Fig. 1

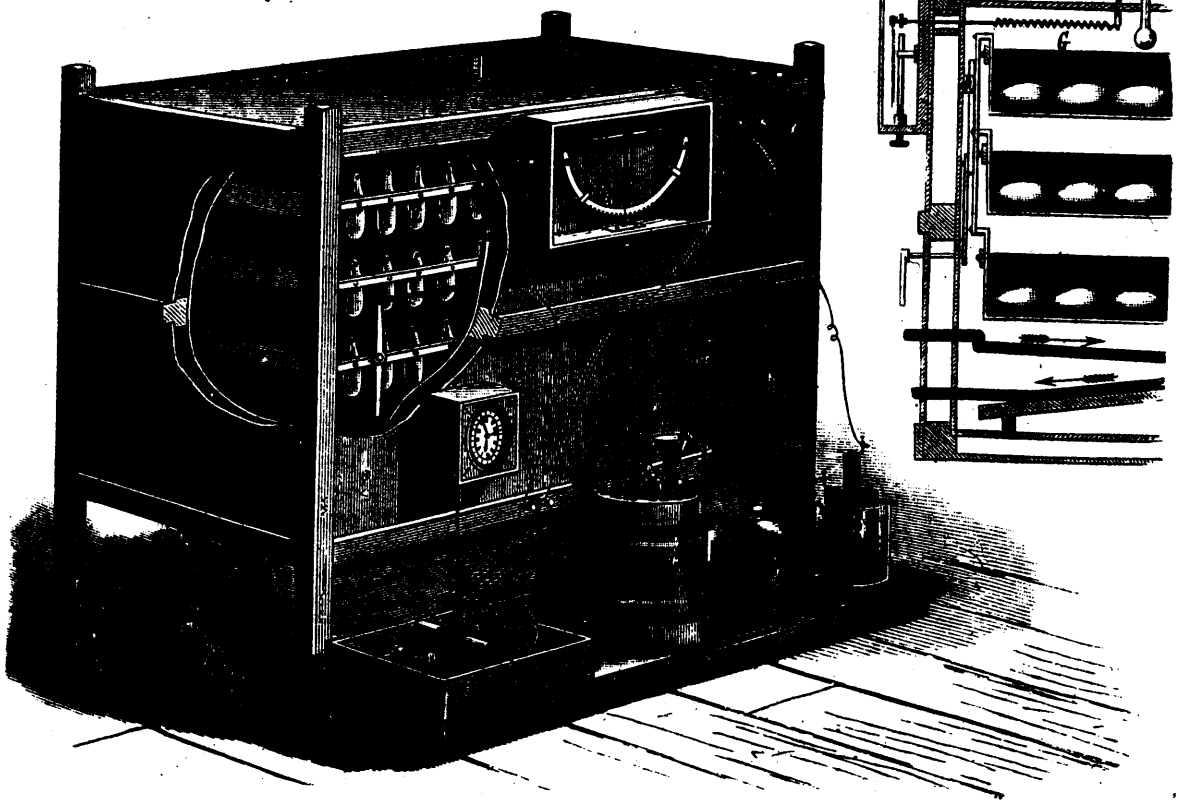

Fig. 2.



IMPROVED INCUBATOR.

## IMPROVED INCUBATOR.

An improved incubator, which regulates its temperature and shifts the eggs automatically at regular intervals, is shown in the annexed engraving. It is provided with a series of longitudinal cloth hammocks or egg receivers, attached to end pieces pivoted to rigid supports and to movable bars, which are automatically moved so as to shift the eggs at regular intervals by suitable levers controlled by clock-work. The gas or oil cock of the flame of the boiler for heating the incubator is controlled by means of a pair of electro-magnets, connected with a battery, and with a metal thermometer provided with an adjustable scale so that the temperature of the incubator is regulated automatically.

In the engraving, Fig. 1 is a perspective view, and Fig. 2 is a vertical section. The box is constructed with rabbeted corner posts and a double casing, the space between being filled in with non-conducting material. The box is also provided with a shelf, upon which the boiler and automatic regulating devices rest. The boiler, C, is provided with pipes for conducting steam to and from the heating tubes arranged in such a way as to gradually pitch back to the boiler. The boiler has a tube F, for filling it, also a water gauge and a safety valve, and is heated by means of a flame of gas or of an oil lamp provided with an Argand burner, When oil is used, an oil tank, D, connected with the burner by a tube is placed on the shelf.

It is of the greatest importance to maintain a uniform heat in the incubator, and mechanism provided which automatically regulates the temperature. A spiral metal thermometer, G, of well known construction, is attached at one end to a binding screw, fastened to the ceiling of the box, and connected with the battery by a wire, and the other end of the thermometer is attached to an index pivoted in the centre of a curved scale at the side of the incubator, which can be adjusted by means of a journaled endless screw.

The index is provided with rectangular arms, which are hinged in such a manner that they can only bend upward, and can never form less than a right angle with the hand, so that if the thermometer continues to rotate the needle or hand, after the ends of the arms rest on the end pieces of the scale, the arms will not break, but will incline at the joint or hinge.

By means of the endless screw the scale, and consequently the thermometer can be made to correspond with the mercury thermometer at the top of the incubator. The end pieces of the circular scale are connected with the electro-magnets by the wires, and the magnets are in turn connected with the battery.

The armature of the magnets is attached to a spring which holds it in a central position in relation to the two magnets. This mechanism controls the gearing, which operates a horizontal shaft driven by clock-work and acting upon the burner. The eggs are placed in longitudinal hammocks or receivers, made of canvas, attached to bars which are fastened to end pieces, which are pivoted to fixed bars and to movable bars. The movable bars are acted upon by the works of the clock, which are constructed similar to the striking mechanism of an ordinary clock, so that the receivers are moved at regular intervals.

The eggs having been placed into the hammocks, the metal thermometer, G, is regulated and adjusted according to the liquid thermometer. If the flame of the burner under the boiler is too large, too much steam will be generated and the air in the box will become overheated. The thermometer, G, expands, and, moving the index, the electric circuit is closed, operating the mechanism which turns down the flame of the burner. If the air in the box is too cold the above operation is repeated, but all parts move in the inverse direction, and in this manner the temperature can be controlled automatically. If desired, alarm bells may be arranged to ring when the temperature rises too high or falls too low.

Shallow vessels containing water will be placed above the steam tubes for the purpose of supplying the air in the incubator with necessary quantity of moisture.

This invention was lately patented by Messrs. Chas. L. and Henry S. La Barge, 22 Nicholson Place, St. Louis, Mo.