

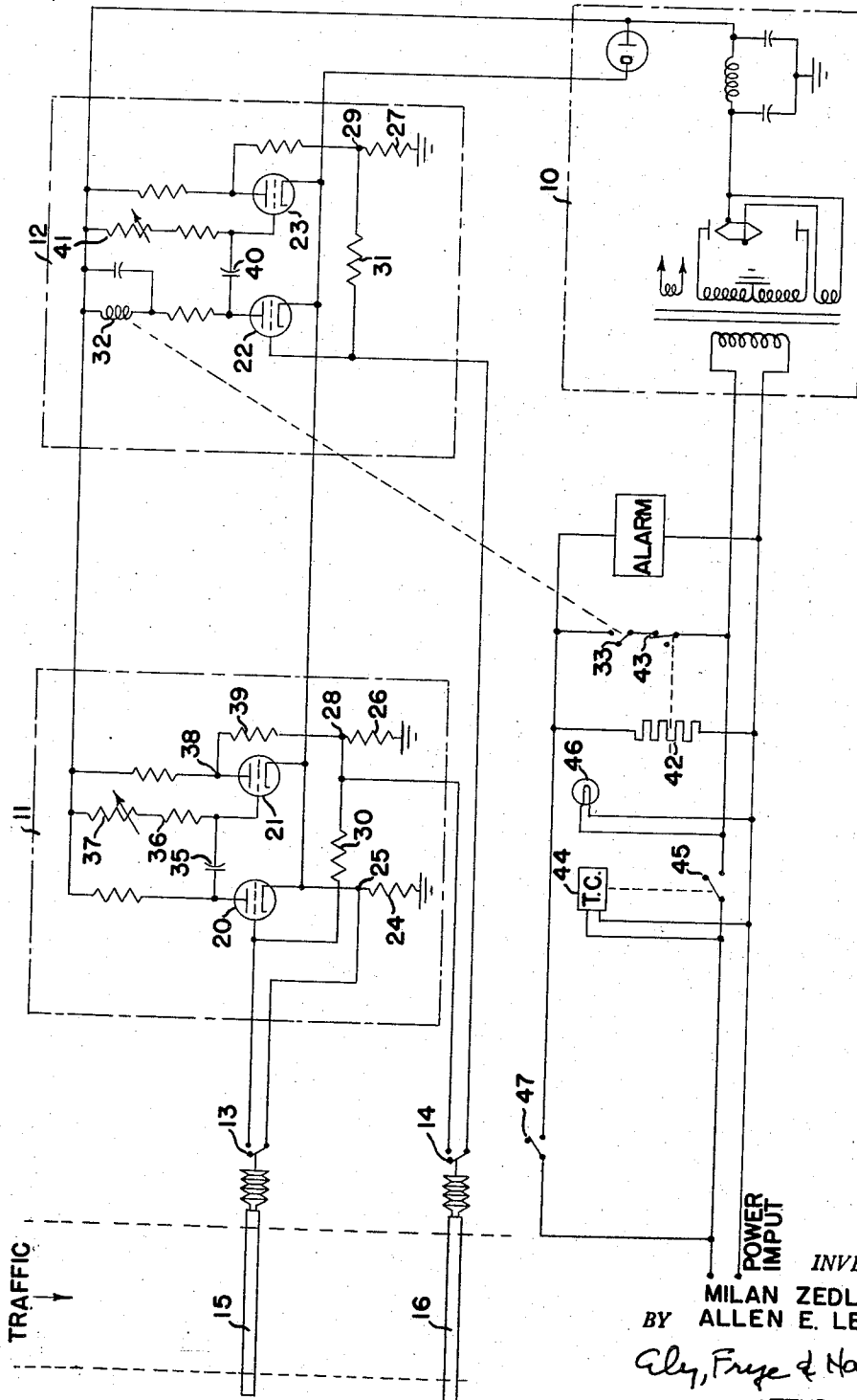
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SPEED TIMER

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SPEED TIMER

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This invention relates to a method of traffic control adapted to effectively inhibit speeding in a restricted speed zone, such as a school zone or other hazardous area, and to apparatus employed in said method.

The invention contemplates the employment of a speed monitoring device at the restricted zone which broadcasts a visual or audio signal announcing and drawing attention to any speed violation at the moment of its occurrence.

We have discovered that, statistically, the public, impartial, instantaneous remonstrance and warning effected by our invention when a speed violation occurs is far more effective in curbing speeding in restricted zones throughout a given municipality than is the most vigilant and impartial conventional traffic patrol or "radar" patrol.

Accordingly, it will be understood that an object of the invention is to provide an inexpensive and unusually effective method of controlling and curbing speeding, and another object of the invention is the provision of simple versatile apparatus adapted for use under a variety of circumstances.

The invention will be more clearly understood from the following detailed description of one preferred form of apparatus contemplated by the invention, together with the accompanying schematic drawing of such preferred form.

The invention may utilize any standard regular power supply for the apparatus such as a full wave rectifier, filter and voltage regulator, indicated as contained in a package 10. The invention may also utilize two switch-actuated one-pulse multivibrators indicated as contained, respectively, within the packages 11 and 12. It will be appreciated that the actual packaging arrangement of the various elements is immaterial, the indicated packaging being chosen merely to facilitate the description of the invention. It will also be appreciated that equivalents for the various elements or combinations of elements may be used, thus, for example, the power supply package 10 could be replaced by a self-contained battery unit or by other standard power supply units suited to the particular type of electrical supply available.

Thus, it will be understood that the following specific description of the presently preferred embodiment of the invention is made for the purpose of most clearly and concisely disclosing the subject matter of the invention and the inclusion of the specific details of such preferred embodiment is not to be interpreted as limiting in any sense the scope of the invention which is to be defined solely by the claims appended hereto.

As shown schematically in the drawing, the invention may utilize a pair of pressure switches 13 and 14 of any suitable type, each of which is associated with one of the air-tight hoses 15 and 16, such arrangements being commonly used in traffic survey work. The hoses are adapted to be placed in a roadway in spaced relation to be momentarily compressed by passing vehicle wheels so as to momentarily close their associated switches 13 and 14. The hoses are placed in such a relation to the direction of

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traffic that the switch 13 is closed by passage of a vehicle prior to the closing of the switch 14.

The multivibrator circuits comprise four tubes 20, 21, 22, and 23. The cathode of each of these tubes is coupled to the cathode bias resistor 24.

In the quiescent state (when no passing vehicles are actuating switches 13 and 14), tubes 21 and 23 are conducting and tubes 20 and 22 are cut off, this cut-off remaining stable due to the relatively small voltage drop through resistors 26 and 27 to points 28 and 29 as compared to the drop through cathode bias resistor 24 during such time as the tubes 21 and 23 are conducting. Points 28 and 29 are connected to the grids of tubes 20 and 22 through isolation resistors 30 and 31. Since tube 22 is not conducting, the plate relay coil 32 is not energized and its normally open contact 33 prevents the alarm from operating.

When a passing vehicle closes switch 13, a zero bias is placed on the tube 20 which immediately conducts. The plate voltage of this tube, therefore, drops suddenly and causes the timing condenser 35 to start discharging through resistor 36 and rheostat 37. This discharge is sufficient to drive the coupled grid of the tube 21 below cut-off and this tube immediately ceases to conduct, causing the voltage drop between point 38 and ground across resistors 39 and 26 to approach power supply voltage, thus causing the voltage drop across resistor 26 to increase sufficiently to maintain conduction of the tube 20 even though the switch 13 reopens.

The tube 21 remains cut off until its grid bias again drops below cut-off value as discharge from the condenser 35 approaches completion, the time of cut-off being varied by adjusting the rheostat 37 to vary the rate of discharge of the condenser. Upon re-conduction of the tube 21, the voltage drop across the resistor 26 falls to its original value and the tube 20 ceases to conduct. Thus, it will be seen that the tubes 20 and 21 are employed in a one-pulse multivibrator circuit, the triggering impulse being supplied by momentary closing of the switch 13.

The tubes 22 and 23 are employed in the second one-pulse multivibrator circuit 12, which only during its timing period energizes the plate relay 32, thereby closing its contact 33 and sounding the alarm.

The second multivibrator circuit 12 is almost identical to the first circuit 11, but is triggered only by actuation of the switch 14 during the timing period of the first circuit 11 when the voltage drop across the resistor 26 is sufficiently low to raise the grid of tube 22 above cut-off. At other times closing of the switch 14 has no effect on the system.

Upon triggering of the second multivibrator circuit 12, the tube 22 fires causing the condenser 40 to discharge, thus driving the grid of tube 23 below cut-off. This causes a sufficient increase in voltage drop across resistor 27 to cause the tube 22 to continue conducting for a timed period which may be varied by adjustment of the rheostat 41.

Thus, only if the switches 13 and 14 are actuated in sequence within a time interval not exceeding the timing period of multivibrator circuit 11 will the relay coil 32 be energized and the alarm sounded. The longer this timing period is made by increasing the resistance setting of the rheostat 37, the lower will be the vehicle speed at which the alarm will sound provided the spacing between hoses 15 and 16 is not changed. The longer the timing period of multivibrator circuit 12 is made by increasing the resistance setting of the rheostat 41, the longer the alarm will sound upon each speed violation.

In connection with the alarm, a thermal time relay comprising a heating element 42 and normally closed contacts 43 may be provided as a protective measure to shut off the alarm after an extended period of operation should

the relay 12 remain energized through some defect in the circuit.

A time clock 44 of standard design may be provided having contacts 45 which are closed only during the hours of the day of week when operation of the device is desired. An indicator light 46 may be included to show when the system as a whole is energized or de-energized by the time clock 44.

In order to operate the alarm remotely and independently of the speed measuring system so that it may be utilized, for instance, as part of a civil defense warning system, a separate circuit independent of the time clock 44 and the heat sensitive relay 42 is provided having switch 47 in it which can be actuated remotely for signal purposes independently of the normal control system.

While the apparatus described in detail above has been found to be particularly suited to the broad objects of the invention, no holding relays or similar mechanical devices being required and no moving parts being utilized in the timing circuit other than the road switches themselves, equivalent speed monitoring devices departing in greater or smaller degree from the details of our specific disclosure may occur to those familiar with the most closely related arts. This range of equivalents is intended to be covered by the following claims which define the scope of the invention.

What is claimed is:

1. A speed monitoring device comprising a pair of switches successively actuatable by passing vehicles, a relaxation circuit having a stable permanent phase and a stable temporary phase, said circuit being triggered from said permanent phase to said temporary phase by actuation of only a certain one of said pair of switches and alarm means responsive to the actuation of the other one of said switches only during said temporary phase.

2. A speed monitoring device to monitor speed between a pair of points comprising a one-pulse multivibrator circuit, means responsive to passage of a vehicle past only a certain one of said pair of points to trigger said multivibrator circuit from its permanent to its temporary phase, and alarm means responsive to the passage of said vehicle past the other one of said pair of points only during said temporary phase of said multivibrator circuit.

3. A speed monitoring device comprising a sub-circuit including an electronic alarm actuating element in series with the plate circuit of an electric valve having a control electrode and a cathode, said control electrode being normally negatively biased below cut-off with respect to said cathode, means responsive to passage of a vehicle past a first given point to establish during a first time period following said passage a source of positive bias sufficiently to drive said control electrode above cut-off with respect to said cathode, means to momentarily couple said source and said control electrode upon passage of said vehicle past a second given point whereby said electric valve will conduct and said alarm will be actuated, and means to cause said electric valve to continue to conduct during a second time period following initial actuation of said alarm whereby said alarm will continue to be actuated during said second time period.

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