

(Model.)

C. A. COLBY & J. C. STRONG.
ELECTRIC TIME DIAL.

No. 424,273.

Patented Mar. 25, 1890.

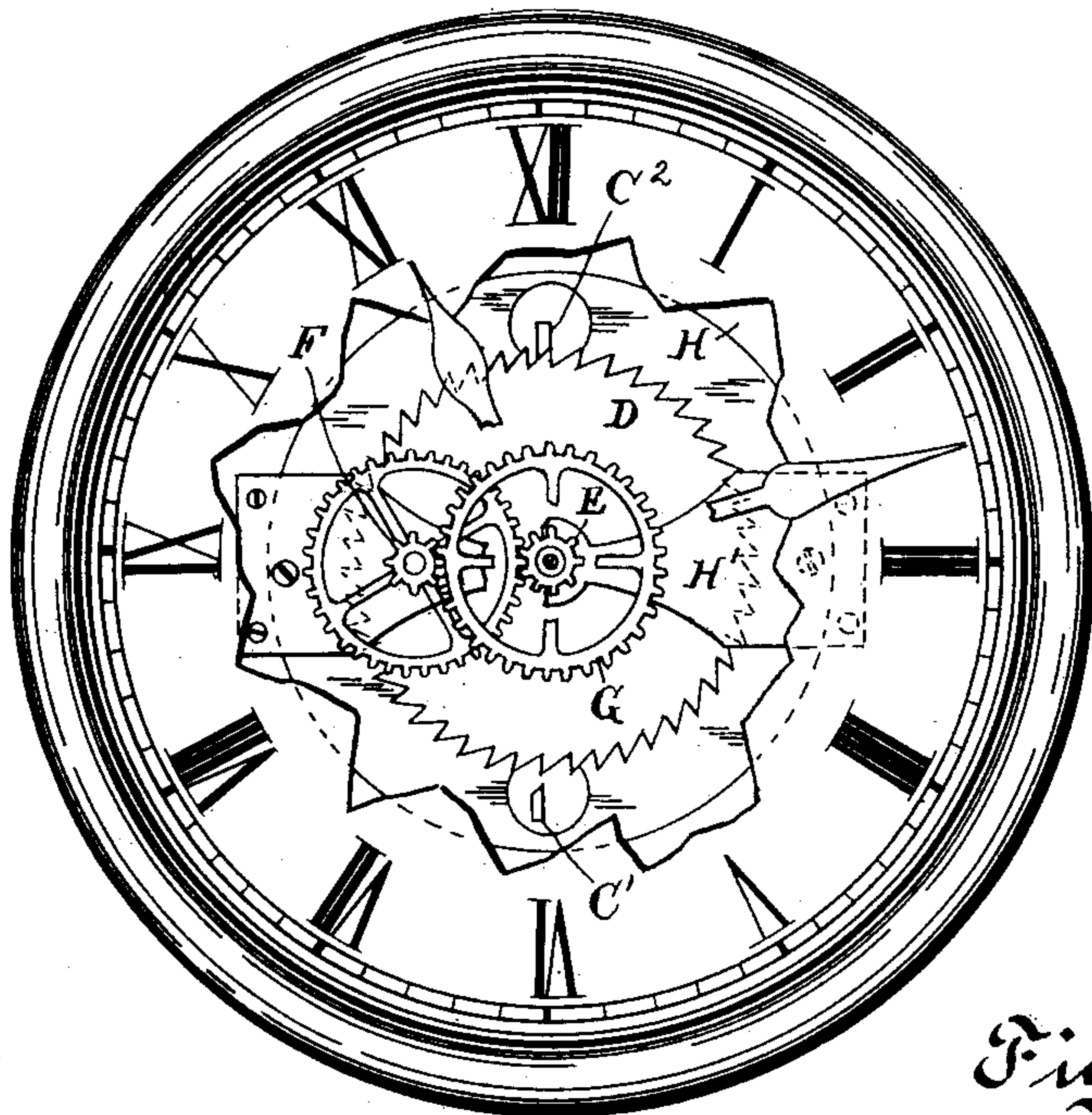


Fig. 1.

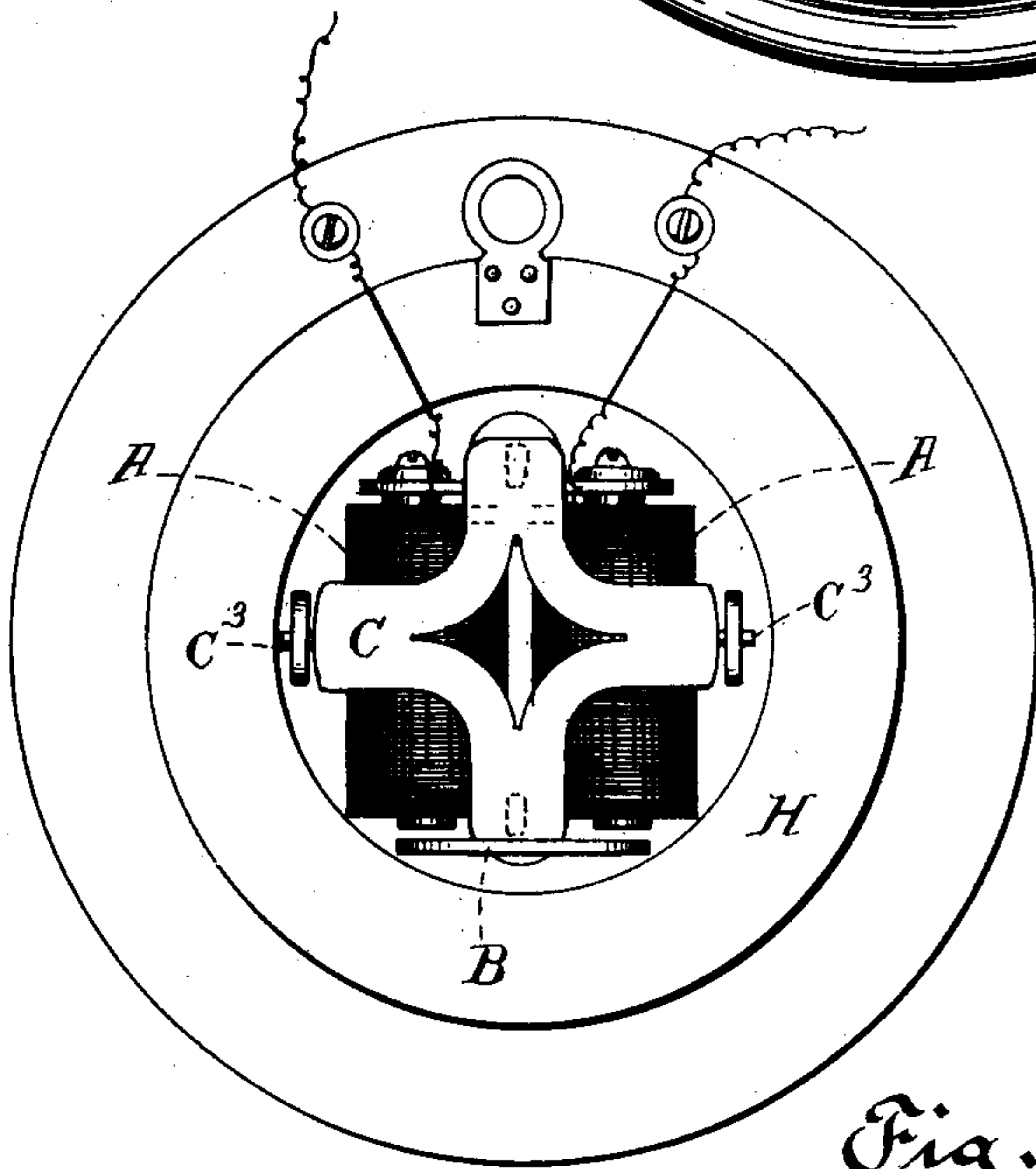


Fig. 2.

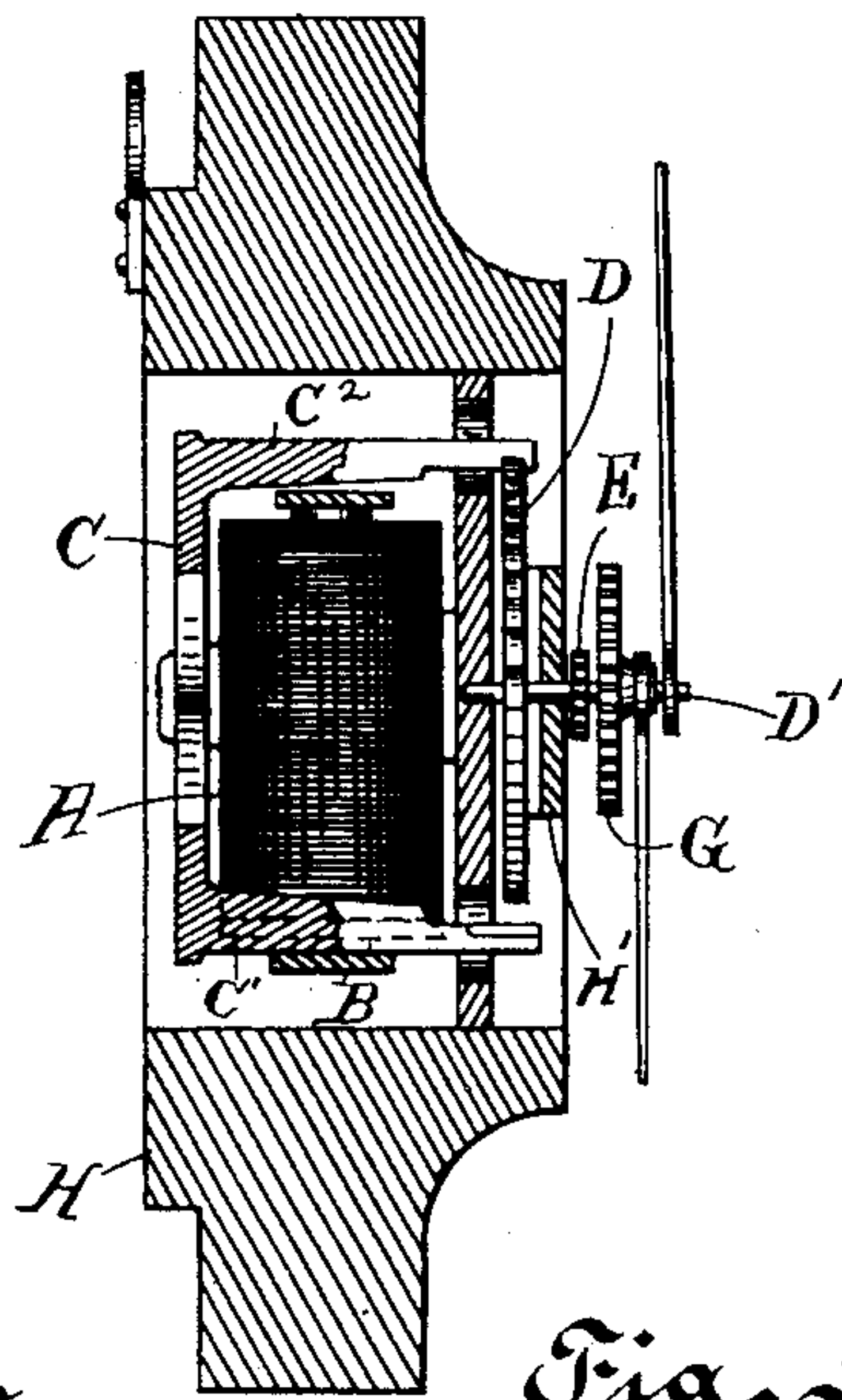


Fig. 3.

Witnesses:

Otto E. Koddick.
Henry W. Brendel

Inventors

Charles A. Colby.
James C. Strong

UNITED STATES PATENT OFFICE.

CHARLES A. COLBY AND JAMES C. STRONG, OF BUFFALO, NEW YORK.

ELECTRIC TIME-DIAL.

SPECIFICATION forming part of Letters Patent No. 424,273, dated March 25, 1890.

Application filed August 7, 1889. Serial No. 319,975. (Model.)

To all whom it may concern:

Be it known that we, CHARLES A. COLBY and JAMES C. STRONG, citizens of the United States, residing at the city of Buffalo, county of Erie, and State of New York, have invented a new and useful Electric Dial, of which the following is a specification.

Our invention relates to an improvement in electric dials; and it consists of a magnet or magnets, an armature, a toothed wheel, an oscillating lever with two arms integral with it, and a frame in connection with the necessary wheels, dial, hands, &c., usually used with a clock.

The object of our invention is to greatly simplify the mechanism required to operate electric dials, and thus greatly cheapen their manufacture. We attain these objects by the mechanism as shown in the accompanying drawings, in which—

Figure 1 is a front view; Fig. 2, a back view, and Fig. 3 a vertical section.

Like letters represent like parts.

A A represent two electro-magnets; B, the armature; C, the oscillating lever; C' and C², two projecting arms integral with the oscillating lever; C³, pointed centers; D, toothed wheel upon which the arms of the oscillating lever act; D', arbor of said wheel; E, cannon-pin; F, minute-wheel and pinion; G, hour-wheel; H, frame; H', cross-bar to frame.

The mechanism operates as follows: When used as a secondary dial, a circuit-closer is attached to a standard-clock, so as to close the circuit once a minute, and from thence connected with all the dials in the usual manner, and once a minute magnetizes the magnets A A. The armature B, which is attached to the bottom of the oscillating lever C, is immediately drawn up to the magnets A A, forcing the projecting arm C' against the lower edge of the wheel D, (which in the mechanism now described has sixty teeth,) moving said wheel forward in direction of the arrow one-half of a tooth. The contact of the circuit-closer is one second, and when it opens the armature B and oscillating lever C fall by their own weight, and the projecting arm C² strikes the upper side of the wheel D, again moving it forward one-half of a tooth. Thus the contact and fall of the armature, by moving the oscillating arm C and the projecting arms C' and C², moves the wheel D forward one tooth, and as the

minute-hand on the dial is attached to the arbor D', this movement necessarily moves the minute-hand one minute forward on the dial. The cannon-pinion E, being attached to the arbor D', carries the minute-wheel F, and the pinion on said minute-wheel carries the hour-wheel G, to which the hour-hand on the dial is attached, and is thus moved forward at the proper speed upon the dial.

When our invention is used as a primary clock, it is attached by a circuit-closer to an electric pendulum, so that the circuit is closed once a minute and operated therefrom the same as is described above.

The teeth on the wheel D are of such shape as to allow the hands on the dial to be moved backward at will for the purpose of setting the hands at pleasure.

We are aware that electric clocks and dials have been made for the purpose of telling time, and we therefore do not claim such combination or device broadly; but no such device, so far as we are able to ascertain, embodies the mechanical principle embodied in the mechanism of our invention, or its simplicity and cheapness of manufacture. Said principle of motion can be used for other purposes than for telling time.

We therefore claim and desire to secure by Letters Patent—

1. The combination, with the dial-train of a time-piece, of a ratchet-actuating wheel, a lever pivoted to vibrate in a plane perpendicular to the plane of such wheel and having pallets to alternately engage and actuate the same, and an electric magnet controlled from a primary clock to actuate such lever, substantially as described.

2. An oscillating lever with arms having pallets, said lever, arms, and pallets being integral with each other, working at right angles with the plane of a wheel and perpendicular to its center, in combination with said wheel, a magnet or magnets, and the wheels, pinions, dial, hands, &c., usually used with a clock, the whole adapted to operate said hands as the circuit through the magnet is made and broken, substantially as described.

CHARLES A. COLBY.
JAMES C. STRONG.

Witnesses:

HENRY W. BRENDEN,
C. LOUIS FRITZ.