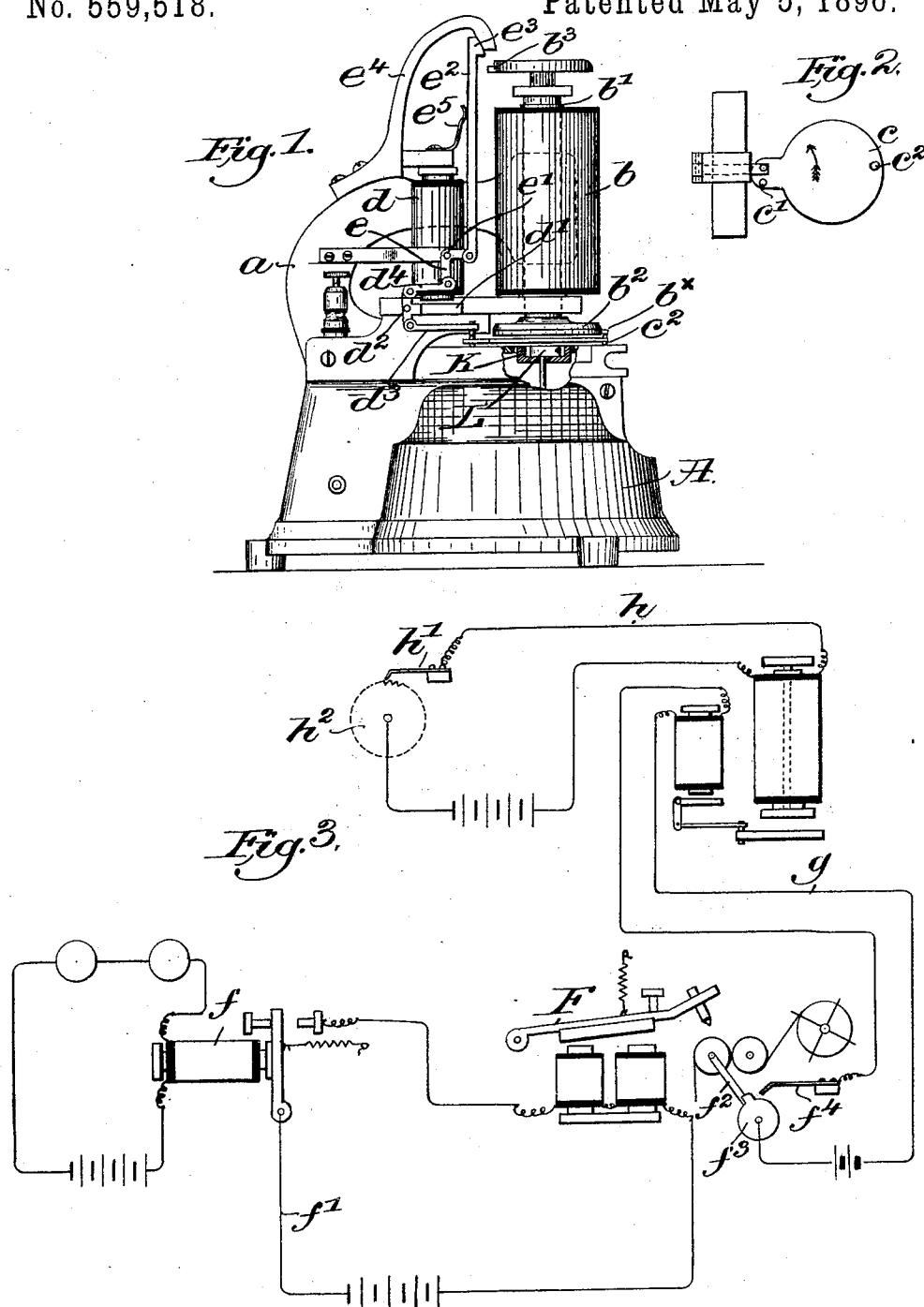


(No Model.)

H. F. EATON.  
AUTOMATIC TIME RECORDING INSTRUMENT.

No. 559,518.

Patented May 5, 1896.



Witnesses.

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# UNITED STATES PATENT OFFICE.

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## AUTOMATIC TIME-RECORDING INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 559,518, dated May 5, 1896.

Application filed March 20, 1893. Serial No. 466,826. (No model.)

*To all whom it may concern:*

Be it known that I, HOWARD F. EATON, of Quincy, county of Norfolk, State of Massachusetts, have invented an Improvement in Automatic Time-Recording Instruments, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 This invention relates to automatic time-recording instruments, the invention having particular reference to the employment of such-instruments in connection with the receiving-instruments of fire, police, and other 15 signaling systems.

The function of time-recording instruments when used in connection with receiving-instruments, as above referred to, is to stamp or record upon the recording strip or sheet 20 the time at which a given signal is received.

Prior to this invention apparatus have been devised wherein the time-recording instrument is operated at regular intervals to stamp or record the time upon a moving sheet, 25 whether a signal is being received or not, the particular time at which a signal is received upon the sheet being determined by reference to the time-stamps at each side of and adjacent to the recorded signal. In such an 30 apparatus the continuous movement of the recording-sheet in order to receive the time stamped upon it at regular intervals, regardless of whether a signal is being received or not, involves a useless waste of the paper 35 constituting the sheet, for the record of the time is of no use except in connection with a recorded signal.

This invention has for its object to produce an automatic time-recording instrument in 40 which the recording or printing and impression-receiving members are intermittently actuated, one with relation to the other, by an independently-controlled arresting device, but which are prevented from recording or 45 stamping the time upon the recording-sheet except immediately before or after the reception and recording of a signal upon the sheet, so that the recording-sheet need not be moved except at and during such time as a signal is 50 being received.

This invention in automatic time-record-

ing instruments therefore consists in the combination, with printing and impression-receiving members and means to automatically and regularly move the same, one with relation 55 to the other, of an arresting device to prevent at times the making of an impression by said relatively and regularly moving printing and impression-receiving members, substantially as will be described.

60 Other features of this invention will be hereinafter described, and pointed out in the claims.

Figure 1 represents in side elevation an automatic time-recording instrument embodying this invention, the base being broken away to display the printing-type; Fig. 2, a detail plan view of the shield to prevent the recording of the time upon the recording-sheet, and Fig. 3 a diagram view showing one 70 manner of connecting the time-recording instrument with a signal-receiving instrument.

Referring to the drawings, A represents the base of a time-recording instrument of the class shown and described in United States 75 Patent No. 224,666, dated February 17, 1880, to which reference may be had, said base containing suitable type or printing disks K L, rotated by a clock mechanism contained within the base to indicate, in connection with a 80 series of fixed numerals on the bed, the time of day, and a type or printing ribbon extending over the faces of the said numerals and disks, all as in the patent referred to.

A curved arm a, standing up from the base, 85 supports the electromagnet or solenoid b, the hollow core of which receives the armature b', provided at its lower end with a printing plate or member b<sup>2</sup>, adapted, as herein shown, to be depressed upon a recording-sheet s, 90 passed between it and the printing-ribbon, as shown, to cause the type and the disks on the base, which in the present instance constitutes the impression-receiving member of the instrument, to act through the type-ribbon 95 to stamp the time upon the recording-sheet. A spring (not shown) retains the armature of the magnet and the printing member b<sup>2</sup> normally in their elevated positions, as shown. A shield c is pivoted at c' to swing under the 100 printing-plate b<sup>2</sup> to arrest the latter in its movement and prevent the same making an

impression upon the recording-sheet when it descends, the said shield having a lug  $c^2$ , which, when the shield is swung beneath the printing-plate, is interposed between the base 5 A and an ear  $b^x$  on the printing member to prevent the latter being depressed. The shield is moved to withdraw the lug  $c^2$  from beneath the ear  $b^x$  in the printing-plate by the armature  $d'$  of an electromagnet  $d$ , said 10 armature being pivoted at  $d^3$  and connected by a link  $d^3$  with the shield, as represented in Figs. 1 and 2, attraction of the armature turning the shield on its pivot in the direction of arrow, Fig. 2, to withdraw the shield 15 from beneath the printing member  $b^2$ . The armature  $d'$  is also connected by a link  $d^4$  with one arm of a bell-crank lever  $e$ , pivoted at  $e'$ , and having its other arm jointed to the lower end of a vertical rod  $e^2$ , provided at its 20 upper end with a hook  $e^3$ , normally lying behind the inclined surface of a finger  $e^4$ . (See Fig. 1.) A spring  $e^5$  acts to depress the rod  $e^2$  to the right and hold the same frictionally against the finger. 25 Referring to Fig. 3,  $f$  represents the receiving-relay of a signaling-circuit of any kind, its armature controlling a local circuit  $f'$ , containing a receiving-instrument  $F$ , of which  $f^2$  represents a shaft forming a part of the 30 mechanism for feeding the recording-sheet beneath the marking-pen when a signal is being received and recorded by the instrument. This shaft  $f^2$  in the present construction has fixed to one end a contact-wheel  $f^3$ , which at 35 each revolution contacts with the pen  $f^4$  to momentarily close a local circuit  $g$ , in which is included the electromagnet  $d$  of the time-recording instrument. 40 The actuating magnet or solenoid  $b$  of the time-recording instrument is arranged in a local circuit  $h$ , which is closed at regular intervals—say every five minutes—through a contact-pin  $h'$ , co-operating with the teeth on a wheel  $h^2$ , forming part of or moved by the 45 clock mechanism within the base A.

The operation of the device is as follows, viz: The wheel  $h^2$ , rotated by the clock mechanism, closes the circuit  $h$  at regular intervals, causing the magnet  $b$  to be energized at each 50 closure to intermittently attract or pull down its armature  $b'$  to depress the printing member  $b^2$  upon the recording-strip of the receiving instrument  $F$ , which strip is passed between the printing member and the printing- 55 ribbon lying on top of the type or impression-receiving member of the device. The shield  $c$ , however, lying beneath the printing-plate and between it and the recording-sheet, prevents the printing member from making an 60 impression upon the sheet, the lug  $c^2$  on the shield arresting the downward movement of the printing member. When, however, a signal sent in from one of the boxes in the signaling-circuit is being received and recorded 65 by the receiving instrument  $F$ , the feeding mechanism of the instrument will be set in motion in usual manner to feed the sheet

through the instrument to receive the signal, said sheet at the same time being thereby also fed through the time-recording instrument. 70 When the shaft  $f^2$  has nearly completed a revolution, the contact-wheel  $f^3$  will contact with the pen  $f^4$  and momentarily close the circuit  $g$  to energize the magnet  $d$ , causing the latter to attract its armature  $d'$  and remove 75 the shield  $c$  and its lug  $c^2$  from beneath the printing member  $b^2$ , and permit the latter upon its next regular downward movement to stamp the recording-sheet down upon the printing ribbon and type and record the time 80 upon the sheet. When the armature  $d'$  is attracted to remove the shield  $c$  from beneath the printing-plate, the rod  $e^2$  is, by the same movement, drawn down and away from the finger  $e^4$ , the spring  $e^5$  throwing the rod forward as it leaves the finger into the path of movement of the lug  $b^3$  on the upper end of the armature  $b'$  of the magnet  $b$ , which lug upon the next upward or return movement of the armature will engage the hook  $e^3$  on the 85 rod, lift the same, and return the armature  $d'$  and the shield  $c$  to their normal position, Fig. 1, the finger  $e^4$  drawing the upper end of the rod back out of engagement with the lug  $b^3$  as the latter reaches the end of its movement, 90 the action of the spring  $e^6$  pressing the rod against the finger retaining the rod and shield in such positions until again moved by the attraction of the armature  $d'$ .

From the foregoing it will be seen that the 100 printing plate or member  $b^2$  is operated intermittently without reference to the reception of a signal; but that it will not stamp the time upon the recording-strip unless the shield or arresting device  $c$  is first removed from beneath it, when upon its next subsequent downward movement it will cause the time to be stamped upon the strip.

This invention is not restricted to the particular construction or arrangement herein 110 shown, as the same may be varied and still come within the scope of the invention.

The invention, broadly, is applicable to any kind or form of time-recording mechanism, and may be connected to and operate in connection with any receiving instrument other than that shown, the gist of this invention being set forth in the claims appended to this specification.

I claim—

1. In an automatic time-recording instrument, the combination with printing and impression-receiving members, and means to automatically and regularly move the same, one with relation to the other, of an arresting device to prevent at times the making of an impression by said relatively and regularly moving printing and impression-receiving members, substantially as described.
2. In an automatic time-recording instrument, the combination with an intermittently-actuated printing member, of an independently-actuated arresting device adapted to be put into and out of position between the print-

ing member and the recording-strip, substantially as described.

3. In an automatic time-recording instrument, a printing member actuated automatically and constantly at predetermined intervals and an electromagnet to actuate the same, combined with an arresting device independent of the said actuating-magnet for and to prevent the recording of the time by said printing member, and an electromagnet to control said arresting device, substantially as described.

4. In an automatic time-recording instrument, an electromagnet, its armature, and a printing member moved thereby, combined with an arresting device, an electromagnet to move the same beneath said printing member, said arresting device being removed therefrom by movement of said armature, substantially as described.

5. In an automatic time-recording instrument, a base, the type-disks K, L, the printing member  $b^2$ , and a magnet to actuate the same, combined with an arresting device  $c$ , the electromagnet  $d$  to move the same, and the rod  $e^2$ , all to operate, substantially as described.

6. An automatic time-recording instrument having a printing member actuated automatically and constantly at predetermined intervals, combined with a signal-receiving instrument, and an arresting device for the printing member controlled by said receiving instrument to prevent the said printing member making a record upon the recording-sheet, substantially as described.

7. An automatic time-recording instrument having an intermittently-actuated printing member, and an arresting device for and to prevent said printing member making a record upon the recording-sheet, substantially as described.

ord upon the recording-sheet, combined with a signal-receiving instrument, and connections intermediate the same and said arresting device whereby the receiving instrument when receiving a signal acts to remove said arresting device to permit said printing member to record the time upon the recording-sheet, substantially as described.

8. An automatic time-recording instrument having an intermittently-actuated printing member, an arresting device to prevent the said printing member making a record, and an electromagnet to actuate said arresting device, combined with a signal-receiving instrument and a circuit-controller actuated thereby to change the condition of the circuit of said electromagnet to cause the latter to withdraw said arresting device to permit the printing member to make a record, substantially as described.

9. A signaling-circuit or signal-receiving instrument, a controlling-magnet therefor arranged in said circuit, combined with an automatic time-recording instrument having a printing member automatically and constantly actuated at predetermined intervals, and an arresting device controlled by the condition of the said signaling-circuit, to prevent the making of a record by said time-recording instrument when a record is not desired, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HOWARD F. EATON.

Witnesses:

FREDERICK L. EMERY,  
EDWARD F. ALLEN.