

July 23, 1935.

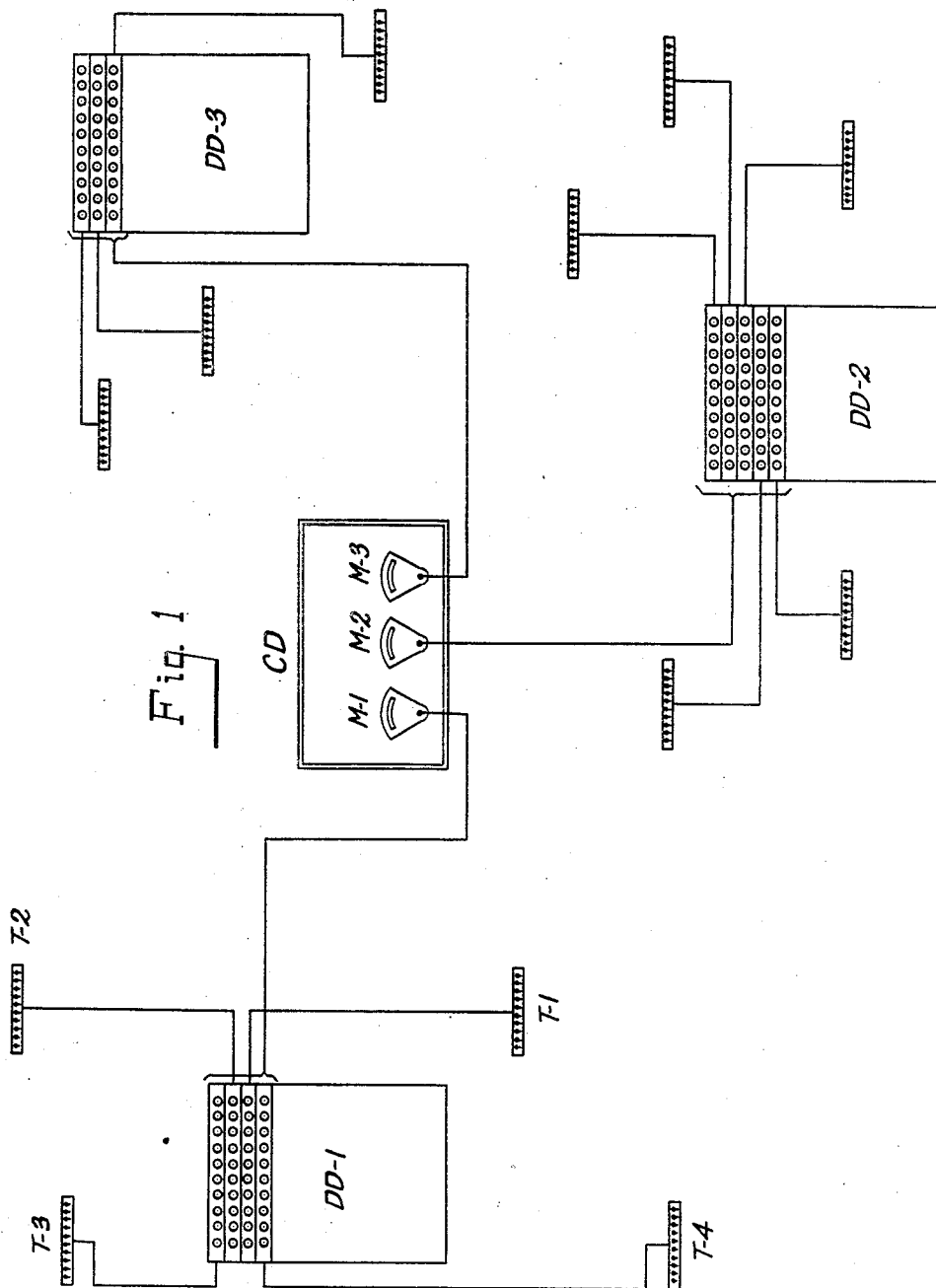
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2,008,909

SIGNALING SYSTEM

Filed April 11, 1929

2 Sheets-Sheet 1



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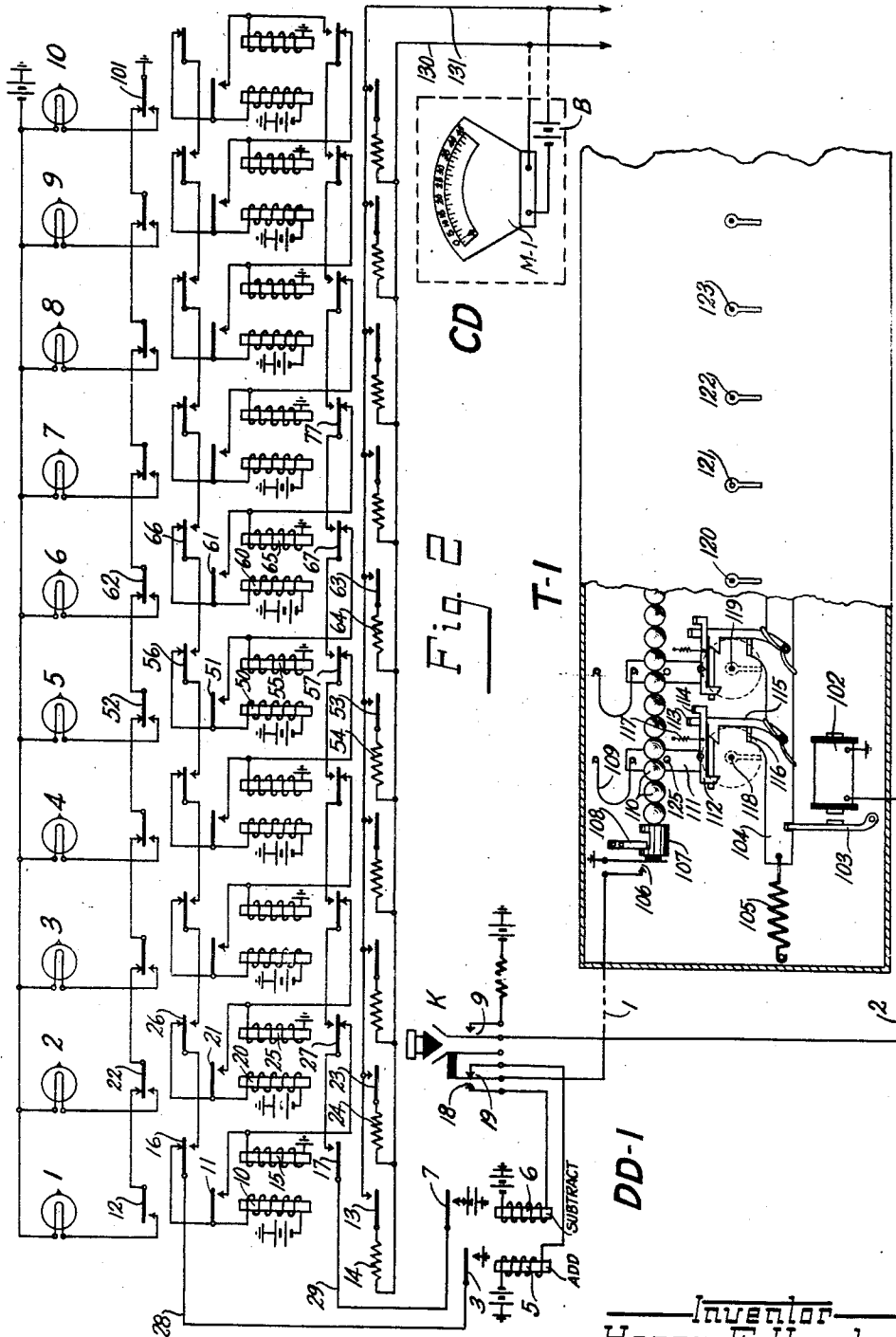
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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SIGNALING SYSTEM

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12 Claims. (Cl. 177—311)

This invention relates in general to signaling systems, but more particularly to a system for controlling and supervising the distribution of taxi-cabs throughout a number of districts of a large city.

The principal object of the invention is the provision of efficient signaling means whereby a plurality of indicating signals at a central location are progressively operated or released under the variable control of an outlying signaling station.

Where there are a large number of taxicabs in a city, it is the usual practice for them to have certain stations at which they congregate, and these stations are all interconnected in a particular district with a district dispatcher's office over a private telephone system so that drivers of the taxi-cabs can call the dispatcher and ask for orders or receive them from the dispatcher. In this type of system it is the usual practice for the district dispatcher upon receiving calls from the taxi-cab drivers to write on a pad of paper the number of cabs waiting for orders. She has, therefore, before her a list which she has always to add to or subtract from and keep revising so that she will at all times be aware of the number of cabs available. If she occasionally forgets to keep this up to date as it should be and also if the drivers of the taxi-cabs fail at times to inform her that they are available, the list would not be accurate and she would not know the exact number of taxi-cabs that are not in use.

It is an object of this invention to utilize the existing telephone system between cab stations and the district dispatcher, and in addition thereto supplant this with a signaling system of such a nature that unnecessary work on the part of the dispatcher will be eliminated, and at the same time she would exercise complete control over the taxi-cab drivers and the proper distribution of cabs in answer to calls for cabs by the public. There will be any number of dispatchers scattered through a particular city and these all in turn would be centralized at a common chief dispatcher's position so that the chief dispatcher is enabled to tell at a glance whether there are too many taxi-cabs waiting for orders at any one of the district stations and thereby be enabled to properly distribute them to other districts where they are needed.

A feature of the invention resides in means whereby a district dispatcher will have visible means whereby she will be aware at all times of the number of taxi-cabs available at a particular taxi-cab stand. She will have under her direct

supervision a plurality of these taxi-cab stands.

Another feature of the invention resides in the means whereby a taxi-cab driver can control the visible display means in front of the district dispatcher in such a manner that the dispatcher will at all times know the number of cabs available at the cab stand.

An additional feature resides in a plurality of sets of chain counting relays that may be energized and deenergized in succession to operate indicating signals under control of the taxi-cab drivers so that each set of the relays are energized or deenergized as the drivers call in or are released for orders.

Another feature of the invention resides in the means whereby the district dispatcher controls the release of a taxi-cab for use only after a driver has called in over the telephone system.

The invention will be better understood by referring to the accompanying two sheets of drawings comprising Figs. 1 and 2, in which Fig. 1 is a diagrammatic layout of the signaling system of the invention, the chief dispatcher CD being connected to the district dispatchers DD1, DD2, and DD3, and these district dispatchers in turn being connected to any number of cab stands T-1, T-2, etc. Fig. 2 shows the transmitter mechanism T-1 at one cab stand, and the sets of chain counting relays and the lamps 1 to 10, inclusive, corresponding to the maximum number of cabs at the cab stand where the transmitter T-1 is located. The indicating means M-1 of the chief dispatcher's position is shown to the right in this figure.

The general operation of the system will now be given in connection with the layout shown in Fig. 1. Each district dispatcher's position, DD-1, for example, has a number of rows of indicating lamps mounted above the telephone switchboard and each row of these lamps is connected to a particular cab stand, such as T-1 for example. In addition to this interconnection between the cab-stand transmitters and the indicating lamps the dispatcher will have a regular telephone line extending from her switchboard to each cab-stand so that she can converse with the drivers. This telephone connection has not been shown on the drawings. All of the rows of lamps of each district dispatcher are multipled together and then connected to the indicating meter M-1 located at the chief dispatcher's position CD. This is a totalizing meter giving a direct reading of the number of cabs available at the particular district dispatcher's position, this being the sum of all the rows of lamps.

There is only one lamp at a time illuminated in each row of lamps, and this is a direct indication to the district dispatcher DD—1 of the number of cabs available at the associated cab stand T—1, while the indicator M—1 at the chief dispatcher's position CD will give a reading of the total number of cabs available at the district dispatcher's position. All other district dispatchers, DD—2 and DD—3, for example, are similarly interconnected between their respective cab-stands and the chief dispatcher's position CD. There may be any number of other district dispatchers connected to the chief dispatcher and there also may be any number of taxi-cab stands connected to a district dispatcher from those shown in the drawings.

In the operation of the system as illustrated in Fig. 2, a taxi-cab driver, after discharging his passengers, arrives at a taxi-cab stand to which he regularly reports and inserts a key in one of the key senders in the transmitter T—1, for example. This action transmits an impulse of current over the line extending to the district dispatcher DD—1 and lights the first lamp in the particular row of lamps associated with the transmitter T—1. A different numeral is behind each lamp and the district dispatcher thereby is informed when lamp number 1 is lighted that there is a taxi-cab available at the taxi-cab stand T—1. This action also moves the needle of the meter M—1 at the chief dispatcher's position over one point, to show one cab is available. Another cab driver at the stand T—1 inserts his key in the next key hole and transmits another impulse over the line to the district dispatcher DD—1. This action wipes out the first lamp lit and illuminates the second lamp, indicating there are two cabs available. Any number of other cab drivers arriving at the cab-stand T—1 will insert keys in the vacant holes to transmit single impulses to the district dispatcher and light the next lamps in succession. Only one lamp at a time is lighted and this indicates the total number of cabs in the cab-stand, the addition of one cab to the previous number at the stand always wiping out the previous illuminated lamp and setting up a new number.

At this time, should the district dispatcher DD—1 receive a call for a cab from a patron or a cab-driver have a "pickup", they communicate with each other over the regular telephone system which is used in conjunction with this signaling system. The district dispatcher thereupon informs the taxi-cab driver to be prepared to remove his key from the key sender in the transmitter T—1. The dispatcher thereupon operates a release key at her position associated with this particular cab stand T—1 and allows the driver to remove his key from the transmitter. This action transmits a single impulse over the line to the district dispatcher's position which extinguishes one lamp in the row and illuminates the next preceding lamp to indicate to the district dispatcher that a cab has been given an order and is not waiting at the cab-stand T—1. From the foregoing, it will be seen that the district dispatcher exercises complete control over the distribution and release of taxi-cabs at a taxi-cab stand.

The above describes briefly the general layout of the system of the invention, and while only three dispatcher's positions have been shown connected to a chief dispatcher's position, it will be understood that there may be any number of these district dispatchers scattered throughout a

large district or a city. Similarly, there may be any number of taxi-cab stands connected to a particular district dispatcher, the number being only limited to that which can be conveniently taken care of by that particular district dispatcher.

A detailed description will now be given of the apparatus and equipment involved in the invention in connection with a single taxi-cab stand and one row of lamps or, in other words, the equipment for a taxi-cab stand at a single district dispatcher's position, DD—1 for example. The equipment at a cab-stand comprises a suitable weather-proof transmitter box T—1 that may be mounted on a telephone pole directly above the telephone box through which the cab driver communicates with his district dispatcher. This transmitter box has ten key holes or key senders arranged in a row on the face of it. Inserting a key and turning it in the key hole transmits an impulse of current over the conductor 1, extending to the district dispatcher's position and operates the adding relay 5. This repeats the impulse to the first one of a pair or set of ten chain counting relays to control the first lamp #1. There are ten lamps, numbered 1 to 10, inclusive, associated with the transmitter T—1. These lamps are controlled by the associated pair of counting relays. The key K associated with the transmitter T—1 is operated by the dispatcher when he has transmitted an order to the cab driver over the telephone line to pick up a fare. Operating this key operates a magnet in the transmitter T—1 so that the driver can withdraw his key which sends out another impulse to the last operated set of counting relays to extinguish the lamp and light the preceding one. The key, after having once been inserted, is prevented from being withdrawn by the driver only until the dispatcher has given him an order and operated the key K. The operation of one set of counting relays also inserts a resistance, 14 for example, in a conductor extending to the meter M—1 which is in front of the chief dispatcher. This gives the chief dispatcher a reading of the meter to show that one cab has been added to the cab-stand or withdrawn.

In the detailed description of the operation of the system a cab driver, upon arriving at his cab-stand, will approach the telephone pole upon which the box containing the telephone instruments and the transmitter T—1 is placed. He will insert his key which is an ordinary flat type key in the key hole or key sender 118 and turn it completely around. The course taken by the key in its movement in the key hole is indicated in the drawings by a circular dotted line. At the first part of the turn he will turn the key under the trigger 112 which is normally tensioned by the spring 117 in its normal position. Further movement of the key pushes up the L-shaped bracket 111, upon which the trigger 112 is pivoted, in an upward direction, compressing the tension spring 109 which is fixed on one end of this bracket. A pin 125 on the bracket 111 is thereby inserted between two of a row of balls 110. This pin is forced between two of these balls so that those to the left of the pin 125 will operate the slide 107 in the left-hand direction until a projection on it engages the stop 108 and near the end of the movement the slide 107 operates the contact springs 106. A similar movement of the balls 110 takes place on the right-hand side of the pin 125, but there is no contact on this side, the movement being taken up by a coil spring.

Further movement of the key engages the trigger on the pivoted lever 115 which is also under spring tension. The key then engages and moves the lever 115 until it passes the trigger point, whereupon the L-shaped bracket 111 under control of tension spring 109 restores to normal position and allows the pin 125 to become disengaged from the row of balls 110 which thereupon assume their normal position in contact with one another. The slide 107 thereby moves to the right until its left-hand side engages the stop 108, thereby opening the contact springs 106. The key is turned further until it reaches the stop 116 on the release bracket 104, in which position it remains and it cannot be withdrawn by the driver on account of the trigger on the lever 115.

The key remains locked in this position and it will be noted that the contacts 106 have been opened and closed once, thereby transmitting an impulse of current from ground over the conductor 1 which extends to the district dispatcher's office DD-1 and lights up the first or the next lamp, depending upon how many other keys have been placed in the key hole and to inform the district dispatcher that a driver is waiting for orders. When another cab driver afterwards inserts his key in the next key hole, 119 for example, the trigger mechanism and the operation of the impulse springs by balls 110 takes place in a similar manner as when the first driver placed his key in the key hole 118. In case, however, the driver placed his key in the key hole 118 and started to turn it and another driver operated the key in the key hole 119 at the same instant, one of them will be prevented from fully turning his key by the action of the balls 110. These, it will be observed, allow only one pin, such as 125, to be inserted between them, and no two pins can therefore be inserted between the balls at exactly the same time; otherwise there will be a false transmission of impulses. When a number of other keys have been placed in key holes 120, 121, 122, and 123, or the maximum (which is ten) are inserted, the impulse springs 106 will have been operated in accordance with the number of keys inserted, one impulse being transmitted for each key. Accordingly, a particular lamp in the row before the chief dispatcher will be illuminated informing her exactly how many keys have been inserted in the transmitter T-1, so that she will know how many taxi-cabs are available.

After a number of keys have been inserted in the transmitter and the district dispatcher receives an order for a taxi-cab or a driver has a pickup, the district dispatcher will call the driver, or the driver will call the district dispatcher, over the regular telephone system and request a release. The dispatcher thereupon operates the key K associated with the transmitter T-1 and the driver will be ready to remove his key from the key hole 118. The operation of the key K transmits current over conductor 2 to the transmitter T-1 and energizes the release magnet 102. This release magnet has an armature 103 in engagement with the release bar 104 which is under tension of the spring 105. The operation of the release magnet 102 moves the bar 104 in a right-hand direction, thereby moving all of the key stops 116 associated with each key hole to the right. This stop 116 bears against the levers 115 in every key hole and moves them slightly to the right. This disengages the trigger on the lever 115 from the path of the key and allows the driver to move the key in a counter-clockwise direction so that it engages the lower portion of the

L-shaped bracket 111 and moves it again in an upward direction against the tension of the spring 109, thereby forcing the pin 125 between two of the balls 110 and moving the slide 107 to the left to operate the springs 106 as before. As the lever 115 is moved to the right by stop 116 of the release bar 104, the upper end of this lever which is an L-shaped portion 113 is moved directly on top of a similar part 114 on the trigger 112, so that the projection 113 will be resting upon projection 114. As the key is further turned and the bracket 111 moved upward, the trigger 112 moves upward with it and, due to engagement of the parts 113 and 114, the trigger 112 will be turned about its pivot on the bracket 111 to move its trigger point upward and allow the key to be further moved in a counter-clockwise direction until it engages its opening, whereupon it may be withdrawn.

The foregoing action, it is seen, also transmits an impulse of current over conductor 1 in a similar manner as when the driver has inserted his key. Similarly, should another driver attempt to remove his key from the key hole 119, for example, at the same time that the first driver is removing his key, he will be prevented from doing so by the action of the pin 125 which has moved the balls and allows only one pin at a time to be inserted between them. These balls will be separated only a distance corresponding to the diameter of the pin 125 and the insertion of another pin will be prevented due to the limited movement of the movable slide 107 which is limited by the fixed stop 108. After a driver has withdrawn his key the dispatcher restores the key K, thereby interrupting the current to the release magnet 102 which thereupon restores its armature and allows the spring 105 to move the release bar 104 in the left-hand direction, and thereby restore all the levers 115 of all of the key holes to their normal positions under tension of their retaining springs. When the lever 115 has been returned to its normal position by the restoring action of the release bar 104, it disengages its projection 113 from the projection 114 and allows the trigger 112 to be restored to its normal position on the L-shaped portion of the bracket 111 under tension of the spring 117. It will be understood that the row of balls 110 and the movable stop 107 are all arranged to be held in a suitable retaining trough so that they will always be in alignment, and the release bar will also be arranged so that it moves in a certain direction only. This whole mechanism is merely shown in this manner so that it will be easily understood and is only diagrammatically illustrated.

The foregoing briefly describes the operation of the transmitter T-1 when a cab driver inserts and withdraws his key. As a key is inserted and turned in the key hole 118, it will be remembered, an impulse of current was transmitted from ground over the contacts 106, conductor 1, normally closed contacts 19 of the key K through the winding of the add relay 5 to battery. As the key in the key hole 118 is moved further, springs 106 are again opened. Accordingly, relay 5 energizes and deenergizes once. At the front contact of armature 3 relay 5 transmits an impulse from ground over conductor 28, armature and back contact 16 of relay 15 through the winding of relay 10 to battery. Accordingly, relay 10 energizes and operates its armatures 11, 12, and 13. At the front contact and armature 12 it completes a circuit extending from battery through

the lamp 1, front contact and armature 12 and then in series through all the back contacts and armatures on each of the sets of relays, to ground on armature 101. The illumination of lamp 1 informs the dispatcher that there is one cab waiting for orders at the cab-stand T-1.

As soon as the contacts 106 of the transmitter T-1 are opened, the relay 5 deenergizes and removes ground from conductor 28 by opening its armature 3. This action completes a locking circuit for relay 10 extending from battery through the winding of relay 10, armature 11 and its front contact, through the winding of relay 15 to ground. Relays 10 and 15 are therefore energized in series with each other, when the ground is removed from conductor 28.

At front contact and armature 13 relay 10 inserts the resistance 14 across the conductors 130 and 131 extending from both poles of battery B to the totalizing meter M-1, situated at the chief dispatcher's position CD. The needle of the meter is moved to indicate to the chief dispatcher that one cab is available at the district dispatcher's position DD-1. At the back contact of armature 16 relay 15 disconnects the original energizing circuit of relay 10 and transfers the circuit of conductor 28 to the armature 26 of relay 25 which controls the lamp 2. At front contact and armature 17 relay 15 prepares a circuit for deenergizing relay 10 for a purpose which will be later on explained.

Summarizing the above, it will be seen that there is a key in the key hole 118 and relays 10 and 15 are energized in series, while the lamp 1 is illuminated, indicating to the district dispatcher that there is one cab available. If another cab arrives at the taxi-cab stand T-1, the driver inserts his key in the next key hole 119. This operates the mechanism in the transmitter, as has been described, to open and close the contact springs 106. This action transmits another grounded impulse over conductor 1, extending through contacts 19 of the key K, through the winding of adding relay 5 to battery. Relay 5, upon energizing, transmits a grounded impulse from its front contact and armature 3, over conductor 28, armature 16 and its front contact, armature 26 and its back contact, through the winding of relay 20 to battery. Relay 20 attracts its armatures 21, 22, and 23, and when the impulse is removed from contacts 106 and relay 5 is deenergized, relay 20 remains locked up over its front contact and armature 21 in series with relay 25. At the back contact of armature 22 relay 20 disconnects the chain circuit for the lamp 1 and transfers it over to the lamp 2, thereby extinguishing lamp 1 and illuminating lamp 2, from the ground on armature 101. At front contact and armature 23 resistance 24 is introduced across the conductors 130 and 131, in addition to resistance 14, so that the needle on the meter M-1 at the chief dispatcher's station CD will indicate two taxi-cabs available. At the back contact of armature 27 relay 25 disconnects the prepared deenergizing circuit for relay 10 which will be later on explained. At the back contact of armature 26 the original energizing circuit of relay 20 is opened and the conductor 28 is transferred to the next relay set which controls the lamp #3. Relays 20 and 25 are now held energized in series with each other, as are relays 10 and 15.

From the foregoing, it will be seen that when the second cab driver inserts his key in the second key hole or any other key hole on the trans-

mitter T-1, the second lamp #2 is lighted while lamp #1 goes out, so that there will be no two lamps lit up at the same time. The third and fourth drivers arriving at the taxi-cab stand T-1 insert their keys one after the other in key holes 120 and 121 and operate the relay sets associated with lamps 3 and 4, illuminating these lamps in turn and extinguishing those previously lit. When the fifth taxi-cab driver inserts his key in the key hole 122, an impulse of current is transmitted over conductor 28 in series through all the armatures 16, 26, and similar armatures associated with the relay sets of lamps 3 and 4, through armature 56 and its back contact, through the winding of relay 50 to battery. Relay 50 energizes and locks up in series with relay 55 after the impulse is removed from conductor 28. At the front contact of armature 52 the lamp 5 is illuminated and the previous lamp 4 is disconnected at the back contact. At front contact and armature 53 resistance 54 is included across the conductors 130 and 131 so that there will now be five similar resistances including 14 and 24 across these conductors. Accordingly, the needle of the meter is pointing opposite the fifth number, indicating five available taxi-cabs at the district dispatcher DD-1. At front contact and armature 56 the circuit for conductor 28 is transferred to armature 66 by relay 55.

When another taxi-cab driver inserts his key in the key hole 123, the impulse of current caused thereby is transmitted over conductor 28 through armature and back contact 66 through the winding of relay 60 to battery. Relay 60 energizes and locks up in series with relay 65 over its contact 61. At the front contact of armature 62 the circuit for the lamp 5 is disconnected and the circuit connected to lamp 6, so that lamp 6 will be lit and lamp 5 will go out. At front contact of armature 63 the resistance 64 is introduced across the conductors 130 and 131 so that there are now six resistances connected across this conductor in multiple, thereby giving a reading of six on the meter M-1.

It will be noted now that the lamp 6 is illuminated while all other previous lamps from 1 to 5 have been extinguished and this indicates to the district dispatcher that there are six taxi-cabs waiting for orders. Likewise, relays 10 and 15, 20 and 25, the relays associated with lamps 3 and 4, relays 50 and 55, and 60 and 65 are all energized in series with each other. At this time should the district dispatcher DD-1 receive an order for a cab, she transmits this order over her private telephone system to the cab-stand T-1 and the telephone thereat. One of the cab drivers waiting receives the call and she instructs him where to pick up the passenger. It may also happen that the cab driver receives a request for a cab from waiting patrons. He then calls the district dispatcher over the regular telephone system and requests a release. In either case, after having been in communication with the district dispatcher, she operates the push button associated with the key K, thereby closing contacts 18, opening contacts 19, and closing contacts 9. The driver has his hand on the key, the one for example in the key hole 118, and prepares to withdraw it. The operation of the key K closes the contact 9 and completes a circuit extending from battery through the resistance, closed contacts 9, over conductor 2, through the winding of release magnet 102 to ground. This magnet 102 accordingly attracts its armature 103, thereby removing the release bar 104 against

the tension of spring 105 and in the right-hand direction. The stop 116 moves the lever 115 and allows the release of the key from the key hole 118, as has been previously explained. In addition to this the bracket 111 is moved in an upward direction against the tension of the spring 109 so that the pin 125 may be inserted between two of the balls 110. Accordingly, the contacts 106 are closed and opened again when the key is removed and the bracket 111 restored. This action transmits an impulse of current extending from ground through the closed contacts 106 over conductor 1, through the operated contacts 18 of the key K, through the winding of the subtracting relay 6 to battery. Relay 6, upon energizing, closes its front contacts on its armature 7 and completes a circuit extending from battery, armature 7, conductor 29, operated armature 17 and its front contact, armature 27 and its front contact, and in series through similar armatures on relays associated with lamps 3 and 4, armature 57 and its front contact, armature 67 and its front contact, armature 77 and its back contact, and through the winding of the relay 65 to ground. Relay 65, being already energized in series with relay 60, will not be affected. However, battery extends to the front contact of closed armature 61 so that relay 60 will be short circuited, and it will therefore release its armatures 61, 62, and 63. At the front contact of armature 62 the circuit for the lamp 6 is opened and at the back contact of this armature a circuit from ground on armature 101 is transferred over to armature 52 and its front contact, to the lamp 5. Lamp 6 will be extinguished and lamp 5 lighted. At the front contact of armature 63, resistance 64 is removed from across the conductors 130 and 131, so that the meter M—1 will now read 5 instead of 6.

Subtract relay 6 has been only momentarily energized and immediately deenergized due to the opening and closing of the contact 106. The battery from the front contact of armature 7 is shortly afterwards removed from conductor 29 when relay 6 deenergizes. Accordingly, the circuit for relay 65 is interrupted, extending over armatures 57, 67, and 77, and relay 65 deenergizes and restores its armatures 66 and 67. At the back contact of armature 66 the original energizing circuit for relay 60 is prepared, at the back contact of armature 67 the subtract circuit for relays 50 and 55 is prepared.

When the district dispatcher notices the extinguishing of the lamp 6 and the illumination of lamp 5 she will know that the driver has removed his key from the key hole 118 and she thereupon restores the key K to normal. This opens the contacts 18 and restores the contacts 19 to their original normal position and at the contact 9 removes the battery extending over conductor 2 to the release magnet 102, so that this magnet restores armature 103, thereby allowing the release bar 104 to be restored to its normal position, under tension of the spring 105. The movement of the bar 104 moves the stop 116 to the left, thereby releasing the lever 115 so that its trigger arm will then be in position to be operated by another key. The other drivers then remove their keys one after the other in order, under control of the key K of the district dispatcher until only one key remains. When the district dispatcher calls the cab-stand T—1 again and requests the remaining driver to take an order for a cab, lamp 1 is the only one illuminated at this time. She operates the key K so that the release

magnet 102 is again energized from contact 9. This moves the release bar 104 to the right-hand direction so that the stop 116 disengages its trigger arm on the lever 115 so that the key can be rotated in a counter-clockwise direction to move up the L-shaped bracket 111 and insert the pin 125 between the pair of balls 110 and operate the springs 106. The projection 113 riding on top of the projection 114 allows the trigger 112 to be moved out of the way of engagement with the key so that it can be further rotated in a clockwise direction and finally withdrawn. This action transmits another impulse of current from the contact 106 over conductor 1, through the operated contacts 18, through the winding of subtract relay 6 to battery. At the front contact of armature 7 relay 6 puts battery on conductor 29 through armature 17 and its front contact, armature 27 and its back contact, winding of relay 15 to ground. A branch of this circuit extends as before through the front contact of armature 11 to one side of the winding of relay 10, thereby short circuiting this relay. Relay 10 releases its armatures and at the front contact and armature 12 interrupts the circuit to the lamp 1, thereby extinguishing it. There are no lamps lit now and there are no keys in position in the key holes in the transmitter T—1. At armature 13 resistance 14 is removed from across conductors 130 and 131, allowing the needle on the meter M—1 to restore to its normal or zero position. At armature 11 relay 10 opens the short circuit on itself. When the key has been withdrawn by the driver and the contacts 106 opened, relay 6 restores and opens its armature and contact 7, removing the battery from the conductor 29 so that relay 15 will deenergize. At armature 17 it opens a further point in its circuit and at the back contact of armature 16 it again prepares a circuit for energizing relay 10 over conductor 28. The district dispatcher noting the extinguishment of the lamp 1 releases her key K, thereby restoring contacts 18 and 19 to their normal position and also removing the battery to contact 9 from the release magnet 102 so that it can restore its armature and allow the lever 115 and all the other levers to assume their normal position.

From the foregoing operation, it will be seen that any number of keys may be inserted in the transmitter T—1 and a single lamp will be always lit corresponding to the total number of keys in the key holes. Each time that a key is withdrawn the highest numbered lamp will be extinguished and the next lowest numbered lamp will be illuminated on any one of the lamps from 1 to 10 so that at all times there will be a direct reading before the district dispatcher of the number of keys in the key holes, which indicates the number of cabs awaiting orders, and these cabs can only be released by the operation of the key K by the district dispatcher. Each time a cab is added to the stand a key is inserted in a key hole and an impulse is sent over conductor 28 to add up and light the next preceding lamp, while each time a key is removed and the cab driver sent out on an order, an impulse is transmitted over conductor 29 so that the highest numbered lamp will be extinguished and the next lower one will be illuminated.

The conductors 130 and 131 extending to the chief dispatcher and terminating in the meter M—1 are multiplied to other sets of relays similar to that described which are associated with other rows of lamps similar to those shown, so

that the total number of cabs in a particular district under control of the district dispatcher will always be indicated on the meter before the chief dispatcher.

5 It will be appreciated that the number of key holes that are in the transmitter T-1 are not limited to the number illustrated, which is ten. They may be expanded to any number and, likewise, the lamps 1 to 10 may be increased to any
10 number desired, or there may be fewer than that shown, depending upon the requirements of each cab-stand and the amount of taxi-cabs that a district dispatcher can conveniently control.

15 It will be understood that the lamps 1 to 10 will all be arranged in a horizontal row in positions visible to the district dispatcher and preferably a plate of glass will be placed in front of the lamps with the numerals opposite each lamp so that when the lamp is lighted the numeral will
20 be visible. Instead of extinguishing a lamp when a cab is withdrawn from the cab-stand T-1 and illuminating a lower numbered lamp, it may be desired to keep all lamps lighted or the number according to the total number of cabs in the cab-stand. In other words, if there are four cabs,
25 there will be four lamps lit and each time a cab is released there will be one less lamp lit. This would only be in case there would not be any numbers opposite each lamp, so that the operator would be able to tell at a glance how many cabs
30 are available by counting the lamps. This feature can be applied to the sets of relays by merely removing the back contacts of the contacts controlling each lamp in the row so the lamp will not
35 be operated over a series chain circuit, but will be controlled by an independent circuit.

This system, likewise, is not intended to be limited to the control of taxi-cabs in a large city, but may be utilized to operate in connection with
40 a watchman's supervisory system or a police registration system or any other similar system.

What is claimed is:

1. In a signaling system, a circuit, a dispatcher's position, an outlying signaling station connected to said dispatcher's position over said circuit, a sending transmitter at said signaling station having signal transmitting means for transmitting like impulses of current over said circuit, a plurality of signals at said dispatcher's position, means for in one instance operating said signals responsive to the operation of said transmitting means and the consequent transmission of said current impulses over said circuit, and means for in another instance releasing said signals responsive to the operation of said transmitting means and the consequent transmission of current impulses over said circuit, and means for determining which said means will operate said signals.

2. In a signaling system, a circuit, a dispatcher's position, an outlying signaling station connected to said dispatcher's position over said circuit, a signal transmitter at said signaling station having means for transmitting current over said circuit, a plurality of keys, means for permitting the turning of said keys and for locking them in said transmitter to actuate said signal transmitting means, a plurality of signals at said dispatcher's position, means for operating said signals in consecutive order responsive to the turning and locking of a key in said transmitting means, a dispatcher's key at said circuit controlling position, means for releasing said signals, and means operated by said dispatcher's key for unlocking said first keys to permit them to be turned
75 to again operate said transmitting means to in

turn operate said release means to release said signals in consecutive order.

3. In a signaling system, a dispatcher's position, a circuit, an outlying signaling station connected to said position over said circuit, a signal transmitter at said signaling station having means for transmitting current over said circuit, a plurality of keys, means for permitting the turning of said keys in said transmitter to actuate said signal transmitting means, means for locking an inserted key in said transmitting means, a plurality of signals at said dispatcher's position, means for operating said signals in consecutive order responsive to the operation and locking of said keys in said transmitting means, a circuit controlling key at said dispatcher's position, said circuit controlling key controlling means to effect the unlocking and permit the turning of the first keys in said transmitting means, means for releasing said signals, said signal releasing means also controlled by said circuit controlling key and operated by the unlocking and turning of said first keys in said transmitting means for releasing said signals in consecutive order.

4. In a signaling system, a dispatcher's position, a circuit, an outlying signaling station connected to said dispatcher's position over said circuit, a signal transmitter at said signaling station having a signal transmitting means for transmitting current over said circuit, a plurality of keys, means for permitting said keys to be turned and for locking them in said transmitting means, a plurality of signals at said dispatcher's position, said transmitting means transmitting an impulse of current over said circuit connection responsive to the turning and locking of a key therein, means responsive to said current impulse for operating one of said signals, said transmitting means transmitting another impulse of current responsive to the turning and locking of another key in said transmitting means to operate said signal operating means to in turn operate the next succeeding signal, means controlled at said dispatcher's position for permitting the unlocking and turning of any one of said keys in said transmitting means, the unlocking and turning of a key operating said transmitting means to transmit a further impulse of current over said circuit, and signal releasing means responsive to said last impulse of current to effect the release of said last operated signal and reoperate said first signal.

5. In a signaling system, a circuit, a dispatcher's position, a transmitting station connected to said dispatcher's position over said circuit, transmitting means at said transmitting station for transmitting current over said circuit, a plurality of signals at said dispatcher's position, a pair of relays at said position, one having means for operating and the other having means for releasing said signals, a plurality of keys, the turning of a key in said transmitting means effective to transmit current over said circuit to energize one of said relays to in turn controlling its means operate one of said signals, the turning of another key in said transmitting means effective to again energize said one relay to again control its means operate the next succeeding signal, a circuit controlling key at said dispatcher's position, the operation of said circuit controlling key and the turning and removal of one of said inserted keys to again operate said transmitting means effective to transmit current over said circuit to energize the other of said pair of

relays to in turn control its means to release the last operated signal.

6. In a signaling system, a dispatcher's position, a circuit, a plurality of signals at said dispatcher's position arranged in a row, a plurality of sets of counting relays one for each signal, a pair of control relays connected to said circuit, means responsive to the operation of said pair of relays for controlling the relays of each set, an outlying signaling station connected over said circuit to said dispatcher's station, means at said dispatcher's station for connecting said outlying station over the circuit to either of said control relays, means controlled at said signaling station for connecting a source of current to said circuit for operating one of said control relays, means responsive to the operation of said one control relay to control said counting relays consecutively and operate said signals in a definite order, and means for operating the other of said control relays from said signaling station, and means responsive to the operation of said other control relay for deenergizing said sets of counting relays in consecutive order and releasing said signals in consecutive order.

7. In a signaling system, a dispatcher's position, an outlying station, a circuit connecting the two, a single circuit closer at the station, a plurality of control means for operating the circuit closer, a plurality of signals at the position controlled over the circuit, certain of the control means operated at different times to in each case operate the circuit closer to transmit a current impulse over the circuit, relay means responsive to one impulse to operate one of said signals, release relay means, and means at the dispatcher's station responsive to another impulse for operating said release relay means to release the operated signal and operate another of said signals.

8. In a signaling system, a dispatcher's position, an outlying station, a circuit connecting the two, a single circuit closer at the station, a plurality of control means each having means for operating the circuit closer, a plurality of signals at the position, corresponding in number to the said plurality of control means, certain of said control means operate at various times to actuate said circuit closer to in turn transmit impulses of current over said circuit, relay means responsive to one impulse for operating one of said signals, release means, and means at the position including a key, responsive to another impulse for operating said release means to release the operated signal and operate another signal to indicate the operation of both of said control means.

9. In a signaling system, a dispatcher's position, a plurality of indicating signals at said position arranged in consecutive order, relays for operating said signals, a pair of control circuits extending to said relays, a relay having means for controlling one of said circuits, another relay having means for controlling the other control circuit, an outlying station, a circuit connecting said station to the dispatcher's station, a dispatcher's key for controlling the connection of said control relays to the last circuit, means at the outlying station for operating said control

relays over said last circuit, under control of said key, to in turn control certain of said signal operating relays over said control circuits to operate and release said signals consecutively.

10. In a signaling system, a dispatcher's position, a plurality of signals at said position arranged in consecutive order, relays for controlling said signals, a pair of circuits over which said relays are controlled, a first control relay having means for controlling one of said circuit, a second control relay having means for controlling the other of said circuits, an outlying station having a signal circuit connected to the dispatcher's position, a dispatcher's key controlling the connection of said signal circuit to said control relays, means at the station for repeatedly operating said first control relay over the signal circuit to in turn control the associated control circuit to operate said first relays to thereby operate the signals consecutively and disconnect each previously operated signal, said means at the station operative, after the dispatcher's key has been operated, for repeatedly operating said second control relay over the signal circuit to restore the first relays consecutively over the other control circuit and thereby release the signals in a similar manner so that one signal will always be operated at a time.

11. In a signaling system, a series of indicating devices, relays for controlling said devices, a pair of conductors over which said relays are controlled, a first control relay having means for controlling one conductor, a second control relay having means for controlling the other conductor, means for transmitting impulses to said first control relay, said first control relay operated responsive to said impulses to progressively energize said relays over one of said conductors and lock them energized, said relays having means for operating said signals consecutively and disconnecting the previously operated signal when thus progressively energized, means for transmitting impulses to the said second control relay, to in turn progressively deenergize said relays over the other of said conductors to disconnect the operated signal and disconnect the preceding signal.

12. In a signaling system, a plurality of indicating devices, a pair of relays for controlling each device, a plurality of sets of contacts controlled by each relay, a pair of conductors connected each in a separate circuit passing through contacts of each pair of relays in series, a control relay for controlling each conductor, means for transmitting impulses to one control relay to operate it to progressively energize and lock energized the pairs of relays over one of said conductors, circuit connections controlled by the contacts of each pair of relays for operating the associated indicating device and releasing the previously operated device, means for transmitting impulses to the other of said control relays to operate it to progressively release said pairs of relays over the other of said conductors, and circuit connections controlled by the contacts of each pair of relays for releasing the associated indicating devices and operating the preceding indicating device.

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