No. 690,394. Patented Jan. 7, 1902.

S. BOWER.

TIME RECORDER.

(Application filed Nov. 13, 1900.)

(No Model.)

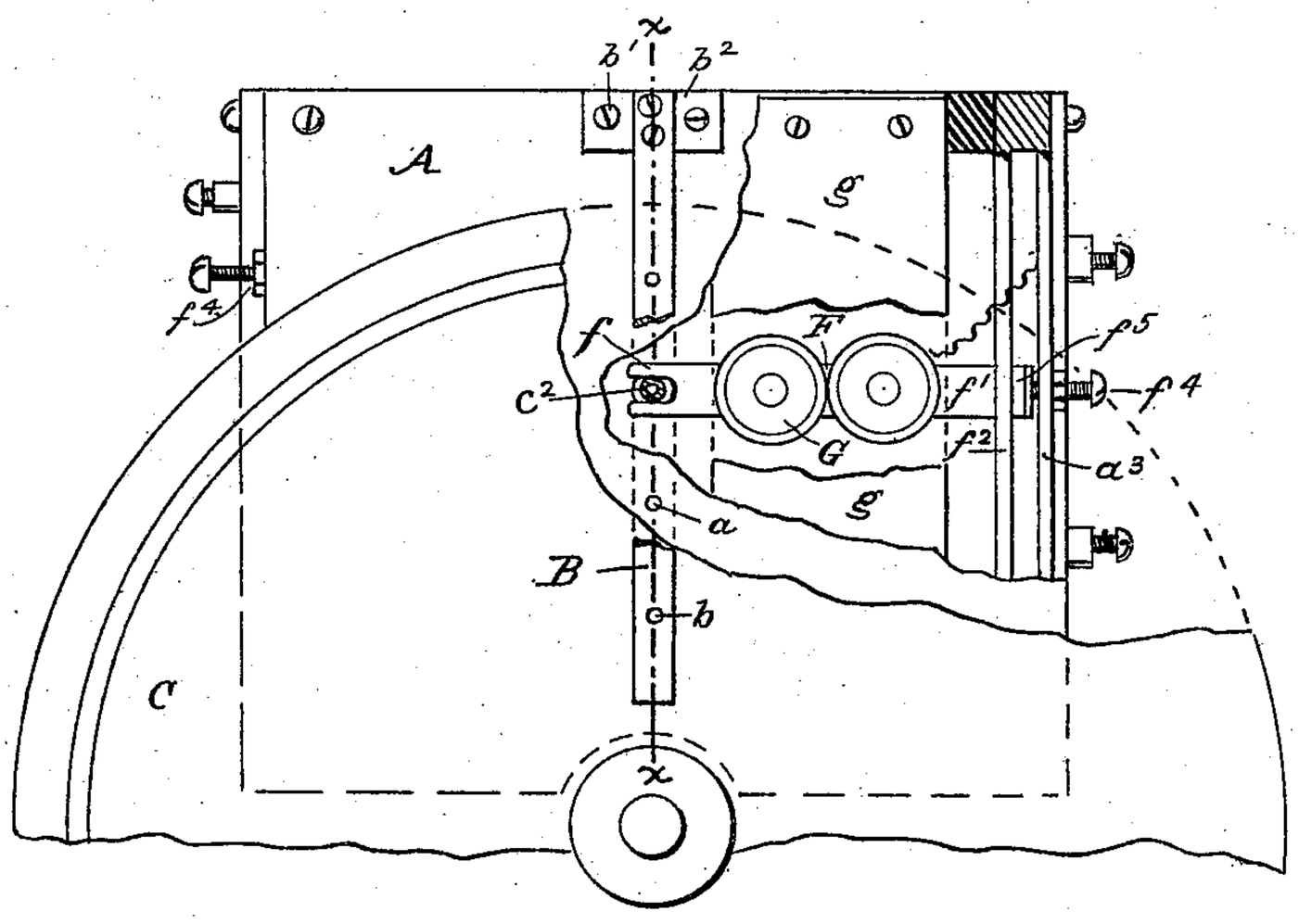

Fig. 1.

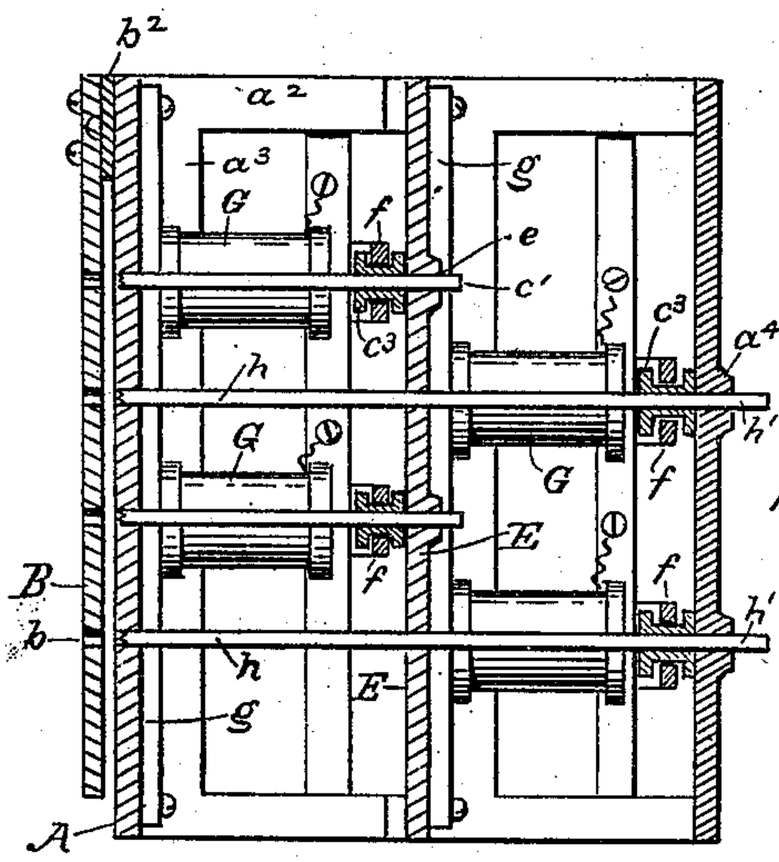

Fig 2.

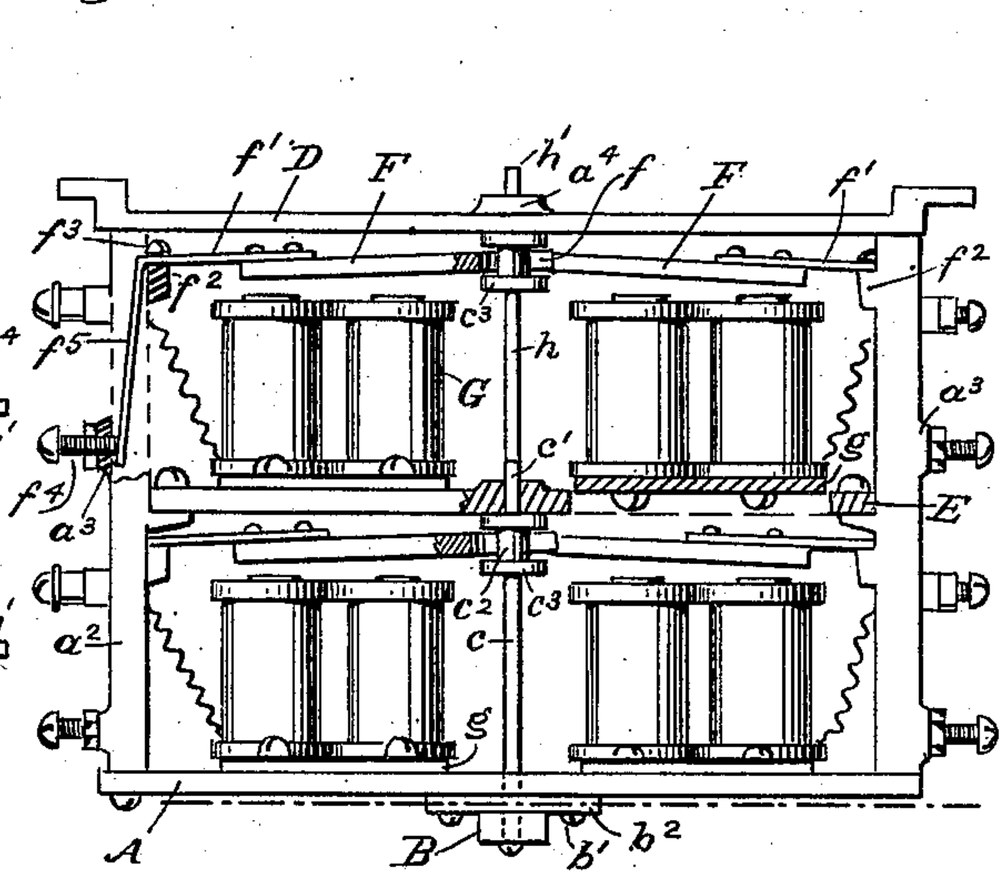

Fig. 3.

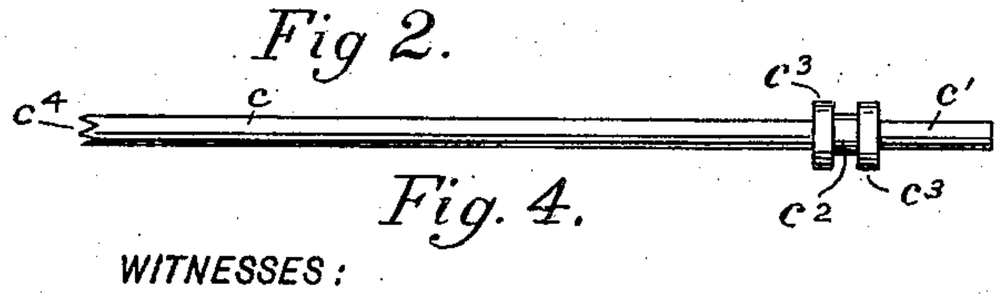

Fig. 4.

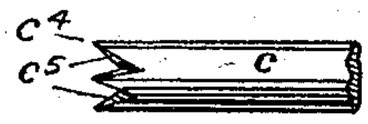

Fig. 5.

WITNESSES:

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TIME-RECORDER.

SPECIFICATION forming part of Letters Patent No. 690,394, dated January 7, 1902.

Application filed November 13, 1900. Serial No. 36,332. (No model.)

To all whom it may concern:

Be it known that I, SIGMUND BOWER, a subject of the Emperor of Germany, and a resident of the borough of Brooklyn, city of New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Electromagnetic Time-Recorders, of which the following is a specification.

My invention relates to electromagnetic time-recorders, and has special reference to that class of time-recorders which are known as "watchmen's time-detectors." The invention, however, is not thus limited, but will be described.

With reference to a watchman's time-detector the invention will be understood by referring to the accompanying drawings, forming part hereof, in which like letters of reference indicate corresponding parts in all the figures, and which shows a watchman's time-detector or time-registering clock embodying my invention.

The invention will be described with reference to the drawings and particularly claimed.

In the drawings, Figure 1 is a front elevation of a sufficient number of parts of a watchman's time-registering clock or time-detector to illustrate my invention. A portion of the dial and front plate has been broken away to enable the construction to be more clearly illustrated. Fig. 2 is a central vertical longitudinal section of the apparatus on line $x\ x$ of Fig. 1. Fig. 3 is a plan view, partly in section, of the construction shown in Fig. 1, the dial being exhibited in dotted lines. Fig. 4 is a front view of a punch employed in the apparatus and shown on an enlarged scale, and Fig. 5 is a side view of the end of the said punch.

Referring to the drawings, A indicates the front plate of the recorder apparatus, which front plate is pierced with a series of apertures a, in front of which a similarly-apertured guide-bar B is mounted. The apertures b of the guide-bar B preferably register with the apertures a of the front plate A. Punches c enter the apertures a in the front plate A, and in order to provide a long bearing-surface for the said punches a guide-bar D may be provided in rear of the front plate A, which guide-bar is apertured in a similar manner to the plate A. In the present instance the bar B, which serves to guide the dial C, is shown as secured to the front plate A of the apparatus by screws b'. A plate or batten b^2 intervenes between the dial guide-bar B and the front plate A in order to provide a space between the said bar and plate for the reception of the dial C. The punches c, which extend into the plate A, are provided at their rear ends with guiding portions c', which guiding portions have their bearings in an apertured rear plate or support E, which is provided with the apertures e for the reception of the guiding shanks or portions c' of the punches. In the present instance this rear plate has been shown as the front plate of another series of punch mechanisms. Each of the punches c is provided with a hub c^2, having the flanges c^3. When in a normal position, the hub acts as a stop against the plate in which it has its rear bearing. This hub c^2 is embraced by the forked end f of an armature F. There is an armature F for each punch, each of which armatures is acted upon by an individual electromagnet G, which electromagnets are preferably mounted upon a plate or keeper g, carried upon the plates A and E of the instrument. It will be obvious that when the individual electromagnets are energized their armatures will be drawn up and will thrust the punch acted upon by the said armature through the dial C to make the record, the guide-bar B acting as a die. Each of the armatures F is carried upon a spring f', secured loosely upon a batten f^2 by a screw f^3 and adjusted by an adjusting-screw f^4, bearing against the rear end f^5 of the spring f'. These adjusting-screws are preferably carried by the bars a^3, integral with the side bars a^2 of the frame. In the rear of the plate E a similar set of magnets G are located, which are similarly provided with armatures F and act upon the punches h, which are similar to the punches c, except that they are longer. The punches h intervene between the punches c, so as to form a straight vertical line of punches. The punches h are similarly provided with hubs c^2 and have their rear bearing ends or shanks h' guided in a plate or bar a^4. The punches may be of any desired construction. In the present instance I have

shown punches which are designed to punch out a disk from the paper dial C rather than merely pierce or bore the said disk, as heretofore. Such a punch is desired for the reason that when the disk is merely pierced or bored the holes therein are closed up; but when a disk is actually removed by the punch from the paper record-disk C the hole can never close up. The form of punch is shown in Figs. 4 and 5, wherein the punch c, or it may be h, is hollowed and provided with a toothed front edge, each tooth c^4 preferably having sharpened edges c^5. The punches c and h, having their bearings in the front and center or center and back plate, as the case may be, can rotate freely in their bearings.

The operation of the device is analogous to that of other time-recorders, except that the adjustment of the armatures can be very readily made. The punches are efficiently guided, and by reason of the forked armatures engaging in the hubs c^2 great flexibility of action is allowed. The apparatus has the further advantage that it makes a permanent record upon the record-disk C, which record cannot readily be effaced or closed up.

It will be understood that the magnets will be properly connected in circuit and the disk C properly driven by clockwork. I have not shown these features, as their construction will be readily obvious to one skilled in the art.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a time-recorder, the combination of punches provided with stops thereon, of armatures embracing the said punches between the stops and leaving the said punches free to vibrate or swing independently of the movement of the armature.

2. In a time-recorder, the combination of a punch provided with a hub c^2, of an armature provided with a bifurcated end, embracing the said hub and leaving the punch free to move rotatively independent of the movement of the armature.

Signed by me at Brooklyn, New York city, this 2d day of November, 1900.

SIGMUND BOWER.

Witnesses:
HENRY BLANK,
GEORGE GRAY.