

(No Model.)

2 Sheets—Sheet 1.

C. F. HOLT.

ELECTRIC ACTUATOR FOR REGISTERING MECHANISMS.

No. 475,399.

Patented May 24, 1892.

Fig-1-

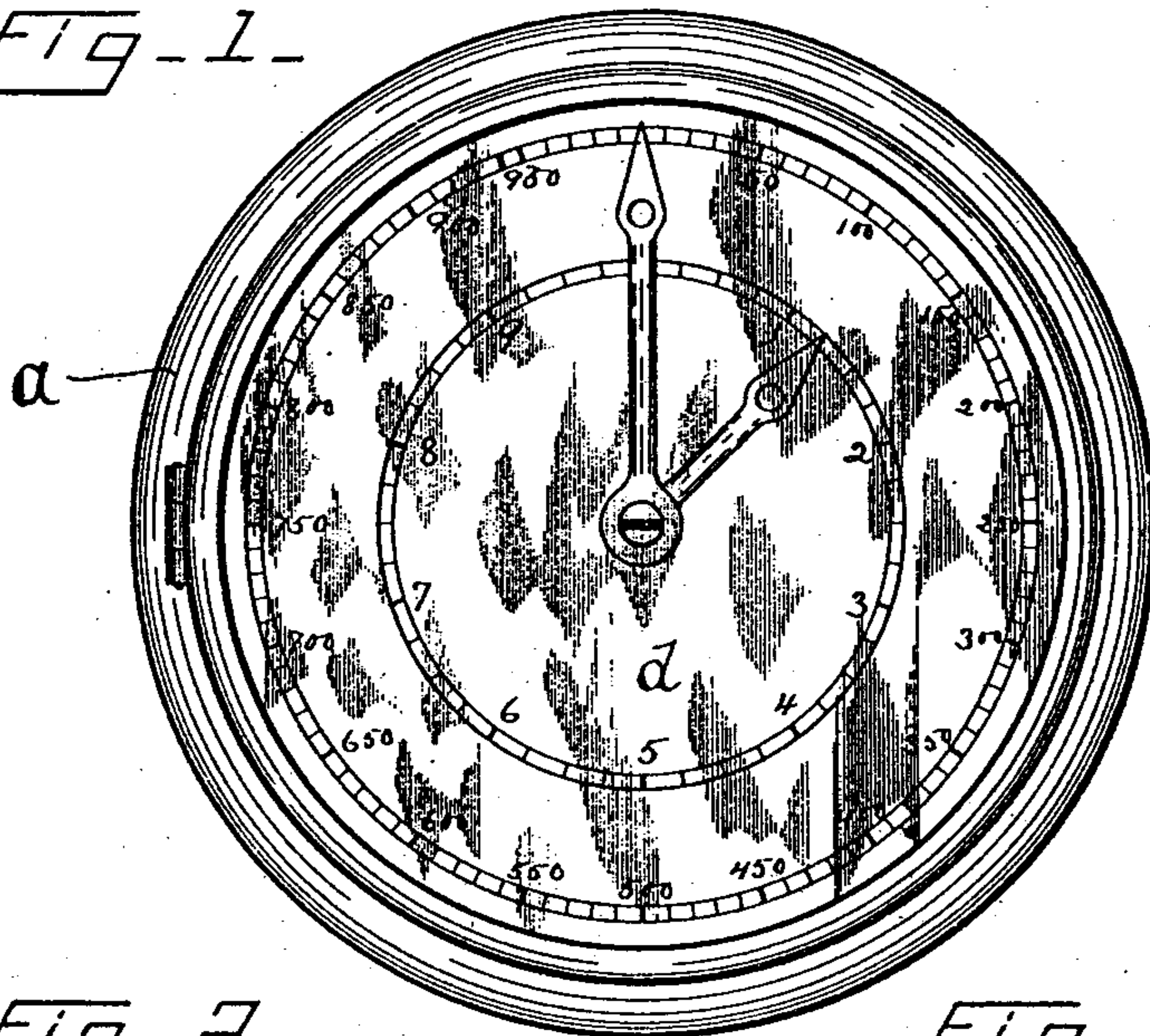


Fig-2-x

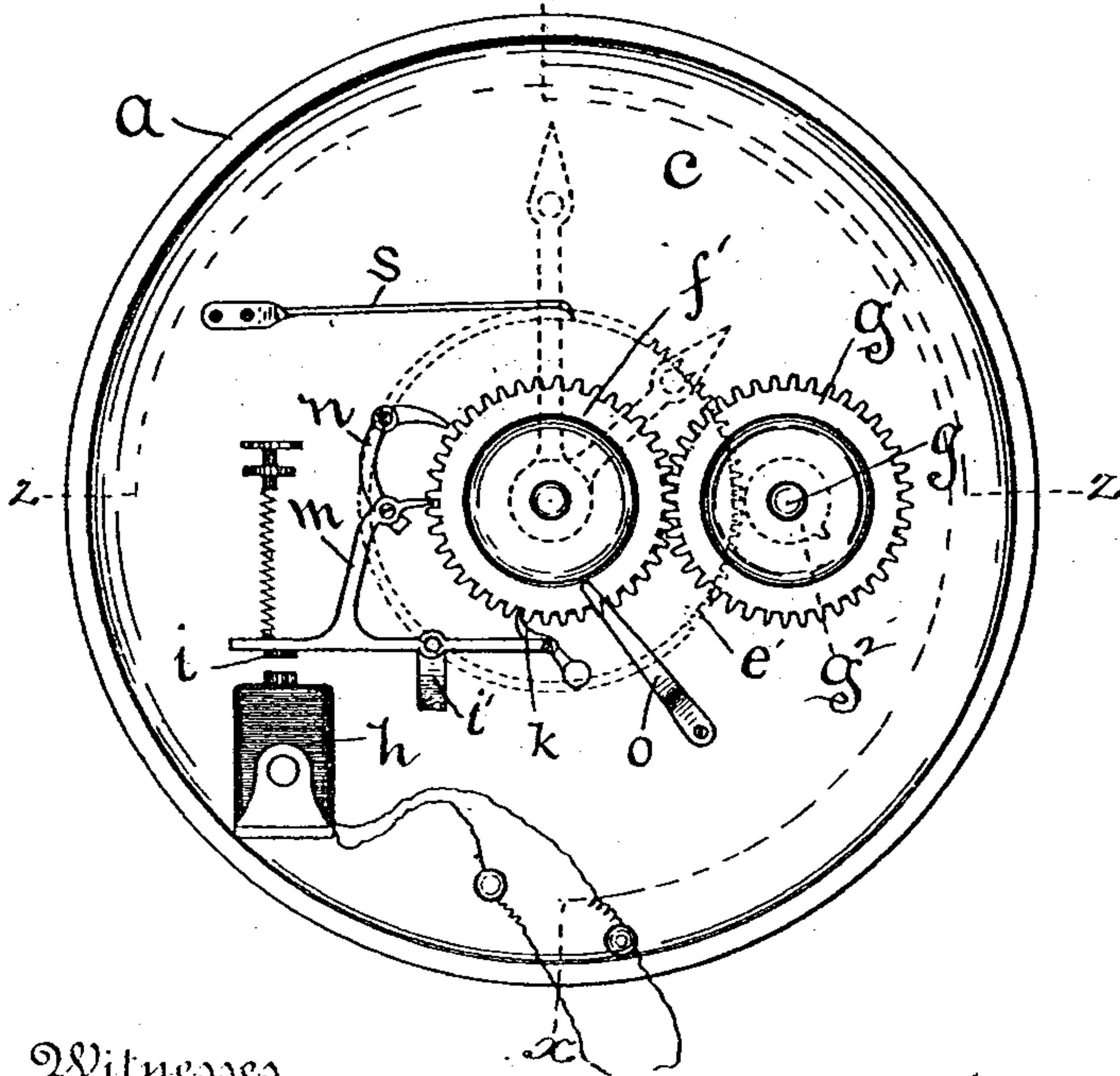
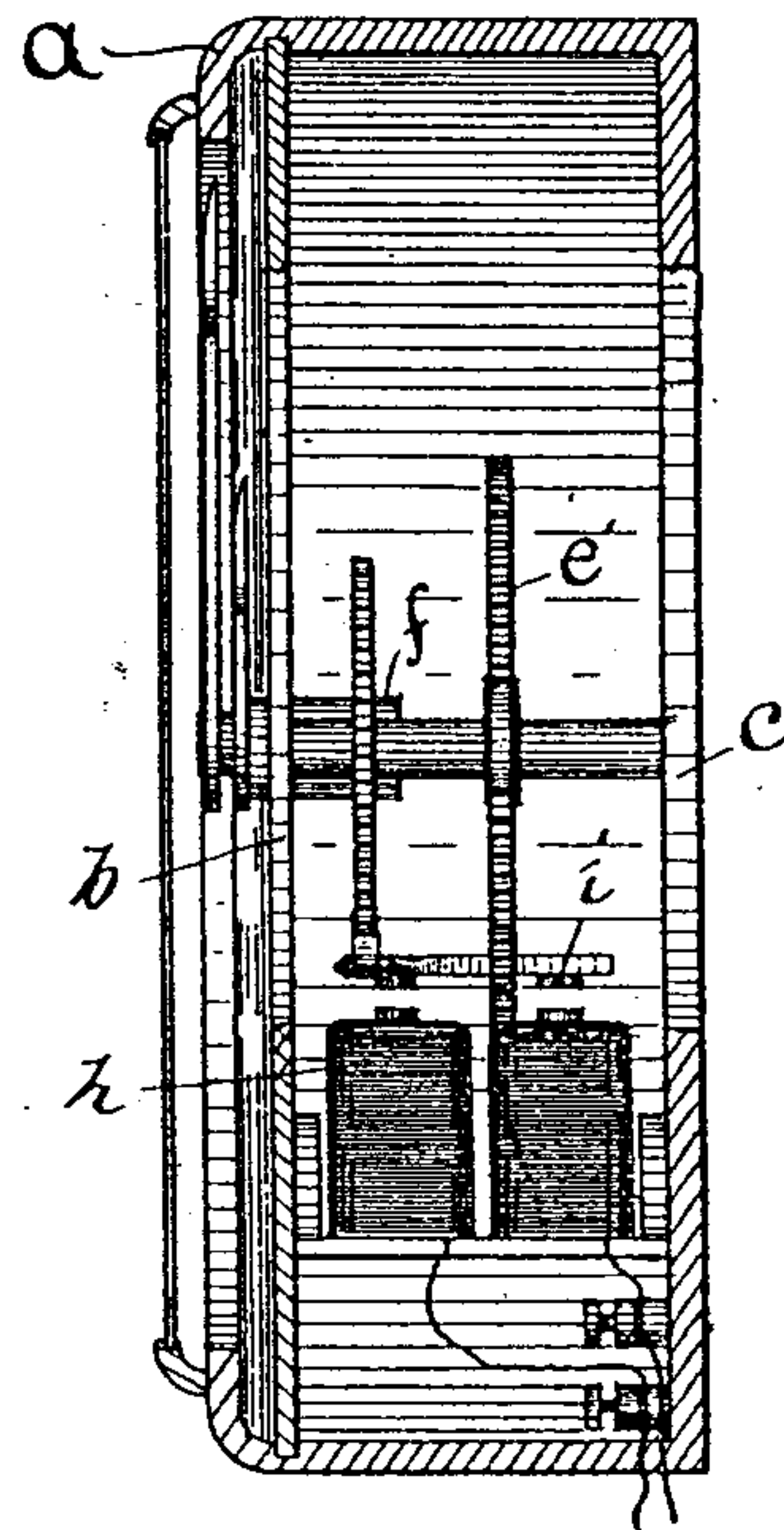


Fig-3-



Witnesses

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Inventor

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Frank H. Allen

(No Model.)

2 Sheets—Sheet 2.

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Fig - 4 -

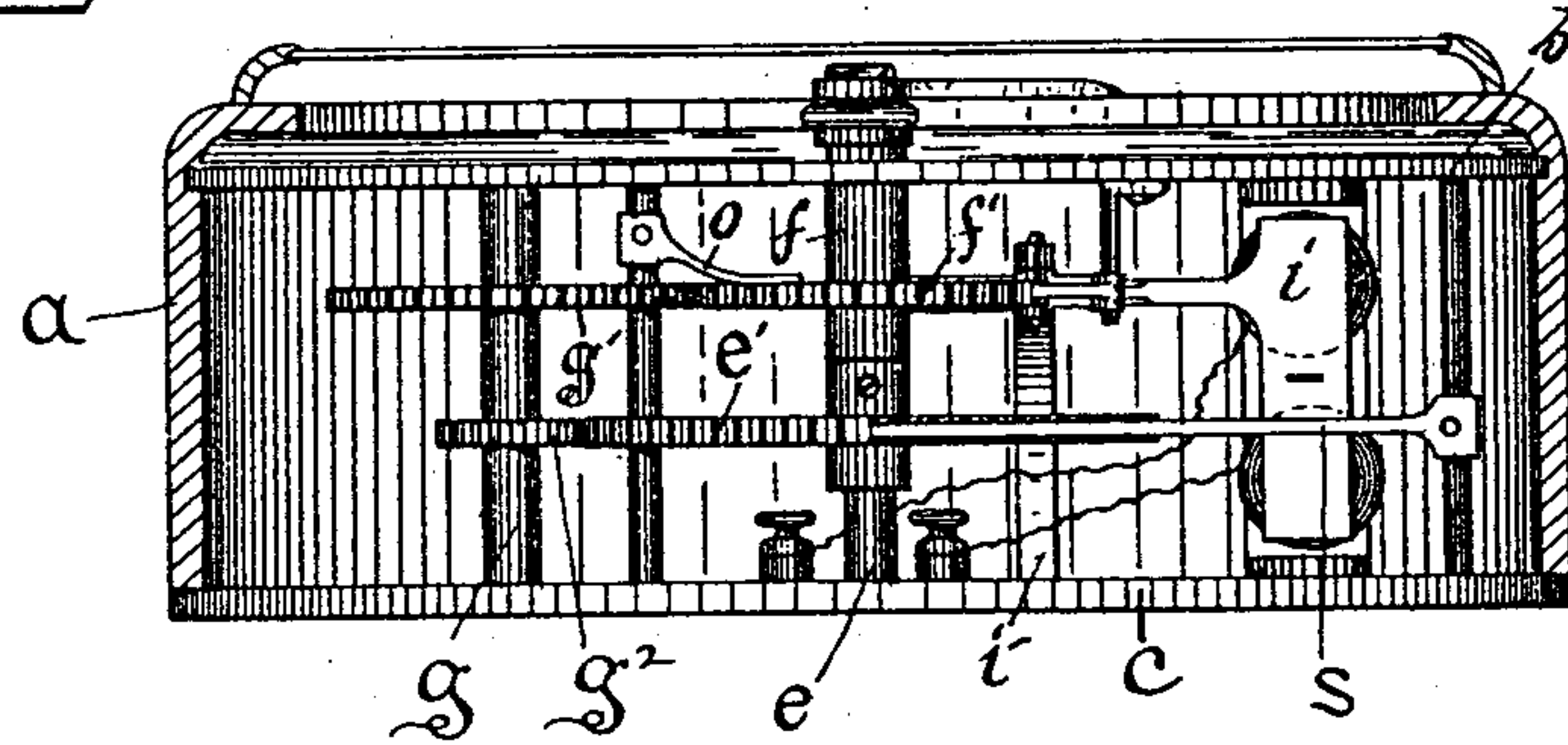
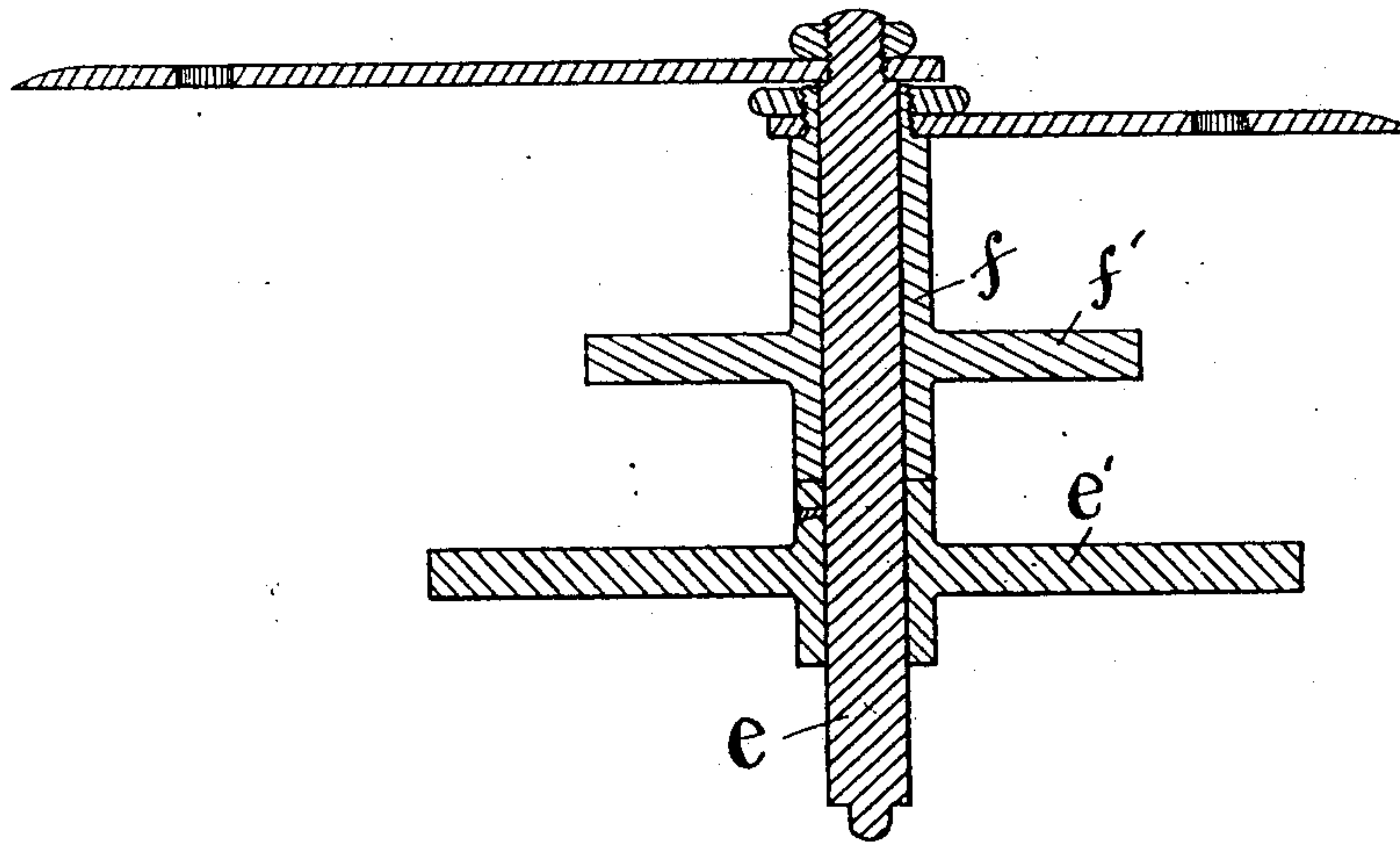


Fig - 5 -



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UNITED STATES PATENT OFFICE.

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HALF TO WILLIAM S. STARR, OF SAME PLACE.

ELECTRIC ACTUATOR FOR REGISTERING MECHANISMS.

SPECIFICATION forming part of Letters Patent No. 475,399, dated May 24, 1892.

Application filed June 22, 1891. Serial No. 397,144. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. HOLT, a citizen of the United States, residing in the city and county of New London, and State of Connecticut, have invented certain new and useful Improvements in Electrical Actuators for Registering Mechanisms, which improvements are fully set forth and described in the following specification, reference being had to the accompanying two sheets of drawings.

My invention is especially adapted for use with that class of mechanisms in which a graduated dial and intermittently-moving pointers are provided to register certain movements at a distance—as, for example, in so-called “electric clocks,” which may be distributed at various distant points and controlled by a single time-piece centrally located.

In the annexed drawings, Figure 1 is a front face view of a complete indicator embodying my improvement, and Fig. 2 a similar view with the dial and hands removed to expose the operative parts of the indicator. Fig. 3 is a cross-sectional view of a complete indicator on line *xx* of Fig. 2, and Fig. 4 is a similar view on line *zz*. In Fig. 5 I have shown a central sectional view, considerably enlarged, of the hands and the pinions to which they are attached.

In the drawings, *a* denotes the inclosing case of the indicator, the operative parts being pivoted in and between the front and rear plates *b c*. To the front plate *b* is secured a graduated dial *d*. The movements of the hands or pointers are substantially the same as in ordinary electric clocks—that is to say, one of said hands is caused to travel with a “step-by-step” movement, and when it has completed the round of the dial the other hand moves forward one step. The dial here shown is intended for use with a ship’s log, the inner-graduated circle and shorter pointer being provided to register each quarter-mile traveled, while the outer graduated circle and longer pointer register every ten miles—i. e., every complete revolution of the short pointer.

e indicates a central pivot, to which the longer pointer is fastened. This pivot has secured to it a gear *e'*, having, for the present

purpose, one hundred teeth. On the front end of said pivot *e* is a tubular shaft *f*, having secured near its inner end a gear *f'* with forty teeth, and to its outer end the shorter pointer. A second pivot *g*, supported between the front and back plates of the indicator, bears a gear *g'*, that meshes with the gear *f'*, and also a mutilated gear *g''* with a single tooth that meshes at stated times with the large gear *e'*. The gear *f'* serves as the driver of the train, and it will be understood that when said gear is set in motion the large gear *e'* will be moved forward only one tooth for each complete revolution of the driver. Gear *f'* is controlled and moved step by step by a novel arrangement of pawl and escapement, forming the most essential feature of my invention, which I will proceed to describe.

h denotes an electro-magnet, which we will assume is in the line of an electric circuit which includes the usual battery and also a ship’s log or other circuit maker and breaker.

i denotes the armature of the magnet, pivoted to a bracket *i'*, secured to the back plate of the indicator, and bearing at its inner end a pawl *k*, which engages successively the teeth of gear *f'*. When the electric circuit is closed and the armature rocked on its pivot, the pawl *k* advances a distance equal to a single tooth and the gear *f'* is correspondingly moved.

Projecting upward from the armature-lever *i'*, near the end that coacts with the magnet, is an arm *m*, whose end is bent toward gear *f'* and of such size and length that it may enter between the teeth of said gear when the armature is raised out of contact with the magnet, as in Fig. 2 of the drawings. Jointed to the projection *m*, near its end, is a lever *n*, that is pivoted to the front plate of the indicator and is formed with a pawl-shaped short arm, that is rocked to enter between the teeth of gear *f'* when the armature is drawn into contact with the magnet. The described arrangement of armature and connections provides a pawl for actuating gear *f'* along, tooth by tooth, and also a double system of locking bolts or escapement, which permit the said gear to be moved only one tooth at a time.

In order to further prevent any accidental displacement of gear *f'*, I preferably provide

a frictional, or so-called "drag," spring *o*, which may be secured to one of the plates *b c* or to a rod extending from plate to plate, as in Fig. 4. One end of said spring bears lightly on the face of gear *f'* and serves to hold said gear when not positively engaged and controlled by the described pawl and compound escapement. I also provide a spring pawl or detent *s*, which is suitably fastened to or between the plates of the indicator, and whose free end engages one of the teeth of the large gear *e'*. This detent serves to hold gear *e'* at all times in proper relation to the mutilated gear *g'*, so that the single tooth of the latter shall always mesh properly with the teeth of the former. The mutilated gear *g'* could be provided with any number of teeth, instead of one, as here shown; but for my present form of indicator one only is required.

My device as a whole is simple in construction, inexpensive to produce, and has the further advantage of requiring but little power to operate. The pointers are secured to their

respective pinions by thumb-nuts, which allow said points to be released and set in any desired position on the dial.

Having described my invention, I claim—

1. In combination with a train of gearing controlling the movements of two pointers, as set forth, and an electro-magnet, an armature of lever form having an actuating-pawl and a locking-pawl, as described, and an independently-pivoted locking-pawl connected with said armature-locking pawl, substantially as and for the purpose specified.

2. In combination with a toothed wheel, an angle-lever having an actuating-pawl at one end and a locking-pawl at the other end and an independently-pivoted locking-pawl connected with said angle-lever in manner and for the purpose specified.

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Witnesses:

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ALONZO M. LUTHER.