Feb. 16, 1943. F. L. MICHAELS 2,311,242

PARKING METER

Filed July 3, 1939 4 Sheets-Sheet 1

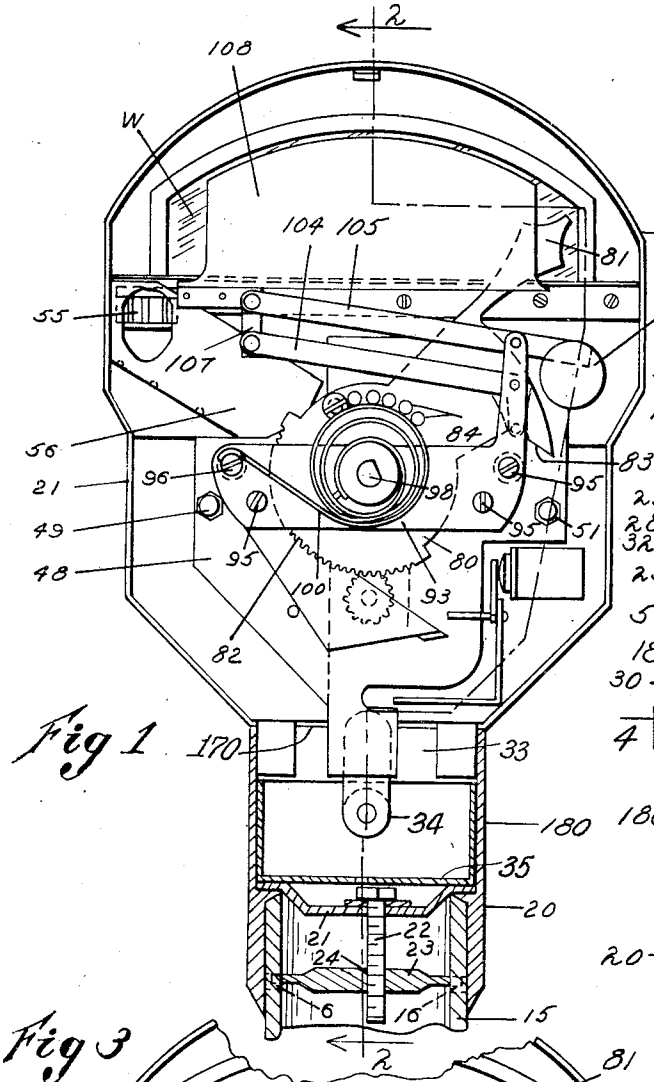


Fig 1

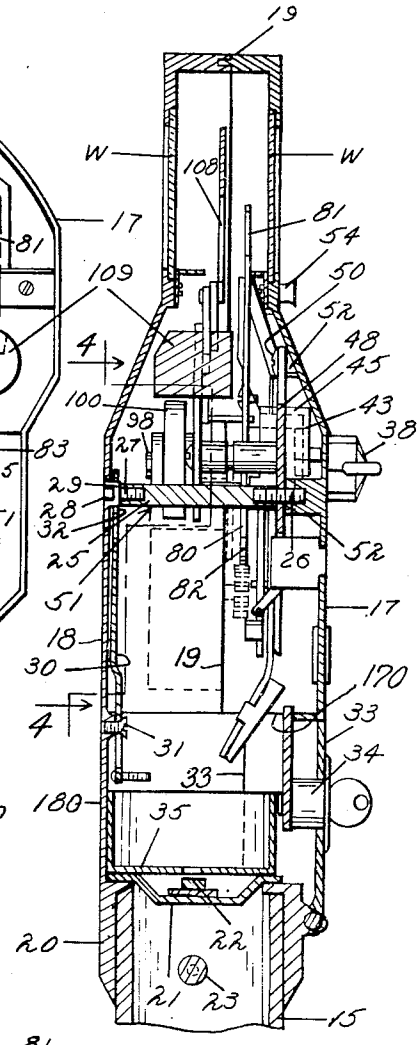


Fig 2

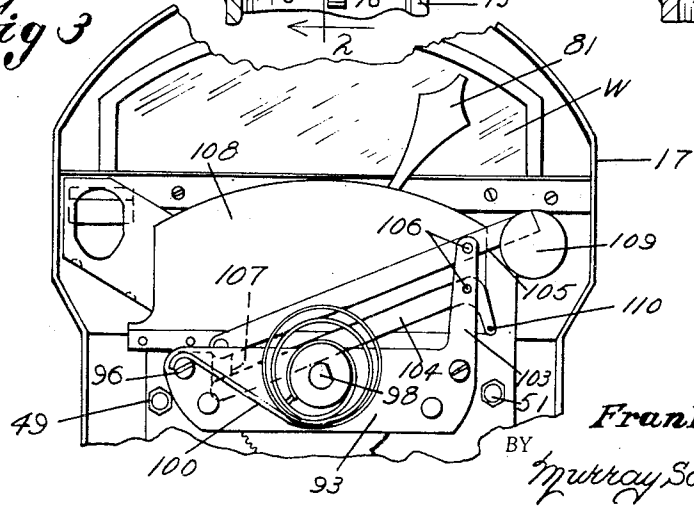


Fig 3

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Filed July 3, 1939 4 Sheets-Sheet 2

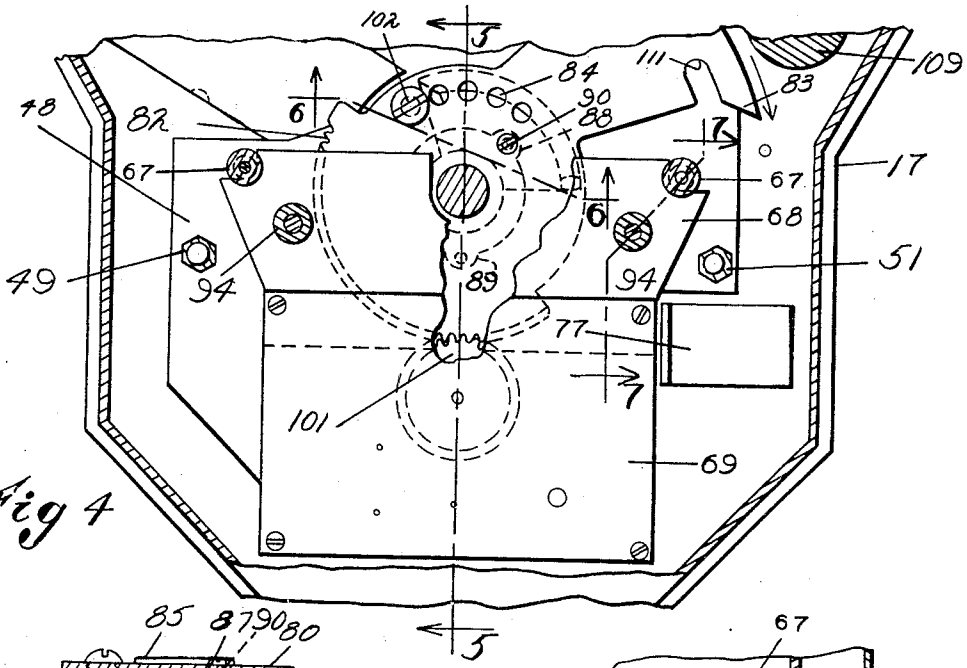


Fig 4

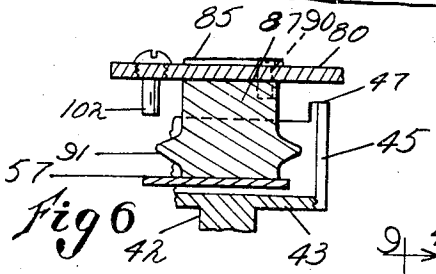


Fig 6

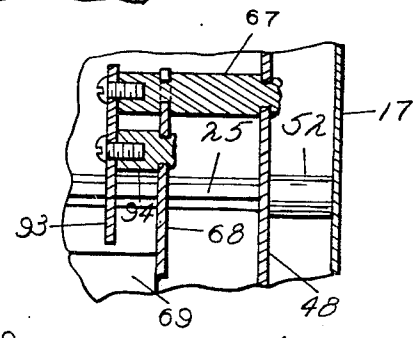


Fig 7

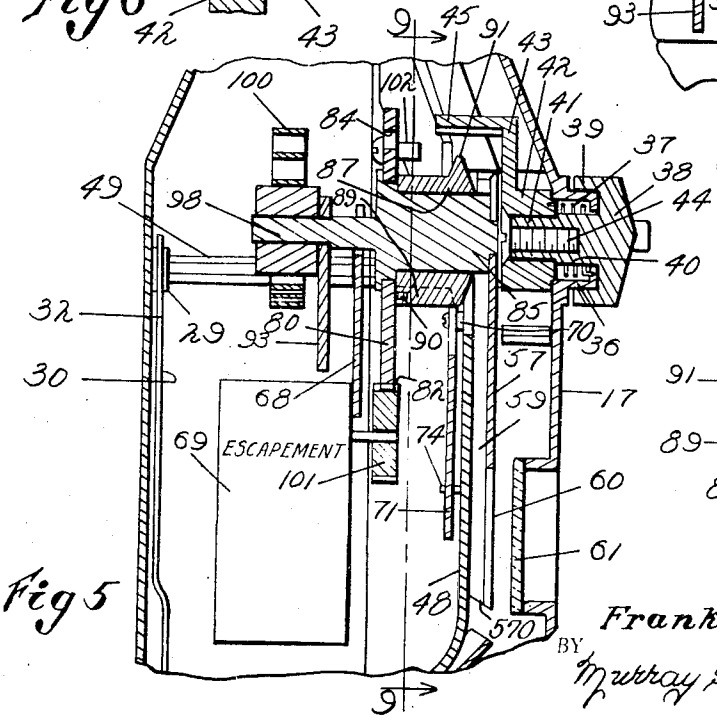


Fig 5

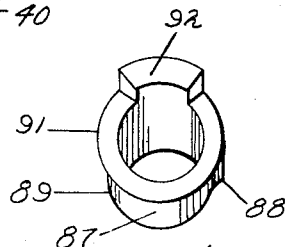


Fig 8

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PARKING METER

Filed July 3, 1939 4 Sheets-Sheet 3

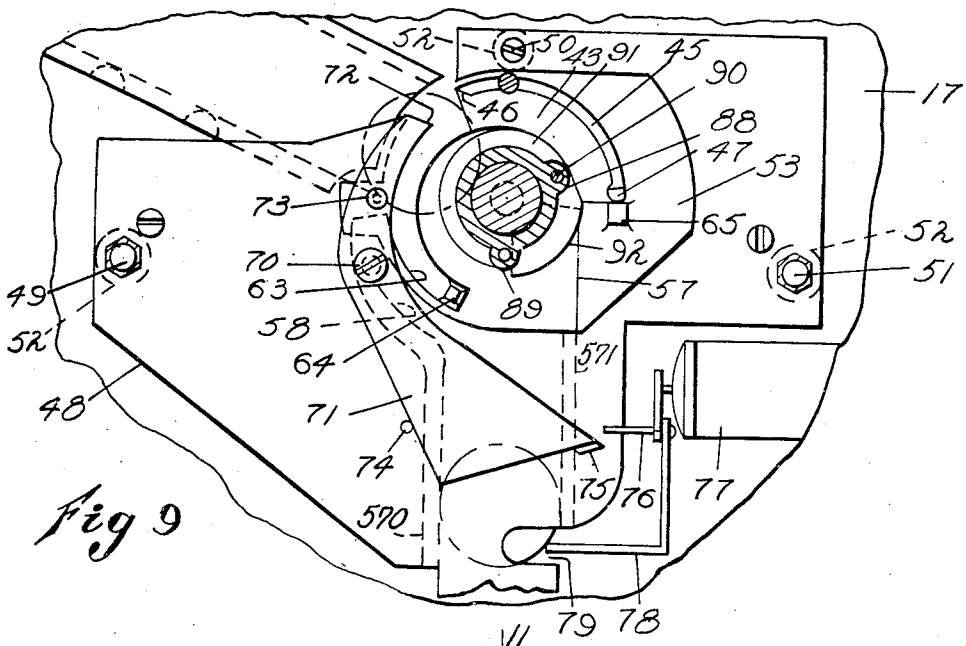


Fig 9

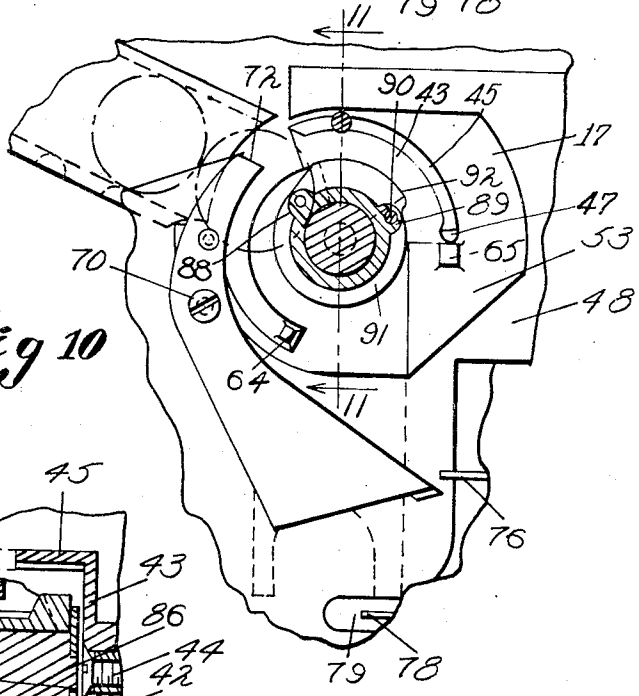


Fig 10

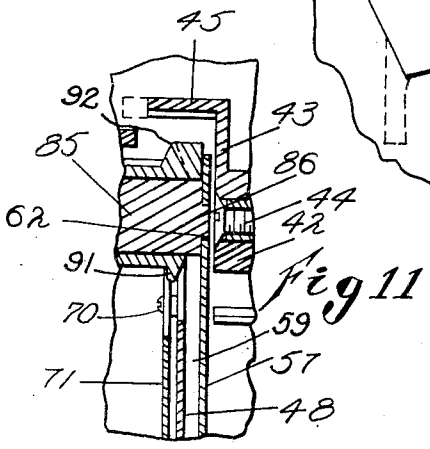


Fig 11

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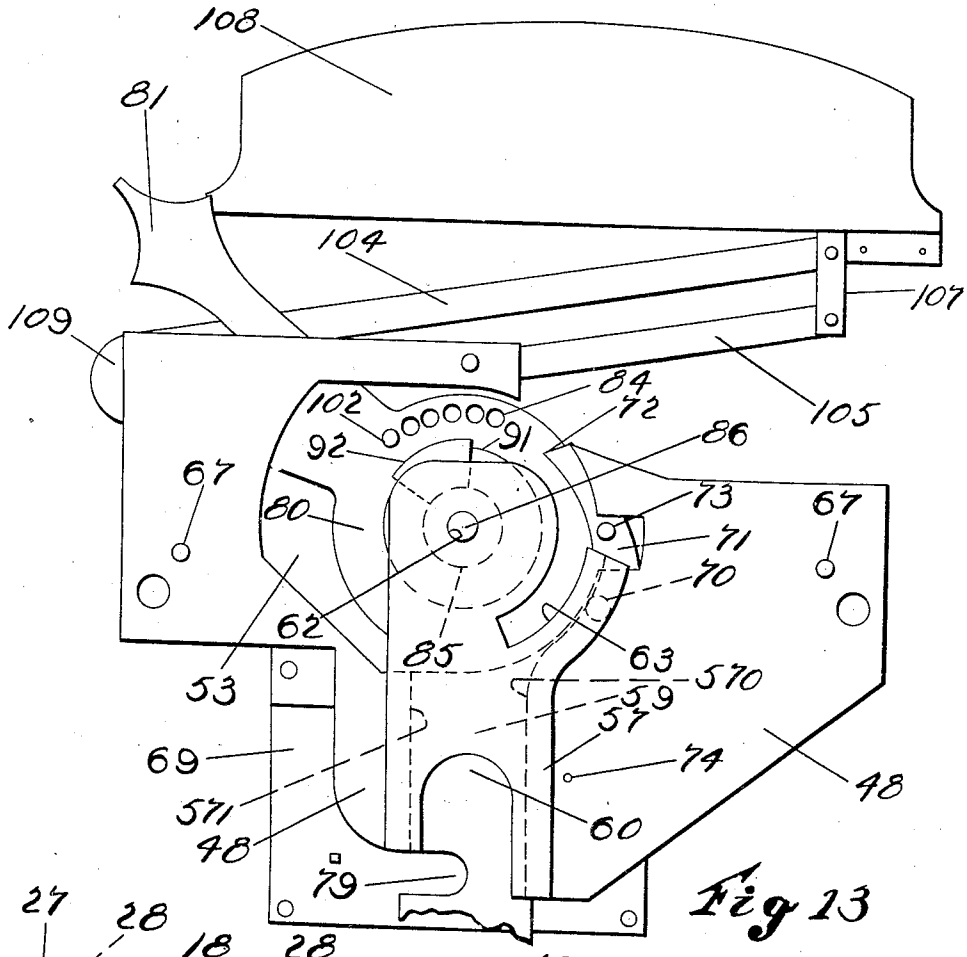


Fig 13

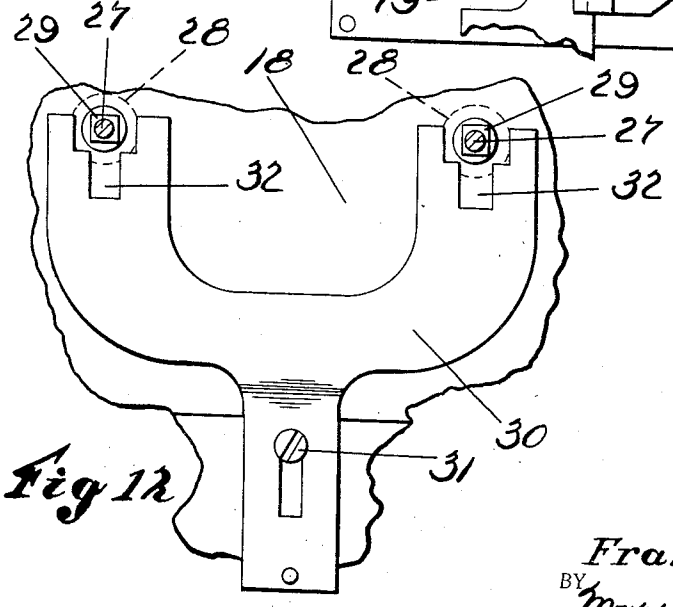


Fig 12

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UNITED STATES PATENT OFFICE

2,311,242

PARKING METER

Frank L. Michaels, Fort Thomas, Ky.

Application July 3, 1939, Serial No. 282,645

4 Claims. (Cl. 194—92)

The present invention relates to parking meters and has for an object the provision of a simple coin controlled mechanism arranged for selective adaptation as regards resetting of the mechanism.

Another object of the invention is to provide a coin controlled, manually set mechanism wherein the handle is locked against movement except when a coin is properly positioned in the mechanism.

A further object of the invention is to provide a simple and direct intercontrol between an indicator, a violation signal, a release for a previously deposited coin, and a counter for coins to assure perfect functioning of these parts whenever the mechanism is manually set after deposit of a proper coin.

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

Fig. 1 is an elevational view of the mechanism of the invention mounted in the removable casing section, the violation signal raised and the escapement brake mechanism removed, said removal casing section being shown in position on the bottom portion of the complementary fixed, post-mounted casing section, the latter being shown in cross-section.

Fig. 2 is a view taken on line 2—2 of Fig. 1, the escapement brake mechanism being shown in dotted lines.

Fig. 3 is a fragmental elevational view of the parts of Fig. 1 with the mechanism in running position and the violation signal lowered.

Fig. 4 is an enlarged fragmental view taken on line 4—4 of Fig. 2.

Fig. 5 is a view taken on line 5—5 of Fig. 4.

Fig. 6 is a view taken on line 6—6 of Fig. 4.

Fig. 7 is a view taken on line 7—7 of Fig. 4.

Fig. 8 is a perspective view of an adjustable hub forming a detail of the invention.

Fig. 9 is a view taken on line 9—9 of Fig. 5 showing the adjustable hub arranged to permit resetting of the mechanism at any time.

Fig. 10 is a view similar to Fig. 9 but having the adjustable hub arranged to permit resetting of the mechanism only upon completion of the previously initiated cycle of operation.

Fig. 11 is a view taken on line 11—11 of Fig. 10.

Fig. 12 is an enlarged fragmental view of the inside face of the fixed casing section with the locking screws in position and the control plate in inoperative position.

Fig. 13 is an enlarged rear elevational view showing the mechanism of the meter detached from the removable casing section.

The meter of the invention provides ready accessibility of the mechanism and simplicity of construction. The tubular top end of a suitable standard or post 15 has diametrically opposed bores 16 near the top thereof to provide for the simple, foolproof, and invisible connection of the parking meter casing thereto.

The casing for the meter comprises two sections 17 and 18 having a complementary tongue and groove joint which forms a vertical parting line around the sides and top, as indicated at 19, in Fig. 2. Section 17 has a horizontal bottom edge 170 which seats on the top of a reduced portion 180 of the fixed casing section 18. Portion 180 terminates in an integral tubular sleeve 20 at its bottom. The portion 180 is downwardly cut away for a distance from its top edge and has a hinged door 33 at its bottom which serves to close this cut-away opening, the top edge of the door meeting the bottom edge of casing section 17. The sleeve 20 serves to slidably receive the top of post 15. A spider 21 is fixed interiorly of sleeve 20 and has a bolt 22 extending loosely therethrough. A bar 23 has an overall length greater than the inside diameter of post 15 and less than the outside diameter thereof. The opposite ends of the bar may be entered in the opposed bores 16 in post 15, prior to seating the sleeve 20 of casing section 18 on the post, by diagonally inclining the bar 23 and passing one end thereof entirely through one of the bores 16 from the open top interior of the post. The other end of said bar 23 may then be lowered inside the post and the alignment with the opposite bore 16, whereupon said latter end of the bar is entered into the last mentioned bore 16. The sleeve 20 of the fixed casing section 18 is then lowered over and seated on the post in the position shown ni Fig. 1 so that the perforations are concealed and the bar 23 is substantially centered on a diameter of the post and sleeve and cannot be removed when the parts are in this position. Bar 23 has a threaded perforation 24 on its longitudinal axis at one side of its longitudinal center (see Fig. 1) to receive bolt 22. When bolt 22 is drawn tight, the bar 23 being substantially centered an eccentric invisible strong connection is effected between the post 15 and casing section 18.

As shown best in Fig. 2, section 17 is removably secured to section 18 by a pair of tie bar assemblies 49 and 51 each consisting of a member 25 having an axial threaded bore at each end. Headless screws 26 each have one end engaged

in the interior wall of casing section 17 and the opposite end threadedly engaged in one end of a member 25. Lock screws 27 each have a slotted head 28 countersunk in the exterior face of section 18 and are engaged in the adjacent axial threaded bores in members 25. Screws 27 each have an angular shank section 29 extending inwardly of the inside face of section 18 and a Y-shaped plate 30, shiftable vertically over the inside face of casing section 18 on a screw 31, has adjacent its top ends, slots 32 enlarged at the top and restricted at the bottom (see especially Fig. 12). When the plate 30 is pulled down, the angular shank section of each lock screw 27 may turn freely in the enlarged upper part of slot 32. When the screws 27 are tightened and holding the casing sections together, the plate 30 is pushed up from the inside of the casing and the restricted lower part of slots 32 precludes turning of screws 27.

All access to plate 30 and also to the bolt 22 is by way of the opening in reduced portion 180 controlled by hinged door 33 having a key controlled lock 34. Any suitable cup or coin box, such as 35, is removably seated on spider 21 within the portion 180 of casing section 18 and it is also accessible through door 33.

The casing sections 17 and 18 together form a restricted top in which are opposed windows W through which an indicator and a violation signal are visible from either side of the casing. All of the operating mechanism of the invention is bodily supported on casing section 17. The screws 27 may be removed when plate 30 is in the position shown in Fig. 12, hence casing section 17 with its attached mechanism is readily removable by one having proper access to the inside of the casing. This greatly facilitates maintenance of a series of meters allowing adjustments and replacements to be made when necessary with substantially no interruption to service because sections 17 with all mechanism attached are interchangeable on any others of the fixedly mounted casing sections 18.

Referring now to the mechanism of the meter, removable casing section 17 carries an operating handle 38 (see Fig. 5). A flanged hub 36 on casing section 17 houses a coil spring 37 which has one of its ends anchored in said hub. Operating handle 38 has an overhanging flange 39 which rides freely on the outside of hub 36, while a central stud 40 passes through the center of hub 36 and the spring 37 to the inside of the casing where the squared end 41 of the stud enters a complementary bore in hub 42 of a pusher segment 43. Spring 37 is anchored in hub 42 and urges the handle member in a counterclockwise direction. A countersunk screw 44 fixes pusher 43 on stud 40. The pusher segment has an arcuate flange 45 with an end 46 and a lug 47 on the free edge of said flange at the opposite end of said flange.

The remainder of the operating mechanism is mounted on a back plate 48 removably secured to the inside face of casing section 17. Back plate 48 is secured by tie bars 49 and 51 and screw 50 entering suitably located tapped bosses 52, on the inner face of casing section 17, and has an aperture 53 (see Fig. 13), so located and so shaped that the arcuate flange 45 of pusher 43 may freely operate therein. A coin slot structure, which forms the subject matter of a co-pending application, Serial No. 282,646, filed of even date herewith but now abandoned, includes an exterior projection 54 on casing section 17 through which coins are entered horizontally, and an interior chamber 55 wherein the inserted coin is turned to roll edgewise down a chute or tube 56 to a position within the range of the flange 45 of pusher 43.

An odd shaped member 57 has on one face a pair of edge flanges 570 and 571 which are brazed or otherwise suitably attached to the rear face of plate 48 (see Fig. 13). The upper curved part of flange 570 defines part of a curved coin way 58, while the lower part of flange 570 and the flange 571 define between them a lower coin way 59 communicating with said way 58. Member 57 is cut out at 60 to render visible a coin which is retained in the way 59 by means hereinafter described. A glazed sight opening 61 is disposed in casing section 17 opposite said cut-out 60 (see Fig. 5).

The member 57 extends upwardly and partly across aperture 53 and has a bore 62 which is coaxial with stud 40 of the operating handle. Concentric to bore 62 is a slot 63 in member 57 which permits arcuate flange 45 of the pusher segment to be moved through slightly more than one-fourth of a turn against a limit stop formed by a boss 64 on the inside of casing section 17. The pusher segment is normally spring-urged away from stop 64 and against a stop boss 65. On opposite sides of plate 48 is a pair of forwardly projecting spacer posts 67 which receive the notched corners of a leaf 68 that carries a suitably housed escapement brake mechanism 69. Pivoted on stud 70 which is fixed in the face of plate 48 is a lever 71 which serves as a latch and a coin arrester. Lever 71 is longer and heavier below its pivot so that its top end 72 is normally urged into the path of flange 45 on the pusher segment to permit very little movement of handle 38 when there is no proper coin in place for setting the meter.

A pin 73 on lever 71 normally projects across the coin way so that a coin entering the coin slot will come to rest thereon, as shown in dotted lines in Fig. 9. If the outside handle 38 is now turned, the end of flange 45 in the pusher segment presses on the coin which pushes pin 73 away, thus rocking the lever 71 on its pivot and allowing the coin to be pushed beyond the control of said pin 73.

A stop 74 limits the swing of lever 71 in one direction and also retains said lever in the position shown in Fig. 9 wherein a rearwardly turned extension 75 on the lever 71 engages the operating arm 76 of a coin counter 77 whenever the lever is rocked by the passage of a coin. Secured on operating arm 76 is an L-shaped coin stop finger 78 which supports the last coin opposite the sight opening and swings transversely aside to release the coin whenever the counter mechanism is actuated by the succeeding coin. It should be noted that one wall of vertical coin way 59 is notched out at 79 to permit the transverse swing of the end of coin stop finger 78.

A simple and inexpensive flat stamping, indicated generally as 80, performs a number of vital functions in the meter of the present invention (see Fig. 1). Stamping 80 and the hereinafter described parts connected thereto may be conveniently termed a rockable indicator unit. Member 80 has an indicator hand 81 formed at one end and at the opposite end there is formed a toothed gear segment 82. A cam finger 83 is formed by a lateral extension on the member 80 and inwardly therefrom are a plurality of threaded perforations 84 arranged concentrically with

and opposite gear teeth 82. A stud shaft body 85 extends fixedly through member 80 concentrically of toothed segment 82 and perforations 84 and is supported rockably on the shouldered end 86 in the bore 62 in plate 57 (see Fig. 11). An adjustable hub 87 (see Fig. 8) has adjacent its periphery two internally threaded bosses 88 and 89, either of which may be engaged by a screw 90 that passes through a fixed location in member 80 (see also Figs. 4 and 5). Hub 87 has a flange 91 which serves as a complement to the arcuate portion of coin way 59. The stud 85 between flange 91 and the member 57 defines an edge of the arcuate portion of the coin way of which the upper curved portion of flange 570 defines the opposed edge. An arcuate shoulder segment 92 on hub 87 may be arranged to block this curved portion of coin way 59 at times (see Figs. 5, 9, 10, 11 and 13). The shoulder segment 92 assumes a selected position which is determined by the attachment of hub 87 by screw 90 in one of the threadedly bored bosses 88 or 89. When the screw passes through stamping member 80 and into boss 89 of hub 87, the segment 92 which is disposed in the plane of coin way 56 does not move far enough during the limited rocking movement of member 80 to block the passage of coins from 56 into the arcuate coin way defined by member 58.

When screw 90 enters boss 88, the segment 92 is so related to the member 80 as to block such passage of coins except when the indicator 81 has reached the zero position as shown in Fig. 1, viz., until the indicator has completed a cycle of operation. The foregoing adjustments thus determine whether the mechanism may be reset at any time or only after a previous cycle of operation is concluded. When the device is arranged to receive a plurality of coins at one time with the assured operation of the device through one complete cycle for each deposited coin, a motorist may deposit one or more coins and set the device in operation with the first coin. The traffic officer, or any other person, may reset the device after the parking period has expired if another coin remains available.

Parallel to the leaf plate 68 is a transverse support 93 which is secured to the ends of posts 67 and the auxiliary posts 94 by screws 95 and an extension post 96. A bore 97 serves to journal a reduced end 98 of stud shaft 85 upon the free projecting end of which is a hub or barrel 99 that supports the flat coiled power spring 100. The free end of spring 100 is hooked over extension 96 and serves to at all times urge stud shaft 85 and the stamping 80 toward the zero position of indicator hand 81 as shown in Fig. 1. A pinion 101 on the escapement brake mechanism 69 meshes with the toothed segment 82 of stamping 80 to provide for a regulated rate of return movement of the indicator 81 when said spring 100 is wound.

From the foregoing description, it will be noted that when no proper coin is in position in the device, the setting handle 38 is locked against rotary movement by the abutment of the end 46 of flange 45 upon the top end 72 of lever 71 and the mechanism cannot be set. When the proper coin enters and rests on pin 73, the pusher segment 43 urges the coin against pin 73 so that the lever 71 rocks on its pivot 70, removes pin 73 from the path of the coin and allows the pusher segment to operate under continued manual pressure on handle 38 and move the coin through the arcuate passage or coin way 57 until pusher segment 43 reaches limit stop 64 and the coin drops into vertical way 59. During this rocking movement of lever 71, the counter 77 was actuated and arm 78 moved out of notch 79 to drop the previously arrested coin and returned to its position to arrest the coin which just served to enable operation of the handle 38.

As the pusher segment was turned, the finger 47 engaged the projecting screw stud 102 which is adjustably positionable in any of perforations 84 in member 80 and rocked said member on its axis and tensioned the power spring 100. It will be apparent from an inspection of Figs. 1, 4 and 6, that as stud 102 is moved to the right, as viewed in Fig. 1, or closer to the starting position of finger 47 on pusher segment 43, said stud is engaged sooner and the stamping 80 is rocked farther about its axis during the movement of said pusher segment 43 and requires a correspondingly longer time to return to zero position under the influence of spring 100 and the escapement brake 69. The desired parking period is thus selected by the adjustment of stud 102 in the proper perforation 84 before placing the meter into service and may be changed without difficulty by a relatively unskilled attendant.

The transverse support 93 has a vertical arm 103 upon which parallel levers 104 and 105 are pivoted as at 106. A link 107 pivoted at its end to said levers serves to retain them in parallelism, and this link has fixed thereto a violation signal 108 of suitable shape and color which is raised and lowered vertically between the windows W at the top of the meter casing. Arm 105 has a weight member 109 fixed thereon which is raised by the weight of signal 108 whenever the weight is unrestrained. Lever 104 has a lug or pin 110 projecting into the path of cam finger 83 so that as the member 80 with its indicator 81 and said cam finger slowly returns to zero, the pin is depressed by said cam finger and the violation signal is caused to raise to a visible position. The arcuate lower edge of finger 83 cooperates with pin 110 in a very gradual cam action until the pin reaches the end of notch 111 whereupon continued movement of member 80 rapidly depresses the weighted end of the parallel lever and raises the violation signal 108 full and quickly.

The operation of the device is readily understood from the foregoing. When a coin deposited in the coin chute comes to rest on pin 73, the edge of the coin is higher than end 72 of lever 71; hence, the pusher segment engages the coin when the exterior handle is turned. This serves to push pin 73 aside to permit further turning of the pusher segment which engages stud 102 in member 80. The indicator hand 81 is thus moved away from zero and power spring 100 is simultaneously wound. The pressure of finger 83 on the weighted end of the lever is relieved and the violation signal 108 lowers by gravity. The escapement brake 69 provides for the slow return of the indicator under the influence of the power spring and finger 83 engages the weighted end of the parallel lever system to supply the small amount of additional force required to again raise the violation signal at the completion of the cycle of operation.

What is claimed is:

1. In a parking meter the combination of a manually rotatable pusher, a coin way disposed in part concentrically of said pusher, said coin way having a notched wall, below said concentrically curved part, the portion of the coin way

opposite said notch defining a coin inspection station, an operating arm, a coin stop finger mounted on said arm swingable through said notch and normally disposed in said coin way for holding a coin in the coin way at said inspection station, a latch lever having one end normally blocking manual operation of said pusher, a pin on said end of said lever for supporting a deposited coin in the coin way in the path of said pusher whereby the coin is movable by said pusher to rock the said lever end away from blocking position, the other end of said lever engaging the operating arm for shifting the coin stop finger for releasing a previously deposited coin from the inspection station.

2. In a parking meter the combination of an indicator unit rockable from a zero position and return, a manually operable pusher engageable with said indicator unit for moving it from zero position, a power spring operative on said indicator unit to return it to zero position, a latch lever normally precluding operation of said pusher, a coin way, a projection on said latch lever extending into said way for arresting a coin thereon in position for abutment by said pusher and a segmentally shouldered hub adjustable on said indicator unit to selectively permit and preclude seating of additional coins in said coin way on said projection when the indicator unit is away from zero position.

3. In a parking meter mechanism the combination of a rockably mounted indicator unit, a support, a lever pivotally mounted intermediate its ends on the support, a signal carried on one end of the lever, a projecting lug on the other end of the lever in the path of the indicator unit, power means operative on the indicator unit for driving said unit at predetermined rate into engagement with said projecting lug whereby the lever is rocked on its pivotal mounting for positively raising the signal, and manually operable means for rocking the indicator unit away from the lug and permitting gravitational descent of the signal and the end of the lever which supports the signal.

4. In a parking meter mechanism the combination with a casing having a window therein, of an indicator unit rockably mounted in the casing for traversing the window in a relatively horizontal direction, a violation signal member for traversing the said window in a relatively vertical direction, a support in the casing, a lever pivoted intermediate its ends on said support below said window, said signal pivoted at the bottom to one end of the lever, a projecting lug on the opposite end of the lever disposed in the path of the indicator unit for engagement with and movement by said indicator unit as said unit is moved to a predetermined point in the direction of one side of the window whereby the signal is positively elevated, means including a power spring for effecting said movement at a controlled rate, manual means for moving the indicator unit in the opposite direction for releasing the lug and permitting gravitational descent of the violation signal, and a second lever pivoted to said signal and said support for holding the violation signal upright in all positions of the levers.

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