Jan. 15, 1929. 1,699,392

C. G. FISHER

ELECTRIC SWITCH ATTACHMENT

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Fig. 1

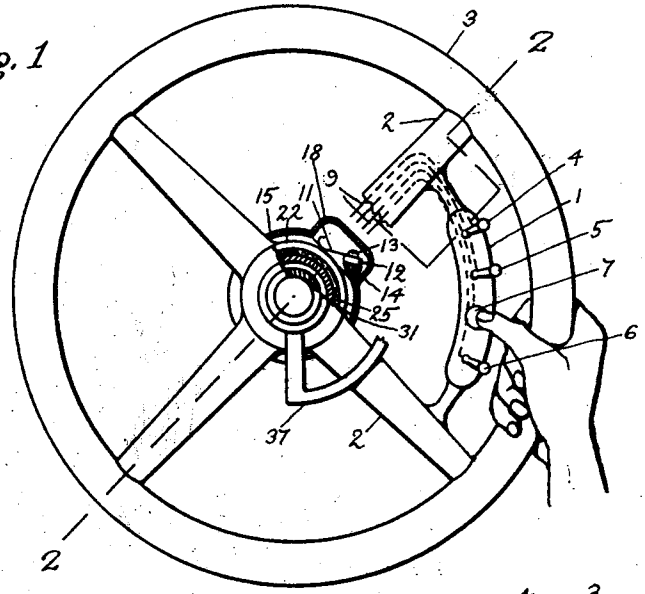


Fig. 2

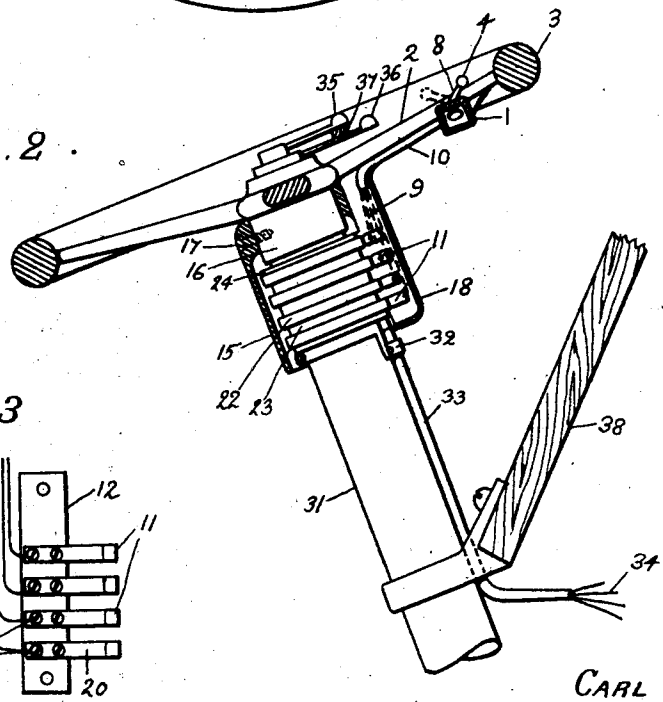
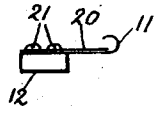


Fig. 3

Fig. 4



CARL G. FISHER
INVENTOR

BY John P. Nikonow
ATTORNEY

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C. G. FISHER

ELECTRIC SWITCH ATTACHMENT

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Fig. 5

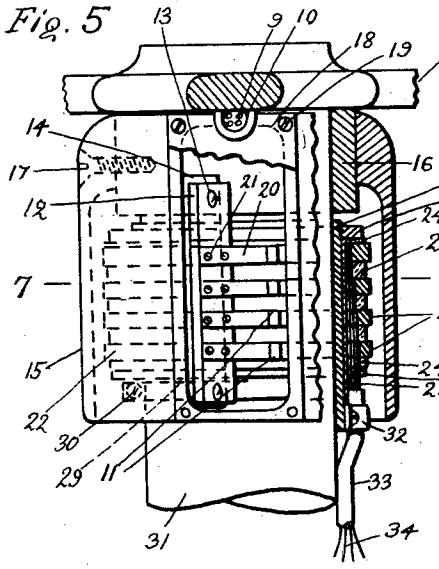


Fig. 6

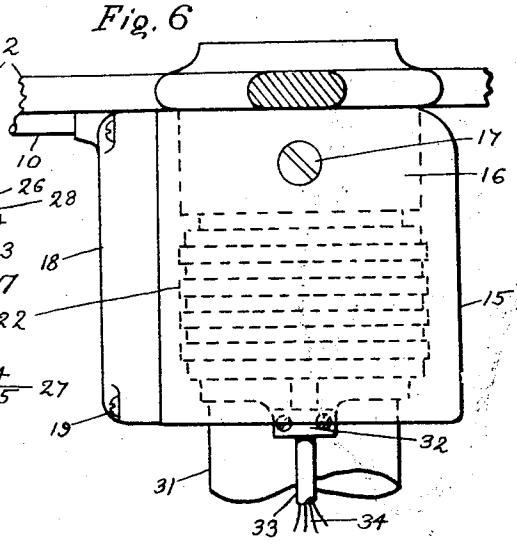


Fig. 8

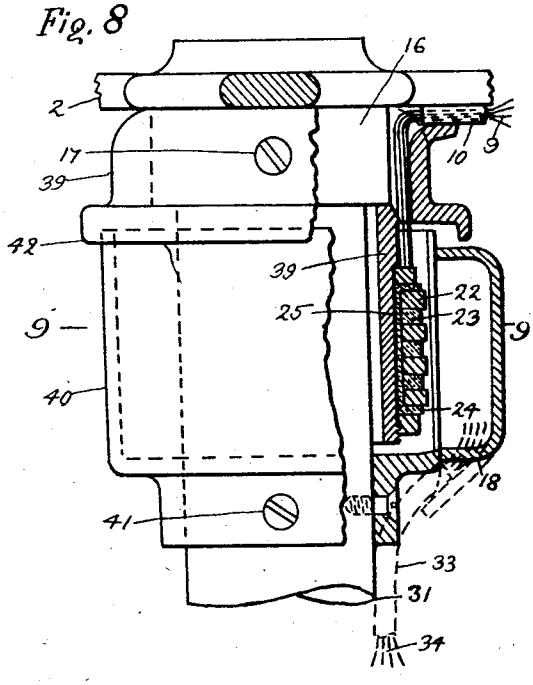
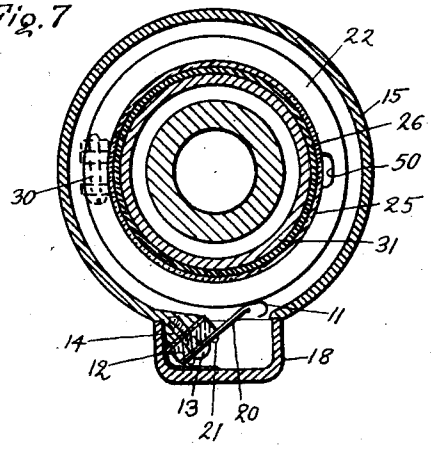


Fig. 7



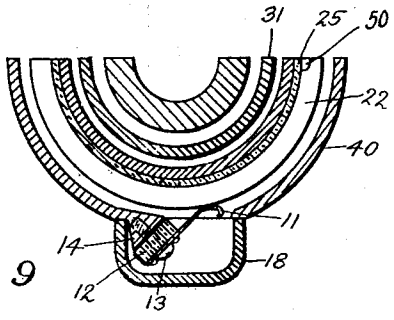


Fig. 9

CARL G. FISHER
INVENTOR

BY John P. Nikonow
ATTORNEY

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C. G. FISHER

ELECTRIC SWITCH ATTACHMENT

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Fig. 11

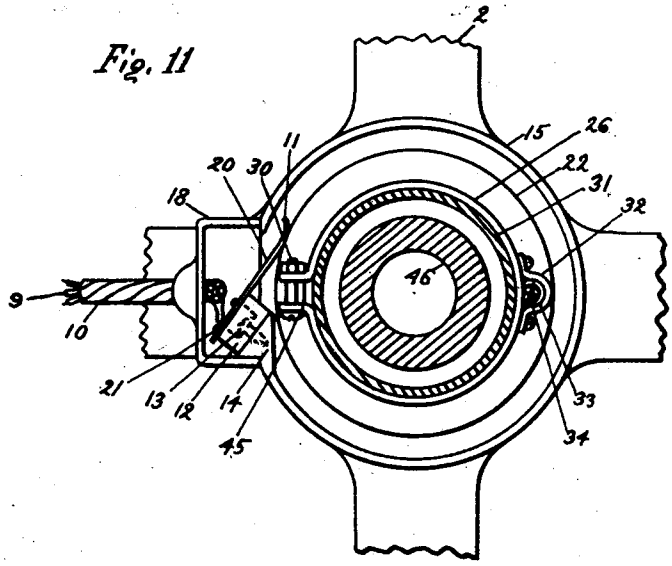


Fig. 12.

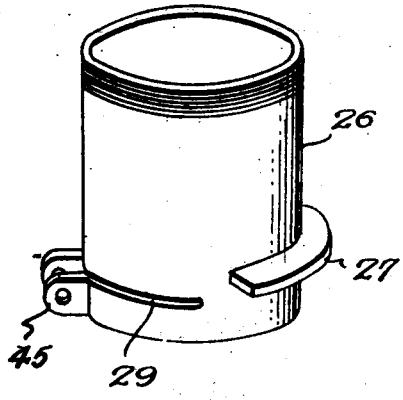
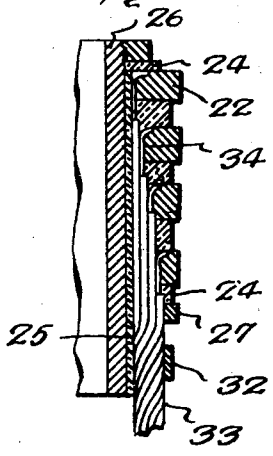


Fig. 10.



CARL G. FISHER

INVENTOR

BY John P. Nilsonow

ATTORNEY

Patented Jan. 15, 1929. 1,699,392

UNITED STATES PATENT OFFICE.

CARL G. FISHER, OF PORT WASHINGTON, NEW YORK, ASSIGNOR OF ONE-THIRD TO THOMAS W. MILTON, OF PORT WASHINGTON, NEW YORK, AND ONE-THIRD TO JOHN P. NIKONOW, OF NEW YORK, N. Y.

ELECTRIC-SWITCH ATTACHMENT.

Application filed September 30, 1924. Serial No. 740,776.

My invention relates to electric switch attachments and has a particular reference to switches controlling electric lights, ignition, signalling apparatus, etc. on moving vehicles, such as automobiles and the like.

The object of my invention is to provide an electric switch attachment directly on a steering wheel so that the driver could operate these switches with his fingers without losing or changing his grip of the wheel.

I am aware that switches have been invented for mounting on top of the steering column, but such switches do not move with the wheel and, consequently, can not be operated with the same hand with which the wheel is being turned; while with my switch attachment the driver can use both his hands for operating the wheel, using at the same time one of his fingers to operate any of the switches,—for instance, to dim the headlights or to press the horn button.

In order to maintain an uninterrupted electrical connection between my switches and the electrical apparatus controlled by these switches, I provide sliding contacts between the leads coming from the switches and the stationary leads on the steering column, covering these contacts so as to protect them from dust and moisture.

My invention is more fully described in the accompanying specification and drawings in which—

Fig. 1 is a plan view partly in section of my switch attachment on a steering wheel, Fig. 2 is a sectional elevation of same taken on the line 2—2 (Fig. 8), Fig. 3 is a detailed view of the contact springs, Fig. 4 is an end view of these contacts, Fig. 5 is a sectional elevation of the contact arrangement, Fig. 6 is an elevation of same from another side, Fig. 7 is a horizontal section of same taken on the line 7—7 (Fig. 5), looking from the top, Fig. 8 is a sectional elevation of a modified arrangement, and Fig. 9 is a section 9—9 (Fig. 8) looking from the top of same. Fig. 10 is a sectional detailed view of collector rings, Fig. 11 is a view of the contact arrangement looking from the bottom, and Fig. 12 is a perspective view of the collector sleeve.

My electric switch consists of a housing 1, cast integrally with spokes 2 of a steering wheel 3, or attached to them by means of screws or bolts (not shown). The housing contains a number of individual switches 4, 5 and 6, also contact buttons 7. An ordinary arrangement for an automobile would be to have switch 4 for main headlights, switch 5 for dimmed lights also for the tail lamp, switch 6 for the ignition circuit, and the contact button 7 for the electric horn. It is evident, of course, that any other arrangement of switches may be used.

The housing 1 has an elongated form and is made substantially concentric with the rim of the wheel, being placed at such distance that it does not interfere with the driver's hand, being at the same time within easy reach for the outstretched thumb. This arrangement is illustrated in Fig. 1 which shows the driver's hand operating the wheel with his thumb pressing the horn button 7.

The switches 4, 5 and 6 may be of any standard construction, but I prefer to use so called "toggle" switches, provided with tilting handles 8, so that the switch is closed with the handle in one position (for instance, when tilted to the right, as shown in Fig. 1 or 2), and opened when tilted to the left (as shown with dotted lines in Fig. 2).

Leads or insulated wires 9 are brought from the switches and buttons under the spoke of the wheel in a pipe or conduit 10 and are connected with corresponding contact springs or brushes 11, each brush being connected with one of the switches. The brushes are fastened to an insulation bar 12 (shown in detail in Figs. 3 and 4), and this bar is attached with screws 13 to bosses or projections 14 formed at the open portion of a sleeve or skirt 15 attached to a hub 16 of the wheel by means of screws 17. The contacts are protected with a metal cover 18 attached to the skirt (or collar) 15 with screws 19.

The contact brushes 11 may be provided with stiffening steel springs 20 placed under the heads of fastening screws 21. The ends of leads 9 are fastened to the brushes with the same screws 21.

The contact brushes 11 are adapted to touch corresponding contact rings 22 with insulation spacers 23 between them and insulation rings 24 at the ends, mounted on an insulation sleeve 25. The sleeve 25 is placed on a metal sleeve or bushing 26 with a shoulder 27 and a clamping nut 28 which holds the whole collector assembly together. A saw-cut 29 separates the lower portion of the sleeve 26 which is split open at the middle,

the ends 45 being turned out and provided with holes for a screw or bolt 30. A clamping arrangement is thereby formed adapted to hold the collector assembly tight on a stationary tube 31 of the steering post. A clamp 32 is provided at the opposite side of the sleeve for holding one end of a conduit 33 for stationary leads 34. These leads are brought through slots 50 in the rings 22 and 24, each lead being then soldered or otherwise attached to a corresponding collector ring 22.

With this arrangement each switch is always in contact with a corresponding apparatus (such as a lamp, horn, etc.) and remains in a contact for all positions of the steering wheel 3.

The switch housing 1 is placed in such position that it does not interfere with levers 35 and 36 sliding along a sector 37 and controlling the spark advance of the motor and its throttle valve. The hub 16 is mounted on the end of a tubular steering rod 46 by means of a nut.

The conduit 33 is placed alongside of the steering post and brought back of the instrument board 38 where the leads 9 are connected to main leads connecting the electrical apparatus. The other contact of each switch is simply grounded in the switch itself which is in a permanent metallic connection with the frame of the automobile through spokes of the steering wheel and through the rest of the steering mechanism.

This arrangement is generally used on automobiles when one pole of the storage battery is grounded on the frame of the machine. Of course, in such cases when the whole circuit is completely insulated, a return lead should be brought from the switches to the battery, this lead being common to all of them.

A modified arrangement is shown in Figs. 8 and 9. Here a different collar 39 is shown attached to the hub 16, the lower extension of this collar supporting the collector assembly with contact rings 22. The leads 9 from the switches are connected with corresponding rings, the latter turning with the steering wheel. A sleeve 40, attached to the tube 31 of the steering post with screws 41, encircles the collector rings. An overhanging portion 42 of the collar 39 protects the rings from dust and moisture.

One side of the sleeve 40 is open and provided with a boss 14 supporting an insulation plate 12 with contact brushes 11, the brush arrangement being similar to the one previously described. A cap 18 is attached to the sleeve 40 with screws (not shown), protecting the brushes. Stationary leads 34 are connected with corresponding brushes and are placed in a conduit 33.

The essential difference between the two modifications described is that in one case the contact rings are stationary and the brushes turn with the wheel, while in the other case the rings turn and the brushes are stationary, there being no difference for the operation of my switch how this relative movement between the contact rings and the brushes is arranged.

Important advantages of my switch are that it is very convenient for its operation and that it promotes the safety in driving, as the driver can retain full control of the vehicle while dimming his lights for passing another vehicle at night, or blowing the horn when there are people on the road in front of him.

I claim as my invention:

In an electric switch attachment, the combination with a tubular member of means to support said member on the outside of a stationary steering post of an automobile, a layer of insulation on said tubular member, a plurality of collector rings on said insulation, a plurality of insulated wires extending from said collector rings on the outside of said steering post, a tubular cover enclosing said collector rings on the outside and spaced therefrom, means to attach the upper portion of said cover to a steering wheel of said automobile, a plurality of contact members inside of said cover and adapted to slidably engage said collector rings, and a plurality of insulated wires extending from said contact members to a switch on said steering wheel.

Signed at Port Washington in the county of Nassau and State of New York this 22 day of Sept. A. D. 1924.

CARL G. FISHER.