

Sept. 6, 1966

H. I. Å. RUDBERG

3,270,847

AUTOMATIC CAR PARKING-METER FOR GARAGES

Filed Oct. 22, 1964

2 Sheets-Sheet 1

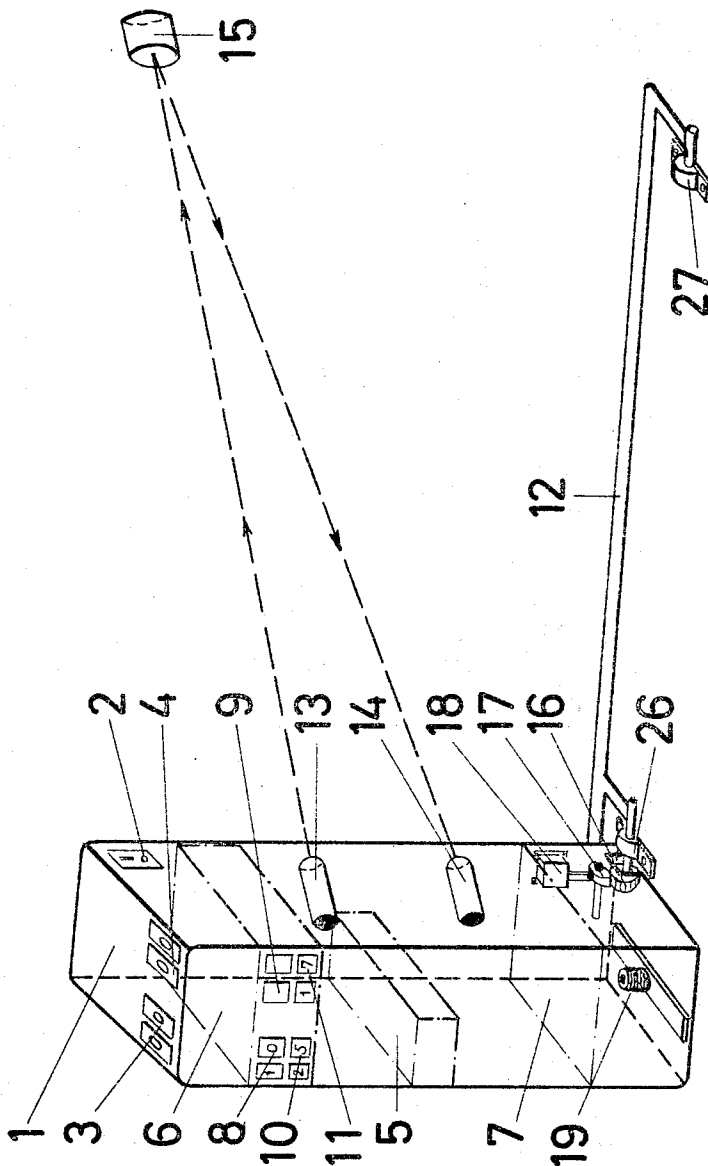


Fig 1

INVENTOR
HARRY INGE ÅKE RUDBERG

By: McGlew and Torrey
attorneys

Sept. 6, 1966

H. I. A. RUDBERG

3,270,847

AUTOMATIC CAR PARKING-METER FOR GARAGES

Filed Oct. 22, 1964

2 Sheets-Sheet 2

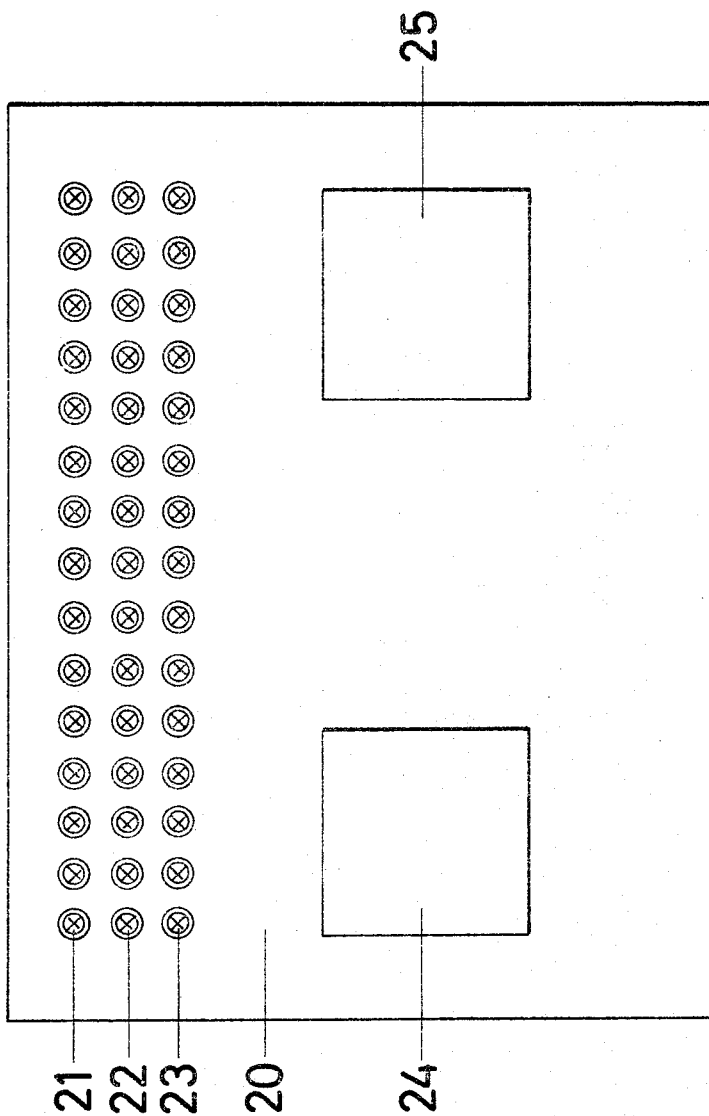


Fig 2

INVENTOR
HARRY INGE ÅKE RUDBERG

By: *M. J. Lew and T. J. Toren*
Attorneys

1

3,270,847

AUTOMATIC CAR PARKING-METER FOR GARAGES

Harry I. Å. Rudberg, 28 W. 44th St., Stockholm, Sweden

Filed Oct. 22, 1964, Ser. No. 405,766

Claims priority, application Sweden, Oct. 31, 1963,

11,983/63; Apr. 9, 1964, 4,365/64

3 Claims. (Cl. 194-1)

The present invention relates to an automatic carparking-meter for garages of the kind in which a parking-meter is arranged in each parking space in the garage and by which the motor car is automatically shut up in the parking space by means of a gate or the like until the fee shown on the meter is paid.

According to the invention this is obtained by means of an indication arrangement, which indicates when the car is in the parking space and thereby that this indication arrangement is connected to parking-meter which by means of time-impulses from a central panel automatically indicates the time the car has been parked.

The indication arrangement may consist of an electro-mechanical contact arrangement, which is closed as long as the car stands in the parking space, of a combination of a raying source, photocell or eventually of a mirror, by which the emitted ray is broken when the car stands in the parking space, or by a magnetic switch actuated by the iron-mass when the car stands in the parking space.

When the indication arrangement is closed and a car thus stands in the parking space, a relay is closed which is provided with contacts which close a circuit from the central panel, from which time impulses emanate, for instance every minute, so that a counter arranged in the parking-meter or a step relay indicates the number of minutes the car has been parked.

For instance every 30th minute a debit counter arranged in the parking-meter receives an impulse for advancing one step. By varying the time length between these impulses, the rate of fee may be altered according to varying prices or value in money.

As the price for a whole day or, respectively, a whole night, should be limited there are counters or selector switches arranged in the parking-meter which are automatically stopped at previously fixed maximum limits for one day or, respectively, one night parking.

From the central panel impulses are sent out to a relay arranged in the parking meter, in order to indicate day or night parking.

When the driver comes for his car he puts into the coin receiver the number of coins the time counter in the parking meter shows, whereby the coin counter advances until coincidence with the time counters is obtained, that is, the counters which are fed forward by the time impulses from the central panel, whereby the counting arrangements in the parking meter are set to zero, and a relay is actuated which causes the gate to be lowered and to remain in that position for a certain time (waiting-time) decided by a time counter, so that the driver has time to drive the car out of the parking space before the gate automatically is closed by the time counter in question. The grid remains in open position, if the car has left the parking space before the waiting-time is out.

In such parking-meters, where the raying source is steadily on when no car stands in the parking space, the apparatus will be strongly heated, which can involve a risk for damage of the electronic components, whereby the consumption of current and lamps is unnecessarily high.

According to the invention these inconveniences are removed thereby, that the time impulses, which are sent from the central panel are used also for action on the

2

indication arrangement, which indicates when and how long the car has been parked in the parking space, so that the indication arrangement only works intermittently when no car stands in the parking space.

In order that the raying source shall be able to obtain its full intensity before the photocell circuit is closed, according to the invention, the time impulses which act on the circuit in the raying source begin earlier and, in order that the raying source by the going out shall not act upon the photocell, the time impulses which act upon the photocell cease a little earlier than the time impulses, which act upon the raying source.

This can be obtained for instance by there being arranged, in the central panel synchronously working cam discs of different shape, which make a contact of for instance 5 seconds duration for the lighting of the raying source and 3 seconds closing time for the circuits of the photocell and the counter, which can be effected by intermediate relays.

An embodiment of the invention is shown in the annexed drawing. FIG. 1 shows the parking meter diagrammatically in perspective. FIG. 2 shows the central panel common for the meters.

Referring to FIG. 1, 1 designates the parking-meter for each parking space. The cover of the meter is resilient fastened to the support, so that it should not be damaged if a car drive on the same from any direction. By means of a return spring 19 and tapered guiding pins it returns thereafter to its neutral position. If the meter is being driven on, a micro switch is closed and an alarm bell rings. Number 2 designates the coin slot, 3 the two decade-counters, on which the number of coins which are to be paid for the time the car has been parked, in the parking space is indicated. Number 4 designates the two decade counters which indicate how many coins which by the parking occasion have been paid by the driver. When the figures on the counters 3 and 4 coincide the counters are brought to zero over their own contacts by zero bringing-impulses from an electronic unit 6, whereby the gate 12 is lowered. Number 5 designates the coinbox, which is provided with a lock and in which the coins put in the coin slots 2 are collected. Number 6 designates the electronic unit which governs the different functions and stores the impulses. Number 7 designates the motor unit for actuating the gate. The motor may be electric, electro-magnetic, pneumatic or hydraulic. Number 8 designates that part of the electronic unit 6 which receives minute impulses from the central panel 20. Number 9 designates a manual/automatic zero bringing unit for the counters. Number 10 designates the counters with preselection switch for selecting the maximum fee for a whole day that is the maximum amount which shall be debited for a whole day. Number 11 designates the corresponding counters for maximum fee for a whole night. Number 12 designates the gate which shuts up the car in the parking space. Number 13 designates the light source with its lens which directs a light ray against the mirror 15, where it is reflected back to the photocell 14. Number 16 is a ratchet wheel with its pawl 17, which is acted upon by a pulling electromagnet 18. Number 19 designates the spring for the resilient fastening of the cover. Referring to FIG. 2, 20 designates the front of the central panel. Number 21 designates the so called "free" lamps. Number 22 designates the "maximum time" lamps. Number 23 are the "gate damage" lamps and 24 the minute impulse units. Number 25 are night and day marking units for giving impulses to all units. In FIG. 1, 26 and 27 designates the bearings for the gate.

The apparatus works in the following manner.

When spaces are free in the garage the gate 12 is lowered and the ray from the source 13 is reflected against

the mirror 15 and falls into the photocell 14. Hereby a photocell relay is closed. When the car drives into the parking space the ray is cut, whereby the photocell relay falls and minute impulses begin to be fed from the central panel to the counters 8 via the contacts of the photocell relay. When three minute impulses have advanced the counters 8, a circuit to a secondary relay is closed which transfers and shuts the gate 12 by starting the motor 7. When minute impulses from the central panel have advanced the counters 8, for example 30 times, a circuit to the counters 3 is closed, which advances the latter one step: in this way charging of the cost for the parking with one unit each half hour is obtained.

When the driver desires to get his car, he observes the counters 3 and pays thereafter, in the coin slot 2, the number of coins shown on the counters 3. Each unit of coin which is put in is marked on the counters 4.

When all necessary coins have been put in and the number on the counters 3 and 4 thus are in coincidence, a circuit is closed and the apparatus will be re-set to zero by means of relays which close, whereby the gate is opened so that the car can be driven out. When the gate moves a tone is sounded as a warning. The driver then puts himself in the car and he then has 3 minutes to drive the car out. After the car has been driven out of the parking space the beam to the photocell is again closed over the mirror and the apparatus is ready to receive the next car.

If this driver or any other driver happens to drive on the meter, an alarm bell is activated as soon as the meter, which is resiliently attached on a central spring, which is attached to the bottom of the same, is touched. By means of tapered pins the meter is guided back to its normal position as soon as the driver has driven his car away from the meter.

The gate is provided with a ratchet wheel so that it cannot be lowered improperly when it is on its way upwards or stopped in its upper closed position.

If the gate is held during its way upwards a red lamp in the central panel lights up so that the guard is alarmed.

If the car has been parked too long, for instance a week, another lamp lights up in the central panel. A third lamp in the central panel shows if the space is free or occupied.

From the central panel there are also impulses from a time recording clock, which indicates if it is day or night charging.

The central panel moreover sends minute impulses to all parking meters.

By means of contact ammeters which measure the con-

sumption of current to the lamps in the central panel which show the number of free spaces, an estimation of the degree of coverage in the garage may be made and a marking for occupation be made for each floor.

It is evident that the different arrangements may be varied in many respects without departing from the spirit of the invention.

Having now described my invention what I claim is:

1. In an automatic parking meter for garages of the type having parking spaces each controlled by a meter and each having a closure blocking a car in the respective parking space until payment of the free registered on the associated meter: the improvement comprising a source of radiant energy associated with each parking space; a respective radiant energy responsive means operatively associated with each radiant source; the receipt of radiant energy from a source thereof by the associated responsive means being interrupted responsive to movement of a car into the associated parking space; a source of timing pulses; normally open circuit means connecting each responsive means to said source of timing pulses and operable, responsive to the interruption of radiant energy to a respective responsive means, to initiate delivery of timing pulses from said source thereof to the associated meter; first means operable periodically, for short time periods, to activate said sources of radiant energy; and second means operable periodically, during such short time periods, to close said circuit means; said first and second means operating in synchronism, and said first means, during each such short period, activating said radiant energy sources sufficiently in advance of closing of said circuit means to assure full energization of said radiant energy sources before closing of said circuit means.

2. The improvement claimed in claim 1, in which said first means, during each such short period, deactivates said radiant energy sources in advance of reopening of said circuit means.

3. The improvement claimed in claim 2, in which said first and second means comprise cam operated switches.

References Cited by the Examiner

UNITED STATES PATENTS

2,528,790	11/1950	Scherer	340—51	X
2,535,472	12/1950	Wood.		
2,712,125	6/1955	Koch	340—51	
2,936,057	5/1960	Alimanestiano et al.	194—9	

M. HENSON WOOD, JR., *Primary Examiner.*

STANLEY H. TOLLBERG, *Examiner.*