Nov. 8, 1932. C. E. KRUEGER 1,887,312

BATTERY WATER LEVEL INDICATOR

Filed May 17, 1929

Fig. 1.

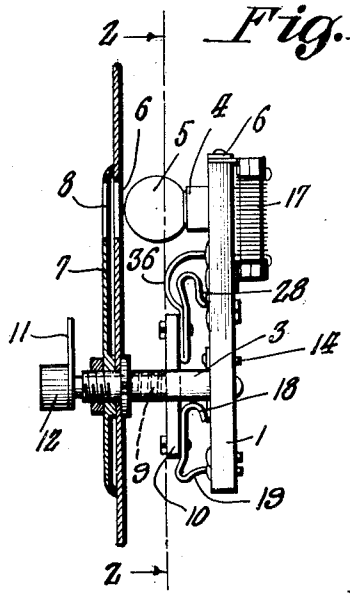


Fig. 2.

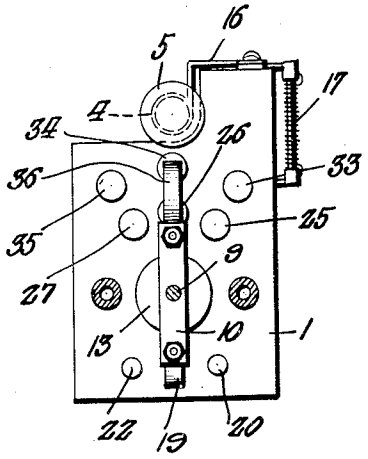
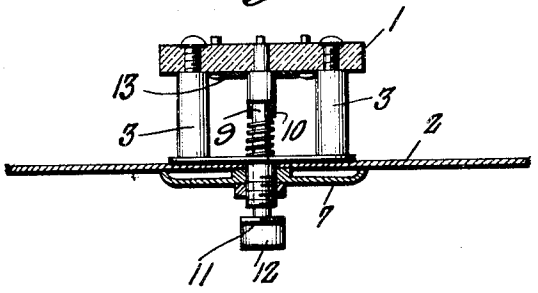


Fig. 3.



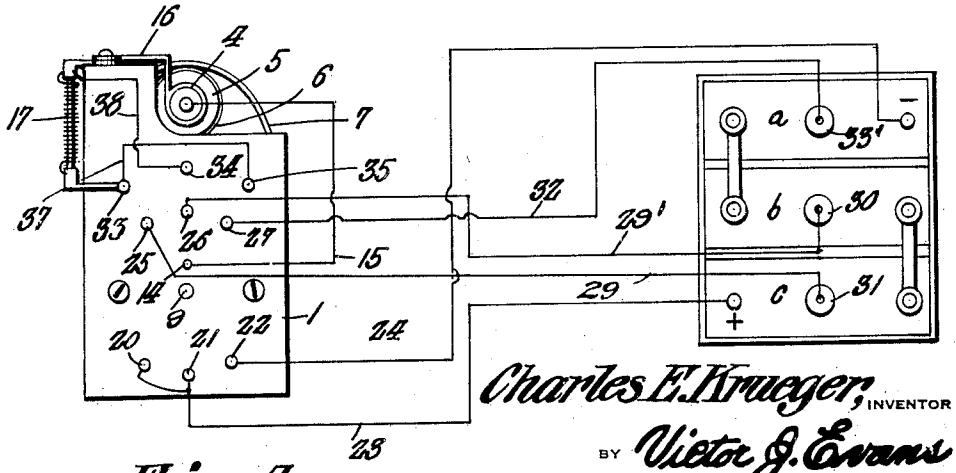


Fig. 4.

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UNITED STATES PATENT OFFICE

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BATTERY WATER LEVEL INDICATOR

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This invention relates to a battery water level indicator, the general object of the invention being to provide a single lamp arranged on a switch base adapted to be attached to an instrument board, with switch means for controlling circuits connected with parts carried by the battery whereby any desired cell of the battery can be tested as to the water level therein through means of the lamp lighting when the cell contains water.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawing and specifically pointed out in the appended claim.

In describing the invention in detail, reference will be had to the accompanying drawing wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is a sectional view showing the switch base and its associated parts arranged adjacent the instrument board of a vehicle.

Figure 2 is a section on line 2—2 of Figure 1.

Figure 3 is a horizontal sectional view through Figure 1.

Figure 4 is a diagrammatic view of the circuits.

In these views, the numeral 1 indicates a switch base which is attached to the rear part of the instrument board 2 by the bolts and spacers, shown generally at 3. A lamp socket 4 is carried by the base to receive the lamp 5 and the instrument board is formed with an opening 6 through which the rays of the light will pass. A dial plate 7 is placed on the instrument board and has an opening 8 therein which registers with the opening 6. The stem 9 of the movable part 10 of the switch passes through the instrument board and dial and is provided with a pointer 11 cooperating with the indicia on the dial plate. The stem is also provided with a knob 12 so that the movable part of the switch can be turned.

A disk 13 is attached to the base and a contact 14 passes through the disk and the base and this contact is connected by a conductor 15 with one terminal of the lamp socket, the other terminal being connected by the conductor 16 with a rheostat 17 carried by the base. The part 11 is provided with a brush 18 which always contacts the disk and a brush 19, formed with the brush 18, is adapted to engage any one of three contacts 20, 21 and 22 carried by the base, with parts passing through the base. A conductor 23 connects the contacts 20 and 21 with the positive terminal of the battery B and a conductor 24 connects the contact 22 with the negative terminal of the battery. The base also carries the contacts 25, 26 and 27 which are engaged by a brush 28 on the opposite end of the part 10 from that which carries the contacts 18 and 19. The contacts 25 and 26 are connected by conductors 29 and 29′ respectively, with the members 31 and 30, respectively, which extend into the water space of the cells *b* and *c* of the battery and the contact 27 is connected by a conductor 32 with a similar member 33′ of the cell *a* of the battery. Three contacts 33, 34 and 35 are also carried by the base and are engaged by the brush 36 which is associated with the brush 28, these brushes being so arranged that when the brush 28 is engaging any one of the contacts 25, 26 or 27, the brush 36 will be engaging that contact of the group of contacts 33, 34 and 35 which is opposite the contact engaged by the brush 28. The contacts 33 and 35 are connected by the conductor 37 with the rheostat and a conductor 38 connects the contact 34 with the conductor 16 at the point where the conductor joins the rheostat.

From the foregoing it will be seen that

when the water level in cell *a* is to be tested, the pointer is moved to the indicia which represents the cell and in this position of the parts, the brush 19 will be engaging the contact 20 and as the brush 18 is always in contact with the disk, current will flow from the positive terminal of the battery through conductor 23 to contact 20 and then through the brushes 19 and 18 to the disk and from the disk, the current will pass from the contact 14 through conductor 15 to the lamp and from the lamp, the current will pass over conductor 16 through the rheostat, over conductor 37 to the contact 35 and as contacts 35 and 27 are bridged by the brushes 36 and 28, the current will flow over conductor 32 to the member 33′ in cell *a*. If there is water in this cell, the lamp will be lighted as the circuit will be completed by the water, but if the water level is below the member 33′, the circuit will be broken and thus the lamp will not light so that the operator will know cell *a* needs refilling. Attention is called to the fact that the current goes through the rheostat as this is necessary for the reason that the full strength of the battery current would otherwise pass through the small lamp. When cell *b* is to be tested, the brush 9 is placed on the contact 21, so that the current will pass from the positive pole of the battery to contact 21, through the disk to contact 14 and then through the conductor 15 and the lamp, through conductor 16 to conductor 38, cutting out the rheostat and from conductor 38, the current passes to contact 34 over the brushes 36 and 28 to contact 26 and then over conductor 29′ to the member 30. As the current is passing from but two cells, it is not necessary to pass the current through the rheostat.

When the cell *c* is to be tested, the parts are moved to a position to connect the contact 22 with the disk so that the negative terminal of the battery would be connected to the lamp and to contacts 33 and 25 so that the current will pass over conductor 29 to the member 31 of cell *c*. Thus the three cells are tested by a single lamp.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claim.

What I claim is:—

In combination with a battery of three cells which are electrically connected in series, said battery having two terminals, each cell having a body of electrolyte and a contact member extending into the electrolyte, a lamp, a resistor and unitary means for separately electrically connecting the lamp and resistor in series across one terminal of the battery and the contact member in the end cell remote from said terminal, for separately electrically connecting the lamp and resistor in series across the other terminal of the battery and the contact member in the end cell remote from said other terminal, and for separately electrically connecting the lamp without the resistor across the contact member in the middle cell and one of the terminals of the battery.

In testimony whereof I affix my signature.

CHARLES E. KRUEGER.