United States Patent [19]

Harwood

[11] **3,818,186**

[45] **June 18, 1974**

[54] **ELECTRONIC TAXIMETER**

[75] Inventor: **Mark H. Harwood,** Livingston, N.J.

[73] Assignee: **Machining Methods Industries,** East Rutherford, N.J.

[22] Filed: **Nov. 3, 1972**

[21] Appl. No.: **303,467**

[52] **U.S. Cl.** .... **235/30 R,** 235/45 R

[51] **Int. Cl.** **G07b 13/10**

[58] **Field of Search** 235/30, 33, 45, 103, 103.5, 235/104; 328/45

[56] **References Cited**

UNITED STATES PATENTS

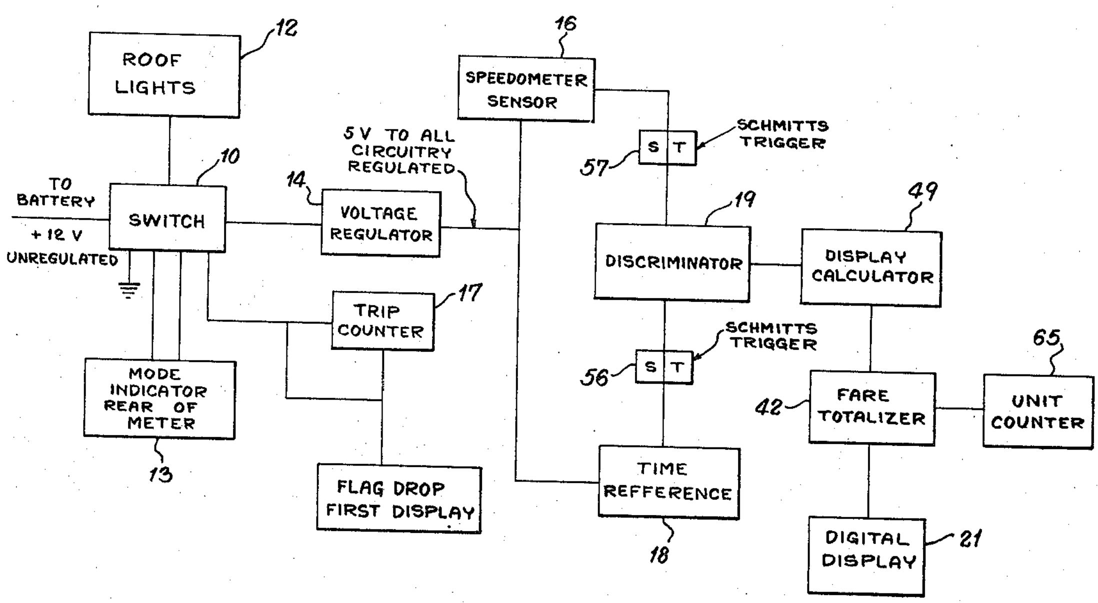
3,388,859	6/1968	Kelch et al.	235/30 R
3,512,706	5/1970	Bruce-Sanders	235/30 R
3,703,985	11/1972	Berg	235/30 R

Primary Examiner—Richard B. Wilkinson
Assistant Examiner—Vit W. Miska
Attorney, Agent, or Firm—Leo C. Krazinski

[57] **ABSTRACT**

An electronic taximeter with a simplified integrated circuitry having a sensor for computing distance travel charge, a constant frequency oscillator for computing waiting time charge, a counting means, control means in which the higher revenue charge takes precedence in being transmitted to the counting means, and an illuminated digital display for indicating the integrated time-distance charge in terms of monetary units.

9 Claims, 9 Drawing Figures



PATENTED JUN 18 1974

3,818,186

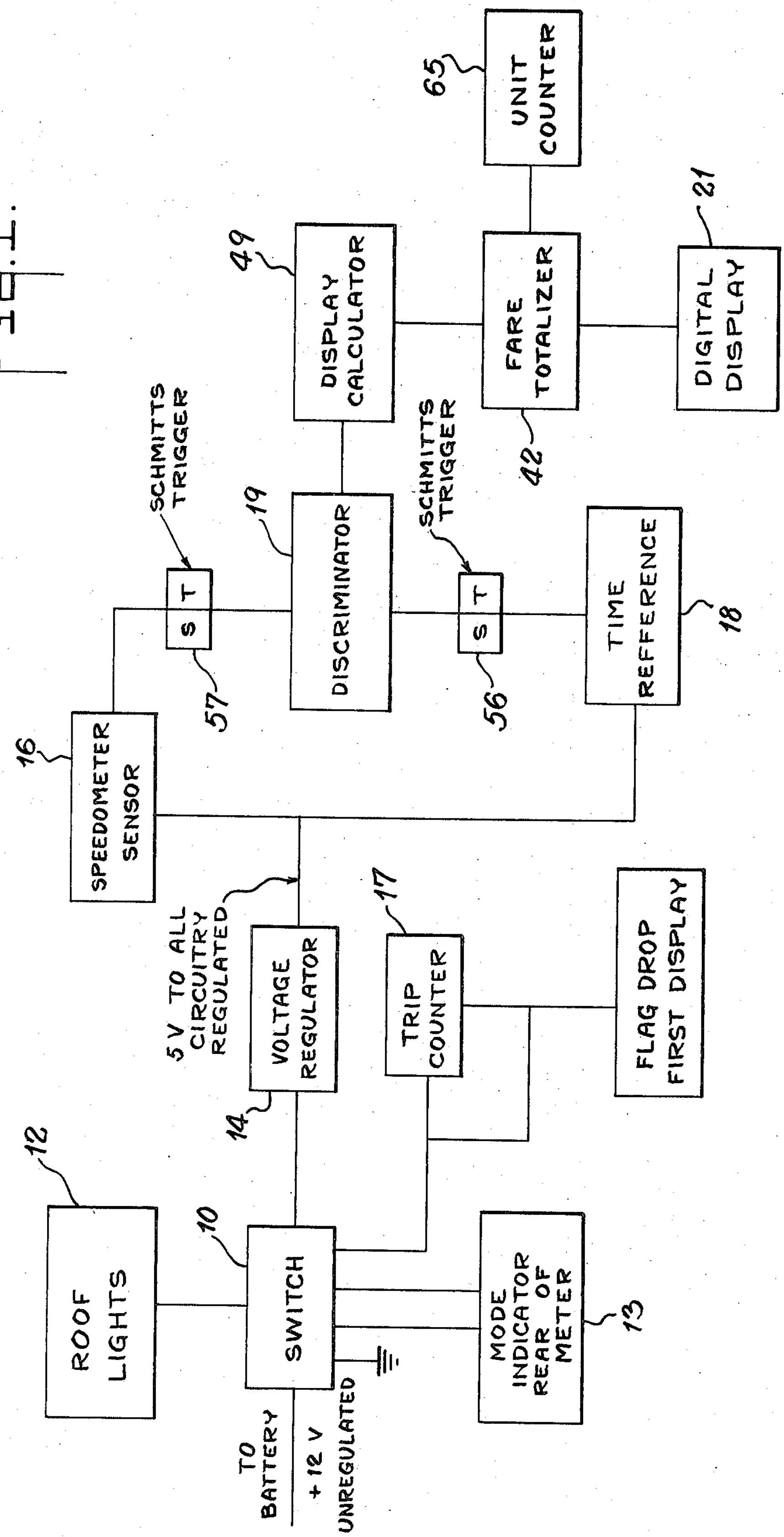


Fig. 1.

Fig. 2.

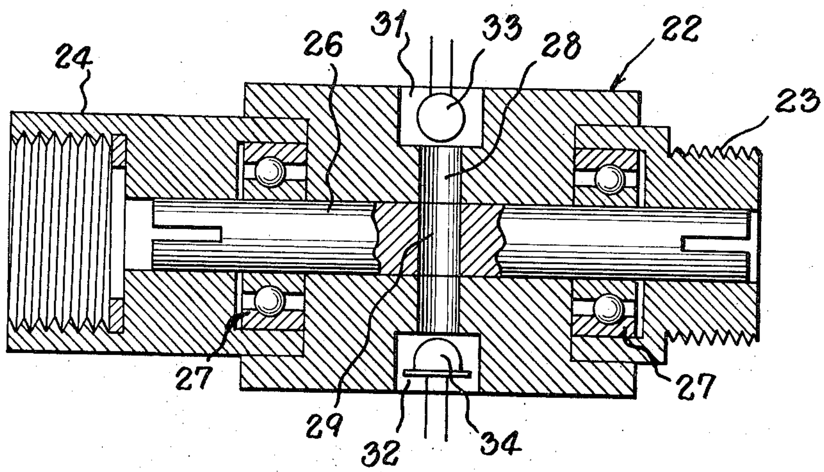
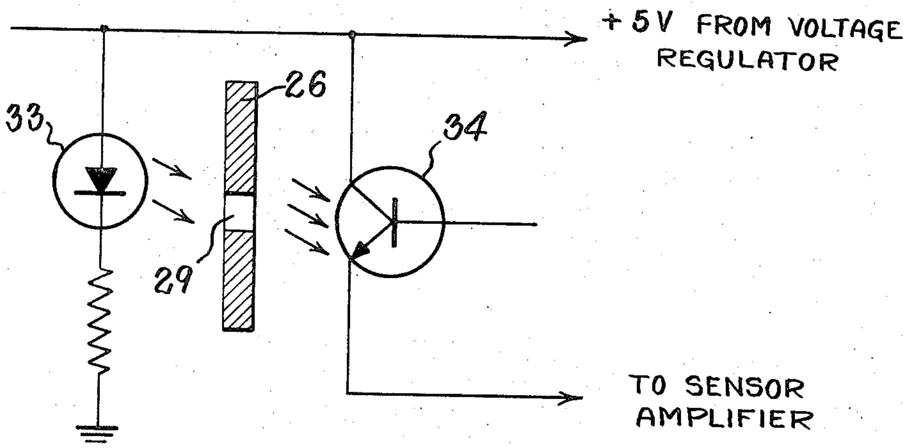

24
26
31
33
28
22
23
27
27
29
32
34

Fig. 3.


+5V FROM VOLTAGE REGULATOR
26
33
34
29
TO SENSOR AMPLIFIER

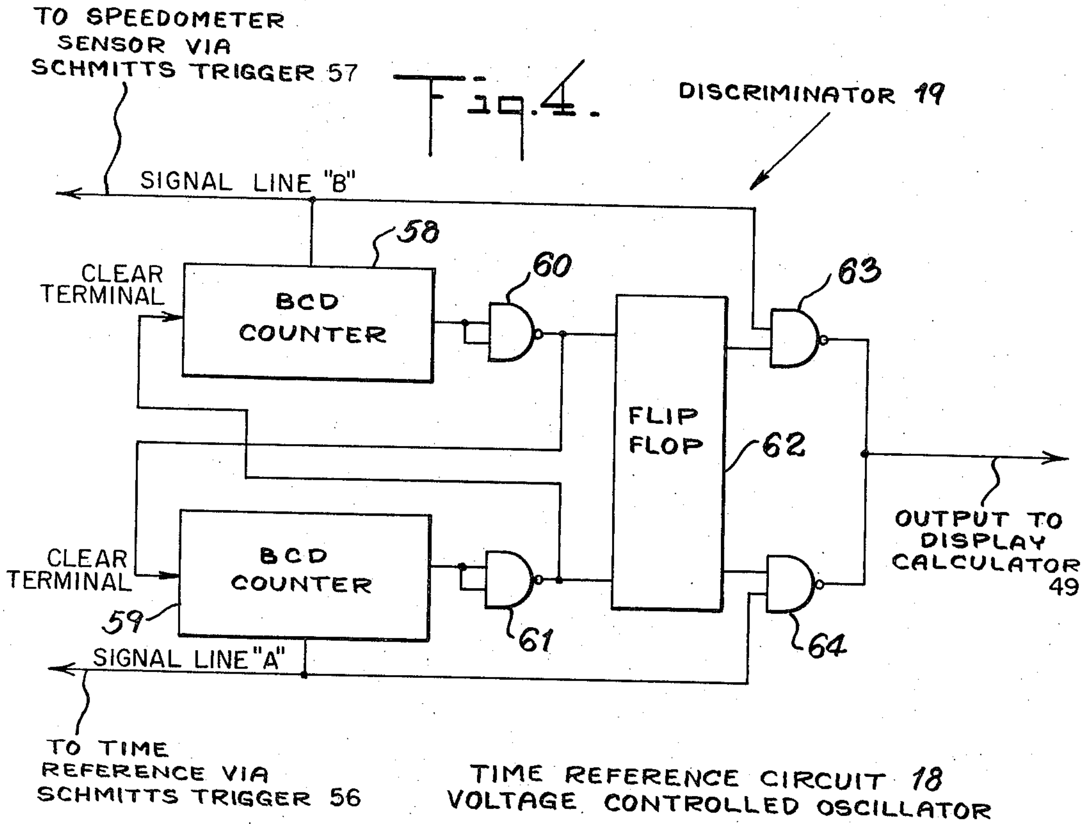

TO SPEEDOMETER SENSOR VIA SCHMITTS TRIGGER 57
DISCRIMINATOR 19
SIGNAL LINE "B"
58
60
63
CLEAR TERMINAL
BCD COUNTER
FLIP FLOP
62
OUTPUT TO DISPLAY CALCULATOR 49
CLEAR TERMINAL
BCD COUNTER
59
61
64
SIGNAL LINE "A"
TO TIME REFERENCE VIA SCHMITTS TRIGGER 56

Fig. 4.

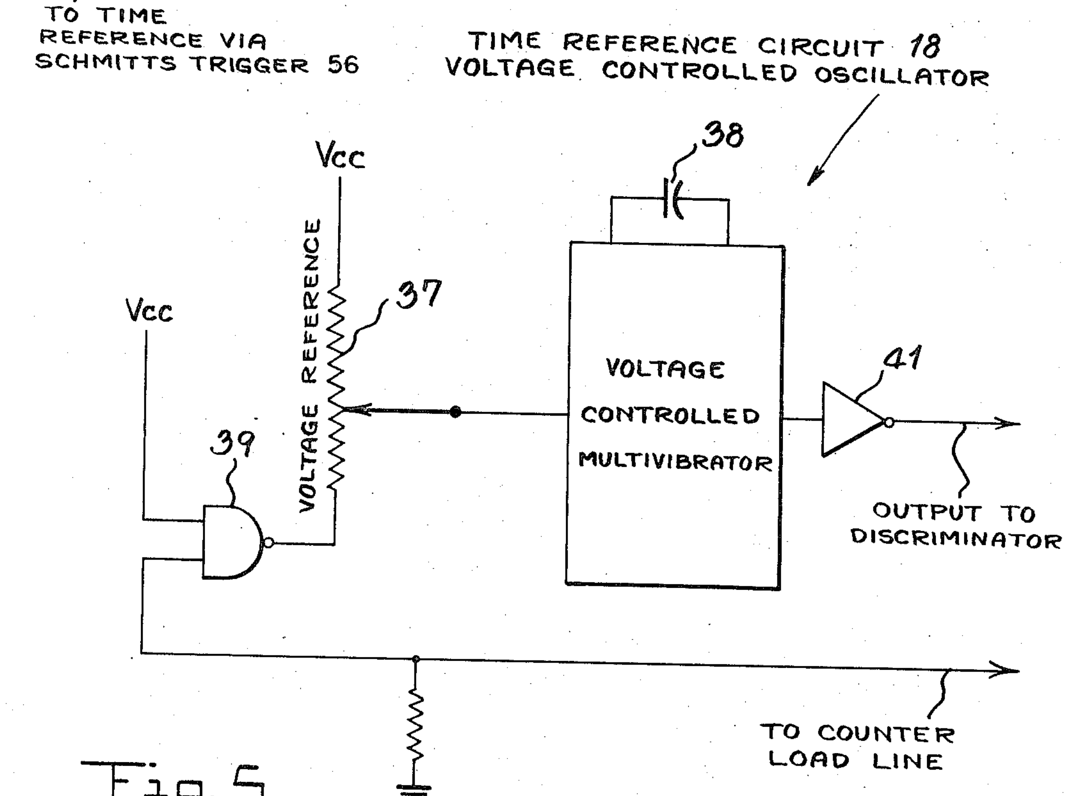

TIME REFERENCE CIRCUIT 18
VOLTAGE CONTROLLED OSCILLATOR
38
Vcc
37
VOLTAGE REFERENCE
Vcc
VOLTAGE CONTROLLED MULTIVIBRATOR
41
39
OUTPUT TO DISCRIMINATOR
TO COUNTER LOAD LINE

Fig. 5.

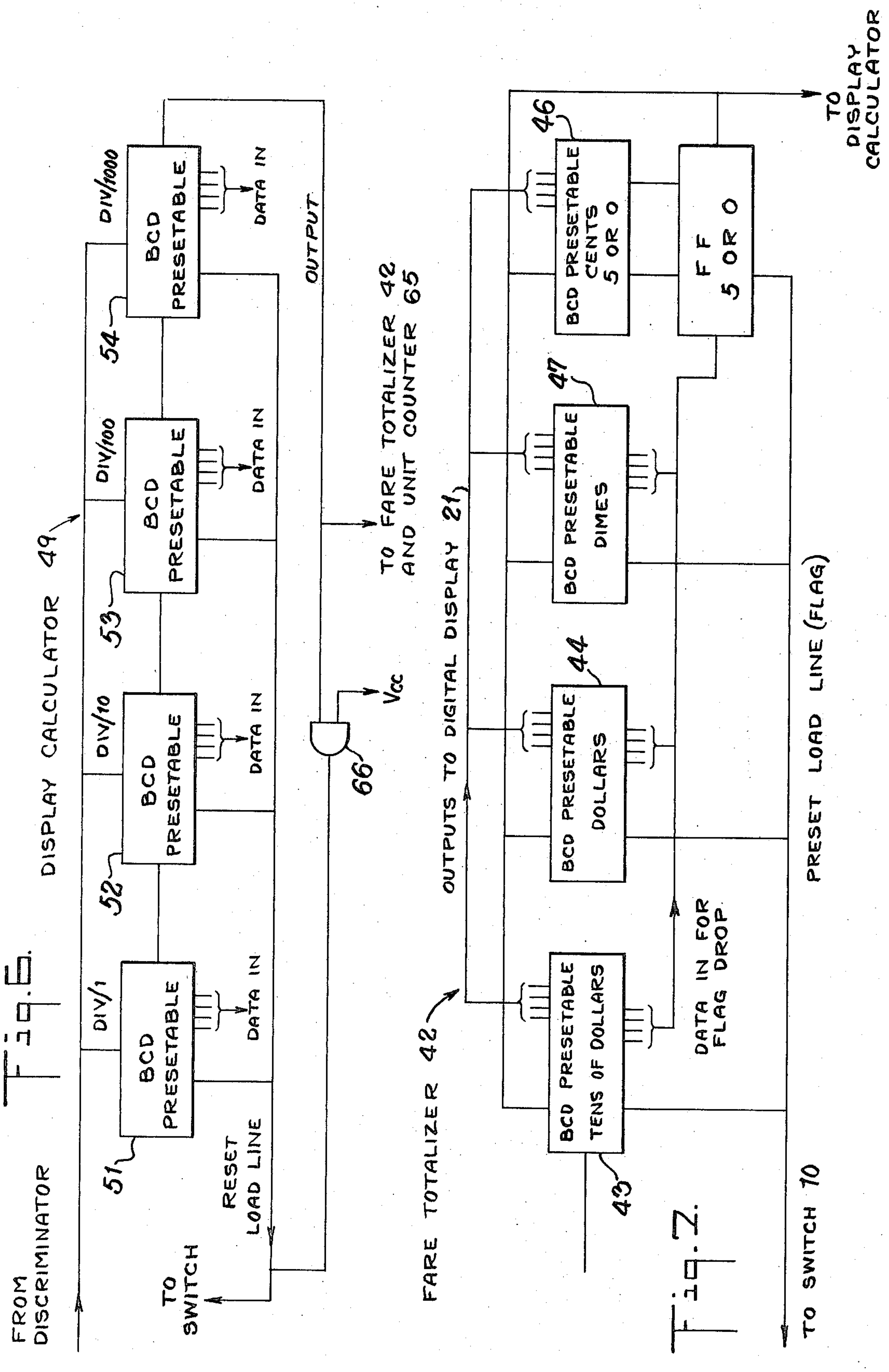

DISPLAY CALCULATOR 49
FROM DISCRIMINATOR
DIV/1
DIV/10
DIV/100
DIV/1000
BCD PRESETABLE
51
52
53
54
DATA IN
OUTPUT
RESET LOAD LINE
TO SWITCH
66
Vcc
TO FARE TOTALIZER 42 AND UNIT COUNTER 65
FARE TOTALIZER 42
OUTPUTS TO DIGITAL DISPLAY 21
BCD PRESETABLE TENS OF DOLLARS
43
BCD PRESETABLE DOLLARS
44
BCD PRESETABLE DIMES
47
BCD PRESETABLE CENTS 5 OR 0
46
F F 5 OR 0
TO DISPLAY CALCULATOR
DATA IN FOR FLAG DROP
PRESET LOAD LINE (FLAG)
TO SWITCH 10

Fig. 6

Fig. 7

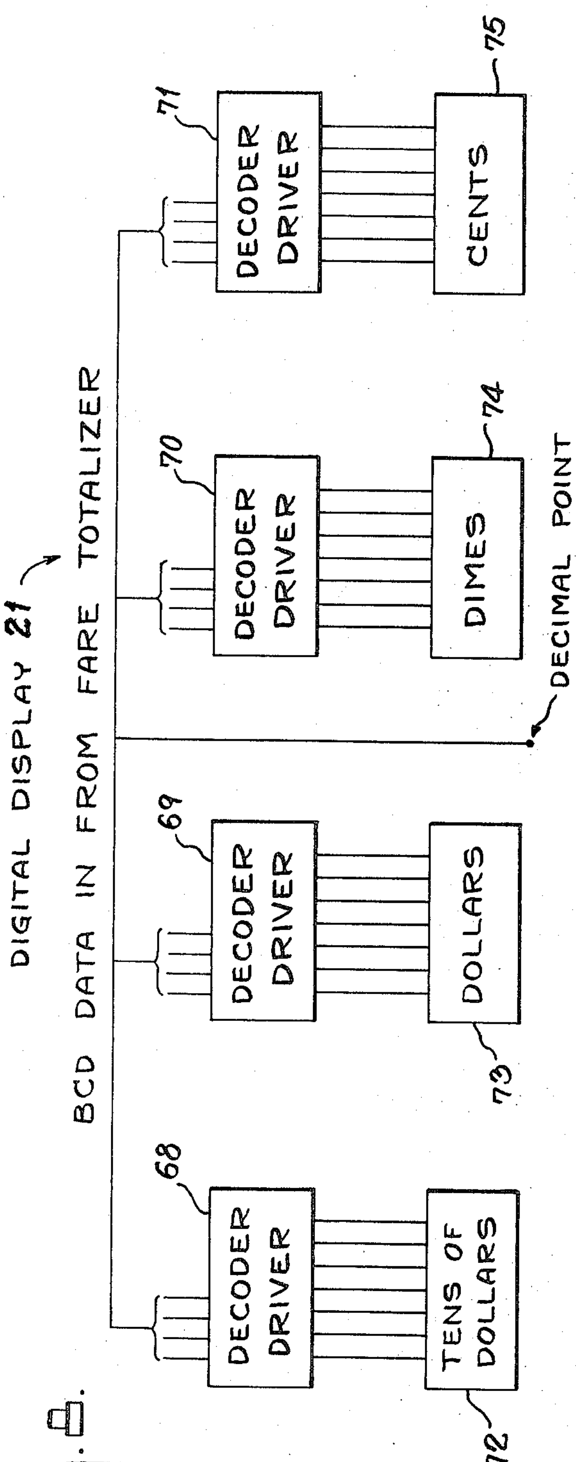

DIGITAL DISPLAY 21
BCD DATA IN FROM FARE TOTALIZER
DECODER DRIVER
DECODER DRIVER
DECODER DRIVER
DECODER DRIVER
68
69
70
71
TENS OF DOLLARS
DOLLARS
DIMES
CENTS
72
73
74
75
DECIMAL POINT

Fig. 8.

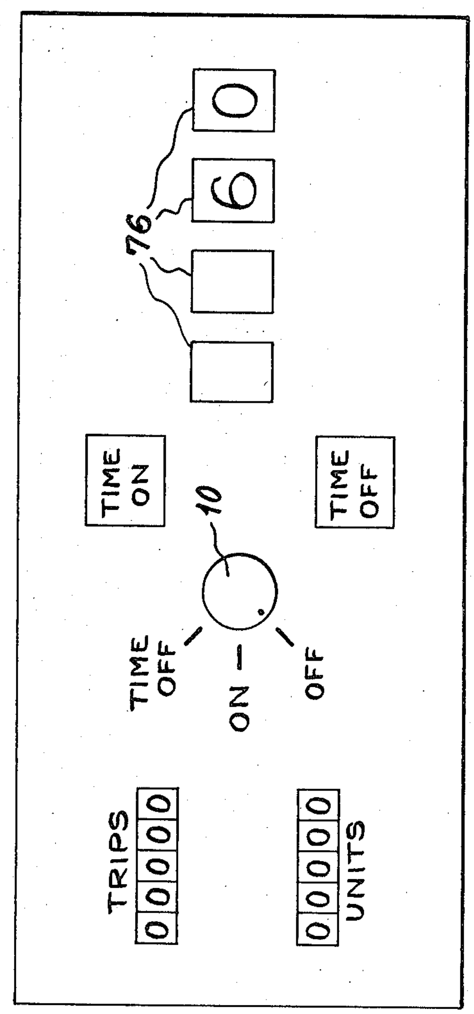

TRIPS
0000
UNITS
0000
TIME OFF
ON
OFF
10
TIME ON
TIME OFF
76
60

Fig. 9.

ELECTRONIC TAXIMETER

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to taximeters and, in particular, to electronic taximeters wherein the conventional mechanical components are eliminated.

The present invention is concerned with reducing to a practical minimum the number of electronic component parts required in indicating to a passenger the proper charge.

2. Description of the Prior Art

As in U.S. Pat. No. 3,512,706 of May 19, 1970, the instant invention is designed to eliminate almost in its entirety taximeters employing mechanical parts, such as, gears, ratchets, springs, etc.

SUMMARY OF THE INVENTION

Accordingly, an object of the present invention is to provide an electronic taximeter that reduces the number of parts of said prior patented electronic meter and yet accomplishes the necessary result in a more accurate manner.

Another object is to provide an improved electronic taximeter having substantially no time loss during time-distance change over.

Another object is to provide an improved electronic taximeter having a tamper proof speedometer sensor.

Another object is to provide an improved electronic taximeter wherein a rate change is accomplished by changing bias on data inputs without adding components.

A further object is to provide an improved electronic taximeter of maximum accuracy having encapsulated tamper proof circuitry.

Other and further objects will be obvious upon an understanding of the illustrative embodiment about to be described, or will be indicated in the appended claims and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

In accordance with the present invention, the foregoing objects are generally accomplished by providing an improved electronic taximeter which comprises five essential elements, namely, (1) time and distance scalers and pulse shapers, (2) time and distance discriminator, (3) time and distance counter and integrator, (4) associated programming devices, and (5) digital display.

Except for trips, total miles, paid miles, unit counters, and manual switches, the meter herein employs integrated circuitry thereby eliminating entirely the service problem. The circuit chips used in this improved meter are readily substituted and do not require any amount of maintenance.

BRIEF DESCRIPTION OF THE DRAWINGS

A preferred embodiment of the invention has been chosen for purposes of illustration and description and is shown in the accompanying drawings, forming a part of the specification, wherein:

FIG. 1 is a block diagram of an electronic taximeter embodying the present invention.

FIG. 2 is a sectional view of a speedometer pickup device.

FIG. 3 is a schematic view of the electronic apparatus shown in FIG. 2.

FIG. 4 is a block diagram of the discriminator shown in FIG. 1.

FIG. 5 is a schematic block view of the time reference block shown in FIG. 1.

FIG. 6 is a block diagram of the display calculator shown in FIG. 1.

FIG. 7 is a block diagram of the fare totalizer shown in FIG. 1.

FIG. 8 is a block diagram of the digital display shown in FIG. 1.

FIG. 9 is a front elevational view of an electro digital panel for the electronic taximeter.

A general description will now be given of each of the five essential elements of the electronic taximeter, indicated hereinbefore.

1. TIME AND DISTANCE SCALERS & PULSE SHAPERS

All taximeters operate basically on the same principle. They collect information provided by a mechanical clock for time measurement and mechanical connection to drive, that is, gear box or speedometer cable, for distance measurement. Two rates are set which assure the taxi owner to collect his minimum revenue, that is, (a) rate/hr and (b) rate/mile. If the vehicle is moving slowly the hourly rate dominates. However, as soon as a certain speed is reached, the meter changes over to the distance rate which provides a higher revenue. It is evident therefore that both the time scaler and distance scaler must be extremely accurate. The time base in this meter is an electronic clock which is adjustable to provide the exact number of pulses per second corresponding to the hourly rate. In order to assure accuracy the circuitry used in this invention employs a square wave generator compensated for changes in temperature or other environmental conditions. This clock is used not only for time base but for all other comparative measurements.

The distance scaler used in this invention is coupled to the output of the speedometer connection (mechanical or electronic) providing a fixed number of square wave pulses per mile, thus providing extremely accurate distance measurements. Both the clock and distance scalers are fully programable to provide corrections, such as needed for tire wear, distance rate changes or hourly rate changes.

Since both sources of square waves are the only information producing devices, it is very important that the pulse shape produced by both of them be of very accurate duration and very precise shape. In order to assure both of these features the produced signals are fed into a pulse shaping device, termed a Schmitts trigger, which has a very accurate output regardless of the input fed into it. Thus until this point we have obtained two precise measurements, time and distance.

2. TIME DISTANCE DISCRIMINATOR

As mentioned hereinbefore, the rate which provides higher revenue must be the dominant rate, for a slow moving or standing vehicle would provide no revenue. In such case the hourly rate takes over assuring the owner to collect revenue established by the local municipal ordinance. Mechanical discriminators used on most taxi meters lag in time during change over especially during frequent speed changes particularly during cross overs of the critical speed, thus producing a certain loss in revenue. Critical speed is the speed at which revenue is the same provided either by distance or time rate. This speed is obtained by dividing hourly rate by distance rate, i.e. $5.00 per hourly rate and 10 cents per 1/5 mile rate would produce a critical speed of 10 MPH.

To assure accuracy and to provide a minimum time delay during change over a special time-distance discriminator is connected to both outputs from the pulse shaper. This invention operates on "first come first get" basis. It employs two BCD counters in a symmetrical arrangement, cross coupled in such a way that only one output at a given time is possible. One counter is connected to the output from the time reference pulse shaper, while the other counter is connected to the distance scaler pulse shaper.

The time reference signal is present continuously as long as the taximeter is in "On" position and power is supplied to the circuitry, regardless whether or not the taxi is moving or standing.

The BCD counter connected to the time reference pulse shaper will count the pulses from the clock, produce an output at the end of the count, and by proper arrangement this output is used to clear the BCD counters, as well as to set the flip-flop gate combination to pass the clock pulses through to the next stage.

The automatic and simultaneous clearing of both BCD counters to zero is the basic principle of operation of the discriminator. As each time both BCD counters are cleared, they start to count from the beginning and, as soon as one reaches its final count, both BCD counters are reset to zero and the signal corresponding to the BCD counter which reached its final count first will be passed to the next stage.

Assume that the taxi is beginning to move and signal pulses are beginning to show at both BCD counters. Since the automatic clearing of both counters is simultaneous, only one of them will have an output which will pass the proper signal to the next stage. As long as the taxi is moving with speed below the "critical speed" the speedometer signals will not go through, since the time reference will produce an output first and therefore clear both BCD counters without giving the BCD counter connected to the speedometer a chance to reach a final count. As soon as the taxi's speed increases and exceeds the critical speed, the BCD counter connected to the speedometer will produce an output before the time reference counter and thus it will block the time reference signals from going through and pass the speedometer signal to reach the next stage. This condition will remain until the speed of the taxi drops below critical speed in which case the time reference will take precedence, block the speedometer signals from going and let the time (clock) reference signal to the nex stage.

3. TIME DISTANCE COUNTER, INTEGRATOR

This invention provides a means of counting and integrating signals supplied by the time distance discriminator in a way requiring no additional counting aids. In most counters having a few digits a number of gates and inverters must be used to obtain a final count. In a BCD (Binary Counting Decade) system counting four digits, a minimum of four and maximum of sixteen outputs must be fed into gates to provide a decimal output, thus counting from 1 to 1,000 would require four gates, each having four inputs. This invention provides a final count with only one single output, thus counting always

to the same constant number. The proper count is obtained by automatically presetting a number into the counter and counting from this number until the final constant number is reached. Since the presetting is done by the output signal from the same counter, no additional components are required.

For example, if a count of 200 were required, it would necessitate the use of 3 BCD counters and three gates connected, one to each counter. The same count of 200 in this invention is obtained by setting the final count to be 1,000 with one single output from the last counting decade, and presetting the counter to 800 which results in the total counting of 200. Presetting is done automatically by feeding the output pulse to the preset terminal of the individual counters. Since the entire resetting cycle is done during only one signal pulse, no time or count is lost. Mathematically it can be represented 200 = 1,000–800 or final count setting less preset value. It can be seen from this derivation how easily any number of counts may be obtained without use of additional components. This counter integrates pulses obtained from either time or distance scalers and provides an output after reaching its final count. This output is then used to activate the digital display showing the total in terms of monetary units. Each cycle is repeated at a predetermined rate set by the hourly and distance rates.

4. PROGRAMING DEVICES

Programing devices used in this invention consist of several electronic switches designed in such a manner that no change in wiring is needed to change rates or fare. It is only a matter of grounding or not grounding data input connections in such a way as to preset and/or reset BCD counters in proper sequence to obtain desired counting order, as dictated by the local rates, and as mentioned previously, no additional components or change of components is needed.

5. DIGITAL DISPLAY

Digital display used in this invention consists of several illuminated displays which show the integrated time-distance in terms of monetary units. In order to display the proper amount a counter is connected to each display and programmed to correspond to change in accordance with the monetary system used. In case of the decimal system each display shows numerals from 0 to 9.

Since the segments of each display are illuminated, they are clearly visible regardless of the light ambient. Changes in fare are accomplished in the same way as were changes in rates. Only data inputs to the BCD counters have to be properly grounded or disconnected from ground to obtain the desired count. Since this display has no moving mechanical parts, the change is completely noiseless and instantaneous.

Referring now to the drawings in detail, a switch **10** (FIG. **1**) is permanently shown connected to a nominal 12 volt battery, which varies from 8 to 16 volts D.C. Power to the taximeter is connected by the switch **10** which is shown also located on a panel **11** (FIG. **9**) of the taximeter. In the normally OFF position the switch **10** energizes roof lights **12** and one light in a mode indicator **13** to provide a visual display from the outside, such as FOR HIRE, NOT FOR HIRE, or OFF DUTY: but no energy is supplied to a voltage regulator **14** or speedometer sensor **16**.

During operation of the switch **10** from OFF to ON position all circuitry is provided with positive voltage from the voltage regulator **14** and at the same time information is fed to all circuitry to preset itself to predetermined mode according to local rates and so instructed by properly biased data inputs (FIG. **6**), as well as setting the first drop (flag) to display the proper amount (FIG. 7). At the same time the roof lights **12** are extinguished and one count is added to an electromechanical trip counter **17.** In addition while the vehicle is stationary, the following elements (FIG. **1**) were activated, namely, time reference **18,** discriminator **19,** and digital display **21.**

As soon as the vehicle begins to move, the speedometer sensor **16** receives information. As to the sensor details, see FIG. **2,** it comprises a housing **22** having at one end a male connector **23** for connection to a speedometer cable (not shown), at its other end a female connector **24** for connection to a speedometer (not shown), and a shaft **26** rotatably carried upon antifriction bearings **27** within the housing for interconnecting the connectors **23, 24.** Preferably, the connectors **23, 24** are affixed to the shaft **26** and are rotatable therewith. About the center of the housing is shown an opening **28,** which is adapted to register with an opening **29** in the shaft **26**; while opposed, enlarged openings **31, 32** in extension of housing opening **28** are provided for a light emitting diode **33** and photo sensitive transistor **34,** respectively, as also shown schematically in FIG. **3.** Consequently, during movement of the vehicle and rotation of the speedometer shaft **26** the rotating shaft opening **29** opens and closes with intermittent transmission of light from the light emitting diode **33** to the photo sensitive transistor **34.** The output from the transistor **34** is proportional to the amount of interrupted light received, thereby providing a relative measurement of distance travelled in unit time.

The advantages of this system are:

1. Light emitting diode **33** has no filament and does not produce heat as do other light sources.
2. Unless power source fails the diode **33** is tamper proof (unlike magnetic or mechanical devices).
3. Having no hot filament is vibration and temperature proof.
4. Phototransistor **34** output does not require any conversion to electronic systems, since its output can be connected directly to an amplifier, thereby eliminating the need of transducers.
5. The rise and fall time of both diode **33** and transistor **34** are so short that no additional components are needed to eliminate persistence or memory, such as are exhibited by magnetic or resistive devices.
6. Magnetic, mechanical or resistive devices can be easily defeated by introducing an externally strong magnetic field, mechanical friction etc.

From the moment the switch **10** is rotated to the ON position and voltage is supplied to the time reference **18** a voltage controlled oscillator **36** (FIG. **5**) starts to oscillate at a rate preset to correspond to the time interval required by local rates.

Since the voltage supply is regulated by the regulator **14** and does not vary by more than 1 percent including temperature variations, the time reference circuit **18** once set by means of a voltage divider **37** (FIG. **5**) and capacitor **38** will remain within this accuracy during the entire operating cycle. A gated input **39** and output **41** (FIG. **5**) provide a means to enable or disable the time reference **18** or change its interval as may be required in a dual tariff operational mode.

EXAMPLE OF A TYPICAL OPERATIONAL CYCLE

1. Assuming the following local rates are:

A. Flag drop 60 cents/ first one-fifth mile

B. 10 cent each additional one-fifth mile

C. $5.00/ hour waiting time

2. The taximeter must be adjusted to do the following:

A. Display **60**C for the first drop by properly biasing data inputs on fare totalizer **42** (FIG. **7**) to display **.60** as soon as the switch is put in ON position. This is accomplished by presetting Tens of Dollars, Dollars, and Cents circuits **43, 44 & 46,** respectively, to **0** while dimes circuit **47** (Fig. **7**) is preset to **6.** As soon as switch **10** (FIG. **9**) is rotated from "OFF" to "ON" position the flag preset load line is grounded momentarily, therefore displaying **.60.**

B. Time reference **18** must be preset to add 10 cents to the fare for each 72 seconds of waiting time, which is accomplished by adjusting voltage bias **37** of the time reference **18** (FIG. **5**), for 72 seconds.

C. Display calculator **49** must add **10**c for each additional one-fifth mile, which is accomplished by properly biasing data inputs of "BCD" counters **51, 52, 53 & 54** (FIG. **6**). The reset load line will receive a count signal at the completion of each one-fifth mile, or 72 seconds, of waiting time or any composite integrated distance and time.

Having set the taximeter for the specified rates, it is now operational and the normal cycle would be as follows:

As soon as the passenger enters the taxi and gives his destination, the driver turns the selector switch **10** to ON position. This disables the roof lights **12,** enables the mode indicator **13,** the voltage regulator **14,** displays first drop (flag) .60 and enables all the remaining circuitry. While the vehicle is still standing or moving slowly only, that is, less than **10** miles per hour, in this example, the time reference **18** signals reach the display calculator **49,** as the discriminator **19** did not let the speedometer distance rate pass through. The system remains in this state as long as the time reference **18** provides a higher revenue. Having reached and/or exceeded 10 MPH, the system will drop the time rate by cutting out the time reference **18** and cutting in the distance reference.

The 10 MPH is the speed at which the revenue is identical for both time or distance modes for the set of conditions mentioned previously. The change over is done by the discriminator **19** (FIG. **1**) in the following fashion.

Both the speedometer distance sensor **16** and the time reference **18** outputs enter the discriminator **19** through Schmitts triggers **56** and **57,** respectively, in order to provide data of equal amplitude and shape. The function of the discriminator **19** is to provide one output only corresponding to the higher revenue. Therefore it is a selective rate scaler designed to operate per unit time dictated by the higher revenue set by the conditions. Since the conditions do not vary for one locality, the speed at which the revenue becomes greater is fixed and the discrimination is automatic once all data inputs are set for the entire system.

Referring to FIG. **4**, information to the discriminator **19** enters from both Schmitts triggers **56** and **57** into the time reference BCD counter **59** and into the speedometer BCD counter **58**, respectively. Both the time reference signals and speedometer signals are always present at the inputs to the BCD counters **58** and **59** as well as at one of the inputs to gates **63** and **64** forming signal line A for the time reference and signal line B for speedometer sensor. Because of the symmetrical arrangement only one of the gates **63** or **64** can be opened to pass a signal through depending on the state of flip-flop **62**. The state of the flip-flop **62** is determined by the conditions of gates **60** and **61** which are in turn dependent on the state of the BCD counters **58** and **59**. Gates **60** and **61** are also cross coupled with the "Clear" inputs of the opposing BCD counters **59** and **58** providing a means of simultaneous count start.

Signal line A has a pulse train present on it as soon as the taxi meter is turned "On" and is in waiting time mode. As long as the vehicle is not moving, signal line B has no pulse available and the following condition will exist. The BCD counter **59** will count to nine (**9**) at which time it will produce an output into gate **61** and it will reset to zero automatically. Gate **61** will clear BCD counter **58** (at this time there is no count in it) and at the same time Gate **61** will put flip-flop **62** into a state permitting gate **64** to pass signals present on signal line A and also close gate **63**. Of course, at this time this is the only revenue producing mode, since the vehicle is stationary. As soon as the vehicle starts to move, pulses are now present on both signal lines A and B. As long as the vehicle is moving with speed below, say **10** MPH, the number of pulses per unit time is lower than the number of pulses provided by the time reference and, since both BCD counters **58** and **59** start counting simultaneously, it is obvious that BCD counter **59** will reach the count of **9** prior to BCD counter **58**, reset both itself and BCD counter **58** to zero and through gate **61**, flip-flop **62** and gate **64** pass the time pulses present on signal line A through to the display calculator **49**. As stated before, since gate **64** is open the state of flip-flop **62** closes gate **63**. As the speed of the vehicle increases, the number of pulses per unit time also increases more and more until it is equal and then exceeds the number of pulses from the time reference.

Since both BCD counters **58** and **59** start to count simultaneously, at this time BCD counter **58** reached the count of nine first and therefore provided an output into gate **60**, reset itself to zero and at the same time cleared counter **59** to zero. Gate **60** has now inverted the state of the flip-flop **62** which has now opened gate **63** passing the pulses present on signal line B through to the display calculator **49** and, closing gate **64**, it has blocked pulses present on signal line A from going through.

This condition will now prevail as long as the vehicle is moving with a speed higher than the critical speed in this case, namely, 10 MPH. This will of course provide a higher revenue, since more pulses were present on signal line B than on signal line A and this is the line "open" into the display calculator **49**.

As soon as the vehicle slows down and its speed falls below 10 MPH, the situation reverses itself back to the original state, so that BCD counter **59** has an output into gate **61** which reverses the position of the flip-flop **62** thusly opening gate **64** and letting pulses present on signal line A through, which became again the higher revenue producing when entered into display calculator **49**.

This continuous discrimination of lower count pulses goes on for every **10** pulses provided by either signal line A or B, whichever line provides higher revenue. In cases where the time reference is not needed, flip-flop **62** is fixed in one position by the external switch (**10**) in "waiting time off" mode. In this state gate **64** closes the passage of pulses present on signal line A and gate **63** opens passing through pulses present on signal line B regardless of their repetitive rate. The output from the discriminator **19** for each integrated time distance input is transformed into one output corresponding to 72 seconds, one-fifth mile or any combination of parts of each.

At the end of each cycle, the output available from the display calculator **49** corresponding to one 10 cent drop is fed into the fare totalizer **42**, unit counter **65** and nand gate **66** (FIG. **6**), into reset load line of the display calculator **49**, and the fare totalizer **42**, until the trip is completed. The fare totalizer **42** was preset to advance by 10 cents for each output from display calculator **49** by having proper bias at the data inputs.

Each BCD counter **43, 44, 47** and **46** (FIG. **7**) has four outputs which are fed into the digital display **21**, its decoder drivers **68, 69, 70** and **71** (FIG. **8**) and converted into seven segmental digital displays **72, 73, 74** and **75**, showing the total fare on four illuminated displays **76** (FIG. **9**).

Having reached his destination, the driver will turn the switch **10** into TIME OFF position in order to de-energize the time reference **18**. Now there is no signal available from either speedometer sensor **16** or time reference **18** and therefore the digital display **21** will remain in its position corresponding to the last 10 cent addition.

After discharging the passenger the driver will turn the switch **10** to the OFF position. During the transition from TIME OFF to OFF position, he will de-energize all circuitry and add one count to the trip counter **17**. At the same time the mode indicator lights **13** will be extinguished and the roof lights **12** energized.

The taxi is now ready to receive its next passenger.

From the foregoing description it will be seen that the present invention provides an improved electronic taximeter having substantially no time loss during change over from a time scaler to a distance scaler or vice versa, thereby providing maximum accuracy, the rate change being readily accomplished by a bias change on data inputs without adding components.

As various changes may be made in the circuitry, form, construction and arrangement of parts herein, without departing from the spirit qnd scope of the invention and without sacrificing any of its advantages, it is to be understood that all matters are to be interpreted as illustrative and not in any limiting sense.

What is claimed is:

1. An electronic taximeter in a vehicle for determining a passenger fare and displaying the same on an illuminated digital display panel comprising, in combination, a time scaler, including an electric clock for generating pulses in response to time travelled and or time standing, a distance scaler including a speedometer for generating pulses in response to distance travelled, a pulse shaper responsive to pulses from said time and distance scalers for emitting pulses of predetermined shape, a discriminator for receiving said time and distance pulses from said pulse shaper including a counter for each of said time and distance pulses, means in said discriminator for accepting one of said pulses and rejecting the other of said pulses, the pulses of the highest repetitive rate being accepted, a display calculator responsive to output of said discriminator in which a proper count is obtained by setting a final count and presetting a number into the display calculator, whereby the difference between the final count and presetting number is the desired count, a fare totalizer for integrating each output pulse from said display calculator after a final count has been reached, and an illuminated digital display responsive to said fare totalizer counter for indicating in monetary units the passenger fare.

2. An electronic taximeter in accordance with claim 1, wherein said speedometer includes a housing, a shaft in said housing coaxial with and rotatable by a taxi speedometer cable, a light emitting diode, and a photo sensitive transistor responsive to said diode, wherein said housing has an opening and said shaft also has an opening for intermittent registration with said housing opening, whereby light pulses emitted by said diode and passing through said openings actuate said transistor.

3. An electronic taximeter in accordance with claim

1, wherein said discriminator means includes two counters, one counter for distance pulses and the other counter for time pulses, a flip-flop and gate for passing through only the highest repetitive rate pulses.

4. An electronic taximeter in accordance with claim 2, wherein said diode and said transistor are carried by said housing.

5. An electronic taximeter in accordance with claim 3, wherein said counters are BCD counters.

6. An electronic taximeter in accordance with claim 5, wherein said BCD counter for said time pulses assumes control when said vehicle travels at less than a predetermined critical speed.

7. An electronic taximeter in accordance with claim 6, wherein said BCD counter for said distance pulses assumes control when said vehicle travels at more than a predetermined critical speed.

8. An electronic taximeter in accordance with claim 7, including a plurality of electronic switches for programming fares in the taximeter, whereby changes in the fares are made simply by grounding or ungrounding data input connections in said display calculator and fare totalizer.

9. An electronic taximeter in accordance with claim 9, wherein each of said switches is a circuit chip containing a plurality of flip-flops or gates.

* * * * *