

PATENT SPECIFICATION

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DRAWINGS ATTACHED.

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COMPLETE SPECIFICATION.

A Signalling System for Motor Vehicles.

I, WANG, YANG, P.O. Box 22577 Taipei, Taiwan, Republic of China, a citizen of the Republic of China, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a signalling system for motor vehicles.

Known automobile signal systems provide automatic signalling based on only one factor; namely, the condition of the braking system. Such signalling is effected by a red light directed rearwardly of the automobile and energised upon application of the brakes. Since a rearwardly directed red light is normally lighted when the automobile light system is energised, a change in the braking condition under these circumstances is commonly reflected only by a change of intensity of said light. This arrangement is unsatisfactory for the reason that the change in intensity can easily be overlooked, resulting in a hazardous situation. Moreover it is apparent that in addition to the braking factor, another important factor is the presence or absence of automobile motion.

The present invention provides a motor vehicle including electrically operable means mounted to the rear of the vehicle for giving a visual warning signal, electrically operable means mounted to the rear of the vehicle for giving a signal of a normal condition of the vehicle, a switch responsive to motion of the vehicle, and a switch responsive to actuation of the vehicle braking system, the said switches and signal means being so connected in a control circuit that said rear warning signal means is operated when the vehicle is stationary or when the brakes of the

vehicle are applied, whilst said rear normal signal means is operated when the vehicle is in motion with the brakes released. The arrangement according to the invention thus serves to signal the presence or absence of motion in addition to the condition of the vehicle braking system.

According to one embodiment of the invention the vehicle includes further warning and normal signal means mounted to each side of the vehicle and so connected to said control circuit that side warning signal means is operated when the vehicle is in motion or when the brakes of the vehicle are applied, whilst side normal signal means is operated when the vehicle is stationary with the brakes released.

By this means signal indications relevant to the condition of motion of the vehicle are rendered visible from the side, as well as from the rear thereof, the combination of the side signalling and motion signalling providing a further new function for vehicle signal systems. When these features are combined, it is possible to indicate to vehicles approaching from the side whether or not the signalling vehicle is stopped and therefore whether it is safe, or not safe, to proceed across the path of the signalling vehicle.

The invention is illustrated by way of example in the drawings, in which:

Figure 1 is a circuit diagram of a signalling system according to the present invention;

Figure 2 is an elevation, in diagrammatic form, of the brake detector switch; and

Figure 3 is an elevation, in diagrammatic form, of the motion detecting switch.

Referring to Figure 1, a power supply 1 comprises a conventional automobile power supply of battery and alternator or generator. One terminal of a conventional

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ignition switch 3 is connected to the un-
earthed terminal of the power supply by
way of a conductor 2. A conductor 4 con-
nects the other terminal of the ignition
switch 3 to a changeover contact 36 of a
brake switch 5. The brake switch 5 is
shown in more detail in Fig. 2. An idle
contact 26 of the switch 5 is connected by
way of a conductor 6 to a changeover
contact 49 of a motion detector switch 8.
The motion detector switch 8 is described
in more detail in Fig. 3. An idle contact
47 of the switch 8 is connected by a con-
ductor 9 to a side green light 15, the other
terminal of which is earthed. Also con-
nected to the conductor 9 is a conductor
14 connected to a rear red light 19 the
other terminal of which is earthed. A work-
ing contact 48 of the switch 8 is connected
by a conductor 10 to a side red light 16
of which the other terminal is earthed.
Also connected to the conductor 10 is a
conductor 13 which is connected to a rear
green light 18 of which the other terminal
is earthed. A working contact 27 of the
switch 5 is connected by way of a con-
ductor 7 to a side red light 17 of which
the other terminal is earthed. Also con-
nected to the conductor 7 is conductor 12
which is connected to a rear red light 20
of which the other terminal is earthed.

Figure 2 shows the brake detector switch
5. This comprises a housing 24 with a rod
34 slideably mounted therein in holes 37
and 38. The rod 34 is responsive to fluid
pressure in the brake system and is loaded
by a return spring 35. When the brakes are
not applied, the fluid pressure on the rod
34 causes the contact plate 36 to engage
the contact 26. When the brakes are
applied, the change in pressure allows the
spring 35 to move the plate 36 into engage-
ment with the contact 27. The plate 36
is in electrical contact with the rod 34
which, in turn, is electrically connected to
a conductor 25. The conductor 25 is held
to a terminal 22 by a screw 31. A con-
ductor can be connected to the terminal
22 by a screw 28. In like manner, the con-
tact 26 is held to a terminal 21 by a screw
32 and a conductor can be connected to
the terminal 21 by a screw 29. Similarly,
the contact 27 is held to a terminal 23 by
a screw 33 and a conductor can be con-
nected to the terminal 23 by screw 30.

Figure 3 shows the motion detector
switch 8. It comprises a shaft 42 mounted
for rotation between supports 41 and 44.
Rotation is imparted to the shaft 42 by
way of a cable 46, such as a speedometer
cable. The cable is rotated by means of a
well-known gear arrangement (not shown)
which includes an idler gear which disen-
gages the cable 46 when reverse motion is
encountered. Governor weights 39 are

mounted on the shaft 42 by means of
arms 40 so that on rotation of shaft 42,
the weights 39 and arms 40 will rotate.
The arms 40 are attached to pivots 49 so
that as the centrifugal force developed
during rotation increases, the arms 40 will
tend to rise. A follower 45 is slidably
mounted around the shaft 42 and can be
raised against the action of a spring 43
to follow the upward movement of arms
40, by means of arms 50 connected to the
arms 40. The spring 43, weights 39, arms
40 and 50 are so arranged that at a pre-
determined low speed the follower 45 rises
by a predetermined distance. The contact
49 is attached to the follower 45. In the
rest position, the contact 49 makes a con-
nection with the contact 47. At the chosen
speed, the contact 49 is disengaged from
the contact 47 and engages the contact 48
owing to the rise of the follower 45. Suit-
able conductors can be connected to the
contacts 47, 48 and 49 to enable the mo-
tion detector switch 8 to be included in
an electrical circuit.

In operation, when the ignition switch
3 is closed and the automobile is at rest
with the brakes off, the contact 36 engages
the contact 26, thus passing current to the
motion detector switch 8. The contact 49
engages the contact 47 energising the side
green light 15 and the rear red light 19.
The energised side green light signifies to
automobiles approaching from the side
that the signalling automobile is at rest
and it is safe to proceed. To automobiles
approaching from the rear, the energised
rear red light signifies the rest condition
of the signalling automobile and the need
for evasive action.

When the signalling automobile begins
to move, the contact 49 will engage the
contact 48, thus energising the side red
light 16 and the rear green light 18. The
energised side red light signifies to au-
tomobiles approaching from the side that it
is unsafe to proceed, and, to automobiles
approaching from the rear, the energised
rear green light signifies that it is now safe
to follow.

When the brakes are applied while the
automobile is in motion, the contact 36 will
engage the contact 27 and energise the side
red light 17 and the rear red light 20. This
signifies to automobiles approaching from
the side that it is unsafe to proceed and
cautions automobiles approaching from the
rear that some action is required since the
signalling automobile is stopping.

Since Figure 1 is only a diagram, it
shows only one of each type of lamp. In
fact, at least, two side signalling lamps
would be provided, one for each side of
the automobile.

WHAT I CLAIM IS:—

1. A motor vehicle including electrically operable means mounted to the rear of the vehicle for giving a visual warning signal, electrically operable means mounted to the rear of the vehicle for giving a signal of a normal condition of the vehicle, a switch responsive to motion of the vehicle, and a switch responsive to actuation of the vehicle braking system, the said switches and signal means being so connected in a control circuit that said rear warning signal means is operated when the vehicle is stationary or when the brakes of the vehicle are applied, whilst said rear normal signal means is operated when the vehicle is in motion with the brakes released.

2. A vehicle as claimed in Claim 1, including further warning and normal signal means mounted to each side of the vehicle and so connected to said side control circuit that side warning signal means is operated when the vehicle is in motion or when the brakes of the vehicle are applied, whilst side normal signal means is operated when the vehicle is stationary with the brakes released.

3. A vehicle as claimed in Claim 1 or 2, in which the motion responsive switch and the brake switch are changeover switches, the moving contact of the brake switch being connected to the current source of the vehicle, the moving contact of the motion responsive switch being connected to the idle contact of the brake

switch, said rear normal signal means being connected to the working contact of the motion responsive switch and separate rear warning signal means being connected respectively to the working contact of the brake switch and to the idle contact of the motion responsive switch.

4. A vehicle as claimed in Claim 3 when appended to Claim 2, in which the side normal signal means is connected to the idle contact of the motion responsive switch, and separate side warning signal means are connected respectively to the working contact of the brake switch and the working contact of the motion responsive switch.

5. A vehicle as claimed in any one of Claims 1 to 4, in which the warning and normal signal means comprise different coloured lamps.

6. A vehicle as claimed in Claim 5, in which the or each warning signal lamp is red and the or each normal signal lamp is green.

7. A motor vehicle including a signalling system substantially as described herein with reference to the accompanying drawing.

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