

No. 636,656.

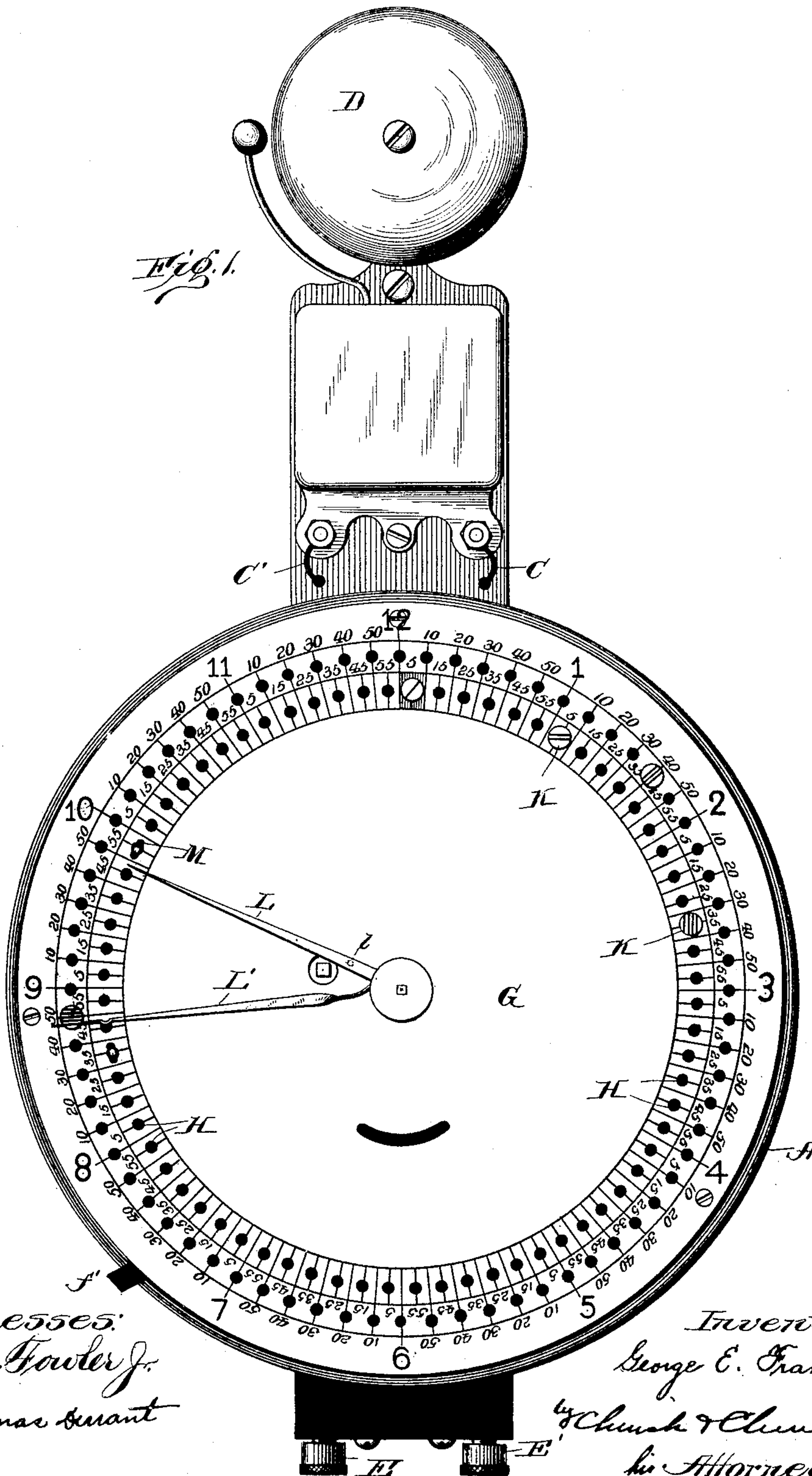
Patented Nov. 7, 1899.

G. E. FRANK.
ELECTRIC TIME ALARM.

(Application filed Jan. 20, 1899.)

(No Model.)

2 Sheets—Sheet 1.



witnesses:
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UNITED STATES PATENT OFFICE.

GEORGE E. FRANK, OF SCRANTON, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO J. A. LANSING, OF SAME PLACE.

ELECTRIC TIME-ALARM.

SPECIFICATION forming part of Letters Patent No. 636,656, dated November 7, 1899.

Application filed January 20, 1899. Serial No. 702,816. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. FRANK, a citizen of the United States, residing at Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Time-Alarms; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, and to the letters of reference marked thereon.

This invention relates to timing apparatus, and especially is designed for use in connection with galvanoplastic processes in order to notify the operator when articles have been subjected to the galvanic action for a sufficient time, the apparatus being more especially designed for timing the galvanic action in a series of separate tanks or baths; but it will be understood that the apparatus may be employed for other timing operations, as for sounding an alarm at predetermined intervals, without departing from the invention.

Referring to the accompanying drawings, Figure 1 is a front elevation of a timing apparatus embodying my present improvements. Fig. 2 is a top plan view with the face and cover plates removed to show underlying parts. Fig. 3 is a vertical section. Fig. 4 is a detail bottom plan view of the preferred form of hands for the time-train.

Like letters of reference in the several figures indicate the same parts.

In carrying the invention into practice any preferred form of base or casing may be employed to contain the working parts, a cast-iron case, such as A, being preferably used, however, because best calculated to withstand the rough usage, dirt, and deteriorating effects due to its use in a plating or similar plant, and, in fact, it will be borne in mind that the whole apparatus is designed to run and operate with great certainty in most trying situations and when exposed to the dust and dirt invariably incident to galvanoplastic operations for practical purposes.

Within the case A a clockwork B of any approved pattern is located, preference being given to one having a strong main or driving spring. The clockwork is preferably insulated from the case by washers b, and to it is

connected a wire C, extending to an ordinary electric bell D. From the other bell-terminal a wire C' extends to a resistance-coil C² and thence to a terminal binding-post E, supported by the case at any suitable point. The case is covered by a plate F, preferably of non-conducting material, held in place by screws f, and this cover-plate F is adapted to support the face-plate G, (shown in front elevation, Fig. 1,) a space being left between the two to permit dirt and accumulations to drop away. The cover-plate and face-plate are perforated to give access to the winding-stem and regulating-lever, and the slot through which the lever is reached is provided with a slide or cover f', by which it may be closed to prevent entry of dirt.

The face-plate G is of metal and is connected by a wire g with the binding-post E' on the case adjacent to the post E. The face-plate is marked with twelve main divisions, indicating in the form shown hours and corresponding in this respect to the face of a clock, and in addition to the major divisions it has between the major divisions two sets of minor divisions, each representing minutes in multiple of ten; but the divisions in one set are arranged intermediate those in the other set on radial lines. Thus in the illustrated example the indications in one set read "5," "15," "25," &c., and those in the other set read "10," "20," "30," &c. Holes H are formed on each division clear through the face-plate and are adapted for the reception of terminal pins K, preferably split, as shown, and bearing on their heads marks to distinguish them apart and preferably corresponding to the tank to which they relate.

The minute-hand arbor of the clock is preferably omitted, and the hour-hand arbor bears a hand which in its travel will strike a pin placed in any one of the time-division openings and through the electrical connections before described, a suitable source of electricity being connected with the binding-posts E E', will sound the bell.

In order to prevent the stopping of the clock when the hand strikes the pin, I may make the hand elastic or its connection with the arbor elastic. Thus, as shown in the drawings, the arbor is provided with a pointer or hand

L, which occupies a fixed relation to the arbor, and in addition it is provided with a longer spring-pressed hand L', held forward against a stop l by its spring, but capable of remaining stationary for a considerable time should it strike a pin, as illustrated in Fig. 1. This arrangement permits the circuit to be kept closed until the attendant removes the pin without in any way interrupting the running of the clock. Thus when a series of pins have been set up the bell will be rung for each one exactly at the right interval. In other words, there will be no retardation due to the hands striking any one of the prior pins.

In instances where it is desired that the attendant should not remove the pin, but that the bell should ring for a given time and then cease, a pin of the form illustrated at M may be employed, the construction being such that the top of the pin is rounded and the hand contacting therewith will ride up over the pin and down again, continuing its movement to the next pin.

With the arrangement described now it will be seen that with a comparatively small face-plate the time may be subdivided to give almost an unlimited range of variation for the intervals between the pins, and in manipulating a series of tanks pins corresponding to those tanks may be set at the desired minute and the alarm or bell will be sounded, notifying the attendant that it is time to remove the articles being plated from each tank in succession.

For the purpose of permitting the device to be used in the shunt of an ordinary working circuit a coil C² is employed in the bell-circuit, thereby choking off a large portion of the current and permitting only sufficient to pass for ringing the bell. Inasmuch as the clock is liable to run down without the fact being discovered by the attendant, I provide an alarm-circuit for indicating this fact.

Reference being had to Figs. 2 and 3, it will be seen that to the cover-plate there are attached two inwardly-extending spring-arms N, the position of the arms being such that they will contact with the mainspring of the clock when the same becomes distended to a point where the clock is liable to stop. These arms are connected by a wire N' with the binding-post E'. Thus when the spring is distended the arms coming in contact with the spring will complete the circuit through the bell, and the bell will be sounded until the spring is rewound.

Should the holes in the face-plate become stopped up with dirt or accumulations of any kind, it is obvious that pins being pushed into said holes will force the dirt out at the back, and because of the space between the face and cover plates it will drop away from the appa-

ratus, leaving the parts in cleanly condition and ready for effective operation.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States of America, is—

1. In a time-alarm, the combination with a casing, the cover-plate for closing said casing and the metallic face-plate supported outside of said cover-plate with a free open passage between the two for the escape of dirt, dust, &c., said face-plate having a series of time-graduations and a corresponding series of apertures therein, of a clockwork mounted in said casing, a hand moved by said clockwork and located outside of the face-plate, a series of removable pins adapted to enter the apertures in the face-plate and with which the hand contacts and an electric circuit including an electric alarm and connected respectively with the clockwork and face-plate; substantially as described.

2. In a time-alarm, the combination with a casing, a clockwork in said casing and a cover-plate for closing said casing having a central aperture for the clock-arbor and a slot over the clock-regulator, of a metallic face-plate supported by, but removed from the cover-plate to afford a passage for the escape of dirt, dust, &c., and having a central clock-arbor aperture, a slot over the clock-regulator and a series of apertures corresponding to graduations of time, a closure for the regulator-slot mounted on the cover-plate and having a handle projecting out between the cover and face plates, a hand mounted on the clock-arbor and overlying the face-plate, a series of pins adapted to enter the time-apertures in the face-plate, and an electric circuit including an electric alarm and connected respectively with the clockwork and face-plate; substantially as described.

3. In a time-alarm, the combination with a casing, a clockwork located therein and an insulated face-plate having perforations corresponding to divisions of time, of a visual hand projecting beyond the time-perforations and connected with the clockwork through a spring connection whereby the hand may be arrested in its movement without stopping the clock, a series of pins adapted to enter said perforations in the path of the hand and to arrest the same, and an electric circuit including the hand, said pins and an electric alarm, whereby an alarm will be sounded when the hand strikes a pin and will continue to be sounded until the pin is removed, but without stopping the clock; substantially as described.

GEORGE E. FRANK.

Witnesses:

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