HORN CONTROL SYSTEM

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Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5
This invention relates to a system of controls for automobile horns and more particularly to the type of control which provides for the sounding of a warning signal of relatively low volume or relatively short duration suitable for city traffic and a signal of longer duration and greater volume for country driving.

Automobiles are usually provided with a pair of matched horns differing in frequency and having their frequencies so related that, when the horns are sounded simultaneously, a pleasing tone will be produced. It is an object of the present invention to provide a system of control for a pair of horns which is normally conditioned so that only one of the horns can be sounded, and then only to give a tone of moderate volume, less than the volume which the horn is capable of producing. By means within the control of the driver or by automatic means responsive to engine speed or to engine acceleration or to the application of vehicle brakes, the system is conditioned so that both horns will be sounded with full volume whenever the horn button is pressed and these conditions prevail.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawing wherein a preferred embodiment of the present invention is clearly shown.

In the drawing:

Figure 1 is a wiring diagram of a system embodying the present invention in which a manually operated switch is employed to control the energization of a control relay which changes the status of the system from city driving to country driving.

Figure 2 shows diagrammatically an engine exhaust manifold temperature responsive switch which may be substituted for the manual switch of Figure 1.

Figure 3 is a diagram of a switch responsive to the application of vehicle brakes for performing the function of the manual switch shown in Figure 1.

Referring to Figure 1, horns 20 and 30 are a pair of matched horns having their frequencies so related that, when the horns are sounded together a pleasing tone will be produced. Horn 20 has an operating magnet coil 21 which produces movement of an armature connected with a diaphragm not shown. The movement of the armature intermittently opens a pair of normally closed contacts 22 and 23, the latter being grounded and the former being connected with the magnet coil 21. For the purpose of reducing sparking at the contacts 22 and 23, a resistance 24 (two ohms for example) is connected in parallel with these contacts. Horn 20 is provided with two terminals, a main terminal 25 and a terminal 26 connected through a resistance 27 with the contact 22. Resistance 27 is less in amount than resistance 24, being about .1 ohm where resistance 24 is 2 ohms.

Horn 30 is provided with an operating magnet coil 31, normally closed contacts 32 and 33, and a contact shunting resistance 34 of the same value as resistance 24. Horn 30 has a main terminal 35.

A storage battery 36 grounded at 37 is connected with the horn 20 through a relay 40 comprising a magnet winding 41, an armature 42 and normally open contacts 43 and 44, the latter of which is connected by wire 45 with horn terminal 25. The relay winding 41 is connected to ground to a horn switch 50, comprising a button 51 connecting a contact 52 with a grounded contact 53. When the switch 50 is closed, relay winding 41 is connected to ground whereby energizing relay 40 and effecting the engagement of contacts 43 and 44 thereby connecting the horn 20 with the battery through the following circuit: battery 36, armature 42, contact 43, contact 44, wire 45, terminal 25, horn magnet coil 21, horn contacts 22 and 23. Wire 45 is connected by wire 45a with one end of magnet coil 61 of relay 60. The other end of coil 61 is connected by wire 68 with movable contact 72 of selector switch 70. In the B position, contact 72 opens the circuit of coil 61. In the A position, contact 72 engages 71 which is grounded, thus making a connection between coil 61 and the battery 36. When contact 72 of switch 70 is in the A position and button 51 is closed, coil 61 is connected with the battery 36, and armature 62 is attracted downwardly (Fig. 1) to separate contact 63 from contact 64 (connected with terminal 25 and resistance 27) and to move contact 65 into engagement with contact 66 (connected with terminal 35 of horn 30).

When the selector switch 70 is in the A position both horns, 20 and 30, sound with full volume. When the selector switch 70 is in the B position, horn 30 is silent and horn 20 sounds with reduced volume because the resistance 27
having a flexible wall or diaphragm 112 supporting a movable contact 113 capable of being moved into engagement with a stationary contact 114 connected with wire 58, and a grounded stationary contact 115. Normally the contact 113 is held by a spring 116 out of engagement with the stationary contact. When the vehicle brakes are applied the pressure in the chamber 111 rises sufficiently to move the diaphragm 112 downwardly to cause the contact 113 to engage the contacts 114 and 115, thereby completing a current path between generally operated and coil 61 of the current by-passing relay 60.

In the system shown in Figure 1 any of the switches shown in Figures 2, 3, 4 and 5 may be substituted for the selector switch 70 or may be connected in parallel with switch 70 in order to provide for the control of the short circuiting relay 60 either by manual means, by means responsive to vehicle speed, by means responsive to the accelerating of the engine, or by means responsive to the application of brakes.

From the foregoing description, it will be seen that the construction and mode of operation of my new system of controlling automobile horns it is apparent that I have a system which is normally conditioned for causing only one of a plurality of horns to give a relatively weak note during normal conditions of city driving and to cause all the horns to sound with full power when driving in the country, or when it is desired to accelerate the engine, or whenever the vehicle brakes are applied, or may be controlled at will. The latter form of control may be preferred for commercial vehicles which are generally operated during the day for certain hours in a very congested district where the noise level is relatively high and the horn should be sounded at full volume at all times. Under those conditions the selector switch 70 should be closed. At times the vehicle is driven through districts which are relatively uncongested, such as residence districts or school or hospital zones, where the horns should not be sounded with full volume any more frequently than is necessary for safety. Under these conditions of driving the selector switch 70 should be opened and the control of the system effected by one or more of the switches shown in Figures 2 to 5.

While the embodiment of the present invention as herein disclosed, constitutes a preferred form it is to be understood that other forms might be adopted, all coming within the scope of the claim which follows.

What is claimed is as follows:

A horn control system comprising a current source, a horn having an operating magnet coil and a circuit breaker operated thereby, a switch for connecting the source with the magnet coil, a circuit for paralleling the magnet coil and including switch contacts and a resistance operable when the contacts are closed to retard the decay of flux of the magnet coil when the circuit breaker is open, and means for opening the contacts in the circuit paralleling the magnet coil.

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