

[54] **TAXIMETER ARRANGEMENT WITH EXCHANGEABLE CONTROL UNIT**

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3,052,403 9/1962 Damon.....235/1 D

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[22] Filed: **April 13, 1971**

[57] **ABSTRACT**

[21] Appl. No.: 133,514

A taximeter apparatus, including distance and time measuring devices, a calculator, and an indicator, is mounted in a housing into which any one of several control units can be selectively inserted. Each control unit has plugs which engage sockets in the housing when the control unit is inserted and operative. Each control unit has different manual operating means for selecting functions of the taximeter apparatus, such as calculating different charges in accordance with different rates.

[30] **Foreign Application Priority Data**

April 18, 1970 Germany.....P 20 28 640.7

[52] U.S. Cl. 235/30 R

[51] Int. Cl. G07b 13/00

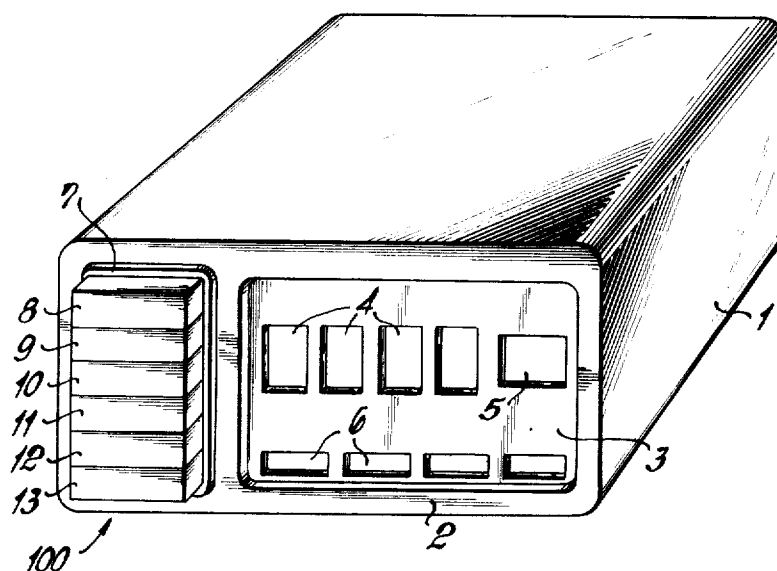
[58] Field of Search 235/30 R, 33, 44, 45, 1 R, 235/1 D

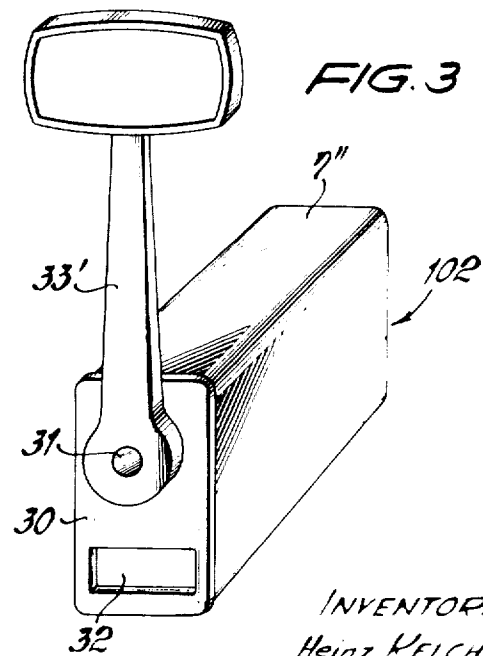
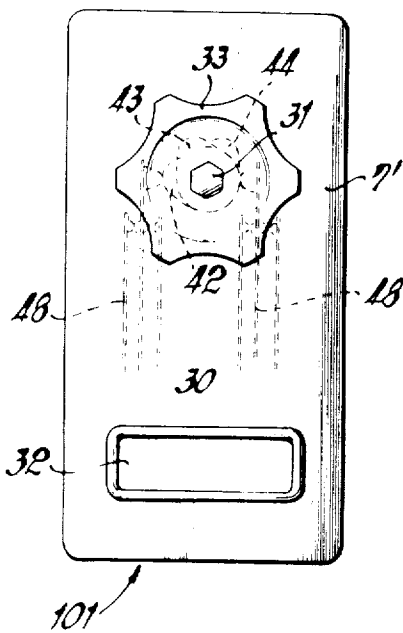
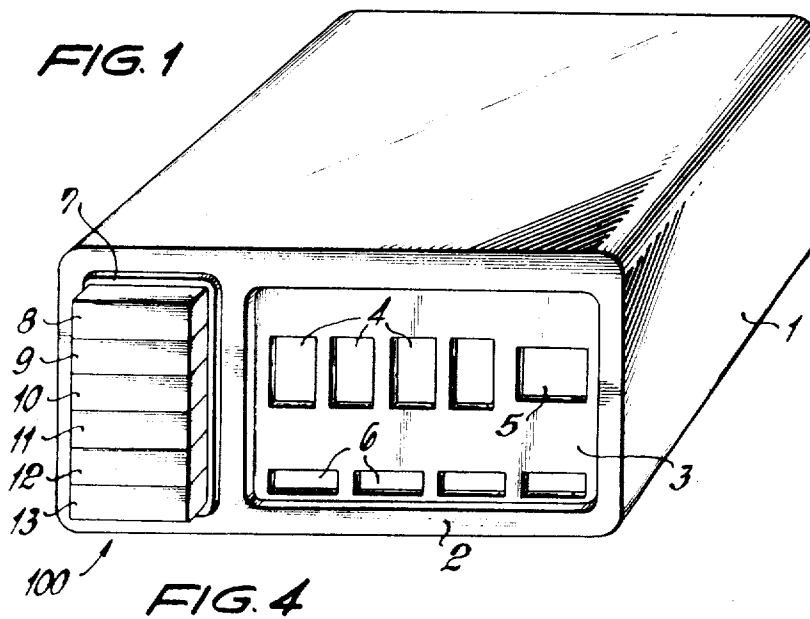
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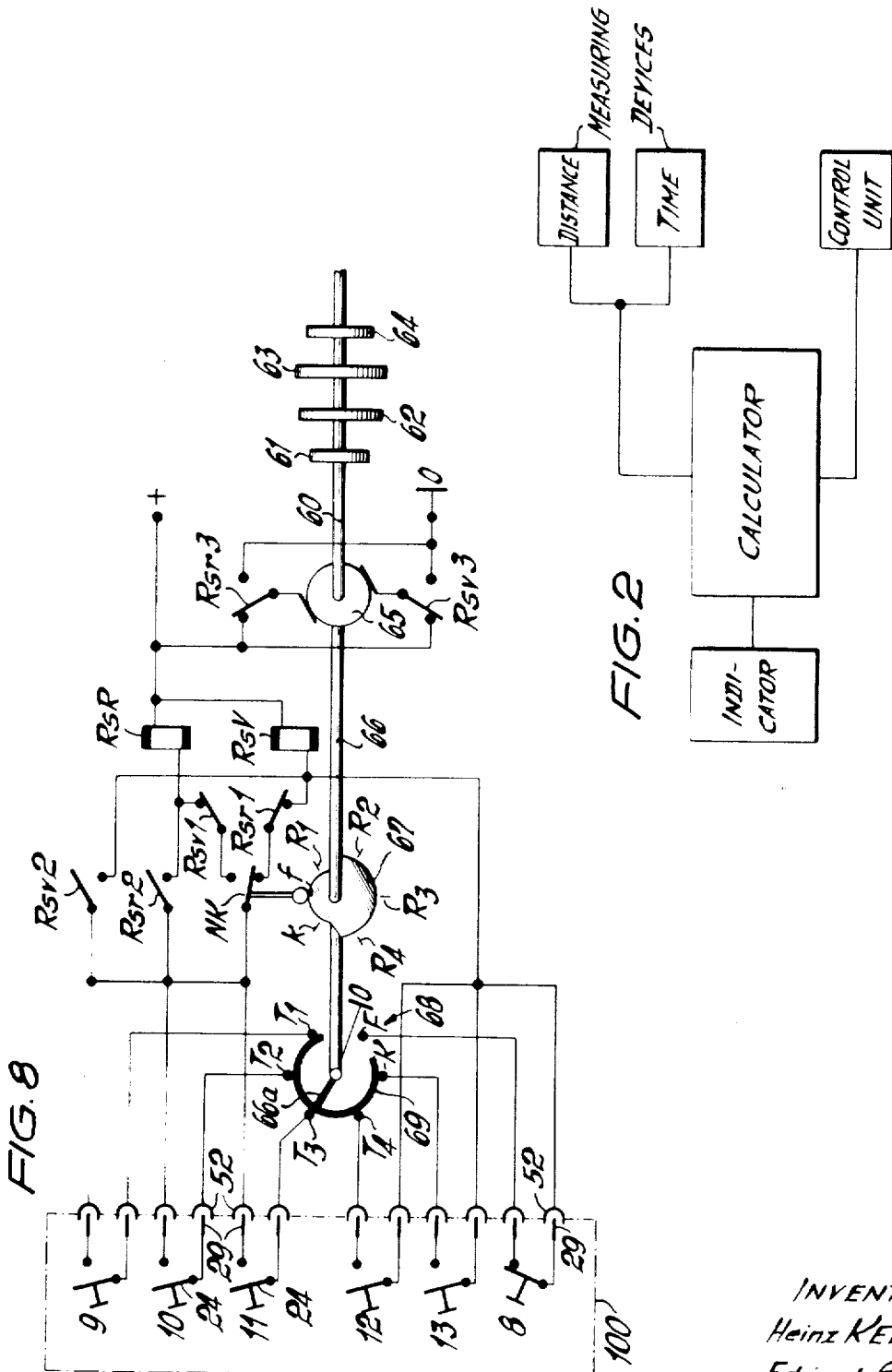
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18 Claims, 8 Drawing Figures





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FIG. 5

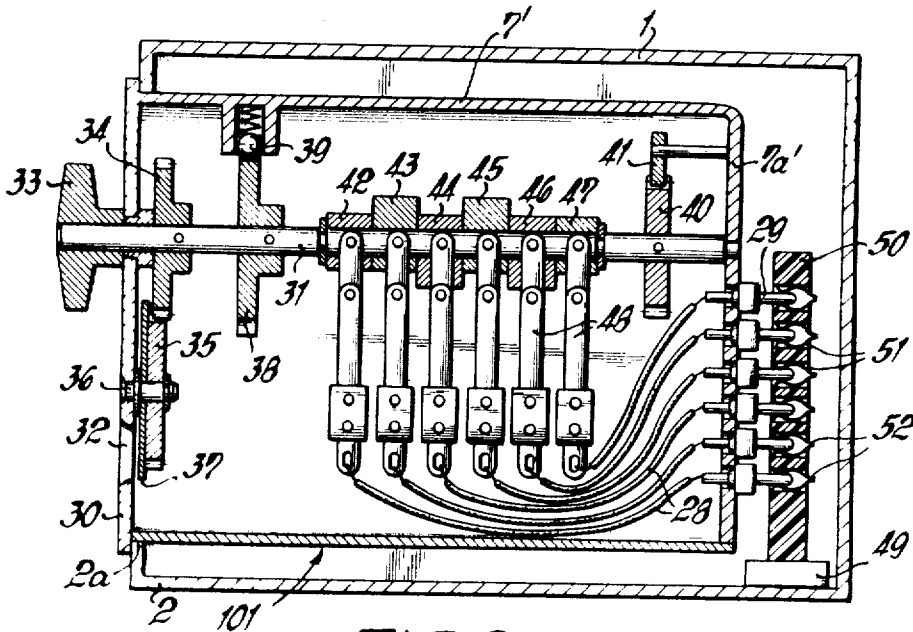


FIG. 6

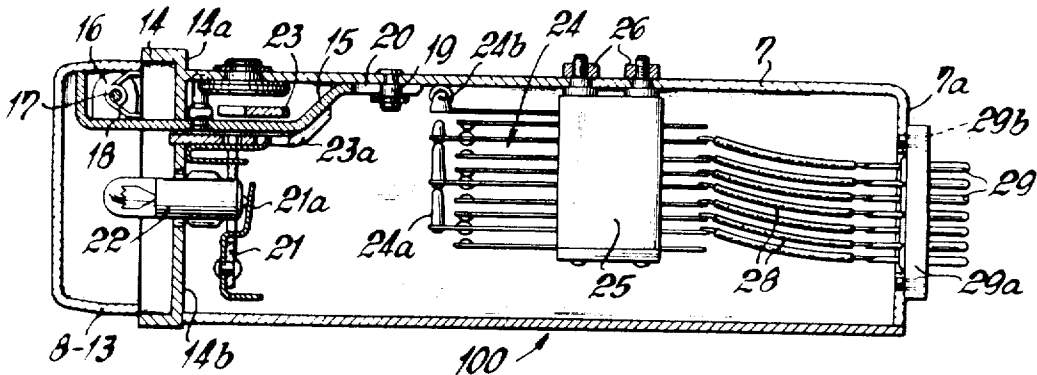
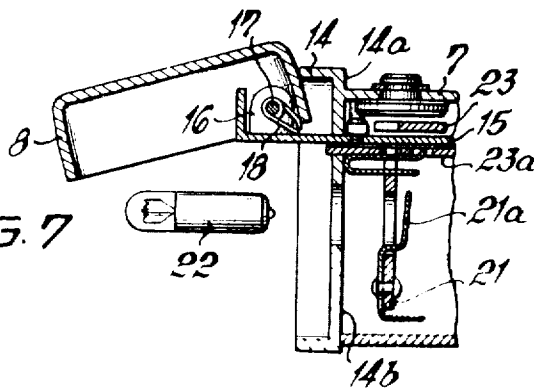


FIG. 7



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TAXIMETER ARRANGEMENT WITH EXCHANGEABLE CONTROL UNIT

BACKGROUND OF THE INVENTION

Most conventional taximeters are mechanical or electromechanical devices. The taximeter is either driven by a clock, or by a distance measuring device, and a calculator computes the fare based on the data produced by the time and distance measuring devices. A totalizer or other indicator represents the amount due.

In order to adapt a taximeter to different tariffs in different countries and cities, it is known to provide taximeters with means for setting the taximeter to different operational conditions so that different rates may be charged in accordance with the taxi regulations in the respective city. Taximeters are provided with a control means permitting to set the taximeter to different functions, such as "vacant," "rate 1," "rate 2," "cash," and "vacant." It is conventional to use a manually turnable flag as control means, whose position indicate the condition of the taximeter. In modern taximeters, the flag is replaced by a simple manual knob for selecting the several functions and conditions of the taximeter. It is also known to provide a taximeter with a motor which turns a control cam shaft of the taximeter by which the several conditions and functions of the taximeter are automatically obtained. The motor provides the turning motion which is otherwise manually supplied by the flag or knob. The motor is started by a pushbutton, and automatically runs to the next following position in which it automatically stops. A taximeter of this type is described in the German Pat. 1,038,581.

In some cities and countries, a flag is absolutely required, and a knob or pushbutton is not permitted. In other cities and countries, a flag, a knob, and also a pushbutton for an automatically operated motor are permitted.

Electronic taximeters have been recently developed which have only few mechanical parts, and which do not require a cam shaft for selecting the several functions and conditions of the taximeter. Each function and condition can be obtained by actuating a correlated pushbutton by which a set of cooperating contacts is operated. A taximeter of this type is disclosed in German Pat. 1,259,129.

The manufacture of different types of taximeters in accordance with the different police regulations in different countries and cities increases the production cost. It is desirable to manufacture a taximeter apparatus which, with only minor changes, can be used in different countries and cities irrespective of the local taxi regulations. While the basic taximeter apparatus including the time measuring device, the distance measuring device, the calculator, and the indicator must be provided in any country and city, and is not subject to regulations, a control unit is required by which the several conditions of the taximeter apparatus can be selected, and which determines in which manner the time measuring device, the distance measuring device, the calculator, and the indicator cooperate.

SUMMARY OF THE INVENTION

It is one object of the invention to provide the basic taximeter apparatus with different control units, each

of which may satisfy requirements of a particular country or city.

Another object of the invention is to mount the basic taximeter apparatus in a housing, and to insert a selected particular control unit into the housing for cooperation with the basic taximeter apparatus.

Another object of the invention is to manufacture a greater number of basic taximeter apparatus, and a smaller number of each of several types of control units, any one of which can be used for the basic taximeter apparatus.

With these objects in view, in accordance with the invention, one of several different control units is selected, and inserted into the housing in which the basic taximeter apparatus is located.

The housing is provided with suitable guiding and holding means for guiding the casing of the unit to an operative position in which plugs projecting from the casing of the control unit are inserted into sockets provided on the housing of the taximeter apparatus.

The control units may include a manually turnable flag, a manually turnable knob, or a set of pushbuttons, each of which is associated with a function and condition of the taximeter apparatus.

The invention permits it to construct the taximeter apparatus either as a mechanical device, or as an electromechanical device, or as an electronic device, the devices including the usual time and distance measuring devices, a calculator, and an indicator, and only the control function is carried out by an exchangeable control unit, which is constructed in accordance with the requirements of the respective customer in cities and countries having specific regulations regarding the construction of the control means of the taximeter.

Generally speaking, a taximeter arrangement according to the invention comprises taximeter apparatus having a plurality of conditions for functioning differently, for example, in accordance with different tariffs and rates, and including control circuit means having a plurality of input contact means including sockets mounted on the housing of the taximeter apparatus; and a plurality of different control units each including a casing fitting into guiding and holding means of the housing, manual operating means mounted on the casing outside of the same and of the housing in the operative inserted position of a control unit, a plurality of switch means in the casing controlled by the manual operating means, and a plurality of output contact means including plugs mounted on the casing outside of the same for engaging the sockets of the input contact means in the operative position of a selected control unit.

Each of the control units with its respective casing can be selectively inserted through an opening in the housing and positioned in the operative position for placing, under the control of the respective manual operating means, the taximeter apparatus in a selected condition.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view illustrating a taximeter according to one embodiment of the invention;

FIG. 2 is a schematic and diagrammatic view illustrating the connections between the components of a taximeter;

FIG. 3 is a perspective view illustrating a modification of the control unit used in the taximeter of FIG. 1;

FIG. 4 is a front view illustrating another modification of a control unit used in the taximeter of FIG. 1;

FIG. 5 is a fragmentary sectional view illustrating the modified control unit corresponding to FIG. 4 positioned in the housing of the taximeter;

FIG. 6 is a sectional view illustrating the control unit of the embodiment of FIG. 1;

FIG. 7 is a fragmentary sectional view illustrating a portion of the control unit shown in FIG. 6 in a different position; and

FIG. 8 is a diagrammatic view illustrating a specific taximeter apparatus controlled by a control unit substantially as shown in FIG. 6.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring first to FIG. 2, a taximeter includes distance and time measuring devices generating signals which are selectively entered into the calculator whose functions are controlled by the control unit so that a corresponding indication is made by the indicator which shows the computed total amount of fare at any moment.

FIG. 1 shows a taximeter having a housing 1 in which the components described with reference to FIG. 2 are located. The front wall 2 has a large cutout behind which a sheet 3 is placed which has explanatory legends, not shown, and windows behind which the number wheels 4 of the indicator are visible. An additional window 5 is provided for indicating an additional amount, such as may be required for loading baggage. Further windows 6 are provided for totalizers counting the total number of miles driven, the number of trips made by the drivers, the number of miles driven with passengers, and like indications.

FIG. 1 shows a control unit 100 inserted into an opening in the front wall 2 of housing 1. As best seen in FIG. 6, the control unit 100 has a casing 7 whose front portion 14 forms a shoulder 14a abutting the wall portion of wall 2 which surrounds the opening in front wall 2, into which the casing 7 is inserted, as shown for the opening 2a in the similar arrangement of FIG. 5.

In the embodiment of FIGS. 1, 6 and 7, manual operating means are provided in the form of pushbuttons 8 to 13 which are mounted on a transverse plate portion 14b of casing portion 14.

Pushbutton 8 is correlated with the condition of the taximeter "vacant," pushbuttons 9 to 12 are respectively correlated with different rates, and pushbutton 13 is correlated with the "cash" condition of the taximeter.

The housing portion 14 mounts the pushbuttons 8 to 13. Each pushbutton 8 to 13 has a stem 15 with lugs 16 through which a pivot means 17 passes for supporting the pushbuttons 8 to 13 for angular movement between the closed position shown in FIG. 6, and the open position shown in FIG. 7. A spring 18 wound about pivot

means 17, is compressed in the open position of a pushbutton 8, as best seen in FIG. 7, and urges the pushbutton to the closed position. In the open position shown in FIG. 7, a signal lamp 22 can be exchanged, so that replacement of burnt out lamps can be easily carried out. Pushbuttons 8 are transparent so that an illuminated pushbutton indicates the respective condition of the taximeter.

Stems 15 of the pushbuttons 8 to 13 are guided by bolts 19 secured to casing 7 and having portions located in slots 20 of the respective stems 15 for guiding the pushbuttons 8 to 13 for straight rectilinear movement into and out of casing portion 14. A supporting bar 21 mounted in casing 7, supports a plurality of contact springs 21a for the signal lamps 22. Stems 15 cooperate with a locking slide 23 and with a comb shaped member 23a so that each pushbutton is arrested in the depressed position, and released when another pushbutton is operated. A set of cooperating switches 24 is provided for each pushbutton and stem, and mounted in a holder 25 which is secured to casing 7 by screws and nuts 26. The contacts of each set of switch means 24 are controlled by insulating pieces 24a, and one of the insulating pieces cooperates with the stem 15 of the respective depressed pushbutton 8 to 13. The switch means 24 include normally closed contacts, normally open contacts, and make and break contacts which are simultaneously operated when a depressed pushbutton moves to a position in which its stem 15 engages the insulator piece 24b. The number of switches 24 depends on the required function of the taximeter apparatus in housing 1, and also on the construction of the taximeter apparatus which may be mechanical, electromechanical, or electronic.

A set of conductors 28 connects the contacts of each set of switches 24 with a set of plugs 29 which are mounted on an insulator piece 29a secured by screws 29b to the rear wall 7a of casing 7. The number of plugs 29 in each set depends on the number of contacts in each set of switches 24. FIG. 6 shows the set of plugs 29 correlated with one of the pushbuttons 8 to 13, and a corresponding set of plugs 29 and a set of switches 24 is provided for each pushbutton 8 to 13.

It is important that the plugs 29 of each set project from the rear wall 7a of casing 7 so that, when casing 7 with pushbuttons 8 to 13 is inserted into housing 1 to the operative position shown in FIG. 1, plugs 29 of each set enter sockets of a corresponding set of sockets mounted on a wall of housing 1, not shown in FIG. 6. FIG. 5, which illustrates a modified control unit 101 inserted into the housing 1, shows corresponding socket means, including a bar 49 carrying an insulating plate 50 provided with a set of sockets 51 including spring contacts 52.

Plugs 29 constitute output contacts for the switch means 24, and the corresponding sockets mounted on housing 1 constitute input contacts for the circuit of the taximeter apparatus located in housing 1.

The only functional connection between the control unit 100, and the circuit of the other components of the taximeter apparatus, is provided by plugs 29 and the corresponding socket means in housing 1.

The pivotal mounting of the pushbuttons 8 to 13 on the casing 7, 14 has the advantage that the entire control unit 100 need not be removed from housing 1 when a signal lamp 22 has to be exchanged.

FIGS. 4 and 5 illustrate a modified control unit 101.

As shown in FIG. 4, the modified control unit 101 has a casing 7' closed by a front plate 30 which has a window 32 behind which indicator means indicate the position of a manually operated knob 33 which is carried by a shaft 31, see FIG. 5, which is mounted in the front wall 30 and in the rear wall 7a of casing 7, as shown in FIG. 5.

In the modification shown in FIG. 3, the turnable knob 33 is replaced by a turnable flag 33' secured to shaft 31 in the same manner as knob 33. The modified control unit 102 with the casing 7'' and flag 33', operates in the same manner as the control unit 101 shown in FIG. 5.

The front wall 30 of casing 7' of control unit 101 is slightly greater than the opening 2a in housing front wall 2, so that the position of casing 7' is exactly determined, permitting the plugs 29 mounted on casing rear wall 7a', to enter the sockets 51 and to engage the contact springs 52. Suitable supports may be provided in housing 2 for guiding the respective selector unit, and more particularly its casing, during the insertion into housing 1. The wider housing portion 14 with shoulder 14a shown in FIG. 6 abuts the portion of front wall 2 surrounding the opening 2a in the same manner as the front wall 30 of the embodiment of FIG. 5. Front wall 30 and plate 14b of the larger housing portion 14 of the embodiment of FIG. 6, may be attached by screws, not shown, to the front wall 2 of housing 1. In this manner, guiding and holding means are provided for inserting the respective control unit 100 or 101, or 102 into the housing to the operative position in which the output plugs 29 of the control unit engage the input sockets 51 of the circuit of the taximeter apparatus, not shown in FIGS. 5 and 6, and located in housing 1.

Shaft 31 to which the knob 33, or the flag 33' is secured, carries a fixed gear 34 meshing with the gear 35 mounted on a pivot 36 secured to front wall 30 of casing 7'. Gear 35 is covered by an indicator plate 37, a portion of which is visible through the window 32 in front plate 30 for indicating the angular position of shaft 31 and knob 33 or flag 33', and thereby the desired condition and function of the taximeter apparatus, not shown, in housing 1.

Shaft 31 carries a fixed arresting disc cooperating with a spring loaded arresting ball 39 mounted in a tubular projection of the top wall of casing 7' so that shaft 31 is detachably arrested in each of a plurality of angular positions. In some taximeters, it is necessary to turn shaft 31 only in a forward direction, and reverse turning must be blocked. This is accomplished by a ratchet wheel 40 secured to the shaft 31 and cooperating with a ratchet pawl 41 mounted on casing rear wall 7a'.

As shown in FIG. 4, shaft 31 has a hexagonal cross-section, and six cams 42 to 47 are mounted on the hexagonal shaft 31. The cams are identical, and have a single cam lug, as best seen in FIG. 4. The respective lugs are angularly spaced at an angle of 60°.

Assuming that the taximeter has six different operational conditions, namely "vacant," "rate 1" to "rate 4," and "cash," the six cams correspond to these conditions. If the taximeter has to be set to a smaller number of conditions, corresponding cams of cams 42 to 47 may be omitted. As shown in FIG. 5, each cam 42 to 47 cooperates with a set of switch means 48, also shown in FIG. 4. The number of contacts in each switch means

depends on the construction of the taximeter apparatus and on the function which is to be performed by the same, and is also different for mechanical and electronic taximeters.

Conductors 28 connect the switch means 48 with a set of plugs 29 mounted on the rear wall 7a', and cooperating with sockets 51 1,259,129, in housing 1, as explained above.

If the taximeter which is provided with one of the control units 100, 101, or 102 is an electronic apparatus, as described in the German Pat. 1,259,129, it is only necessary to insert the respective control unit into housing 1, and secure the same in housing 1 in a position in which the plugs 29 are located in the sockets 51 which are connected by conductors, not shown, with the other components of the electronic taximeter mounted in housing 1. All necessary connections to the electronic taximeter apparatus are obtained by switches 48, and the electronic taximeter is set to different conditions for performing different functions by turning knob 33 and correspondingly actuating selected sets of switches 48.

In mechanical and electromechanical taximeters, a function control shaft is provided which, by means of control cams, sets the taximeter to different conditions in which different functions are performed. In order to use control units of the type described above for insertion into a mechanical or electromechanical taximeter, without requiring separation of meshing gears when the respective control unit is removed, and placing gears in a meshing condition when the control unit is inserted, it is necessary to provide a particular circuit which permits the selection of the conditions of the functions of the taximeter apparatus under the control of pushbuttons 8 to 13 in the embodiment of FIGS. 1, 6 and 7, and by turning of the manual operating means 33, 31 or 33', 31 in the embodiments of FIGS. 3 to 5.

An embodiment using the control unit 100 of FIGS. 1, 6 and 7 in combination with an electromechanical taximeter, is illustrated in FIG. 8. The taximeter apparatus shown in the right-hand portion of FIG. 8 is located in housing 1, into which the control unit 100 is inserted as described with reference to FIGS. 5 and 6 so that the output plugs or contacts 29 of the control unit 100 are inserted into sockets 51 which constitute input contacts for the circuit of the electromechanical taximeter apparatus. In the arrangement of FIG. 8, it is only necessary to provide a single switch 24 for each of the pushbuttons 8 to 13.

The taximeter apparatus has a control shaft 60 with four control cams 61, 62, 63 and 64 which set the taximeter to different conditions for performing different functions such as charging at different rates, starting of the time measuring means instead of the distance measuring means when the car is at a standstill, shifting of the totalizers and counters, and operation of the indicator device.

A motor 65 drives control shaft 60 and also drives, through a shaft 66, the rotary switch arm of a rotary switch which has stationary contacts T₁, T₂, T₃, T₄, K, which are respectively associated with different rates, and with the "cash" condition. The stationary contacts T₁ to T₄ are respectively connected with sockets 51 correlated with pushbuttons 9 to 12 which are associated with different rates, contact K is connected

with a socket 51 correlated with a pushbutton 13 for obtaining the "cash" condition, while a contact F, associated with the condition "vacant" is connected to the socket 51 correlated with pushbutton 8 which obtains the condition "vacant." The inner end of the contact arm 66a is connected to ground, and rotary switch 68 has a contact ring 69 engaged by contact arm 66a.

Shaft 66 also rotates a reversing control cam 67 which cooperates with a shiftable switch NK. Reversing cam 67 has a lower portion associated with the conditions "cash," "vacant," and "rate 1," as indicated by reference characters *k*, *f*, and *R*₁ adjacent cam 67. The higher portion of cam 67 effects shifting of shifting contact NK to its other position when the taximeter apparatus is placed to the operational conditions in which three other rates are effective, as indicated by the reference numerals *R*₂, *R*₃ and *R*₄ adjacent reversing cam 67.

As explained above, the rotary switch 68 has six stationary contacts *F*, *T*₁, *T*₂, *T*₃, *T*₄, and *K*, and is arranged so that its slide ring 69 connects all stationary contacts *T*₁ to *K* with ground. Only a single stationary contact, namely the contact *F* corresponding to the condition "vacant," is not connected to ground, and does not cooperate with the slide ring 69.

Two relays *R*_s*R* and *R*_s*V* are connected into the circuit. Relay *R*_s*V* controls motor 65 for rotation in forward direction, and relay *R*_s*R* controls motor 65 during reverse rotation. Each relay *R*_s*V* and *R*_s*R* has three contacts, namely one normally open, one normally closed, and a make and break contact. Contacts *R*_{sv}1 and *R*_{sr}1 disconnect the respective other relay when one of the relays *R*_s*V* or *R*_s*R* is energized. Contacts *R*_{sv}2 and *R*_{sr}2 serve as holding contacts for the relays *R*_s*R* and *R*_s*V* when one of the relays is energized by operation of a pushbutton. Contacts *R*_{sv}3 and *R*_{sr}3 control the motor 65 during forward and reverse rotation, respectively. When switch *R*_{sv}3 is shifted, motor 65 runs forwardly, and rotates control shaft 60, 66, cam 67, and the rotary switch arm 66a in forward direction, since the current flows from the plus terminal through switch *R*_{sr}3, motor 65, and switch *R*_{sv}3 to ground. If relay *R*_s*R* is energized, and switch *R*_{sr}3 is shifted, while switch *R*_{sv}3 remains in the position of rest shown in FIG. 8, the current flows from the positive terminal through switch *R*_{sv}3, motor 65, and switch *R*_{sr} 3 to ground.

FIG. 8 shows a control unit 100 which has six pushbuttons 8 to 13 which are correlated with the conditions of the taximeter for obtaining the function "vacant," "rate 1" to "rate 3," "rate 4," and "cash." Evidently, instead of the control unit 100, one of the control units 101 or 102 may be used, and instead of operating pushbuttons 8 to 13, the respective manually operated member 33 or 33' can be used for actuating switches 48, described with reference to FIG. 5 instead of switches 24 described with reference to FIG. 6, and also shown in FIG. 8.

The embodiment illustrated in FIG. 8 operates as follows. Assuming that in the position shown in FIG. 8, pushbutton 8 for the condition "vacant" was depressed, while the rotary switch 68 is in the illustrated position, the pushbutton 10 correlated with rate *Z* may be depressed, so that the respective switch 24 is closed, and relay *R*_s*V* is energized by current flowing

from the positive terminal through relay *R*_s*V*, relay switch *R*_{sr}1, switch NK, switch means 24 of pushbutton 10, rotary switch 68, contact *T*₂, slide ring 69 and switch arm 66a to ground 0. Relay *R*_s*V* disconnects the switches *R*_{sv}1 to *R*_{sv}3. Switch *R*_{sv}1 disconnects relay *R*_s*R*. Switch *R*_{sv}2 holds relay *R*_s*V* in the energized condition. The circuit of relay *R*_s*V* is now closed, in addition to the connection by switch NK, also from the positive terminal through relay *R*_s*V*, switch *R*_{sv}2, switch 24 of pushbutton 10, and stationary contact *T*₂ to ground.

Switch *R*_{sv}3 energizes motor 65 to rotate in forward direction, since the circuit is closed from the positive terminal through *R*_{sr}3, motor 65 and switch *R*_{sv}3 to ground. Control shaft 60 and shaft 66 are driven in the forward direction.

One of the control cams 61 to 64 sets the taximeter to the respective condition and function, and at the same time, shaft 66 simultaneously rotates cam 67 and rotary switch 68.

Reversing cam 67 first shifts switch NK in the moment in which reversing cam 67 is between the positions *R*₁ and *R*₂. Since relay *R*_s*V* is held by holding contact *R*_{sv}2, relay *R*_s*V* is not yet disconnected. Only when rotary switch 68 has turned to a position in which stationary contact *T*₂ is no longer connected with ground, the circuit of relay *R*_s*V* is interrupted, and switches *R*_{sv}1 to *R*_{sv}3 is opened and shifted, respectively. Due to the shifting of switch *R*_{sv}3, motor 65 stops, so that the reversing cam 67 and the rotary switch 68 remains in the obtained position. Also shaft 66 is arrested by mechanical means, not shown, so that the respective function can be performed by the taximeter.

If after pushbutton 10, associated with the function "rate 2," pushbutton 13 associated with the function "cash" is depressed, switch NK is in the shifted position. However, relay *R*_s*V* is energized by current flowing from the positive terminal, through relay *R*_s*V*, switch 24 of pushbutton 13, rotary switch 68, contact *K*, and slide ring 69 to ground. Also in this case, switches *R*_{sv}1 to *R*_{sv}3 are operated, and the function is continued as described above for the operation of pushbutton 10.

The same function is carried out when after pushbutton 13, associated with "cash," pushbutton 8 associated with "vacant" is depressed, as will occur during normal operation of the taxicab. Reversing cam 67 serves the purpose of making possible a rearward shifting of control shaft means 66 and 60 out of the conditions *T*₂, *T*₃ and *T*₄. Assuming that the taximeter is in the condition for "rate 3," switch NK is in the shifted position. If in this position *T*₃, in which the switch 24 of pushbutton 11 is closed, the switch 24 of pushbutton 9 for "rate 1" is operated, the following switching operations take place in reverse direction. By operation of pushbutton 9, and switch 24 thereof, relay *R*_s*R* is energized, since current flows from the positive terminal, through relay *R*_s*R*, relay contact *R*_{sv}1, cam switch NK, switch 24 of pushbutton 9, stationary contact *T*₁, and slide ring 69 to ground.

Switches *R*_{sr}1 to *R*_{sr}3 are operated. Switch *R*_{sr}3 causes the flow of current from the plus terminal, switch *R*_{sv}3, motor 65, switch *R*_{sr}3 and to ground so that motor 65 runs in reverse direction and turns the control shaft means 66 and 60 in reverse direction.

Switch Rsr2 disconnects relay RsR from the cam switch NK, so that relay RsR is also energized by a current flowing from the positive terminal through relay RsR, relay switch Rsr2, switch 24 of pushbutton 9, stationary contact T₁ to ground. When reversing cam 67 and rotary switch 68 have turned to a position in which contact T₁ is not covered by slide ring 69, relay RsR is de-energized, and switches Rsr1, Rsr2 and Rsr3 are opened and shifted, respectively, so that motor 67 is stopped, and the entire taximeter comes to a standstill.

The reversing cam 67 performs the function to permit by cam portions R₁, f and k, respectively associated with "rate 1," "vacant," and "cash" conditions, only forward turning of motor 65, whereas in the conditions of the taximeter associated with "rate 2," "rate 3," and "rate 4," also reverse rotation of motor 65 with control shaft means 60, 66 to the conditions "rate 1," "rate 2," or "rate 3" is possible.

From the above description it will become apparent that it is possible to control by means of a replaceable control unit, which may have a set of pushbuttons, or a flag, or a knob for manual operation, either an electronic taximeter apparatus or an electromechanical, or a mechanical taximeter apparatus in such a manner that the entire taximeter can be easily adapted to different requirements of customers at low cost, with a minimum of components, and with a very simple assembly.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other type of taximeters differing from the types described above.

While the invention has been illustrated and described as embodied in a taximeter arrangement with an exchangeable control unit including manual operated means for setting a taximeter to different operational conditions for performing different functions, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be protected by Letters Patent is set forth in the appended claims.

1. Taximeter arrangement comprising at least distance measuring means, time measuring means, fare calculating means, indicating means and control means having a plurality of operational conditions for controlling the cooperation between said distance and time measuring and said calculating and indicating means, said control means consisting of input means undetachably connected to at least part of said distance and time measuring means and of said calculating and indicating means, and of output means and manual operating means designed as a separate unit to be connected and disconnected from said input means, said output means serving to transmit any control opera-

tions of said manual operating means to said input means of said control means.

2. Taximeter arrangement as claimed in claim 1, wherein said distance and time measuring means, said calculating and indicating means and said input means of said control means are mounted in a housing having an opening and wherein said output means and said manual operating means of said control means are mounted in a casing adapted to be removably mounted in said opening of said housing means.

3. Taximeter arrangement as claimed in claim 2, wherein said output means of said control means consist of a plurality of output contact means correlated to a plurality of conditions for functioning and adapted to be operated by said manual operating means, said input means of said control means consisting of a plurality of input contact means mounted adjacent said opening in said housing, said output contact means engaging said input contact means when said casing is located in said opening of said housing means.

4. Taximeter arrangement as claimed in claim 3 wherein said manual operating means include a turnable taxi flag, and cam means operated by said flag to operate said plurality of output contact means.

5. Taximeter arrangement as claimed in claim 3 wherein said manual operating means include a manually operated turnable knob, and cam means operated by said knob to operate said plurality of output contact means.

6. Taximeter arrangement as claimed in claim 3 wherein said manual operating means include a plurality of manually operated pushbuttons for operating said plurality of output contact means, respectively.

7. Taximeter arrangement as claimed in claim 3 wherein one of said pluralities of contact means includes a plurality of plug means, and the other plurality of contact means includes a plurality of socket means, and wherein said plug means are located in said socket means, when said casing is mounted in said opening of said housing.

8. Taximeter arrangement as claimed in claim 7 wherein each plug means include a set of plugs fixedly mounted on said casing projecting from the same from the rear wall thereof, wherein each socket means includes a set of sockets fixedly mounted on said housing means.

9. Taximeter arrangement as claimed in claim 3 wherein each of said contact means includes a set of contacts wherein each of said output contact means includes a set of output contacts; and wherein said manual operating means has a plurality of positions for connecting said sets of switches with said sets of output contacts, respectively.

10. Taximeter arrangement as claimed in claim 3 wherein said manual operating means includes a shaft mounted in said casing, a plurality of cams secured to said shaft, a manually operated member secured to said shaft for stepwise turning the same with said cams; wherein said contact means are operated by said cams, respectively, in different positions of said shaft and manually operated member; wherein each contact means includes a set of cooperating contacts; and wherein each output contact means includes a set of output contacts connected with said contacts of a corresponding set, respectively.

11. Taximeter arrangement as claimed in claim 1 wherein said input means includes a control shaft having a plurality of control cams for controlling various conditions, respectively, a motor for rotating said control shaft stepwise so as to render said cams successively operative, and a rotary switch including a plurality of stationary contacts, and a rotary switch arm driven by said shaft, said stationary contacts being connected with said input contact means, respectively.

12. Taximeter arrangement as claimed in claim 11 wherein said taximeter apparatus includes a reversing control cam driven by said motor, reversing control switch means operated by said reversing control cam, and relay means controlled by said reversing control switch means so as to permit reversal of said shaft and motor only in selected positions of said cam shaft and cams.

13. Taximeter arrangement as claimed in claim 3 wherein said manual operating means include a plurality of manually operated pushbuttons for operating said plurality of switch means, respectively; wherein each of said pushbuttons includes a cover movable between an open position and a closed position, and a lamp under said cover for illuminating said cover in the depressed condition of the respective pushbutton.

14. Taximeter arrangement as claimed in claim 3 wherein said manual operating means include a plurality of manual pushbuttons for operating said plurality of switch means, respectively; wherein each pushbutton has a stem moving along a path when the respective pushbutton is depressed; and wherein each switch means includes a set of cooperating switches, said sets being located in said paths, respectively, for operation by said pushbuttons, respectively.

15. Taximeter arrangement comprising taximeter apparatus having a plurality of different conditions for functioning differently, and including control circuit means for placing said apparatus in any one of said conditions and having a plurality of input contact means correlated with said conditions, respectively; housing means for said taximeter apparatus having an opening,

and adjacent said opening guiding and holding means, said housing means supporting said input contact means inward of said opening; and a plurality of different control units, each including a casing fitting into said guiding and holding means in an operative position in which said casing is located in said opening, different manual operating means mounted on said casing outside of the same and located outside of said housing means in said operative position of said casing, a plurality of switch means in said casing controlled by said manual operating means, and a plurality of output contact means connected with said switch means and mounted on said casing outside of the same for engaging said input contact means, respectively, in said operative position so that each of said control units with the respective casing can be selectively inserted through said opening into said housing and positioned in said operative position for placing under control of the respective manual operating means, said taximeter apparatus in a selected condition of said conditions.

16. Taximeter arrangement as claimed in claim 15 wherein said plurality of input contact means includes a plurality of socket means mounted on said housing; and wherein said plurality of output contact means of each of said control units includes a plurality of plug means; and wherein said plug means of the control unit which is in said operative position are located in said socket means.

17. Taximeter arrangement as claimed in claim 15 wherein said housing means has a front wall forming said opening; and wherein said casing of each control unit has a shoulder abutting said front wall adjacent said opening when the respective control unit is in said operative position.

18. Taximeter arrangement as claimed in claim 15 wherein said manual operating means of one of said control units includes a plurality of pushbuttons for operating said switch means; and wherein said manual operating means of another unit of said selector units includes a manually turnable member and a cam shaft secured to the same for operating said switch means.

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