Aug. 12, 1958 R. G. WOLTERS 2,847,527

CURB FINDER

Filed Jan. 3, 1956 2 Sheets-Sheet 1

Fig. 1.

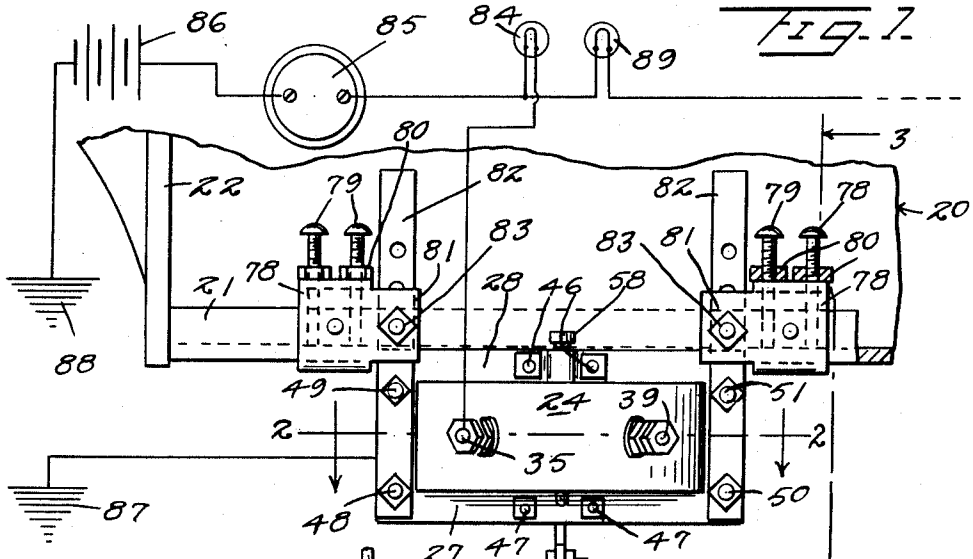


Fig. 2.

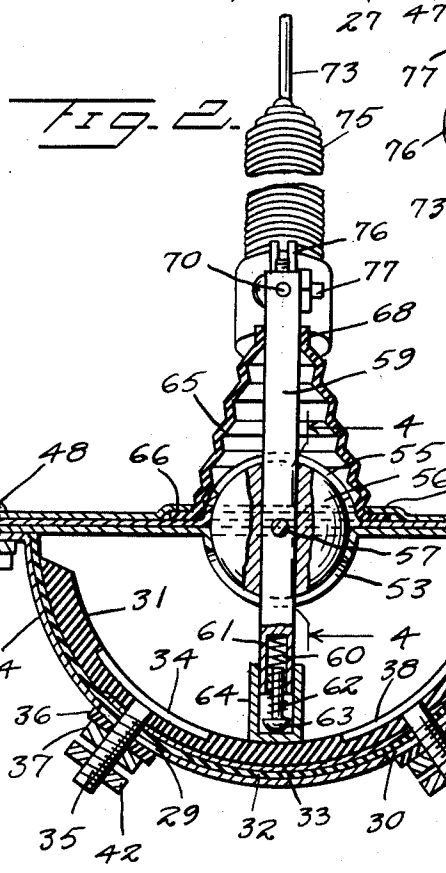


Fig. 6.

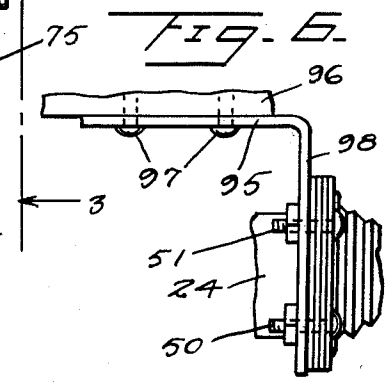
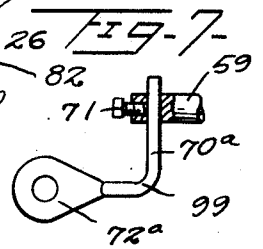


Fig. 7.



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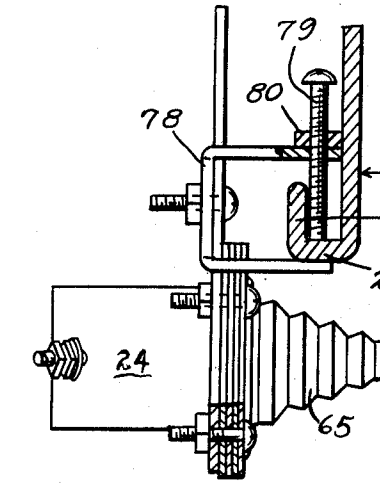


Fig. 3.

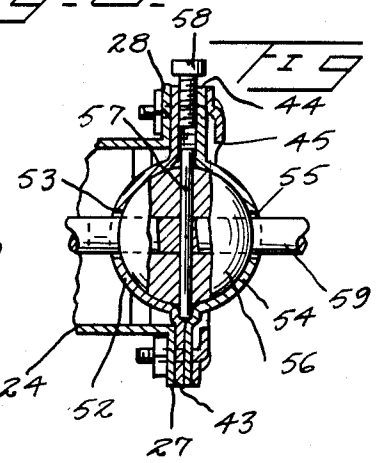


Fig. 4.

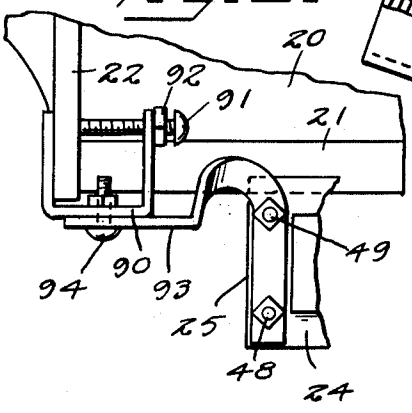


Fig. 5.

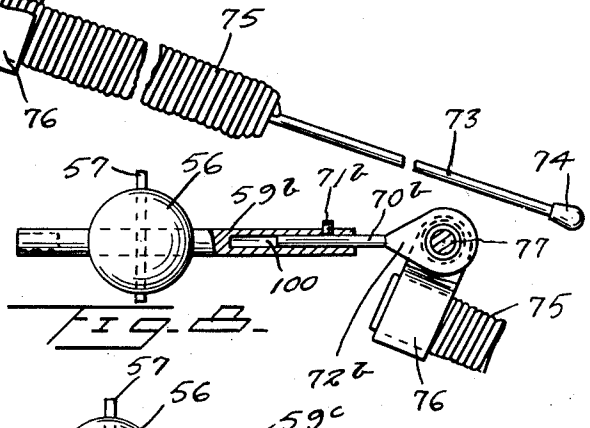


Fig. 8.

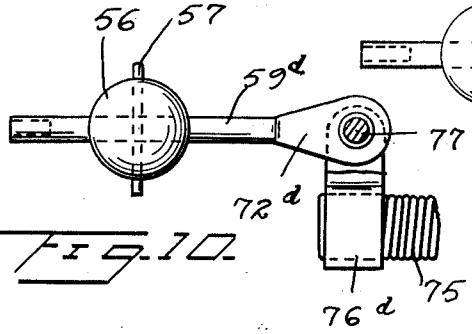


Fig. 10.

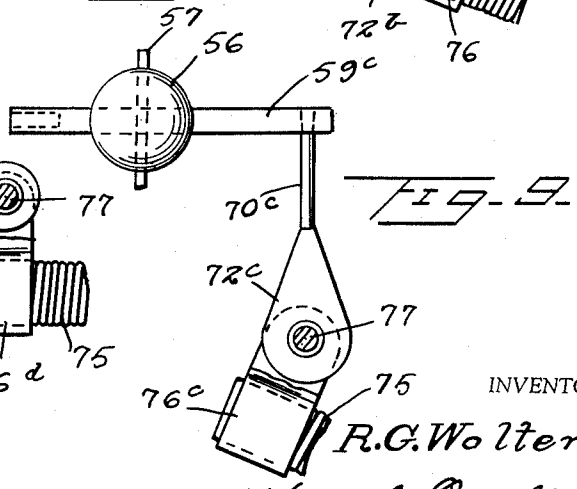


Fig. 9.

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CURB FINDER

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Application January 3, 1956, Serial No. 556,879

2 Claims. (Cl. 200—61.44)

The present invention relates to curb finders, and more particularly, to curb finders of the type having a visual indication of the operation of the finder.

A primary object of the invention is to provide a curb finder having means associated therewith for closing a circuit to a signal light which will burn when the curb finder is operated.

Another object of the invention is to provide a curb finder of the class described having means to normally maintain the finder in a neutral position.

A further object of the invention is to provide a curb finder having means for clamping the finder to a portion of a motor vehicle adjacent to the side of the vehicle exposed to curbs.

A still further object of the invention is to provide a curb finder mounting having adjusting means thereon such as to permit horizontal, vertical, and angular adjustment of the finder to the road.

Another object of the invention is to provide a curb finder which is adaptable to varying structures of motor vehicles having varying heights above the road surface.

Other objects and advantages will become apparent in the following specification when considered in the light of the attached drawings, in which:

Figure 1 is a rear elevation of the invention shown attached to a portion of a motor vehicle, partially broken away and partially in section, and includes a diagrammatic illustration of the electrical circuits involved.

Figure 2 is an enlarged horizontal cross-section taken along the line 2—2 of Figure 1, looking in the direction of the arrows.

Figure 3 is an enlarged vertical cross-section, partially broken away, taken along the line 3—3 of Figure 1, looking in the direction of the arrows.

Figure 4 is a fragmentary detailed cross-section of the pivot ball taken along the line 4—4 of Figure 2, looking in the direction of the arrows.

Figure 5 is a fragmentary rear elevation of a modified form of mounting bracket.

Figure 6 is a fragmentary side elevation of another modified form of mounting bracket.

Figure 7 is a fragmentary side elevation of a modified form of curb finder support.

Figure 8 is a side elevation, partially broken away, of another modified form of curb finder support.

Figure 9 is a fragmentary side elevation of still another modified form of curb finder support.

Figure 10 is a fragmentary side elevation of yet another modified form of curb finder support.

Referring now to the drawings in detail wherein like reference numerals indicate like parts throughout the several figures, the reference numeral 20 indicates generally a portion of a fender of a conventional motor vehicle. The fender 20 is provided with an upwardly and inwardly reverted lower edge 21 and a cross baffle 22 which extends transversely of the vehicle and of the fender 20. The reverted edge portion 21 is spaced from the fender 20 by means of a horizontally disposed portion 23 in a conventional manner.

A housing 24 consisting of a semi-cylindrical body is provided with oppositely disposed end flanges 25 and 26 and oppositely disposed side flanges 27 and 28. The semi-cylindrical housing 24 is formed hollow and has a pair

of apertures 29 and 30 formed therein. A fiber semi-circular block 31 is positioned within the housing 24 and an insulating panel 32 is positioned between the fiber block 31 and the housing 24. A copper connector 33 is mounted between the fiber block 31 and the insulating panel 32.

A contact plate 34 is recessed in the fiber block 31 and has an integral bolt 35 extending through the fiber block 31, copper connector 33, insulating panel 32 and aperture 29 to extend outside of the housing 24. A fiber insulating washer 36 is positioned about the bolt 35 in engagement with the outer surface of the housing 24. A nut 37 engages against the fiber washer 36 to clamp the bolt 35 in place which locks the fiber block 31 within the housing 24.

A second contact 38 is recessed within the block 31 in spaced apart relation to the contact 34 and likewise has a bolt 39 integrally extending therefrom. The bolt 39 extends through the fiber block 31, connector 33, insulating panel 32, and aperture 30 in the housing 24. A nut 40 on the bolt 39 engages a fiber washer 41 to lock the assembly in place on the housing 24. The bolts 35 and 39 are each provided with a wire clamping nut 42. The copper connector 33 is in electrical contact with the bolts 35 and 39 to provide an electrical connection therebetween.

A pair of cover members 43 and 44 are positioned over the flanges 25, 26, 27 and 28 on the housing 24, and a third cover member 45 is superposed thereover. A pair of bolts 46 project through the cover members 43, 44 and 45 and the flange 28 at one side of the housing 24, and a pair of bolts 47 project through the covers 43, 44 and 45 and the flange 27 at the other side of the housing 24 to lock the covers and flanges together. Bolts 48, 49, 50 and 51 project through the covers 43, 44 and 45 and the flanges 25, 26, 27 and 28, respectively, adjacent the corners thereof to lock the covers to the flanges.

The cover 43 is provided with a semi-cylindrical inwardly projecting socket 52 adjacent the center thereof, and the socket 52 is provided with an elongated arcuate slot 53 extending horizontally about the socket 52. The cover 44 has a socket 54 projecting outwardly oppositely to the socket 52 and cooperating therewith. A slot 55 is formed in the socket 54 opposite to the slot 53. A ball 56 is mounted in the sockets 52 and 54 and is provided with a pivot pin 57 extending vertically therethrough and engaged at its opposite ends between the covers 43 and 44. A bolt 58 extends vertically between the covers 43 and 44 in alignment with the pivot 57 to provide an opening for lubricating the ball 56.

A shaft 59 extends through the ball 56, slots 53 and 55, and into the housing 24 at one end, and projects a substantial distance laterally at the other end. The inner end of the shaft 59 is formed with an axial bore 60 having a coil spring 61 seated therein. An internal spring guide 62 is mounted over the outer end of the spring 61 and has a head 63 formed therein. A cap 64 telescopes over the inner end of the shaft 59 and engages the head 63 on the spring guide 62 so that the cap 64 is normally biased into engagement with the block 31.

A bellows-like tapered boot 65 has its large end 66 engaged against the cover plate 44 and clamped thereto by an off-set flange 67 formed on the cover plate 45. The outer end 68 of the boot 65 is engaged over the shaft 59. A vertical bore 69 extends through the shaft 59 adjacent the outer end thereof and has a shaft 70 slidably secured therein by means of a longitudinally extending set screw 71.

The lower end of the shaft 70 is provided with an eye 72. A curb feeler rod 73 having a tip 74 thereon is mounted on a heavy duty coil spring 75. A split

clamp **76** is positioned in clamping relation to the coil spring **75** and engages over the opposite sides of the eye **72** where it is clamped by means of a bolt **77**. Obviously, the shaft **70** can be vertically and angularly adjusted with relation to the shaft **59** and the feeler rod **73** can be angularly adjusted about the bolt **77** with relation to the shaft **70**.

A pair of U-shaped clamp members **78** are secured to the fender **20** by means of bolts and lock nuts **79** and **80** which extend across the U-shaped clamp **78** to clamp the horizontal portion **23** of the fender **20** therebetween. A plate **81** extends laterally from the bight of each of the U-shaped clamps **78** and has a bar **82** secured thereto by means of bolts **83** in a generally vertical position. The lower ends of the bars **82** are secured to the flanges **25** and **26** by means of bolts **48**, **49**, **50** and **51** so as to support the housing **24** from the fender **20**.

A signal light **84** is electrically connected through the ignition switch **85** to a battery **86** and to the bolt **35** in a conventional manner. The body of the housing **24** is grounded to the metal of the vehicle as indicated at **87**, and the battery **86** is grounded to the metal of the vehicle as indicated at **88**.

Contact of the cap **64** with either of the contacts **34** and **38** will complete the circuit through the indicator bulb **84** when the ignition switch **85** is on so that the bulb **84** will become illuminated indicating that the feeler **73** is in contact with a curb. A second indicator bulb **89** is adapted to be connected to a second curb feeler (not shown) positioned at the opposite end of the vehicle to the feeler **73**.

In Figure 5 of the drawings a modified form of mounting structure is illustrated in which a U-shaped clamp **90** is clamped to a baffle **22** by means of a bolt **91** and lock nut **92**. An arm **93** is bolted to the U-shaped clamp **90** by means of a bolt **94** and is clamped to the flange **25** by means of the bolts **49** and **48**. This structure is utilized at such points where it is more convenient than the clamps illustrated in the preferred form of the invention.

A right angular mounting bracket **95** is shown secured to a horizontal member **96** on the vehicle by means of bolts **97**. The vertical leg **98** of the bracket **95** is secured to the housing **24** by means of bolts **50** and **51**.

In Figure 7, a modified shaft **70*a*** is illustrated in which the shaft **70*a*** has a right angle bend **99** formed therein. An eye **72*a*** similar to the eye **72** is formed on the terminal end of the shaft **70*a***.

Figure 8 illustrates another form of the invention where the shaft **59*b*** is formed with a bore **100** extending longitudinally thereof, and a shaft **70*b*** is telescopically received in the bore **100** being secured therein by means of a set screw **71*b***. An eye **72*b*** is formed on the free end of the shaft **70*b*** to receive the clamp **76** secured thereon by means of the bolt **77**. The shaft **59*b*** is mounted in the ball **56** in the same manner as illustrated in the preferred form of the invention.

In Figure 9 a modified form of the invention is illustrated wherein the pivot ball **56** is provided with a bore which has extending therethrough a pivot pin **57**. A right angularly extending shaft **70*c*** passes through a transverse bore adjacent the outer end of the shaft **59** and is secured therein. The shaft **70*c*** has an eye **72*c*** formed adjacent its lower end. A clamp **76*c*** secures the spring **75** to the eye **72*c*** by means of a bolt **77**. The inner end of the shaft **59*c*** is mounted in the same manner and performs the same function as the inner end of the shaft **59** in the preferred form of the invention. In the modification illustrated in Figure 10 there is shown a ball **56** having a pivot pin **57** extending therethrough which carries a shaft **59*d*** extending therethrough similarly to the shaft **59** in the preferred form of the invention. An eye **72*d*** is formed on the outer end of the shaft **59*d*** and has a clamp **76*d*** secured thereto by means of a bolt **77**.

In the use and operation of the invention referring first to the preferred form of the invention, as illustrated in Figures 1 through 4, the U-shaped clamp **78** is secured to the fender **20** by bringing the bolt **79** into clamping engagement with the horizontal portion **23** thereof. Vertically extending members **82** are secured to the U-shaped clamp **78** by bolts **83** and carry the body **24** by means of bolts **48**, **49**, **50** and **51** passing therethrough.

The curb feeler **73** is secured to the housing **24** through the spring **75**, clamp **76**, shaft **70**, and ball **56** in a position to engage a curb at the edges of the road. The knob **74** in contacting the curb will cause the feeler **73** to move in a direction opposite to the movement of the direction of the car about the pivot pin **57** of the ball **56**. This movement will cause the cap **64** to contact the contact plate **34** or **38** depending upon the direction of movement of the vehicle. Contact of the cap **64** with the contact plates **34** or **38** establishes a circuit between the bolt **35** and ground.

The positive side of the bulb **84** is connected through the ignition switch **85** to the battery **86** with the battery **86** being grounded at **88**. The ground side of the bulb **84** is connected to the bolt **35** so that the bulb **84** will be energized when the cap **64** contacts the contacts **34** or **38** if the ignition switch **85** is closed. The bulb **84** being locked on the dashboard of the vehicle will indicate which curb feeler **73** has been moved. As illustrated in Figure 1, a second bulb **89** is provided to extend to a second curb feeling mechanism at the other end of the vehicle to provide a signal to indicate the actuation of this curb feeler.

Figures 5 and 6 disclose modified supporting structures for supporting the body **24** from other points of suspension on the vehicle such as baffle **22** and frame **96**.

Figures 7 through 10 illustrate modified mountings of the curb feeler to the body **24** to provide varying adjustments and heights to adapt the curb feeler to automobiles of different structures.

Having thus described the preferred embodiments of the invention, it should be understood that numerous other modifications and structural adaptations may be resorted to without departing from the scope of the appended claims.

What is claimed is:

1. A curb feeler switch comprising a generally flat cover, a ball having a pair of perpendicularly related intersecting bores extending therethrough, a sweep arm extending through one of said bores, means extending through the other of said bores locking said sweep arm to said ball, means on said cover cooperating with said last-named means securing said ball to said cover for pivotal movement thereon about a transverse axis, a housing including a semi-cylindrical wall securing to said cover with the axis of curvature of said semi-cylindrical wall coinciding with the transverse pivot axis of said ball, a pair of circumferentially spaced contacts supported on said wall within said housing, and a moving contact secured to said sweep arm at the end thereof adjacent said cylindrical wall and arranged for engagement with a selected one of said contacts on pivotal movement of said sweep arm.

2. A device as claimed in claim 1 wherein said moving contact is resiliently secured to the end of said sweep arm and resiliently engages the selected one of said contacts.

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