No. 657,731. Patented Sept. 11, 1900.

J. F. ELDRED.

GRAPHOPHONE CLOCK.

(Application filed Oct. 28, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

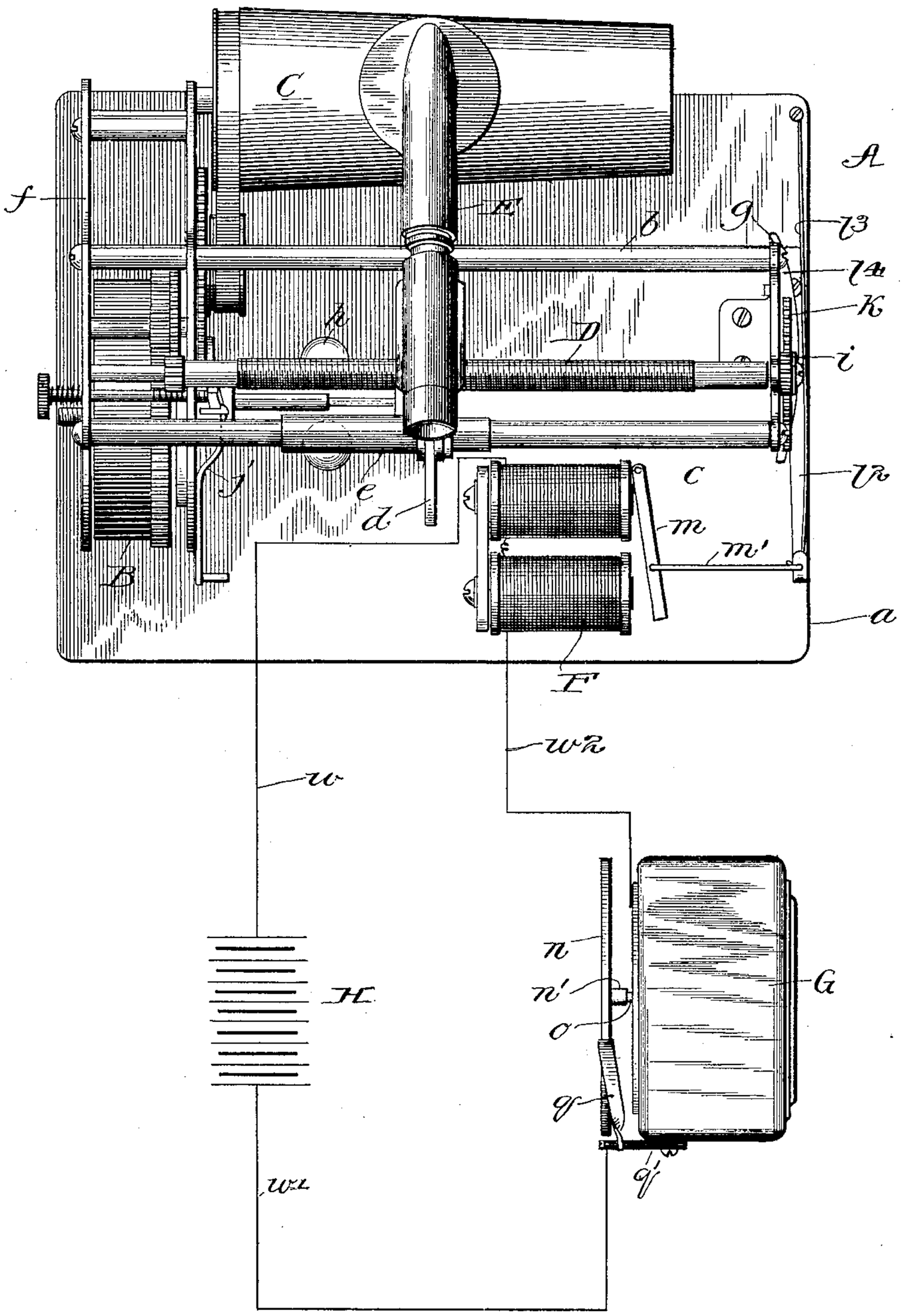

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Fig. 3.

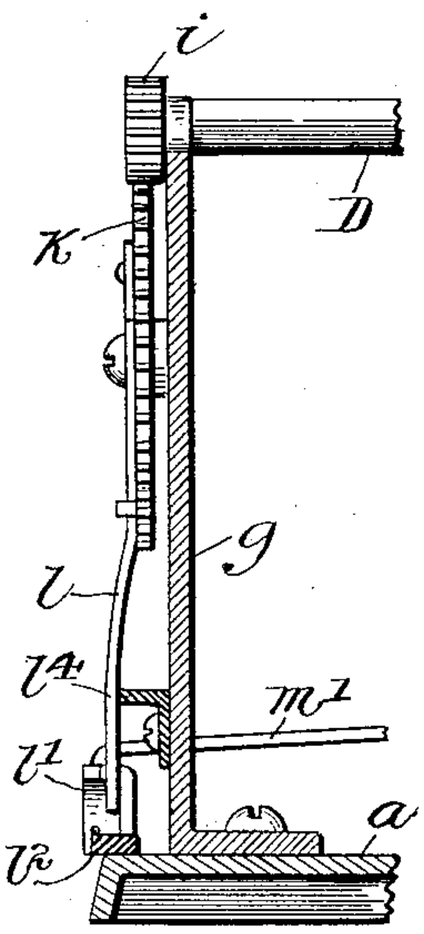


Fig. 2.

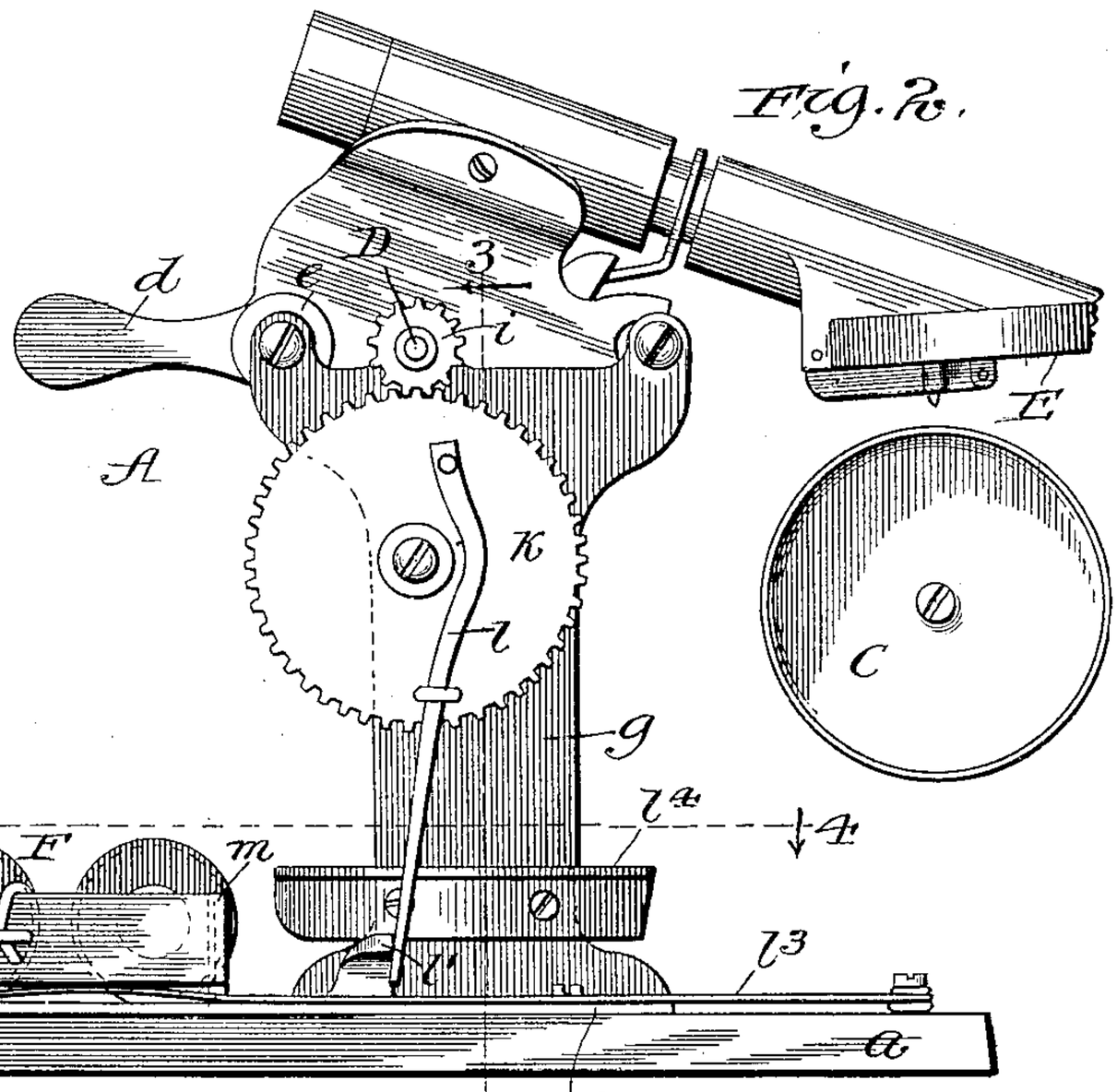


Fig. 4.

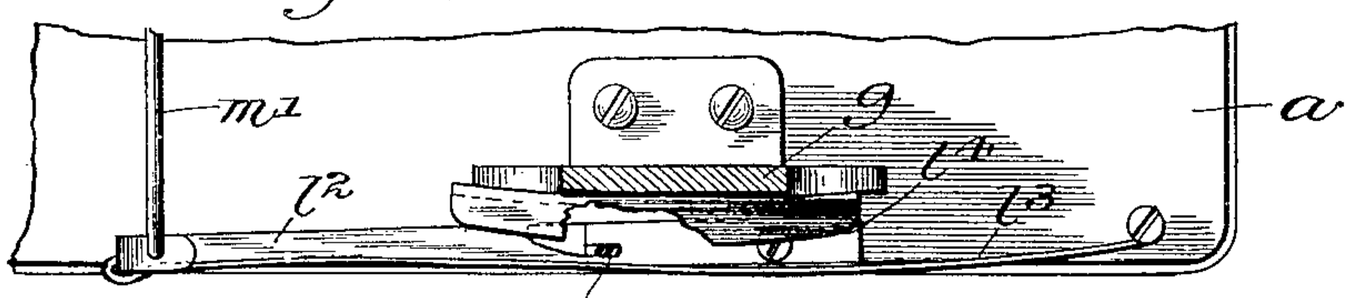


Fig. 5

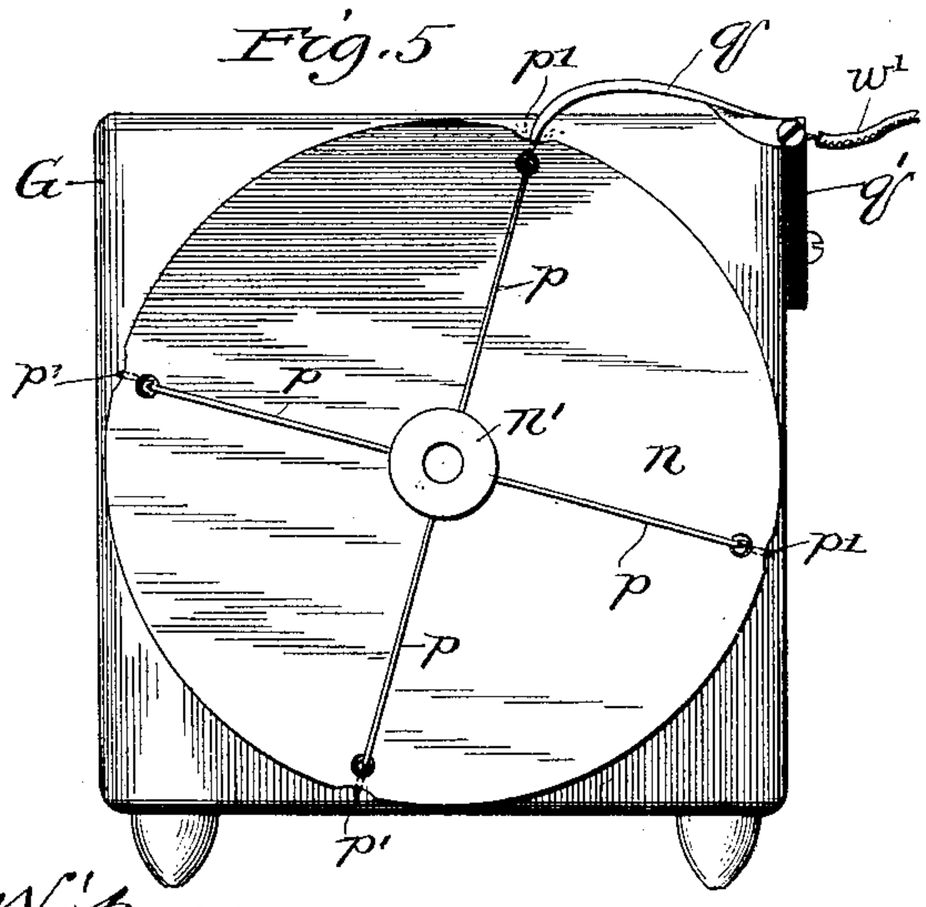
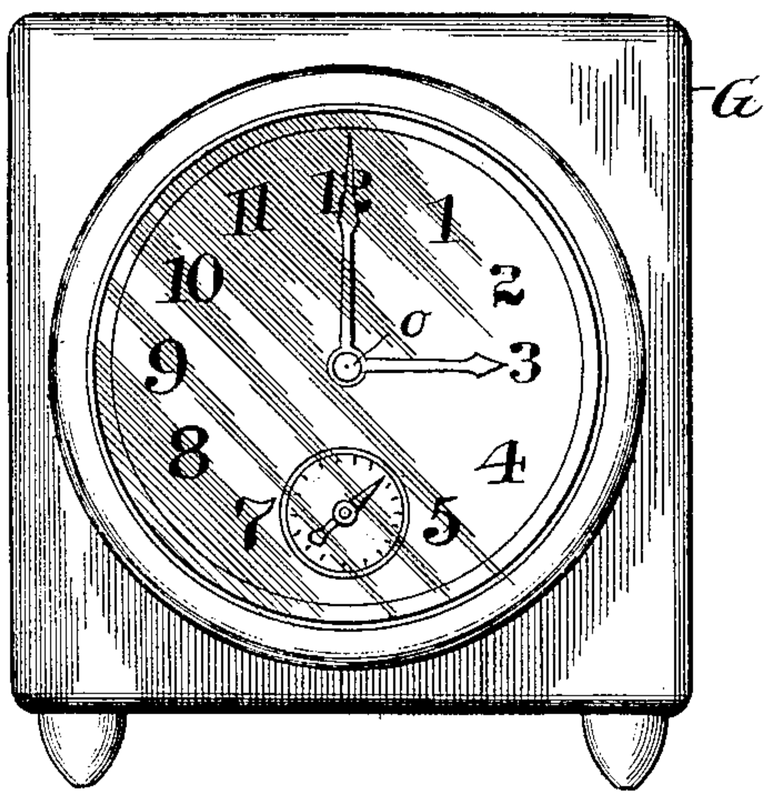


Fig. 6.



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UNITED STATES PATENT OFFICE.

JOHN F. ELDRED, OF CHICAGO, ILLINOIS.

GRAPHOPHONE-CLOCK.

SPECIFICATION forming part of Letters Patent No. 657,731, dated September 11, 1900.

Application filed October 28, 1899. Serial No. 735,056. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. ELDRED, a citizen of the United States, residing at No. 1644 Melrose street, Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in a Combined Clock and Graphophone, of which the following is a specification.

My invention relates to an improved combination with a clock of a speech-reproducing instrument (gramophone, graphophone, or phonograph) for causing the latter to call out the hour or fraction thereof as the same is registered upon the clock-dial.

Generally stated, my improvement involves an electric brake on the reproducing instrument normally checking the motor of the latter and released at predetermined periods by the action of the clock in temporarily closing the circuit to actuate the instrument to announce the time suitably recorded upon its disk or cylinder.

Referring to the accompanying drawings, Figure 1 is a plan view showing a graphophone combined with a clock through the medium of my improvement; Fig. 2, a view of the same in end elevation, showing the brake mechanism; Fig. 3, a section taken at the line 3 3 on Fig. 2 and viewed in the direction of the arrows; Fig. 4, a broken section taken at the line 4 4 on Fig. 3 and viewed in the direction of the arrows; Fig. 5, a view in rear elevation of the clock provided with a circuit-closing disk on its minute-hand shaft, and Fig. 6 a view of the clock in front elevation.

For illustrating my improvement I have selected a graphophone A, which may involve any suitable or well-known construction and need not, therefore, be described herein in detail. That shown is of the variety employing a spring-motor B on the base *a*, geared with a record-cylinder C to rotate it and with the threaded shaft D to rotate it for producing the travel of the stylus device E, which crosses it and is supported at its forward end on a rod *b* and at its rear end on a rod *c* through the medium of a sleeve *e*, carrying a clutch-lever device *d* for engagement with the thread of the shaft D to connect therewith the stylus device, the rods and threaded shaft being supported at their opposite ends in bearing-plates *f* and *g*, rising from the base. At *h* is shown a governor for the spring-motor, and at *j* is shown the brake device for locking the motor, as while its spring is being wound.

On one end of the shaft D is a pinion *i*, meshing with a toothed wheel *k*, journaled on the outer side of the plate *g* and carrying a stop-finger *l*, into the path of the free end of which there normally projects a stop-lug *l'*, extending upward from a lever l^2, fulcrumed at one end on the base to turn horizontally thereon and controlled by a spring l^3, tending to hold it yieldingly in position to present the lug *l'* in the path of the stop-finger. Near the base of the plate *g* is shown a curved guide-ledge l^4 for the stop-finger.

F is an electromagnet having its pivotal armature *m* connected by a link *m'* with the free end of the lever l^2, and G is a clock of any suitable variety equipped with electrical circuit-closing mechanism. This mechanism may be, as shown, a disk *n*, of insulating material, centrally secured at its tubular metal socket *n'* to the rearwardly-projecting end of the minute-shaft *o* of the clock and having at equal intervals metal strips or wires *p*, extending radially from its metallic center and terminating at shallow notches *p'* in the periphery of the disk, bearing against which is the free end of a metal contact-finger *q*, pivoted at its opposite end to an insulated support *q'* on the clock-casing.

The magnet F is included in the circuit of a battery (indicated at H, Fig. 1) by a wire *w*, leading from one pole thereof to one side of the magnet, a wire *w'* leading from the other pole of the battery to the contact-finger *q*, from which the circuit is continued over one or the other of the strips *p* and socket *n'* through the clock (or clock-frame if it be of metal) to the opposite side of the magnet over a wire w^2, connecting it with the clock. As arranged the strips *p* provide the disk *n* with four circuit-closing points, whereby the circuit closure occurs at intervals one-quarter of an hour apart. With the record-surface of the cylinder C provided at proper intervals with announcements of the quarter-hours of time, (as 12.15, 12.30, 12.45, 1 o'clock,) requiring that there shall be forty-eight announcements upon it for each twelve hours, after which

the stylus device E should be returned to its initial position either by hand or automatically, (for which latter purpose provision is made on some varieties of graphophones,) the operation is as follows:

In the rotation of the disk *n* with that of the minute-hand of the clock, each time a notch *p'* is brought coincident with the finger *q* it drops into the respective notch and contacts with the extremity of the wire *p* therein exposed, with the effect of closing the circuit to energize the magnet, which thereupon attracts the armature. The movement of the armature pulls the lever l^2 with it, thereby withdrawing the lug *l'* out of the path of the stop-finger *l*, the normal engagement of which with the lug affords a brake against action of the spring of the motor B, so that when the stop-finger is thus freed the motor-spring drives the screw-shaft D to cause the stylus device to travel upon it and reproduce the time announcement it encounters on the cylinder C. The extent of contact-surface presented at the extremity of a wire *p* is so small that owing to the continuous rotation of the disk *n* the circuit closure is only momentary, so that immediately after the magnet is energized it is deënergized by opening of the circuit, thereby permitting the recoil force of the spring l^3 to retract the armature and also the lever l^2 again to present the stop-lug *l'* in the path of the finger *l*. Rotation of the shaft D by rotating the pinion *i* turns the wheel *k* through a complete revolution, when it is arrested by the finger *l* encountering the lug *l'* in its path, thereby braking the motor B and maintaining it inactive until the circuit is again closed by the continued movement of the disk *n* to repeat the described operation.

As will be understood, the extent of record-surface on the cylinder C is so divided up by the time announcements thereon that in each operation of the apparatus the stylus device and cylinder shall coöperate to complete an announcement.

Suitable contact mechanism for my purpose may be provided in various forms differing from the form thereof shown and described. Hence I do not limit my invention in that particular. Moreover, the brake mechanism formed by the finger *l* and lug-carrying lever l^2, connected with the magnet-armature, may be arranged differently from the arrangement thereof herein set forth or constructed otherwise than shown and described without departure from my invention, the essential features of which are suitable brake mechanism for the motor of a graphophone or analogous instrument combined with a clock and an electromagnet with which the brake mechanism is releasably connected in normally-open electric circuit closed by the clock at predetermined intervals of time to energize the magnet to release the brake mechanism, and thereby permit the motor to actuate the said instrument to announce the time recorded upon it and shown by the clock. Obviously it is also within my invention to provide matter other than time announcements, such as advertising matter on the record-surface of the cylinder.

What I claim as new, and desire to secure by Letters Patent, is—

1. In combination, a clock provided with electric-circuit-closing mechanism operated at predetermined intervals by the clock-movement, a speech-reproducing instrument having its record-surface provided with announcements according to the intervals at which said clock-movement is operated, having its threaded shaft provided on its outer end with a pinion, a toothed wheel journaled on the instrument to mesh with said pinion and carrying a stop-finger, a guide for said finger, a spring-controlled lever carrying a stop-lug normally projecting into the path of said finger to check the motor of said instrument, an electromagnet having its pivotal armature linked to the free end of said lever to move the stop out of the path of said finger by movement of the armature and thereby release said motor, and an electric generator-circuit containing said magnet and circuit-closing mechanism, substantially as and for the purpose set forth.

2. In combination, a clock carrying on the shaft of its minute-hand a disk of insulated material having a metallic center electrically connected with the clock and from which radiate at intervals metallic strips terminating at notches equidistant apart in the periphery of the disk, a contact-finger supported on the clock to engage with said periphery, a speech-reproducing instrument having its record-surface provided with announcements according to the intervals at which said clock-movement is operated, brake mechanism normally checking the motor of said instrument, an electromagnet having its armature connected with said brake mechanism to release it by movement of the armature, and an electric generator-circuit containing said magnet and contact-finger to be closed by contact of said finger with a strip on said disk in its rotation, substantially as and for the purpose set forth.

JOHN F. ELDRED.

In presence of—
D. W. LEE,
F. J. MARTIN.