This invention relates to a traffic control system and more particularly to a system that can be employed to control the movement of traffic in an emergency condition or a condition that is not considered normal or permanent.

Many conditions occur during movement of vehicles on a roadway where some special traffic control is desirable, and this is ordinarily taken care of by specially assigned individuals which is time consuming and costly. Some of these conditions are traffic accidents on roadways which tie up normal flow of traffic, highway construction which necessitates detours, stoppage for intervals of time while work is done, failure of the usual automatic control signals, etc.

One of the objects of my invention is to produce a portable traffic control system that can quickly be set up and operated either automatically or manually so that the desired flow of traffic on a roadway can take place in a convenient manner.

Another object is to produce an improved portable roadway traffic control system of the remote electrical control type which will include a transmitter unit and receiver units involving signal lights which can be placed in any desired position so that all conditions of traffic can be controlled in an emergency condition or any semi-permanent condition as the situation demands.

A more particular object is the provision of a portable electrical transmitter unit for controlling separate portable receiver units of a traffic control system which will involve in the receiver units traffic control signals and will permit these units to be set up along a highway or other place where vehicular traffic is to be controlled and said unit operated from some remote point by the portable transmitter unit either manually or automatically so that the movement of the vehicular traffic will occur in a desired manner.

Still another object is to produce a traffic control system of the electrical signal type that will be compact, easily placed and carried in an automobile or other vehicle for transporting, quickly set up for use in any situation requiring special control of vehicular traffic and which will be easily controlled and efficient in operation.

Other objects of my invention will become apparent from the following descriptions taken in connection with the accompanying drawings, showing a preferred embodiment.

In the drawings:
- Figure 1 is a view of a road way showing my emergency or temporary traffic control system set up along said road way for the control of vehicular traffic thereon;
- Figure 2 is an enlarged view of the electrical signal unit, parts being broken away to show details of the tripod support;
- Figure 3 is a wiring diagram of the transmitter unit of the traffic control system which will be in a separate portable case; and
- Figure 4 is a wiring diagram of one of the electrical signal units of the system which will be positioned alongside of a roadway with one or more such units to control the vehicular traffic in the manner desired by operation of the transmitter unit either manually or automatically as the situation demands.

Referring to the drawings in detail and first to Figure 1, there is disclosed a section of highway indicated at X where it is desired to control automobile traffic in a temporary or partially temporary manner. For example, an accident may occur which will require one way traffic to be established for a considerable period of time before normal traffic flow can be re-established. Or there may be road construction operations going on which will, during certain periods, last for hours or even days, requiring that traffic move in alternate one way directions. When such conditions for traffic control exist, it has been found expensive to do the traffic controlling by using a control officer or director. The traffic can, however, be efficiently controlled in any desired manner by the use of the portable traffic control system embodying my invention and shown as set up along the section of highway X where the control is desired. As shown, there are receiving signal units R disclosed as two in number with one being set up at one side of the highway to be easily seen on the right of oncoming traffic moving in one direction and the other being set up on the other side of the highway to be easily seen on the right of oncoming traffic moving in the opposite direction. The units R are each contained in a box 10 supported on tripod legs 11 at a suitable height along the highway. In addition to the receiving signal units R which may be more than two if the situation demands, as for example where cross traffic is to be controlled, there is a portable transmitting unit T mounted in a suitable box 12 and positionable at any place desired. The receiving units R each have a receiving antenna 13 and the transmitting unit has a sending or transmitting antenna 14.

The boxes 10 of each receiving set may be built in a suitable manner, but as best shown in Figures 1 and 2 there is a front plate suitably attached to rectangularly arranged side, top and bottom walls and in this front plate are mounted two signal lights 16 and 17, the former or top one having a red lens to indicate "stop" as shown thereon, and the latter or bottom one having a green lens to indicate "go" as shown thereon. The back of each box is closed by a removable closure plate 18. The bottom wall 19 carries the leg support unit 20 having sockets into which the legs 11 can be inserted at will to set the receiver unit in any desired place. The legs will be of a suitable height so the lights can be seen and also easily removable from their sockets so that the units can be made compact for transportation purposes. The receiver units R may have top handles 21 so the boxes can be easily handled. Also, the transmitter can have a top handle 22 for the same purpose. One panel of the transmitter box 12 can be removable so as to have access to the transmitting circuit therein.

A suitable transmitting circuit is shown in Figure 3 which employs a crystal oscillator 23 connected to a suitable amplifying tube 24 which is coupled to the transmitting antenna 14. In the oscillating circuit for the control grid of tube 24 is an inductance and the output is controlled by the resistor 25. Power is supplied by a 135 volt battery 26 (three 45 volt batteries in series). Current for heating the cathode or filament of tube 24 is supplied by a 1.5 volt battery 27. The filament circuit is tapped into the inductance. The transmitter circuit also has a variable capacitance circuit associated with the antenna couple. The transmitter circuit can be controlled in any desired manner, as by a manual device or
an automatic timing device which is indicated at C in the transmitter circuit.

To control a receiving circuit for controlling the "stop" and "go" lights in the receiver units R shown in Figure 4. The receiving circuit has a triode gas filled amplifying tube 29, the filament of which receives current from a 1.5 volt battery as shown. A 45 volt battery powers the circuit and the receiving antennas 19 is connected into the circuit including the plate input of the tube 29 in the manner disclosed, there being the usual variable condenser 30 associated with the antenna and the other condensers and inductances shown included in the circuit.

Connected to the 45 volt power battery and the grid of tube 29 is a receiver relay RR having the double throw switch 31 which, with three additional relays R₁, R₂, and R₃ having suitable switches 32, 33, 34 and 35 as shown, control the lighting of the two lamps S and G for the stop and go signals in the receiver unit R. Power for operating the three relays R₁, R₂, and R₃ and lighting the lamps S and G is supplied by a battery 36 and associated with the battery in the circuit is a manual on and off switch 37. As can be seen from Figure 4, relay R₁ controls a double pole switch 32, the relay R₂ a double throw switch 33 together with one arm being of the double pole type and the relay R₃ controls the double throw switch 34 with one arm being of the double pole type and said relay also controlling the double pole switch 35.

In the circuit of Figure 4 all the relays are shown de-energized and under these conditions the switch conditions will be as shown. If the manual switch 37 is closed, then all relays R₁, R₂, and R₃ remain de-energized. The stop light lamp S will become lighted due to the change in condition of switch 34. When a signal is now received from the transmitter and the relay receiver RR is energized, the switch 31 will be thrown to its position opposite that shown in Figure 4. This then will cause the relay R₁ to be in an energized circuit and both sections of switch 32 will be thrown from their open position to closed position. The stop light S will remain lighted, due to the unchanged condition of switch 34.

When the receiver relay RR is caused by the transmitter to become energized, a switch 31 will return to the condition shown in Figure 4. Relay R₁ does not become de-energized because when it became energized a holding circuit was established through the closing of switch 32. Thus, when switch 31 returns to the condition shown, the relay R₁ will be energized and switch 32 will be operated and Figuration of a holding circuit to maintain this relay R₁ energized independently of switch 33. The light S remains lighted as its circuit is not broken.

If now the receiver relay RR is again caused by the transmitter to be energized, a circuit will be created through switch 31 and also switch 33 which will energize relay R₂, thus throwing both switch 34 and switch 35. This breaks the circuit of the stop light S and it is extinguished and substantially simultaneously therewith there is closed a circuit through the go light G whereby it is lighted. Relays R₁ and R₂ will become de-energized, due to the change in condition of switch 35 upon energization of relay R₂.

Following this energization of the receiver relay RR, if the transmitter is operated to cause such receiver relay to be de-energized after a period of time, the go light G will turn off as the relay R₂ becomes de-energized due to the change of switch 35. The stop light S is again turned on as switch 34 returns to the condition shown in Figure 4. The whole circuit is now conditioned to where all relays are de-energized and the cycle of controlling the lights can be repeated.

When two of the receiver units are set up in the manner described in Figure 4, it will be seen that both receiver units will show red simultaneously and both show green simultaneously. When it should be desired to control two-way cross traffic at an intersection, for example by a single transmitter, the companion receiver units for the cross traffic will be closed to show red and show green when the other companion receiver units are showing red. To accomplish this one set of receiver units when turned on will be conditioned to show green and this is accomplished by manually operating and releasing the relay receiver switch as S of the unit. In doing this it will cause relay R₂ of each unit to become energized and this will turn off the red lights and turn on the green lights in the same manner as if the receiver relays had been caused to be energized and then de-energized with a signal from the transmitter. With this manual pre-conditioning of two of the companion receiver relays then upon the transmitter being operated and the receiver units receiving signals, the proper coordination of the receiver units for controlling the cross traffic will take place.

Under certain conditions it may be desirable to control one way traffic with the receivers and this is done by the use of two receiver units with one of them being first manually conditioned to turn on the green light. With this conditioning of one of the units, it will be seen that traffic can move in one direction while this light is green and the traffic in the opposite direction will be stopped. Thus, the operator controls the traffic flow being on. When the transmitter is operated to transmit a signal to the receiver units, the one that is green will be turned to red as its relay R₃ will become de-energized. The other unit will have its receiver relay RR energized and its red light remains on. Thus both red lights will be on and all traffic stopped, giving an opportunity for the traffic between the two receiver units to clear before traffic is started in the opposite direction by again operating the transmitter. When traffic moves in this opposite direction, the receiver unit which was red changes to green and the one which was previously green will remain red, as will be apparent from the operation of the circuit as previously described.

It will be noted that my traffic control system is simple and it can be produced at a low cost. The transmitter and receiver circuits are not complicated and only one tube is required for each circuit. The units are compact and the receiver units can be easily handled and set up at any desired place. Transportation of the equipment is easy and a small space is all that is required, because of ready removal of the legs of the receiver units. Any police car can carry the equipment. The transmitter unit can be placed as desired, either left in the car for use or placed alongside the tracks to be protected. Control can be manual or automatic as desired. Although only two receiver units are shown, more could be controlled by the transmitter if desired. To have units work in pairs, the unit which will be a companion to the one having the receiver circuit shown in Figure 4 will be changed by having its "S" and "G" lights connected in reverse to those of the disclosed circuit.

I am aware that modifications can be made in any disclosed portable traffic control system, all without departing from the fundamental principles involved. The transmitting and receiving circuits can be varied, as is well known to any electronic engineer. Also, other supporting arrangements for mounting the receiver units could be used. I therefore desire it to be understood that the scope of my invention is not to be limited except in accordance with the appended claims.

What is claimed:

1. In a portable traffic control system comprising a portable unit including traffic control lights positionable as desired along a traffic way for indicating "stop" and "go," electrical means including a plurality of switches for controlling the intermittent "on" and "off" operation of the lights, means for operating said switches including a radio receiving means comprising a radio signal receiving antenna and a circuit connected therewith having a plurality
of relays for operating the switches, a separate portable transmitter unit for generating and transmitting radio control signals to the receiving antenna to thereby cause the relays to operate and alternately control the lights in the "on" and "off" manner desired, a second separate portable unit having "stop" and "go" lights, a radio receiver means, a plurality of switches, a circuit including a plurality of control relays for said switches and an antenna similar to the first named unit, said second unit having its radio receiving means, the relays and the switches connected so that when controlled by signals from the transmitter its "stop" and "go" lights can be lighted in a manner opposite those of the first circuit, each of said circuits including one switch which is manually operable for varying the contact relationship of the relays.

2. The portable traffic control system of claim 1 wherein both the first and second control units having lights include in the receiving means a receiver relay for electrically operating said one switch in accordance with the generated signals.

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