ABSTRACT OF THE DISCLOSURE

A protective cover device adapted to be applied to the housing for gear shifting mechanisms for two-speed axles of trucks, which housing has thereon a plurality of electrical terminals on the outside thereof to which electrical wires are connected from the gear shift handle inside of the truck cab. The protective cover protects the electrical terminals against deterioration by the action of chemicals, dirt, and weather.

Brief description of the invention

This invention relates in general to a cover or protective device for the wire connections on a gear shifting mechanism for the two-speed axles of trucks.

Heavy duty trucks normally are equipped with two-speed axles and the differential of the vehicle has mounted thereon a gear shifting motor or mechanism which is controlled electrically by the driver of the vehicle in the truck cab. This type of construction is well known and is shown in many prior art patents, such as, for example, the Russell Patent No. 2,462,779 issued Feb. 22, 1949.

The housing of the gear shifting mechanism has a plurality of electrical terminals on the outside thereof to which electrical wires are connected from the gear shift handle inside of the truck cab. Within the housing of the gear shifting mechanism an electrical connection is made between these terminals and the motor which operates to shift gears, and this is actuated by a button or switch within the truck cab and operated by the driver.

Hereofore and up to the present time, the connections between the electrical wires and the terminals on the housing of the gear shifting mechanism have been exposed to the weather and to the action of chemicals, such as salt, chloride and water, so that such connections will deteriorate and eventually break off or become inoperative. When this occurs it is impossible for the driver of the vehicle to shift gears. If it occurs while the gears are in a neutral position, then the vehicle will not operate at all. If it should occur during a period when the vehicle is moving in low gear, then it would be impossible to shift the gears into a high gear ratio or back to neutral.

This is quite obviously an undesirable situation and it is, therefore, one of the principal objects of the present invention to provide a device which will protect the connections between the wires and terminals from the action of weather and chemicals, and is an improved design over that disclosed in my earlier Patent No. 3,318,475 issued May 9, 1967.

Another object of the invention is to provide a wire connection cover particularly adapted for mounting on the housing of a remote controlled vehicle gear shifting mechanism, thereby enclosing and providing a protective covering for the connections between the electrical wires and terminals thereon.

A further object of the invention is to provide a wire connection cover adapted for use in protecting the connection between electrical wires and terminals on the housing of a remote controlled vehicle gear shifting mechanism wherein such housing has a flanged neck thereon for mounting on a vehicle differential and wherein the cover is so constructed as to form, with said neck, a protection for the wire connections against the action of weather, chemicals, and the like.

Other objects and advantages of the invention will become apparent upon reading the following description taken in conjunction with the accompanying drawing, in which:

FIG. 1 is an exploded view in perspective showing the presently used form of housing for a remote controlled vehicle gear shifting mechanism with the wire connection cover of the present invention which is to be applied thereto;

FIG. 2 is a perspective view of the cover showing the inner portion thereof which is the side opposite to that shown in FIG. 1, and

FIG. 3 is a fragmentary, perspective view illustrating the wire connection cover in place and secured to the housing.

Detailed description

Referring now more particularly to the drawing, and especially to FIG. 1, there is illustrated a housing generally indicated by the numeral 1 which is typical of those currently in use which house the gear shifting mechanism for a vehicle and which is mounted on the differential. This housing is provided with an outwardly extending neck 2 which terminates in an annular flange 3. The neck is hollow and is adapted to accommodate well known mechanism which is connected to a vehicle differential for shifting the gears therein.

The flange 3 is provided with a plurality of openings 4 through which suitable bolts may pass for securing the housing to the vehicle differential.

The housing to which the cover of the present invention is particularly suited to be applied includes oppositely extending webs 5 and 6 located between and connecting the annular flange 3 and the main body of the housing 1.

The gear shifting mechanism situated within the housing 1 is operated by a remote control device connected electrically to terminals on the housing. Normally there is provided a cable 7 having electrical wires 8 extending therethrough which are connected to the terminals 9.

Normally these terminals are on the outside of the housing and to the present time the terminals and the wires connected thereto are subject to corrosion and deterioration, not only due to weather conditions, but also dirt and chemicals from the highway.

As stated hereinabove, the present invention is directed particularly to means for protecting the wire connections to the terminals against deterioration by action of chemicals, dirt and weather.

The wire connection cover of the present invention includes a first side wall 10 having the elongated side edges 11 and 12 and the end edges 13 and 14. A second side wall 15 extends angularly from the side edge 11 and terminates in the edge portion which is generally indicated by the numeral 16.

This edge portion 16 of the second side wall 15 is appropriately contoured to fit snugly against the outer surface of the flanged neck 2. In the present instance this edge 16 is contoured to provide an arcuate portion 17 intermediate the ends thereof, a slightly arced portion 18, and a relatively straight portion 19. The purpose, of course, is to create a snug fit of this portion of the cover against the external surface of the neck 2 so that this area may be sealed with an appropriate sealing compound to prevent ingress of chemicals, dirt, and the like, to beneath the cover, thereby deteriorating the terminals 9. The contour of the edge 16 of the second side wall 15 may be modified in accordance with any modifications in the
external contour of the neck 2 without departing from the
spirit of the invention.

The first end wall 20 joins the first and second side walls 10 and 15, respectively, as may be seen more clearly in
FIG. 2, thereby providing an end closure for the cover.
The outer end of this first end wall 20 is provided with a
flange 21 thereon for a purpose which will presently appear.

A connecting wall 22 is provided which joins the first
end wall 20 and the second side wall 15 and which is
spaced inwardly from the flange 21. This arrangement
thereupon provides an elongated recessed portion 23 of
such size to receive the lower edge of the web 5. Thus,
when the cover is assembled with the housing 1, one end
thereof is locked to the housing by reason of the edge of
the web 5 being lockingly received within the recess 23.

A second end wall 24 is provided which joins the adjac-
ent ends of the aforesaid first and second side walls 10
and 15 at the end of the housing opposite the first end
wall 20, thereby providing a second end closure for the
cover.

This opposite end of the cover is secured by any suit-
able means to the other oppositely extending web 6, there-
by to secure the cover in place on the housing 1 over
the terminals 9 for protection as heretofore mentioned.

The web 6 and the second end wall 24 may be so
shaped as to cooperate with each other so that suitable
fastening means may engage these two parts and secure
them together. As illustrated herein, the outermost edge of
the second end wall 24 is provided with a flange 25
extending upwardly therefrom, which flange is adapted
to abut against and be secured to the aforesaid web 6.

Any suitable fastening means may be utilized but as
shown herein, the flange 25 and web 6 are provided with
threaded openings 26 and 27, respectively, which may be
brought into alignment to receive the threaded fastener 28.

To provide for an effective seal, one of the walls of
the cover should be recessed to allow the cable 7 to ex-
tend to the terminals 9 within the housing. For purposes
of illustration, the second end wall 24 is shown as being
provided with a recess or cut-away portion 29 in one edge
thereof, through which the cable 7 may extend, as clearly
shown in FIG. 3. Thus, the wire connection cover of the
present invention is designed for quick and easy applica-
tion to the housing of the gear shifting mechanism as well
as for easy removal therefrom when necessary.

The cover of the invention is designed to fit in suffi-
ciently close relationship to the housing and neck so as
to enable a sealing compound to be applied in any spaces
therebetween.

The invention provides assurance that the gear shif-
ting mechanism within the housing will function properly
at all times as far as the electrical connections are con-
cerned. As long as these connections are secure, the ve-
cicle driver is assured that electrical current will always
flow to the gear shifting mechanism every time he presses
the switch at the remote control station within the truck
cab. Thus, one source of concern to truck operators is
eliminated by the present invention and that is the con-
cern for time wasted in making repairs or replacing the
electrical connections and the expense of service calls
in connection therewith.

The invention is hereby claimed as follows:
1. A wire connection cover adapted for use in protect-
ing the connection between electrical wires and terminals
on the housing of a remote controlled vehicle gear shift-
ing mechanism having a flanged neck thereon for mount-
ing on a vehicle differential with oppositely extending
webs between the neck flange and the main body of the
housing, said cover comprising,
(a) a first side wall having side and end edges,
(b) a second side wall extending angularly from one
of the side edges of said first side wall, the edge of
said second side wall remote from said first side
wall being contoured to fit snugly against the flanged
neck of the gear shifting mechanism housing,
(c) a first end wall joining said first and second side
walls adjacent one of the ends thereof and forming
an end closure for the cover, the outer end of said
first end wall having a flange extending therefrom,
(d) a connecting wall joining said first end wall and
said second side wall and spaced inwardly from said
flange on said first end wall, thereby to provide a
recess to lockingly receive the edge of one of the
oppositely extending webs on the flanged neck,
(e) a second end wall joining the adjacent ends of said
first and second side walls at the opposite end of
said first side wall and forming a second end closure
for the cover,
(f) said second end wall having means thereon adapted
to abut against and be secured to the other of the
oppositely extending webs on the flanged neck,
(g) and an opening through one of said walls to per-
mit the electrical wires to be received within said
cover for connection to the terminals.
2. The combination of elements defined in claim 1
wherein said last named means includes a flange ex-
tending from said second end wall adapted to abut against
and be secured to the other of the oppositely extending
webs on the flanged neck.

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JOSEPH R. LECLAIR, Primary Examiner.
JAMES R. GARRETT, Assistant Examiner.