June 21, 1938. E. J. SWEETLAND 2,121,179

PARKING CONTROL APPARATUS

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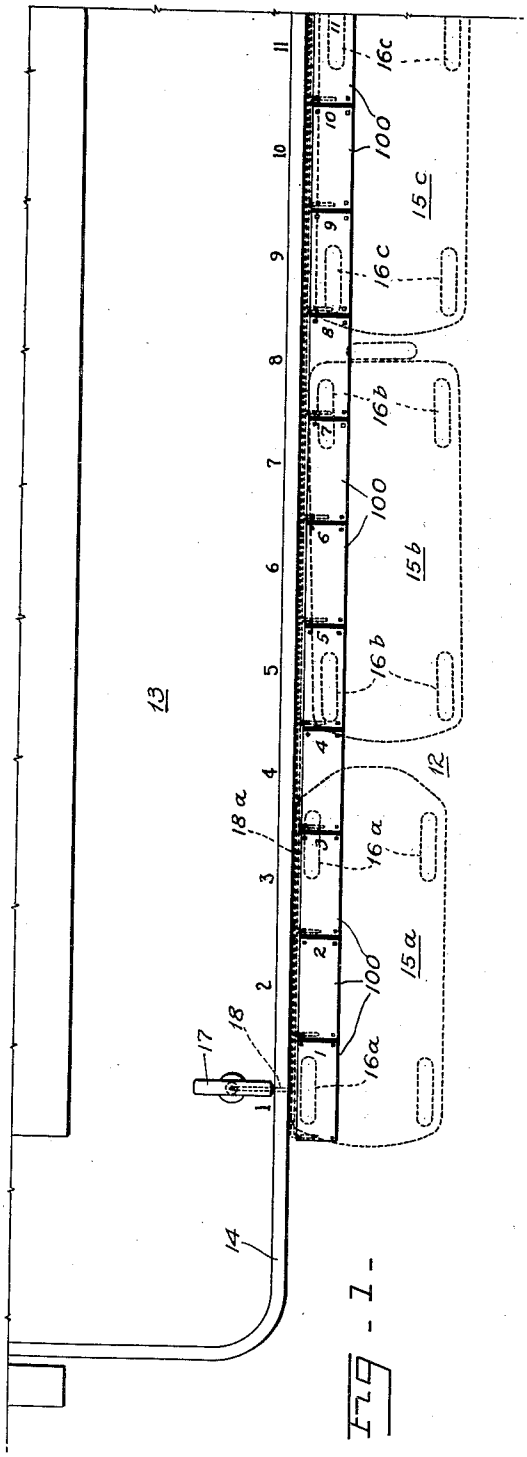


FIG - 1 -

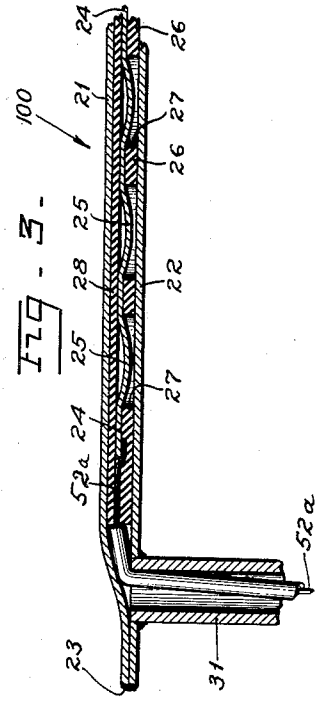


FIG - 3 -

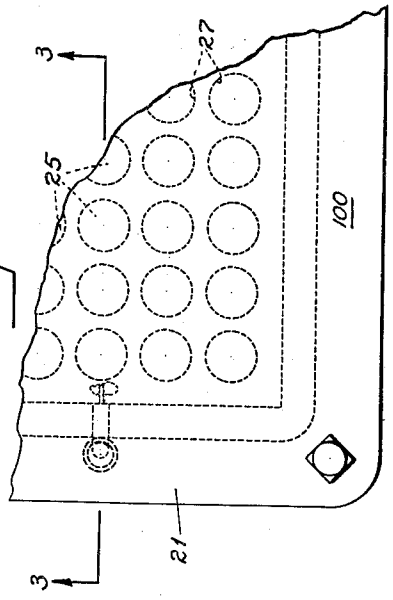


FIG - 2

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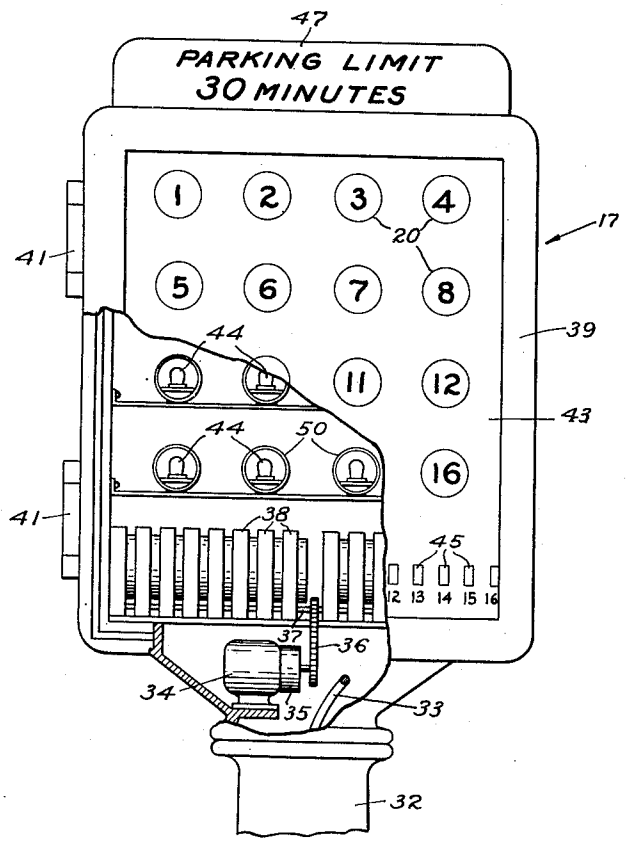


Fig. 4.

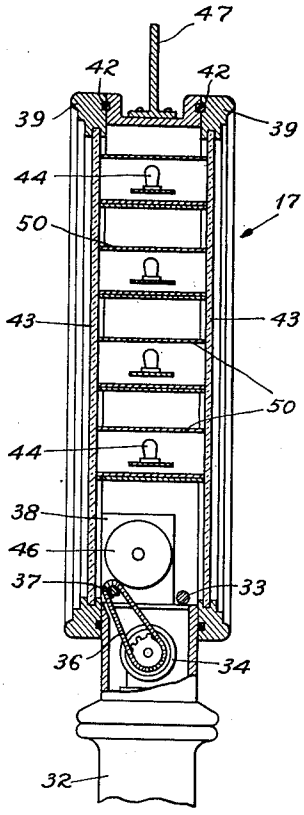


Fig. 5.

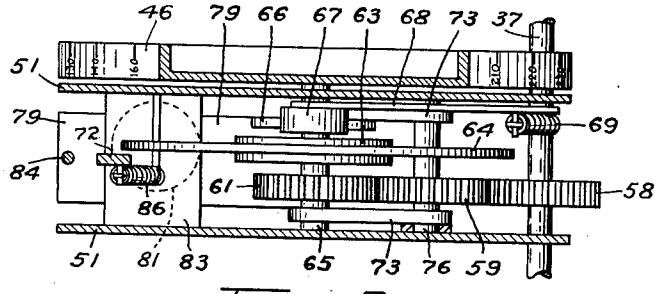


Fig. 9.

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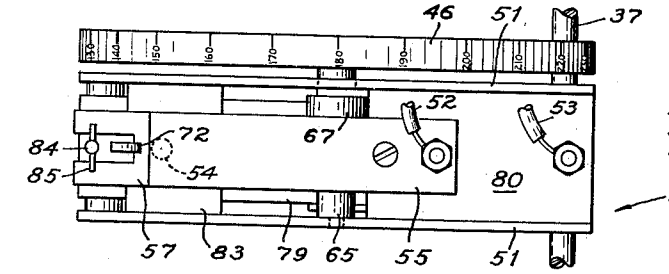


Fig. 8.

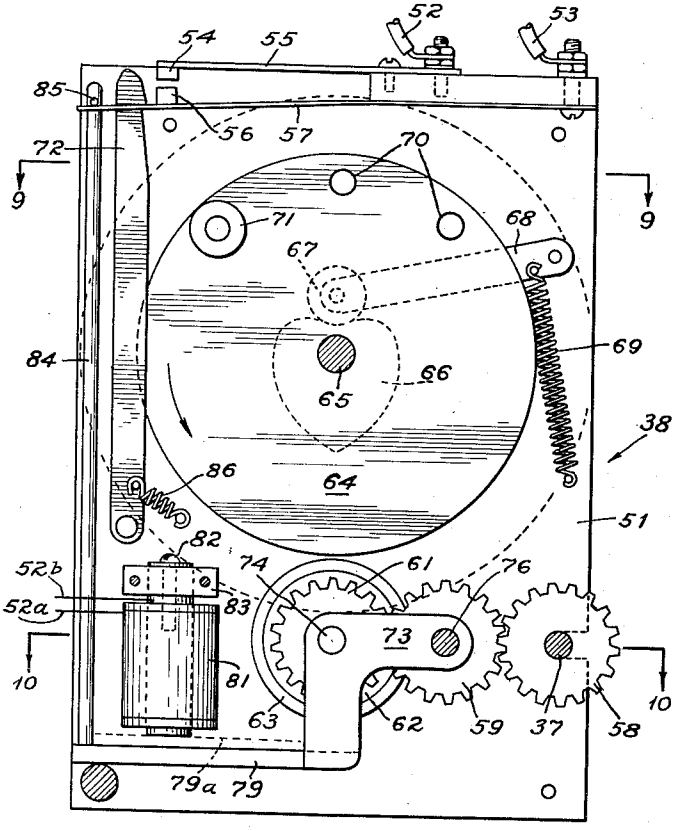


Fig. 6.

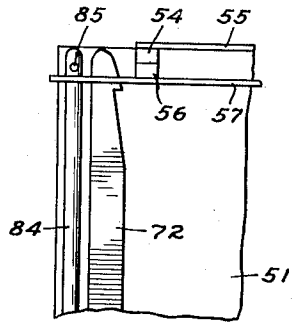


Fig. 7.

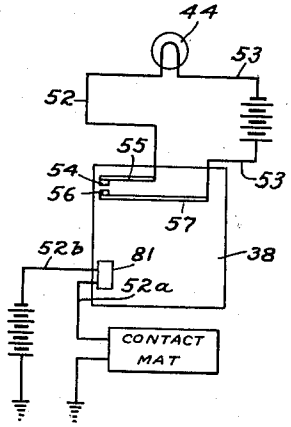


Fig. 11.

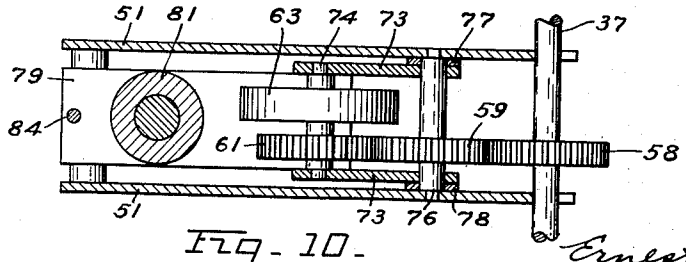


Fig. 10.

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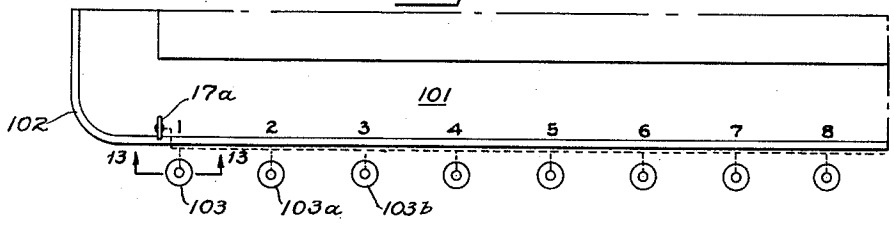
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Fig. 12.



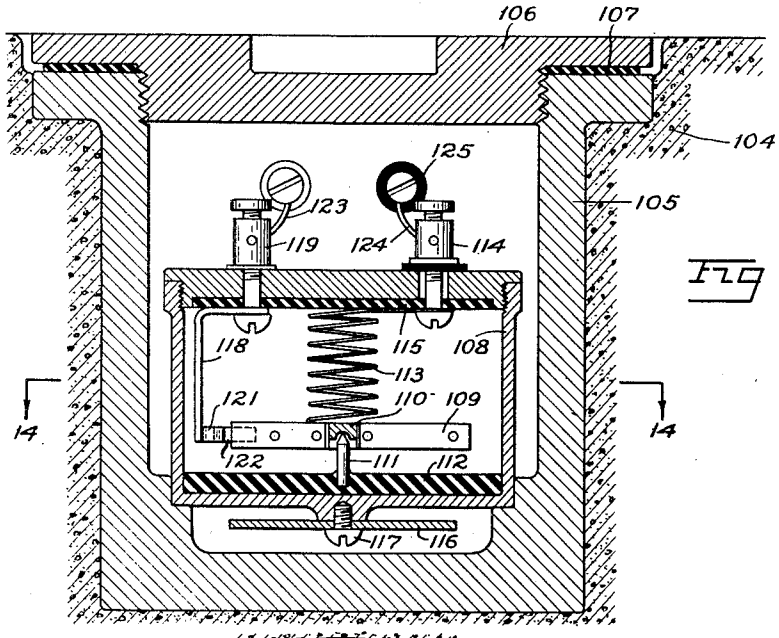


Fig. 13.

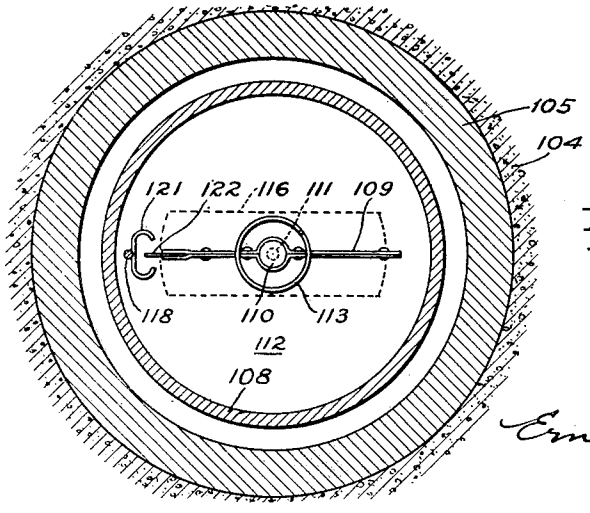


Fig. 14.

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Patented June 21, 1938

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UNITED STATES PATENT OFFICE

2,121,179

PARKING CONTROL APPARATUS

Ernest J. Sweetland, Piedmont, Calif.

Application March 10, 1936, Serial No. 68,067

5 Claims. (Cl. 177—311)

This invention relates to means for indicating the length of time during which vehicles are parked and to give a signal visible at a considerable distance when a car is parked longer than the legal parking limit in the district in question.

It is particularly designed as a parking control means for use in congested city districts; especially narrow streets where cars must park parallel to the curb.

My invention does not require the parking area to be divided into specified parking "berths", and vehicles may therefore park end to end regardless of their size and without waste of space. Where a street is wide enough to permit of diagonal parking the use of separate berths marked off in the street does not involve any particular complication, because motor vehicles are substantially of the same width regardless of length, so that where diagonal parking is used the berths may be of uniform size. However, the problem is greatly complicated in streets that are too narrow for diagonal parking for the following reason: Motor vehicles vary greatly in length; therefore if a district for parallel parking is subdivided into separate berths each berth must be long enough to accommodate the longest car and also must provide room for the cars to get in and out of the berths. This means that the berths must be inordinately long with reference to the length of a short vehicle, and this, in turn, means that fewer cars can be parked in a given block than the same block would accommodate if the cars were free to come and go without reference to any definitely prescribed berth.

The reasons above stated have prevented parking control means being employed in narrow streets—where they are most needed. My invention may be employed for either diagonal or parallel parking, but is especially advantageous for the latter.

In the present invention I overcome the difficulties that hertofore existed in connection with parallel parking by entirely disregarding the length or width of vehicles to be parked, and subdividing the area into units so much smaller than even the smallest standard automobile that it is impossible for a vehicle to park near the curb without automatically being subjected to my parking control means. My apparatus performs its functions without subjecting the driver to the slightest inconvenience and without any action whatever on his part. Indeed, the installation may be carried out without any visible evidence of control if desired; or, it may employ an annunciator board clearly visible to the public together with a sign which states the legal parking limit in the district.

My mechanism does not include specific means whereby the owner of the vehicle may pay a certain sum for parking; but is based upon the theory that the public is entitled to free parking so long as the individual does not exceed the legal parking limit. In cases where the legal limit is exceeded a signal apprises the officer in charge of the district, and he may then promptly apply the customary "ticket", and the fines thereby collected may be applied toward the installation and maintenance of the equipment.

My invention includes not only means of giving a visual signal to indicate the overparking of the vehicle, but also includes means whereby the exact duration of parking or overparking in minutes may be ascertained. By this means the vehicle owner may be charged or fined upon a basis governed by the number of minutes he has parked beyond the legal limit.

The invention possesses other advantageous features, some of which with the foregoing, will be set forth at length in the following description where the forms of the invention which have been selected for illustration in the drawings accompanying and forming a part of the present specification are outlined in full. However, I do not confine my invention to the specific forms set forth in the drawings and specification as it is capable of many modifications which are limited only by the scope of the appended claims.

Referring to the drawings:

Figure 1 is a plan view of a portion of a city street with parked vehicles indicated in dotted lines.

Figure 2 is a fragmentary plan view of one of the mats or contact mats used for making electrical contact with an annunciator when a vehicle moves into a parking space.

Figure 3 is a fragmentary sectional view taken on the lines 3—3 of Figure 2.

Figure 4 is an elevation of an annunciator panel with a portion broken away to show the inner construction.

Figure 5 is a vertical section on the lines 5—5 of Figure 4.

Figure 6 is an elevation of one of the switch-timing units used in the annunciator showing the unit in inoperative position. One of the side plates is removed to show the inner construction.

Figure 7 is a fragmentary view of the switch shown in Figure 6 when same is in closed position.

Figure 8 is a plan view of the switch-timing mechanism shown in Figure 6.

Figure 9 is a section on the lines 9—9 of Figure 6.

Figure 10 is a section on the lines 10—10 of Figure 6.

Figure 11 is a wiring diagram showing connections between the switch timing apparatus, the contact mat and the electric light.

Figure 12 represents a plan view of a sidewalk and curb illustrating the use of the contact device shown in Figures 13 and 14.

Figure 13 is a sectional elevation of a magnetically operated contact switch which may be used in place of the mat illustrated in Figures 2 and 3.

Figure 14 is a cross section of the magnetically controlled contact switch illustrated in Figure 13.

Referring to Figure 1 in detail, 12 designates a portion of a city street, 13 the sidewalk and 14 a curb which separates the two. 15*a*, 15*b* and 15*c* designate the outline of parked vehicles and 16*a*, 16*b* etc. indicate the vehicle wheels. An annunciator panel such as is shown in detail in Figures 4 and 5 is designated by the numeral 17, the dotted lines 18 and 18*a* indicating an electric conduit which carries the wires forming contact between the various contact elements in the street and the switch-timing elements in the annunciator panel. It will be noted that the edge of the sidewalk is marked with numerals from 1 to 11. These numerals correspond to the numerals which designate the contact mats at the edge of the sidewalk and also with numerals on the annunciator panel. The purpose of the numerals on the sidewalk is to locate the position of a parked car when a red light appears in the annunciator panel. For instance the car 15*b* as indicated in the drawing would register at numbers 5, 7 and 8 on the annunciator panel which clearly indicates the position of an overparked car to the officer in charge. The overparked car is readily located regardless of the number of mats it happens to contact. An important feature of my invention is to provide mats of a size and shape whereby two or more mats will be contacted regardless of the size of the vehicle when such vehicle is parked parallel with the curb.

I prefer to make the length of the contact mats short enough so that it is impossible for two vehicles to make contact with the same mat at the same time when the vehicles are parked end to end. This is accomplished by making the mats slightly shorter than the distance from the contact point between the rear tires and the rear bumper of a small car, plus the distance from the contact point of the front tires to the front bumper of a similar car. This distance may range between 3 and 4 feet which makes a satisfactory length for the mat, because the front bumper on one car contacts with the rear bumper of another car parked in front of it before the car in back can reach a mat upon which the rear wheel of the front car is resting. This avoids the possible complication of having two cars on the same mat at the same time. However, by my system of having each car contact two or more mats when in parallel parking position it is possible to locate the overparked car even though two cars may be on the same mat for the following reason: Assume that due to the unusual construction of a certain car the same mat should be contacted by two cars. Now suppose that car A has overparked and given a red signal and car B moves into parking position in front of car A. Car B is in contact with the same mat that has given a signal for car A. Then car A moves away thereby leaving a red light for which car B would appear to be responsible. However, upon checking up, the officer finds that car B also occupies another mat which does not show a red signal. This clearly indicates that the signal must have been given by a car previously parked in back of the car B.

The details of the mat will be better understood by reference to Figures 2 and 3. 21 is the cover plate of the mat which is preferably made of sheet steel. This is welded or otherwise secured to the end of the bottom plate 22 as for instance is shown at the welded joint 23. Between these two plates is the metal element 24 which is merely a flat sheet of metal, stamped to form dished surfaces as shown at 25. 26 represents a sheet of rubber or other flexible material which is provided with perforations 27 to receive the dished concave surfaces 25. 28 is a second sheet of rubber which insulates the plate 24 from plates 21 and 22. 52*a* is an insulated wire which is in electrical contact with the plate 24, and is led through the conduit 31 to the main conduit 18*a*. It will therefore be seen that what I refer to broadly as the mat consists of a waterproof housing formed by a pair of sheet metal plates within which is enclosed the metal plate 24, which normally is held out of contact with the lower plate 22 but which is caused to contact with plate 22 when the weight of a vehicle bears upon the upper plate 21. The conduit 31 as well as the plates 21 and 22 are electrically grounded. Therefore the circuit required to actuate the annunciator is closed when the weight of a vehicle brings the plate 24 into contact with plate 22 which will be understood from the wiring diagram in Figure 11. While in this application I have shown a contact mat using a single wire and ground system, obviously I could use a wire return circuit in place of the ground if desired. This would be readily accomplished by having two plates such as 24 within the mat separated by the perforated rubber sheet, each of which would be insulated from the housing of the mat. In such a modification the plates 24 would be positioned with their convex surfaces facing each other and just far enough apart that they would not contact until a considerable weight such as that of a vehicle wheel would be placed upon the mat. I prefer to adjust the distance between plates and the resiliency of the rubber used so that they will not contact when walked upon, but only in response to the weight of a vehicle.

Referring to Figures 4 and 5, 32 is a hollow column to form a standard or base for the annunciator panel 17. This column may be located upon the sidewalk or in any position, but preferably where it may be viewed by the public. A cable 33 which contains a wire leading to each contact mat enters the annunciator through the column, and each wire therein connects with a switch-timing unit as will be understood from the further description. In the base of the annunciator panel is an electric motor 34 and gear box 35 which through the chain 36 and suitable sprockets imparts rotary motion to the shaft 37 which extends across the base of the panel and serves to drive the switch-timing mechanisms. Each switch-timing mechanism is designated as a unit by the numeral 38 in Figures 4 and 5. These are shown in detail in Figures 6 to 10 inclusive. Each of the units 38 has connection

with one of the lights of the annunciator panel as well as with a mat at the curb. The annunciator panel has a door 39 on either side carried by hinges 41. These doors bear against gaskets 42 which make the construction water-proof. On the front of each door is a glass plate 43 which is preferably made of red glass and which has numerals painted in the circle opposite each electric light as indicated in Figure 4, the intervening spaces, between the circles bearing the numerals, being blanked off with opaque paint. Each of the electric lamps 44 within the annunciator is surrounded by a tubular metal casing 50 to prevent the light from the lamp showing except through the numbered red discs opposite it. On one side of the panel clear windows 45 are provided to enable the attendant to read the elapsed time in minutes indicated on the numbered discs 46 which are described in detail in connection with the succeeding figures. The annunciator panel may be surmounted by a sign 47 announcing the legal limit in the district. For the sake of simplicity, I have illustrated a panel containing only 16 units. Ordinarily there would be several times that number in a single panel.

Referring to Figure 6 which describes in details the units designated by 38 in Figure 4 this unit for purposes of clarity is illustrated with one of the side plates removed. 51 is a side plate forming a housing for the moving parts. The wire 53 leads to a source of power and thence to the electric lamp 44 and 52 connects direct with lamp 44. Therefore since the wire 52 is electrically connected to the contact point 54 through the switch leaf 55 and since the wire 53 is connected to the contact point 56 through the leaf 57, the lamp 44 is lighted when the switch points 54 and 56 come in contact and is extinguished when they are parted.

The shaft 37 turns at an exceedingly slow rate of speed due to the back gearing of motor 34 in the gear box 35. This shaft is provided with the gear wheel 58 which imparts motion through the gears 59 and 61 to the friction wheel 62 which is provided with a soft rubber tire 63 in order to give it a satisfactory frictional contact with the driven friction wheel 64. The shaft 65 is provided with bearings in the cover plates and is free to rotate in these bearings. A heart cam 66 is also fixed to the shaft 65. The roller 67 which is revolvably mounted at the end of the lever 68 is maintained in contact with the heart cam 66 by the tension of spring 69. The purpose of the heart cam is to return the driven friction disc 64 to its starting or zero position whenever it is released from contact with the rubber tire 63 of friction wheel 62. The shaft 65 also carries the numbered disc 46 which is graduated to read in minutes of time.

The driven friction wheel 64 is provided with roller 71 which is free to revolve about its axis. This roller is set in relation to the heart cam at 45° from horizontal and since the rate at which shaft 37 turns is correlated so as to revolve the disc 64 one revolution in four hours, it follows that 30 minutes will be required before the axis of the roller 71 reaches a position where it coincides with the horizontal axis of the driven friction wheel 64, at which point it trips the latch 72 to cause the points 54 and 56 to make contact and light the light in the annunciator panel.

The gear wheel 61 is rigidly mounted on the shaft 74 which has its bearings in the yoke 73. The extreme end of the yoke 73 encircles the shaft 76 with a free running fit to permit the free up and down movement of the yoke and attendant parts. 77 and 78 are spacing washers to prevent excessive side motion of the yoke and its attendant parts.

Connected with the yoke 73 is the iron bar 79 forming an armature for the electromagnet 81 which through the wire 52b makes contact with a source of power and thence to a ground connection while 52a connects with a mat in the street. The magnet 81 is supported within the side plates by the screw 82 and the block 83.

The upright bar 84 is rigidly mounted in the armature bar 79. In the upper portion of bar 84 is a cross piece 85 which is preferably made of insulating material.

When the electromagnet 81 is energized it lifts the armature bar 79 to the position indicated by the dotted line 79a at the same time raising the bar 84 so that the cross piece 85 is out of contact with the leaf 57. The switch points 54 and 56 are therefore free to close and make contact when the roller 71 reaches a horizontal position and trips the latch 72 the resiliency of leaf 57 being sufficient to bring the switch points together. When the latch 72 has been tripped and the light is still on, the parts are in the position shown in Figure 7 but as soon as the circuit in wires 52a and 52b is opened by the removal of a vehicle from the mat to which electromagnet 81 is connected, then the weight of the armature pulls downwardly on the bar 84 and cross piece 85 pulls down the leaf 57 and thus opens the switch and resets the latch 72 which is urged forward by the light spring 86. If desired a spring may be used to urge the armature bar 79 downwards and thus assist in opening the switch but such a spring is not necessary when the spring leaf 57 is of very light material, as the weight of armature 79 is sufficient to part the switch points and reset the latch.

Since the driven friction disc 64, the heart cam 66 and the graduated disc 46 are all fixed to the shaft 65 they will revolve together when the rubber tire 63 of wheel 61 is in frictional contact with the periphery of the driven friction wheel 64, motion being imparted to them by the rotation of the shaft 37 and gears 58, 59 and 61. It therefore follows that when the armature 79 drops away from the electromagnet 81, the frictional contact is broken which causes the friction disc 64 to be returned by the heart cam 66 and roller 67 to the position shown in Figure 6. It will be understood that whenever there is an open circuit in wires 52a and 52b, the disc 64 remains stationary but as soon as the circuit in wires 52a and 52b is closed, rotation of disc 64 commences in the direction indicated by the arrow and when the roller 71 disengages the latch 72 from the switch leaf 57 the points 54 and 56 make contact and close the circuit in wires 52 and 53 which are connected with a lamp 44 in the annunciator panel. The position assumed by the latch 72, the post 84 and cross bar 85 when the switch is closed and the light is in circuit, are indicated in Figure 7.

The plan view Figure 8 shows the figures on the graduated disc 46. These figures indicate minutes of time and a complete revolution of this disc corresponds in the design illustrated, to four hours of time, or 240 minutes. The figures are so placed that when the disc 64 is at rest in the position as shown in Figure 6, a reading of zero would be indicated through the windows 45 of Figure 4 and as soon as one of the instruments 38 starts to function due to the circuit of

the electromagnet 81 being closed, then the movement of disc 46 marks the duration of time in minutes that the circuit is closed by a vehicle in parking position.

Obviously the rate of rotation of the driven friction disc 64 and the figured disc 46 may be varied to suit conditions and it is a feature of my invention that gear reducing units 35 (Fig. 4) may be made with different gear reductions and interchangeable, so that changing the unit simultaneously changes the rate of revolution of shaft 37 and all units controlled thereby. By shifting the pin which carries roller 71 the elapsed time before the red light appears may be varied. The holes 70 provide for variation in this connection. The figured wheels 46 are interchangeable and wheels of any graduation may be supplied.

If the parking zone is under close supervision and the red light signal is not deemed necessary, then my system may still be used and considerably simplified by eliminating the red lights from the annunciator panel and the switches which govern them from the apparatus 38. With these parts omitted the system is still complete and operative. In this simplified form, the numbered disc 46 may be made in two colors such as white which would appear through windows 45 (Fig. 4) until the expiration of the legal parking limit, and red which would appear thereafter.

As will be seen in Fig. 4 each window is numbered to correspond with the number of a mat 100 and the numbers at the windows also correspond to the numbers in the panel where the red lights appear.

Many modifications of the annunciator panel are obvious without departing from the principles set forth. For example the lamps 44 may be placed to show through windows 45 instead of through the larger circular windows 20 shown in the upper part of the panel.

Figure 8 also illustrates the mounting of the switch leaves 55 and 57 in the fibre block 80 and in this view it will be noted that the outer extremity of the leaf 57 is slotted to accommodate the latch 72 and post 84.

The horizontal section Figure 9 which is taken on the line 9—9 of Figure 6 shows the position of the various parts in plan view and since the parts bear numerals corresponding with those used in previous figures, detail description is unnecessary.

Figure 10 which is a horizontal section on the line 10—10 of Figure 6 more clearly indicates the position of the yoke 73 and the method of mounting same on the shaft 76.

The wiring diagram of Figure 11 shows the circuits which operate the switch timing mechanism 38. There are two distinct circuits employed; the circuit of the electromagnet 81 through the wire 52*a* is connected with the plate 24 of a contact mat. When the plate 24 contacts with the lower plate 22 this branch of the circuit is grounded, while the other branch of the circuit runs through the wire 52*b* to a source of power and thence to the ground. Thus it will be seen that the circuit in electromagnet 81 is closed to render the magnet 81 operative when a vehicle takes its position on the mat. The other circuit shown in Figure 11 represents a source of power in the line 53 which is connected with the lower leaf of the switch 57, and with one side of the lamp 44, through which the circuit continues through the wire 52 and upper leaf of the switch 55. Therefore when the switch points 54 and 56 contact to close the circuit the lamp 44 is caused to light.

In the modified application of my invention as shown in Figure 12, 101 indicates a sidewalk upon which has been installed an annunciator panel 17*a* which in detail is as represented in Figures 4 and 5. 102 represents the curb and in the street adjacent thereto are electromagnetic switch elements 103, 103*a*, 103*b* etc. the details of which will be understood by reference to Figures 13 and 14, Figure 13 representing a vertical cross section on the line 13—13 of Figure 12.

In Figure 13, 104 represents the paving of the street into which is imbedded a metal casing 105 which is made of any non-magnetic metal. A cover plate 106 with annular gasket 107 forms a waterproof closure for the casing 105. Mounted within the casing 105 is a second casing 108 which is made of non-magnetic metal and which forms a housing for the magnetic needle 109 which has a jewel bearing 110 supported by the central needle point 111, the needle point being supported in a fibre disc 112. Electrically connected to the magnetic needle 109 is a helical coil of extremely fine wire 113 which is in electrical contact with the binding post 114 and is insulated from the casing by the fibre disc 115. A bar of iron or a bar magnet 116 is held in fixed position to the bottom of casing 108 by the screw 117. The purpose of the bar or magnet 116 is to serve as a means of "loading", or orienting, the magnetic needle 109. In the absence of bar 116 the needle 109 would naturally point north but if a bar magnet is used as indicated at 116 the needle 109 can be made to point in any desired direction by adjusting the angle of the bar magnet accordingly. The arm 118 is in electrical contact with the binding post 119 and at its lower extremity is provided with a C-shaped terminal 121 which is adapted to make electrical contact with the platinum leaf 122 when the needle 109 deviates from the position in which it is normally held by the magnetic influence of the bar magnet 116. For purposes of illustration it is assumed that the wire 123 which connects with binding post 119 is grounded and that the wire 124 which connects with the binding post 114 passes through the rubber insulating plug 125 and thence to a source of power, and thence to make connection with the wire 52*a* of the electromagnet 81 as shown in Figure 6. Briefly, the apparatus illustrated in Figures 13 and 14 consists of a very delicate magnetic switch mounted within a rugged casing adapted to be imbedded in the pavement and flush with the surface thereof and is so constructed that the mechanism is accessible upon removal of the cover plate 106. I have found that a magnetic switch of this design can readily be adjusted by means of the bar magnet 116 so the needle 109 normally rests in a position to hold the platinum leaf 122 midway between the points of the contact element 121. However, when a body of metal capable of influencing a magnetic field such as iron or steel, is brought into proximity with the magnetic switch, the needle 109 deviates so as to bring the leaf 122 in contact with 121 whereby an electric circuit may be closed.

The operation of my parking control apparatus in the form illustrated in Figures 1 to 11 inclusive is as follows: The parking area to be controlled is equipped with an annunciator panel

17 and along the margin of the street are installed a series of mats such as are shown in Figures 1, 2 and 3, these mats being designated in general by the numeral 100. The size and shape of these mats may be varied to suit the particular location and requirements but I prefer to make them small enough that it is impossible for the wheels of two different vehicles to get on the same mat at the same time. This condition is realized by making the distance across the top of the mat shorter than the combined overhang at the front and rear of average vehicles. By this arrangement it naturally follows that any vehicle parked parallel to the curb must bear upon two or more of the mats. Very large vehicles such as trucks with more than four wheels may make contact through four or five mats at the same time. The number of mats contacted, and the consequent number of annunciator units affected, is unimportant because in any event the location of a car which remains beyond the parking limit of time is indicated regardless of the number of contacts made. Each mat upon which the weight of a wheel is bearing will be partially collapsed so that the plate 24 contacts with the grounded plate 22 thus closing the circuits of the electromagnets 81 of the timing switches corresponding in number with the mats contacted. Thereupon the armature 79 is attracted by electromagnet 81 bringing the rubber tire 63 into frictional engagement with the driven friction disc 64. Since the shaft 37 is kept in constant rotation by the motor 34 the disc 64 starts to rotate immediately when contact is made. However, no signal is given on the annunciator panel until the expiration of the legal parking limit, when roller 71 disengages the latch 72 from the leaf 57, the resiliency of which causes it to spring upwardly and bring points 54 and 56 into contact thereby closing the circuit in wires 52 and 53 causing the lamp 44 to light and thus produce a visual signal on the annunciator panel, indicating to all those within sight of the panel that a car, located in the position designated by the numbers on the panel, has remained in parked position longer than the time permitted by law. The panel numbers are designed to be visible for a distance of several blocks and it is assumed that the officer in charge of the district will give attention immediately when a red light appears. While immediate notice is given to the officer in charge, as well as to the public when a car remains in parked position beyond the legal limit, vehicles which depart before the expiration of the legal limit are caused no inconvenience whatever. When a vehicle which contacts with one or more of the mats is removed, the armature 79 falls away from the electromagnet 81, whereupon the roller 67 and heart cam 66 causes the disc 64 to return immediately to the normal position in readiness for further service when another contact is made. The cross bar 85 always separates the switch points 54 and 56 simultaneously with the dropping of the armature 79. Also it should be noted that a portion of the leaf 57 bears against the sloping side of the top of the latch 72 so that when the cross bar 85 pulls down the leaf 57 the latch 72 is automatically reset.

When the modification illustrated in Figures 12 to 14 inclusive is employed the action of the panel board is the same, the only difference being that instead of the weight of the vehicle making physical connection between the contact plates as is the case when the mat 100 is employed, the magnetically influenced switch is affected by the body of metal in the engine and other parts of the vehicle whereby the magnetic needle 109 is caused to deviate sufficiently to bring the leaf 122 in contact with the points of the element 121 thus closing the circuit which is connected with the electromagnet 81 as formerly described.

The magnetic switches illustrated in Figures 13 and 14 are illustrative of a type of magnetically influenced switch which may be used in connection with my invention but it is within the province of my invention to substitute in place of this switch any suitable means of making electrical contact that is caused to function, and thereby produce a signal when a vehicle occupies a parking position. I may employ a balanced circuit of any type influenced by the presence of a magnetic body such as an engine; or I may employ means wherein the electrical "capacity" of a body, such as a condenser, is influenced by the proximity of a vehicle. With such mechanisms suitable means for amplifying signals, such as vacuum tubes may be employed. As circuits coming under these heads are well known, detailed description is not required here.

Throughout this application the term "circuit-breaker" is intended to mean any device which is capable either directly or indirectly of making and breaking an electrical circuit. While in the form of my invention herein described either the contact mat shown in Figures 2 and 3, or the magnetically operated switch shown in Figures 13 and 14, is a form of circuit-breaker applicable to the purposes, I do not limit myself to these specific forms. Furthermore, in my description and drawings I have so arranged the circuits that the circuit is closed and the signal is given in the annunciator when a vehicle moves into position in a parking space, but if desired the opposite arrangement may be employed; that is, that the apparatus in the annunciator could be made to function by breaking the circuit in the contact mat upon arrival of a vehicle, and closing the circuit when the vehicle departed. This would be accomplished by a reversal of wiring arrangements. In either event the result would be the same; namely, that the arrival and departure of vehicles in the parking area would produce intelligible signals to be displayed upon the annunciator.

Where I have used the term annunciator it is intended to define a mechanism which produces intelligible signals to indicate duration of parking. Such signals may be either visual or audible, or a combination of both, within the spirit of my invention. If audible signals are desired suitable sound producing mechanisms such as electric bells or buzzers may be connected in circuit with the visual signals of the annunciator board to produce a sound at the termination of the legal parking limit.

Where the term "deparked" is used in the following claims it is intended to indicate the discontinuance of parking or the removal of a vehicle from a parking place.

In the appended claims I have referred to the distance between the "road-contacting portions of the front wheels of one vehicle and the road-contacting portion of the rear wheels of a vehicle parked immediately in front thereof". I realize the considerable variation in such measurements as these when applied to vehicles of different size and make. Where I have used this language or variations thereof in the appended claims it should be understood that the language is to be

construed with reference to the general run of vehicles for which the parking area is designed and that it is not intended to apply to miniature vehicles, motor-cycles, or other vehicles of unusual construction that may occasionally be parked within the area.

I claim:

1. Parking control means comprising a parking area; a plurality of vehicle-actuated switch mechanisms in said area; said switch mechanisms being disposed along the parking area of a city street; said switch mechanisms being disposed at intervals lesser in length than the distance between the road-contacting portion of the front wheels of one vehicle and the road-contacting portion of the rear wheels of a vehicle parked immediately in front thereof, said intervals being of substantially shorter length than the wheel-base of the vehicles for which the parking area is designed, whereby any parked vehicle must actuate more than one switch; time-measuring units in electrical circuit with and actuated by said switches whereby the duration of parking of each vehicle is indicated by more than one time-measuring unit.

2. Parking control means comprising a plurality of vehicle-actuated switch mechanisms disposed in a parking area arranged for the parking of vehicles in end-to-end relationship, said switch mechanisms being disposed at intervals of less length than the distance between the road-contacting portions of adjacent wheels of separate vehicles, said intervals being of substantially less length than the wheel base of the vehicles for which the parking area is designed, whereby any parked vehicle must actuate a plurality of switches, and means electrically connected to said switches for indicating the actuation of said plurality of switches.

3. Parking control means comprising a plurality of vehicle-actuated switch mechanisms disposed in a parking area arranged for the parking of vehicles in end-to-end relationship, said switch mechanisms being positioned in alignment with said vehicles when parked and being disposed at intervals of substantially less length than the wheel base of the vehicles for which the parking area is designed, whereby any parked vehicle must actuate a plurality of said switches, and time lapse indicating means in electrical circuit with said switches for indicating the actuation of each of said switches, the indicating means for adjacent switches being positioned adjacent each other so that the indication of actuation of said plurality of switches locates the vehicle actuating said plurality of switches.

4. Parking control means comprising a parking area; a plurality of switch mechanisms in said area; a contact member covering each switch mechanism; said contact members being in alignment substantially parallel to the direction of vehicle traffic; said contact members being of lesser length than the distance between the road-contacting portion of the front wheels of one vehicle and the road-contacting portion of the rear wheels of a vehicle parked immediately in front thereof and of substantially shorter length than the wheel base of the vehicles for which the parking area is designed whereby the front and rear wheels of the same vehicle must rest upon different contact members and actuate different switches while the length of said contact members does not permit the wheels of two different vehicles to rest upon the same contact member; time measuring units in electrical circuit with and actuated by each of said switches whereby the duration of parking of each vehicle is indicated by more than one time measuring unit.

5. Parking control means comprising a parking area; a plurality of switch mechanisms aligned in said area adjacent each other with bearing surfaces to receive the wheels of parked vehicles and to be actuated thereby; said surfaces and their attendant switches being limited in length so that the front wheel of one vehicle cannot contact the bearing surface of a switch mechanism when the rear wheel of a parked vehicle is bearing thereon and said bearing surfaces and switches being at intervals less than the length of wheel base of the vehicles for which the parking control is designed whereby any parked vehicle must contact more than one bearing surface and actuate more than one switch but no two vehicles of the type for which the control is designed can contact the same switch; an annunciator in electrical circuit with each of said switches; said annunciator having signal means and a timing mechanism to delay the operation of said signal means by a pre-determined time interval after a vehicle has actuated the switch in connection therewith.

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