

No. 698,985.

Patented Apr. 29, 1902.

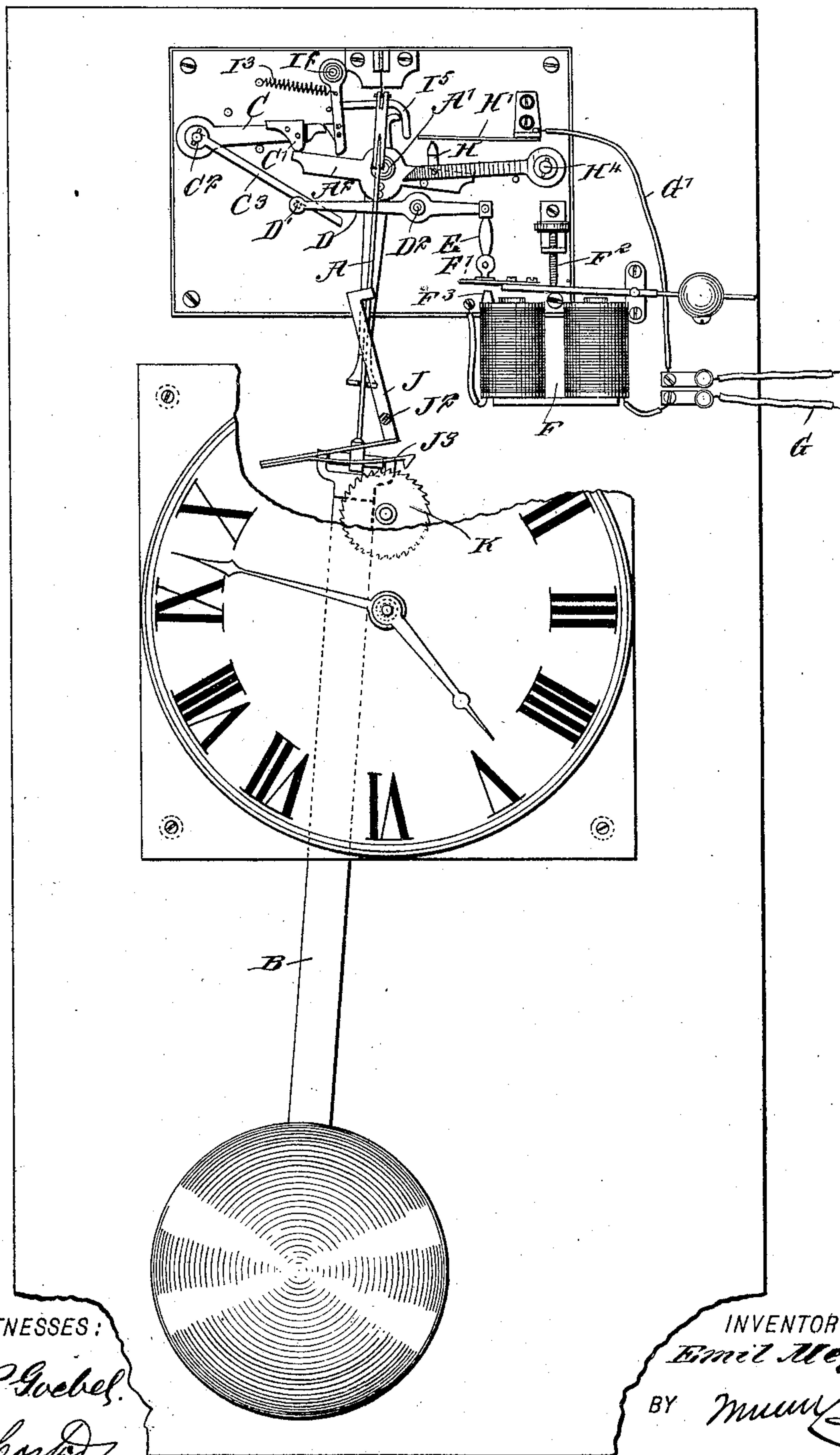
E. MEYER.  
ELECTRIC CLOCK.

(Application filed July 19, 1901.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



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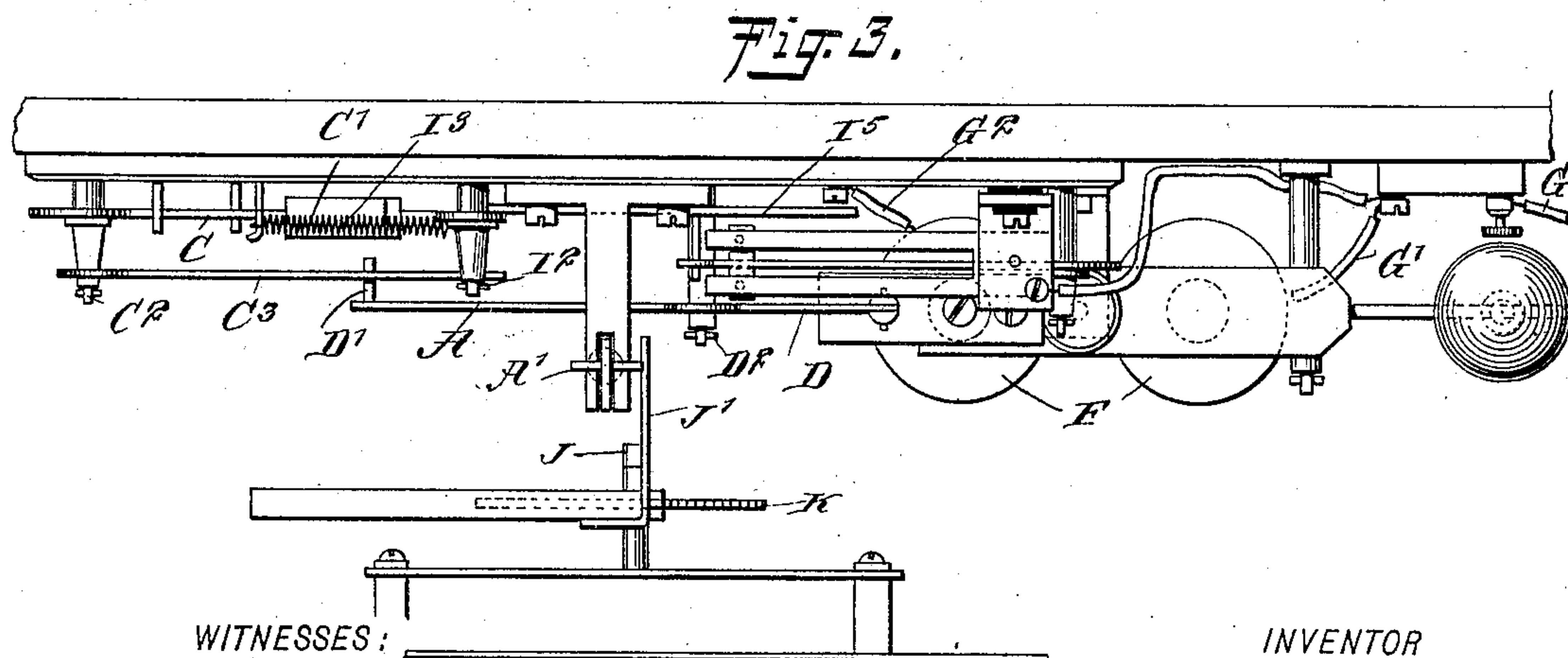
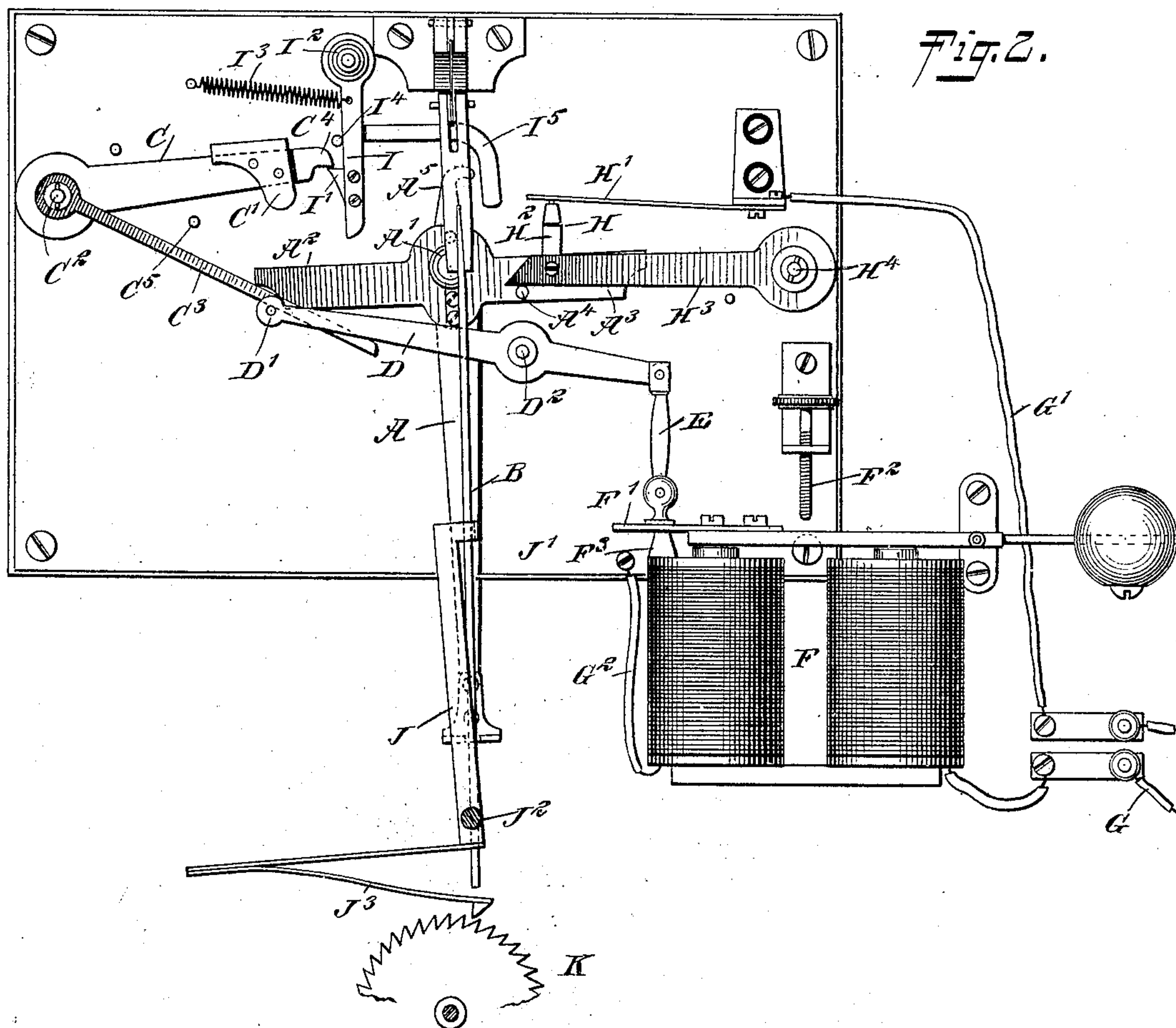
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**2 Sheets—Sheet 2.**



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# UNITED STATES PATENT OFFICE.

EMIL MEYER, OF JERSEY CITY, NEW JERSEY, ASSIGNOR OF ONE-HALF TO  
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## ELECTRIC CLOCK.

SPECIFICATION forming part of Letters Patent No. 698,985, dated April 29, 1902.

Application filed July 19, 1901. Serial No. 68,925. (No model.)

*To all whom it may concern:*

Be it known that I, EMIL MEYER, a subject of the Emperor of Germany, residing in Jersey City, in the county of Hudson and State of New Jersey, have invented a new and Improved Electric Clock, of which the following is a full, clear, and exact description.

The invention relates to clocks driven by electricity; and its object is to provide a new and improved electric clock which is simple and durable in construction and very accurate in its workings.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a front elevation of the improvement with parts broken out. Fig. 2 is an enlarged front elevation of the driving mechanism, parts being in a different position from the one shown in Fig. 1; and Fig. 3 is a plan view of the same.

The crutch or fork A of the pendulum B is pivoted at A' on the clock-frame and is provided with side or cross arms A<sup>2</sup> A<sup>3</sup>, of which the arm A<sup>2</sup> periodically receives a blow or is struck by a weight C', held adjustably on the arm C, fulcrumed at C<sup>2</sup> on the clock-frame. An angular arm or extension C<sup>3</sup> of the arm C is adapted to be engaged by a pin D', held on a lever D, fulcrumed at D<sup>2</sup> on the clock-frame and pivotally connected by a link E with the armature-lever F' of an electromagnet F, of any approved construction. The electromagnet F is in a circuit G, containing a circuit-closer H, controlled by the arm A<sup>3</sup> of the crutch, and this circuit-closer consists, essentially, of spring contact-plates H', connected with a circuit-wire G and adapted to be engaged by a contact-point H<sup>2</sup>, projecting upwardly from an arm H<sup>3</sup>, fulcrumed at H<sup>4</sup> on the clock-frame. The free end of the arm H<sup>3</sup> is engaged by a pin A<sup>4</sup> on the side of the cross-arm A<sup>3</sup>, so that when the pendulum, and with it the crutch A, swings from the left to the right the pin A<sup>4</sup> imparts an up-

ward swinging motion to the arm H<sup>3</sup> to move the contact-point H<sup>2</sup> in engagement with the contact-plates H' to close the circuit, it being understood that the point H, arm H<sup>3</sup>, and pin A<sup>4</sup> are electrically connected with the wire G<sup>2</sup> of the circuit, as will be readily understood by reference to Figs. 1 and 2. Now when the circuit is closed the armature-lever F is attracted, and in swinging downward said lever by the link E imparts a swinging motion to the lever D, so that the angular arm C<sup>3</sup> is swung upward to cause a like upward swinging of the arm C and its weight C'. When the weighted arm C swings into an uppermost position, as described, its free end C<sup>4</sup> passes upon a lug I', arranged on one side on an arm I, fulcrumed at I<sup>2</sup> on the clock-frame, a spring I<sup>3</sup> pressing said arm I to hold the latter normally in the position shown in Fig. 2, the arm I resting against the stop-pin I<sup>4</sup>. On the arm I is held an angular extension I<sup>5</sup>, adapted to be engaged by an extension A<sup>5</sup> on the upper end of the crutch A, so that when the pendulum and the crutch A swing from the right to the left the said extension A<sup>5</sup> moves in contact with the extension-arm I<sup>5</sup> to swing the arm I from the left to the right against the tension of the spring I<sup>3</sup> and to move the lug I' from under the free end C<sup>4</sup> of the weighted arm C. Thus when the pendulum arrives in its left-hand position the weighted arm C is released, and it consequently swings downward by its own weight, and the weight C' imparts a blow to the arm A<sup>2</sup>, so as to give an impulse to the crutch A, and consequently to the pendulum B, to swing the same from the left to the right. As soon as the crutch is on the oscillation from the left to the right the arm A<sup>2</sup> moves out of engagement with the weight C', as the arm C thereof now rests on the stop-pin C<sup>5</sup>. When the pendulum B nears its right-hand position, then the pin A<sup>4</sup> has moved the arm H<sup>3</sup> upward to bring the contact-point H<sup>2</sup> in engagement with the contact-plate H', so that the circuit H is closed and the armature-lever F' is attracted to cause the lever D to swing the arm C back into an uppermost position and in engagement with the lug I' to hold the arm C temporarily at rest.

It is understood that when the pendulum



and the crutch A are moving from the left to the right the extension A<sup>5</sup> moves out of engagement with the extension-arm I<sup>5</sup> to allow the arm I to return to its normal position against the stop I<sup>4</sup> by the action of the spring I<sup>3</sup>. When the pendulum swings from the right to the left, then the contact-point H<sup>2</sup> finally moves out of contact with the plate H', so that the circuit is broken and the armature-lever F' swings back into an uppermost position against the stop F<sup>2</sup>, as shown in Fig. 1. This upward movement of the armature-lever F causes the lever D to swing back to its backward position, the pin D' being a distance below the angular arm C<sup>3</sup> to allow a free downward swinging of the arm C as soon as the latter is released by the arm I being caused to swing to the right upon the extension A<sup>5</sup> moving the extension-arm I<sup>5</sup>, as previously explained.

In order to insure a quick upward swinging of the arm C by the lever D and its pin D' acting on the angular arm C<sup>3</sup>, I provide a cushion F<sup>3</sup>, of rubber or other elastic material and located under the armature-lever F', so that when the latter is attracted by the armature on the closing of the circuit, as above described, then the impact of the lever F' on the bumper F<sup>3</sup> causes a jerk to the lever D and the angular arm C<sup>3</sup> to suddenly swing the arm C back into an uppermost resting position.

The movement given to the pendulum B by the successive blows imparted to the arm A<sup>2</sup> by the weight C' may be transmitted to the clock mechanism proper by any suitable mechanism. For instance, as shown, the pendulum B engages a lug J' on a lever J, fulcrumed at J<sup>2</sup> on the clock-casing, said lever J carrying a spring pull-pawl J<sup>3</sup>, adapted to turn a ratchet-wheel K, forming part of the clock-gearing.

The clock-gearing is not shown or described in detail, as it is evident that an ordinary clock-gearing may be employed.

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

1. An electric clock having a pendulum, a pendulum-crutch provided with cross-arms, a weighted arm for striking one of the cross-arms to give an impulse to the pendulum in one direction, and an electrical device for raising the weighted arm, said electrical device comprising a circuit, an electromagnet in said circuit, a circuit-closer for said circuit and controlled by the other arm of the pendulum-crutch, and means connected with the armature-lever of the said electromagnet, for imparting an upward movement to said weighted arm when the pendulum-crutch closes the circuit, as set forth.

2. An electric clock having a weighted arm for imparting movement to the pendulum in one direction, an electrical device controlled by the pendulum and arranged to return the weighted arm to an inactive position, and a

retaining device controlled from the pendulum, for temporarily holding the weighted arm in a raised position, said retaining device comprising a spring-pressed arm having a lug adapted to be engaged by the free end of said weighted arm, and means on said crutch for periodically imparting a swinging motion to said spring-pressed arm, to move the lug out of engagement with said weighted arm, as set forth.

3. In an electric clock, the combination with a pendulum crutch or fork provided with oppositely-arranged arms, of a pivoted and weighted arm adapted to strike one of the arms of the pendulum crutch or fork, a locking device for holding the weighted arm raised, means controlled by the crutch or fork for releasing the locking device to allow the weighted arm to fall, an electromagnet, means operated by the armature of the magnet for swinging the weighted arm upward into engagement with the locking device, and a circuit-closer controlled by the other arm of the pendulum crutch or fork, as set forth.

4. In an electric clock, the combination with a pendulum crutch or fork provided with oppositely-arranged arms, of a pivoted and weighted arm adapted to strike one arm of the pendulum crutch or fork, an electromagnet, a circuit-closer controlled by the other arm of the pendulum-crutch, a pivoted lever having one end connected with the armature of the electromagnet and its other end operatively connected with the weighted arm, a locking device for holding the weighted arm raised, and means for operating the locking device to release the weighted arm, as set forth.

5. In an electric clock, the combination with a pendulum crutch or fork provided with oppositely-arranged arms, of a pivoted and weighted arm adapted to strike one arm of the pendulum crutch or fork and provided with an angular extension, an electromagnet, a circuit-closer controlled by the other arm of the pendulum crutch or fork, a pivoted lever, having one end connected with the armature of the magnet and its other end engaging the extension of the weighted arm, a pivoted and spring-pressed arm provided with a lug with which the weighted arm engages when raised, and means for swinging the spring-pressed arm against the action of its spring from the pendulum crutch or fork, as set forth.

6. In an electric clock, the combination with a pendulum crutch or fork provided with oppositely-arranged arms and with an extension at its upper end, of a pivoted and weighted lever adapted to strike one of the arms of the pendulum crutch or fork and provided with an angular extension, an electromagnet, a circuit-closer controlled by the other arm of the pendulum crutch or fork, a pivoted lever having one end engaging the angular extension of the weighted lever, a link connecting the other end of the lever with the armature



of the magnet, and a pivoted and spring-pressed arm provided with a lug with which the weighted arm engages when raised, and with an angular extension extending into the  
5 path of the extension of the pendulum crutch or fork, as set forth.

7. In an electric clock, the combination with a pendulum crutch or fork provided with oppositely-arranged arms, one of which is provided with a lateral projection, of a pivoted  
10 and weighted lever adapted to strike one arm of the pendulum crutch or fork, an electromagnet, means for swinging the weighted arm in an upward position, means for holding the  
15 weighted arm raised, means controlled from

the pendulum crutch or fork for releasing the weighted arm, a pivoted arm provided with an upwardly-projecting contact-point adapted to be engaged by the projection on the arm of the pendulum crutch or fork, a con-  
20 tact-plate above the contact of the said arm, and an electric circuit, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EMIL MEYER.

Witnesses:

THEO. G. HOSTER,

EVERARD B. MARSHALL.