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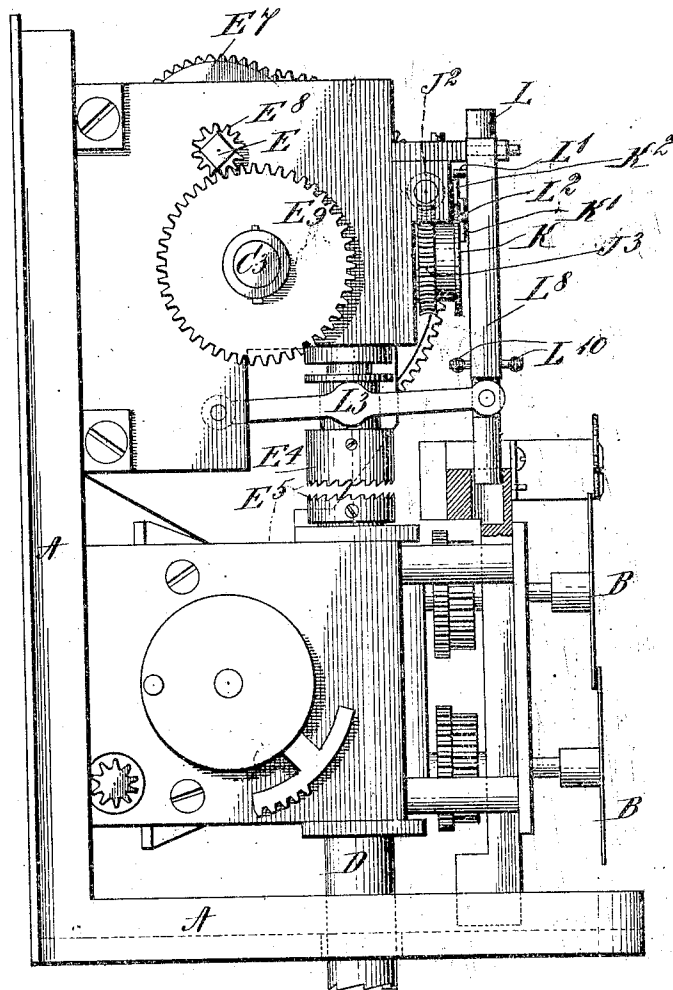


Fig. 1.

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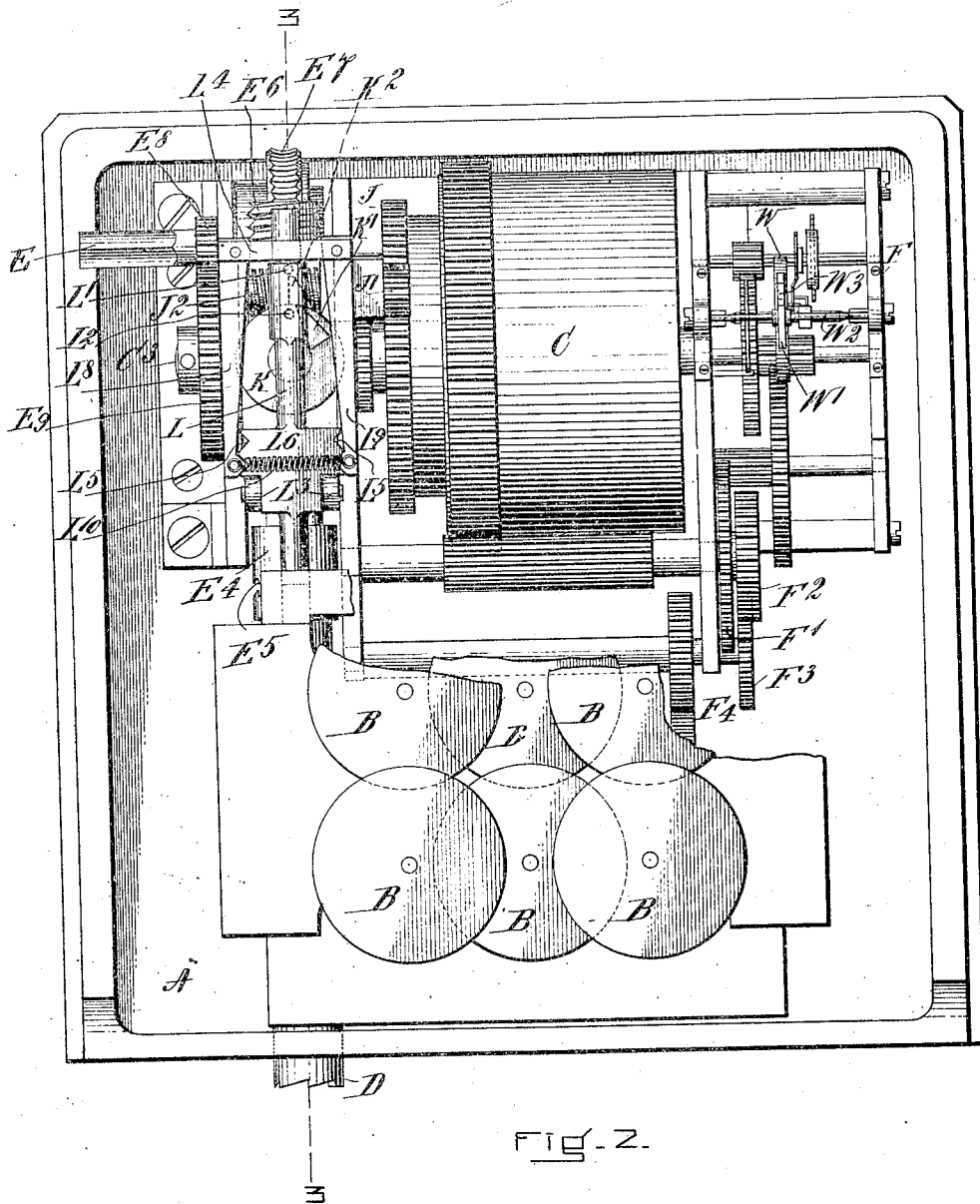
TAXIMETER.

APPLICATION FILED APR. 20, 1909.

Patented Oct. 12, 1909.

4 SHEETS—SHEET 2.

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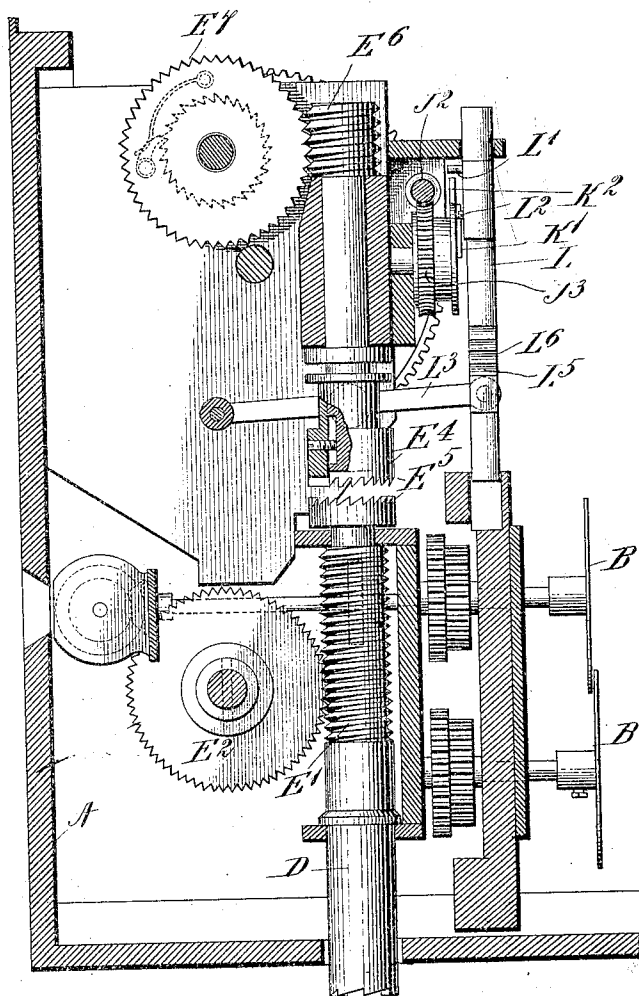


Fig. 3.

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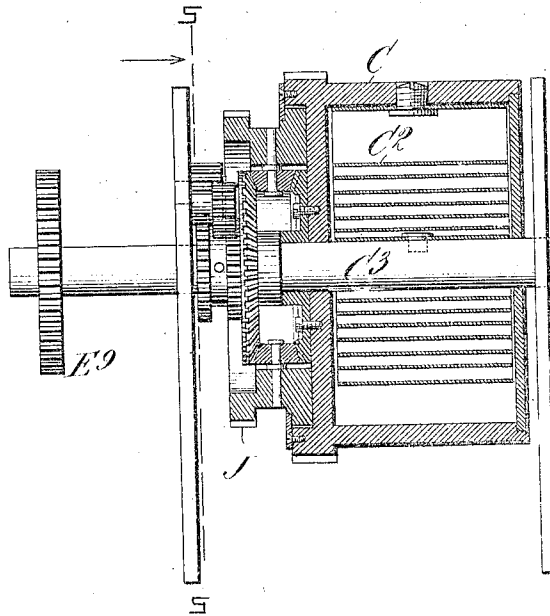


FIG. 4.

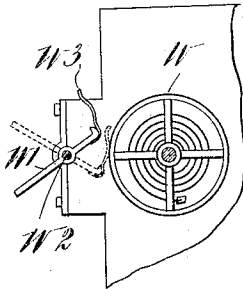


FIG. 6.

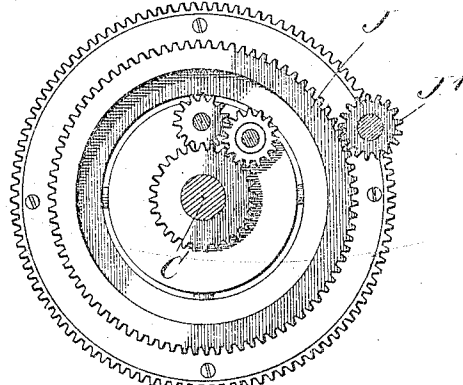


FIG. 5.

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UNITED STATES PATENT OFFICE.

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TAXIMETER.

936,559.

Specification of Letters Patent.

Patented Oct. 12, 1909.

Application filed April 20, 1909. Serial No. 491,125.

To all whom it may concern:

Be it known that I, CHARLES H. PEARSON, a citizen of the United States, residing in Brookline, in the county of Norfolk and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Taximeters, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to a mechanism by which a charge is recorded that includes the price for the miles run at a fixed rate per mile and in addition to this a tax, at a less rate, for the time that the vehicle is not running but still held by the passenger or passengers, and consists of a set of dials operated by a train of gears to which motion is given by a spring, the said spring being wound and kept wound by trains of gears which are separate and yet co-working, one of these trains of winding gears being driven direct by the hand of the user, by a key on the winding stem, and the other by connection with some moving part of the vehicle mechanism.

The object of this invention is to insure continuity and regularity of movement and accuracy of record. These objects I attain by the mechanism shown in the accompanying drawing in which:

Figure 1 is an end elevation of my invention; Fig. 2 is a view from the front showing the set of charge recording dials in elevation and the mechanism that more particularly embodies my invention; Fig. 3 is a section on line 3—3 of Fig. 2. Fig. 4 is a view showing the spring-barrel and spring in vertical section, and other connected parts in elevation; Fig. 5 is a sectional view taken on line 5—5 of Fig. 4; Fig. 6 is a detail showing escapement balance and stop spring-lever.

In a lever clock or in a spring motor used in a so-called taximeter (an instrument used on taxicabs and the like for operating a charging mechanism) defects occur, chiefly, from such clock or motor not having the capacity to run for more than a few hours and then quite irregularly, not sufficiently regular to warrant exposing a time of day dial to the customer, rendering it difficult for the driver to know whether the clock or motor is running, and requiring frequent hand winding of the spring.

The usual way a taximeter is operated is by power exerted by the running of the taxi-

cab, through a flexible shaft connected with or operated by a part of the taxicab, generally the hub or some part of one of its wheels, such flexible shaft being fitted with a clutch or its equivalent, to avoid operating on the charging mechanism when the taxicab is run backward. When, however, the speed of the taxicab is quite slow, or when it stops, on a charging trip, waiting customers' orders, the clock or spring motor mechanism overtakes the part operated by power and operates the charging mechanism. Hence regularity in running and the use of the strongest part of the spring is desirable. The limited space in a taximeter practically prevents the use of an extensively long spring and the use of such would mean very irregular running and great variation in the power exerted by it in operating the charging mechanism.

In a clock or clock movement used in an instrument for indicating, registering or recording, used on an automobile or the like (or in an engine room or boiler house where there may be power takable from a running shaft, etc.) a principal cause for damage to a clock comes from the frequent opening of the clock case to wind it, and loss of key for winding it by hand.

To get the necessary power to operate the recording mechanism of a taximeter requires a very strong main-spring and in the limited space the clock motor must be made small so that running time of motor is necessarily short, thereby causing the operator to watch the clock carefully to prevent the same from running down while in use, as in the event of this happening the taximeter would register an incomplete fare. As applied to a clock on moving vehicle, locomotive, steamer or in any place from which power could be connected, the clock would never require winding by and would have the advantage of running on one part of spring constantly and where fine rating is wanted would be a distinct advantage.

The defects above referred to are largely remedied by the invention herein referred to and for which improvements a patent is wanted.

The general characteristics of my invention may be briefly stated as follows:—A method utilizing a power already connected or one especially connected for the purpose of winding a clock or motor mechanism, recording gage or any mechanism controlled by a

spring that requires winding, by means of a moving shaft controlled either by belt, chain, flexible shaft or other mechanical means, causing at any stated time the rewinding of the spring, either when wholly or partly run down. Except under conditions where a long wait or stop is made the clock or motor could thus be rewound every 15 minutes or half hour or in a clock could be rewound once a day.

My mechanism can be so arranged that should the vehicle be laid up for a few days the clock would still run out the balance of week and still have considerable reserve on mainspring or where the power was constant a very light spring could be used, automatically winding as often as considered necessary.

In the drawings A represents the outside casing of my machine and B, B the recording or indicating dials which are to be graduated or numbered in any desired manner.

The recording or indicating dials B, B are caused to work, and indicate the amount of charge for the use of the vehicle, by a train of gears driven by some motion transmission devices, such as a flexible shaft for instance, which transmits the motion, from some moving part of the machinery that propels the vehicle, to the vertical shaft D. These parts are old and need not be described in detail.

My invention is connected with and lies in the parts that cause the rewinding at intervals of the strong large spring in the drum C; that prevents over-winding of the same; that gives regular motion to all the parts and insures the correct recording of the time that the vehicle is not running but still serving the passenger or passengers that have hired it. These parts may be described as follows:—The winding stem E is used by the operator for winding up the spring C² attached to the shaft C², before the vehicle is started or at any time when for any cause the spring has run down or so far run down as to be below the desired point at which it is desired to keep it wound for obtaining the best results.

The clock train and its connected mechanism has functions distinct from those of the mechanisms for driving the charging or recording dials; those are driven directly by the vertical shaft D and worm gear E¹, E², see Fig. 3, when the vehicle is in motion, and thus record the distance traveled and the charge. But the clock train operates the said dials when the vehicle is at rest and records charges for the time that the vehicle rests. The clock train F also causes the rewinding of the spring at predetermined intervals and prevents over-winding. The devices for recording the rest charge by the clock train F consist of the gear wheels F¹, F², F³, and F⁴, which are driven mediately by the said clock train F, see Fig. 2.

The partial winding of the mainspring at intervals and prevention of over-winding is effected by the following-described devices:—A cam disk K, Figs. 1, 2 and 3, which is driven by the mainspring or motor device acting through the gears J, J', Fig. 2, and worm gear J², J³, Fig. 3; on this cam disk K are two cam pieces K¹, K², the cam pieces K¹ and K² acting through the pins L¹, L² cause the rod L to move up and down at certain predetermined times, that is, if the vertical shaft E⁴ (which when lowered engages by the ratchet teeth E⁵ with the shaft D) is allowed to drop, then it will be caused to rotate and acting through the worm gear E⁶, E⁷, Fig. 3, and acting through the hand-winding shaft E and gears E⁸, E⁹, Fig. 1, will wind up the spring of the clock, and when lifted into the position shown in the drawings will cease to wind, thus preventing over-winding.

The movement of the rod L is communicated to the vertical shaft E⁴ through the pair of levers L³, L². The swing snap hooks L³, L² which are attached to the fixed-arm L⁴ engage with the notches L⁵, L⁵ on the crosshead L⁶ attached to the rod L and thus hold it in the position that the cam pieces K¹, K² have left it. Springs L¹⁰ causes the snap hooks L³, L² to close onto the crosshead L⁶, and thus hold it in place.

When the vehicle is not in use the clock may be stopped, and thus prevent the spring from running down. For the purpose of thus stopping the clock I have the following-described device: A lever W¹, Fig. 6, which is frictionally held on the arbor W² and has a light spring W³ attached to its end so constructed that when the lever is turned to the positions shown in dotted lines it, the spring W³, will bear against the escapement balance wheel W and stop it.

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

1. In a taximeter, the combination of registering means, a shaft driven by the vehicle and having an operative connection with the registering means, a spring also having an operative connection with the registering means for driving the same when the vehicle is at rest, a second shaft, means co-operating with the second shaft for rewinding the spring, a clutch mechanism between the two shafts, a cam driven by the spring, and means actuated by the cam for automatically controlling the clutch mechanism.

2. In a taximeter, the combination of registering means, a shaft driven by the vehicle and having an operative connection with the registering means, a spring having an operative connection with the registering means for moving the same when the vehicle is at rest, a second shaft, means for co-operation with the second shaft to rewind

the spring, a clutch mechanism between the two shafts, a reciprocating rod, means actuated by the spring for moving the reciprocating rod, and means cooperating with the reciprocating rod for controlling the before mentioned clutch mechanism.

3. In a taximeter, the combination of registering dials, a shaft driven by the vehicle, an operative connection between the shaft and registering dials, gearing for moving the registering dials when the vehicle is at rest, a spring for driving the gearing, a second shaft having an operative connection with the spring for rewinding the same, a clutch mechanism between the two shafts, a cam disk driven by the spring, and means actuated by the cam disk for automatically controlling the clutch mechanism.

4. In a taximeter, the combination of registering dials, a shaft driven by the vehicle, an operative connection between the shaft and registering dials, gearing for moving the registering dials when the vehicle is at rest, a spring for driving the gearing, a second shaft having an operative connection with the spring for rewinding the same, a clutch mechanism between the two shafts, a cam disk driven by the spring, a reciprocating rod driven by the cam disk, and means cooperating with the reciprocating rod for automatically controlling the before mentioned clutch mechanism.

5. In a taximeter, the combination of registering dials, a shaft driven by the vehicle, an operative connection between the shaft and registering dials, gearing for moving the registering dials when the vehicle is at rest, a spring for driving the gearing, a second shaft having an operative connection with the spring for rewinding the same, a clutch mechanism between the two shafts, a cam disk driven by the spring, a reciprocating rod driven by the cam disk, and a lever cooperating with the reciprocating rod to control the before mentioned clutch mechanism.

6. In a taximeter, the combination of registering dials, a shaft driven by the vehicle, an operative connection between the shaft and registering dials, gearing for moving the registering dials when the vehicle is at rest, a spring for driving the gearing, a second shaft having an operative connection with the spring for rewinding the same, a clutch mechanism between the two shafts, a reciprocating rod, means actuated by the spring for moving the reciprocating rod, and means cooperating with the reciprocating rod for controlling the before mentioned clutch mechanism.

ing rod for controlling the before mentioned clutch mechanism.

7. In a taximeter, the combination of registering dials, a shaft driven by the vehicle, an operative connection between the shaft and registering dials, gearing for moving the registering dials when the vehicle is at rest, a spring for driving the gearing, a second shaft having an operative connection with the spring for rewinding the same, a clutch mechanism between the two shafts, a reciprocating rod, means actuated by the spring for moving the reciprocating rod, means for holding the reciprocating rod at either limit of its movement, and means cooperating with the reciprocating rod for controlling the before mentioned clutch mechanism.

8. In a taximeter, the combination of registering dials, a shaft driven by the vehicle, an operative connection between the shaft and registering dials, gearing for moving the registering dials when the vehicle is at rest, a spring for driving the gearing, a second shaft having an operative connection with the spring for rewinding the same, a clutch mechanism between the two shafts, a reciprocating rod, means actuated by the spring for moving the reciprocating rod, a spring actuated snap hook, means cooperating with the said snap hook to hold the reciprocating rod at either limit of its movement, and means cooperating with the reciprocating rod for controlling the before mentioned clutch mechanism.

9. In a taximeter, the combination of registering means, a shaft driven by the vehicle and having an operative connection with the registering means, a spring, means driven by the spring for actuating the registering means when the vehicle is at rest, a second shaft having an operative connection with the spring for rewinding the same, a cam disk driven by the spring, a reciprocating rod actuated by the cam disk, a snap hook, means cooperating with the snap hook to hold the reciprocating rod at either limit of its movement, a clutch mechanism between the two shafts, and means cooperating with the reciprocating rod to control the clutch mechanism.

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

CHARLES H. PEARSON.

Witnesses:

WALTER E. MCGRAW,

FRANK G. PARKER.