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PNEUMATIC DIRECTION SIGNAL LIGHT

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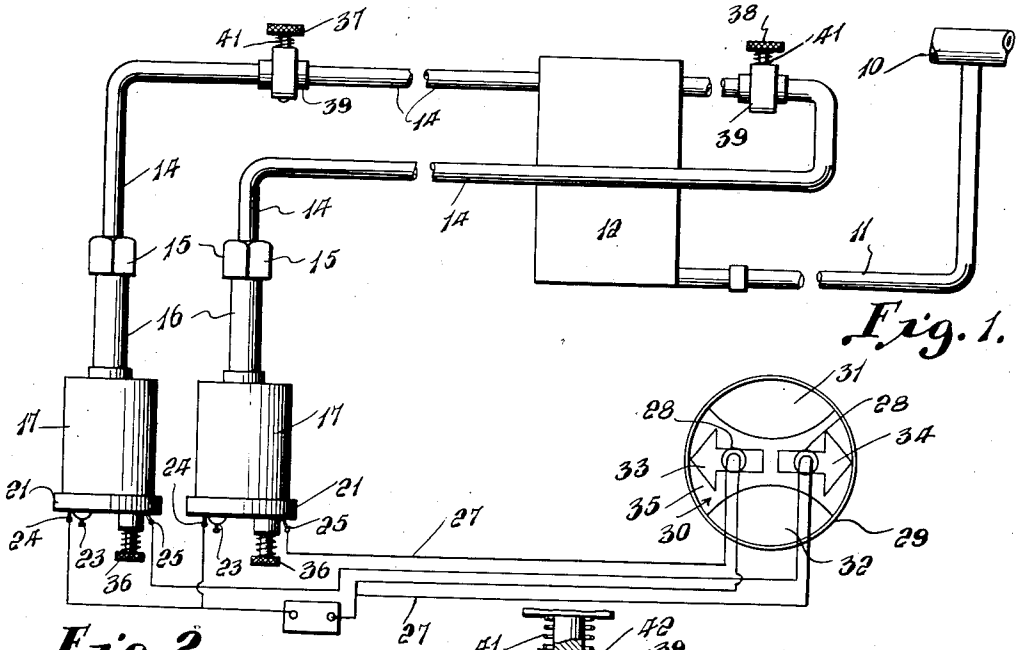

Fig. 1.

Fig. 2.

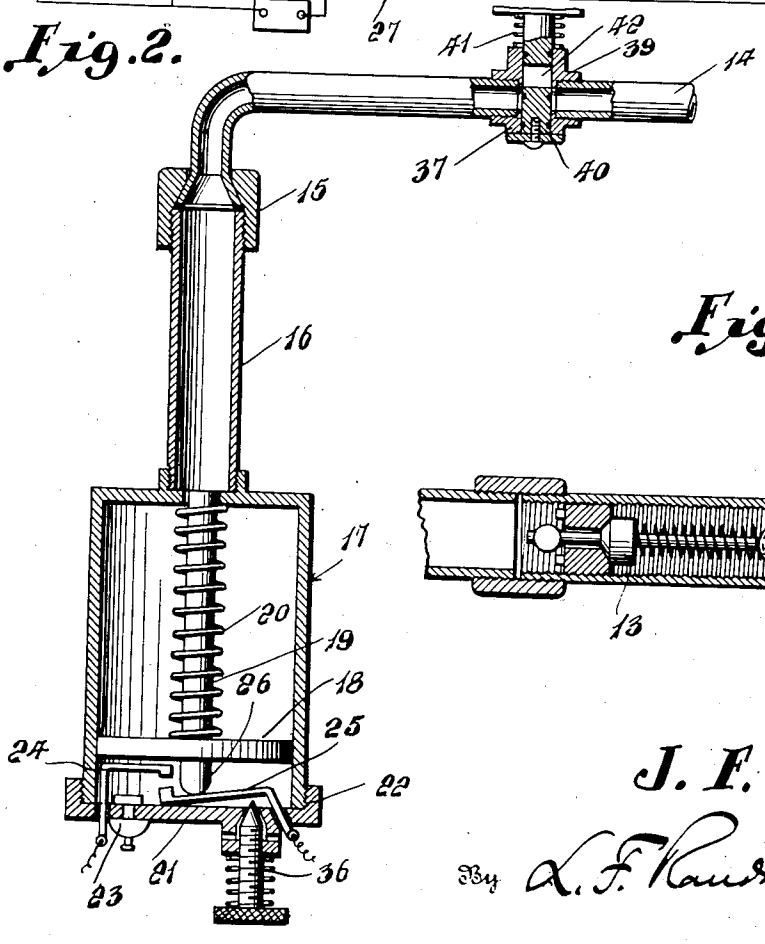

Fig. 3.

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PNEUMATIC DIRECTION SIGNAL LIGHT

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2 Claims. (Cl. 200—82)

This invention relates to a direction signal light and it aims to provide a novel construction operable by the vacuum created within an internal combustion engine or by compressed air, or the equivalent.

It is further aimed to provide such a structure wherein signals are operated one to indicate an intended turn to the right and one to indicate an intended turn to the left, each being under control of a manually operable valve and an associated time delay or dashpot controller including an electric switch for the illuminating means of the signals.

Various additional objects and advantages will become apparent from a consideration of the description following taken in connection with accompanying drawing illustrating an operative embodiment.

In said drawing:

Figure 1 is a view illustrating the improvements in diagram;

Figure 2 is an enlarged sectional view through one of the control devices and its switch, and a control valve, and

Figure 3 is a detail illustrating the valve connection between the vacuum reservoir and the intake manifold.

Referring specifically to the drawing, a fragment of an intake manifold of an internal combustion engine is suggested at 10 and a pipe 11 in communication therewith leads to a vacuum reservoir 12. Installed in pipe 11 adjacent to the reservoir, is a valve 13 illustrated in Fig. 3 of the conventional type used in inner tubes for the tires of vehicle wheels, which valve serves to permit air to be taken from the reservoir.

Pipes 14 lead from the reservoir 12, adjacent the top thereof, and are detachably coupled as at 15 to tubes 16, rising from cylinders 17 of control devices. Operable in each cylinder 17 is a piston 18 having a stem 19 surrounded by a coil spring 20 of the expansive type, engaging the piston 18 and a part of the cylinder at opposite ends, normally urging the piston downwardly as shown in Figure 2. The interior of the cylinders 17 are in communication with the tubes 16 and the latter accommodate movement of the stems 19 when the pistons move upwardly.

Detachably screw threaded to the lower ends of the cylinders are caps or plates 21, the screw threads being shown at 22. The cap 21 has a normally closed valve 23 adapted to open when the piston 18 is raised, through the suction created by such raising. Each cap 21 has a contact 24 thereon. Each cap 21 also has a second contact 25 fastened thereto, being of resilient metal and inherently urged into contact with that at 24. The contacts 24 and 25 are insulated from cap 21 as shown and normally are disengaged since the latter is held depressed by a projection 26 on the piston 18, one of these parts preferably being insulated at the zone of contact with the other. Conductors 27 lead from the contacts 25 to signal lamps 28.

Said signal lamps 28 are preferably mounted within cells or compartments of a suitable casing 29. A panel 30 is disposed over the casing 29 having portions preferably red as at 31 and 32, behind which stop lights and tail lights may be arranged and having arrow shaped portions 33 and 34 over the respective bulbs 28, the former preferably being green so as to indicate a turn to the right while the latter is of a different color, preferably red, orange or amber to indicate a turn to the left. The portion 35 about the arrows 33 and 34 is preferably opaque. It will also be understood that the panel portions 31 and 32 are partitioned off from the cells or compartments containing the bulbs 28. A suitable needle valve device 36 forms part of the end plate or cap 21, and it is adjustable to control the outlet of air.

Normally the pipes 14 are closed against the action of vacuum by valve devices as at 37 and 38. Such devices are similar and include castings 39 in which plugs 40 are vertically movable and normally urged upwardly by expansive coil springs at 41. The plugs contain passages 42 therethrough so that when depressed the passages 42 will align with the bore of the pipes 14.

With the improvements installed on an automobile, when a turn is contemplated, the valve device 37 or 38 according to the direction of the turn to be made, is depressed thereby arranging the passage 42 of the depressed valve in alignment with the bore of the associated pipe 14, thus subjecting the control device communicating therewith to the action of the vacuum created by the engine in manifold 10 The vacuum created by the intake manifold moves the air from the associated cylinder 17 and the normal pressure of the air will then cause the piston 18 therein to raise compressing the coil spring 20 which will allow the contact 25 to spring up into engagement with the contact 24 to close an electric circuit from the battery, through the ground connections with the framework of the automobile and signal lamp 28 in circuit therewith. When the piston 18 reaches its highest position, the valve 37 or 38 associated therewith may then be released whereupon the piston 18 by grav-

ity and aided by the spring 20 will slowly descend in the cylinder forcing the air in the cylinder out through the needle valve 36, the adjustment of which governs the length of time necessary for the descent of the piston. At the lowermost position of the piston, projection 26 engages contact 25 and moves and maintains it out of engagement with the contact 24, breaking the circuit through the electric lamp in question at 28. Valve 23 is in the nature of a poppet valve and its function is to permit a large volume of air to enter cylinder 17 quickly and then close.

It will be realized that the invention provides a plain, simple, durable and effective means of signalling the direction of a contemplated turn, without the necessity of opening the window of the automobile or the like and it provides a construction which after manual operation of the valve 37 or 38, is automatic in its action.

Various changes may be resorted to provided they fall within the spirit and scope of the invention.

It will be pointed out that the reservoir 12 insures a constant vacuum on the pistons 18 when the valves 37 and 38 are operated.

I claim as my invention:

1. A device of the class described for vacuum or pressure operation comprising a cylinder, a tube to conduct the operating media extending from the cylinder, a piston in the cylinder to be operated by the vacuum or pressure, a stem on the piston extending into the end wall of the cylinder remote to the piston, said tube being alined with said stem to accommodate the movement of the stem, a spring engaging the piston and compressible through its movement, contacts carried by and located within the cylinder, means on the piston on the opposite side to the spring to disengage one contact from the other at one limit of movement of the piston, said contacts being adapted for connection in an electric circuit.

2. A device of the class described for vacuum or pressure operation comprising a cylinder, a tube to conduct the operating media extending from the cylinder, a piston in the cylinder to be operated by the vacuum or pressure, a stem on the piston extending into the end wall of the cylinder remote to the piston, said tube being alined with said stem to accommodate the movement of the stem, a spring engaging the piston and compressible through its movement, contacts carried by the cylinder, means on the piston to disengage one contact from the other at one limit of movement of the piston, said contacts being adapted for connection in an electric circuit, a valve to permit entry of a large volume of air to the cylinder, a valve carried by the cylinder to control the outlet of the air, a plate on the cylinder carrying said contacts and said valves, said contacts extending through the plate into the interior thereof, and a projection on the opposite side of the piston to the spring engageable with one contact at one extreme of movement to separate it from its companion.

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