July 18, 1939. S. MICELI 2,166,818

MOTOR DESIGN SIGN WITH ELECTRIC BULBS

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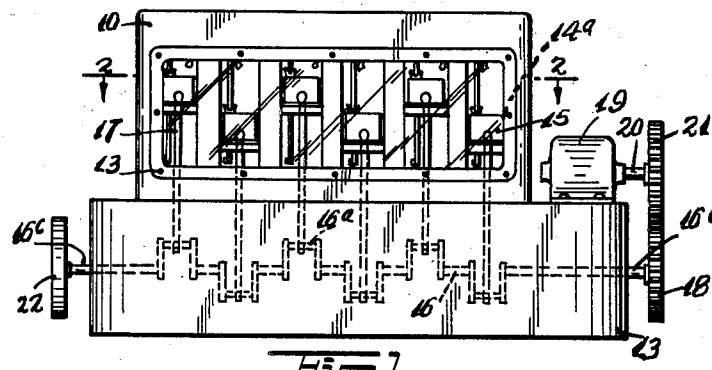


Fig. 1.

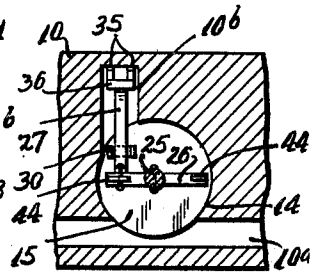


Fig. 6.

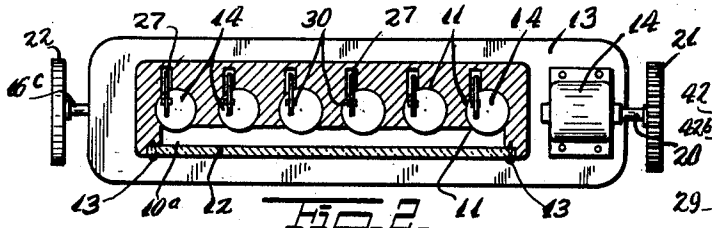


Fig. 2.

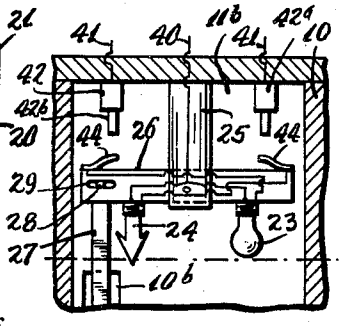


Fig. 5.

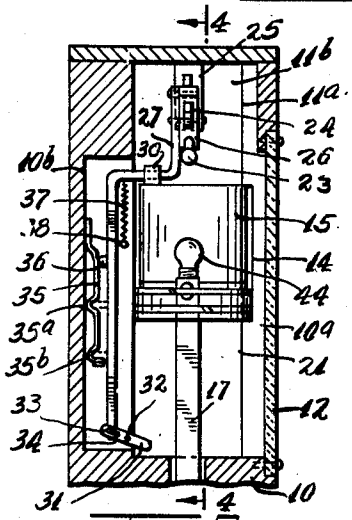


Fig. 3.

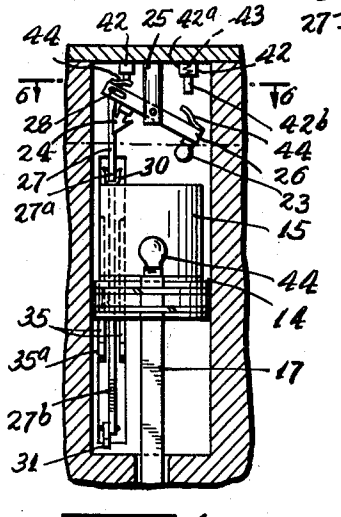


Fig. 4.

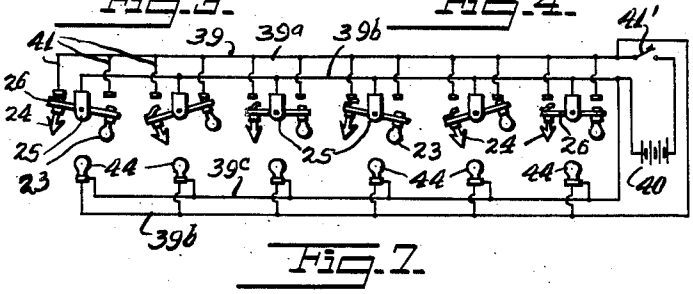


Fig. 7.

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MOTOR DESIGN SIGN WITH ELECTRIC BULBS

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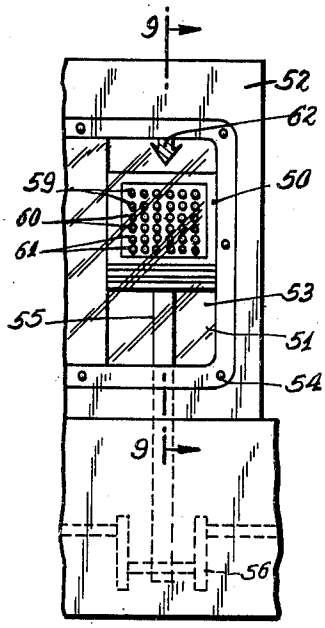


Fig. 8.

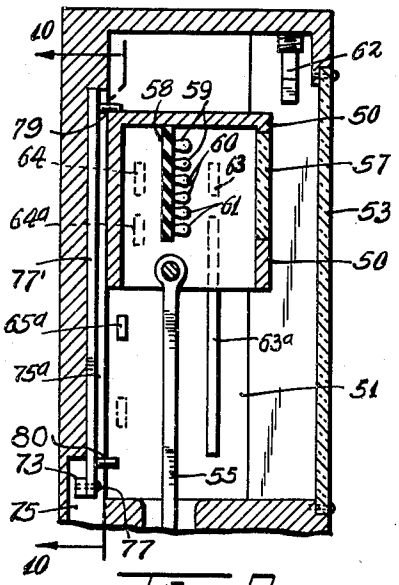


Fig. 9.

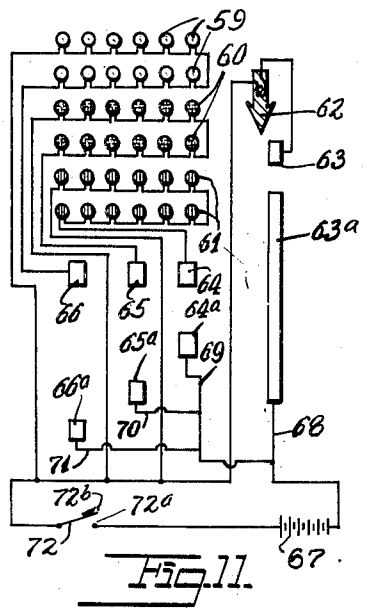


Fig. 11.

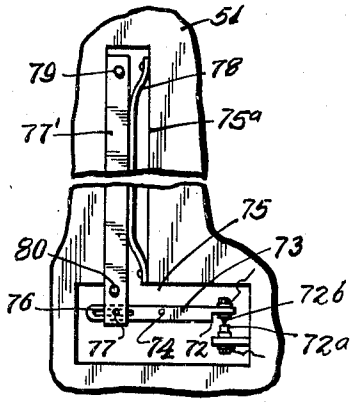


Fig. 10.

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MOTOR DESIGN SIGN WITH ELECTRIC BULBS

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Application July 28, 1938, Serial No. 221,860

3 Claims. (Cl. 40—139)

This invention relates to new and useful improvements in a motor design sign with electric bulbs.

More specifically, the invention proposes the construction of a motor design sign characterized by a body having a plurality of cylinders with open sides and a piston in each cylinder viewable through the open sides as they move up and down therein.

Still further it is proposed to provide a crank shaft driven by an electric motor and having the pistons connected therewith for reciprocating the pistons within the cylinders in a specific relationship with respect to each other.

Still further it is proposed to provide a hollow top portion between the top end of each piston and the top wall of the cylinder and in which a red lamp and a green lamp are mounted in such a manner that the red lamp will be extended when the piston reaches the top of its up stroke, and the green lamp will be extended when the piston moves downward.

It is further proposed to mount the lamps on the end of a lever pivotally supported intermediate of its ends and associated with an electric circuit for lighting the lamps in their lowered positions.

A further object of the invention is to provide a glass front on each of the pistons and behind which a white lamp is mounted and viewable therethrough for permiting the movement of the pistons to be easily followed as they move up and down within the cylinders.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

Fig. 1 is a front elevational view of a motor design sign constructed according to this invention.

Fig. 2 is a sectional view on the line 2—2 of Fig. 1.

Fig. 3 is a vertical sectional view of one of the cylinders.

Fig. 4 is a sectional view on the line 4—4 of Fig. 3.

Fig. 5 is an enlarged view of a portion of Fig. 4, but illustrating a different position of the parts.

Fig. 6 is a sectional view on the line 6—6 of Fig. 4.

Fig. 7 is a schematic wiring diagram of the device.

Fig. 8 is a view similar to a portion of Fig. 1 but illustrating a further modification of the invention.

Fig. 9 is a sectional view on the line 9—9 of Fig. 8.

Fig. 10 is a view taken on the line 10—10 of Fig. 9.

Fig. 11 is a schematic wiring diagram of the device.

The motor design sign with electric bulbs includes a body 10 having a plurality of cylinders 11 formed therein and having open sides 11a. The body 10 is also formed with an open side 10a adjacent the open sides 11a of the cylinders 11. The open side 10a of the body 10 is closed by means of a pane of glass 12 extending thereacross and held in position by means of screws 13. The hollow body 10 is mounted upon a base 13 shown in Figs. 1 and 2.

A piston 14 is slidably mounted in each of the cylinders 11 and is adapted to be moved vertically upwards and downwards within the cylinders. The pistons 14 are formed with an open side 14a adjacent the open side 11a of the cylinders 11. A piece of glass 15 is extended across the open side 14a and securely held in position therein by the edges of the opening 14a.

A means is provided for reciprocating the pistons 14 in a specific relationship with respect to each other and comprises a crank shaft 16 having a plurality of oppositely disposed offset portions 16a. Each of the pistons 14 has a connecting rod 17. The upper ends of the connecting rods 17 are pivotally connected, one with each of the pistons 14. The bottom ends of the connecting rods are each pivotally connected with one of the offset portions 16a of the crank shaft 16. One end 16b of the crank shaft 16 extends from the adjacent end of the base 13 and is provided with a gear 18. A motor 19 is mounted upon the base 13 and has its drive shaft 20 extending therefrom and superimposed above the end 16b of the crank shaft 16. A gear 21 is mounted upon the extended drive shaft 20 and meshes with the gear 18 for driving the crank shaft 16. The other end 16c of the crank shaft extends from the other end of the base 13 and has a balance wheel 22 mounted thereon. The offset portions 16a of the crank shaft 16 are so positioned with relation to each other that every other piston 14 will be up within its cylinder 11 while the other pistons will be down within their cylinders 11.

Each of the cylinders has a hollow portion 11b extending between the top end of the cylinders 14 when in its "up" position and the top of the cylinder 11. A red lamp 23 and a green lamp 24 is mounted within each of the hollow top portions 11b. A downwardly extending lug 25 extends from the top of the cylinder 11. A lever 26 is located within each of the cylinders 11. Each of the levers 26 is pivotally mounted intermediate of its ends upon the bottom end of the lug 25 located within the cylinder 11. Each of these levers is identical in construction and has a red bulb mounted at one end on one side of the pivot and a green bulb mounted on the other end on the other side of the pivot.

A downwardly extending member 27 for each of the cylinders 11 has its top end pivotally connected with one end of the lever 26. This pivotal connection is accomplished by means of a peg 28 engaging an elongated slot 29 formed in the lever 26. Each of the members 27 has an offset portion 27a against which the top end of the piston 14 is adapted to strike when reaching its up position for pivoting the lever 26 for lowering the red lamp 23. When the piston 14 moves downwards a means is provided for pivoting the lever to cause the green lamp 24 to be exposed. This means comprises a clip 30 fixedly attached to the top of the piston 14 and adapted to engage the offset portion as shown in Fig. 4 for pulling the member 27 downwards to pivot the lever 26 and expose the green lamp.

The member 27 has a portion 27b extending downwards within a hollow 10b formed in the body 10 to the rear of each of the cylinders 11. A short lever 31 is pivotally mounted intermediate of its ends by means of a pin 32 at the bottom of the hollow and has one of its ends extending into the cylinder 11. The other end of the short lever 31 is pivotally connected with the bottom end of the portion 27b of the member 27. This connection is accomplished by means of a pin 33 extending from the portion 27b and engaging an elongated slot 34 formed in the short lever 31. When the piston 14 reaches the bottom of the cylinder it is adapted to strike against the short lever 31 and pivot the same slightly to correspondingly pivot the lever 26 to cause both the red and green lamps to be drawn into the hollow 11b.

The lever 26 has three positions, one in which the red lamp 23 is exposed, a second in which the green lamp 24 is exposed, and a third in which both the red and green lamps will be disposed within the hollow 11b. A pair of leaf springs 35 are fixedly attached to the rear wall of the hollow 10b on either side of the member 27 and each is formed with a pair of offset portions 35a and 35b. A lug 36 is attached to the rear edge of the portion 27b of the member 27 and is adapted to be selectively engaged in the recesses for holding the lever 26 in one of its three possible positions. When the lug 36 is in the position shown by the full lines in Fig. 3 the red lamp 23 will be extended. When the piston 14 moves downwards to expose the green lamp it will cause the lug 36 to be drawn past the recesses 35a and engage it into the recesses 35b. When the lug reaches the recesses 35b the member 27 can go no lower and the green lamp 24 will be exposed from within the hollow portion 11b.

Further movement of the piston 14 will cause the clip 30 to snap off the offset portion 27a freeing the piston and permitting it to move to its complete down position. When reaching its complete down position the bottom portion of the piston will strike against the short lever 31, moving the member 27 upwards and causing the lug 36 to be engaged into the recesses 35a to pivot the lever 36 to a position in which both bulbs will be disposed within the hollow 11b. A means is provided for drawing the member 27 downwards. This means comprises a spring 37 operating between a pin 38 and the offset portion 27a of the member 27 for normally urging this member downwards.

A means is provided for lighting each of the red lamps when in their lowered position and a similar means is provided for lighting each of the green lamps when in their lowered positions. This means comprises an electrical circuit 39 and includes a source of power 40 and a switch 41 for controlling the operation of the circuit. The circuit 29 has a lead 39a and a lead 39b. Branch leads 40 are connected to the line 39b and are extended into the cylinders 11 along the lugs 25 and are connected with the center contacts of each of the bulbs 23 and 24.

Branch leads 41, two for each of the cylinders 11, extend into the cylinders and are connected with telescopic contacts 42 mounted within the cylinders on either side of the lugs 25 and one above each of the ends of the lever 26. These contacts comprise a section 42a and a movable section 42b. A spring 43 is provided for urging the sections 42b into their extended positions. Spring contacts 44 are mounted upon the ends of the lever 26 and are engageable against the sections 42b for urging them into the sections 42a when the proper end of the lever 26 is raised to complete a circuit therethrough. The circuits for the lamps are so arranged that when the end having the green bulb 24 is urged upwards it will complete a circuit through the red bulb which has been extended for lighting the same. In the same manner when the end having the red bulb 23 is raised it will complete a circuit for lighting the green lamp 24 which has been extended. When the lever 26 is in a horizontal position or one in which both lamps are retracted, the circuit will be open and neither lamp will be lit.

A white bulb 44 is mounted within each of the pistons 14 and is viewable through the glass 15 for permitting the movement of the pistons to be easily followed. The circuit 39 also has a pair of leads 39c and 39d and each of the white bulbs is connected in parallel with the leads 39b and 39c in a manner so that the lamps will be continuously lit when the switch 41' is in its closed position.

The operation of this device is as follows:

For oscillating the pistons 14 within the cylinders 11 the motor 19 is set in operation causing the crank shaft 16 to be rotated. As the crank shaft 16 rotates the piston 14 will move up and down therein. While the pistons are moving up and down the white bulbs 44 will be continually lit permitting the movement of the pistons to be easily followed. When the pistons reach the top of their stroke they will strike against the offset portion 27b of the member 27 causing the lever 26 to be pivoted to expose the red lamps 23 and complete the circuit for lighting these lamps to indicate that the pistons have reached the top of their stroke.

When the pistons 14 start moving downwards the clip 27 engaging the offset portion 27a will cause the member 27 to be pulled downwards to pivot the lever 26 to expose the green bulbs 24.

When the green bulbs are exposed the lug 26 from the member 27 will be engaged into the bottom recesses 35b of the leaf springs 35 to limit further downward movement of the member 27. When the green bulb is extended a circuit will be completed for lighting this lamp to indicate that the piston 14 is moving downwards. When the piston reached its complete down position it will strike against the short lever 31 causing the member 27 to be moved upwards until the lug 36 engages into the recesses 35a of the leaf springs 35 pivoting the lever 26 to the horizontal, or in a position in which both lamps will be located within the hollow 11b with neither one lit. This position indicates that the piston is moving upwards.

According to the modification of the invention shown in Figs. 8–10 a plurality of pistons 50 are slidably mounted in cylinders 51 formed in a body 52. The front of the body 52 is open and is provided with a glass 53 for closing this open side. Screws 54 engage through openings formed in the edges of the glass 53 and threadedly engage into the body 52 for holding the glass in position on the open side thereof. Each of the pistons 50 is connected with a downwardly extended rod 55. Each of the rods 55 has its bottom end turnably connected with offset portions formed in a motor driven crank shaft 56 for causing the pistons 50 to oscillate up and down within the cylinders 51.

Each of the pistons 50 is formed with an open side adjacent the open side of the body 52. A glass 57 is provided for closing the open side of each of the pistons 50. An insulation member 58 is mounted within each of the pistons 50 behind the glass 57 and a plurality of rows of electric light bulbs are mounted upon this member. These rows of bulbs are arranged in a particular manner and are provided with contacts for the successive lighting of each pair of rows as the piston moves downward. The two top rows of bulbs 59 are white; the two intermediate rows of bulbs 60 are yellow, and the two bottom rows of bulbs 61 are red. A green electric bulb in the form of an arrow 62 is mounted upon the top wall of each of the cylinders 51 and has its bottom end viewable through the glass 52 and is also adapted to be lit when the piston is moved downwards.

Four contact members 63, 64, 65 and 66 are mounted across the back of each of the pistons 50 and are adapted to control lighting of the bulbs 59, 60, 61 and 62. The contact member 63 is adapted to engage against a complementary contact member 63a mounted upon the back wall of the cylinder 51 for controlling the operation of the green arrow 62.

The contact member 64 is adapted to engage against a complementary contact member 64a mounted upon the back wall of the cylinder 51 for controlling the operation of the two rows of red bulbs 61. The contact member 65 is adapted to engage a complementary contact member 65a also mounted upon the back wall of the cylinder 51 for controlling the operation of the two rows of yellow bulbs 60. The contact member 66 is adapted to engage a complementary contact member 66a mounted upon the back wall of the cylinder 51 for controlling the operation of the two rows of white lights 59. The contact member 63a is of a length substantially equal to the distance through which the pistons 50 oscillate for permitting the green arrow 62 to be lit during the entire power stroke of each piston.

The complementary contact members 64a, 65a, and 66a, are mounted in staggered relation to each upon the rear wall of the cylinder 51 for causing the rows of lights 59, 60 and 61 to be successively illuminated as the piston 50 moves downwards on its power stroke.

A circuit is provided which is controlled by the movement of the cylinder to cause the lights to be lit only on a downward stroke. This circuit includes a source of power 67 and a lead for each of the bulbs 59, 60, 61 and 62. A lead 68 includes the green arrow 62, the contact member 63 and its complementary contact member 63a. A lead 69 includes the contact member 64, the two rows of red bulbs 61, and the complementary contact member 64a for controlling the lighting of the red bulbs 61. A lead 70 includes the contact member 65, the two rows of yellow lights 60, and the complementary contact member 65a for controlling the lighting of the yellow bulbs 60. A lead 71 includes the contact member 66, the two rows of white lights 59, and the complementary contact member 66a for controlling the lighting of the white bulbs 59.

A switch 72 is mounted at the base of each of the cylinders 51 and is controlled in a novel manner by the oscillation of each of the pistons 50 for controlling the operation of the circuit to prevent the bulbs to be lit only upon the downward stroke of the piston. One contact 72a of the switch 72 is stationarily mounted and the other contact 72b is mounted on a lever 73 pivotally mounted intermediate of its ends on a pin 74 extending from the rear wall of a cavity 75 formed in each of the cylinders 51 behind the pistons 50. The free end of each of the levers 73 is formed with an elongated slot 76 into which a pin 77 extends. Each of the pins 77 is mounted upon the bottom end of a lever 77' which extends upwards within an extension cavity 75a formed at one end of the cavity 75. A spring 78 is mounted upon the side wall of the extension cavity 75a and bears against the adjacent face of the lever 77' for holding the same in its adjusted positions.

The top and bottom ends of the lever 77' are formed with inwardly extending pins 79, and 80. The pin 79 is adapted to be urged upwards by engagement with the top end of the pistons 50 when it reaches the top of its upward stroke for pivoting the lever 73 to close the switch 72 and permit the current to flow from the source of power 67 through the leads 68, 69, 70 and 71. When the piston 50 reaches the bottom of its down stroke its bottom end will strike against the pin 80 and urge the lever 77' downwards to pivot the lever 73 and open the switch 72 to prevent new current from passing there-through to cause the contact members 63, 64, 65 and 66 to be inoperative when the piston 50 moves upwards. The device as shown in the drawings is a motor design sign and not an educational device for illustrating the cycle of a gasoline or similar motor. While it is in the form of a motor it is proposed that the device be placed in a store window or similar show place merely to attract the attention of passersby as the lights light on the downward strokes of the pistons. The operation of the lights is one which is believed to be best suited for the purpose of attracting attention.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and the right is reserved to all changes and modifications coming within the scope of the inveniton as defined in the appended claims.

Having thus described my invention, what I

claim as new, and desire to secure by United States Letters Patent is:

1. A motor driven sign with electric bulbs, comprising a body having a plurality of cylinders with open sides, a piston in each cylinder viewable through said open sides and also having open sides adjacent said open side, means for reciprocating said pistons in a specific relationship with respect to each other, a green lamp mounted within a hollow top portion of each cylinder, a plurality of pairs of rows of differently colored bulbs mounted within each of said pistons and viewable through open sides, and a means for causing said green lamp to be continuously lit on each downward sttroke of each of said pistons, and for causing each pair of rows of differently colored bulbs to be successively lit upon the downward stroke of said piston.

2. A motor driven sign with electric bulbs, comprising a body having a plurality of cylinders with open sides, a piston in each cylinder viewable through said open sides and also having open sides adjacent said open side, means for reciprocating said pistons in a specific relationship with respect to each other, a green lamp mounted within a hollow top portion of each cylinder, a plurality of pairs of rows of differently colored bulbs mounted within each of said pistons and viewable through open sides, and a means for causing said green lamp to be continuously lit on each downward stroke of each of said pistons, and for causing each pair of rows of differently colored bulbs to be successively lit upon the downward stroke of said piston, said means comprising a row of contacts mounted upon the back of said piston, a contact for one of said contacts of a length substantially equal to the distance through which said piston moves for causing said green light to be lit, and a contact for each of the other contacts in said group of contacts and arranged in staggered relation to each other upon the rear wall of each of said cylinders and contactable successively by said contacts on said piston during said downward stroke, and a circuit connecting complementary contacts together in series and each of said circuits including certain of said lamps.

3. A motor driven sign with electric bulbs, comprising a body having a plurality of cylinders with open sides, a piston in each cylinder viewable through said open sides and also having open sides adjacent said open side, means for reciprocating said pistons in a specific relationship with respect to each other, a green lamp mounted within a hollow top portion of each cylinder, a plurality of pairs of rows of differently colored bulbs mounted within each of said pistons and viewable through open sides, and a means for causing said green lamp to be continuously lit on each downward stroke of each of said pistons, and for causing each pair of rows of differently colored bulbs to be successively lit upon the downward stroke of said piston, said means comprising a row of contacts mounted upon the back of said piston, a contact for one of said contacts of length substantially equal to the distance through which said piston moves for causing said green light to be lit, and a contact for each of the other contacts in said group of contacts and arranged in staggered relation to each other upon the rear wall of each of said cylinders and contactable successively by said contacts on said piston during said downward stroke, and a circuit connecting complementary contacts together in series and each of said circuits including certain of said lamps, and a means for causing said contacts to be inoperative on the upward stroke of said pistons.

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