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CIRCUIT CLOSING DEVICE

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This invention relates to a circuit closing device and is designed primarily for use in closing a signal circuit to make active the signal element of the circuit for signalling for attendants at filling stations, but it is to be understood that a device, in accordance with this invention may be employed in any connection for which it is found applicable, and the invention has for its object to provide, in a manner as hereinafter set forth a device of the class referred to so constructed and arranged whereby a signal elements will be made active for an extended period without the use of springs, magnets or complicated switches.

A further object of the invention is to provide, in a manner as hereinafter set forth, a device of the class referred to actuated to active position by fluid pressure, such as air, and so constructed and arranged whereby it may be made active from the passage of a wheel of a vehicle over a compressible and extendible air container, forming an element of the device for the purpose to direct attention of an attendant at a filling station to a person requiring service.

Further objects of the invention are to provide, in a manner as hereinafter set forth, a circuit closing device which is comparatively simple in its construction, strong, durable, compact, thoroughly efficient in its use, positive when active, readily assembled, conveniently repaired when occasion requires, and comparatively inexpensive to manufacture.

To the above ends essentially, and to others which may hereinafter appear, the invention consists of such parts and such combination of parts which fall within the scope of the invention as claimed.

In the drawing:

Figure 1 is a fragmentary view in side elevation of a circuit closing device in accordance with this invention.

Figure 2 is a fragmentary view in longitudinal section of the circuit closing device.

Figure 3 is a fragmentary view in sectional plan.

The device includes a casting constituting the body part 1 thereof, and such body part is of substantially rectangular contour recessed, as at 2 in its lower face. Each end of body part 1 is formed at its bottom with a flat extension 3 provided with an opening 4 for the passage of holdfast means 4', to anchor body part 1 stationary.

The body part 1 is formed with a pair of aligning oppositely disposed circular air intakes 5, 6 extending lengthwise of and opening at opposite

ends thereof. Secured in the intakes 5, 6 are the inner ends of nipples 7, 8 respectively which project a suitable distance from the ends of body part 1 and are coupled as at 9, 10 respectively to the inner ends of compressible and extendible air containers 11, 12 respectively, each in the form of a rubber hose of the desired length provided at its outer end with a normally closed air intake valve 13. The intakes 5, 6 are arranged in alignment with, but below the longitudinal axis of the body part 1, and the latter in proximity to its upper end is formed with an air receiving chamber 14 positioned above and in alignment with the longitudinal axis of body part 1. The ends of air chamber 14 are positioned between the vertical median and the ends of body part 1, and open into a pair of vertically disposed valve chambers 15, 16 provided at their bottoms with valve seats 17, 18 respectively for gravity seating check valves 19, 20 respectively. Leading from the inner ends of air intakes 4, 5 to and opening into the valve chambers 15, 16 through the bottom of the latter are air conducting ports 21, 22 respectively. The valve chambers 15, 16 are formed in body part 1 and are closed at their upper end by removable headed elements 23, 24 respectively seated on and threadedly engaging in body part 1. The air chamber 14 opens into the valve chambers at the inner ends of elements 23, 24. The top of body part 1 is formed at one side of its transverse median with a vertical opening 25 which communicates at its lower end with an air chamber 14. The valves 19, 20 normally close the valve chambers to the ports 21, 22. The containers 11, 12 are employed for supplying a fluid pressure impulse to chamber 14. The containers are selectively operated. The nipples 7, 8 are provided with air intakes 7', 8' respectively for the containers 11', 12' respectively.

Secured at its lower end to the wall of opening 25, and having its lower edge flush with the upper wall of chamber 14 is a vertically disposed cylinder 26 which is open at each end. Extending diametrically of cylinder 26 and seated upon the top of body part 1 is a combined supporting and stop pin 27 for a purpose to be referred to. Loosely mounted in the cylinder 26 and normally supported upon pin 27 is an inverted cup-shaped piston 29 having its outer diameter slightly less than that of the inner diameter of cylinder 26 to form a leak passage 30. The piston 29 has integral centrally of the closed upper end 31 thereof a vertically disposed stem 32, of a length to extend from the upper end of cylinder 26, when piston 29 is normally seated on pin 27.

Secured to the top of body part 1 outwardly with respect to elements 23, 24 are standards 33, 34 respectively having secured to their upper ends, as at 35 the ends of a cross head 36. Secured to and depending from the latter is a pair of spaced binding posts 37, 38, the former being of greater length and depending a greater distance below cross head 36 than the post 38. Carried by post 37 is an insulating collar 39 which seats upon a resilient contact strip 40 supported by post 37. The collar 39 bears against cross head 36 and contact strip 40, the latter being extended across and normally spaced from stem 32, whereby it will be arranged in the upward path of movement of stem 32. The strip 40 has its upper face provided with a contact point 42. Carried by post 38 is an insulating collar 43 of less height than collar 39. The collar 43 seats upon a resilient contact strip 44 of less length than and which is arranged in superposed relation with respect to strip 40. The strip 44 is supported at one end from post 38. The collar 43 bears against cross head 36 and contact strip 44, the latter has its lower face provided with a contact point 45 normally arranged in superposed spaced relation to said contact point 42.

A signal element is designated 46, a source of electrical energy at 47, a circuit connection between source 47 and post 37 at 48, a circuit connection between post 38 and element 46 at 49, and a circuit connection between element 46 and source 47 at 50.

A cover 51 is supported from the nipples 7, 8 and encloses the elements of the device arranged over body part 1.

Either hose is capable of being depressed to cause an air impulse to enter through a nipple into an air intake, from the latter upwardly through a port to elevate a check valve, the air passing through a valve chamber into the air chamber and from the latter into the cylinder. The air entering the latter will raise the piston to the desired height, whereby the piston stem will act upon contact strip 40 to bring its contact point 42 in engagement with contact point 45 and close the signal circuit thereby making the signal element active. The air impulse or pressure is held in the air chamber by the check valves. This pressure is held against the piston whereby contact points 42 and 45 are held in engagement until the pressure is slowly reduced by leakage between the piston and cylinder wall, this arrangement provides to make the signal element active for an extended period without the employment of springs, magnets or complicated switches.

What we claim is:—

1. A circuit closing device comprising the combination of a horizontally disposed casting having formed therein in proximity to the top thereof a lengthwise extending fluid pressure charge receiving chamber, said casting being formed with a pair of spaced oppositely extending fluid pressure conducting passages, each opening at one end of the casting and leading to an end of said chamber, a pair of fluid pressure charge operated valves within said casting for normally closing the ends of the chamber to said passages, oppositely extending, selectively operable, compressible and extendible tubular elements coupled with the ends of said casting, communicating at their inner ends with said passages, closed

at their outer ends and each adapted when compressed by the weight of a mobile body traveling thereover and directly engaging therewith to supply a fluid pressure charge to said chamber, said casting being formed in its top with a vertical opening communicating with said chamber intermediate the ends of the latter, an open top and open bottom vertically disposed cylinder secured at its lower portion to the wall of said opening, a gravity lowering piston operating in said cylinder and elevated by a fluid pressure charge supplied to said chamber, and a circuit closer carried by said piston.

2. In a circuit closing device of that type including a fluid pressure charge elevated circuit closer, the combination of a horizontally disposed casting for supporting said closer and formed at its ends with apertured extensions for the passage of holdfast means for anchoring it upon a traction surface, said casting being formed lengthwise thereof with a fluid pressure charge receiving chamber permanently opening intermediate its ends of its top into said closer, said casting being formed with a pair of spaced oppositely extending fluid pressure charge conducting passages, each opening at one end of the casting and leading to an end of said chamber, a pair of fluid pressure charge operated valves within the casting for normally closing said passages to said chamber, a pair of oppositely extending, elongated, compressible and extendible tubular elements for mounting upon the traction surface adjacent the ends of the casting, said elements coupled at their inner ends with the ends of the casting, permanently communicating with said passages, closed at their outer ends and each adapted when compressed by the weight of a mobile body traveling thereover and directly engaging therewith to supply a fluid pressure charge to said chamber, and means arranged above the point of communication between the closure and fluid receiving chamber for arresting the lowering movement of said closer.

3. In a circuit closing device of that type including a fluid pressure charge elevated circuit closer, the combination of a casting for seating upon a traction surface and for supporting said closer, said casting being formed near its top and lengthwise thereof with a fluid pressure charge receiving chamber and means intermediate the ends of said chamber for permanently establishing communication between the latter and the closer, said casting being formed with an angle-shaped fluid charge conducting passage opening at one end of the casting and at its other end at one end of said chamber, a valve within the casting for normally closing the chamber to the passage, an elongated directly compressible and extendible tubular element for mounting on the traction surface adjacent said end of the casting and closed at its outer end, an apertured tubular sleeve extending into said passage at said end of the casting, said sleeve being extended from the inner end of said element and having its aperture positioned between said end of the casting and the inner terminus of said element, and coupling means between the sleeve and element.

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