

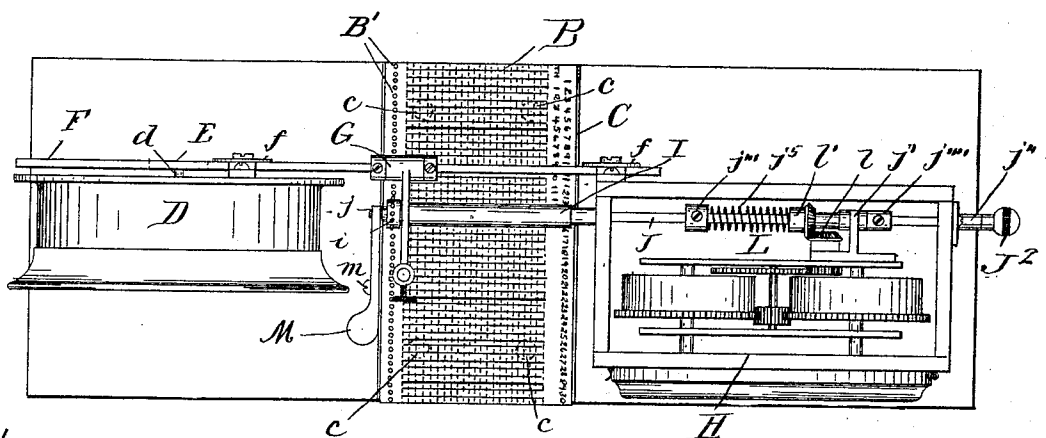
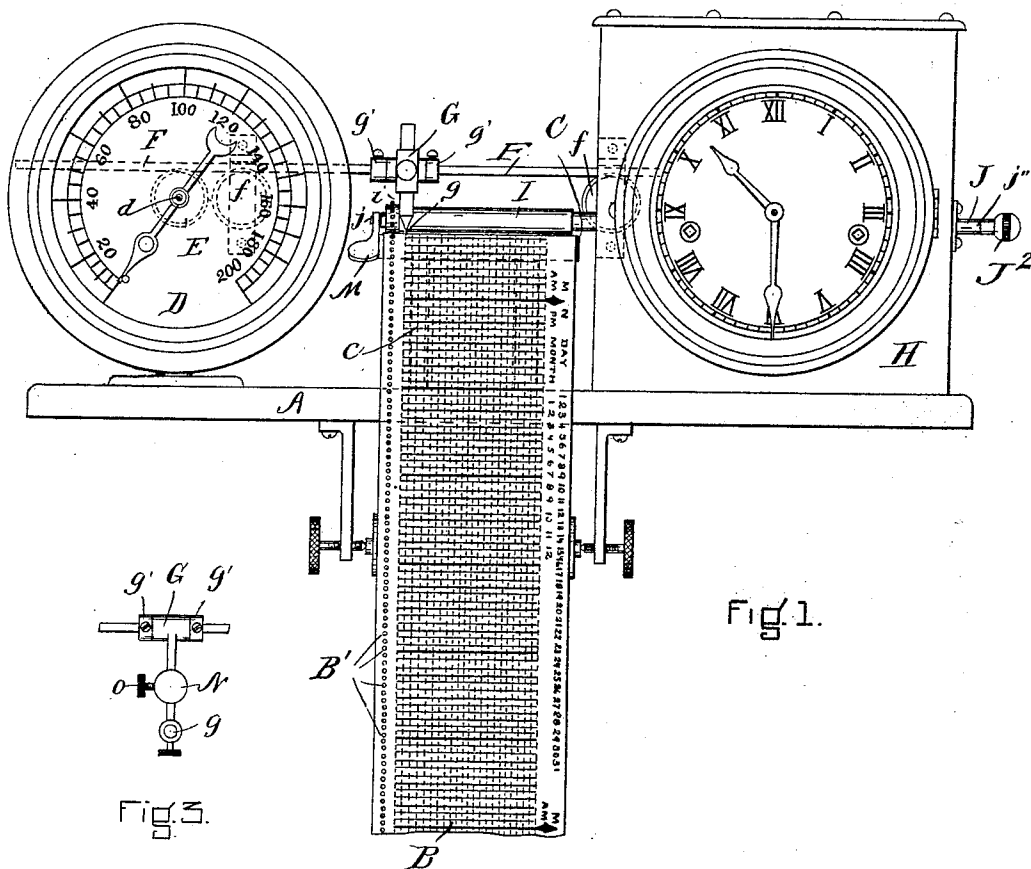
(No Model.)

3 Sheets—Sheet 1.

J. NAYLOR, Jr.
PRESSURE RECORDER.

No. 520,073.

Patented May 22, 1894.



WITNESSES.

A. Kenny
John A. Johnson.

INVENTOR.

James Naylor Jr

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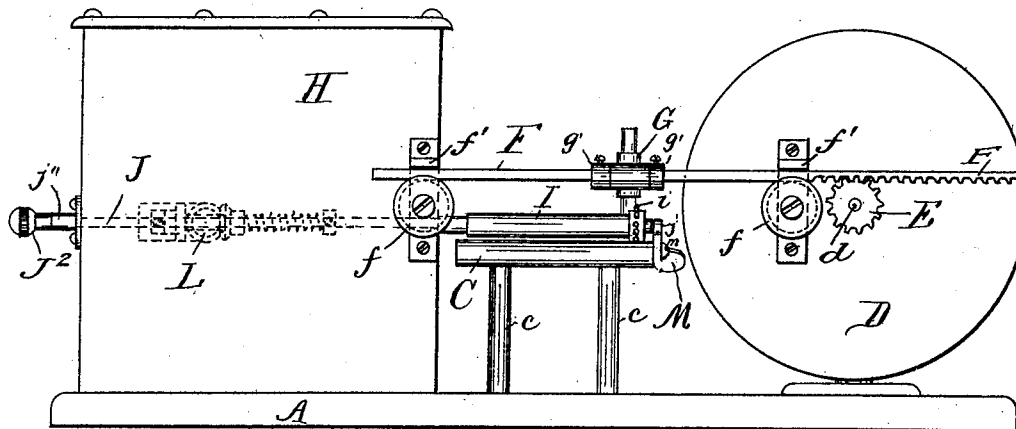


Fig. 5.

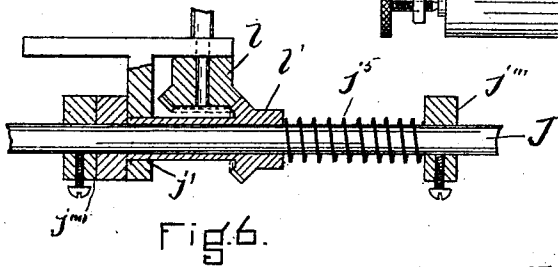


Fig. 6.

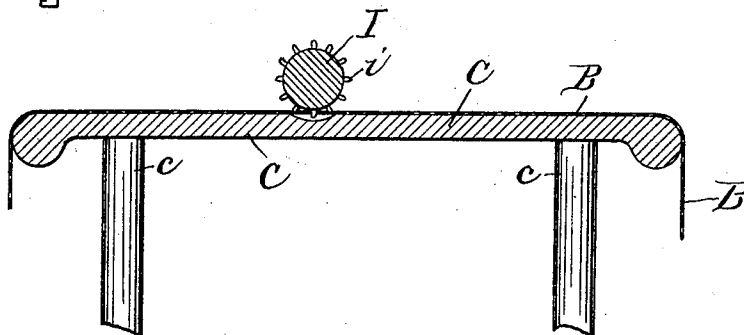


Fig. 7.

WITNESSES.

Charles E. Moss.

Chas. Spaulding

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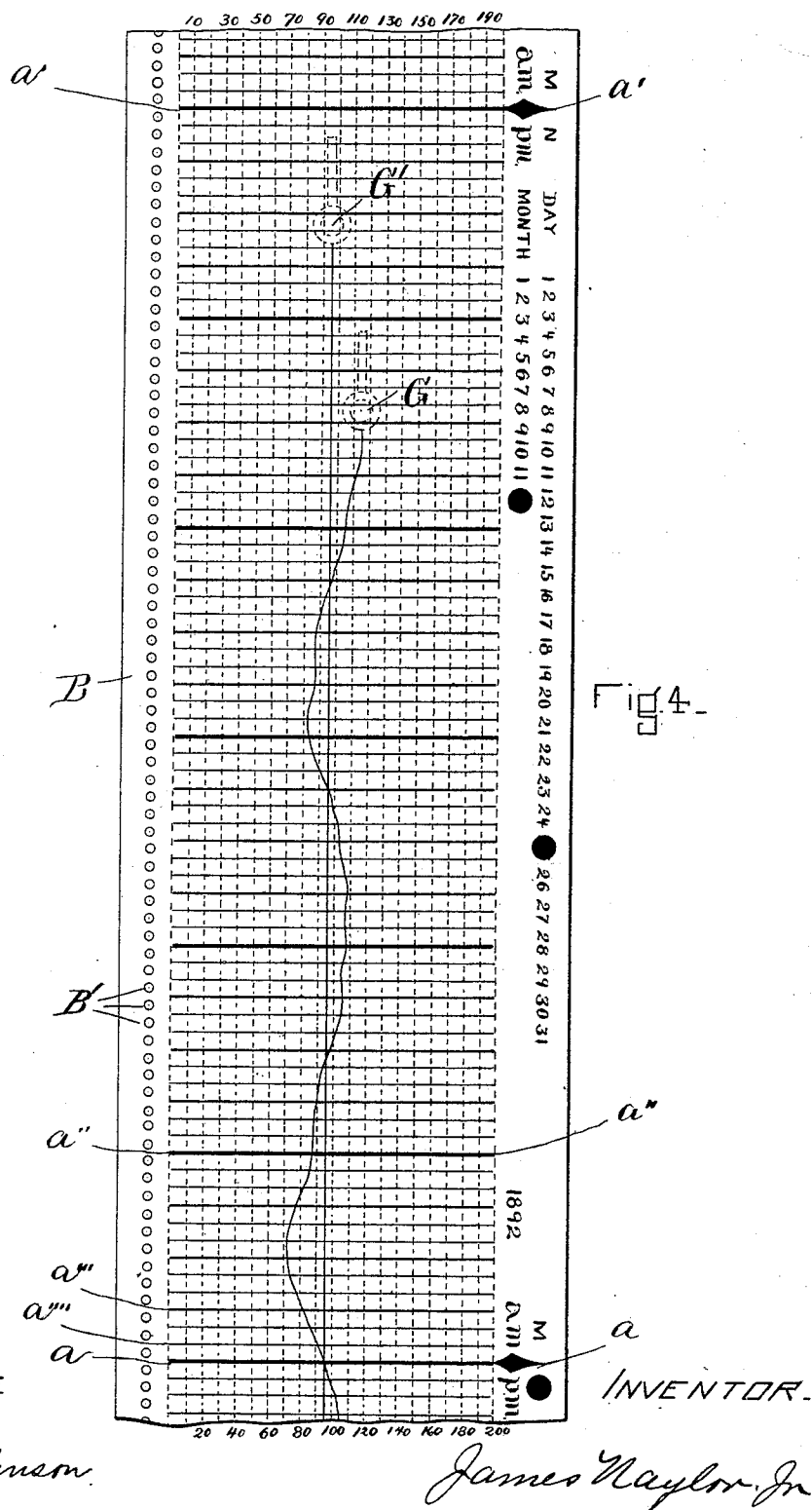
(No Model.)

3 Sheets—Sheet 3.

J. NAYLOR, Jr.
PRESSURE RECORDER.

No. 520,073.

Patented May 22, 1894.



THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

UNITED STATES PATENT OFFICE

JAMES NAYLOR, JR., OF BOSTON, MASSACHUSETTS, ASSIGNOR OF THREE
FOURTHS TO GEORGE THOMAS McLAUTHLIN, OF SAME PLACE.

PRESSURE-RECORDER.

SPECIFICATION forming part of Letters Patent No. 520,073, dated May 22, 1894.

Application filed January 14, 1893. Serial No. 458,415. (No model.)

To all whom it may concern:

Be it known that I, JAMES NAYLOR, Jr., a citizen of the United States, and a resident of Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Pressure-Recorders, of which the following, taken in connection with the accompanying drawings, is a specification.

My improvements relate to a recording apparatus combined with an ordinary chronometer or clock and a pressure gage.

The object is to obtain an accurate, legible, and continuous transfer upon a paper blank of the time as shown by the clock simultaneously with the pressure as indicated by the gage.

It consists of the arrangement and construction of parts as will be hereinafter fully specified and set forth in the claims.

In the drawings:—Figure 1 is a front elevation of my invention; Fig. 2 a plan; Fig. 3 a detail view; Fig. 4 a full sized section of chart; Fig. 5 a rear elevation of my invention; Fig. 6 a sectional view of the friction driving device, and Fig. 7 an enlarged or full sized cross-section through the table, the paper blank, and the toothed feed roll.

A is the shelf or frame upon which the several parts are secured.

B is the continuous paper blank upon which are printed the divisions of time and of pressure. On the margin are regular perforations B' through the blank in a straight longitudinal line.

The time divisions are printed transversely along the blank as follows: From *a* to *a'* is six hours or one quarter of the day, which is indicated by the printed arrow points on the right hand margin. Near to the arrow points are the letters M N a. m. and p. m. which signify respectively midnight, noon, six a. m. and six p. m. *a* to *a''* represents one hour. These hour divisions are shown by the heaviest transverse lines. *a* to *a'''* indicates fifteen minutes. These divisions are shown by lighter transverse lines. *a* to *a''''* indicates five minutes. These five minute lines are as light as is practical to make them. All these divisions are continuous upon a roll, yet they may be printed in any desired lengths.

The pressure divisions are shown by the longitudinal dotted lines, which represent, in the present case, ten pound spaces, beginning at the left and increasing to the right as shown by the figures 10, 20, 30, 40 and so on, signifying pounds pressure to the square inch and corresponding with the dial figures of the pressure gage. At the right hand margin are printed in numerals the year, the months and days of the months. The printing of any of these lines and letterings may be changed to meet special requirements. This continuous paper blank is printed and perforated in a machine, for which I intend to make a subsequent application for Letters Patent. The perforations B' through the paper are for the engagement of a toothed feed roll, thereby making the paper blank the mechanical equivalent of a rack. See Fig. 7.

C is the table or support for the paper blank. It is held at proper elevation by the posts *c. c. c.*

D is a pressure gage having an extending stem *d* through the back of the case.

Secured to the stem *d* is the spur gear E engaging with the rack F, said rack being supported and held laterally by the rolls *f f'* and in place by the projections *f' f'*, said projections secured to the chronometer and gage cases and extending over the rack bar, so as to prevent its falling out.

Upon the rack is a holder G for a pen, pencil, or other marking point *g*. This holder may be secured to the rack in any simple way, but I prefer to have it freely jointed in a vertical plane, as by the construction shown. See Figs. 1, 2 and 3.

g' g' are collars which are set close against the hub of the holder through which the rack passes, and prevents lateral motion on the rack, but the holder with the marking point may be raised from the paper blank and replaced at will.

H is the chronometer or clock from which by any devised means, motion is communicated to the feed roll I mounted on the shaft J, having teeth *i*, which engage in the perforations B' of the paper blank, to move same forward at a rate coinciding with the time divisions. The circumference of the feed roll I is equal to the hour divisions of the

blank, with the teeth of the feed roll and the perforations of the blank coinciding therewith. The feed roll is integral with the shaft J, which extends into the chronometer case, and through it to the knob J². The shaft J has three journal bearings at *j*, *j'*, *j''*, and receives its motion from the time movement through a friction driving device L. The miter gear *l* is driven by the clock movement as seen in Fig. 2 and drives the miter gear *l'*, which is freely mounted upon the shaft J between the collars *j'''*, *j''''* and an intervening spring *j³*, the whole constituting the friction driving device L. The bearing *j* of the shaft J is in the end of the thumb lever M, by which said shaft is held at right angles with the blank. The lever M is fulcrumed freely upon the screw *m* which is screwed tight into the table C, and by pressure upon the thumb piece of the lever M the feed roll is raised. There is a depression in the table as seen in Fig. 7, so that the teeth of the feed roll may reach below the surface of same. The shaft J being of small diameter it springs sufficient to allow the engagement or disengagement of the teeth of the feed roll into or out of the perforations in the blank by pressure upon the outer end of the lever M.

A means is shown in Figs. 1 and 5 for supporting the continuous paper blank consisting of drop hangers secured to the under side of the shelf A and provided with set screws to carry the roller from which the blank is unwound. Any other simple means may be substituted.

The operation is as follows:—The gage shows by its pointer and dial what the pressure is. The spur gear E moves with the pointer of the dial, and by means of the rack and holder moves the marking point or pencil transversely on the paper blank. Meanwhile the clock movement is driving the shaft J through or by means of the friction device L and motion is given the feed roll I, which moves the paper blank forward under the marking pencil, and thus a line is marked thereon recording the pressure as shown by the gage. Supposing the time to be noon, December 25, 1892, the paper blank is punched near one of the arrow points on the right hand margin through the letter N, signifying noon, through the day numeral 25, signifying the day of the month, and through the month numeral 12, signifying the twelfth month. The heavy line at the punched arrow point being noon, the paper blank is fed along by the knob K until said heavy line is directly under the marking pencil. Its operation is thereafter automatic. The time as shown by the clock dial is indicated on the paper blank, may be read by the time lines thereon, and the pressure as seen by the gage is marked continuously on the blank, and may be also read by the pressure lines. The recorded blank may be re-wound into a roll or cut off at pleasure in any length, without interfering with its operation. The record may be

preserved for inspection, reference, and proof, which in many cases may become valuable. Instead of the several pressure lines as shown on the paper blank, a normal line may be drawn by an auxiliary marker G' shown in Fig. 4 by the dotted lines; in which event only the time lines would be printed on the paper blank. The pencil or marking point bears on the paper blank by the gravity of the pencil and holder, and the adjustable weight N secured thereto, see Fig. 3 which is for the purpose of adapting the pressure of the marker so as to make a legible line and yet not bear hard enough to create undue friction. The weight N is made adjustable on the pencil holder by the set screw O, Fig. 3.

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

1. The combination with a chronometer, of a perforated blank, mechanism from said chronometer to engage the perforations of said blank to move it forward over a stationary surface; and the stationary support as shown and described.

2. The combination with a gage and chronometer having exposed dials, a continuous paper blank provided with the perforations in a straight line, and a stationary table; of connecting mechanism from said chronometer to said blank to move it in a straight line, connecting mechanism from said gage to a pencil point to move the same transversely, and said pencil as herein set forth.

3. In a pressure recorder, the combination with a gage having a spur gear E secured to the pointer stem *d*, an engaging and supported rack bar, a pencil and holder adjustably secured to said rack bar; the supported and perforated blank; of mechanism from a chronometer to directly engage said blank; and said chronometer, as shown and described.

4. The combination with a supported rack bar operatively connected to a gage, a gravity marking pencil and holder secured to said bar, of a stationary support to sustain said pencil and holder as herein set forth.

5. The combination with a stationary support; of a pencil and holder mounted upon a rack bar and held from lateral movement upon said bar, yet allowed freedom in other directions, connecting mechanism to a gage, and said gage as herein set forth.

6. In a recording apparatus the combination with a chronometer, a friction driving mechanism, shaft J² and the toothed feed roll; of the stationary table having its upper surface extending in a plane in advance of, and in the rear of the said toothed feed roll; and the perforated paper blank as herein set forth.

7. In a recording apparatus the stationary support C having a level upper surface, a perforated blank supported thereby; of the marking pencil and toothed feed roll located directly over the said level surface of the support C; operative mechanism to connect said pencil to the gage and said roll to the chro-

nometer, and said gage and chronometer as shown and described.

8. The combination with the stationary table C, having a depression for the teeth of the roll; of the perforated blank and the supported and driven toothed feed roll as herein shown and described.

9. The combination with the table C having a depression under the teeth of the roll, the lever M pivoted to said table, of shaft J² to act as a spring to bring the teeth of the roll into re-engagement, and the toothed feed roll mounted upon said shaft, as shown and described.

10. A record blank having a series of perforations B' along one side of its length, a supporting and stationary table C having a depression for the teeth of the roll; in combination with the toothed feed roll to engage said perforations, connecting mechanism therefrom to a chronometer, and said chronometer as herein set forth.

11. In a recording apparatus the gravity acting pencil and holder, supported rack bar F, collars g' g', spur gear E, supported pointer stem d; in combination with a stationary table C located directly under said gravity acting pencil as herein set forth.

12. The combination with a gravity acting pencil and holder, adjusting weight N, supported and operated rack bar F and collars g' g'; of a stationary table C located directly under said pencil as herein set forth.

13. The combination with a gage and chronometer each separately incased and having exposed dials; connecting mechanism from said gage to a pencil point to move it in a transverse straight line; said pencil supported by a stationary table C, a supported toothed feed roll located over the table C, mechanism connecting said roll to said chronometer; of the perforated blank and its supporting table as herein set forth.

14. The combination with a blank having time divisions marked by transverse lines, a tooth and perforation opposite to or in line with every time division, said blank supported by the table C; of a chronometer and connecting mechanism therefrom to a toothed feed roll, and said roll having teeth coinciding to the perforations and teeth of the blank as herein set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 8th day of December, A. D. 1892.

JAMES NAYLOR, JR.

Witnesses:

A. KENNY,
JOHN A. JOHNSON.