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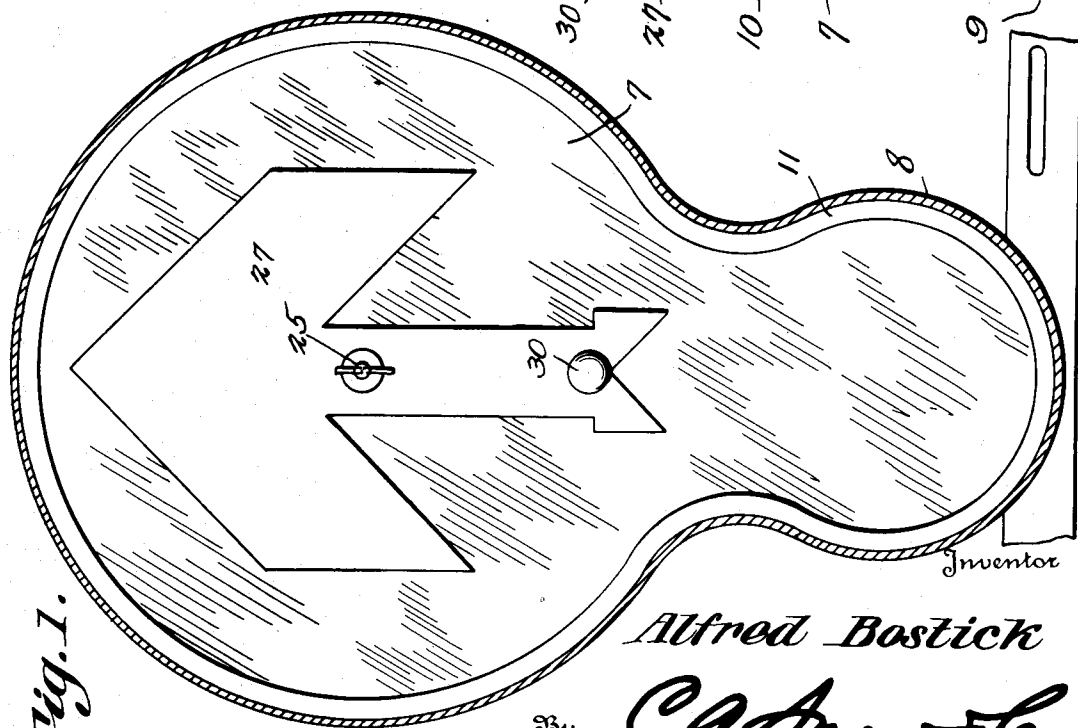
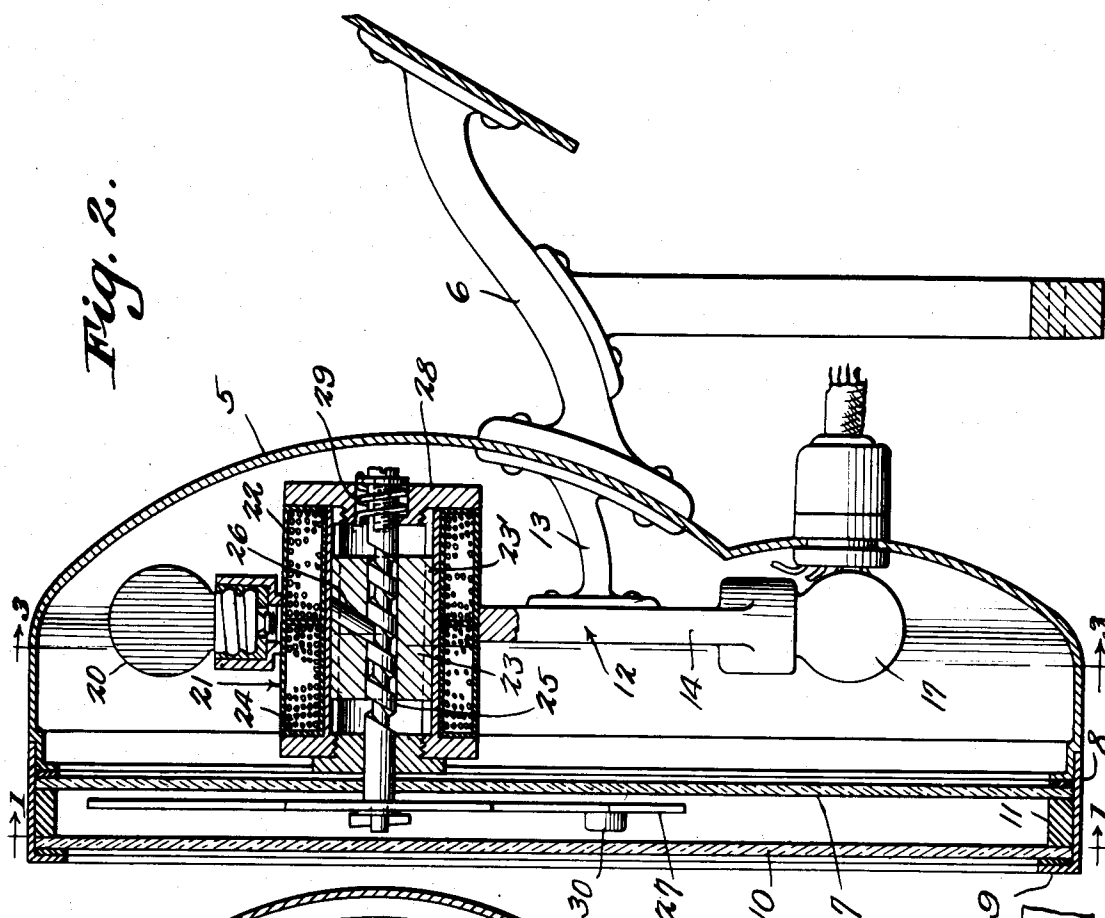
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2,110,033

SOLENOID ACTUATOR FOR ROTATING SIGNALS

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2 Sheets-Sheet 1



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SOLENOID ACTUATOR FOR ROTATING SIGNALS

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2 Claims. (Cl. 175—341)

This invention relates to direction indicators designed for use on motor vehicles.

The primary object of the invention is to provide a direction indicator of the electrically controlled type, and one which is operated by a switch located in easy access to the operator.

An important object of the invention is to provide a signal including an indicator in the form of an arrow adapted to be moved to point to the right or left, indicating the direction of travel to be taken by the vehicle equipped with the direction indicator.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, may be made within the scope of what is claimed, without departing from the spirit of the invention.

Referring to the drawings:

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

Figure 2 is a vertical sectional view taken at right angles to Figure 1.

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

Figure 4 is a diagram indicating the circuits controlling the lights of the signal.

Referring to the drawings in detail, the indicator embodies a housing indicated generally by the reference character 5, the housing being supplied with a bracket 6, secured at the rear thereof, whereby the housing may be readily and easily secured to a supporting surface.

The reference character 7 designates a translucent member fitted in the front of the housing 5, closing the front of the housing, the member 7 being held in position by means of the wide lens band 8. The outer edge of the lens band 8 is turned inwardly providing an annular flange 9 which in turn provides a support for the member 10 which is also constructed of translucent material. This member 10 is held in spaced relation with the member 7, by means of the spacing ring 11, the spacing ring being shown as positioned between the members 7 and 10 and held in position by frictional contact with the members 7 and 10. The reference character 12 designates the lamp bracket which is mounted within the housing, the lamp bracket being provided with an arm 13 extending rearwardly therefrom, the arm being secured to the rear wall of

the housing, as clearly shown by Figure 2 of the drawings.

The lamp bracket 12 is of novel construction, and comprises a downwardly extended arm 14 and laterally extended arms 15 and 16, the arm 14 providing a support for the tail light 17, while the arms 15 and 16 provide support for the lamps 18 and 19, the lamps 18 and 19 constituting lamps of the indicator or signal. Extending upwardly and disposed between the lamps 18 and 19, is a lamp 20, which also constitutes one of the signal lamps of the indicator. It might be stated that the lamps 18 and 20 are colored red, while the lamp 19 is of amber color, for purposes to be hereinafter described.

The lamp bracket 12 is provided with a central enlarged portion formed with an opening to receive the double solenoid 21, which is of a diameter to closely fit within the opening of the lamp bracket, where it is securely held in position.

As shown by Figure 2 of the drawings, this double solenoid is supported in horizontal position, the coil 22 at one end of the solenoid being designed to attract the core 23 in one direction, while the coil 24 is adapted to attract the core 23 in the opposite direction. The solenoid 21 is formed with grooves which accommodate the ribs 23', formed on the core so that rotary movement of the core 23 will be prevented, as it moves within the solenoid. The core 23 is provided with a bore extended centrally there-through, the bore being designed to accommodate the shaft 25, which shaft is formed with a spiral groove. The pin 26, carried by the core 23, extends into the spiral groove of the shaft 25, so that as the core 23 moves longitudinally of the solenoid, the shaft will be rotated. The forward end of the shaft 25 extends through an opening in the translucent member 7, and provides a support for the arrow 27 which is secured to the shaft to rotate therewith.

The rear end of the shaft 25 fits in an opening formed in the end plate 28 of the solenoid, the opening being substantially large providing a housing for the coiled spring 29 which has one end thereof secured to the shaft, while the opposite end of the spring is secured to the end member. Thus it will be seen that as the shaft rotates the spring is placed under tension to cushion the action of the shaft, and at the same time assist in returning the arrow to its normal inactive position. The weight indicated by the reference character 30, is so positioned on the arrow that it will hold the arrow in its vertical

position, when the arrow is not moving under the influence of the solenoid.

Referring now to Figure 4 of the drawings, which illustrates the diagram of the circuit controlling the lamps, it will be seen that the reference character 31 designates the battery of the motor vehicle, which is grounded through the wire 32. Wire 33 leading from the battery, connects with the switch arm 34, which is adapted to complete the circuit with the wire 35 leading to tail light 17 of the vehicle, the circuit being grounded through the wire 37. The lamp 20, which is red, is controlled by the brake pedal 38, which connects with the wire 39, so that movement of the brake pedal 38 will cause the circuit to be completed from the battery, through wire 39 and wire 40, to the red lamp 20. The wire 41 connects with the wire 33, and also connects with the switch arm 42 of the manually controlled switch which operates the indicator. Wire 43 extends to the coil 24 of the double solenoid, the wire 44, leading from the wire 43 being in circuit with the lamp 18, so that when the circuit to the solenoid or coil 24, is completed, the lamp 18 will be lighted simultaneously. In order to complete the circuit to the coil 24 and lamp 18, it is only necessary to move the switch arm 42 to engage the contact 45. Wire 46 connects switch contact 50 with the coil 22 of the solenoid, and this wire 46 is also connected with the wire 47 that leads to the amber lamp 19. In order to complete the circuit to the coil 22 of the solenoid and amber lamp 19, it is necessary to move the switch arm 42 to engage the contact member 50. The operation of the device is as follows; assuming that the driver of the vehicle equipped with the indicator is to turn to the left, the operator will move the switch arm 42 to close the circuit to the coil 24 of the solenoid and the red lamp 18. When the coil 24 becomes energized, the core 23 will be moved in such a way that the shaft 25 will rotate, moving the indicator or arrow 27 to indicate a left turn. Should it be desired to turn to the right, the

operator by closing the switch arm 42 will complete the circuit to the coil 22 of the solenoid and amber lamp 19. The core 23 will now be moved in the opposite direction, rotating the shaft 25 in the opposite direction, or in a direction to indicate the direction of travel of the vehicle.

Having thus described the invention, what is claimed is:

1. A signal actuating mechanism comprising a housing, a solenoid mounted within the housing, and including independent coils, a core mounted within the coils, ribs formed on the core and extending longitudinally thereof, said solenoid having grooves accommodating the ribs, a shaft supported within the coils and having a spirally formed groove, a pin extending into the core and having its inner end disposed in the spirally formed groove whereby movement of the core in either direction will operate to rotate the shaft, and a yieldable member secured to the shaft and adapted to return the core to its inactive position intermediate the ends of the solenoid.

2. A signal actuating mechanism comprising a housing, a solenoid mounted within the housing and including independent coils, a core mounted within the coils, ribs formed on the core and extending longitudinally thereof, said solenoid having grooves accommodating the ribs, a shaft supported within the coils and having a spirally formed groove, a pin extending into the core and having its inner end disposed in the spirally formed groove, whereby movement of the core in either direction will operate to rotate the shaft, said solenoid having an enlarged opening in which one end of the shaft is positioned, a coiled spring having one of its ends secured to the shaft, and having its opposite end secured to the solenoid, the coiled spring being housed within the enlarged opening, and said coiled spring adapted to operate to return the core to its inactive position intermediate the ends of the solenoid.

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