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AUDIBLE SIGNAL APPARATUS

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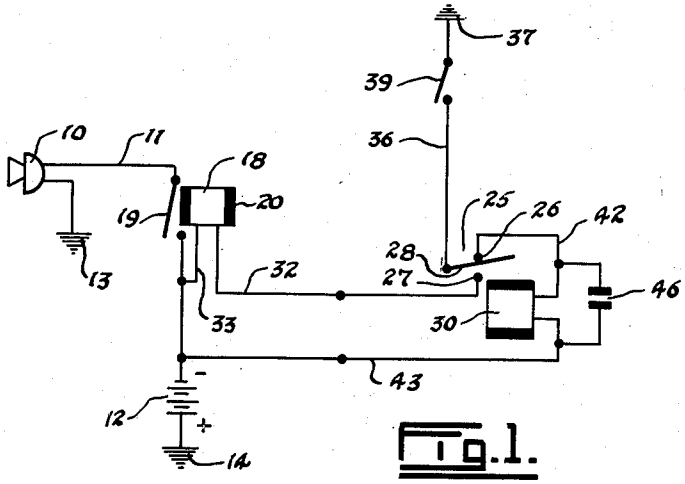


Fig. 1.

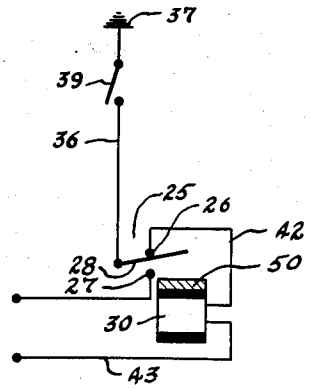


Fig. 2.

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AUDIBLE SIGNAL APPARATUS

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This invention relates to improved audible signal apparatus.

The main object of this invention is to produce an audible signal which is more effective than known signals of this type.

Another object is the provision of an audible signal device, such as a vehicle horn or siren, which is much improved over those now in common use.

A further object is the provision of an audible signal, and particularly a vehicle horn, which cuts through the normal noisy atmosphere in heavy traffic.

Yet another object is the provision of a vehicle horn which offers a greater degree of safety both for the vehicle on which it is installed and for other vehicles and persons around it.

While this invention is particularly applicable to vehicle horns, and is so described herein, it is to be understood that it may be applied to other types of audible signals, such as sirens, whistles, and the like. At the present time, all vehicle horns make a continuous noise. Many times this is not very effective in heavy traffic since the horn is drowned out by the traffic noise. Furthermore, a person's attention is more quickly drawn to an interrupted or fluctuating noise. It is now time that the vehicle horn which has been in use since the advent of the automobile be brought up to date to meet the present normal traffic requirements.

The present invention is designed to operate vehicle horns in such a way that they will attract attention in any reasonable traffic noise which may even be greater than the noise of the horn itself. This is accomplished by fluctuating, interrupting, or fluttering the originally produced signal. This fluctuation of the signal causes it to rise and fall so that it cannot blend in with other noises around it. The apparatus for fluctuating the signal is very simple, and two examples are illustrated in the accompanying drawings, in which,

Figure 1 diagrammatically illustrates one form of audible signal apparatus, and

Figure 2 diagrammatically illustrates an alternative form of the invention.

Referring to Figure 1 in the drawings, **10** is a vehicle signal horn connected by a circuit **11** to a source of electrical power, such as a battery **12**. The horn and battery are grounded at **13** and **14**, respectively. The horn circuit may be directly controlled by a button switch, but it is usual to employ a relay **18** consisting of a switch **19** in the horn circuit and a solenoid **20** for operating

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said switch. The relay is in a circuit including the battery **12** and a normally open switch so that when the latter is closed, the relay is energized to operate switch **19** to set the horn into operation.

In this example, a switch **25** consisting of spaced contacts **26** and **27** having an armature **28** therebetween is provided, said armature being controlled by a solenoid **30**. The contact **27** is connected by a wire **32** to one end of the coil of the relay solenoid **20**, the opposite end of said coil being connected by a wire **33** to a portion of the horn circuit **11** extending to the battery **12**. A wire **36** extends from the armature **28** to ground **37**, said wire having a normally open control switch **39** therein. Actually, the horn relay circuit consists of wire **36**, switch **39**, armature **28**, contact **27**, wire **32**, solenoid **20**, wire **33**, circuit **11** and battery **12**, extending from ground to ground.

The armature **28** normally engages the switch contact **26** which is connected by a wire **42** to one end of the coil of the solenoid **30**, the opposite end of said coil being connected by a wire **43** to the portion of the horn circuit **11** extending to the battery. A condenser **46** may bridge the coil of the control solenoid **30**.

In order to operate the signal horn **10**, the control switch **39** is closed to energize the solenoid **30**. The solenoid moves the armature away from contact **26** to engage contact **27** of the switch **25** to close the circuit of the relay **18**, thus energizing the relay solenoid **20** to close switch **19**. This closes the horn circuit to cause the horn **10** to sound. The moment the armature **28** moves away from contact **26**, the solenoid **30** is de-energized so that the armature immediately returns from contact **27** to contact **26**, breaking the relay circuit and releasing the switch **19** to break the horn circuit. If the control switch **39** is still closed, the solenoid is again energized and the cycle repeated. In this way, the signal horn is fluctuated as long as the control switch is closed. In other words, the switch **25** and its associated elements form switch means for continuously making and breaking the signal circuit when the control switch is closed to cause the audible signal to fluctuate.

If the condenser **46** is not used, the signal fluctuation is very rapid. However, this condenser is very desirable since it is charged when the control switch is closed and at the same time that the solenoid **30** is energized, and the condenser discharges through the solenoid when the

control switch is open to delay the action of the solenoid armature.

In Figure 2, the condenser **46** is omitted, and a copper slug **50** is attached to either end of the core of the solenoid **30**. In this example, it is attached to the end of the core at which the armature **28** is located. When the solenoid is energized, the copper slug causes the formation of a magnetic flux which opposes the normal flux of the coil to delay the operation of the switch **25**.

With the present audible signal apparatus, the signal horn is fluctuated while the control switch is closed. Thus a fluctuating or interrupted signal is produced which cannot blend with any of the normal traffic noises. This means that the signal will attract attention much more surely and effectively than the horns now in common use. This advantage is obtained if a siren is substituted for a horn. As sirens are used on fire trucks, ambulances and police cars, which are usually moving at high speed when the siren is operating, it is highly desirable to attract attention to them in the most effective manner. A person may be only dimly aware of a constant noise, whereas an interrupted noise will usually attract his attention.

What I claim as my invention is:

1. Audible signal apparatus comprising an electrically-operated audible signal, an electric circuit for connecting the signal to a source of electrical power, a normally open control switch in the circuit for closing the latter to cause the signal to sound, automatic electrical switch means in the circuit for continuously making and breaking the latter when the control switch is closed to cause the original signal sound to fluctuate, and means for retarding the switch means to slow down the fluctuations of the signal.

2. Audible signal apparatus comprising an electrically-operated audible signal, an electric circuit for connecting the signal to a source of electrical power, a control switch in the circuit, a solenoid, a circuit for connecting the solenoid to the power source, a condenser bridging the coil of the solenoid, a switch consisting of two spaced contacts and an armature therebetween for the solenoid, one contact and the armature being in the audible signal circuit and the other contact being in the solenoid circuit, said armature normally engaging the solenoid circuit contact and being moved into engagement with the other contact by the energized solenoid when the control switch is closed to cause the signal to operate, and said movement of the armature de-energizing the solenoid to cut off the signal.

3. Audible signal apparatus comprising an electrically-operated audible signal, an electric circuit for connecting the signal to a source of electrical power, a control switch in the circuit, a solenoid, a circuit for connecting the solenoid to the power source, a copper slug connected to one end of the solenoid core, a switch consisting of two spaced contacts and an armature therebetween for the solenoid, one contact and the armature being in the audible signal circuit and the other contact being in the solenoid circuit, said armature normally engaging the solenoid circuit contact and being moved into engagement with the other contact by the energized solenoid when the control switch is closed to cause the signal to operate, and said movement of the armature de-energizing the solenoid to cut off the signal.

4. Audible signal apparatus for vehicles comprising an electrically-operated audible vehicle signal, an electric circuit connecting the signal to a source of electrical power, a normally open switch in said circuit, a relay solenoid for operating the switch, a circuit connecting the relay solenoid to the power source, a control solenoid, a condenser bridging the coil of the control solenoid, a circuit connecting the control solenoid to the source of power and a switch consisting of two spaced contacts and an armature therebetween for the control solenoid, one contact and the armature being in the relay solenoid circuit and the other contact being in the control solenoid circuit, said armature normally engaging the control solenoid circuit contact and being moved into engagement with the other contact by the energized control solenoid when the control switch is closed energizing the relay solenoid and closing the vehicle signal circuit to cause the signal to operate, and said movement of the armature de-energizing the control solenoid to cut off the vehicle signal.

5. Audible signal apparatus for vehicles comprising an electrically-operated audible vehicle signal, an electric circuit connecting the signal to a source of electrical power, a normally open switch in said circuit, a relay solenoid for operating the switch, a circuit connecting the relay solenoid to the power source, a control solenoid, a copper slug on one end of the control solenoid core, a circuit connecting the control solenoid to the source of power and a switch consisting of two spaced contacts and an armature therebetween for the control solenoid, one contact and the armature being in the relay solenoid circuit and the other contact being in the control solenoid circuit, said armature normally engaging the control solenoid circuit contact and being moved into engagement with the other contact by the energized control solenoid when the control switch is closed energizing the relay solenoid and closing the vehicle signal circuit to cause the signal to operate, and said movement of the armature de-energizing the control solenoid to cut off the vehicle signal.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,743,711	Field	Jan. 14, 1930
1,853,709	Tibbetts	Apr. 12, 1932
1,992,628	Oishei	Feb. 26, 1935
2,340,502	Baker	Feb. 1, 1944