

No. 791,188.

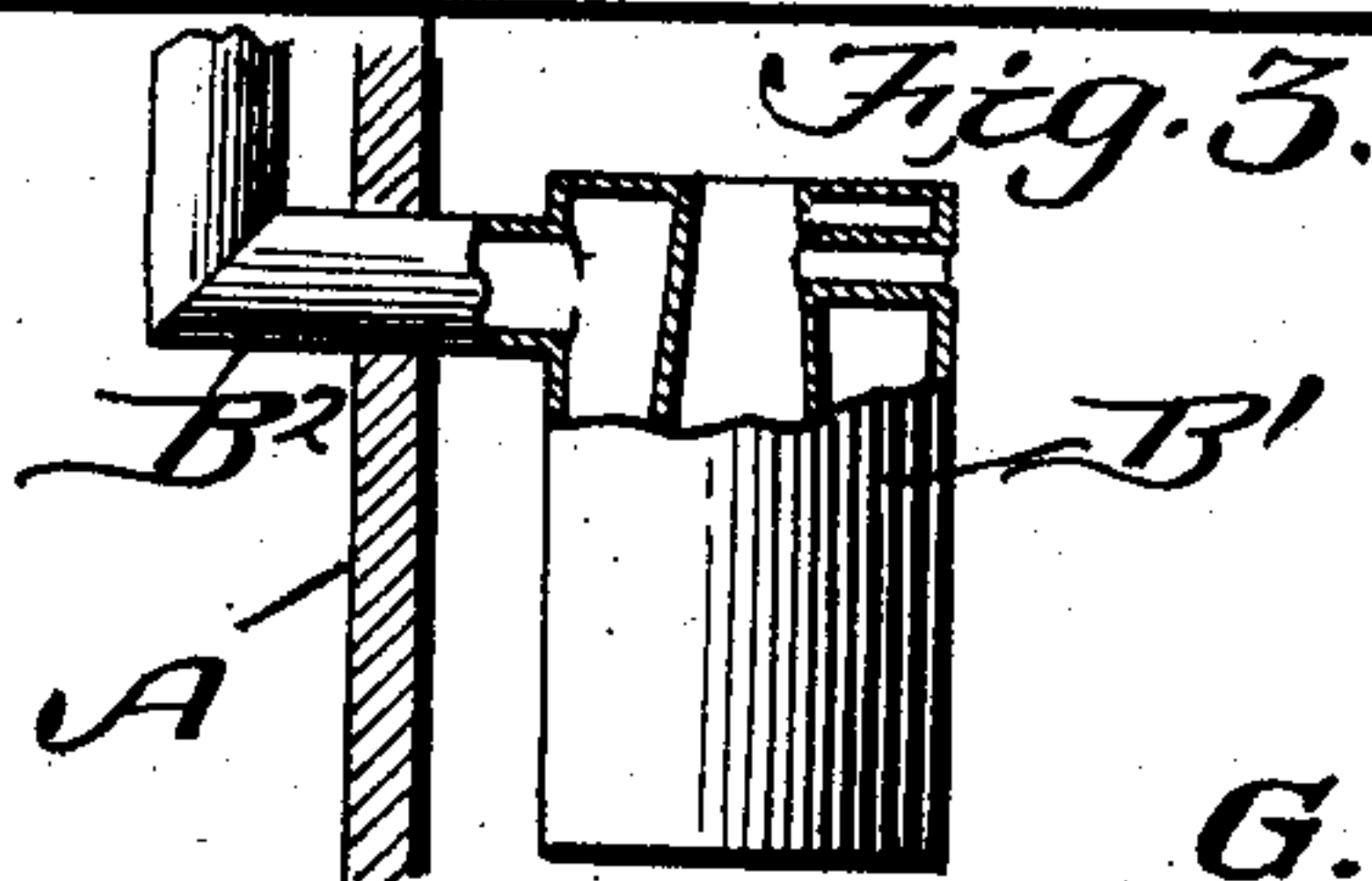
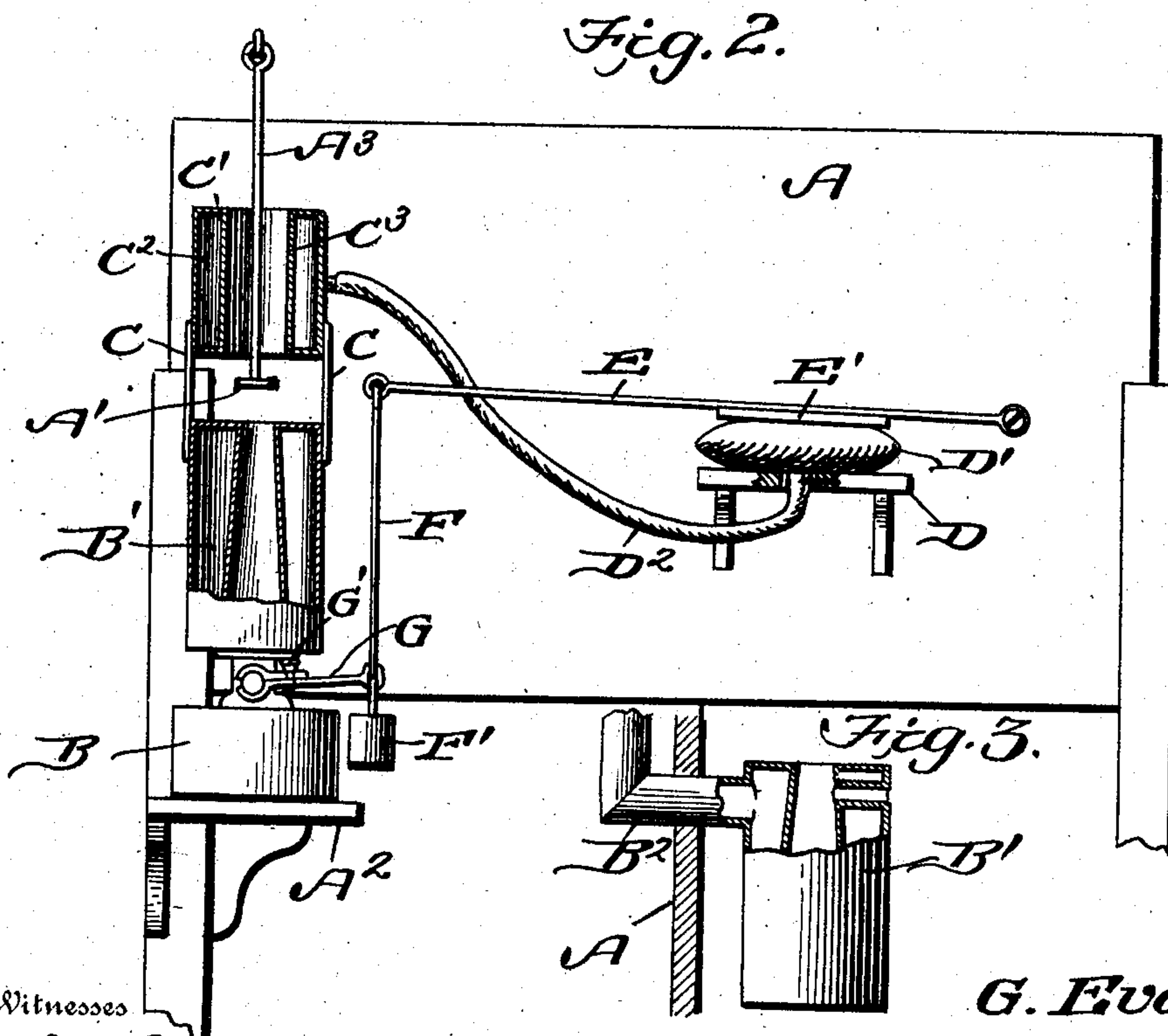
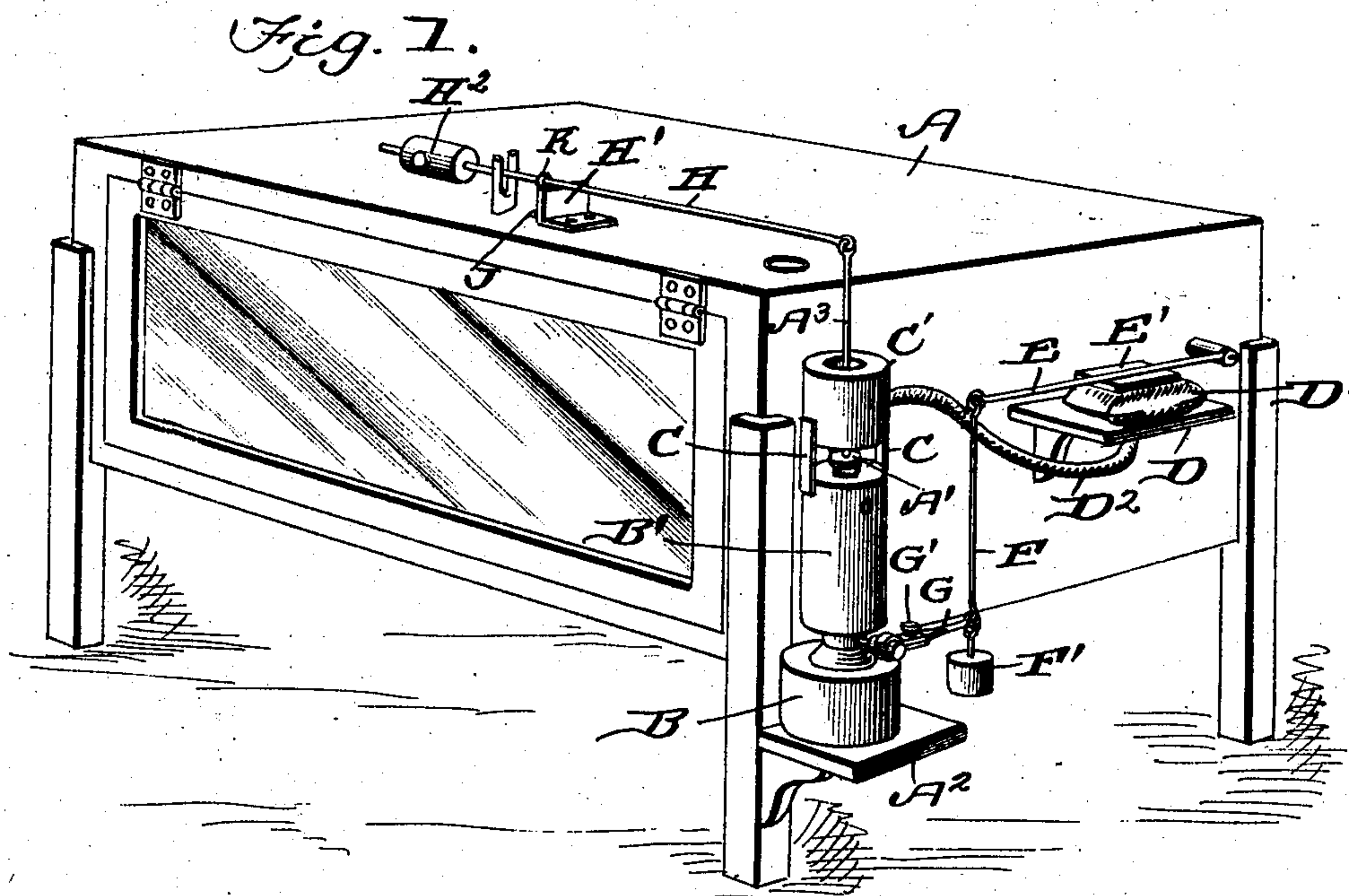
PATENTED MAY 30, 1905.

G. EVANS.

AUTOMATIC CUT-OFF FOR INCUBATORS.

APPLICATION FILED JUNE 15, 1903.

2 SHEETS—SHEET 1.



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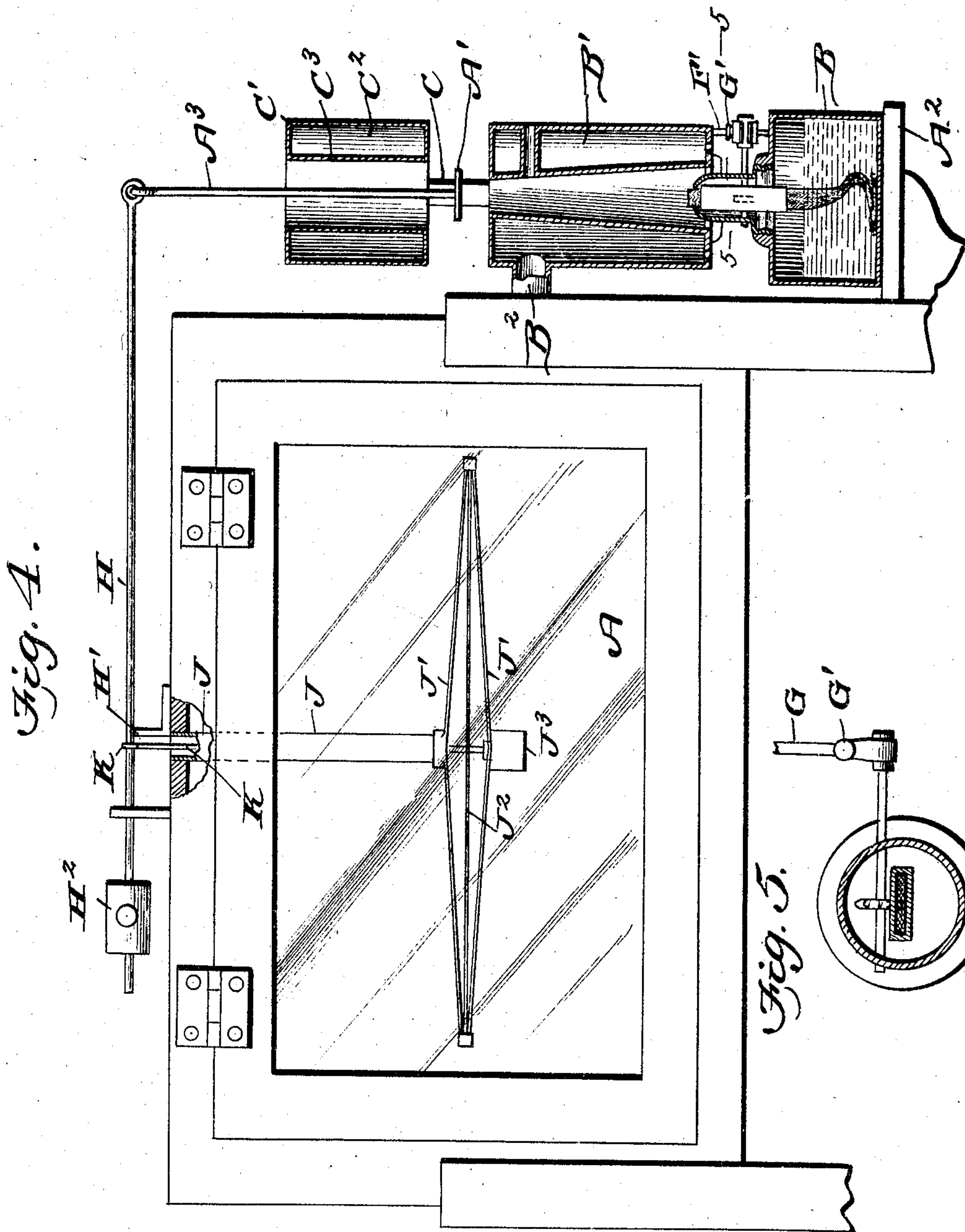


Fig. 4.

Fig. 5.

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UNITED STATES PATENT OFFICE.

GOMER EVANS, OF STREATOR, ILLINOIS.

AUTOMATIC CUT-OFF FOR INCUBATORS.

SPECIFICATION forming part of Letters Patent No. 791,188, dated May 30, 1905.

Application filed June 15, 1903. Serial No. 161,485.

To all whom it may concern:

Be it known that I, GOMER EVANS, a citizen of the United States, residing at Streator, in the county of Lasalle and State of Illinois, have invented a new and useful Improvement in Automatic Cut-Offs for Incubators, of which the following is a specification.

My invention relates to a cut-off for automatically cutting off the supply of heat to the interior of an incubator by regulating the size of the flame of the lamp.

The object of my invention is to provide means for automatically turning down the lamp-wick when the temperature rises above a certain predetermined point and for turning it up when the temperature falls, thereby maintaining the temperature at a practically uniform temperature.

This device may be used in combination with the usual automatic damper common in incubators. In this case I have illustrated a manner of combining the two, showing the position occupied by the parts of my device with reference to the damper. The damper is entirely independent of my wick-turning mechanism, and my device while cooperating with the damper can be used with any form of damper and with any of the well-known modes of regulating the movements of the damper.

The parts comprising my invention are arranged entirely on the outside of the incubator and consist of a lamp, an air-chamber above the lamp, an inflatable bag having free communication with the air-chamber, and means extending from the bag to the wick-raiser adapted to raise or lower the wick according to the extent of inflation of the bag.

My invention further consists in the novel features of combination and construction of parts hereinafter described, particularly pointed out in the claim, and shown in the accompanying drawings, in which—

Figure 1 is a perspective view of an incubator, showing my device arranged on the end of same. Fig. 2 is an end elevation of the incubator, parts of my device being broken away and shown in section. Fig. 3 is a detail view, partly in section, showing the flue leading from the lamp to the interior of

the incubator. Fig. 4 is an enlarged view showing the side of an incubator, the upper portion of which is partly broken away and in section and showing my improvement attached thereto, the latter being in section. Fig. 5 is a detail sectional view on the line 5 5 of Fig. 4.

In the drawings, A represents an incubator having a damper A' and a bracket at one end, (shown at A².) On the bracket is arranged a lamp B, the flue of which is surrounded by a cylindrical heating-drum B', from which a hot-air flue B² leads into the incubator. The exact arrangement and construction of these parts are immaterial.

Supported above the heating-drum B' by brackets C is a fluid-containing receptacle C', comprising concentric chambers C² and C³, the inner chamber, C³, being downwardly and upwardly open and of greater diameter than the damper A' and the outer chamber being closed at each end and having no communication with the outer air. The usual damper-rod A³ extends through the chamber C³ for convenience only, and the damper is held suspended between the heating-drum and the air-chamber. The inner chamber is in alinement with the flue of the lamp B.

A bracket D is arranged on the end of the incubator, and supported on this bracket or shelf is a fluid-actuated motor comprising an inflatable rubber bag D'. A flexible tube extends from the air-chamber C² to the under side of the shelf and is passed upward through the shelf and opens into the bag D'. A rod E is pivoted to the end of the incubator slightly above the normal level of the bag and on the side opposite the lamp. This rod extends over the bag to a point adjacent the lamp and on its under side carries a flat plate E', bearing on the bag. At its forward free end the rod E has a depending rod F pivotally connected to it, and the rod F passes through the outer end of an arm G, which at its inner end is connected to the wick-button or direct to the stem of the wick-raiser, so that any movement of the arm will tend to partially rotate more or less the spurs engaging the wick, the arm being connected to the rod F. At its lower end the rod F carries a

weight F' of a size adapted to overcome the friction of the various parts—the rod E on its pivot-point, the wick-raiser, &c.—so that all the parts are delicately balanced.

5 In Fig. 4 I have illustrated the manner in which the damper A' is actuated. The damper-rod A^3 is pivotally connected at its upper end to a forwardly-projecting end of a rod H , which rod is balanced on a knife-edge H' , and
10 to the rear of said knife-edge the rod H carries the usual adjustable counterweight H^2 . An aperture is formed in the top of the incubator, through which depends a sleeve J , and the bottom of the sleeve J carries the brass
15 strips or diaphragms J' , the ends of the strips being connected to a steel strip J^2 , arranged between the brass strips J' , but in contact with same only at its ends. A weight J^3 is carried by the lower brass strip J' , and this
20 weight has a threaded socket formed in same, into which is secured the lower threaded end of a rod K , which rod passes upwardly loosely through the brass strips J' and through the steel strip J^2 and extends through the sleeve
25 J , being connected by a hook or otherwise to the rod H . The contraction and expansion of the brass strips as the temperature of the interior of the incubator falls and rises actuate the rod K and through it the rod H ,
30 damper-rod A^3 , and the damper A' . As this is an ordinary well-known construction in common use, no detailed explanation of its operation is thought necessary.

The operation of the parts is as follows:
35 The various parts are properly arranged and adjusted so that when the desired temperature is had the wick will be at a certain height, providing a flame adapted to maintain the temperature at as near a uniform
40 rate as possible. The heat from the chamber B' will pass through the flue B^2 into the incubator, the damper A' being lowered. When the temperature in the incubator rises above a certain point, the expansion of the
45 brass strips will draw down the rod K , thereby lifting the damper A' . The heat from the lamp will then pass through the chamber C^3 , heating the air in the chamber C^2 . With a rise in the temperature in the air-chamber
50 C^2 the expansion of the air in said chamber will be communicated through the tube or pipe D^2 , and the bag will become inflated to an extent greater than its normal condition, raising the rod E , rod F , and arm G , turning the wick down. When the air in the
55 incubator has regained the normal or desired temperature, the parts will resume their

normal position. Should the temperature for any reason fall below the required normal, an opposite movement to that described 60 will take place and the rods E and F will descend, turning the wick up. These movements, it is understood, are not sudden or instantaneous, but so gradual as to be almost imperceptible, and the temperature is 65 held within a very few degrees of the temperature required in the incubator.

It is obvious that the chamber C^3 is really a continuation of the flue or chimney of the lamp passing through the air-chamber. 70

I do not desire to limit myself to the use of a rubber bag, though that is my preferred construction. An inflatable or extensible fluid-containing receptacle can be used, whether of rubber or not. 75

The inner end of the arm G is clamped to the wick-raiser by means of a thumb-screw G' , so that it can be readily detached from the wick-raiser of one lamp and secured to that of another when the lamps are changed 80 for purposes of cleaning or repairing.

Where the parts are permanently arranged in place, the pipe D^2 may be of metal instead of using a flexible rubber pipe or tube.

Having thus fully described my invention, 85 what I claim as new, and desire to secure by Letters Patent, is—

The combination with a lamp provided with a wick, of a heating-drum located above the same, said drum being provided with 90 a vertical flue forming a conduit for the products of combustion ascending from said lamp, a thermostatically-actuated damper located above said drum and adapted to control the passage of the products of combustion 95 upwardly from said flue, a fluid-containing receptacle located above said heating-drum and provided with a vertical flue, said flue being in alinement with the flue of said heating-drum and larger than said flue and 100 said damper whereby products of combustion can pass by said damper and through said flue, a fluid-actuated motor in communication with said fluid-containing receptacle, and means actuated by said motor for raising or lowering the wick of said lamp. 105

In testimony whereof I hereunto set my hand in the presence of two subscribing witnesses.

GOMER EVANS.

Witnesses:

JOHN C. SMITH,
ISABELLA MILLER.