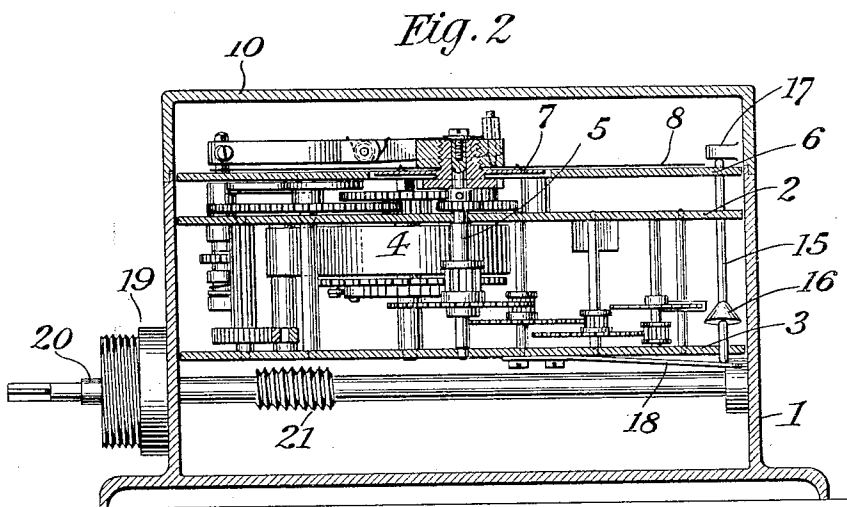
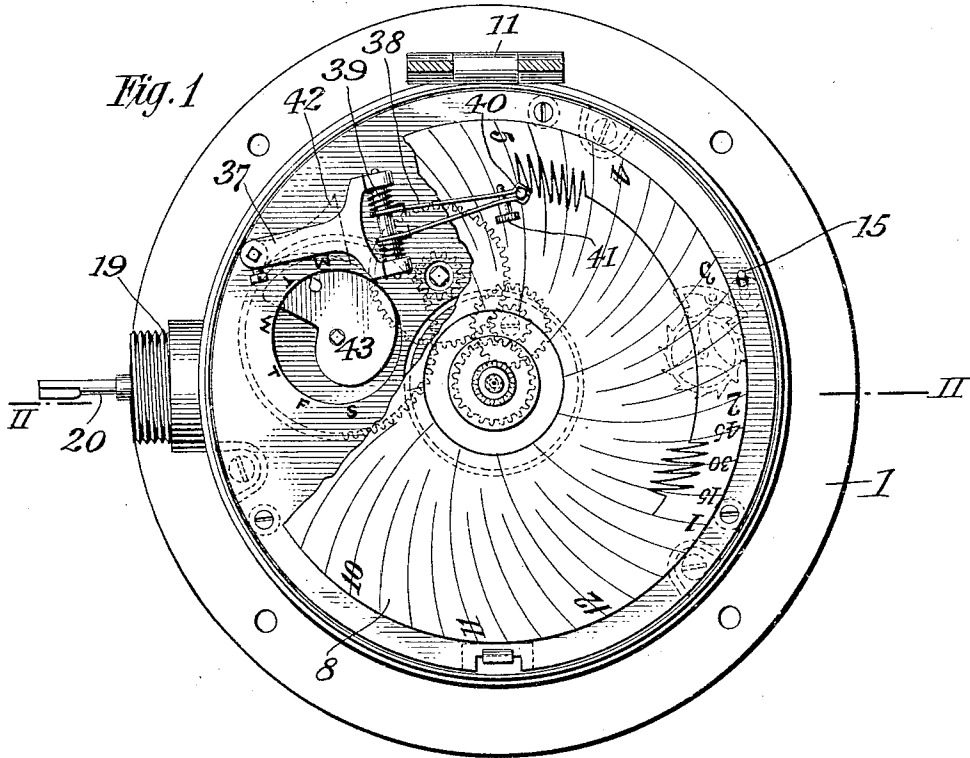


J. W. JONES.
TRAVEL RECORDER.
APPLICATION FILED NOV. 23, 1911.

1,205,353.

Patented Nov. 21, 1916.
2 SHEETS--SHEET 1.



Witnesses:

Raphael Ketter
Ruth C. Fitzhugh

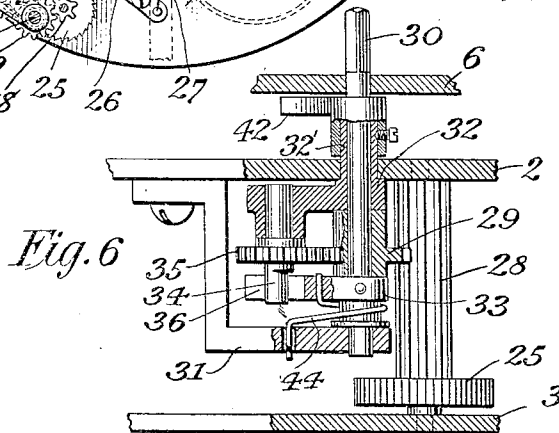
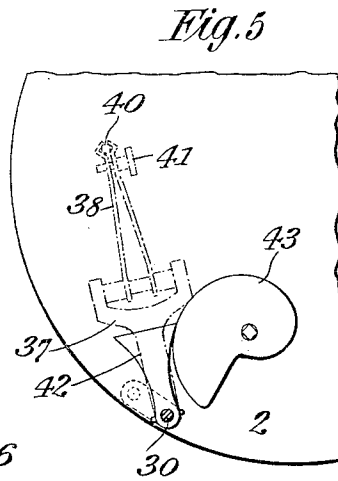
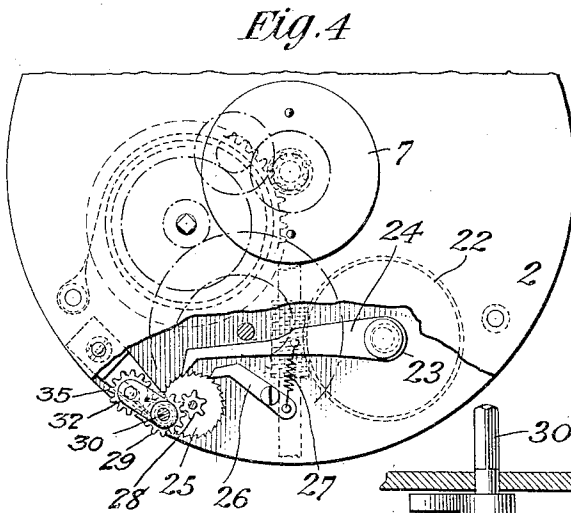
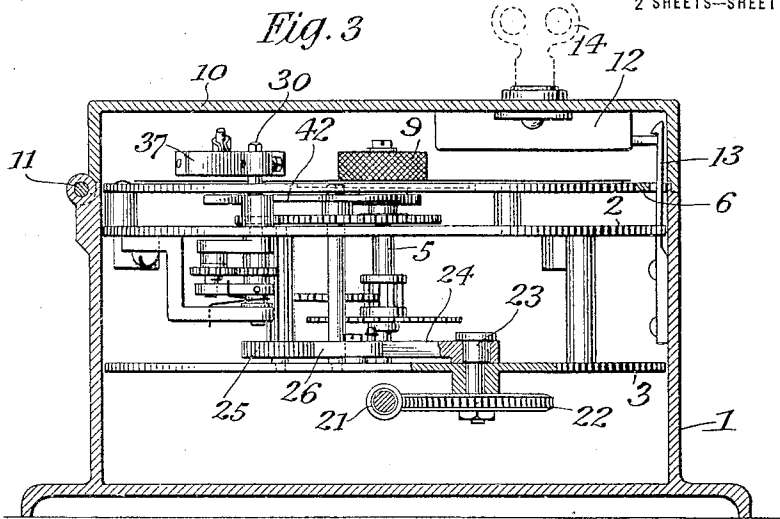
Joseph W. Jones, Inventor

By his Attorneys
Lawrs. Cameron, Lewis & Cassie

1,205,353.

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2 SHEETS--SHEET 2.



Witnesses:
Rappael Better
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UNITED STATES PATENT OFFICE.

JOSEPH W. JONES, OF NEW YORK, N. Y., ASSIGNOR TO THE JONES SPEEDOMETER, OF
BROOKLYN, NEW YORK, A CORPORATION OF NEW YORK.

TRAVEL-RECORDER.

1,205,353.

Specification of Letters Patent.

Patented Nov. 21, 1916.

Application filed November 23, 1911. Serial No. 661,893.

To all whom it may concern:

Be it known that I, JOSEPH W. JONES, a citizen of the United States of America, and a resident of the city, county, and State of New York, (whose post-office address is Broadway at Seventy-sixth street, New York city, New York,) have invented a new and useful Improvement in Travel-Recorders, which invention is fully set forth in the following specification.

The object of my invention is to provide an apparatus for use upon vehicles used for hire, delivery trucks or the like, which will give a permanent record of each and every portion of the time throughout the day (or throughout a number of days). This is to say, my travel-recorder shows, by a permanent record, the particular periods (what hours or portions of hours throughout the day) the vehicle has been in operation, and its average rate of travel during each period, besides showing the precise periods the vehicle has been stationary.

My invention comprises the employment, with a suitable motor (preferably an ordinary clock), of a removable and interchangeable chart or disk rotated thereby, together with mechanism actuated by the travel of the vehicle and comprising a tracer for recording upon said chart. More specifically, the mechanism causes the tracer to vibrate from side to side, marking a continuous zigzag pathway upon the chart, thereby directly indicating simultaneously both time and distance of travel, and indirectly indicating the rate of travel.

My invention consists of the various features of construction and arrangement hereinafter set forth and claimed.

Although my invention may be embodied in various forms yet for the sake of clearness I shall now set forth one preferred embodiment thereof, reference being had to the annexed drawings, in which—

Figure 1 is a face view of a commercial apparatus embodying a preferred form of my invention, with the cover removed and one of the interchangeable charts in place but partly broken away. Fig. 2 is a transverse section through the line II—II of Fig. 1. Fig. 3 is a side view, partly broken away, looking from the right of Figs. 1 and 2. Fig. 4 is a top view, on a larger scale, and partly broken away, of details of the travel-

feed. Fig. 5 is a top view, on the same scale as Fig. 4, of another detail of feed-mechanism. Fig. 6 is another detail, partly in section, and on a still larger scale, of the feed-mechanism.

1 is the main casing, preferably cylindrical, in which is mounted any ordinary clock, preferably an eight-day clock, having the two frame-plates 2 and 3, the main-spring 4, the usual gearing, and the centrally-located arbor (or minute-hand shaft) 5, which rises above a face-plate 6, to carry a turntable 7 for receiving the interchangeable chart 8, which is held in place by the milled nut 9. The cover 10 is hinged to the main casing at 11, and may be provided with a lock 12, engaging a catch 13 carried by the case, and having a detachable key 14. A slide-rod 15 is carried by the plates 2 and 3, and provided with a cone 16 adjacent the escapement or other suitable portion of the clockwork; a shoulder 17 upon the cover is adapted to force cone 16 out of contact with the clockwork when the cover is closed; while a spring 18 (carried by plate 3) forces the cone into contact when the cover is raised, thereby stopping the clock. By the construction just explained, and so long as the cover of the instrument is closed, the chart 8 is rotated by turntable 7 at uniform speed, and preferably at the rate of one complete revolution each twelve hours (the margin of the chart containing an appropriate scale of hours and quarter-hours). But when the cover is opened the clockwork is stopped, and the chart remains stationary until the cover is closed, when it starts up again.

19 is a screw-threaded nipple carried by the case, and in it journals the outer end of the shaft 20, to which is keyed suitable flexible shafting (not shown), the sheath of the latter being threaded upon nipple 19. The shaft 20 is thus rotated by the travel of the vehicle, to an extent and at rates proportionate to the extent and rates of the travel of the vehicle, as is well understood. Upon this shaft is fast the worm 21, in mesh with the worm-gear 22 which is carried on an arbor journaled in plate 3; and on the other end of this arbor is an eccentric 23. On this eccentric is pivoted the rear end of a pawl 24, whose free end engages the teeth of a ratchet-gear 25 carried by a shaft jour-

naled in plates 2 and 3. Another pawl 26 is pivoted upon plate 3, just in front of pawl 24; one end engaging the same ratchet 25, while its rear end is connected to the first-named pawl by tension-spring 27, which thus serves to hold both pawls in engagement with the ratchet. The pawls are so arranged with respect to each other and to the teeth of ratchet 25, that travel of the vehicle, by rotating the flexible shafting (with its worm) and gear 22 (with its eccentric), advances ratchet 25, one tooth for each complete revolution of gear 22 and its eccentric,—counter-clockwise, as viewed in Fig. 4.

28 is a pinion carried by ratchet 25. In mesh with this pinion is a gear 29, which turns freely upon a rock-shaft 30 shown as journaled in plate 2 and in a bracket 31. This rock-shaft carries the tracer (as will be described below). Two arms 32 and 33 (see Fig. 6) are mounted upon this same rock-shaft 30, one on either side of the loose gear 29, and extending in the same direction; the upper arm 32 is loose upon the shaft, and preferably has a sleeve 32' extending above the plate 2, while the lower arm 33 is made fast on the shaft. Gear 35 turns on a stud carried by the upper arm 32, and carries an eccentric 34 entering and engaging a slot 36 in the lower arm 33.

It will be observed that by reason of the loose mounting of the gear 35 in the arm 32, the gear is in effect a floating gear free to be shifted, together with its supporting arm 32, around the shaft 30, without disturbing its operative relations with the gear 29 and the slot 36 in the arm 33. The importance of this construction resides in the fact that it enables a spiral formation of the record made by the marker upon the tablet, as hereinafter described.

Rotation of pinion 28 (which itself is rotated by means of the eccentric and the pawls and ratchet) rotates the loose gear 29, and the latter in turn rotates the spur 35; and this spur, by reason of its eccentric, shifts the arm 33 and the rock-shaft 30 first to one side and then to the other, making a complete swing to-and-fro for each complete revolution of spur 35. Preferably the gears are so proportioned, and the connection of the flexible shafting upon the vehicle-wheel is such, that one mile of travel of the vehicle will cause precisely one to-and-fro swing (one complete vibration) of the rock-shaft 30 with its tracer.

The tracer (see Figs. 1 and 5) consists of two portions, the forked arm 37 keyed upon the outer end of the rock-shaft 30, and the pencil-holder 38 journaled in the fork of arm 37, so that it can be lifted up for inserting or removing the interchangeable charts, but with its pencil or tracer normally held in contact with the chart by

means of springs 39. In the particular construction shown, the pencil-holder consists of two spring-arms adapted to clasp the pencil or tracer 40, the arms being clamped together by a set-screw 41.

By means of the construction thus explained, the pencil 40 is caused to trace one complete traverse line upon the chart 8 for each half-mile of travel; that is, the pencil traces a complete V for each full mile of travel. Though, of course, some other rate may be provided for. Referring for illustration to the chart in Fig. 1; beginning at one o'clock the vehicle was stationary until nearly 1:15; then it commenced to travel, and by shortly before 11:45 it had traveled five miles (or, at an average rate of ten miles per hour); then the vehicle remained stationary (as indicated by the absence of zigzags) until a little after 4:15 o'clock; and, then, the vehicle traveled up to five o'clock, going about six and three-quarter miles (or, at about the same rate as before).

By the construction thus shown, tracings can be made upon the disk or chart for one complete revolution only of the latter, but no more,—that is, for only twelve working hours (if the disk be charted for that service). But it is desirable, in most instances, to have a longer chart. This is accomplished by providing for a gradual inward feeding of the tracer, toward the center of the disk, so as to produce a spirally-arranged path of zigzags. For this purpose I secure upon the sleeve 32' (of the loose arm 32) a cam-plate 42, adapted to contact with a rotary snail-shell cam 43 driven from the clockwork, and a spring 44 (shown in Fig. 6 as anchored upon bracket 31 and bearing against arm 33) tends to hold the cam-plate 42 in contact with the rotary cam 43. The parts are so proportioned, and cam 43 rotated at such rate, as to feed the tracer inward at a sufficient rate to allow each successive spiral of the zigzag pathway to clear its predecessor.

I have thus described my invention with great particularity of detail, but only for the sake of clearness, since my invention is not limited to the precise construction and arrangement of parts set forth, and parts of the invention may be employed to the exclusion of other parts, or modifications and transpositions resorted to, without in any case departing from the spirit of my invention. For example, other means (than the eccentric and pawls) might be employed for rotating the pinion 28, and thereby actuating the tracer; other means (than the eccentric of spur 35) might be employed for causing the tracer to swing to-and-fro in accordance with the travel of the vehicle; other means (than the cam-plate 42 and rotary cam 43) might be employed for producing the spiral arrangement of the record,—or this feature might be omitted en-

tirely; various other forms of tracers might be employed in place of the particular construction shown (37—38, etc.); the clock-stop device 15, etc., and other details might be modified or omitted altogether; and, in fact, there might be a very radical change in the organization of the operative parts, so long as there is present the to-and-fro movement of the tracer (in conformity with the travel of the vehicle) in connection with the rotation of the chart (in conformity with time).

Having thus described my invention, I claim:

1. A travel-recorder, comprising the combination with a chart and clockwork for rotating the same, and a tracer for marking upon said chart, of mechanism actuated positively and directly by, and at a rate corresponding to, the travel of the vehicle for reciprocating said tracer over said rotating chart, and means comprising a spring and a snail-shell cam actuated by said clockwork for spirally advancing the zigzag pathway of said tracer.

2. A travel-recorder, comprising the combination with a chart and means for rotating the same, and a tracer for marking upon said chart, of mechanism actuated positively and directly by, and at a rate corresponding to, the travel of the vehicle for reciprocating said tracer over said rotating chart, and mechanism for spirally advancing the zigzag pathway of said tracer.

3. A travel-recorder, comprising the combination with a chart and means for rotating the same, and a tracer for marking upon said chart, of a rock-shaft carrying said tracer, means comprising an eccentric-carrying floating-gear for swinging said rock-shaft to-and-fro, an intermittent-drive for actuating said gear, and mechanism driven by the travel of the vehicle for actuating said intermittent-drive.

4. A travel-recorder, comprising the combination with a chart and means for rotating the same, and a tracer for marking upon said chart, of a rock-shaft carrying said tracer, means comprising an eccentric-carrying floating-gear for swinging said rock-shaft to-and-fro, and mechanism driven by the travel of the vehicle for actuating said gear.

5. A travel-recorder, comprising the combination with a flat disk-shaped chart and means for rotating the same, and a tracer for marking upon said chart, of mechanism actuated by positive mechanical connection from the rotating wheel or axle of the vehicle for reciprocating said tracer over said chart, and mechanism actuated by the chart-rotating means for spirally advancing the said tracer over the face of said chart.

6. A travel-recorder, comprising the combination of a rotated turntable adapted to carry an interchangeable chart, a tracer for

marking a succession of zigzags upon said chart, mechanism actuated by positive mechanical connection from the rotating wheel or axle of the vehicle for reciprocating said tracer over said chart, and mechanism actuated by the chart-rotating means for spirally advancing the pathway of said tracer toward the center of said chart.

7. A travel-recorder, comprising clock-driven means for advancing a record-surface, and travel-driven means for reciprocating a recording-point, the last-named means comprising a gear, a rock-shaft having fast an arm that carries the recording-point, an eccentric carried by said gear, and a second arm fast on said shaft and having slotted engagement with said eccentric for reciprocating said point.

8. A travel-recorder, comprising clock-driven means for advancing a record-surface, and travel-driven means for reciprocating a recording-point, the last-named means comprising a gear, a mounting for said gear, and means actuated by said clockwork for advancing said gear toward the center of the device.

9. A travel-recorder, comprising clockwork for advancing a record-surface, a cam rotated from said clock-work, a gear-wheel positively rotated in continuous direction by the travel of the vehicle and at a speed proportionate thereto, a shaft parallel to the axis of said wheel, a driving-gear loose on said shaft and in mesh with said wheel, an arm loose on said shaft presenting a cam-bearing and carrying a driven-gear in mesh with said driving-gear, a crank upon said driven-gear, a slotted arm engaging said crank and secured to said shaft, another arm secured to said shaft and adapted to carry a marker and to be swung to-and-fro over the surface aforesaid, and a spring holding said cam-bearing against the above-mentioned cam.

10. A travel-recorder, comprising clockwork for advancing a record-surface, a gear-wheel positively rotated in continuous direction by the travel of the vehicle and at a speed proportionate thereto, a shaft parallel to the axis of said wheel, a driving-gear loose on said shaft and in mesh with said wheel, an arm loose on said shaft and carrying a driven-gear in mesh with said driving-gear, a crank upon said driven-gear, a slotted arm engaging said crank and secured to said shaft, and another arm secured to said shaft and adapted to carry a marker and to be swung to-and-fro over the surface aforesaid.

11. A travel-recorder, comprising clockwork for advancing a record-surface, a gear positively actuated by and in proportion to the vehicle-travel, a floating-gear rotated thereby and carrying a crank, a shaft having a slotted arm engaging said crank, and

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a marker-arm carried by said shaft and adapted to be swung to-and-fro over said surface by the rotation of said crank.

12. A travel-recorder, comprising means
c for advancing a record-surface at a uniform rate, a transmission-member actuated by and in accordance with the travel of the vehicle, a gear-wheel rotated by said member and carrying a crank, a rock-shaft carrying a marker-arm adapted to swing to
10 and-fro over said record-surface, and an-

other arm rigidly secured to said shaft and engaged by said crank and reciprocated by revolutions thereof.

In testimony whereof I have signed this
specification in the presence of two sub-
scribing witnesses. 15

JOSEPH W. JONES.

Witnesses:

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F. K. STICKLE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."