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PARKING METER

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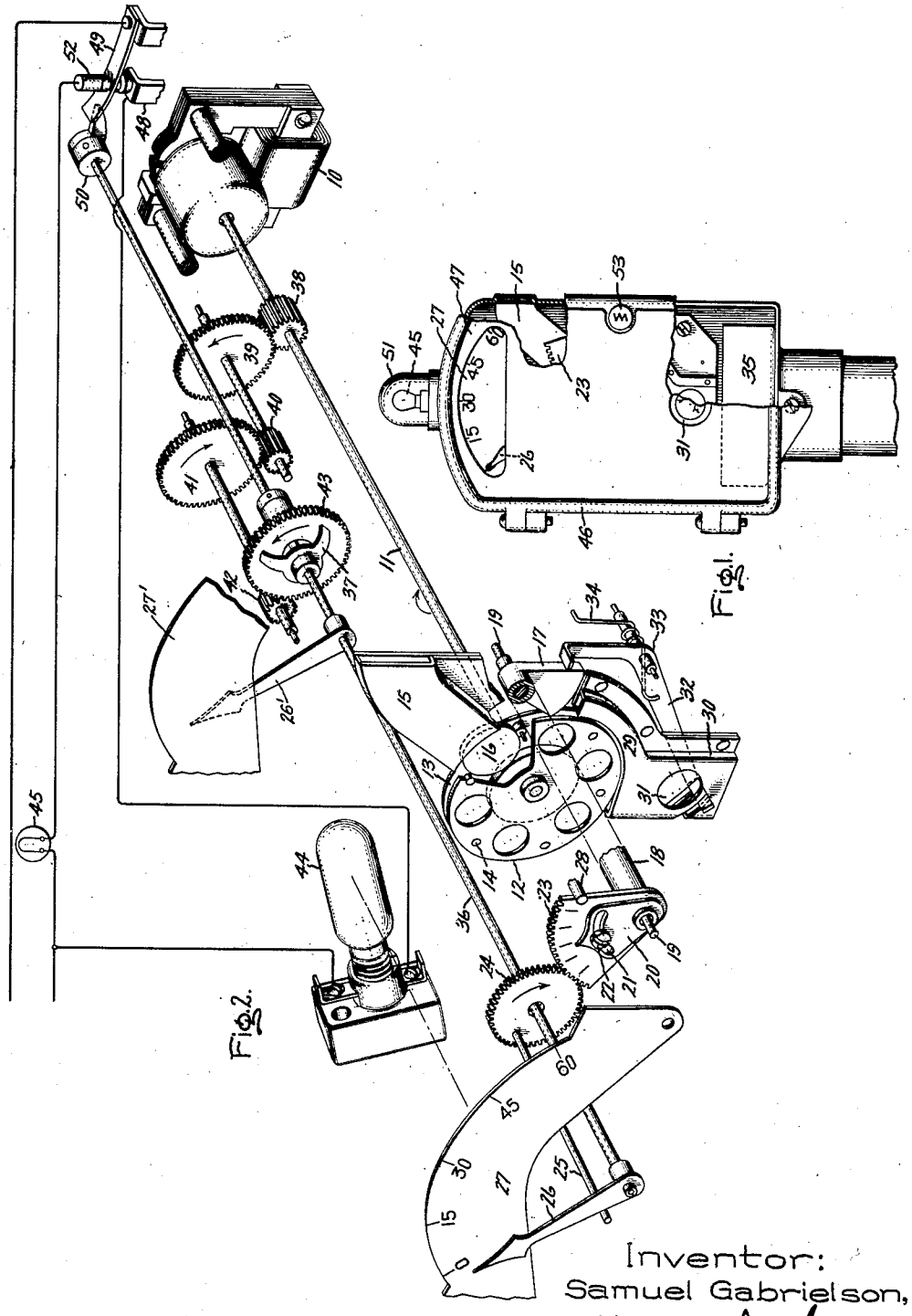


Fig. 2.

Fig. 1.

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PARKING METER

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5 Claims. (Cl. 194—83)

My invention relates to that class of apparatus known as automobile parking meters and its object is to provide such a meter which is reliable and simple in construction and operation. The meter of my invention may be adjusted for different legal parking periods. It indicates the legal parking time remaining in any paid-for parking period and is provided with signals which may be observed from a considerable distance for indicating whether a car located in the metered parking space is legally or illegally parked.

The features of my invention which are believed to be novel and patentable will be pointed out in the claims appended hereto. For a better understanding of my invention reference is made in the following description to the accompanying drawing in which Fig. 1 represents the external appearance of the meter as mounted in a case on a suitable standard and Fig. 2 represents a perspective exploded view of its operating mechanism.

Referring to Fig. 2 of the drawing, 10 indicates any suitable form of timing motor which operates continuously. The motor is here indicated as an electric motor but this is not essential. The motor operates both a coin credit means and a time debit means. The coin credit means will be described first.

The motor drives a shaft 11 on which a coin wheel 12 is secured and hence these parts rotate continuously. The wheel 12 is driven in a clockwise direction at a speed of about one revolution in one-half minute. The exact speed of rotation of the coin wheel is immaterial. The coin wheel 12 is made up of two disk-shaped outer circular plates separated by a smaller plate so as to provide an annular coin holding groove 13 in the periphery of the wheel. This coin groove is divided into a number of coin compartments, six in this example, by pins 14. A gravity feed coin chute 15 has its lower opening adjacent the upper periphery of the wheel in alignment with the groove therein so that if a coin 16 is dropped in the chute, it will fall into the coin compartments of the wheel which is opposite the lower end of the chute or which is next rotated into alignment with the chute, as indicated in Fig. 2. The coin chute is so shaped or otherwise arranged as to prevent clogging of the coins in the chute, in case more than one coin is inserted at a time. There is no object in inserting more than one coin at a time, since substantially no greater parking time is made available by so doing. Such extra coin or coins inserted at the same time will simply find their way to the coin box without being fully credited.

When a coin such as the coin 16 is received by the coin wheel, it is carried around by rotation of the wheel to the right to a point where the outer periphery of the coin strikes against the upper edge of a cam-like member 17 secured to a hollow shaft 18. This hollow shaft rotates on a pin 19 secured to the framework, not shown in Fig. 2. It will be understood that the parts are spread apart in the axial direction of shaft 11, as represented in Fig. 2 for the sake of clearness in the illustration. As actually built the parts will be much more compactly arranged. Also secured to hollow shaft 18 is a pointer plate 20 having an arc-shaped slot 21 therein. Adjustably secured on shaft 18 by a screw 22 in the arc-shaped slot 21 is a gear sector 23 which meshes with a gear 24. Gear 24 carries a pin 25 which moves a pointer 26 in an upscale direction on a scale plate 27 when a coin is inserted and credited. The coin crediting parts just described have a zero position when the right edge of gear sector 23 rests against a stop pin 28. In this position the pointer 26 indicates zero or approximately zero on scale plate 27. It is seen that, with the parts in the positions shown, if a coin is carried around past cam 17, this cam will be rotated counter-clockwise a distance sufficient to allow the coin to pass. This rotates gear 24 and pointer 26 clockwise and moves pointer 26 up-scale a predetermined distance. The scale is marked in graduations representing minutes and if the pointer 26 be moved up to the fifteen minute mark, this means that the legal parking time paid for by the deposit of a coin is fifteen minutes.

If a greater parking time is desired, the screw 22 is loosened and shaft 18 and the parts secured thereto are adjusted clockwise with respect to gear sector 23 and the screw 22 tightened again. This moves cam 17 up further into the path of a coin and requires that the cam 17 be turned further in order for a coin to pass by. In this way the coin crediting means may be adjusted for any desired parking time from 0 to 60 minutes in the example illustrated and preferably the gear sector 23 is provided with a scale corresponding to the scale on plate 27 and on which a pointer part of plate 20 indicates to facilitate such adjustment. In the illustration plate 20 and gear sector 23 are adjusted to provide for thirty minutes parking time. After a coin passes by and rotates cam 17 it is carried around a supporting chute 29 to the bottom of the wheel

where it drops into a compartment 30 having a window 31 therein in which the coin used may be observed. The coin is held in this position by a lever 32 pivoted at 33 until another coin is inserted in chute 15 and is being moved past cam 17. Cam 17 is rotated by this second coin and moves the upper end of lever 32 to the right. This moves the lower end of the lever from beneath the coin in observation compartment 30 and it drops into a coin box 35 (Fig. 1). Before the coin which is passing cam 17 reaches compartment 30 the lever 32 has returned to coin-holding position. This return movement of the lever is assisted by a light spring 34. By this arrangement the parking attendant and the public may observe the coin used in window 31 and this serves to discourage the use of slugs in the parking meter. Where, as described, the wheel 12 rotates at two revolutions per minute, it requires about 15 seconds for a coin to be carried from the coin chute 15 to the observation window 31. The coin remains in the observation position until another coin is inserted into the meter. Hence, the coin used in payment for parking is in plain view, generally, at least as long as the car which has been parked remains in the parking space.

The time debit part of the meter includes the pointer 26 which is secured to a shaft 36 and which is in driving connection with the timing motor 10 through a friction clutch 37, and a speed reducing gear train comprising gears 38, 39, 40, 41, 42, and 43, gear 43 comprising a part of the friction clutch 37. The friction clutch 37 permits the pointer 26 to be quickly moved up-scale by the coin crediting means when a coin is deposited, as previously described. During such operation clutch 37 slips. As soon as the coin has passed cam 17 and the latter is free, clutch 37 no longer slips and pointer 26 is slowly returned towards a zero indicating position by the timing motor and the other coin crediting parts between pointer 26 and cam 17 are likewise slowly returned to the zero position where cam 17 will again project into the path of a coin in pocket of the coin wheel. The gear ratio between the timing motor and pointer is such that the pointer will return to a zero position in the number of minutes which it indicates on the scale plate 27. As shown in Fig. 1, the pointer and scale are in plain view through a window 47 so that anyone may observe the credit condition of the meter at all times. When the pointer is finally returned to a zero position or slightly beyond, gear sector 23 comes against stop pin 28 and thereafter so long as the meter is not again put into use clutch 37 slips.

In order for a parking attendant or traffic officer to tell pertinent facts concerning the condition of the meter when at a considerable distance therefrom, I have provided additional signals in the form of signal lamps 44 and 45. Lamp 44 is located within the housing 46 of Fig. 1, and generally between the scale 27 already referred to and another scale 27' with which another pointer 26' on shaft 36 cooperates. Scale plates 27 and 27' are translucent and face in opposite directions and scale 27' and its pointer 26' simply duplicate the indication given by the first described scale and pointer through another window on the rear side of the housing. The meter may thus be read from the street side as well as the sidewalk side thereof or from any other two desired directions. Lamp 44 is located between the translucent scale plates 27 and 27' and their scale plates are behind windows in the housing so that this lamp, when lighted, illuminates the scales and provides general illumination which may be seen for some distances. Lamp 44 may give a white light and is arranged to be lighted only during a paid-for parking period. Its energizing circuit is controlled by a stationary contact 48 and a movable contact 49 and a switch operating finger 50 fastened to and rotated by shaft 36. Lamp 45 which may give a red light or any other color which is different from that given by lamp 44 may be mounted in a transparent globe 51 on the top of the meter housing (see Fig. 1), or it may likewise be mounted between scale plates 27 and 27' within the housing. Lamp 45 is controlled by movable contact 49 and a stationary contact 52, on the side of contact 49 opposite the previously mentioned contact 48. Movable contact 49 is lightly biased to rest on contact 48 and does so whenever finger 50 is not holding these contacts apart. Finger 50 is so positioned on shaft 36 that when pointer 26 is above a zero indicating position finger 50 is rotated downward away from contact 49 and the white lamp 44 is energized. Hence lamp 44 is lighted whenever the meter is in an unexpired parking credit condition and pointer 26 is at any point on the scale above the zero indication. When the parking time expires and pointer 26 is returned to a zero position, contact 49 is moved upward to extinguish the white lamp 44 and to close the contacts of the red lamp 45. The red lamp is energized simultaneously or slightly before the zero return movement of the pointer is stopped by the stop 28. As a matter of fact, contacts 49 and 52 might serve as a stop and the one at 48 dispensed with. In any event, when pointer 26 is brought to its final zero indicating position the red lamp is lighted and remains lighted when clutch 37 slips because shaft 37 is continuously urged to rotate in a direction to maintain contact 49 closed against contact 52.

If now a car remains parked in the parking space after the red light comes on, a traffic officer some distance away can see that the car is illegally parked. Likewise, the officer can see that a car is legally parked from some distance away when the white light is on.

In localities where ample street lighting is available so that the meter can be read without using lamp 44, it may be dispensed with, since then the fact that the red lamp is not lighted indicates that a car in the metered parking space is legally parked. Where both lamps are used, I may so space the contacts 48 and 52 that both lamps will be out for a few minutes just prior to the expiration of the legal parking time. This arrangement will serve for giving a preliminary notice or signal just prior to the end of the legal parking period, which signal is noticeable for some distance. The arrangement here described can be easily adapted for whatever signaling procedure is most suitable for the regulations in any particular locality.

The casing in which the apparatus is housed may be adapted to be mounted on a standard and will be provided with a suitable door which may be locked as indicated at 53 in Fig. 1. Only authorized persons will have access to the interior of the housing. The adjustments referred to above and the coin box will be accessible only when the door is opened. In case a coin is deposited in chute 15 during a paid-for parking period and hence before pointer 26 has been returned to a zero position, the pointer 26 will

again be advanced up scale to give the maximum parking time indication for which adjusted. Hence a person who desires to make immediate use of an available parking space and stay there a full parking period may do so by depositing the proper coin even though the meter may indicate some unexpired parking time of a previous customer.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A parking meter comprising a continuously operated timing motor, a coin wheel rotated thereby at a speed of the order of a few revolutions per minute, said wheel having coin compartments in its periphery, a coin chute for guiding a coin deposited in said chute to a coin compartment in the upper periphery of said wheel, a rotary cam member positioned adjacent said wheel in the path of a coin contained in a compartment thereof so as to be rotated by the movement of the coin past said cam member, a time graduated scale, a pivoted pointer indicating on said scale, means operated by said cam member when rotated by a coin for quickly moving said pointer upscale to a predetermined time indicating position, a driving connection between said pointer and motor for driving said pointer down scale at a rate of speed to move said pointer to a zero time indicating position in the time indicated by said pointer on said scale, and slip friction means included in said driving connection which is adapted to slip when said pointer is moved upscale in response to the deposit of a coin.

2. A parking meter comprising a continuously operating timing motor, a coin wheel driven thereby at a speed of the order of a few revolutions per minute and provided with a number of coin recesses in its periphery, means whereby coins may be deposited in a compartment in the upper periphery of said wheel, a pivoted cam member at one side of said wheel having a part extending towards said wheel and into the path of a coin contained in a compartment thereof whereby when the coin is rotated past said cam member the latter is caused to rotate to allow the coin to pass by, a time graduated scale, a pointer pivoted to move over and indicate on said scale, a mechanism operated by said cam member for moving said pointer upscale when the cam member is rotated by a coin, said mechanism being adjustable to permit the extent to which the pointer is moved upscale by such movement to be varied, and other driving means between said motor and pointer for moving the pointer downscale towards a zero time indicating position at a rate which will return said pointer to its zero time indicating position in the time which said pointer indicates on said scale when in any upscale position.

3. A parking meter comprising a continuously operating timing motor, a coin wheel driven by said motor at a rate of the order of a few revolutions per minute, said wheel having coin receiving compartments in its periphery, means whereby coins may be deposited into a compartment near the upper periphery of said wheel, a coin crediting mechanism having a rotary part extending into the path of movement of a coin contained in a compartment of such wheel such that the part is moved by the coin when the latter is moved past such rotary part, a time graduated scale, a pointer pivoted to move over and indicate on said scale, said coin crediting mechanism including means for moving said pointer upscale from approximately a zero time indicating position in response to the aforesaid coin actuated movement, a driving connection between said motor and pointer for returning the pointer downscale to a zero position in the time indicated by said pointer on said scale, an electric lamp signaling means associated with said meter, an energizing circuit therefor, a switch controlling said circuit and means moved with said pointer for operating said switch when the pointer moves through substantially a zero time indicating position.

4. A parking meter comprising a continuously operating timing motor, a scale graduated from zero upward in time units, a pointer pivoted to move over and indicate on said scale, coin controlled means operated by said motor in response to the deposit of a coin in said meter for quickly moving said pointer upscale to a predetermined time indication, time debiting means also operated by said motor for moving said pointer downscale at a rate which will return said pointer to the zero time indication on said scale in the time which said pointer indicates on said scale, a pair of electric lamps of contrasting colors, a two-way switch for alternately energizing said lamps and means moving in unison with the pointer for operating said switch in one direction between its two positions when the pointer moves from above to below substantially a zero time indicating position and for reversely operating said switch when the pointer moves from below to above substantially a zero time indicating position.

5. A parking meter comprising a time graduated scale reading from zero upward, a pointer movable over and indicating on said scale, a continuously operating timing motor, a driving connection whereby said pointer may be quickly driven upscale by said motor, said driving connection including driving and driven parts normally interrupted but adapted to be connected by a coin, and means permitting the inserting of a coin in said meter for temporarily completing said driving connection, another driving connection between said motor and pointer for moving said pointer downscale at a rate to correspond with the time graduations thereon, said last mentioned driving connection including a slip friction clutch which is permitted to slip when the pointer is being driven upscale in response to the deposit of a coin, and means in the first mentioned driving connection for adjusting the extent to which the pointer will be moved upscale in response to the deposit of a coin.

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