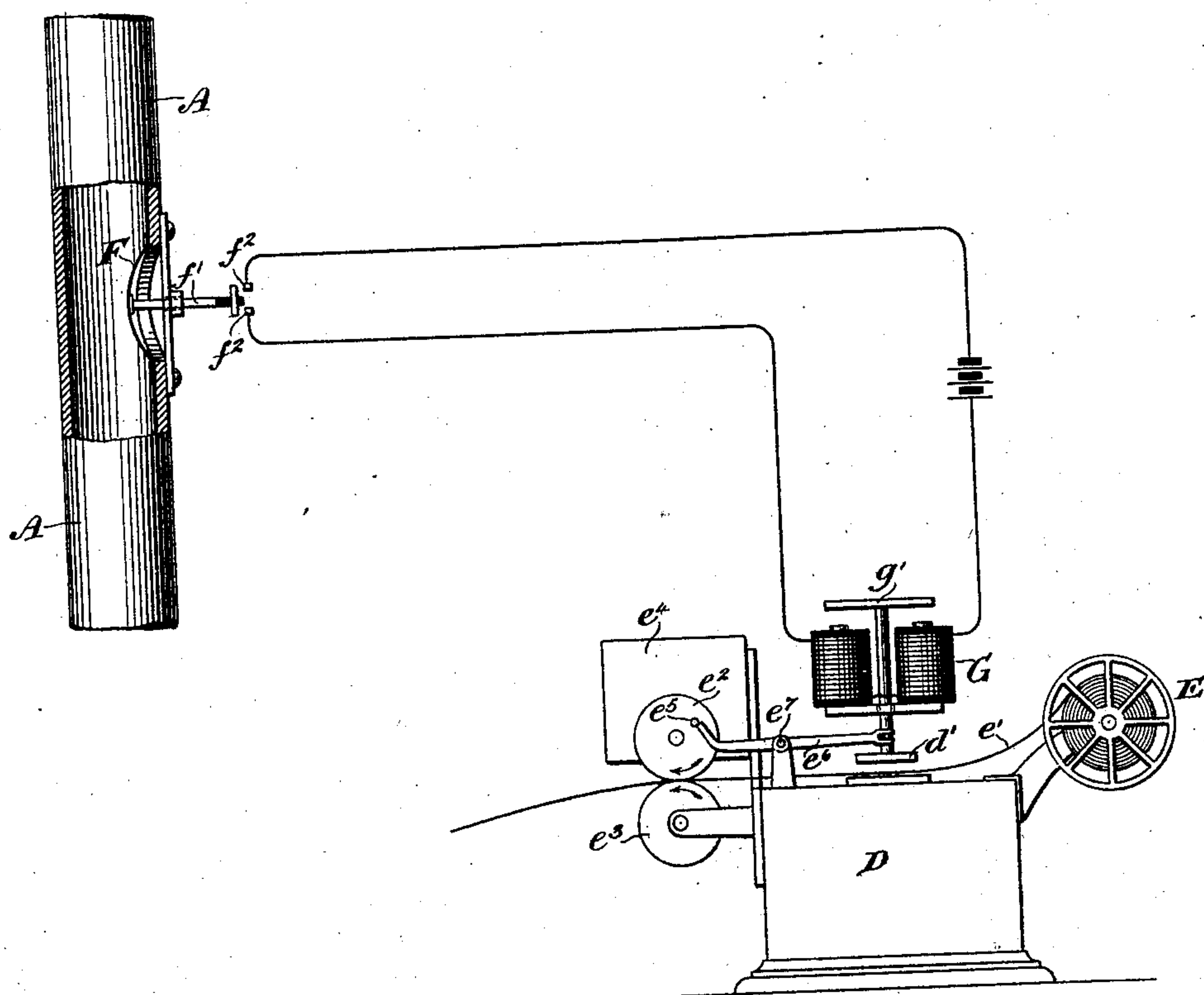


(No Model.)

J. F. BATCHELOR.  
PRESSURE RECORDING DEVICE.

No. 556,081.

Patented Mar. 10, 1896.



Witnesses  
Edward Thorpe.  
William Ingey.

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By his Attorney  
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# UNITED STATES PATENT OFFICE.

JOSEPH F. BATCHELOR, OF BROOKLYN, NEW YORK.

## PRESSURE-RECORDING DEVICE.

SPECIFICATION forming part of Letters Patent No. 556,081, dated March 10, 1896.

Application filed May 2, 1894. Serial No. 509,766. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH F. BATCHELOR, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Pressure-Recording Devices, of which the following is a specification.

My invention relates to improvements in pressure-recording devices—that is to say, devices wherein a record is made as to the time and duration in which pressure is exerted—and the same is adapted to be employed in connection with whistles operated by pressure, as steam, or in any other connection in which it is desirable to record the time at which pressure may be present in such relation as to effect the device here employed and the length or duration of time in which such pressure is present.

I have illustrated my invention in the accompanying drawings, in which like letters refer to like parts.

Figure 1 is a form of construction in which my invention may be applied wherein the record is made mechanically. Fig. 2 is a form in which the record may be made by means controlled electrically.

In Fig. 1, A is a pipe in which a chamber B is interposed, having a port connected with a cylinder  $b'$ , having one end closed and the other entering into the chamber B.  $b^2$  is a piston-head and  $b^3$  a piston-rod.  $b^4$  is a point which may be a puncturing or marking point, secured to the end of the piston-rod, and  $b^5$  is a spring interposed between the head of the cylinder and the head  $b^2$ . C is a time mechanism operating a stem  $c'$ , and  $c^2$  is a disk secured to said stem  $c'$  and revolving therewith with the operation of the time mechanism C.

The operation of this device is as follows: When pressure is interposed into the pipe A and chamber B it affects the cylinder-head  $b^2$  and drives the point  $b^4$  against the disk  $c^2$  to make a mark or puncture therein to indicate that pressure has been before the cylinder-head. It will be understood that this disk is preferably divided, in the usual form, into days or hours, as the case may require. The disk, as stated, is caused to revolve by the time mechanism C, and as such revolutions progress the record will be made upon the

same by the point  $b^4$  either in the form of punctures or marks. According to the length of time that the pressure is exerted in the chamber B, so will the length of the mark indicate the same.

In Fig. 2, A is a pipe—for instance, say, steam-pipe—leading to a steam-whistle. F is a diaphragm interposed in a port in said pipe.  $f'$  is a circuit-maker carried by the diaphragm, and  $f^2$  and  $f^3$  are contact-plates in circuit connection with an electromagnet G. D is a time-stamp in any of the usual forms, having a printing-hammer  $d'$  secured to an armature for said magnet  $g'$ . E is a spool upon which is wound a paper ribbon or tape  $e'$ , which passes under the printing mechanism of the time-stamp and between the rollers  $e^2$  and  $e^3$ .  $e^2$  and  $e^3$  are rollers between which said paper is intended to pass to feed the same to the printing device.  $e^4$  is a figurative representation of a motor, preferably a clock-movement, suitably connected to operate the roller  $e^2$  in a direction to feed the paper to the printing mechanism of the time-stamp.  $e^5$  is a pin secured to the roller  $e^2$ .  $e^6$  is a detent-lever pivoted at  $e^7$  to arrest the movement of the roller  $e^2$ .

The operation of this device is as follows: When pressure is introduced into the pipe A it affects the diaphragm F and causes the circuit-maker  $f'$  to make electrical contact with the contact-plates  $f^2$  and  $f^3$ , thus completing a circuit through the electromagnet G, thus attracting the armature  $g'$  to operate the printing mechanism of the time-stamp D, and cause an impression to be made from the time-stamp on the ribbon  $e'$ , at the same time actuating the detent-lever  $e^6$  to release the feed-roller  $e^2$ , thus causing the paper to be continually fed to the printing mechanism until the roller  $e^2$  has made a complete revolution, and the pin  $e^5$  engages the detent-lever  $e^6$  when its motion is arrested.

It will be understood that when the diaphragm F is affected by the pressure the contact-maker  $f'$  passes over the contact-plates  $f^2$  and  $f^3$ , completing a circuit thereby, and with the further expansion of the diaphragm the circuit is broken.

It will also be understood that with the retraction of the diaphragm due to the exhaustion of the pressure in the pipe A the



circuit is again made as the contact-maker returns over the contact-plates  $f^2$  and  $f^2$ , thus again causing the electromagnets to print a record on the tape to indicate such return.

5 It will be understood from this description that with the expansion of the diaphragm and the making of the circuit a record is made of the time at which this occurs, and again as the diaphragm retracts a second record is  
10 made.

It will be manifest that if the impulses of the diaphragm are very rapid the distance between the impressions on the ribbon will indicate the length of time that the pressure is present before the diaphragm—that is to say, with the expansion of the diaphragm the circuit is made and the printing takes place, and at the same time the detent is released and the tape is fed to the stamp, and  
20 with the retraction of the diaphragm the circuit is made again and the printing is repeated. If the second making of the circuit occurs before the time-stamp has had time to complete its change of time indication, then  
25 the same time will be indicated twice, but by reason of the feed of paper there will be a space between the impressions from the stamp, the length of which space will indicate the length of time the pressure is present before the diaphragm. If, on the other hand, the pressure is exerted long enough to permit the time-stamp to change, the imprint from the stamp will indicate also the length of time the pressure is exerted against the diaphragm.

35 What I claim is—

1. In a pressure-recording device, a diaphragm operated by pressure, in combination with a time-stamp, an electromagnet in circuit, an armature for said magnet connected to operate the printing mechanism of  
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the stamp and also a detent controlling the feed of paper to the stamp, and means to control said circuit operated by the movement of the diaphragm, first by its expansion and second by its retraction, substantially as described. 45

2. In a pressure-recording device a diaphragm operated by pressure in combination with a time-stamp, an electromagnet in circuit, and means to control said circuit, consisting of a contact-maker carried by the diaphragm, engaging contact-plates as the diaphragm expands, and again as the diaphragm retracts, an armature for said magnet connected to operate the printing mechanism of the stamp, and also a detent controlling the feed of the paper to the stamp, substantially as described. 50 55

3. In a pressure-recording device the combination with a chamber adapted to receive pressure, a diaphragm exposed to said pressure, and connected with a circuit-controller, controlling an electric circuit through an electromagnet, first by the expansion of the diaphragm to make and break the circuit, and second by the contraction of the diaphragm to make and break the circuit, said magnet having an armature connected to operate the printing mechanism of a time-stamp, and a detent controlling a motor to feed the paper to the printing mechanism, substantially as described. 60 65 70

Signed in New York, in the county of New York and State of New York, this 19th day of April, A. D. 1894.

JOSEPH F. BATCHELOR.

Witnesses:

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EDWARD J. MCGUIRE.