

(No Model.)

2 Sheets—Sheet 1.

A. GARTNER.

REGULATOR.

No. 395,492.

Patented Jan. 1, 1889.

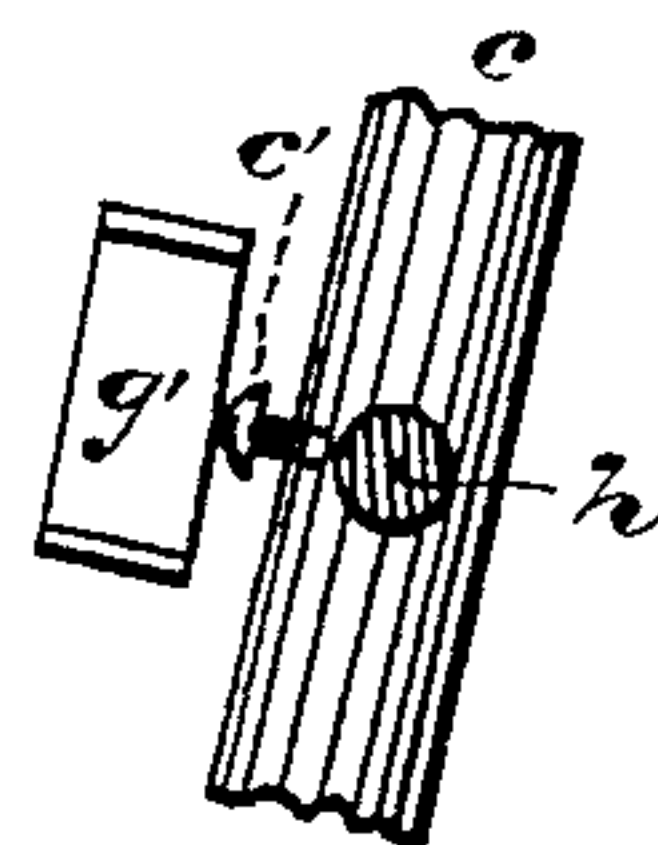
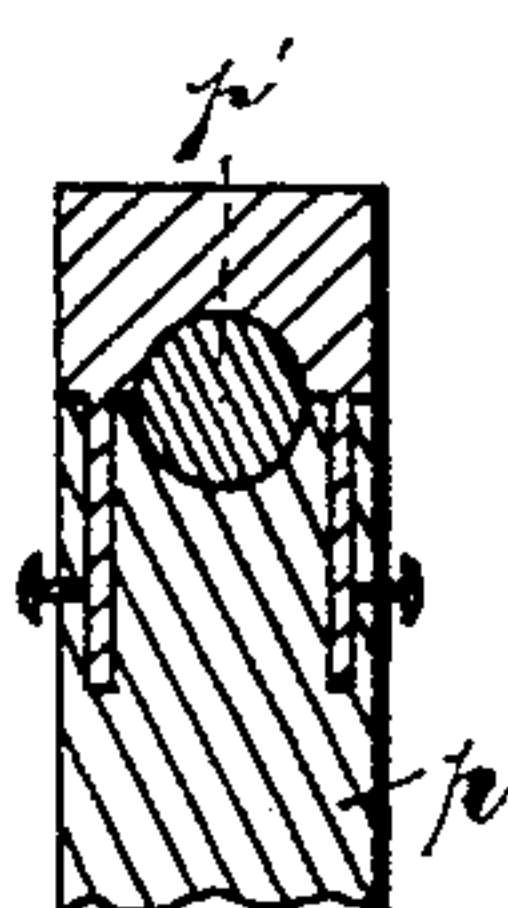
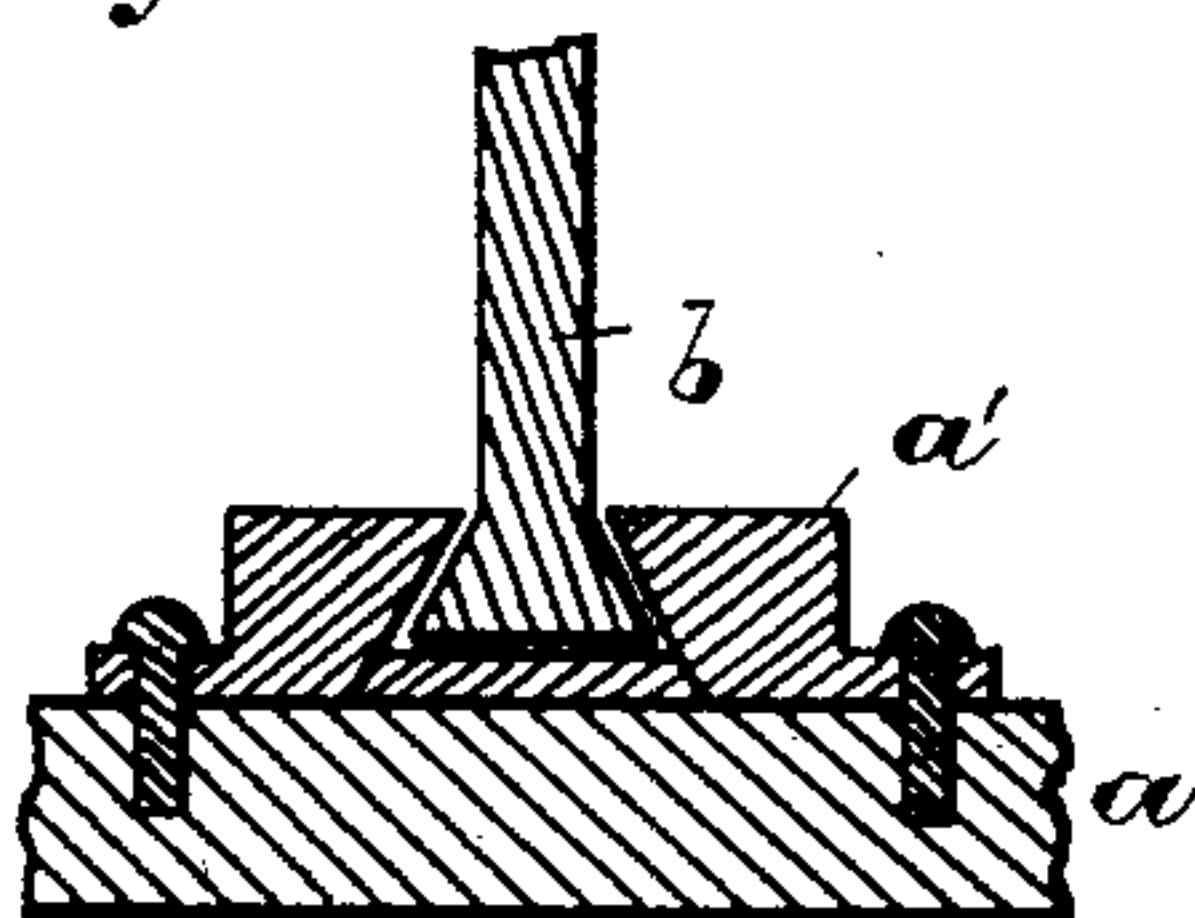
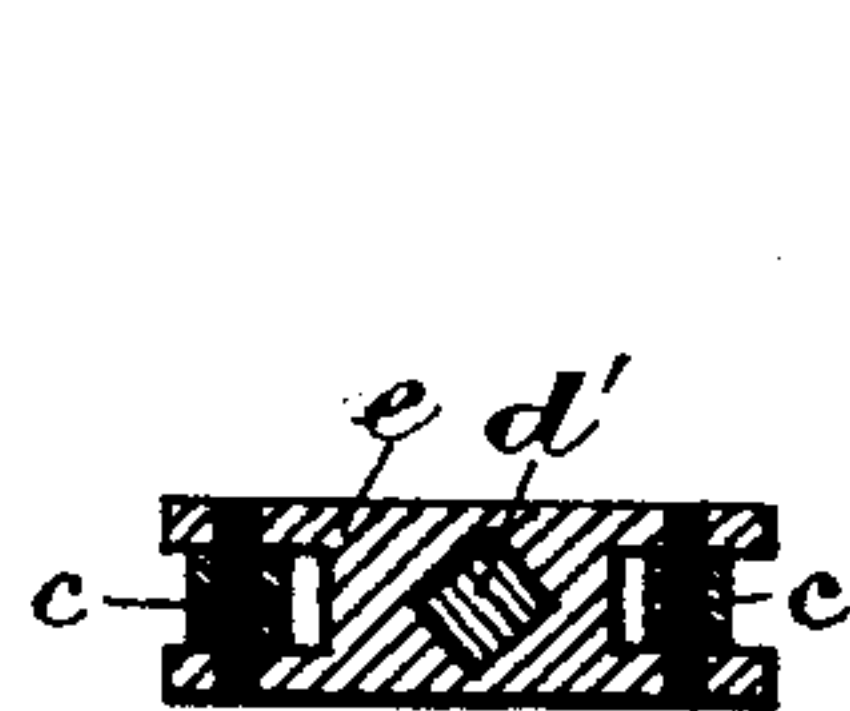
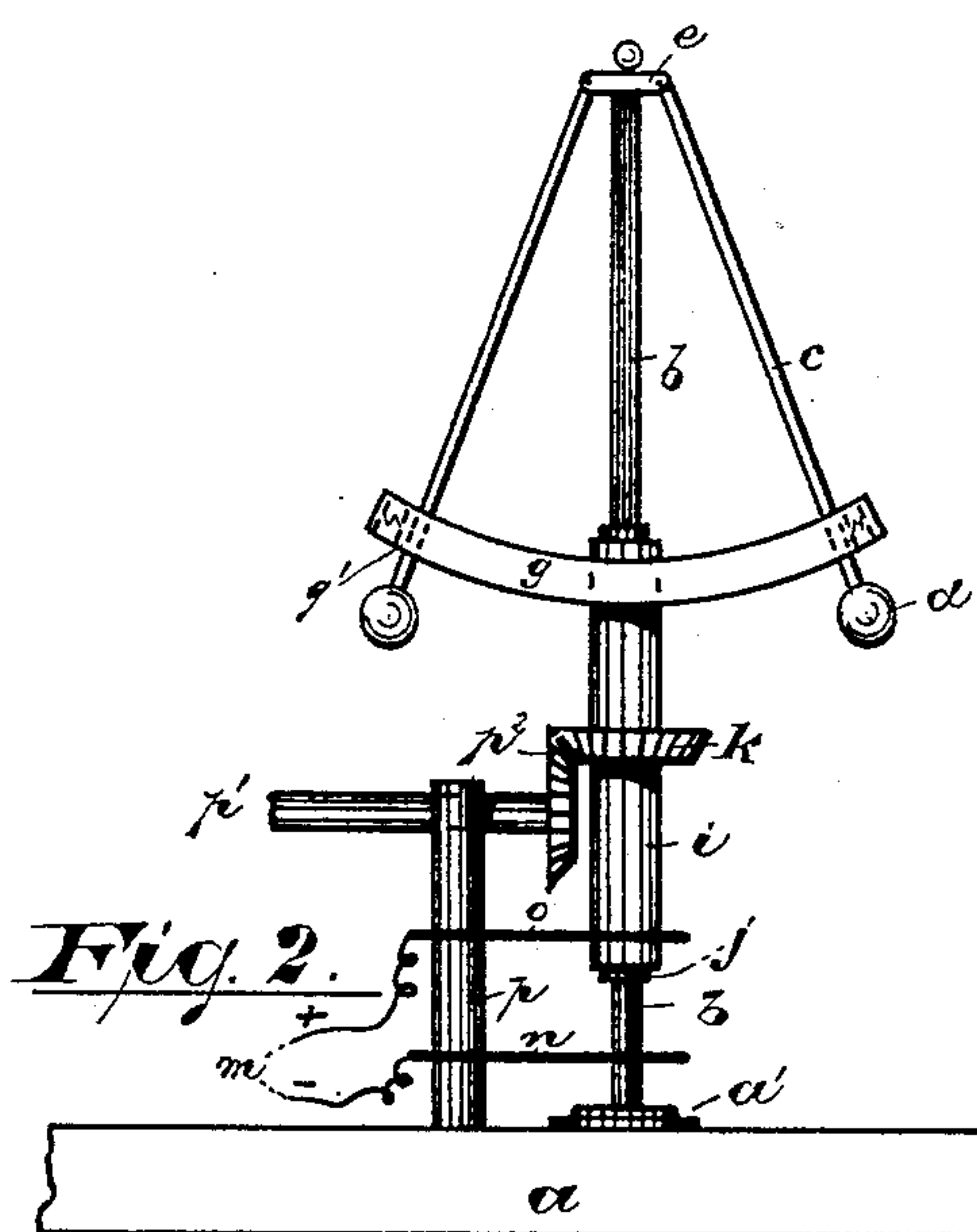
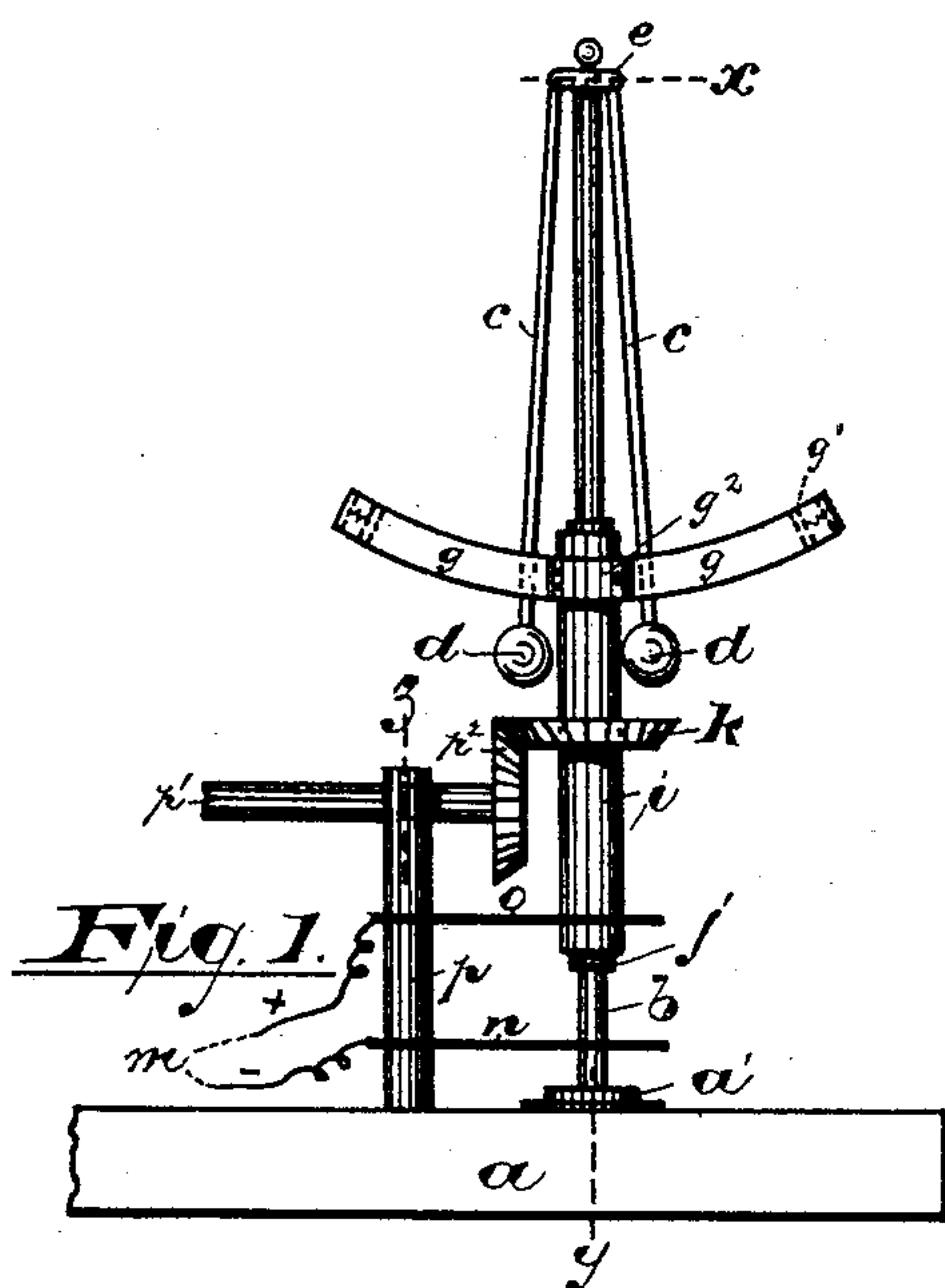


Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

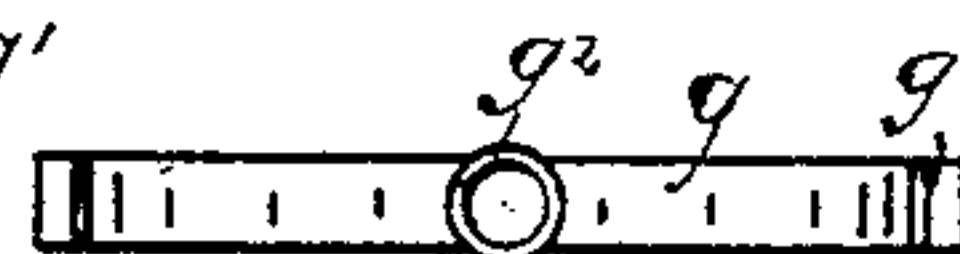
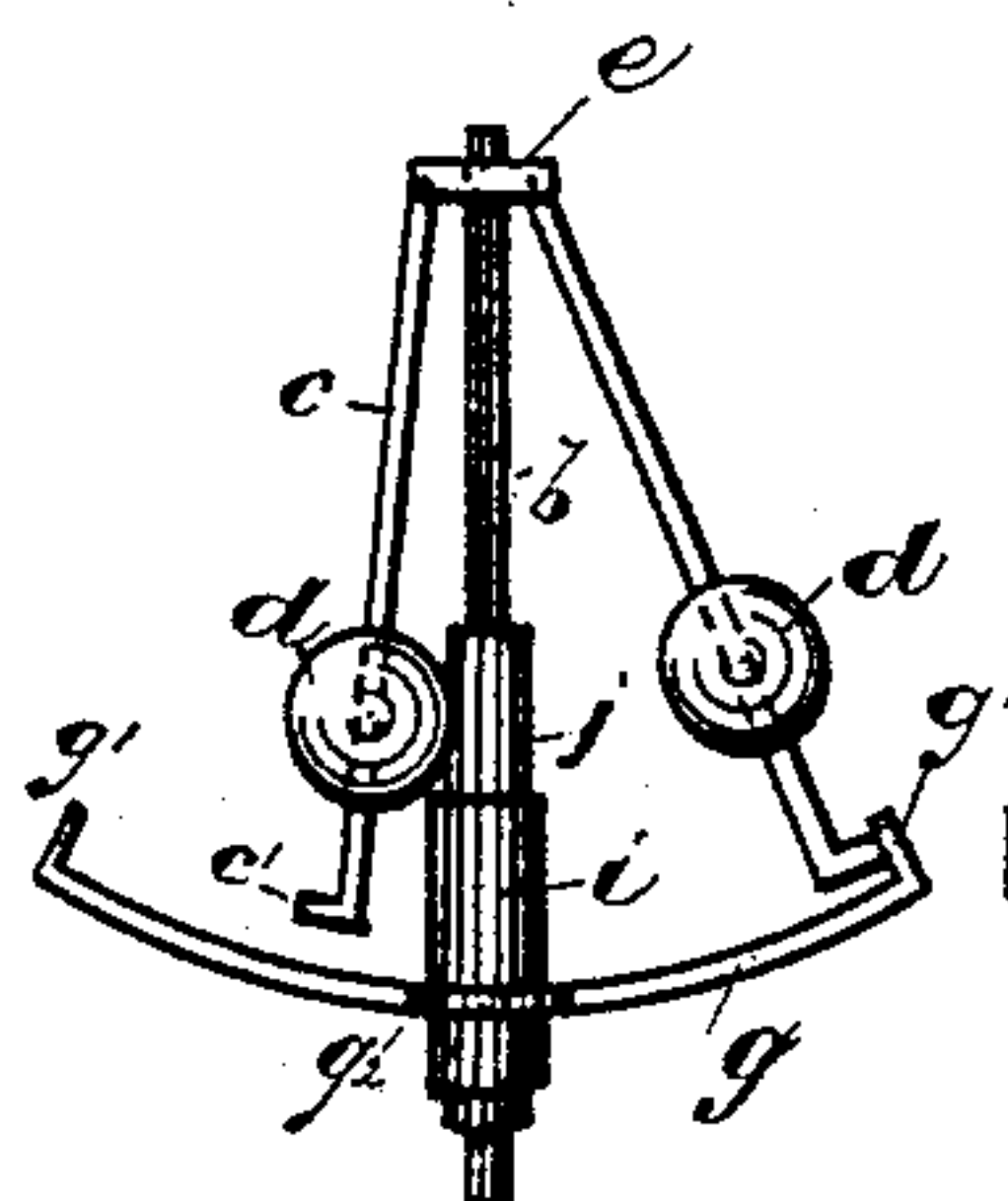
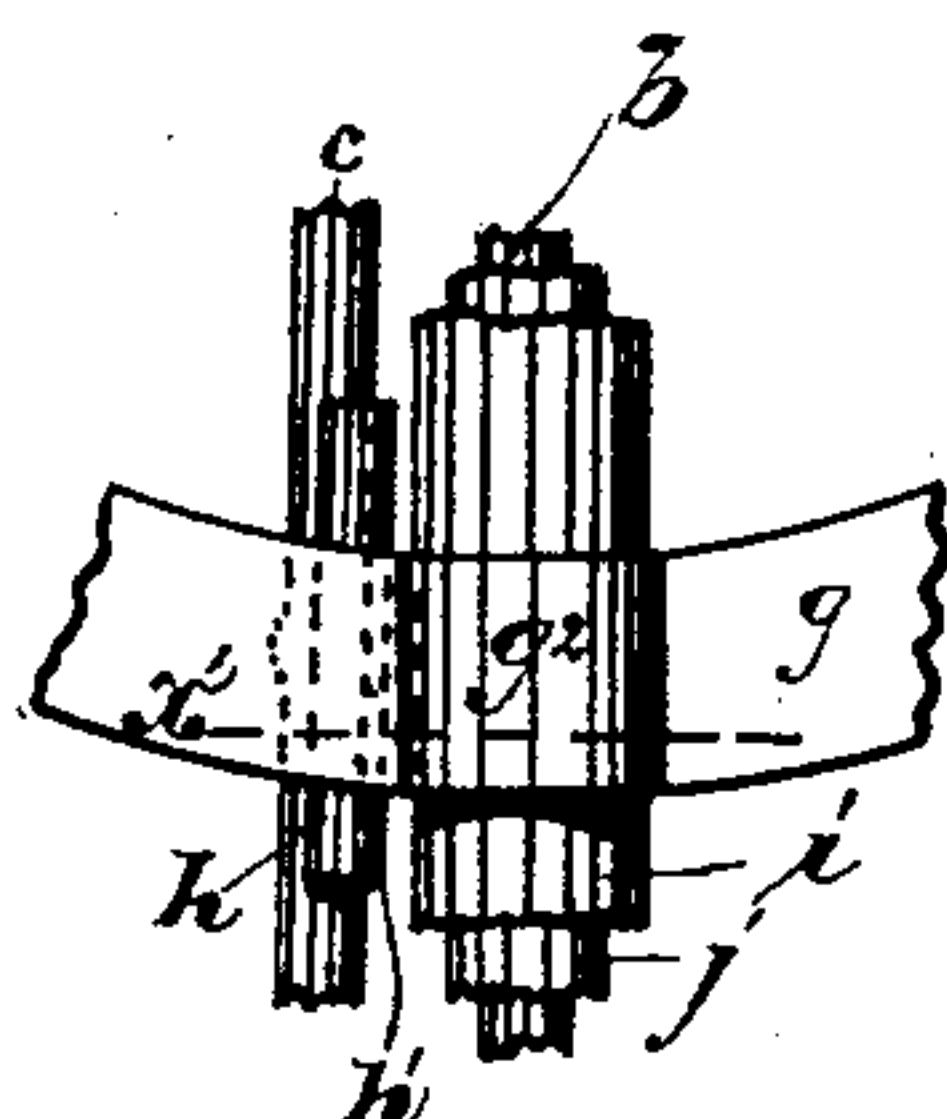
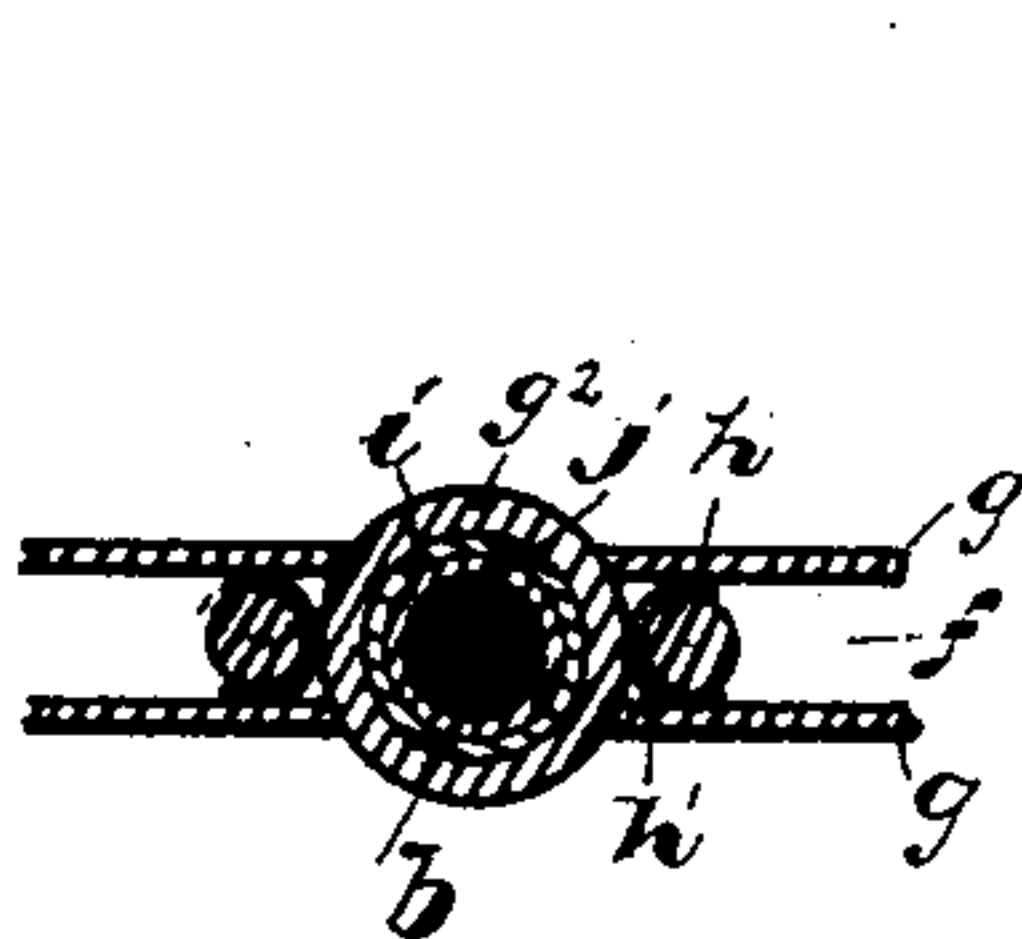


Fig. 7.

Fig. 8

Fig. 9.

Fig. 9<sup>a</sup>

**Inventor:**

Witnesses,  
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**Alfred Gartner,**

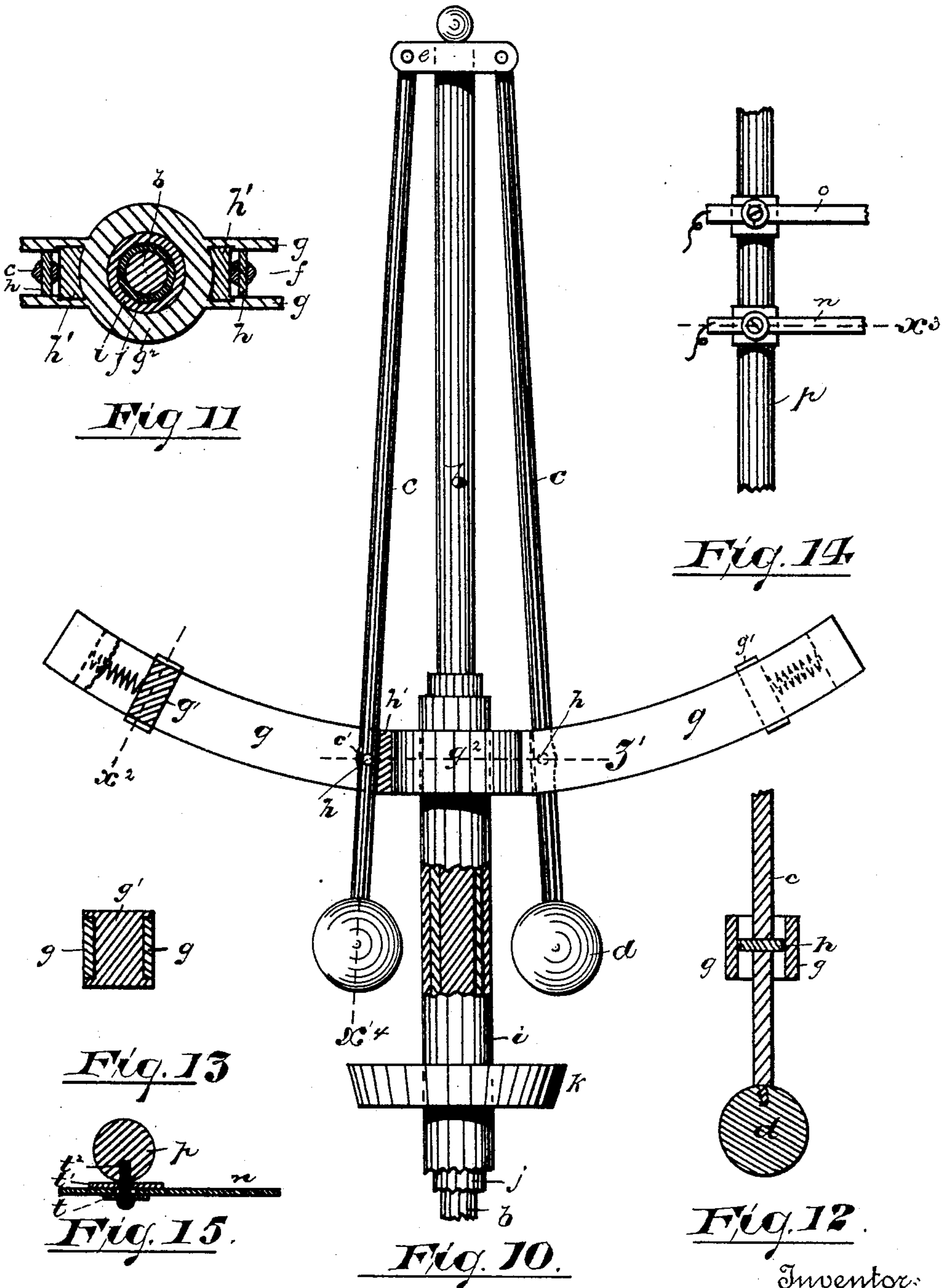
By Lin Attorney S

Drake & Co.

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Witnesses:  
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*W. A. R. G.*

Inventor.



# UNITED STATES PATENT OFFICE.

ALFRED GARTNER, OF NEWARK, NEW JERSEY, ASSIGNOR TO FREDERICK T. FEAREY, OF SAME PLACE.

## REGULATOR.

SPECIFICATION forming part of Letters Patent No. 395,492, dated January 1, 1889.

Application filed July 12, 1888. Serial No. 279,703. (No model.)

*To all whom it may concern:*

Be it known that I, ALFRED GARTNER, a subject of the Emperor of Austria-Hungary, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Electro Regulators and Governors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to provide a governor of reduced cost of construction, and one that will be more reliable and effective; and it consists in the improved electric governor having the arrangements and combinations of parts substantially as will be hereinafter set forth, and finally embodied in the clauses of the claim.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several figures, Figures 1 and 2 are side elevations showing the two opposite positions of the governing-weights. Fig. 3 is a section taken through line  $x$ . Fig. 4 is a section through line  $y$ . Fig. 5 is a section on line  $z$ . Fig. 6 is a detail view showing a modification of construction. Fig. 7 is a section taken on line  $x'$  of Fig. 8. Fig. 8 is a detail modification in the mode of insulating. Fig. 9 is a modification in the construction of the governor or regulator, and Fig. 9<sup>a</sup> is a plan of a certain limiting piece or arm providing contact points or bearings for the governing-arms. Fig. 10 is an enlarged view of the governor, shown partly in section. Fig. 11 is a section through line  $z'$ . Fig. 12 is a section taken on line  $x^1$ . Fig. 13 is a section taken on line  $x^2$ . Fig. 14 is a partial side view showing certain springs connecting with the conducting-wires. Fig. 15 is a section taken on line  $x^3$ .

In said drawings,  $a$  indicates a suitable bed, upon which is secured a bearing-plate,  $a'$ , as indicated in Fig. 4, in which is fixed a revolving standing stud or shaft,  $b$ . Said stud, post, or shaft  $b$  may be provided with bearings above said plate  $a'$  to give greater firmness

thereto in any suitable manner. At the upper end of said stud, standard, or shaft  $b$  are arranged governing-arms  $c c$ , provided at their lower ends or parts with weights  $d d$ , and at their upper ends hinged or pivoted to the stud, standard, or shaft  $b$ . The said stud, standard, or shaft  $b$  may be given an angular form at its head, as indicated at  $d'$  in Fig. 3, and on the same may be arranged cross-bar  $e$ , providing bearings for the arms  $c c$ ; or the said arms may be connected to said stud, standard, or shaft, so as to revolve therewith, in any suitable manner. By turning the shaft  $b$  more or less rapidly in its bearings, and with it the arms  $c c$  and weights  $d d$ , centrifugal force is exerted to cause the weight to separate in the manner common to governors. To give a double bearing to said arms, whereby they are held more firmly upon the standard or shaft  $b$ , and to relieve the upper bearing of a part of the lateral strain, I prefer to provide a guideway in which the said arms are allowed to work, the said guideway being formed by horizontally-disposed rods or bars  $g g$ , which extend a little beyond the limit of the outward movement of the arms. The said bars  $g g$  are preferably of metal, and in that event I prefer to insulate the arms  $c c$  therefrom by means of rubber,  $h$ , or other suitable material, as indicated in Fig. 12, or in the manner indicated in Fig. 7, or in any other appropriate way. The bars  $g g$  are secured upon the stud or standard or shaft  $b$ , as indicated in Figs. 10 and 11, or in any suitable manner, in which figures  $g^2$  indicates a hub upon which said bars  $g g$  are formed or secured.  $i$  indicates a sleeve, of metal, which holds said hub in place; and  $j$ , an interposed sleeve, of rubber or equivalent insulator, which holds said sleeve  $i$  in place, and yet electrically separate from the standard, shaft, or stud  $b$ . Said sleeves are held rigidly upon said standard, stud, or shaft by frictional contact or otherwise, turning therewith, and upon the outer sleeve is fixed a gear or cog wheel,  $k$ , by means of which motion is transmitted from the electric motor to the governor. At the outer ends of the bars  $g$ , which are preferably segmental and concentric with the path of the governing-arms, are formed contact points or bearings  $g' g'$ , which may be either rigidly fixed or



formed on said bars, as in Fig. 9, or have a spring backing, as in Fig. 10, whereby no jar will be produced when said bearings are engaged by the governing-arms.

5 To make a more perfect contact, the arms *c* may be projected or pointed when they are to engage said bearing *g'*, as at *c'*, and should the said arms be so arranged as that they would make an electrical contact with the sleeve *i* when at rest they may be insulated, as indicated in Figs. 7, 8, and 11 at *h'*.

The poles of the electrical circuit to be governed are brought into connection with the shaft or standard *b* by means of the conducting-wire *m* and metallic piece *n*, and with the metal sleeve *i* by means of the metal pieces *n* and *o*, the said metallic pieces *n* and *o* being held on a suitable post, *p*, insulated therefrom, as indicated in Fig. 15, and providing suitable bearings for the shaft *b* and sleeve *i*, so as to secure a perfect electrical connection, the said metallic pieces being preferably springs which bear against the sides of the shaft, and thus produce the desired connection. The stud *p* may be also provided with bearings for the main shaft *p'* and co-operating gear or cog wheel *p<sup>2</sup>* of the motor.

In Fig. 15 the metallic piece *n* is shown to be clamped between rubber washers *t t'*, and to be held upon the post *p* by a suitable pin or screw, *t<sup>2</sup>*, and thus the said piece *n* is held from any electrical connection with the post *p*, as will be understood.

In operating the device the electrical current is brought through a divided circuit from the battery on the wire *m* to the spring *o*, from whence it travels over the sleeve *i*, bars *g*, arms *c*, (when said arms are in engagement with the contact points or bearings *g'*), and shaft *b* to the spring *n*, as will be understood. When the electric motor, to which the governor has been attached by means of the shaft *p'* and wheels *p<sup>2</sup> k*, has attained a high rate of speed, and the weights *d* are thrown outward by the centrifugal force and brought into connection with the said bearings *g'*, and thus a more direct circuit for the current is set up as a result, the current is diverted from the motive mechanism, and thus the speed of the motor is reduced, and is thus kept within the desired limit, as will be understood.

Having thus described the invention, what I claim as new is—

55 1. In combination, in an electric governor, with the shaft *b* and weighted arms *c c*, and a sleeve, *i*, insulated from said shaft, a bar

or bars, *g*, having bearings *g'*, adapted to make an electrical contact with said weighted arms, substantially as and for the purposes set forth. 60

2. In an electrical governor, the combination, with a revolving shaft and governing-arms adapted to be acted upon by centrifugal force, of contact bearings or points arranged on the path of said governing-arms and connected with a sleeve arranged on said shaft, and conducting-pieces *n o*, arranged in connection with said shaft and sleeve, respectively, substantially as and for the purposes set forth. 70

3. In an electrical governor, the combination of a revolving shaft having governing-arms adapted to be acted upon by centrifugal force, an insulated sleeve and bars *g*, having bearings *g'* in electrical connection with said sleeve, a gear-wheel, *k*, arranged in connection with the main shaft of the motor, and springs *o n*, bearing on said sleeve and shaft, respectively, substantially as and for the purposes set forth. 80

4. In combination, in an electrical governor, revolving shaft, and governing-arms, and insulated sleeve *i*, bars *g g*, providing a way for the said arms and bearings *g' g'*, and electrical conductors connecting with said shaft and said bearings *g'*, respectively, substantially as and for the purposes set forth. 85

5. In combination with the shaft *b* and governing-arms, bearings *g'*, and conductors connecting with said bearings and shaft, and insulators interposed between said bearings and shaft, substantially as and for the purposes set forth. 90

6. In combination with the shaft and governing-arms, and bars *g g*, forming a way and providing bearings *g'*, an insulator, *h*, for disconnecting said arms *c* and bars *g*, substantially as and for the purposes set forth. 95

7. In combination with the rod *b* and means for causing the same to revolve, a cross bar or head, *e*, arms *c*, hinged thereto, an insulated sleeve, bars *g*, bearings *g'*, insulators *h h'*, post *p*, springs *o n*, and wires *m*, all arranged and combined substantially as and for the purposes set forth. 100 105

In testimony that I claim the foregoing I have hereunto set my hand this 11th day of July, 1888.

ALFRED GARTNER.

Witnesses:

CHARLES H. PELL,  
E. L. SHERMAN.