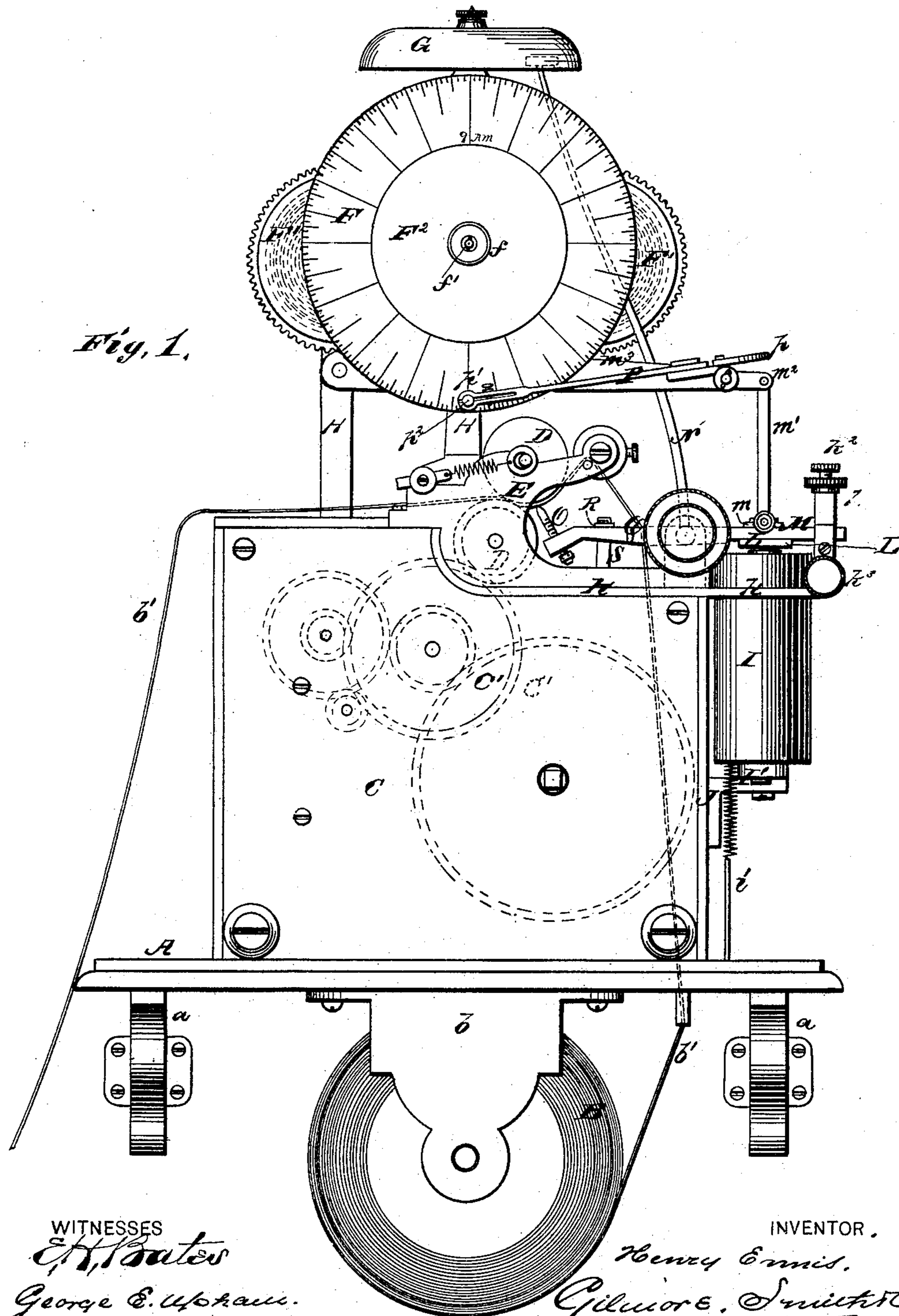


H. ENNIS.

ELECTRIC FIRE-ALARM RECORDER.

No. 178,750.

Patented June 13, 1876.



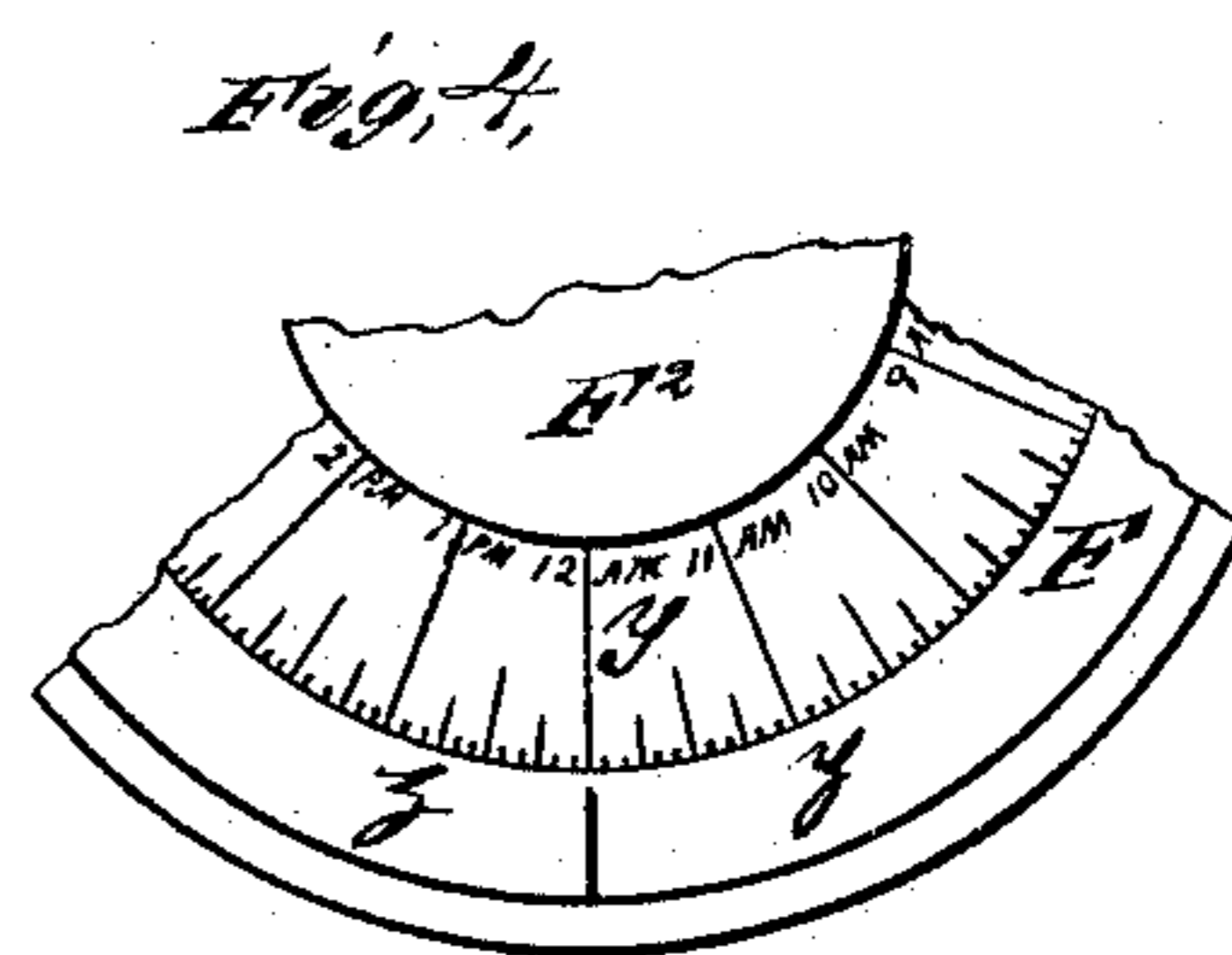
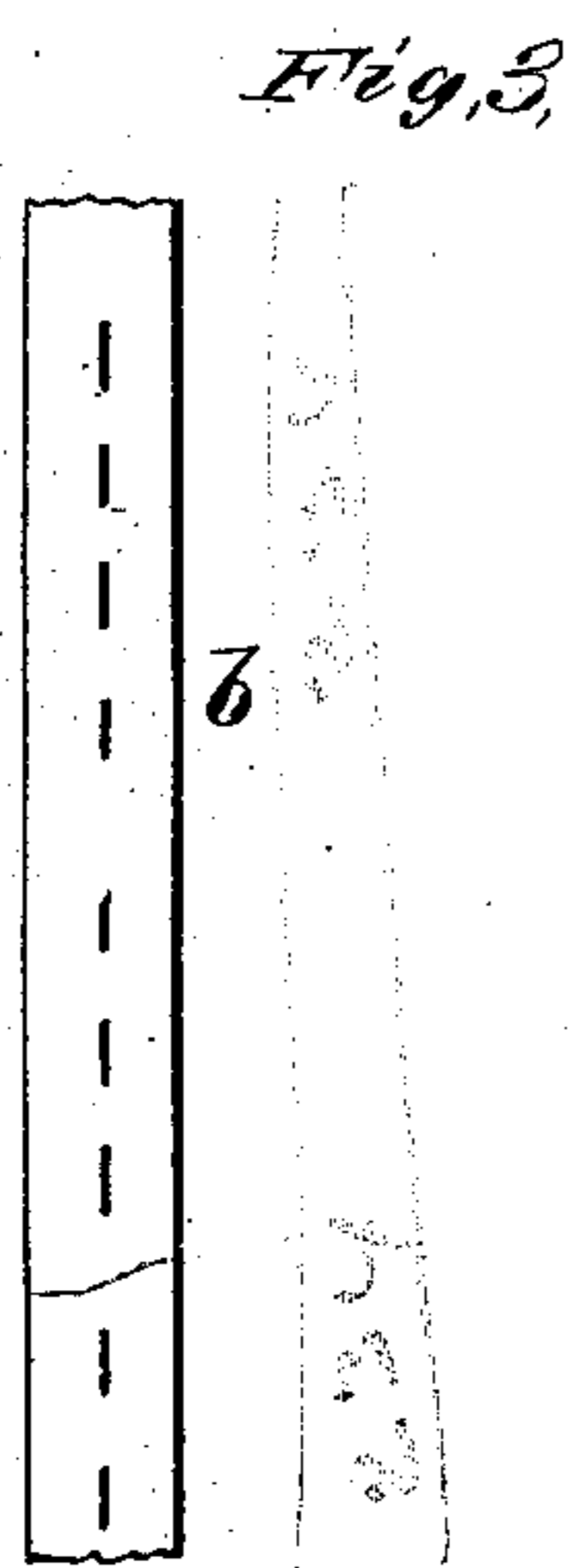
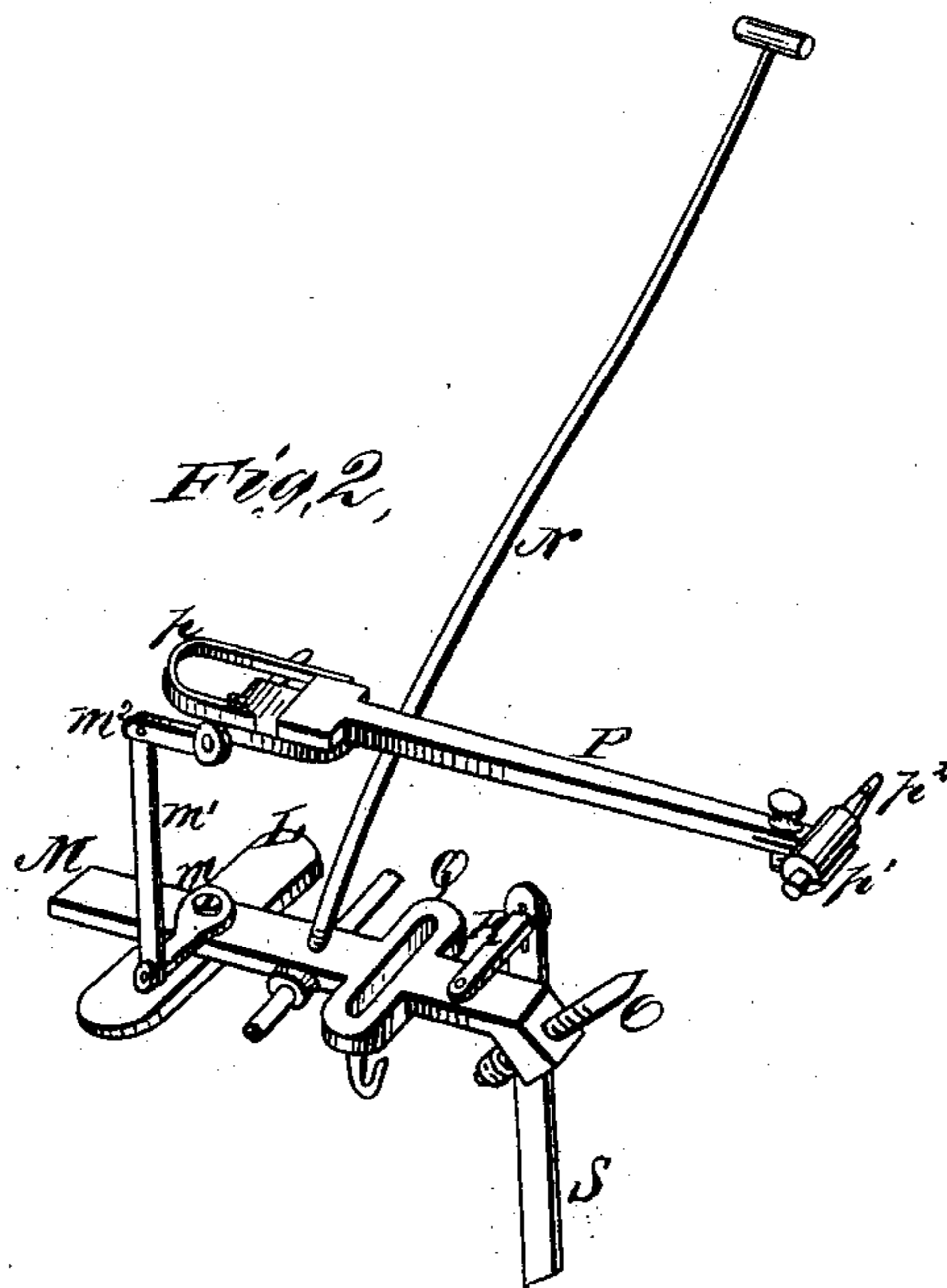
WITNESSES

*E. H. Bates*  
*George E. Upham.*

INVENTOR.

*Henry Ennis.*  
*Gilmore & Smith & Co.*  
ATTORNEYS.

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ELECTRIC FIRE-ALARM RECORDER.  
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*George E. Wokam.*

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*Henry Ennis*  
*Gilmore Smith*  
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# UNITED STATES PATENT OFFICE.

HENRY ENNIS, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO JAMES F. OYSTER, OF SAME PLACE.

## IMPROVEMENT IN ELECTRIC FIRE-ALARM RECORDERS.

Specification forming part of Letters Patent No. 178,750, dated June 13, 1876; application filed June 3, 1876.

*To all whom it may concern :*

Be it known that I, HENRY ENNIS, of Washington, in the county of Washington and District of Columbia, have invented a new and valuable Improvement in Telegraphic Fire-Alarms; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a front view of my telegraphic fire-alarm, and Fig. 2 is a perspective detail view of the registering and alarm-striking mechanism. Figs. 3 and 4 are detail views thereof.

This invention relates to telegraphic receiving-instruments, and especially those employed in telegraphic fire-alarms; and it consists in a receiving-instrument which simultaneously records the precise time of day, registers the number of the precinct where the fire occurs, and sounds an alarm.

It also consists of a hammer-arm for operating a bell or its equivalent, a perforator or pencil for recording a message on a traveling strip or ribbon, and a pencil for recording the time of day upon the face of a rotating clock-dial, said hammer-arm, perforator, and pencil all being connected to the armature of an electro-magnet, so as to be simultaneously operated thereby.

It also consists in the combination of the above devices with clock mechanism for operating said dial, and with similar mechanism for operating the rollers that feed the recording strip or ribbon to the perforating point or pencil.

It also consists in auxiliary devices, hereinafter particularly described.

In the accompanying drawing, A designates the bed or pedestal of my device, which is secured to the wall by brackets *a a*; or it may be provided with short legs, and set upon a table or shelf. B is a roll of paper, secured to bed-piece A by brackets *b*; or it may be attached to, or fixed near, the apparatus in any other convenient manner. C is a casing, preferably of metal, which incloses a train of

gearing, C', (shown by dotted lines in Fig. 1,) which operates, when tripped by lifting a detent, grooved feed-rollers D D, that are journaled in standards E E, detachably secured on the top of said casing. Any ordinary form of roller may be employed. The feed-rollers D D draw slip *b'* from roll B, and present said slip to a pencil or perforator, hereinafter described. F is a rotating dial, graduated so as to indicate minute divisions of time, and operated by clock-work, the spring-barrels of which are shown in Fig. 1 at F<sup>1</sup> F<sup>1</sup>. G is a bell, secured to the framing of said clock-work. The clock-work, dial, and bell are all supported on standards H H on the top of casing C. I I are the helices of an ordinary horseshoe electro-magnet, I'. These helices are connected to the transmitting-instrument at the other station by ordinary line-wires, the ends of which are shown at *i i*.

The bottom of electro-magnet I' is secured to the end of casing C by a bracket, J, and detachable bolt, while the upper parts of said helices I are held in a frame or perforated extension, *k*, of a plate, K, which plate forms a part of the cover of casing C, and intervenes between said casing and standards E E, that support the rollers.

Extension *k* bears a vertical frame-work, *k*<sup>1</sup>, in which works a vertical adjusting-screw, *k*<sup>2</sup>, and a lateral rotating shaft, provided with a head, *k*<sup>3</sup>. (Shown in Fig. 1.)

The office of screw *k*<sup>2</sup> is to regulate the play of the short arm of operating-lever M, hereinafter described. The office of rotating shaft *k*<sup>3</sup> is to regulate, by winding a connecting-cord, the strain of a retracting-spring, which drags on the long end of said lever. L is the armature of the electro-magnet I', and is rigidly secured to the short end of operating-lever M, which is pivoted to standards rigidly secured to casing C. To said lever, immediately over its pivoted point, I attach a bell-hammer handle, N, which is extended upward so as to act on bell G. At the end of long (inner) arm of lever M I attach a perforating point or pencil, O, which acts upon ribbon *b'*, as said ribbon is fed along by feed-rollers D D. On the short end of lever M, above armature L, I attach a side arm, *m*, which is linked by a

rod,  $m^1$ , to a short piece,  $m^2$ , pivoted to a plate,  $m^3$ , extending from the frame of the clock-work F, or from the standards H H. On the end of said short piece  $m^2$  is pivoted an arm, P, the inner end of which is made square, and acted on by a spring,  $p$ , as the spring of a pocket-knife acts upon the blade. The outer end of arm P carries a socket,  $p^1$ , for holding a small pencil,  $p^2$ .

By means of the spring-joint the arm P may either be thrown back out of the way, to allow the removal of dial F, or said rod P may be brought forward, so as to constitute a straight extension of short pivoted piece  $m^2$ , when pencil  $p^2$  is in position to travel over the face of dial F.

In the latter case, when not actuated by the armature, pencil  $p^2$  describes a circle concentric with the circumference of dial F; but when actuated by armature L and lever M, it makes a short mark near said circumference. Lever M is also broadened and perforated at Q, so as to form a guide for ribbon  $b'$ , and is provided, near its long end, with a cross-arm, R, which carries a vertically-movable rod, S. When rod S is lifted it trips the gearing U, and allows the rollers D D to be operated thereby. Said clock-work may be arranged so as to run only for a short time after being tripped, as above described, and thus save the ribbon from being wasted by continuous unwinding when no message is to be recorded.

The operation of the device is as follows: When the electric current passes through the helices I I, magnetizing the cores thereof, the armature L is attracted thereto, and, by reason of the arms and pivots hereinafter described, throws upward pencil  $p^2$ , (marking the dial,) and also the perforating point or pencil O, impressing, printing, or puncturing the slip or ribbon  $b'$ , while, at the same time, the bell-hammer handle L is thrown forward and the detent-rod S is lifted, as described. In this way, every time the circuit is closed by the transmitting-instrument, an alarm is struck, a mark is made on the dial to indicate the time, and a mark is made on the traveling ribbon corresponding to one of the characters of the "Morse," or it may be any other known telegraphic, alphabet. Of course, a succession of these marks will indicate the precinct where the fire occurs, and form a permanent record of such message.

The various features of my device may be modified and their arrangement changed without departing from the spirit of my invention. Thus pencil  $p^2$  might be placed on the longest arm of the lever M, and perforator or pencil O on the shorter end; also, the bell G may be placed at the side of the armature instead of being placed above it, and the handle N may be correspondingly changed. Many other equivalent alterations of construction and arrangement will readily suggest themselves.

I prefer to make the dial F detachable,

holding it in place by a plate,  $F^2$ , and clamping-nut  $f$ , which is screwed home on the threaded end of dial-shaft  $f'$ . Dial F is preferably constructed of paper or similar material. Its face may be marked and graduated in any convenient manner; but I prefer the arrangement shown in Fig. 4, so as to present two concentric circular slips. The inner one,  $y$ , is radially graduated, so as to indicate minute divisions of time, and thereby make the record as exact as possible; but the outer circle  $z$  is left blank, so as to receive and distinctly show the marks made by recording-pencil  $p^2$ .

I have described the above devices especially with reference to telegraphic fire-alarms; but they may also be applied to printing-telegraphs, (substituting type for the perforating-point O,) or, indeed, to any telegraphic receiving-instrument.

My invention will be found useful wherever it is desired to preserve an accurate record of the time of receiving a message.

I may employ, in addition to the alarm shown and described, an auxiliary alarm, which is preferably located in the same building with the rest of the apparatus, and serves to attract the attention of persons there stationed. It may consist of a bell operated by clock-work, which is tripped by the downward impulse of the armature L, when such armature is attracted by the electro-magnet, as hereinbefore described. The tripping of said clock-work may be effected by direct mechanical action, such as pulling on a wire attached to said armature and to said detent; but I prefer to close an additional circuit by the movement of armature L or lever M, and thereby to operate an additional electro-magnet and armature, thus tripping said detent.

Any other equivalent tripping device may be employed, and any equivalent continuously-ringing alarm mechanism.

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

1. A telegraphic receiving-instrument adapted to register a message and record the time of its reception, substantially as and for the purpose set forth.

2. A telegraphic receiving-instrument adapted to sound an alarm and record the time, substantially as and for the purpose set forth.

3. A telegraphic receiving-instrument adapted to sound an alarm, register a message, and record the time, substantially as and for the purpose set forth.

4. Armature L, in combination with pivoted lever M, hammer-handle N, and perforator O, or its equivalent, substantially as set forth.

5. Armature L, in combination with pivoted lever M, perforating-point O, or its equivalent, and pencil  $p^2$ , substantially as set forth.

6. The combination of hinged arm P, adapted to be thrown back out of the way,

with armature L and connecting-pieces, substantially as and for the purpose set forth.

7. The combination of pivoted lever M with vertically-moving trip-rod S, means for operating the feed-rollers, perforator O, and hammer-handle N, substantially as set forth.

8. The combination of pivoted lever M, armature L, perforator O, pencil  $p^2$ , feed-rollers D D', means for operating said rollers, and

rotating clock-dial, substantially as and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

HENRY ENNIS.

Witnesses:

JOHN F. ACKER,  
C. H. McEWEN.