C. E. BONINE.

INCUBATOR.

APPLICATION FILED OCT. 7, 1910.

1,049,042.

Patented Dec. 31, 1912.

3 SHEETS—SHEET 1.

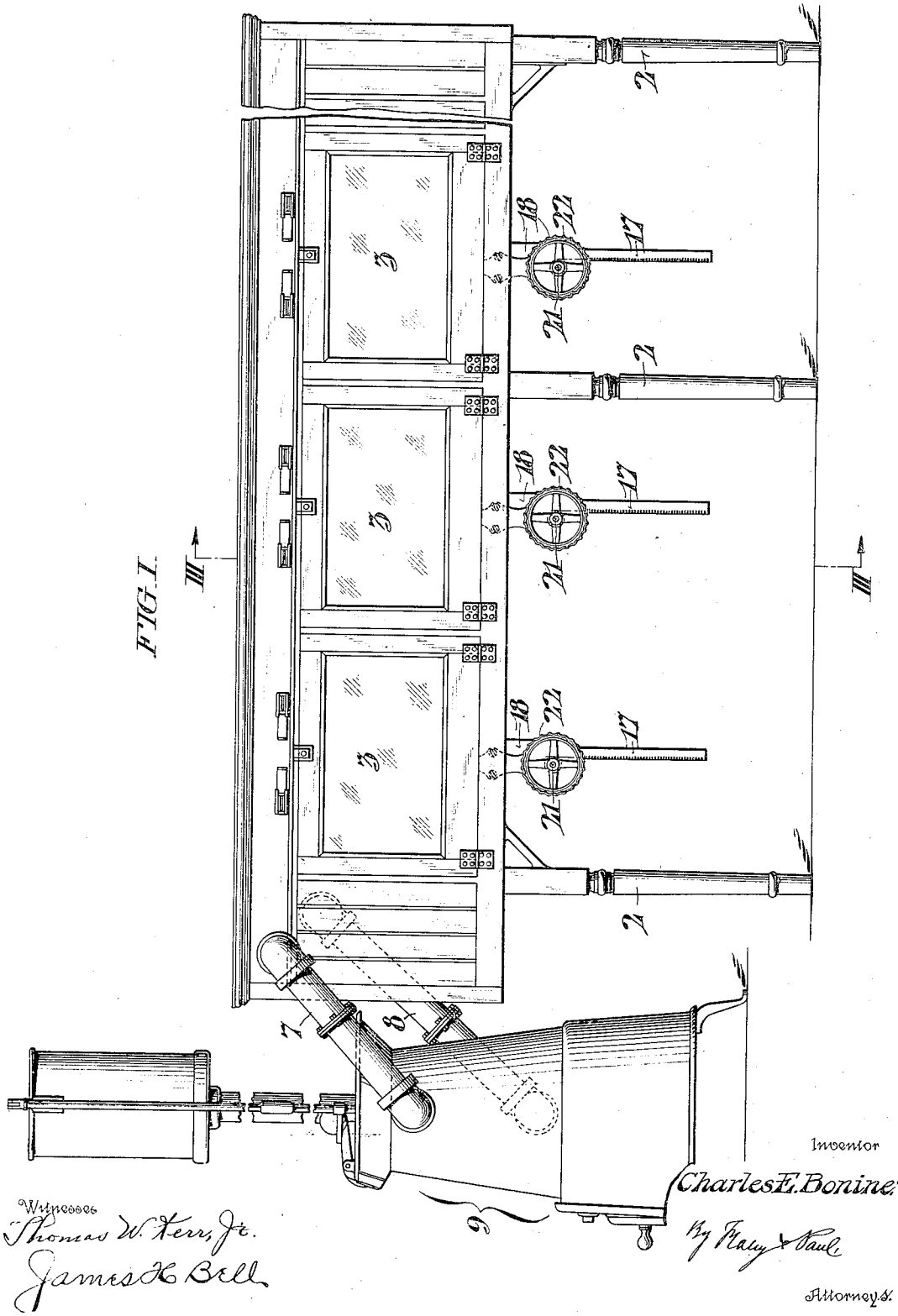

FIG. I.

Witnesses
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3 SHEETS—SHEET 2.

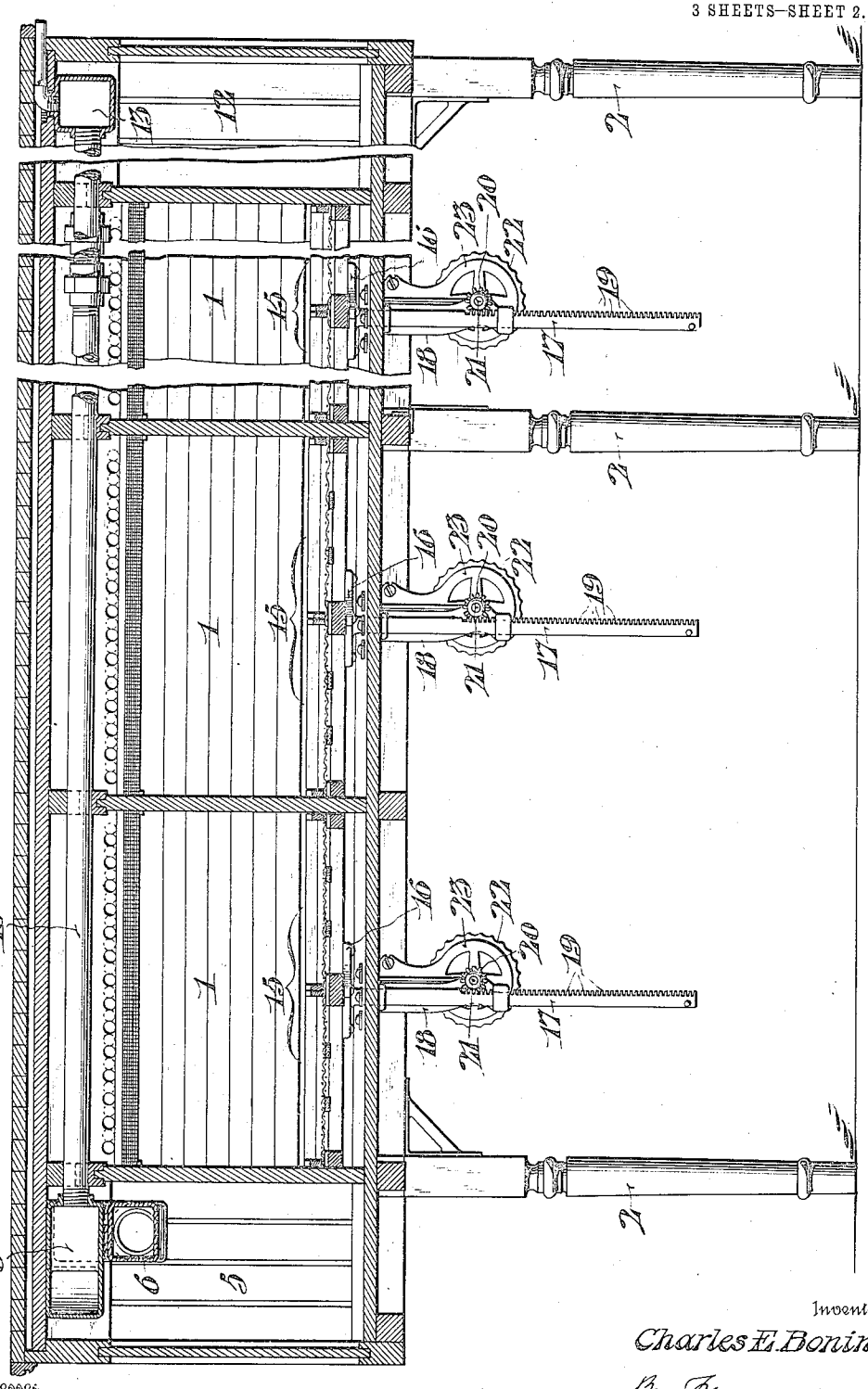

FIG. II.

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3 SHEETS—SHEET 3.

FIG. III.

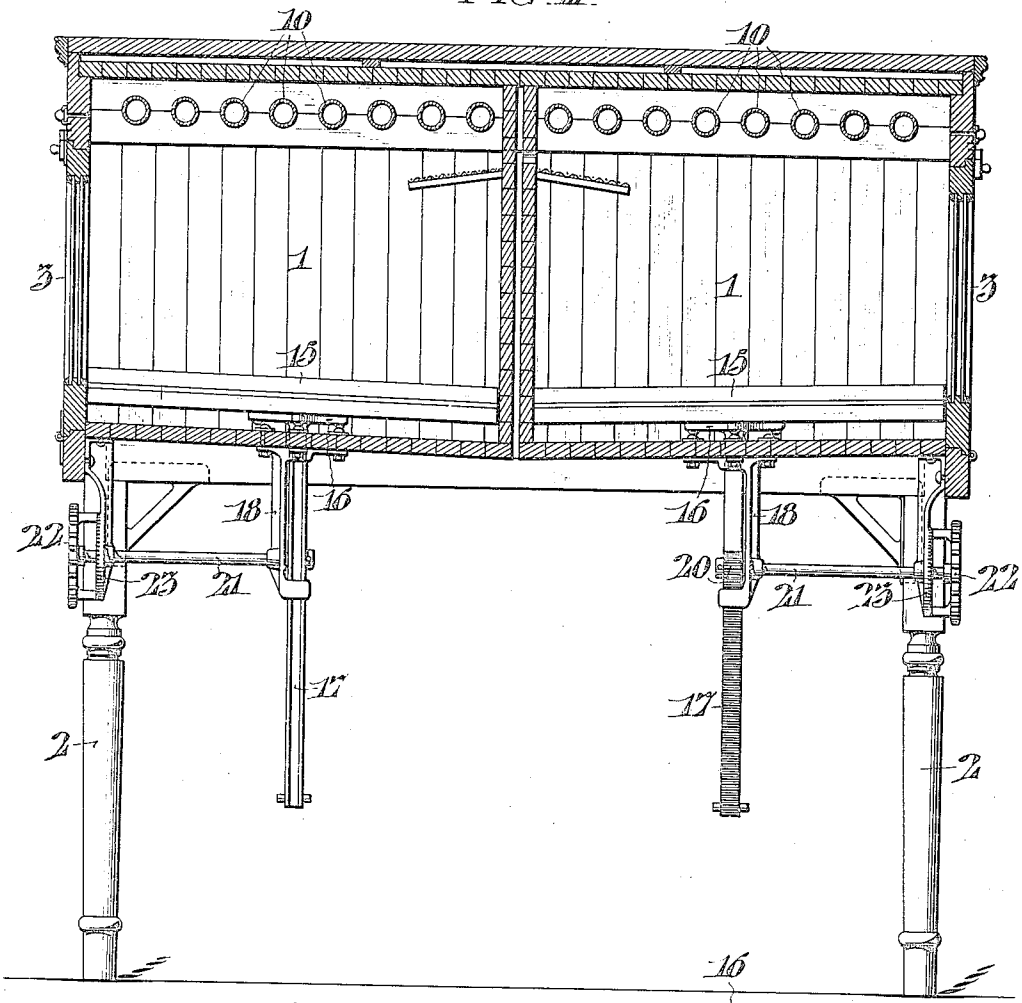
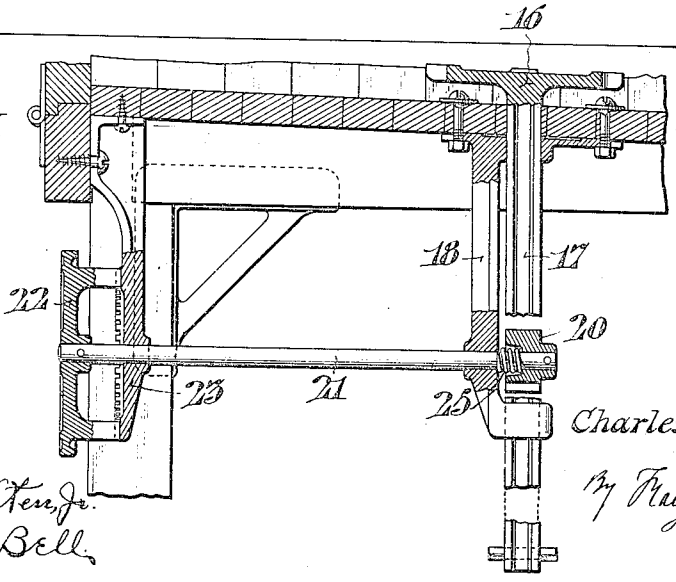


FIG. IV.



Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES E. BONINE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO NEWTOWN PRODUCING COMPANY, OF NEWTOWN, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

INCUBATOR.

1,049,042. Specification of Letters Patent. Patented Dec. 31, 1912.

Application filed October 7, 1910. Serial No. 585,753.

To all whom it may concern:

Be it known that I, CHARLES E. BONINE, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Incubators, whereof the following is a specification, reference being had to the accompanying drawings.

My invention relates to incubators for the artificial hatching of eggs, in which means for maintaining a carefully regulated temperature are provided for a series of incubator compartments, each compartment having suitable trays for the support of eggs at varying distances from the heating means.

The invention relates more particularly to the arrangement and construction of the compartments with relation to a unitary heating system applied to the entire series of compartments, and also to the means for moving and adjusting the trays in each compartment.

An incubator embodying my invention is shown in the accompanying drawings, in which—Figure I, is a side elevation of the incubator. Fig. II, is a longitudinal section of the same. Fig. III, is a cross section of the same along the line III, III, of Fig. I. Fig. IV, is a detailed sectional view of a part of the bottom of one of the incubator compartments showing the means for regulating the height of the egg tray.

The incubator compartments 1, of the incubator are arranged in parallel rows mounted a sufficient distance from the floor of the incubator house on legs 2, 2. In this way each compartment may be provided with a hinged door 3, and at the same time the whole series are conveniently heated by a single heating system.

At one end of the incubator is a special compartment 5, containing two interlocking manifolds 6, 6, communicating at their ends respectively one with a pipe 7, for the feeding of hot water, and the other with a pipe 8, for the return of cold water to the heating apparatus 9. This heating apparatus will not be here described since it forms the subject of another application which I am filing herewith. The manifolds 6, 6, communicate in alternation with the pipes 10, of the heating system. These pipes constitute a horizontal series running across the entire top of the incubator and a number of them traverse each compartment until they reach the other end of the incubator, where there is provided a special compartment 12, containing the header 13, with which all of the pipes communicate. In this way hot water from the manifold 6, is led by every other pipe of the series to the header 13, and returned by the alternate pipes, so that the distribution of the heat in the horizontal series is evenly effected across the entire space of each incubator compartment as traversed by the pipes. The heating pipes are supported near the top of each compartment, which in conjunction with suitably arranged openings in the walls of the compartments, cause the warm air to be circulated over and around the eggs.

Within each compartment there is supported an egg tray 15, consisting of a suitable frame with an open or latticed bottom covered with wire mesh, above which the edges rise sufficiently to hold a layer of eggs resting on the bottom. To the bottom of the tray is secured a supporting frame 16, mounted on a vertical arm 17, slidably mounted in a supporting bracket 18. A rack 19, formed upon one edge of this arm is in engagement with a pinion 20, fixed on a shaft 21, which carries at its forward extremity a crown wheel 22, with teeth in engagement with the crown 23, conveniently formed upon the casting which forms the bearing for the shaft 21. The crown wheel and crown are normally kept in engagement by means of the compression of a spring 25, interposed between the pinion 20, and the adjacent bearing of the shaft, but by manipulating the crown wheel 22, the shaft may be drawn against the pressure of this spring so as to disengage the crown wheel from its crown, permitting the turning of the shaft, so that the pinion by engagement with the rack on the arm 17, may raise or lower each egg tray the desired distance. When this has been done, the reengagement of the crown wheel with its crown immediately takes place, so that the tray is supported at the desired height. This arrangement is a very convenient one because it is necessary to alter from day to day the distance between the heating pipes and the egg trays. By the means which I have provided this may be done at any time without otherwise opening the incubator

compartment; and as the aperture through which the arm 17, passes down through the bottom of the compartment is a tight one, there is no loss of atmosphere within the incubator compartment attendant upon the adjustment of the tray.

Having thus described my invention, I claim:—

1. In an incubator, an incubating compartment, an egg tray, and means for supporting the same including a vertical arm passing through the bottom of the compartment, and means for moving and setting the arm at any desired position, without opening the compartment, said means including a rack on the arm, a longitudinally movable shaft carrying a pinion engaging the rack, and a spring acting on the shaft for moving it longitudinally to hold it in locked position against a stationary part of the apparatus.

2. In an incubator comprising incubating compartments with heating pipes at the top thereof, and an egg tray within each compartment supported upon a single vertical arm projecting through the bottom of the compartment, means for moving and setting the arm at any desired distance from the heating pipes in the compartment, without opening the same, said means including a rack on the vertical arm, a shaft carrying a pinion engaging said rack, a crown wheel on said shaft, a crown normally engaged by the crown wheel, and a spring controlling the shaft to cause such engagement.

In testimony whereof, I have hereunto signed my name, at Philadelphia, Pennsylvania, this sixth day of October, 1910.

CHARLES E. BONINE.

Witnesses:

JAMES H. BELL,

E. L. FULLERTON.