March 28, 1939. M. M. WEAVER 2,152,577

PARKING METER

Filed July 13, 1936

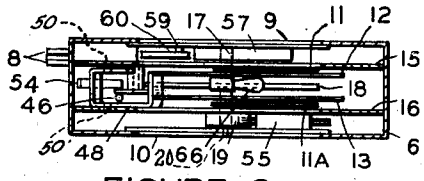


FIGURE 2.

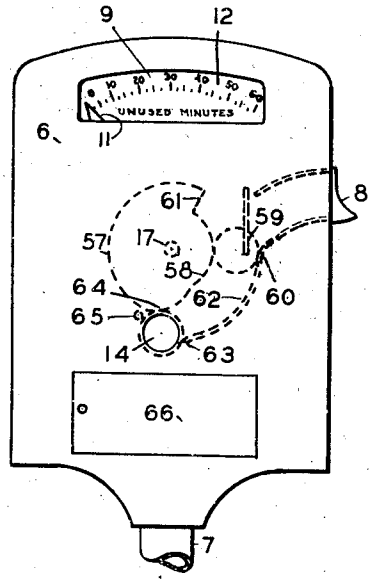


FIGURE 1.

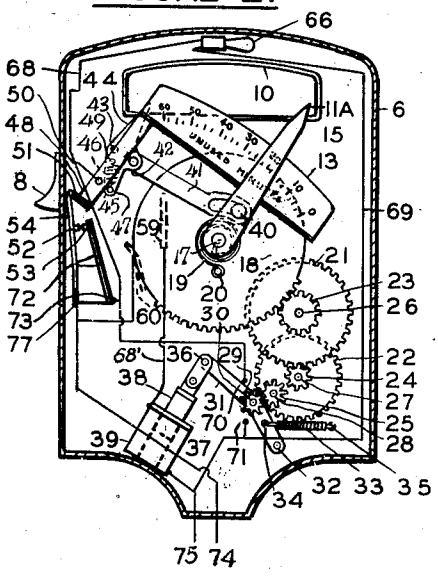


FIGURE 3.

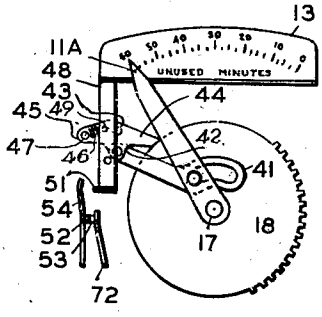


FIGURE 4.

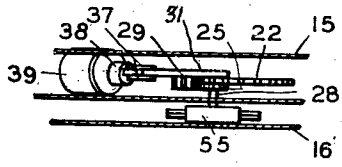


FIGURE 5.

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PARKING METER

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6 Claims. (Cl. 161—15)

This invention relates to parking meters for automobiles and more particularly to improvements therein for automatic electrical operation.

An object of the present invention is to provide mechanism for raising a flag and lighting an incandescent lamp to illuminate the flag when a coin is inserted in the meter.

Another object of the present invention is to provide an electric time meter, synchronized with the generator connected with the electric power and service lines, to drive the mechanism of said meter and an indicator arranged to indicate the unused time for the parking period of a motor car or other vehicle.

Another object of the present invention is to provide mechanical apparatus to quickly return the indicators, that show the mechanism of the meter is in operation, to the starting position preparatory to another starting of time period.

Another object of the present invention is to provide electrical contacts with the coin when passing into the meter to start the motor running for driving the indicating mechanism.

Another object of the present invention is to provide an electrically operated disengaging clutch to disengage the electric motor from the rest of the mechanism to allow the spring motor to return the indicators to the starting position.

Another object of the present invention is to provide a solenoid and companion core to operate the disengaged mechanism of the electric motor from the rest of the driving mechanism.

Another object of the present invention is to wind the spring motor with the electric motor while the time mechanism is being operated by the electric motor, and when the electric motor has driven the indicator over the full period of time allotted to the meter, the electric motor circuit automatically breaks, and the flag or chart of unused minutes is lowered from the registering position.

With these and other objects in view the invention further consists of various combinations of all or some of the new and old parts illustrated in the drawing of the apparatus, described in the specification and more fully pointed out in the appended claims.

Figure 1 is one side view in elevation of the parking meter illustrating the housing, indicator of time, and raised chart of unused minutes, the dotted lines indicating the coin controlling means.

Figure 2 is a fragmentary plan view of the parking meter mechanism in the housing.

Figure 3 is a reversed side view of Figure 1 with the housing and certain parts broken away to illustrate the parking meter mechanism.

Figure 4 is a fragmentary view of the time indicating mechanism returned to the registering position. This view being taken from the same side of the meter as Figure 3.

Figure 5 is a fragmentary view illustrating the motor, solenoid, core, lever arm, and gear engaging and disengaging mechanism.

The housing 6 is mounted on a suitable post 7 and has a pair of coin slot lips 8 mounted on one end thereof. Windows 9 and 10 are arranged on the sides of the housing to expose the indicator points 11 and 11A and minute charts 12 and 13. A window 14 exposes a coin during the time of metering operation.

The partitions 15 and 16 are arranged in the housing 6 to support the metering mechanism. A shaft 17 is journaled in the partitions and has a segmental gear 18 fixed thereon. A spring 19 has one end thereof fixed on the shaft 17 and the other end thereof is held by a pin 20, the pin 20 being supported in the housing 6. The gears 21, 22 and pinions 23, 24 and 25 drive the segmental gear 18, the gears and pinions being mounted on their respective shafts 26, 27 and 28.

A long clutch pinion 29, as compared with the other gears and pinions, is mounted on a shaft 30 secured in the clutch arm 31 and engages and disengages the motor driven pinion 25 and gear 22, the clutch arm being pivoted at 32 and held in an engaging position by a spring 33, one end of the spring is fastened to the arm at 34 and the other end thereof fastened at 35.

The swinging end of the clutch arm is pivoted at 36 to a pair of links 37 and the links are pivoted to the solenoid core 38. The solenoid coil 39 being arranged to pull on the core 38 and cause the lever clutch arm to disengage the clutch pinion 29 from the motor driven pinion 25 and gear 22.

The indicator arm 11A has a pin 40 mounted thereon to engage the slotted arm 41 pivoted to the rocker arm 42. The rocker arm being pivoted at 43, has a stop arm 44 integral therewith to strike the gear segment 18 to limit the movement of slotted arm 41 and indicator arms 11 and 11A. A lever arm 45 arranged thereon has a spring 46 pivoted at 47. The opposite end of the spring 46 is pivoted to the mast arm 48 at 49, the mast arm being pivoted at 50, having insulation switch control finger 51 mounted on the lower end thereof and the two minute charts 12 and 13 mounted on the top thereof.

Switch contact points 52 and 53 are arranged

to normally remain closed and are opened by the switch block 51 moving the spring arm 54 toward the housing shell 6.

A self starting motor 55 is mounted in the housing and has the shaft 28 extending from one side thereof with the motor driven pinion 25 mounted thereon.

A cam 57 is mounted on the shaft 17 and is shaped in the low portion 58 to allow a coin to remain at the electrical contacts 59 and 60 until the spring 19 returns the indicators 11 and 11A to the 60 minutes indicated on the chart. When the tooth 61 strikes the coin and causes it to fall by gravity through the coin chute 62 to the spring holder 63 where it remains exposed through the window 14 until the indicators pass to the zero marked on the unused minute chart. When the high point 64 of the cam strikes the coin and extracts it from the spring holder 63 and pin 65 the coin falls by gravity to the bottom of the housing. A door 66 is arranged in the housing 6 for the removal of the accumulated coin. The housing 6 is shown integral but may be made in enough parts to effect the removal and repair of the mechanism contained therein without departure from the present invention.

An incandescent lamp 66 arranged in the top of the housing to light the unused minute charts has wires 68 and 69 leading to the motor contacts 70 and 71, wire 69 extending to the solenoid coil 39 and wire 68 connected to the switch spring 72 at 73, the wire 68 also connects to one wire of the outside power circuit 74 through the switch 52 and 53. The wire of the power circuit 74 extends to the switch spring 54 making contact at 77 and then extends to coin contact 60. A wire 68' connects coin contact 59 with solenoid 39.

The normal position for the meter mechanism when it is at rest is shown in Figure 3 where the indicator is on the zero minute side and the unused minute charts are lowered by the pin 40 pulling on the arm 41, levers 42 and 45, spring 46, the mast arm 48. The electrical switch contact points 52 and 53 are held open in this position by the switch control finger 51. By an examination of the wiring it is quite obvious that the current is shut off from the incandescent lamp, motor and solenoid and the spring 19 is wound in tension, the pinion 29 being meshed with the pinion 25 and gear 22 and having sufficient resistance to prevent the spring 19 from unwinding. The arm 31 holds the pinion 29 in mesh with gear 22 by means of the spring 33.

Now a coin is inserted in a slot formed by the slot lips 8 and passes to the spring electrical contacts 59 and 60 where a circuit is established in the solenoid. The armature 38 is drawn into the core of the solenoid pulling on links 37, arm 31 and spring 33, thereby disengaging the clutch pinion 29 from the motor driven pinion 25 and gear 22. The spring 19 is immediately released and the indicator arms quickly snap back to the 60 reading on the charts 13. The pin 40 moves the arm 41, and levers 42, 45 and spring 46, the spring passing the mast pivot 50 causing the spring to pull on the mast in a different direction, lifting the charts on the mast and allowing the electrical contacts 52 and 53 to make contact as shown in Figure 4. When the spring 19 drives the indicator arms to the 60 minute position the cam 61 strikes and moves the coin thereby breaking the electrical contact between points 59 and 60 to allow the solenoid to release the core 38 and engage the clutch pinion 29 with the motor driven pinion 25 and gear 22. The contacts 52 and 53 cause a circuit to be established in the light bulb 66 and motor 55. The light bulb 66 illuminates the charts while in the raised position and the motor 55 drives the gearing and moves the indicators 11 and 11A from the 60 unused minutes to the zero on chart when the arm 41 moves the arms 42 and 45 to the position shown in Figure 3, the spring 46 passing the mast pivot 50 and causing the spring to pull the mast downwardly and lower the chart as shown in Figure 3.

What I claim as new and desire to secure by Letters Patent, is:

1. In a parking meter, a housing, a pivot, a mast arm pivoted in said housing on said pivot, a pair of windows mounted in the sides of said housing, a pair of time charts mounted on said mast arm and arranged to swing on said mast arm pivot to register through said windows when in a raised position, said time charts arranged to swing with said mast arm downwardly to disappear from view on the external side of said windows, a bell crank pivoted in said housing, said bell crank having an arm extending from the fulcrum thereof, a spring connecting said arm to said mast arm below said bell crank fulcrum, said bell crank having a second arm, a link arm pivoted to said second arm, said link arm forming a slotted portion therein, a shaft mounted in said housing, a pair of indicator arms secured to said shaft and pivoted in said housing to have the pointers thereof sweep the faces of said charts when the latter are in the raised positions and exposed through the windows of said housing to indicate the time on said chart, a pin mounted in one of said indicator arms to work in the slotted portion of said link arm, said bell crank mast arm and spring being located to be moved by one of said indicator arms as said arm approaches one limit of its travel, whereby the spring is pulled past the mast arm fulcrum and bell crank fulcrum by the bell crank spring-connected arm to raise the mast by the spring tension when the spring is on one side of said mast arm and bell crank fulcrums, and to lower the mast by the spring tension when the spring is on the opposite side of said fulcrums, gearing mounted in said housing, said gearing being connected to said shaft, an electric motor, an electrically operated clutch, said clutch being arranged to be engaged and disengaged with said gearing, said motor driving said gearing in one direction when said clutch is engaged, a motor spring, said motor spring being connected to said housing, and said indicator shaft, said motor spring being wound when said electric motor drives in one direction and said clutch is engaged, and said motor spring driving said indicator arms in the opposite direction when said clutch is disengaged, electric circuits, electric switches, said switches arranged to control said circuits, said circuits controlling said motor and said clutch.

2. In a parking meter, a housing, a pivot, a mast arm pivoted in said housing on said pivot, a window mounted in the wall of said housing, a graduated chart indicating time mounted on said mast arm and adapted to swing on said mast arm pivot to register through said window when in a raised position, said chart being arranged to swing downwardly out of view from said window, a bell crank pivoted in said housing, a spring, said bell crank being connected to said mast arm by said spring, a link arm connected to said bell crank, gearing journaled in said housing, an indi-

cator arm pivoted in said housing having its pointer sweep over said graduated chart when in a raised position to indicate time, a pin on said indicator arm slidably connected to said link arm, an electric motor, said motor being connected to said gearing, said gearing being adapted to move the indicator arm in one direction with said electric motor, a spring motor, said spring motor being adapted to move the indicator arm in the opposite direction from said motor drive when said motor current is shut off, said indicator arm pin arranged to move said link arm at the end of each movement to cause said bell crank and mast arm to raise said chart into view of said window when the arm is at one end of the chart and cause said mast arm to lower said chart when the indicator arm is at the opposite end of said chart, a lamp mounted in said housing to illuminate said chart, an electric circuit, a switch connected to said lamp in said circuit, said switch being operated by said mast arm to break the circuit of the lamp when the chart is lowered from view, and said switch being automatically closed by said mast arm when it is in the raised position.

3. In a parking meter, a housing, a window mounted in the side of said housing, trunnions mounted in said housing, a mast arm mounted on said trunnions, a graduated chart of time mounted on said mast arm, a spring connected to said arm, a lever connected to said spring to swing said mast arm and chart into and out of view through said window, a shaft, an indicator arm mounted on said shaft pivoted in said housing, a link arm connecting said lever and indicator arm, said indicator arm being moved in one direction across the face of said chart, an electric motor mounted in said housing, gearing connecting said motor with said indicator arm shaft, a second spring, said second spring being connected to said indicator arm shaft and housing, said second spring being coiled to return said indicator arm to the original position by moving said indicator arm in the reversed direction from that of the motor drive when the electric current is shut off from said motor, an electric circuit, an incandescent lamp connected in said circuit to illuminate said chart when said chart is in the raised position, a switch connected in said circuit to control said motor and said lamp, said switch being operated by the movement of said mast arm, said switch being opened when said mast arm lowers said chart from view through said window, said switch being closed by the release of said mast arm therefrom when said mast arm raises said chart to the position viewed through said window.

4. In a parking meter, a housing, a transparent window mounted in the side of said housing, a time graduated chart journaled in said housing to swing into and out of view through said window, an incandescent lamp mounted in said housing to illuminate said chart when exposed to view through said window, an indicator arm journaled to sweep the face of said chart and graduations, an electrical switch operated by said journaled chart, an electrically operated motor mounted in said housing, electric circuits connecting said switch with said motor and said lamp, motor gearing connected to said indicator arm to move said indicator arm across the face of said chart in one direction, a spring mounted on said indicator arm to return said indicator arm across the face of said chart in the opposite direction when said motor has the electrical power cut off by said switch, a lever, a spring, said chart being operated by said lever and said spring, and a slotted link arm extending from said indicator arm to said lever.

5. In a parking meter, a housing, a transparent window mounted in the side of said housing, a time graduated chart, driving means to move said chart into and out of view through said window, an indicator arm mounted in said housing to sweep the face of said chart when the chart is in registry with said window, a lamp mounted in said housing, driving mechanism to drive said indicator, a switch, a solenoid controlled clutch, a motor, a coin controlled switch, electric circuits, said first switch and lamp being in one circuit, said first switch and motor being in another circuit, said clutch solenoid and said coin switch being in a third circuit, and said coin switch controlling said solenoid clutch to engage and disengage said driving mechanism.

6. In a parking meter, a housing, a window mounted in the side of said housing, a mast arm, a pivot, a graduated chart mounted on said mast arm in said housing to swing into and out of view through said window, a lamp mounted in said housing to illuminate said chart when in the raised position, an electric switch, electric circuits, said switch and lamp being connected in said circuits, said switch being controlled by the movement of said mast arm, a shaft, an indicator arm secured to said shaft, one end of said indicator arm being adapted to move across the face of said chart in the raised position, an electric motor, gearing connecting said motor to said indicator arm shaft to drive said indicator arm in one direction when said chart is in a raised position, a motor spring connected to said housing and indicator arm shaft to move said indicator arm in the opposite direction when lowering said chart, said electrical switch being connected to said motor and lamp with said electric circuits, levers, a spring, said mast arm being operated by said levers and said spring connected to said indicator arm to open the switch when the indicator arm has swept over the chart and the chart is ready to be lowered from view through said window.

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