

**Sept. 21, 1943.**

F. L. MICHAELS

**2,329,926**

# AUTOMATIC PARKING METER

Filed Jan. 19, 1940

3 Sheets-Sheet 1

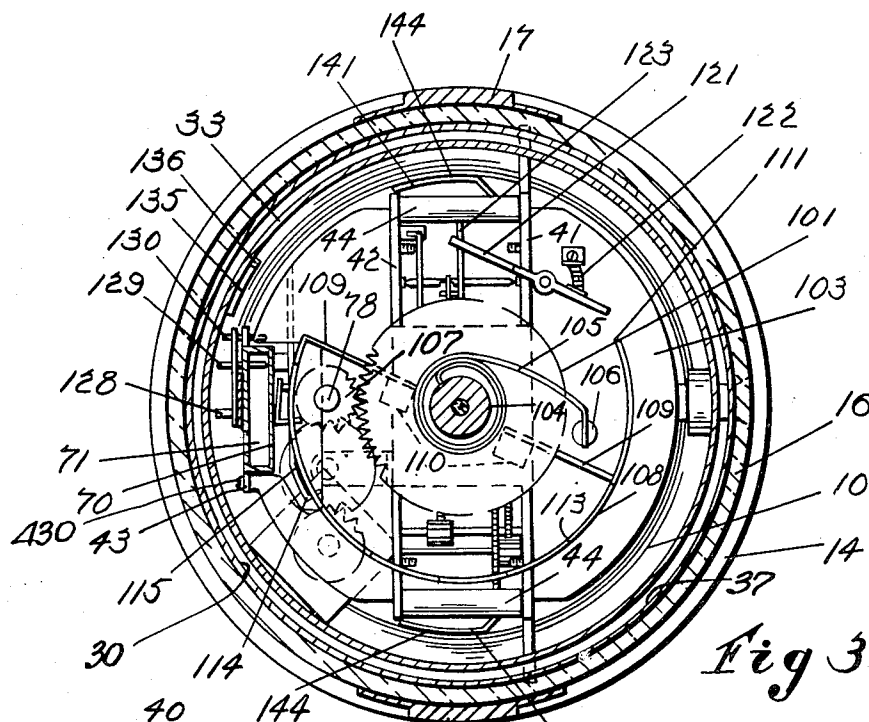
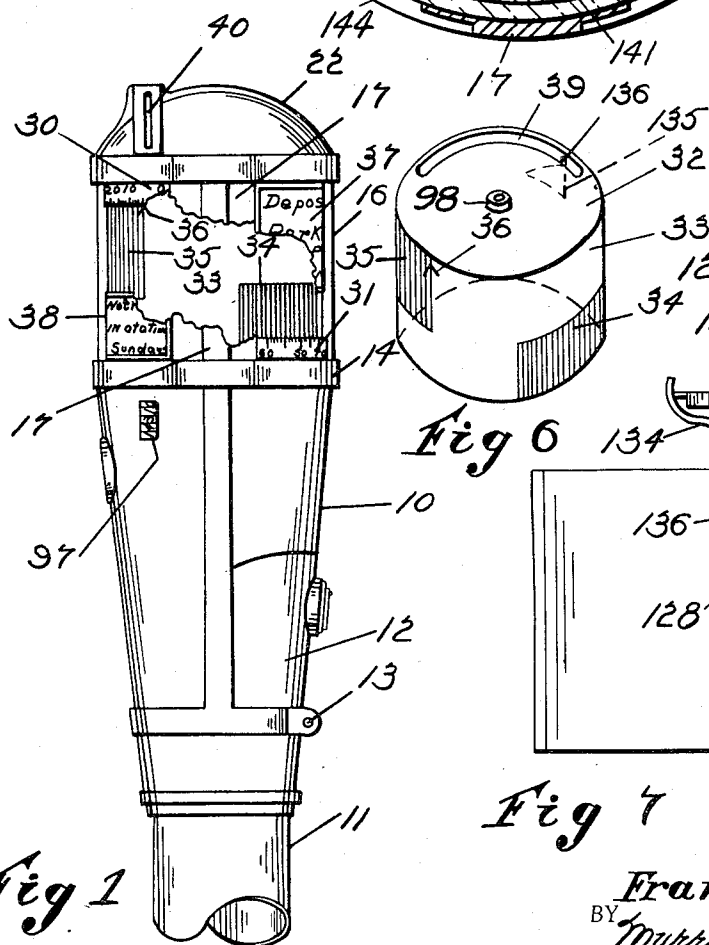
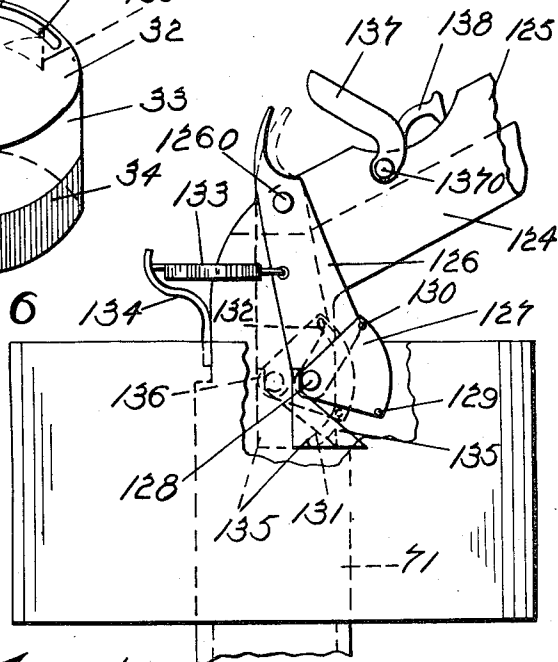


Fig 7

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3 Sheets-Sheet 2

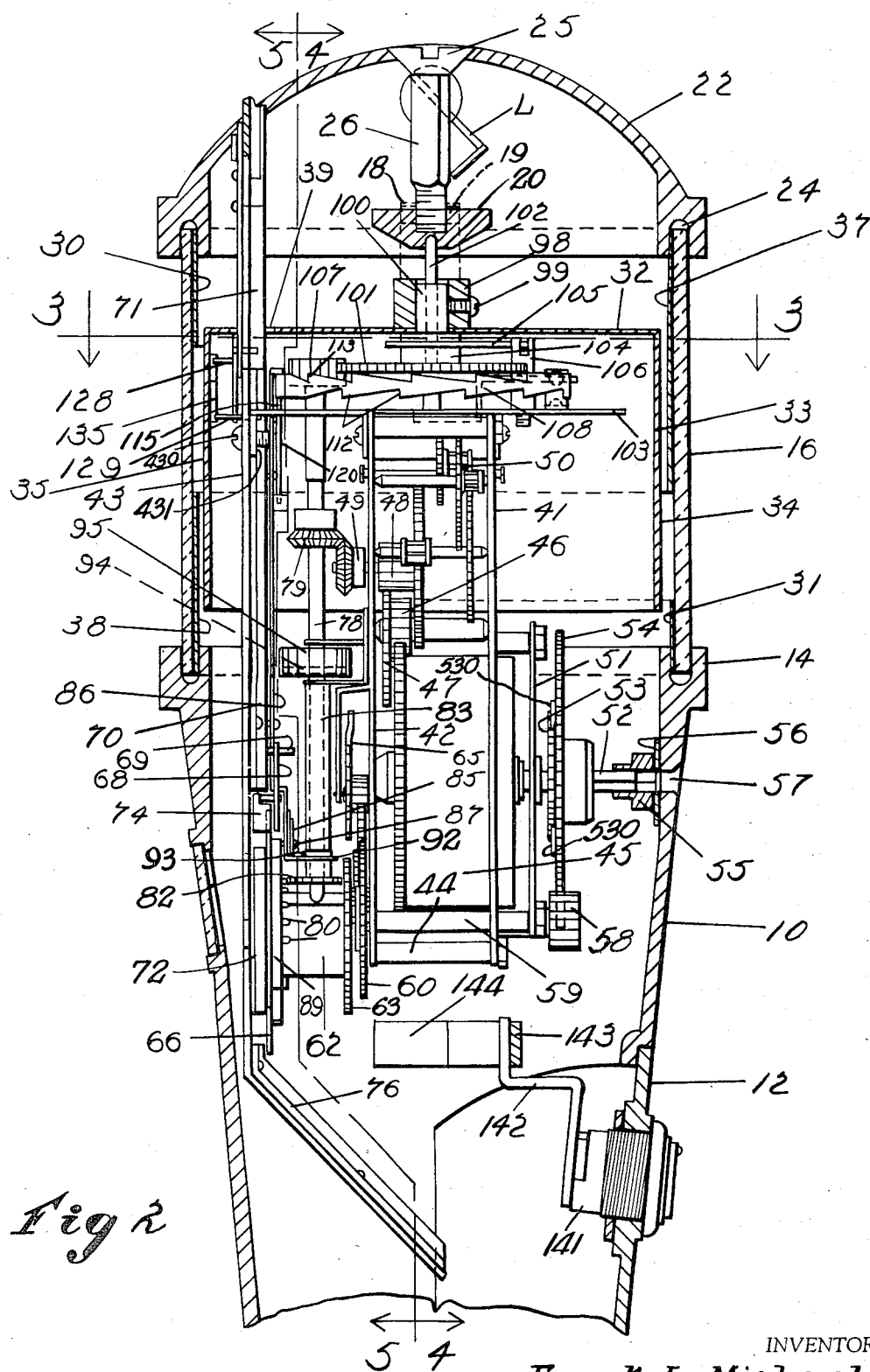


*Fig 2*

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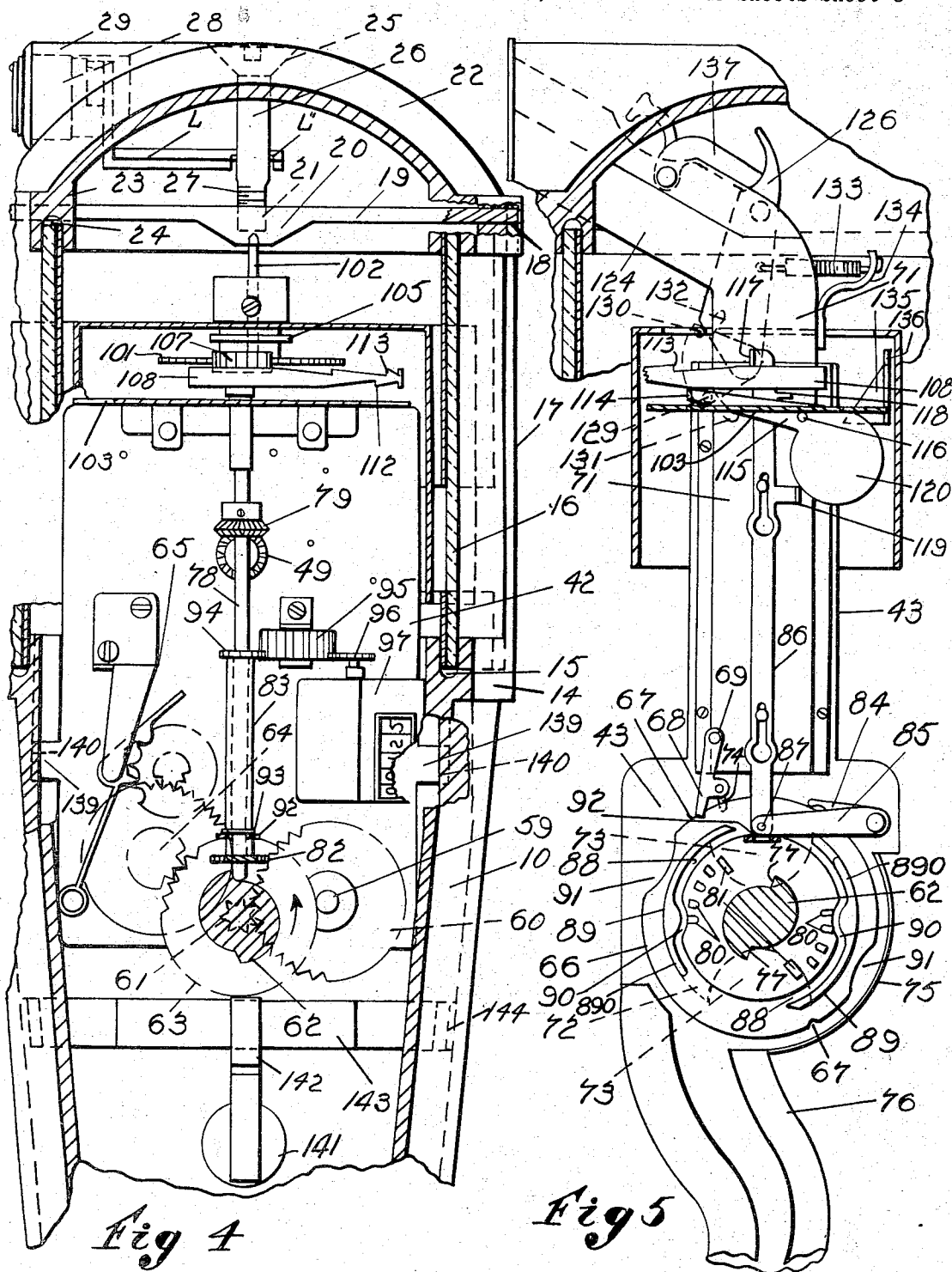
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AUTOMATIC PARKING METER

Filed Jan. 19, 1940

3 Sheets-Sheet 3



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## UNITED STATES PATENT OFFICE

2,329,926

## AUTOMATIC PARKING METER

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Application January 19, 1940, Serial No. 314,654

9 Claims. (Cl. 194—19)

The present invention relates to parking meters, particularly to automatic coin-controlled meters, and has for an object the provision of a mechanism of this character that is adapted to receive, in a common coin chute, coins of more than one denomination, to count the monetary value thereof, and in return automatically provide corresponding periods of operation for the regulation of urban parking of automobiles.

A further object of the invention is to provide a simple means affording rapid conversion of the device from routine daytime parking operation to a different operating arrangement allowing the prepayment of extended or so-called "theater parking," the device being further integrated with said means in order to indicate "overtime" parking only at the expiration of any completely prepaid parking term, regardless of whether said prepaid parking term involves fractional, maximum, or multiple-cycle operations of the mechanism.

A still further object of the invention is to provide a mechanism of the above described character in compact form adaptable for disposition in a small generally cylindrical case, thus affording a neat and attractive mounting upon a tubular standard at the curblin of city sidewalks where it affords ample visibility for observing the time-indicating means from either the street or the sidewalk.

Another object of the invention is to provide, in a parking meter of the class described a single movable member cooperating with a fixed member to accurately register the unexpired remainder of a prepaid parking period and to progressively obliterate the indication of unexpired parking time by a contrasting area indicative of parking violation for overtime parking.

These and other important objects are attained by the means hereinafter described and disclosed in the accompanying drawings, in which:

Fig. 1 is a side elevational view of a device of the invention, parts being broken away to disclose the relation of the fixed and movable parts of the indicator.

Fig. 2 is an enlarged elevational view of the device shown in Fig. 1, the casing being cut away on a diameter and disclosing the operating mechanism in full side elevation.

Fig. 3 is a cross-sectional view taken on line 3—3 of Fig. 2.

Fig. 4 is a view taken on line 4—4 looking toward the right of Fig. 2.

Fig. 5 is a view taken on line 5—5 looking to the left of Fig. 2.

Fig. 6 is a perspective view of the movable indicator unit.

Fig. 7 is an enlarged front elevational view showing the multiple-coin control mechanism of the invention in full and dotted lines, in positions which it assumes during operation.

As is best illustrated in Fig. 1, the mechanism of the invention is encased in a hollow case or housing 10, which is tapered toward the bottom where it is arranged to be invisibly secured to a tubular upright or standard 11 which may be fixed adjacent the curblin of the street. The lower portion of case 10 is provided with a key lock controlled door 12 disposed on that side of the casing which faces the sidewalk, and this door is suitably hinged as at 13. Door 12 affords access to a removable coin receptacle (not shown) which forms no detailed part of the invention.

The ring-like top 14 of housing 10 has an annular groove 15 in the top edge wall thereof which serves to seat a transparent cylinder 16. Extending vertically upwardly from diametrically opposed sides of ring 14 is a pair of uprights 17 which receive the transparent cylinder 16 between them. Uprights 17 have aligned apertures 18 closely adjacent the top thereof into which a cross-bar 19 is adapted to be inserted at its opposite ends. The cross-bar 19 when in position (see Fig. 4) terminates at approximately the outside faces of said uprights 17. Intermediate the ends of cross-bar 19 is a boss 20 having in its upper portion a screw threaded bore 21. A dome-like cap or cover 22 has in its bottom a depending portion 23 and an annular groove 24 which seats over the top edge of transparent cylinder 16 and also over the tops of uprights 17, thus concealing the cross-bar. Rotatably mounted in the top of cap 22 is a screw member 25 having an intermediate flat-sided shank 26 and a threaded end 27 which engages in the threaded bore 21. A key lock 28 is mounted partly in a boss 29 in the cap 22 and has on the interior end thereof an L-shaped arm L with a notch L' therein to snugly engage about the flat sides of the angular shank 26 of the screw 25 to preclude operation of the screw.

From the foregoing, it will be apparent that when the screw 27 is properly engaged in the threaded bore 21 in the cross-bar and the lock arm L is in position, it is impossible to dismantle or gain access to the interior of the composite casing just described. It will also be apparent that upon removal of the cap and thereafter the

cross-bar 19 the hereinafter described mechanism may be bodily inserted into or lifted from the interior of the casing.

As can be best seen in Fig. 1, means are provided inside the transparent cylinder 16 to provide hemi-cylindrical time-indicating means facing the street and the sidewalk, respectively, these indicating means being separated from one another by the uprights 17. The portions of the transparent cylinder 16 thus form curved windows between said uprights 17 and on either side of the housing. Inserted in groove 24 immediately behind the transparent cylinder 16 on the street side is a graduated curved scale 30 marked off to indicate minutes of parking time.

On the opposite side of the casing and inserted in the groove 15 immediately behind transparent cylinder 16 is a similar time scale 31 which faces the sidewalk. Oscillatably mounted interiorly of the upper part of the casing is a movable time indicator 32 comprising a horizontal disk with a depending cylindrical skirt 33, the exterior of which is uniformly colored, for example, white, save for the opposed staggered areas 34 and 35 which are contrastingly colored, as in red, and extend about the circumference of the skirt 33 through an arc which is somewhat longer than the graduated scales on members 30 and 31. The vertical junction line at the righthand edge of each of the areas 34 and 35 may be further ornamented or marked with an arrow, such as 36, so disposed thereon as to point to the graduations on scales 30 and 31, respectively, as these arrows are moved during rotary movement of skirt 33 by the mechanism in a manner hereinafter fully explained.

As shown in Fig. 1, the colored indicator section 35 which cooperates with the street side of the meter is desirably made somewhat larger to afford greater visibility and to enable the approximate condition of the meter to be read at a glance from a distance. In order to conceal a portion of the non-cooperating signal areas 34 and 35 arcuate instruction panels 37 and 38 are disposed opposite scales 31 and 30, respectively.

For operating and controlling the movement of the signal-carrying skirt 33 automatically and to afford the parking control hereinbefore mentioned, the following described mechanism is employed. This mechanism is disposed principally within and below the movable indicator of Fig. 6 which it supports and controls. The disk 32 of the movable indicator has an arcuate slot 39 through which the coin tube of the automatic mechanism projects into communicating relationship with the exterior coin slot 40 in the casing cap 22.

The mechanism is constructed as a removable unit seated within the housing and comprises a rear plate 41, an intermediate plate 42 and a front plate 43, the plates 41 and 42 being secured in spaced relation by spacers 44 between which are mounted the power spring assembly 45 and a gear train driven thereby through pinion 46, gear 47 and pinion 48 which drives bevel pinion 49 disposed on the outer face of plate 42. The remainder of the gear train is indicated generally at 50 and includes an associated escapement for regulating the speed at which bevel pinion 49 is driven through said power spring and its gear train. A plate 51 is mounted in spaced relation to the rear plate 41 and it supports a winding arbor 52 for the power mechanism which operates after the fashion of the

clock winding mechanism of an alarm clock 53 to permit winding of the power spring mechanism 45 without imparting rotation to the gear 54. In other words a ratchet wheel 53 is fixed on arbor 52, while gear 54 is rotatable on said arbor. Pawls 530 are pivoted on gear 54 and ride over the ratchet wheel 53 when the arbor is turned to wind the power spring, but when the wheel 53 is turned by the spring drive of the arbor in a reverse direction, the pawls 530 engage with the wheel and turn the gear 54. An angular socket member 55 is fixed on the end of angular winding arbor 52 and presses against a perforate felt or fabric washer 56 which is interposed between the member 55 and the inner face of the casing 10. The casing 10 has a perforation 57 therein permitting insertion of a winding key through the casing into said winding socket for loading the power spring mechanism 45. The gear 54 meshes with a pinion 58 secured on a shaft 59 which passes through plates 41 and 42 and carries a gear 60 on its opposite end adjacent plate 42. Gear 60 meshes with pinion 61 (see Fig. 4) which is fixed with cam 62 and said cam has fixed thereto a gear 63 which meshes with pinion 64 of a speed governor indicated generally at 65.

From the foregoing it will be apparent that power may be taken from the power spring mechanism 45 to drive the bevel pinion 49 and the cam 62. As will be hereinafter more fully explained, the function of cam 62 is to disconnect the time indicating means from bevel pinion 49 during the automatic resetting of the time indicating means by its own independent power means.

To this end I have provided as a fixed or integral part of cam 62 a disk 66 which has a pair of diametrically opposed edge notches 67, one of which receives a freely swinging lug 68 at the end of each half revolution of the cam in order to stop the cam. The lug 68 is pivoted at 69 on the outside of a channel-shaped member 70 that is secured on the inner face of plate 43 and forms, with said plate, a vertical coinway indicated generally at 71 and which terminates at its lower end alongside the top of disk 66. As an extension on the face of disk 66 and immediately below the hollow interior of the coinway 71 is an extension 72 which is arcuately cut away at its opposite sides to form coin pockets 73 (see Fig. 5), either of which is automatically aligned with the open bottom of coinway 71 when lug 68 arrests the disk 66.

The lug 68 has an offset extension 74 which is normally disposed in the path of a coin traveling through coinway 71, and, in passing, the coin engages extension 74 and swings lug 68 out of notch 67 and then drops into the coin pocket 73. The rotation of cam 62 and all of the associated parts carries the coin which has dropped into the uppermost pocket 73 through  $\frac{1}{2}$  rotation, whereupon lug 68 drops into the next notch 67 and arrests the cam and associated parts with the pocket, which carried the coin remaining in an inverted position. The coin was therefore dropped part way out of the inverted pocket and precluded from escape by the lateral arcuate flange 75 on the lower portion of plate 43. A coin discharge tube 76 is formed as a continuation or an attached part of plate 43, the same being curved or turned inwardly to substantially the center of the bottom of casing 10 where a suitable coin receptacle may be provided to receive the same. Referring to Figs. 4 and 5,

it will be noted that cam 62 has abrupt shoulders 77 with gradually rising eccentric faces extending from the bottom of one shoulder to the top of the other forming cam surfaces upon which a vertically reciprocable shaft 78 may rest and be vertically lifted and then dropped. Bevel pinion 79 is fixed on shaft 78 and meshes with bevel pinion 49 when shaft 78 is in its lowermost position, for example, as shown in Fig. 4. During the rotation of cam 62 through  $\frac{1}{2}$  revolution the shaft is lifted endwise and carries pinion 79 out of mesh with pinion 49 and the power drive from pinion 49 through the shaft 78 is broken. When the bottom of shaft 78 drops over the abrupt shoulder 77 of cam 62, the drive connection between pinion 49 and pinion 79 is re-established.

On the face of disk 66 adjacent the cam 62 are opposed series of short face teeth 80 and a single opposed long tooth 81. These are arranged to engage a pinion 82 mounted on a tube shaft 83, which is free to rotate and reciprocate on shaft 78.

Pivotaly supported on plate 43 is an arm 84 which normally rides on the periphery of disk 66 and fixed on the side of arm 84 and movable about the same pivot is an arm 85. The arm 85 is pivoted to a reciprocably mounted strip 86 by means of a pin 87 which is extended to selectively ride in cam grooves 88 or upon the outer surface 89 of the walls 890 of the cam groove, the walls 890 being arcuate strips secured on the face of disk 66. It will be noted that the grooves 88 dip towards the radial center of disk 66 at a point 90 intermediate the ends of the grooves 88. It will be further noted (see Fig. 5) that disk 66 has peripheral arcuate notches 91 which permit arm 84 to follow as a unit with the movement of arm 85 as the pin 87 is moved downward during the movement of the cam disc assembly. A yoke 92 fixed to strip 86 engages beneath a shoulder 93 on the tube shaft 83. From the foregoing, it will be apparent that the pinion 82 and the tube shaft 83 carrying the same partake of the movement which is imparted to arm 85 accordingly as pin 87 follows through cam grooves 88 or follows the outer surface 89 on disk 66.

As will be readily appreciated by an inspection of Figs. 4 and 5, the pinion 82 is normally disposed at a relatively low level when pin 87 rides through cam groove 88, and therefore when the cam disc assembly is moved through  $\frac{1}{2}$  revolution only the long or extended tooth 81 will engage one tooth of pinion 82 and rotate the tube shaft 83 one tooth.

On the upper end of tube shaft 83 is a pinion 94 which meshes with a relatively wide idler pinion 95 which in turn meshes with the pinion 96 on a counter-mechanism 97.

From the foregoing it will be seen that when a penny is dropped through the coinway 71 it strikes the extension 74 on lug 68 and disengages the lug from notch 67 thus allowing the stored power of spring mechanism 45 to drive through gear 54, pinion 58 which turns shaft 59 and gear 60 which in turn drives the cam disk assembly 62-66 by turning the pinion 61. The penny drops into pocket 73 and is carried around by said pocket without interference by the arm 84. The lug 68 rides on the outside of disk 66 until it again engages in the succeeding notch 67 and stops the power drive of the cam disk assembly 62-66 with the cam 62 at rest as shown in Fig. 4 and with the shaft 78 resting on the

low part of said cam. The parts always assume this same position at the end of a half revolution of disk 66 as can be readily understood from an inspection of Fig. 5. During this movement the tube shaft and its related pinion train were moved only one tooth, thereby causing the counter 97 to register one penny. The vertical reciprocation of strip 86 during this movement served to permit the automatic indicating mechanism to be moved for a distance equivalent to twelve minutes of parking time by the means which will hereinafter be more fully described.

When a nickel is dropped through the coinway 71 it likewise displaces lug 68 and, upon dropping into the pocket 73 and being carried thereby against arm 84, the nickel, by reason of its greater diameter, lifts arm 84, and therefore arm 85, so that the pin 87 rides on the outer arcuate surface 89. This constitutes a lifting action which also lifts the tube shaft and its pinion 82 so that the pinion is engaged by the long tooth 81 and also by the four succeeding short teeth 80, thereby causing the counter 97 to register five cents. This movement also effects a distinctive movement to strip 86 which permits the automatic resetting of the indicator to the equivalent of one hour. It will be remembered that during the  $\frac{1}{2}$  revolution of the cam disk assembly 62-66 following the deposit of either the penny or the nickel, the cam 62 also turned through  $\frac{1}{2}$  revolution and thus disengaged pinions 49 and 79, thus cutting off the power drive between the power spring 45 and pinion 49 from the indicator mechanism.

The movable indicator comprising the disk 32 and its depending skirt or indicating cylinder 33 has at its top a hub 98 with a set screw 99 whereby said movable indicator is fixed to the vertical sleeve 100 that is integral with a gear 101 mounted for free rotation on a vertical stud shaft 102 fixed in the top plate 103 which extends horizontally across and is suitably secured to plates 41 and 42 and which also has attached to it, by means of screws 430 entering downturned flanges 431, the plate 43 carrying the channel member 70. Gear 101 is supported in spaced parallel relation above top plate 103 and the sleeve 100 thereof has an enlargement or barrel 104 to which there is secured one end of a coil spring 105. Spring 105 is coiled about the barrel 104 and has its opposite end secured to a stud 106 which is fixed in plate 103.

The spring 105 is so wound as to tend to turn gear 101 and the movable indicator attached thereto in a clockwise manner as viewed from the top (see Fig. 3). As viewed from the exterior of the meter in its operative position (see Fig. 1), the spring 105, which is the indicator resetting spring, tends to rotate the skirt 33 from right to left, thus causing the vertical edge of the panel 35 which is designated by the arrow 36 to move away from zero on the fixed scale 30 to the highest graduation on the scale.

The gear 101 is in constant mesh with a relatively wide pinion 107 which is fixed on the top end of shaft 78. When power is transmitted from the power spring assembly 45, through bevel pinion 49 to bevel pinion 79, the rotation of shaft 78 causes pinion 107 to drive gear 101 and rotate said gear and its associated parts in a direction such that the resetting spring 105 is wound on barrel 104 and the skirt 33 of the moving indicator is turned from left to right, thus moving area 35 and arrow 36 along graduated scale 30

towards and beyond zero in accordance with the passage of time.

As hereinbefore explained, when the shaft 78 is raised vertically by cam 62 following the deposit of a coin, pinion 79 is raised with it and out of mesh with pinion 49, thus allowing the moving indicator and parts associated with gear 101 to be turned under the influence of resetting spring 105.

The hereinafter described mechanism serves to control the extent of resetting movement of the movable indicator proportionately with the denomination of the coin deposited in the meter. A resetting rack bar 108 is fixed concentrically below the level of gear 101 upon a pair of diametrically opposed arms 109 which are secured on the lower face of said gear as at 110. Rack bar 108 extends through somewhat more than  $\frac{1}{2}$  of a complete circumference and terminates in a finger 111. The rack bar 108 has a series of five teeth 112 along its lower edge, and along its upper edge a corresponding and slightly offset series of teeth 113. The lower teeth 112 are adapted to be engaged by the transversely turned end 114 of a counterweighted lever arm 115 which is pivoted at 116 on the front member 71 of the coinway. The teeth 113 are adapted to be engaged by the transversely turned end 117 formed on the top of strip 86 which lies adjacent the path of said resetting rack bar. The members 114 and 117 constitute stop pawls which cooperate with the resetting rack and they are actuated, as herein-after further described, by the movement of the reciprocating strip 86 according to the movement of pin 87 in the arm 85 through groove 88 or over the cam surface 89. It is to be noted further that the strip 86 has an integral lug 118 which overhangs the pivoted counterweighted arm 115 on one side of the pivotal mounting and said strip 86 also has an integral lug 119 which is disposed below the enlarged counterweight end 120 of the arm 115. The operation of this mechanism to control the automatic resetting in proportion to the deposited coin is as follows:

It is to be understood that the meter, as herein disclosed, is designed to afford a maximum of one hour parking time during a complete unitary cycle of operation, and in addition thereto a predetermined "overtime" period of ten minutes. It will be assumed that the edge of panel 35 and the arrow 36 have moved beyond zero to indicate that the "overtime" or "grace" period has expired and that the mechanism has been brought to rest by reason of the finger 111 having contacted and moved the end of stop lever 121 against the resistance of light spring 122. The stop lever 121 will then have assumed a position contacting the rim of balance wheel 123 of the time escapement 50 and stopped the power drive, bringing all of the mechanism to rest. A motorist desiring to use the parking berth designated for control by the meter will know or learn from the instruction panels 37 or 38 that he may drop one penny to cause the meter to automatically reset for a twelve minute parking period and forthwith start to operate. The motorist will likewise know or be apprised of the fact that he may forthwith drop successive pennies and cause the meter to automatically reset for parking periods which are multiples of twelve minutes for each penny deposited up to a maximum of one hour for five pennies. In lieu of depositing five pennies, the motorist may deposit a five cent piece.

Upon deposit of the first coin, the lever 68

will be released allowing the cam disk 62—66 to be released for driving operation through power spring mechanism 45, gear 54, pinion 58, gear 60 and pinion 61. If the coin is a penny, said coin will be deposited in the uppermost pocket 73 and will be carried around (clockwise as viewed from Fig. 5) and the pin 87 will ride through groove 88 without shifting vertical strip 86 until the pin reaches the depression or dip 90, whereupon strip 86 will be pulled down momentarily causing lug 118 to tip lever 115 and remove the end pawl 114 thereof from the abrupt shoulder of the first of the teeth 112. The same movement also lowers lug 119 to permit the aforesaid movement of lever 115 and it furthermore lowers the pawl 117 to prevent the first of the upper teeth 113 from passing beyond stop pawl 117 while the lower stop pawl 114 is mechanically lowered. During the same portion of the half revolution of the cam disk 62—66, the shaft 78 will rise on the cam 62 and disengage pinion 79 from pinion 49 and will thus allow the heretofore restrained spring 105 to rotate gear 101, the resetting rack bar, and the movable indicator. As soon as the pin 87 assumes the normal level of cam groove 88, the strip 86 and its stop pawl 117 are likewise raised and the lower stop pawl 114 automatically engages the abrupt shoulder of the second of the teeth 112. It is to be noted that the teeth 113 with the stop pawl 117 serve to effect an intermediate dwell or stop in the movement of rack bar 108 to assure proper operation of stop pawl 114 on the lower teeth 112. Upon completion of the full half revolution of disk 62—66, said disk is brought to rest by engagement of lug 68 in the notch 67 and the shaft 78 drops over the abrupt shoulder 77 of cam 62, thus bringing pinion 79 thereof again in mesh with pinion 49. As the finger 111 of the resetting rack bar moved away from lever 121, the spring 122 shifted the lever and imparted an initial movement to the balance wheel 123 of the escapement mechanism.

The amount of rotational adjustment of the skirt 33, thus effected, carried the arrow 36 to a position indicating twelve minutes of running time for the meter. If but a single penny is deposited, as aforesaid, the normal operation of the power spring mechanism 45 under the control of the time escapement 50 will now cause the movable indicator to move, in accordance with the passage of time, back to zero during twelve minutes and will continue to move beyond zero for a period of ten minutes longer, whereupon the meter will stop.

If, in lieu of the deposit of a single penny, a plurality of pennies be deposited, the cam disk 62—66 will complete a series of half revolutions equal to the number of pennies deposited and the pawls 114 and 117 will repeat their cycles of operation upon the succeeding teeth 112 and 113, respectively, so that the motorist may attain an initial automatic resetting of 12, 24, 36, 48 minutes or one hour, according to the number of pennies deposited. Likewise, at any time prior to the return of the indicator under the time mechanism, additional coins may be inserted and the proportionate extension of parking time may be had thereby.

If a five cent piece is deposited in the coinway, the operation of the mechanism will be as follows. The five cent piece or nickel will release lug 68 permitting the rotation of cam 62—66 and the coin will engage the arm 84 as said coin was carried around, thereby lifting arm 85 and

pin 87 high enough to rest upon the outer cam face 89. In doing so, the initial raising movement will push upwardly on counterweight 120 and swing lever 115 so that the stop pawl 114 is clear of the lower teeth 112. A raising movement elevates stop pawl 117 above the upper teeth 113, thus allowing the resetting rack bar, gear 101, and movable indicator free and uninterrupted movement under the power of the separate automatic resetting spring 105. The arrow 36 on the panel 35 will thus be carried around into registry with the index number 60 (not shown) on the scale 30. It will be appreciated that the leading edge and arrow (not shown) on the panel 34 likewise move in unison as the skirt is rotated. Motorists, pedestrians or a traffic officer may thus note, on casual inspection, the amount of unexpired parking time by noting the relative amount of the fixed scale which has not been traversed by the distinctively colored red panels 34 and 35. The operation, as hereinbefore described, represents the normal daytime parking or parking during business hours wherein a maximum of one hour parking may be imposed. The means and manner of effecting a change in the operation of the same meter in order to provide for the prepayment of parking periods of more than one hour will now be described. It is to be understood that the so-called "evening" or "theater" parking periods involve the automatic repetition of the maximum cycle of operation of the meter in exchange for a plurality of initially deposited coins. The meter will thus permit a motorist desiring to park for three or four hours in the evening to deposit a corresponding number of five cent pieces, whereupon the meter will automatically reset for one hour, will operate during that hour and without registering any overtime at the expiration of the first hour automatically reset for a second hour and so on until all of the initially deposited coins have been used. At the expiration of the last of the prepaid parking hours, the meter will continue to operate during ten minutes of overtime and thus render the motorist subject to citation for overtime parking only after the completion of the final prepaid hour of parking. The selective mechanism enabling the so-called business hour and "theater" parking is readily conditioned by the duly authorized traffic officer who uses a specially designed instrument which may be inserted through the exterior of the coin slot. The converting mechanism is as follows:

It was previously explained, and as can be readily understood from an inspection of Figs. 2, 3, 5, 6 and 7, that the arcuate slot 39 in the disk top 32 of the movable indicator has the coinway structure 71 extending upwardly therethrough. Above the top of the indicator the coinway is developed into an angularly inclined J-shaped chute portion 124 into which the coins deposited in slot 40 in the cap may drop. On the higher wall 125 of the chute 124 is a loosely pivoted converting lever 126 which carries a segment plate 127 pivoted loosely thereto on an extended stud 128 (see Figs. 3 and 7). Pins 129 and 130 project through the corners of segment 127. These pins project across the edge of the coinway structure 71 which has arcuate slots 131 and 132 into which the respective pins may enter depending upon the inclination of converting lever 126.

In Fig. 7 these parts are shown in full and dotted lines illustrative of movement imparted to the elements in operation. A light spring 133 is connected to a bracket 134 on the coinway struc-

ture 71 and is also connected to the converting lever 126.

On the inner face of the skirt 33 is securely fixed an inclined cam 135 which is so positioned on the inner circumference of said skirt as to enable it to contact the extended lower pin 129 in the segment plate 127 thereby rocking the segment plate on its pivot stud 128. Upon further rotational movement in the same direction an upper extension 136 on cam 135 contacts the extended stud 128 so that further movement of skirt 33 will rock the converting lever 126 on its pivotal mounting 1260 against the resistance of light spring 133. The position of these parts is such that an appreciable degree of tipping of the segment plate 127 is effected just as the indicating arrow 36 on the movable indicator skirt 33 reaches zero on the fixed scale 30 and the further movement of the parts, including the rocking of converting lever 126 is provided solely for the purpose of permitting the slow rotation of the moving indicator skirt to continue for a full ten minutes, thus moving the indicator arrow 36 and the colored signal area 35 to accurately indicate the passage of time after the zero or expiration index on the fixed scale.

When the meter is arranged for the so-called routine business parking during the daytime a latch 137 pivoted at 1370 on the higher wall 125 of the coin chute is pushed down to the position shown in Fig. 5, in which position the converting lever is pushed aside far enough against the resistance of spring 133 to assure that pins 129 and 130 cannot enter the notches 132 or 131 sufficiently to obstruct passage of a coin deposited in the meter. Under this condition of the mechanism any deposited coin will pass directly and entirely through the coinway 71 and unseat the stop lug 66, as heretofore explained, and effect its prorata degree of resetting of the moving indicator skirt. If subsequent coins are deposited they will cause repetition of the same movements, always momentarily resulting in the lifting of bevel pinion 79 from pinion 49 regardless of whether pinion 49 is moving under the influence of the time gear train or not.

When it is desired to quickly modify the operation of the meter at a given time at the close of business hours, the latch 137 is raised thus subjecting the converting lever and its associated segment plate and pins to the action of spring 133. At this time the segment plate gravitates on its pivot at 128 so that pin 129 extends into the lower slot 131 of coinway 71 sufficiently to arrest the larger coin or five cent piece at that point in the coinway. It will be readily appreciated that with the latch 137 in the position shown in Fig. 7 and the converting lever 126 and segment plate 127 held in the position shown in full lines by reason of the engagement of the inclined cam 135 thereon, either a penny or a five cent piece may be dropped directly through the coinway to initiate the movements resulting in the resetting of the indicating skirt and the consequent removal of the inclined cam 135. The converting lever 126 will thus be drawn in the position shown in dotted lines in Fig. 7 and the segmental plate 127, being no longer supported by the inclined cam, will gravitate and enter the pin 129 in the bottom arcuate slot 131 and arrest a five cent piece which may be subsequently deposited. At this time, however, another penny, deposited in lieu of a five cent piece will pass directly through the coinway because of the smaller diameter of the coin. Thus it will be seen that a plurality of five

cent pieces may be deposited immediately one after the other and that the first coin will set the meter in operation while the remaining coins will be retained in the top of the coinway and chute by pin 129. As the movable indicator skirt 33 returns the indicator 36 to zero position the inclined cam 135 will now engage the outer extension of pin 129 and rock the segmental plate 127 on its pivotal mounting, carrying the pin 129 out of its notch and out of supporting relation with the lowermost coin while the pin 130 will be moved into the upper slot 132 to arrest all coins above the lowermost. Thus the lowermost coin is dropped and the inclined cam immediately recedes under the influence of the resetting operation, thus allowing the segmental plate 127 to gravitationally rock upon its axis and allow the lower pin 129 to enter slot 131 in time to arrest the coin which had been supported by pin 130 in the previous instant. It will be noted that the release of the coin took place immediately as the indicating arrow 36 reached zero on scale 30 so that no overtime operation of the meter took place during the automatic resetting operation. Thus for evening or "theater" parking the meter renders a full hour of operation in exchange for each of the five cent pieces which are deposited at one time or before the last five cent piece has been released. After the final five cent piece has been released and the movable indicating skirt 33 returns to zero under the influence of the time gear train, the time drive of said skirt continues during a ten minute overtime interval thus rendering the motorist liable for citation for overtime parking.

It should be further noted that while the meter is thus convertible to afford the courtesy and convenience of the extended or "theater" parking, it does not preclude the proper use of the meter by the deposit of one or more pennies in order to secure a short period of parking. In order to convert the automatic meter from one course of operation to the other, the latch 137 has a slightly offset latch finger 138 which slightly overhangs the open top of chute 124. The supervising traffic officer is provided with a converting tool consisting of an elongated strip of metal having a 90° twist therein intermediate its ends so that the same may be entered in the outer coin slot 40 and pushed into the interior of the casing while turning the strip with the hand thus disposing the end of the metal which is interiorly of the casing in a relatively horizontal position whereby the finger 138 may be engaged from above or below as required in order to move the latch 137 from the position shown in Fig. 5 to that shown in Fig. 7 or reverse. This is performed with rapidity and great facility with the properly twisted tool although the manipulation of the latch presents considerable difficulty to the unauthorized and uninformed stranger to the task who might attempt to duplicate the converting operation with a wire or a straight flat strip.

The unitary meter mechanism hereinbefore described is mounted for ready insertion into or removal from the casing 10 when the dome or cap 22 is removed by providing on plate 41 a pair of opposed ears 139 which project into grooves 140 on the inside of the casing when the meter mechanism is lowered into said casing. The fixed stud 102 in the top of the mechanism and about which the indicator turns is received in a suitable bore in the bottom of boss 20 on cross-bar 19. This provides a three-point support for

the mechanism and, when cap 22 is secured in position, the mechanism is rigidly supported.

As hereinbefore indicated, the bottom door 12 affords access to the interior of the housing 10 beneath the mechanism. The receptacle (not shown) for coins which are discharged from the terminal end of coin tube 76 is accessible for removal through the door 12. The key controlled lock 141 on the door 12 has an arm 142 which may be moved through 90° from a substantially horizontal position to a vertical position, as shown in Fig. 2, wherein the vertical end of said arm rides behind a keeper 143 which may be formed as a cross-bar with its ends 144 turned and secured to the inside of the housing wall, for example, by spot-welding.

In summarizing the operation of the meter of the present invention, let it be assumed that the mechanism is at rest. At this time the coil spring 105, which is an independent auxiliary power means, is fully loaded but is unable to effect resetting movement of the indicator skirt 33 because the stop pawl 114 is in engagement with the first tooth 112 on the resetting rack bar 108. At this time the time gear train is stopped because lever 121 is held by the extended finger 111 of rack 108 to arrest the balance wheel 123 of the escapement of said time gear train. The shaft 78 is likewise resting upon the lower portion of cam 62 and the time gear train is thus still engaged with the gear 101 of the movable indicator. The lug 68 effectively holds disk 66 against rotation by the main power spring assembly 45. The indicator skirt 33 is at this time in a position indicating vacancy or violation, i. e., the indicator arrow 36 is beyond the zero of scale 30 and the red signal area 35 extends throughout the length of the scale 30. When the indicator skirt 33 is in this position, the inclined cam 135 inside said indicator skirt is holding the lever 126 and plate 127 in the position shown in full lines in Fig. 7 regardless of whether latch 137 is in a raised or a lowered position.

When a motorist desires to reset the meter when parking in a berth controlled thereby, the selected coin is inserted in the coin slot 40 and drops entirely through coinway 71, tripping lug 68 and allowing the cam disk assembly 62—66 to rotate through a half revolution under the influence of power spring 45, gear 54, shaft 59 and gear 60. This rotational movement raises the shaft 78 and disconnects the time gear train by lifting the bevel pinion 79 away from bevel pinion 49. Stop pawls 114 and 117 are manipulated by the operation of strip 86 and the movable indicator is freed to move in a resetting direction under the power of the auxiliary power spring 105. The movement of the indicator carries with it the resetting rack bar 108 which releases lever 121 and starts the balance wheel of the time gear train so that the latter is then driven by the main power spring assembly 45. Upon completion of the half revolution of the cam disk assembly 62—66 the resetting movement of the indicator under the influence of spring 105 is arrested by the re-engagement of pawls 114—117 and the shaft 78 is again dropped re-establishing driving connection between the time gear train and the indicator. Thereafter, the indicator is driven, in accordance with the passage of time, back towards zero, the stop pawls riding over the gradually inclined faces of the teeth on the resetting rack bar as the indicator returns to zero and therebeyond when the finger 111 on said resetting rack bar moves lever

121 to stop the escapement of the time gear train. The automatic selection of the extent of the resetting in accordance with the number and denomination of deposited coins will be well understood from the explanation given concurrently with the description of parts. The change or conversion of the operation of the automatic meter from the regulation daytime parking to evening or "theater" parking operation will likewise be clearly understood to require the mere turning of latch 137 to a substantially horizontal position.

What is claimed is:

1. An automatic parking meter comprising a time scale and a relatively movable indicator, a power means including a time gear train normally in driving connection with said indicator for moving the indicator in accordance with the passage of time, coin controlled means driven by said power means for cyclically disconnecting and reconnecting said time gear train and said indicator, independent yieldable power means for resetting the indicator when the gear train is disconnected therefrom, and means operable with the coin controlled means for selectively regulating the extent of resetting movement of the indicator in accordance with the deposit of selected different coins said means comprising a resetting rack movable with the indicator, a counterweighted lever movable to engage and disengage said rack, a vertically reciprocable strip arranged at its top to engage and disengage said rack, and intermediate its ends adapted to move said lever out of engagement with said rack, and a pin on said strip adapted to lifting by a coin of a given diameter passing beneath it and passing a coin of lesser diameter without lifting said strip.

2. An automatic parking meter comprising a time scale and a relatively movable indicator, a power means including a time gear train normally in driving connection with said indicator for moving the indicator in accordance with the passage of time, coin controlled means driven by said power means for cyclically disconnecting and reconnecting said time gear train and said indicator, independent yieldable power means for resetting the indicator when the gear train is disconnected therefrom, a coinway structure to direct deposited coins to the coin controlled means, means disposed between said indicator and said coinway for holding a plurality of coins in said way and actuatable to release said coins singly to actuate the coin controlled means and a member fixed on the indicator for actuating said coin holding means upon predetermined movement of said indicator.

3. An automatic parking meter comprising a movable indicator, a resetting rack bar movable therewith, stop pawl means cooperating with said rack bar to preclude movement of the rack bar in one direction, a yieldable power means urging said rack bar and indicator in the said direction, a second power means, a time gear train connected therewith, a shiftable connecting member effecting a disconnectable driving connection between the indicator and the gear train whereby the indicator may be driven from the time gear train against the resistance of the yieldable power means, and coin released means driven by said second power means for disconnecting the shiftable connecting member from the gear train and disengaging the stop pawl means from the rack bar.

4. In an automatic parking meter the combination of a casing, a coin chute member extending

into said casing, a cam disc member comprising pocket members to receive coins from said chute, a main power means operative on said disc to carry coins in the pockets away from said chute, a time indicator driven by said power means in one direction in accordance with the passage of time, a resetting rack bar connected with the indicator, a yieldable independent power means urging said indicator and said rack bar in the opposite direction, stop pawl means controlling movement of the rack bar and indicator in the last mentioned direction, means for holding the cam disc against movement by the power means and releasable by passage of a coin from said chute into a pocket in the cam disc, means for retaining a plurality of coins in the coin chute, means on the indicator to engage said retaining means for releasing the lowermost of the retained coins whereby the cam disc is released for movement by said main power means, and means operable by the cam disc for releasing the stop pawl from the resetting bar for automatically resetting said meter as said coins are carried away by the moving disc.

5. In an automatic parking meter the combination of a coin chute to direct coins of predetermined different diameters and values through a common path, a rotary cam disc having peripheral coin pockets registerable with said chute, power means to drive said disc, a holding lug for arresting the cam disc with a pocket in registry with said chute and displaceable by a coin entering a pocket from the chute, a bell crank lever overhanging the path of the coin pockets, and adapted to be lifted by a coin of predetermined large diameter as the latter is carried beneath said lever by the disc, said large coin representing in money value a multiple of money value units while the small coin represents one of the same money value units, a cam shoulder on the disc for retaining the lever in said lifted position during predetermined rotation of the cam disc, a series of radial face teeth on said disc, equal in number to the number of money units of said coin of larger predetermined value, one of said teeth being radially elongated, a rotatably supported gear adapted to be lifted by the bell crank lever and meshing with said entire series of teeth when the bell crank lever is lifted for support by said cam shoulder, a second cam shoulder concentric with said first cam shoulder and engaging the bell crank lever as the cam disc carries a coin of predetermined small diameter, said second cam shoulder imparting distinctive movement to the bell crank lever whereby said gear meshes with said one elongated tooth only, a counter constantly engaged for movement by said gear whereby the monetary units total of deposited coins is registered, a resetting rack bar for the meter, means yieldably urging said bar in a resetting direction and means movable with the bell crank lever for influencing the rack bar to predetermined different amounts of resetting movement as said bell crank is influenced by said different coins and said concentric cam shoulders.

6. In a device of the class described a coin chute having a pair of vertically spaced edge slots, a lever pivoted exteriorly of said chute, a plate pivoted to the lever and having pins therein, means for holding the lever in a position such that the lower pin will enter the lower slot in the chute and support coins in said chute, means to rock the plate whereby the upper pin enters the chute above the lowermost coin to support a coin next above, said lower pin simultaneously mov-

ing out of the slot for releasing said lowermost coin, power mechanism actuated by the release of the coin serving to remove the plate rocking means from said plate and permitting the plate to again rock gravitationally on its pivot to initial position whereby the succeeding coin is arrested in the lowermost position.

7. In a device of the class described a coin chute having a pair of vertically spaced edge slots, a lever pivoted exteriorly of said chute, a plate pivoted to the lever and having pins therein, means for holding the lever in a position such that the lower pin will enter the lower slot in the chute and support coins in said chute, means to rock the plate whereby the upper pin enters the chute above the lowermost coin to support a coin next above, said lower pin simultaneously moving out of the slot for releasing said lowermost coin, power mechanism actuated by the release of the coin serving to remove the plate rocking means from the plate and permitting the plate to again rock gravitationally on its pivot to initial position whereby the succeeding coin is arrested in the lowermost position, and selectively positionable means for holding said lever and plate out of cooperative relation with said chute.

8. In an automatic parking meter, the combination of a rotatable cam disc having coin pockets, a coin chute adapted to receive coins of predetermined different diameters and move them through a common path, means to deposit successive coins into successive pockets, a pivoted bell crank lever adjacent said disc and rockable in one direction by passage of a coin of larger diameter, shoulders on the disc selectively engaging and influencing movement of the bell crank lever as the latter is influenced by coins in the pockets of said rotatable disc, an indicator, a resetting rack bar movable therewith, a yieldable power means urging said indicator and rack bar in one direction, two separate series of teeth on the rack bar in relatively staggered relation, a shiftable strip

movable by said bell crank lever, a stop pawl on said strip cooperating with the first series of said teeth, a pivoted pawl cooperating with said second series of teeth and means on said strip to actuate said pivoted pawl whereby said pawls are selectively influenced to release a single tooth and the entire series of teeth respectively as the bell crank lever is affected by the passage of coins of small and large diameters respectively.

9. In an automatic parking meter the combination of a coin chute to receive coins of selected different diameters and direct them through a common path, a rotatable disk member having pockets to receive coins from said chute, power means to rotate the disk member, a latch for arresting the disk member for the reception of a coin in a pocket thereof, said latch releasable from the disk by passage of a coin into a pocket thereof whereby the disk is rotatable by said power means for discharging the coin from the pocket, a meter resetting rack bar unit, a gear train connecting the same with said power means whereby said unit is driven in one direction in accordance with the passage of time, independent power means yieldably urging said unit in the opposite direction, shiftable control means for the gear train and the rack bar unit including a strip having a stop pawl normally engaged on and restraining the rack bar unit against movement by said independent power means, whereby the rack bar unit is disconnected from driving relation with the first mentioned power means and released for movement by the independent power means, and a plurality of shoulders on the disk selectively engageable by the shiftable control means as the latter is influenced by coins of different diameter in the disk pockets whereby said control means permits said independent power means to move the rack bar unit predetermined different distances.

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