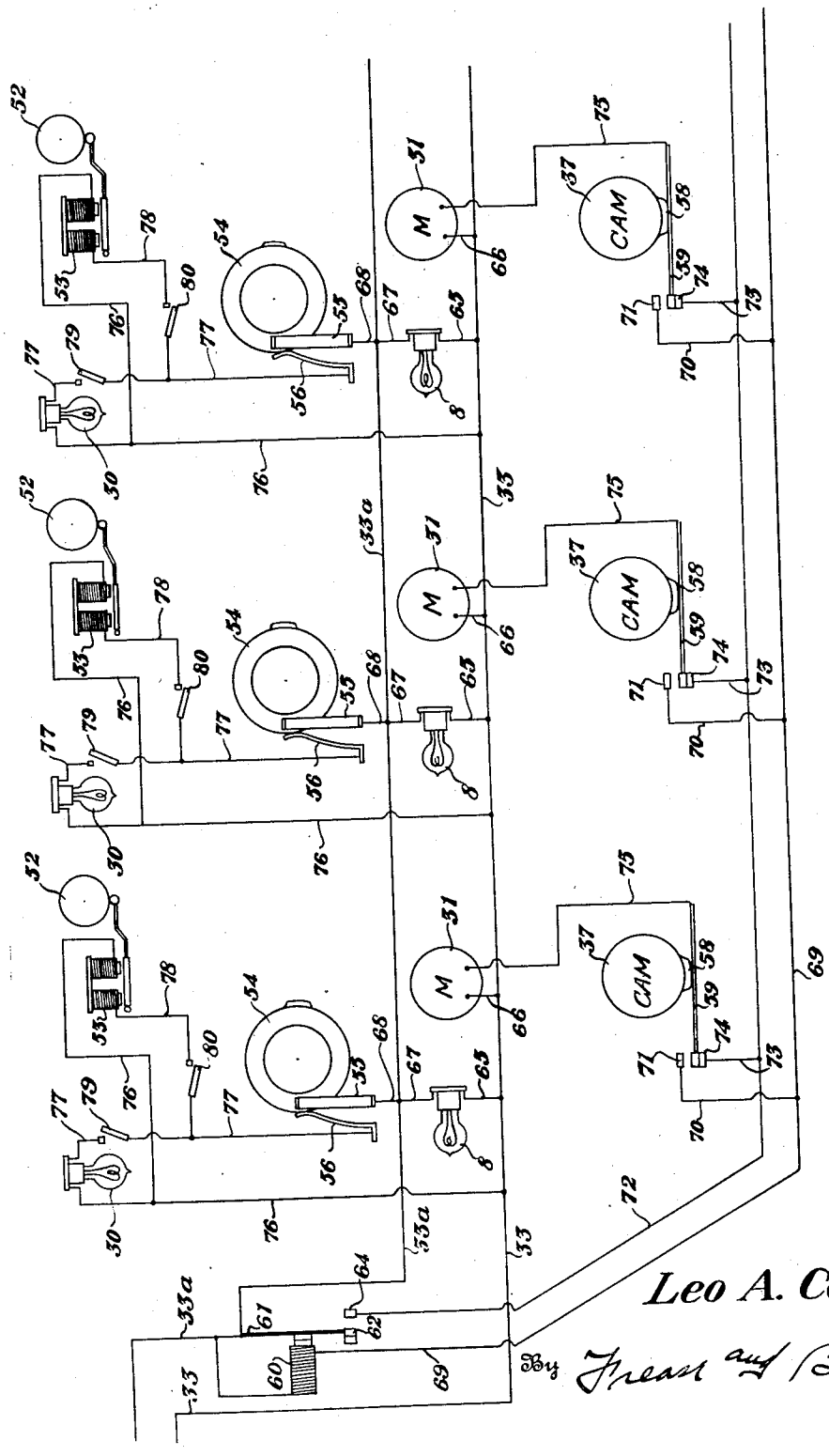
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ELECTRIC MOTOR CONTROL SYSTEM

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Inventor

Leo A. Carver

By Fraser and Bond

Attorneys

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# UNITED STATES PATENT OFFICE

LEO A. CARVER, OF CLEVELAND, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE PARAMOUNT FIRE ALARM ENGINEERING COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO

## ELECTRIC MOTOR CONTROL SYSTEM

Original application filed August 21, 1926, Serial No. 130,604. Divided and this application filed April 16, 1927. Serial No. 184,320.

The invention relates to signals such as are used at street intersections for directing traffic; and the present application is a division of my copending application, Serial No. 130,604, filed August 21, 1926.

The principal object of the present improvement is to provide suitable time controlled mechanism for intermittently reciprocating the box or boxes carrying colored lenses of one or a group of traffic signals described in my copending application, Serial No. 130,604, filed August 21, 1926, and for synchronizing the operation of such a group of traffic signals.

An embodiment of the invention is illustrated in the accompanying drawing in which is shown a wiring diagram disclosing the means of connecting a plurality of signals in series.

Similar numerals refer to similar parts throughout the drawing.

In the figure is shown a wiring diagram of the electric circuits for connecting in parallel each of the motors of a series of the signals arranged to operate in synchronism. To operate all of the series of signals in synchronism an automatic switch is located in the series and mounted in any suitable place, such as upon the support of one of the boxes in the series. This switch comprises the magnet 60 and the armature 61 provided with a contact 62 arranged to engage the fixed contact 64.

The line wire 33*a* is connected with one side of the magnet 60 and with the armature 61 respectively, the wire 33 being then continued through all of the signal devices in the series, being connected to one side of each lamp 8, as at 65, and to one side of each motor 31, as at 66, and the wire 33*a* also leads through all of the signal devices in the series, being connected to the other side of each lamp 8, as shown at 67, and to each spring contact finger 55 of a pair of spring contact fingers 55 and 56 adapted to be brought together by rotation of the respective disks 54, as shown at 68.

A wire 69 leads from the magnet 60, of the automatic controlling switch, through each of the signal devices in the series, being connected, as by a wire 70, with the fixed contact 71 of each signal, arranged to be engaged by the spring switch blade 59.

A similar wire 72 leads from the fixed contact 64 of the automatic controlling switch through each of the signals in the series, being connected, as by the wire 73, with the fixed contact 74 in each signal, arranged to be alternately engaged by the spring switch blades 59 which is actuated by the cam 58 on the cam disk 37. A wire 75 connects the switch blade 59, of each signal device, with the motor 31 of the device.

A wire 76 connects the line wire 33 with one side of the amber lamp 30 and one side of the bell magnet 53 operating the bell 52, in each signal device. The other side of the amber lamp is connected to the spring contact finger 56, by a wire 77, a wire 78 connecting the other side of the bell magnet 53 with said spring finger. For the purpose of independently cutting out the amber light and the bell in each signal device, manually operated switches, 79 and 80 respectively, may be located in the circuits to said amber lamp and bell.

In operating the series of signal devices in unison, the cams 58 are operated by their respective motors and will all run in unison by coming to a fixed position and opening the circuit on the side which is energized, and closing the open side, until all of the cams have reached that position; the last cam opening the energized side of the circuit causing the magnet coil 60 to become de-energized, releasing the spring armature 61 and closing the circuit on the opposite side, starting all of the motors.

All motors will now run until the high points of the cams are all carried over the spring switch blades 59 and when that point is passed the contacts will close on the other side, causing the magnet coil 60 to be energized again to furnish current until all the cams have again reached the high point, thus causing all motors to be synchronized at each revolution of the cams.

It will be seen that the present improved time controlled mechanism for synchronously operating a group of traffic signals is

simple and inexpensive as compared with the intricate switch mechanism required to operate the traffic signals in common use, and possesses many advantages over the latter.

I claim:

1. A motor control system for signals and the like including a circuit, a plurality of motors connected in parallel in the circuit, means controlled by the operation of each motor for opening the circuit to said motor at a predetermined time, and means operated by the opening of the last motor circuit to be opened for simultaneously closing the circuit to all of the motors.

2. A motor control system for signals and the like including a circuit, a plurality of motors connected in parallel in the circuit, means controlled by the operation of each motor for opening the circuit to said motor at a predetermined time, and a magnet operated by the opening of the last motor circuit to be opened for simultaneously closing the circuit to all of the motors.

3. A motor control system for signals and the like including a circuit, a plurality of motors connected in parallel in the circuit, means controlled by the operation of each motor for opening the circuit to said motor at a predetermined time, and a magnet connected in series in the circuit operated by the opening of the last motor circuit to be opened for simultaneously closing the circuit to all of the motors.

4. A motor control system for signals and the like including a circuit, a plurality of motors connected in parallel in the circuit, cam means controlled by the operation of each motor for opening the circuit to said motor at a predetermined time, and means operated by the opening of the last motor circuit to be opened for simultaneously closing the circuit to all of the motors.

5. A motor control system for signals and the like including a circuit, a plurality of motors connected in parallel in the circuit, cam means controlled by the operation of each motor for opening the circuit to said motor at a predetermined time, and a magnet operated by the opening of the last motor circuit to be opened for simultaneously closing the circuit to all of the motors.

6. A motor control system for signals and the like including a circuit, a plurality of motors connected in parallel in the circuit, cam means controlled by the operation of each motor for opening the circuit to said motor at a predetermined time, and a magnet connected in series in the circuit operated by the opening of the last motor circuit to be opened for simultaneously closing the circuit to all of the motors.

In testimony that I claim the above I have hereunto subscribed my name.

LEO A. CARVER.