

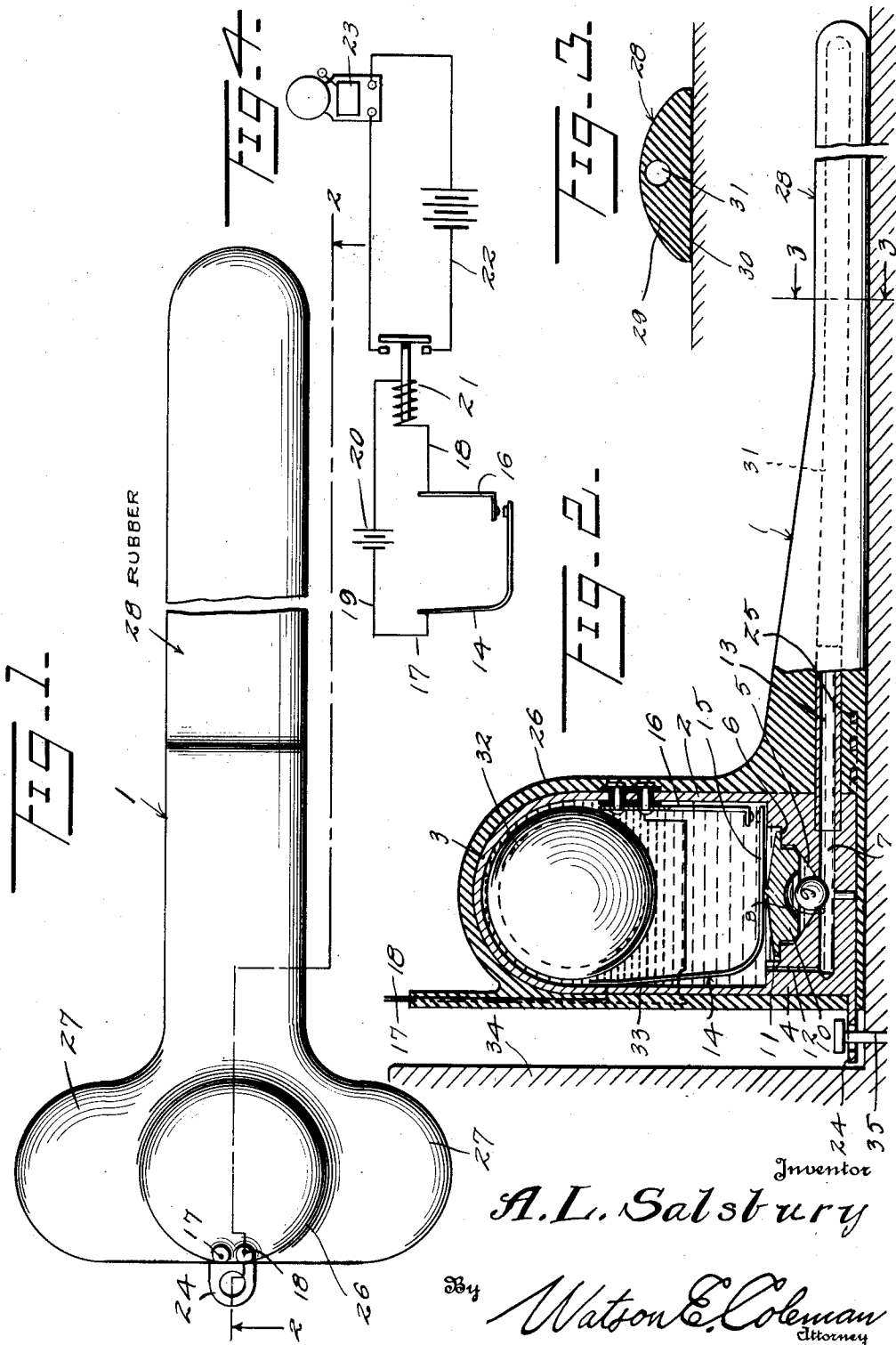
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HYDRAULIC SIGNAL ACTUATOR

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HYDRAULIC SIGNAL ACTUATOR

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This invention relates to improvements in signal operators and pertains particularly to a device designed for use in service stations and garages, to give notice to attendants of the arrival of a motor vehicle.

The primary object of the present invention is to provide a signal operator which is actuated by the motor vehicle running over a compressible portion thereof and thereby giving a movement impulse to fluid therein which actuates a circuit closer.

Another object of the invention is to provide a device of the above described character wherein the circuit closer will be held closed only for a short period, even though the pressure is continuously applied to the compressible element.

A still further object of the invention is to provide a signal operator which is readily portable so that it may be shifted to various positions in a runway, as found necessary.

Other objects and advantages of the present invention will become apparent as the description of the same proceeds, and the invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawing forming part of this specification, with the understanding, however, that the invention is not confined to any strict conformity with the showing of the drawing but may be changed or modified so long as such changes or modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawing:

Figure 1 is a view in top plan of the signal actuating device embodying the present invention.

Figure 2 is a sectional view taken upon the line 2—2 of Figure 1.

Figure 3 is a sectional view taken on the line 3—3 of Figure 2.

Figure 4 is a diagram of an electric circuit controlled by the actuator showing the manner in which the operation of a signal element is effected.

Referring more particularly to the drawing, wherein like numerals of reference indicate corresponding parts throughout the sev-

eral views, the numeral 1 indicates as a whole the signal operating device. This device consists of a metal receptacle 2 preferably of cylindrical design and normally disposed in upright position, the upper end of the receptacle being domed or rounded, as indicated at 3, while the lower end is closed by the thick bottom portion 4.

The inner face of the bottom 4 of the receptacle has formed therein the cone-shaped well 5 which is formed around its top to provide the shoulder 6. Leading into the bottom 4 is the tubular passage 7 into which the lowermost portion of the well 5 opens, as at 8. The opening 8 forms a seat for a ball check valve 9.

Covering the upper part of the well 5 is a shiftable diaphragm 10 about the top of which is a circular flange 11 which rests upon the shoulder 6, as shown. There is thus formed an area between the ball check valve 9 and the underface of the diaphragm 10.

From the inner end of the passage 7 there leads upwardly through the bottom 4 to the interior of the receptacle 2 the by-pass or bleed passage 12, while the other end of the passage 7 has fitted therein one end of the tube 13 which projects laterally from the receptacle.

Within the receptacle there is positioned a substantially L-shaped resilient contact arm 14 the free end of one portion of which is secured to the wall of the receptacle adjacent the top thereof, while the other portion, which is indicated by the numeral 15, extends transversely of the bottom of the receptacle over the center of the diaphragm 10, terminating adjacent the opposite side of the receptacle wall to which the first mentioned portion is secured. Secured to the receptacle wall within the receptacle is a second contact 16, the free end of which terminates in spaced relation to and above the free end of the portion 15 of the contact 14. These contacts 14 and 16 have the wires 17 and 18 respectively connected therewith, which wires form the opposite sides of the electric circuit 19 in which is interposed a source of electrical energy, as for example the battery 20, and a relay 21. The relay 21 may

be employed to control the circuit 22 in which a suitable signal element 23 is placed.

The bottom of the receptacle 2 has formed integral therewith an apertured ear 24 and a plate 25 which is provided with a series of apertures. The plate 25 and a portion of the ear 24 serve to maintain the receptacle 2 in position in the rubber casing 26 which completely encloses the receptacle. This casing 26 includes a base portion having the laterally directed ears or lobes 27 and the elongated tongue portion 28, the upper surface of which is rounded, as indicated at 29, while the bottom is flat, as indicated at 30, so as to provide a surface which will maintain the tongue in flat outstretched position upon the surface of a roadway. The inner portion of the tongue 25 is thickened slightly, as shown in Figure 2, for the purpose of strengthening its connection with the body 26.

The tongue 28 is provided with the longitudinally extending passage or chamber 31 which is closed at its outer end, as shown in Figure 2, while the inner end thereof has the tube 13 extended thereinto.

The receptacle 2 has therein a sponge rubber air filled ball 32 and a fluid 33. The fluid which fills the receptacle 2 keeps the ball 32 in the top of the receptacle, as shown, and it also fills the well 5 and the passages 7 and 31.

When in use the signal operator may be placed in any convenient position at the side of a driveway as, for example, alongside the curb or edge 34 of one of the usual islands found in gasoline filling stations and on which the gas pumps are mounted.

The head of the signal operator, or in other words the portion in which the fluid receptacle 2 is located, is placed close to the curb with the apertured ear 24 thereagainst and a nail 35, or other suitable securing element, may be driven through the ear into the underlying surface to hold the signal operator in position with the tongue 28 extending at right angles from the curb, out into the driveway. When a motor vehicle enters the driveway one of the wheels may be made to pass over the tongue 28 which will be compressed thereby and will thus have some of the fluid 33 forced from the tube or chamber 31 into the receptacle 2 past the check valve 9 and diaphragm 10. The sponge rubber ball will be compressed slightly to permit the fluid to enter the chamber and as this occurs the diaphragm 10 will be raised, thus forcing the resilient contact 14 into engagement with the contact 16 and closing the circuit 19 which will in turn operate the signal circuit 22 through the medium of the relay 21. The fluid forced from the chamber 31 into the receptacle 2 past the ball check valve will then flow back slowly through the bypass or bleed passage 12 after the motor ve-

hicle wheel has been removed from the tongue 28 thus again equalizing the distribution of the fluid in the device.

Should the motor vehicle wheel be stopped upon the tongue 28 the slight resilient action of the portion 15 of the contact 14, together with the weight of the diaphragm member 10, will cause the diaphragm to slowly settle back in the well 5, the fluid trapped therebeneath escaping under the edge thereof, thus permitting the disengagement of the contacts.

It will thus be seen that even though the weight which compressed the tongue 28 is not removed, the operation of the signal will be discontinued after a short period.

Throughout the specification and in the claims the word "fluid" as used is intended to cover the use of both liquids or gases.

From the foregoing description it will be seen that the device herein described may be readily shifted as found necessary and by its use the signal operating circuit will be closed momentarily each time a sufficient weight is placed upon the tongue 28 to compress the same and force the fluid from the chamber therein into the receptacle 2 past the check valve and diaphragm.

Having thus described my invention, what I claim is:

1. An electric signal operator of the character described, comprising a closed receptacle having a well in the bottom thereof and further having a tubular passage in the bottom and communicating with the lower part of said well, a ball check valve closing the communicating opening between the well and the passage and opening toward the receptacle, a movable body closing the upper portion of the well, said receptacle bottom having a bleed passage establishing communication between the interior thereof and the first mentioned passage, a pair of normally separated contacts in the receptacle, one thereof being resilient and normally resting upon said movable body, an elongated compressible tongue like body having a chamber extending longitudinally therein and in communication at one end with said first passage, and a fluid in said receptacle, said passages and said well and chamber.

2. An electric signal operator of the character described, comprising a closed receptacle having a well in the bottom thereof and further having a tubular passage in the bottom and communicating with the lower part of said well, a ball check valve closing the communicating opening between the well and the passage and opening toward the receptacle, a movable body overlying the upper portion of the well, said receptacle bottom having a bleed passage establishing communication between the interior thereof and the first mentioned passage, a pair of normally separated contacts in the receptacle,

one thereof being resilient and normally resting upon said body, an elongated compressible tongue body having a chamber extending longitudinally therein and in communication at one end with said first passage, a fluid in said receptacle, said passages and said well and chamber, and a compressible body maintained in the upper part of the receptacle by said fluid.

3. A portable signal operator of the character described, comprising a chambered body, means for securing the body in a desired location, an elongated relatively flat compressible tongue projecting from the lower portion of said body to extend into a roadway, said tongue being chambered and in communication with the chambered body through a well in the lower portion of the body, a body covering the upper portion of said well and adapted to yield to the application of pressure to the under side thereof, a check valve closing the lower portion of the well and opening toward the said last body, a bleed by-pass between the chamber of the first body and the chamber of said tongue, a pair of normally separated contacts, one of said contacts being engaged by said second mentioned body and adapted to be shifted thereby for engagement with the other contact, and a fluid in the chambers of the first body and the tongue.

4. A signal operator of the character described, comprising a flat elongated chambered body of rubber, a second chambered body operatively connected with the first body, there being a passage between the chambers of the bodies, a broad substantially flat member covering said passage and normally retaining one position with respect thereto and adapted to move relative thereto, and a pair of signal controlling electrical contacts arranged adjacent said member to be actuated thereby relative to one another upon movement of the member, said bodies being designed to contain a fluid which is forced from the first body upon the compression of the same against said member to actuate the same.

5. A signal operator of the character described, comprising a flat chambered body of compressible material, a second chambered body operatively connected with the first body, there being a passage between the chambers of the bodies, a shiftable member covering said passage and normally retaining one position with respect thereto, and a pair of signal controlling electrical contacts arranged adjacent said member to be actuated thereby relative to one another upon movement of the member, said bodies being designed to contain a fluid which is forced from the first body upon the compression of the same against said member to actuate the same, said chambers being connected by a second

relatively small passage through which equalization of the pressure of the fluid in the two chambers is obtained.

6. A signal operator of the character described, comprising a body having a chamber therein, said body being of a character to have the area of said chamber reduced upon the application of a pressure to the body, a second body having a chamber therein, a communicating passage between said chambers, a vertically shiftable element in said second chamber and covering said passage, a pair of electric signal circuit controlling contacts disposed above said element and adapted to be moved relative to one another by the element, and a second passage of relatively small diameter connecting said chambers, said chambers being designed to contain a fluid which moves against said element upon the reduction of the area of the first chamber to actuate said contacts, said last mentioned passage providing means for equalizing the pressure between the chambers upon the continued application of pressure to the first body.

7. A signal actuating device comprising a relatively long tongue like body of rubber having a passage extending longitudinally therein, a chambered body carried by the first mentioned body, the interior of the chambered body being in communication with the passage of the first body through an aperture a pair of electric contact members housed in the chambered body, means covering said aperture for actuating one of said contact members relative to the other, said tongue and chambered body being of a character to confine a fluid therein, the fluid upon ejection from the passage of said tongue through the compression thereof operating to shift said means, and means for equalizing the pressure of the fluid between the said passage and the chambered body.

In testimony whereof I hereunto affix my signature.

ALBERT L. SALSURY.