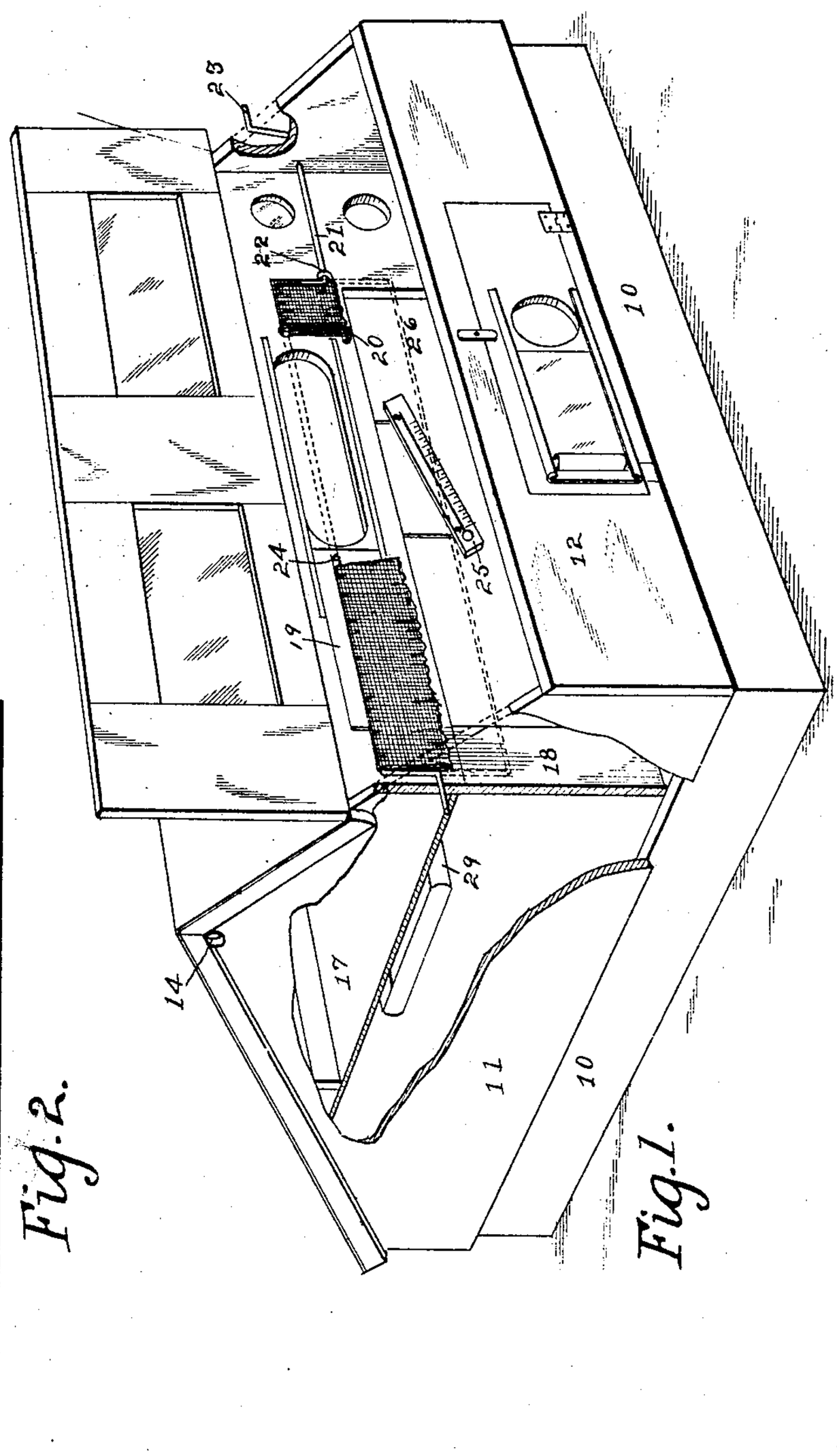

Fig. 1.

Witnesses

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No. 771,182. Patented September 27, 1904.

UNITED STATES PATENT OFFICE.

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BROODER.

SPECIFICATION forming part of Letters Patent No. 771,182, dated September 27, 1904.

Application filed November 23, 1903. Serial No. 182,364. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. SMALL, a citizen of the United States, residing at Des Moines, in the county of Polk and State of Iowa, have invented certain new and useful Improvements in Brooders, of which the following is a specification.

The objects of my invention are to provide an improved brooder of simple, durable, and inexpensive construction.

A further object is to provide a curtain-operating mechanism between the brooding-chamber and the inclosed runway so arranged that an operator may readily and quickly elevate the curtain and support it in its elevated position or lower the curtain by means of a crank on the exterior of the machine.

My invention consists in certain details in the construction, arrangement, and combination of the various parts of the device whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which—

Figure 1 shows in perspective the complete brooder, parts being broken away to show certain details of construction. The dotted lines indicate the position of the curtain-rod when lowered. Fig. 2 shows a vertical central sectional view of the complete brooder, and Fig. 3 shows a plan view of the radiating-coil.

Referring to the accompanying drawings, I have used the reference-numeral 10 to indicate the bottom of the brooder-frame; 11, the ends; 12, the sides, and 13 the cover. The cover is arranged to project slightly over the ends, as clearly shown in Fig. 2, and ventilating-openings 14 are provided in the ends 11 directly under the cover. By this arrangement the projecting ends of the cover prevent the said ventilating-openings from becoming stopped up in case the brooder is placed with one end against a wall or other object. In the ends 11 below the openings 14 are the large ventilating-openings 15, and slides 16 are provided by which these openings may be covered.

The reference-numeral 17 indicates a thin sheet-metal partition arranged horizontally and extending from end to end of the machine and from one side to a vertical partition 18. These two partitions divide the interior of the brooder into a brooding-chamber, a runway, and a radiating-chamber. In the partition 18 below the partition 17 is an opening providing communication between the brooding-chamber and the runway and in the partition 18 above the partition 17 is an opening providing communication between the radiating-chamber and the runway. This latter partition is provided with a slide 19, by which the opening may be covered. I have also provided a curtain 20, preferably made of fabric, attached to the partition 18 immediately above the opening between the brooding-chamber and the runway, said curtain normally hanging downwardly and covering this opening. I have provided means by which this curtain may be raised and lowered and supported in its elevated position, as follows: The numeral 21 indicates a shaft projected through the ends of the brooder-body and also supported in a bearing 22 on the partition 18 adjacent to one end of the opening between the brooding-chamber and the runway. Formed in the crank-shaft 21 is a crank 23 on the exterior of the brooder and within the brooder is a crank-arm 24 of a length corresponding to the length of the curtain 20. This crank-arm 24 when in its lowered position stands between the runway and the partition 18, as shown by dotted lines in Fig. 1. When the crank 23 is turned a half-revolution, the crank-arm 24 engages the curtain and moves it upwardly to the position shown in Fig. 1, thus completely uncovering the opening between the brooding-chamber and the runway. This feature is of particular advantage in determining the temperature of the brooding-chamber, as I usually support a thermometer 25 in the brooding-chamber in such position that it may be readily seen when the curtain is elevated.

The reference-numeral 26 indicates a partition forming a lamp-chamber beneath the partition 17 at one end of the brooder. A lamp 27 of the ordinary kind is placed in this lamp-chamber. Supported directly above the lamp is a heat-distributer comprising an open-

ended cylinder 28, the lower end thereof receiving the lamp-chimney and the upper end passing through the partition 17 and discharging into the radiating-chamber. A radiating-coil 29 communicates with the cylinder 28 and is supported directly beneath the partition 17 in the radiating-chamber. By this arrangement a part of the products of combustion from the lamp pass first through the radiating-coil 29 into the radiating-chamber and part pass directly up through the cylinder 28 into the radiating-chamber. The numeral 31 indicates a radiating-drum surrounding the chamber 28 and having a discharge-pipe 32 projected into the brooding-chamber. At the bottom of the drum 31 are the openings 33 to receive air to be discharged into the brooding-chamber. This radiating-drum and the radiating-coil are of the ordinary construction, and my invention consists simply in their arrangement and combination relative to the partition 17 and the brooding-chamber and the radiating-chamber. By the arrangement of these parts I utilize a maximum amount of the heat generated by the lamp, and yet I prevent any of the products of combustion from the lamp passing into the brooding-chamber. Within the radiating-chamber I have provided a damper 34, controlled by the usual thermostatic regulator 35. This damper controls the opening at the top of the cylinder 28.

In practical use and assuming the damper 24 to be in about the position shown, then part of the products of combustion from the lamp will pass straight up into the radiating-chamber and the air in the radiating-chamber will become heated and this heat will radiate downwardly through the thin sheet-metal partition 17, while the products of combustion will ultimately pass out of the radiating-chamber through the openings 14 and 15. The remainder of the products of combustion will pass through the radiating-coil 29, and during the passage through the coil the heat will be radiated from said coil directly into the brooding-chamber. The products of combustion passing through the coil 29 will discharge through the opening 30 into the radiating-chamber and will materially assist in heating this chamber, which heat will of course radiate downwardly into the brooding-chamber through the sheet-metal partition 17, and in addition to this the heat in the radiating-drum 31 will pass directly into the brooding-chamber. If the damper 34 is closed, a greater proportion of the products of combustion in the lamp will pass through the radiating-coil, and hence the heat in the brooding-chamber will be increased, because the radiation from the coil is more direct than through the sheet-metal partition 17, and if the damper 34 is raised high enough all of the products of combustion from the lamp will pass directly into the radiating-chamber and will not pass through the coil, and hence the heat of the brooding-chamber will be materially less, because the radiation from the partition 17 is more indirect than from the coils, and the openings in the radiating-chamber will prevent the accumulation of too great an amount of heat. Furthermore, by placing the lamp-chamber directly under the thin partition 17 all of the heat radiating from the lamp that does not pass upwardly through the lamp-chimney is utilized in heating the radiating-chamber.

By providing a vertical partition between the runway and brooding-chamber and extending this partition to the solid top of the machine I provide a radiating-chamber between the vertical partition and the opposite side of the machine that will retain heat even though the cover over the runway is open. Hence an operator may open the cover and have access to the runway and also to the brooding-chamber through the curtain without permitting the escape of the heat from the radiating-chamber.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States therefor, is—

1. In a brooder, the combination of inclosing walls, a fixed cover over a part of the top of the brooder, a vertical partition extending from the edge of the fixed cover downwardly, a sheet-metal partition extending from the vertical partition to the side walls beneath the fixed cover forming a brooding-chamber and a radiating-chamber above the brooding-chamber, said vertical partition also forming a runway on the side opposite from the brooding and radiating chambers, a removable cover over the runway, said vertical partition formed with openings to provide communication between the runway and the radiating-chamber and between the runway and brooding-chamber, means for closing the opening between the runway and the radiating-chamber and means for introducing heat to the radiating-chamber.

2. In a brooder, the combination of a radiating-chamber normally closed on all sides, said chamber having a thin sheet-metal bottom, means for introducing heat to the radiating-chamber, a brooding-chamber directly beneath the radiating-chamber, warmed by radiation through the sheet-metal partition, a runway communicating with the brooding-chamber and a removable cover for the runway providing access to the runway and brooding-chamber without permitting the escape of heat from the radiating-chamber.

3. In a brooder, the combination of a brooding-chamber, a runway communicating therewith, a curtain normally covering the opening between the brooding-chamber and the runway, a handle on the exterior of the brooder and means controlled by the handle for raising and lowering the curtain.

4. In a brooder, the combination of a brooding-chamber, a runway communicating there-

with, a curtain supported above the opening between the chamber and the runway and normally covering said opening, a crank-shaft supported above the opening having a crank-arm on the exterior of the brooder and also having a crank-arm to engage the curtain, the latter crank-arm at one limit of its movement supporting the curtain in an elevated position.

5. In a brooder, the combination of a brooding-chamber, a runway communicating therewith, a curtain normally covering the opening between the brooding-chamber and the runway, a handle on the exterior of the brooder, means controlled by the handle for raising and lowering the curtain and a thermometer supported within the brooding-chamber in position to be covered by the curtain when the curtain is lowered and to be uncovered when the curtain is elevated.

6. In a brooder, the combination of inclosing walls, a vertical partition, a horizontal sheet-metal partition extended from the vertical partition to one of the side walls forming a brooding-chamber beneath the partition and a radiating-chamber above it, a solid cover over the radiating-chamber and a hinged cover over the space between the vertical partition and the opposite side wall and a radiating-coil under the sheet-metal partition discharging to the radiating-chamber.

7. In a brooder, the combination of inclosing walls, a solid cover over a part of the brooder and hinged cover over the remainder of the brooder, a vertical partition extending from one edge of the solid cover downwardly and forming a runway on one side of said partition, a horizontal sheet-metal partition under the solid cover extended from the vertical partition to the side wall and forming with the vertical partition and the inclosing walls, a brooding-chamber and a radiating-chamber above the brooding-chamber and a radiating-coil under the sheet-metal partition discharging to the radiating-chamber.

8. In a brooder, the combination of inclosing walls, a solid cover over part of the brooder and a hinged cover over the rest of the brooder, a vertical partition in the brooder extending from the edge of the solid cover downwardly and dividing the lower part of the brooder into a brooding-chamber and a runway, a sheet-metal partition dividing the space beneath the solid cover into a brooding-chamber and a radiating-chamber above the brooding-chamber, the said vertical partition provided with an opening communicating between the brooding-chamber and runway and also with an opening communicating between the radiating-chamber and runway, a curtain for covering the former opening, means for covering the latter opening, a radiating-drum, a coil communicating with the radiating-drum, said coil arranged beneath the sheet-metal partition and extending upwardly through it and discharging into the radiating-chamber, said radiating-drum also discharging directly into the radiating-chamber.

9. In a brooder, the combination of inclosing walls, a fixed cover over a part of the brooder and a hinged cover over the remainder of the brooder, a vertical partition extending from the edge of the fixed cover downwardly, said partition having an opening near its lower end, a curtain covering said opening, said partition also having an opening near its upper end, a slide for covering said opening, a horizontal sheet-metal partition extending from the vertical partition to the side wall of the brooder beneath the fixed cover and between the said openings in the vertical partition, a radiating-drum having a direct discharge into the chamber above the sheet-metal partition, a radiating-coil communicating with the radiating-drum arranged below the sheet-metal partition and discharging upwardly through it into the radiating-chamber, a thermostat in the chamber beneath the sheet-metal partition, a damper operated by the thermostat and controlling the direct discharge from the radiating-drum, said side wall provided with ventilating-openings in the radiating-chamber.

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Witnesses:
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