

(No Model.)

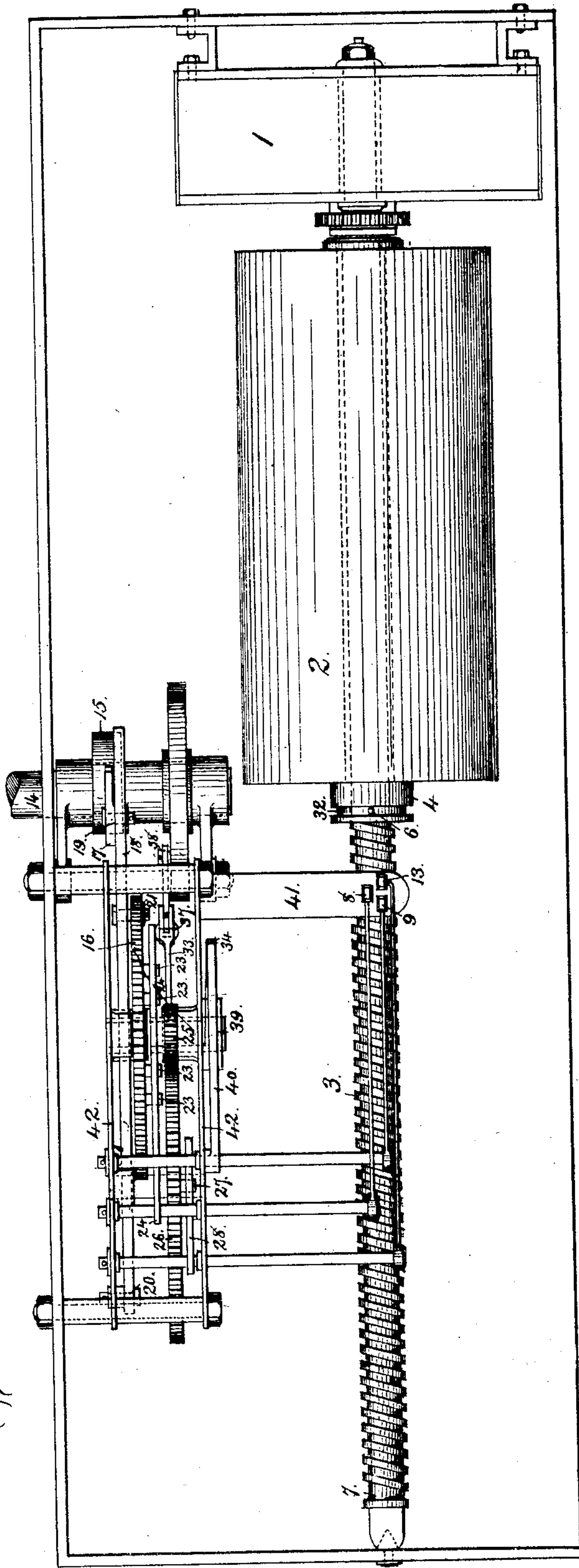
3 Sheets—Sheet 1.

A. L. POUGET.
RECORDER FOR LOCOMOTIVES.

No. 258,672.

Patented May 30, 1882.

Fig. 1.



Attest;
G. H. Graham
T. H. Palmer

Inventor,
Alexander L. Pouget,
by Munson & Philipp
Att'ys.

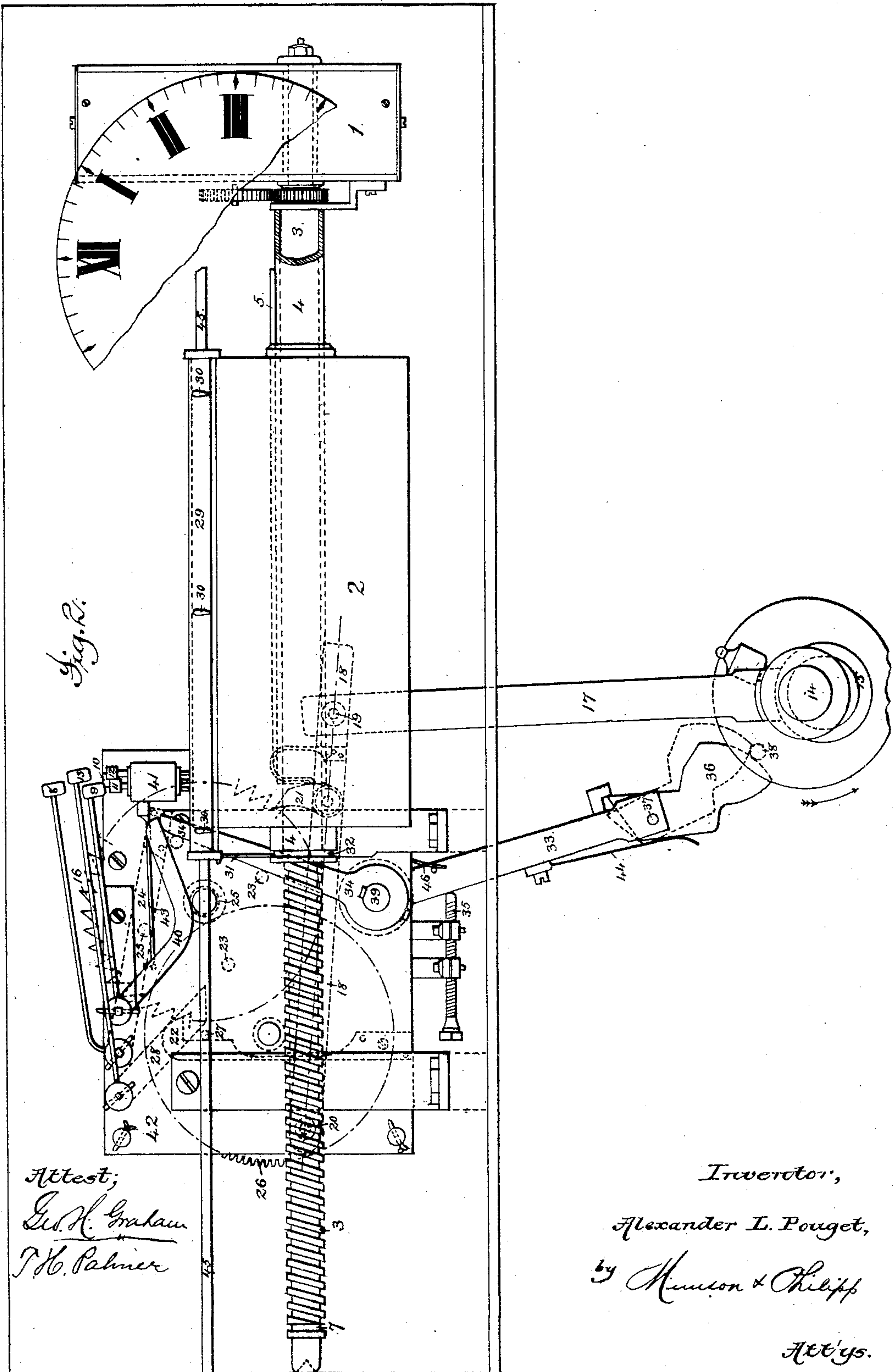
(No Model.)

3 Sheets—Sheet 2.

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(No Model.)

3 Sheets—Sheet 3.

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Fig. 3.

M	K																												L
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
XII	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
I	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
II	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
III	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
III	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
V	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
VI	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
VII	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
VIII	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
IX	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
X	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
XI	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
XII	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
I	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
II	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
III	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
III	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
V	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
N	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59

Attest:
G. H. Graham
T. W. Palmer

Alexander L. Pouget, Inventor,
by Munson & Kilgus, Attys

UNITED STATES PATENT OFFICE.

ALEXANDRE LOUIS POUGET, OF MONTPELLIER, FRANCE.

RECORDER FOR LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 258,672, dated May 30, 1882.

Application filed November 5, 1881. (No model.) Patented in France July 6, 1880, No. 137,637, and June 25, 1881; in Belgium October 14, 1880, No. 52,776, and August 2, 1881; in England (provisional patent) July 23, 1881, and in Italy August 27, 1881.

To all whom it may concern:

Be it known that I, ALEXANDRE LOUIS POUGET, civil engineer, of Montpellier, in the Republic of France, have invented certain new and useful improvements in apparatus for registering the travel and periods of rest of locomotives or other vehicles; and I do hereby declare that the following is a full, clear, and exact description of the same.

My improvements relate to mechanism for registering automatically the distance traveled a forward or in backward direction, and the by a locomotive or other vehicle, whether in speeds at which such travel or travels have been effected, as well as the periods of rest.

For the purpose of my invention, I make use of a sheet of paper or other appropriate material, which I roll on a cylinder, and which is divided longitudinally as well as vertically by parallel lines. The size of this sheet and the distance apart of the lines thereon may vary according to circumstances, as will be understood hereafter. For the purpose of recording the work of a locomotive I find that a sheet twenty centimeters high and thirty long, giving an approximate diameter of ten centimeters when placed on the cylinder, answers every purpose. The horizontal lines thereon can be five millimeters apart and the vertical lines one centimeter. However, this paper is laid at a slight angle on the cylinder in such a manner that the extremities of these lines at one end of the sheet correspond with the extremities of the following lines on the other end of the sheet in such manner that they all form together one long continuous volute or screw, the pitch of which is five millimeters. I impart by means of clock-work rotary motion the cylinder, the speed being one revolution per half minute, and I cause it to rotate on a screw of five millimeters pitch, so that at each revolution it progresses exactly five millimeters. I record the motion of a locomotive or other vehicle on this sheet of paper by means of a set of punches or markers, preferably three, the first of which indicates fractions of a kilometers, the second kilometers, and the third the retrograde motion of the vehicle, also in fractions of kilometers, and in kilometers, by underlining the distance run over as recorded by the two first-mentioned punches. I impart the req-

uisite motion to these three markers by means of a wheel running on the rail of the line or on one of the locomotive-wheels. I convert the rotation of this wheel for the first two markers into a to-and-fro motion by means of an eccentric and a ratchet-lever, which impart an intermittent motion to one or more disk-wheels in which are set studs that lift hammers. These latter, on falling, strike the markers, and for the third marker (that records the retrograde travel) I make use of a stud on the measuring-wheel or on a disk attached to its axle, acting on a jointed lever constructed in such a manner that on the forward motion of the vehicle an arm on such lever is caused to rise and fall without actuating the lever, but on its backward or retrograde motion it acts on a stop on such lever and strikes the hammer which actuates this marker.

In order that my invention may be clearly understood, I will describe the same in detail conjointly with the three accompanying drawings, on which—

Figure 1 is a plan of my improved apparatus, one-half size; Fig. 2, a front elevation of the same, one-half size, and Fig. 3 a full-size representation of the recording-sheets with a few registrations thereon.

In these Figs. 1 and 2, 1 is a clock-work of any appropriate description, indicating on the dial the usual time, and rotating the cylinder 2 one-half revolution per minute. This cylinder is fixed on a tube, 4, which turns on a fixed screw, 3, the pitch of which is five millimeters, and the cylinder is connected with the screw by a pin, 6, so that during its rotation it is compelled to advance five millimeters each revolution, thus describing throughout its entire travel a continuous volute or spiral corresponding exactly with the volute lines printed on the paper. A further key, 5, fixed on the tube 4, allows of this longitudinal motion of the cylinder on the tube while the tube and cylinder are revolving. At the outer extremity of the screw there is a circular groove, 7, in which the pin 6 enters when the cylinder has arrived at the end of its travel, and thereby it can rotate without progressing. This pin 6 is mounted on a spring in such a manner that by raising the same the cylinder can be disengaged and set backward or forward

to any direct point without being obliged to rotate it, and whether the clock-work is going or not. 14 is the shaft on which the actuating road-wheel is set.

5 10 is the first punch or marker which records fractions of kilometers on the sheet of paper, in this case twenty-five meters. It is struck by a hammer, 8, which is raised successively by the four studs 23, set on one face
10 of a ratchet-wheel, 16, and which act on the lever 24, made fast on the same spindle as the shaft of 8. This ratchet-wheel is fast on a spindle that rotates in the two plates 42 42 of the box containing the mechanism for actuating the punches, being rotated intermittently
15 by the eccentric 15, the rod 17 of which is jointed at 19 on a ratchet lever, 18, pivoted at 20, and provided with a ratchet, 21. 22 is a ratchet-tooth pivoted on one of the plates 42, and which serves to retain the ratchet-wheel 16 after each impulsion. For the purpose, as
20 in this case, of marking the travel every twenty-five meters the ratchet-wheel 16 would have forty teeth. The road-wheel keyed on the shaft 14 (and not indicated in Figs. 1 and 2) would be about eighty centimeters in diameter, and the throw of the eccentric 15 such as to turn the ratchet-wheel one tooth for each
25 revolution of the road-wheel. 12 is the second punch or marker which records the kilometers run. It is struck by its hammer 13 by means of a stud, 27, projecting from one face of the wheel 26, and which acts on a lever, 28, fast on the same spindle as the shaft of the
30 hammer 13. The gear 26 is driven by a pinion, 25, which is made fast on the same spindle as the ratchet-wheel 16. It has one hundred teeth against the pinion's ten. Consequently it makes but one revolution against ten made
40 by the ratchet-wheel, and thus while this latter, by means of its four studs, marks every twenty-five meters run over, the former will mark or record one kilometer.

11 is the punch or marker which records the
45 distances run over backward, by underlining the marks recorded for every twenty-five meters and one kilometer run, it being understood that such distances are recorded successively, whether the spaces run over be ahead
50 or retrograde. 9 is its hammer, and 40 its lever, hung below it, but on the same spindle as the hammer-shaft. This lever is actuated, when the locomotive is retrograding, (which direction is the reverse of the one indicated by
55 the arrow, Fig. 2,) by a double lever, 33 34, made fast on a spindle, 39, and this requisite motion is imparted to the said lever by means of a stud, 38, struck in the face of a small disk fast on the main actuating-spindle 14, which, actuating the extremity of a pawl, 36, hung on the
60 end of the lever 33, drives both of them to the right. The upper lever, 34, moves consequently to the left, whereby the lever 40 is raised, and with it the hammer 9, and directly the pin 38 has passed the pawl 36, the spring 43 brings
65 the hammer down on the said marker or punch 11, a spring, 46, having simultaneously brought

back levers 33 and 34 to the position indicated in Fig. 2. 35 is an adjustable screw for limiting the motion of the said compound lever 33 34. When the locomotive is progressing forward, as indicated by the arrow, Fig. 2, these parts, 11, 9, 40, 43, 34, 39, and 33, remain at rest, in consequence of the stud 38, which is then traveling in the direction of the arrow, simply tilting the pawl 36 on its axis 37. A
75 spring, 44, brings it back each time to its normal position. 41 is a guide for the punches or markers 10 11 12. I propose replacing, when convenient, the punches 10, 11, and 12, with their guide 41, by three springs on the outer extremity of which and on their under
80 faces are fixed the markers indicating fractions of kilometers, kilometers, and the backward travel as above. When struck by their respective hammers 8, 9, and 13 they are depressed on the paper, and when liberated by their hammers their elasticity raises them immediately a slight distance from the paper. In
85 another case I propose to suppress the punches 10, 11, and 12 with their guide 41 and the levers 24 23, and I place the punches where the hammers are shown. In such case the hammer-arms must be elastic, and the punches will be raised directly by their respective studs 23
90 and 27 acting on a shoulder adapted to each punch, so that they are raised slowly and descend with a certain percussion on being liberated by the said studs. Or, again, I propose placing the respective punches on vertical bars
95 working in guides, and which shall be raised by pins acting on projecting shoulders, as is the case in stamping-mills.

The recording-paper is shown full size, Fig. 3. When rolled on the cylinder 2 its extremity K L coincides with the line M N, and the
105 point K is in a line with point k on line M N, in order to form one continuous spiral, as above described. The Roman figures on the left-hand vertical column represent hours, and the
110 ciphers arranged horizontally the minutes of each hour, thirty minutes on each line, thus requiring two lines, and consequently two revolutions for each hour. The cylinder rotates in the direction of the progression of the
115 figures, and its progressive motion, due to the screw 3, is in the direction from M to N. The marks are reproduced on the paper by the punches striking on a band of carbon paper rolled on a cylinder, 29, and maintained thereon by claws 30. A small piece of this carbon
120 paper projects from the entire length of this cylinder directly under the line of punches, so that by their percussion they cause the carbon paper to leave a corresponding mark on the recording-sheet below, and the cylinder of carbon paper is caused to progress with the cylinder 2 by being free to move along a stationary rod, 45, and by being connected with the
125 cylinder 2 by means of a pin, 31, running in a circular groove, 32, cut on the outer end of the tube 4; or I arrive at the same result by making use of a transparent sheet of paper printed on one face, and by placing such printed face
130

downward on a carbon paper rolled on the cylinder 2. The upper face, on which the indications will be read from right to left, is exposed to view, and is useful as a check that the sheet has been set to time with the clock-work. When the recording-impressions are thus marked on the under face the screw 3 must be left-handed.

The sheet Fig. 3 contains three examples of the recording effected by my improved apparatus. Thus, in the first case, at the commencement of the third column on the eighth horizontal band, there are recorded two marks, $\frac{V}{1}$, one above the other, two similar marks at the commencement of the fifth column on the same band, and between these two double indications nine single indications. The marks V are the record of kilometers, and those 1 of hectometers (or one hundred meters) run over, for in this case, in order to render the record clearer, three out of the four studs 23 are supposed to be removed. Consequently the remaining stud strikes off every hectometer run over. The reading of this first record indicates that the locomotive commenced running at thirty-two minutes past three, and during the next two minutes it ran over one kilometer, and that in the first minute it accomplished seven hectometers, and in the second only three. As the whole distance is underlined, it shows that the locomotive was running backward or retrograding. It then remained stationary seven minutes. In the second case, at forty-one minutes past three and during the following five minutes, the locomotive has run exactly one kilometer each minute. During the following minute it went over five hectometers, gradually slackening speed, as indicated by the gradually-increased spaces between each hectometer. During next two minutes the locomotive remained stationary. It started again at forty-nine minutes after three, or thereabout, within a few seconds. It ran over one kilometer six hundred meters in a little over one minute and a half. Neither of these last two records being underlined shows that the locomotive was going forward.

It will be easily understood that by augmenting the number of studs 23 on the ratchet-wheel, or by diminishing the diameter of the ratchet-wheel or that of the recording-wheel on the shaft 14, or again by augmenting the stroke of the eccentric 15, the fractions of a kilometer indicated will be diminished, as may be required, and that by employing a larger cylinder, 2, and corresponding record-paper, such fractions may be separated to any required distance from one another.

On placing the cylinder 2, covered with its recording-sheet, on its screw 3 it is of course necessary to fix it so that its indications as to time correspond with the time shown on the dial of the clock-work 1, thus in the example above recorded the party in charge will have previously brought the part indicating thirty-two minutes after three under the punch

striking the fractions of kilometers, after which the apparatus may be closed or locked, only leaving the clock-face in view.

In order to render the record-sheet still more complete, I leave in the case of my apparatus a small opening immediately on the line of travel of the markers, and following the same, through which I pass any appropriate instrument for writing or otherwise noting on the sheet the station at which the locomotive at the time being has stopped or is remaining stationary.

Having thus explained the nature of my invention, I claim—

1. The combination of the stationary screw 3, the rotating cylinder 2, provided with the keyway, the sliding key 6, and the rotating tube 4, provided with the feather 5, whereby a rotative and at the same time a progressive motion is imparted to the cylinders, while at any time the progressive motion may be arrested by raising the sliding key out of the screw, and whereby when such disconnection is effected the cylinder can be freely moved by hand longitudinally on the tube for the purpose of setting it at any particular point, when progressive motion can be again established by reinserting the key in the thread of the screw, substantially as described.

2. In a mechanism for marking the fractions of kilometers (or other measures of distance traveled by a locomotive) on a recording-sheet, the combination, with the shaft 14, rotated by a road-wheel running on one of the locomotive-wheels, and provided with the eccentric 15, of the eccentric-rod 17, lever 18, pawl 21, ratchet-wheel 16, carrying studs 23, lever 24, hammer 8, and punch or marker 10, substantially as described.

3. In a mechanism for marking on a recording-sheet units of distance traveled by a locomotive, the combination, with the shaft 14, rotated by a road-wheel running in contact with one of the wheels of a locomotive, and provided with the eccentric 15, of the eccentric-rod 17, lever 18, pawl 21, ratchet-wheel 16, pinion 25, gear 26, provided with stud 27, lever 28, hammer 13, and punch or marker 12, substantially as described.

4. The mechanism for marking the retrograde travel of a locomotive on a recording-sheet, consisting of the shaft 14, rotated by a road-wheel running in contact with one of the wheels of a locomotive, which road-wheel is provided with a disk carrying the pin 38, the double lever 33 34, spindle 39, pawl 36, provided with spring 44, bent lever 40, spring 43, hammer 9, and punch or marker 11, substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

ALEXANDRE LOUIS POUGET.

Witnesses:

OCT. QUENTIN,
CASTELAR.