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(54) Driving gear commutator-switch.

(57) The driving gear commutator switch incorporates a driving lever (1) with two tappets (10,13) located on either side thereof and at different distances with regard to the rotational axis (2). It also includes a conductor strap (6), which may be arranged in either of two opposite orientations, with regards to the fixed contacts (14). The strap is provided with at least one side projection and sidely arranged spaces or gaps allowing free passage of the tappets.

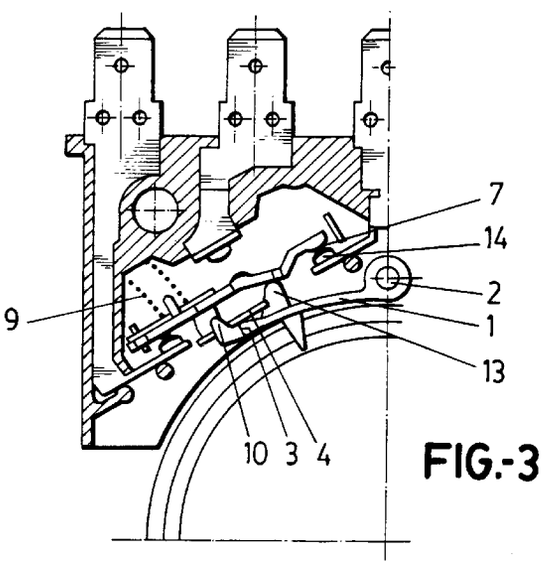

FIG.-3

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SPECIFICATION

Commutator-switches such as those subject of the same applicants' European Patent application number 90500081.6 of 3rd August 1990, that is primarily characterised in that the common or lead-in terminal can be positioned in two of the three possible places by merely changing the mounting position of some of its mobile parts, risks performing unsuitably if for some reason the force of adherence of contacts exceeds the expected system force of detachment, above all bearing in mind that, because of the functional advantages this entails, the tendency is for the same to be placed at the lowest possible value.

The present invention is aimed at providing the commutator-switch with a detachment system for the lower contact (which corresponds to the cam level of smaller radius), such being in the subject case most sensitive to the problem posed.

In this sense, systems are known to rely upon additional driving elements or the existence of a relative linear displacement, at a right angle to the primary movement between a driving lever tappet and a driving projection located upon a swivel-mounted conductor element, all designed for a single mounting position of the switch.

The device subject of the invention is convenient in that being applicable to either of the two possible commutator mounting positions it does not require an increased force or the incorporation of additional parts, as well as performing reliably.

It comprises a projection disposed laterally upon the swivel-mounted conductor strap against which, in the event of contacts adherence, one of both tappets provided on the driving lever shall impinge, depending upon the mounting position in which either tappet is active. The tappets are each located on either side of the driving levers and spaces are provided between the sides of the swivel-mounted parts and the adjacent insulating dividers to pass by when so required.

In the event of adherence of the lower contact, one of the the two tappets drives the strap projection releasing the same. However, upon displacement of the commutator to the higher position (cam level of wider radius) the tappet located outermost on the lever passes by the side of the swivel-mounted strap when its side projection lies beyond reach of the tappet due to the relative linear displacement, at a right angle to the main displacement, that exists between the same, whereas when the other tappet must act, a relative movement in the same direction as the main displacement follows between the projection and the tappet away from each other.

Figure 1.- Is the commutator with the common point upon the right-hand terminal, when at rest.

Figure 2.- Is the same in the higher working position.

Figure 3.- Is the commutator with the common point located between the left-hand terminal and at the lower working position or at rest.

Figure 4.- Is the latter version in the higher position.

Figures 5 and 6.- Are plan and elevation details of the driving lever with its tappets.

Figure 7.- Shows the swivel-mounted conductor strap, the insulating dividers and the spaces available for the tappets.

To describe a potential embodiment of the system, driving of the commutator comes about upon angular displacement of the lever (1) about its axis (2), its driving portion (3) moving the arm (4) on the auxiliary lever (5) as described in detail in the primary patent. Normally, both the auxiliary lever (5) and the swivel-mounted conductor strap (6) move simultaneously saving in the event that the contact heads (7) and (8) have a stronger adherence force than the separation force conveyed to the strap (6) by the spring (9) and the mediation of the auxiliary lever (5), in which event a tappet (10) on the driving lever (1), see figures 1, 5 and 6, drives a projection (11), figures 1 and 7, laterally disposed on the strap (6).

When the commutator moves to its higher working position, figure 2, the position of the spin axes (2) of the driving lever and (12) of the strap (6) causes the tappet (10) to travel as regards the projection (11) towards the spin axis (2) sufficiently for the projection (11) to lie outside the path of the tappet (10).

In the case of figure 3, the tappet (13), figures 3, 5 and 6, actually impinges upon the projection (11) located on the hidden face of the strap (6), if the contacts (7) and (14) remain adhered. In this layout of the commutator, when it moves to its higher position, figure 4, the projection (11) moves faster than the tappet (13) and therefore the same move away from one another sufficiently to take up both the safety strokes and the constructive divergences.

In both layouts, shown in figures 3, 4, 5 and 6, lateral spaces (15) and (16) are provided, figure 7, to allow the tappets (10) and (13) to pass freely by the sides of the strap (6), which the dimensions of the auxiliary lever (5) also allows.

Claims

1.- A driving gear commutator-switch with two possible mounting positions of its internal elements, as in primary patent number 8904099, characterised in having a driving lever (1) with two tappets (10) and (13), one on either side thereof and at different distances from its spin axis (2), and a conductor strap (6) with at least a side projection (11) and likewise side spaces (15) and (16) for the free passage of the tappets (11) and (13).

2.- A driving gear commutator-switch, as in the above claim, characterised in that the spin axis (2) of

the lever (1) and the pivoting points (12) and (17) of the strap (6) and the tappets (10) and (13) and the projection (11) are laid out such that when the commutator-switch moves from one working position to the other, the tappets move as reagrds the projection approximately at a right angle to the primary movement in the case of the layout when the tappet (10) furthest from the spin axis (2) of the driving lever acts and in its same direction when the other tappet (13) must act.

3.- A driving gear commutator-switch, as in the above claims, characterised in that the driving lever and the other elements making up the switch are the same for both mounting positions.

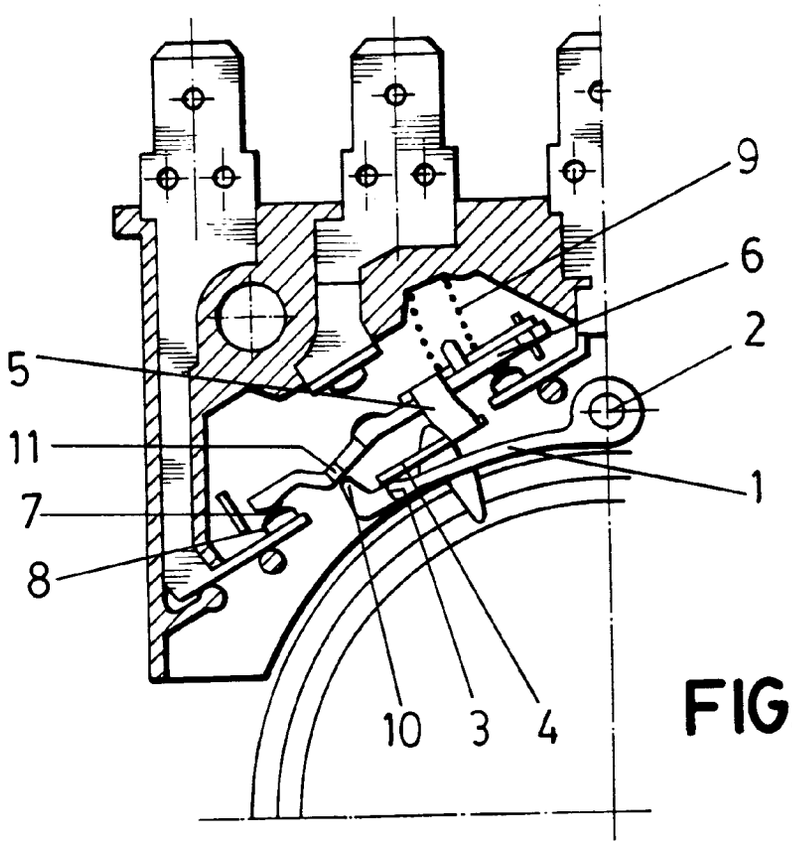

FIG.-1

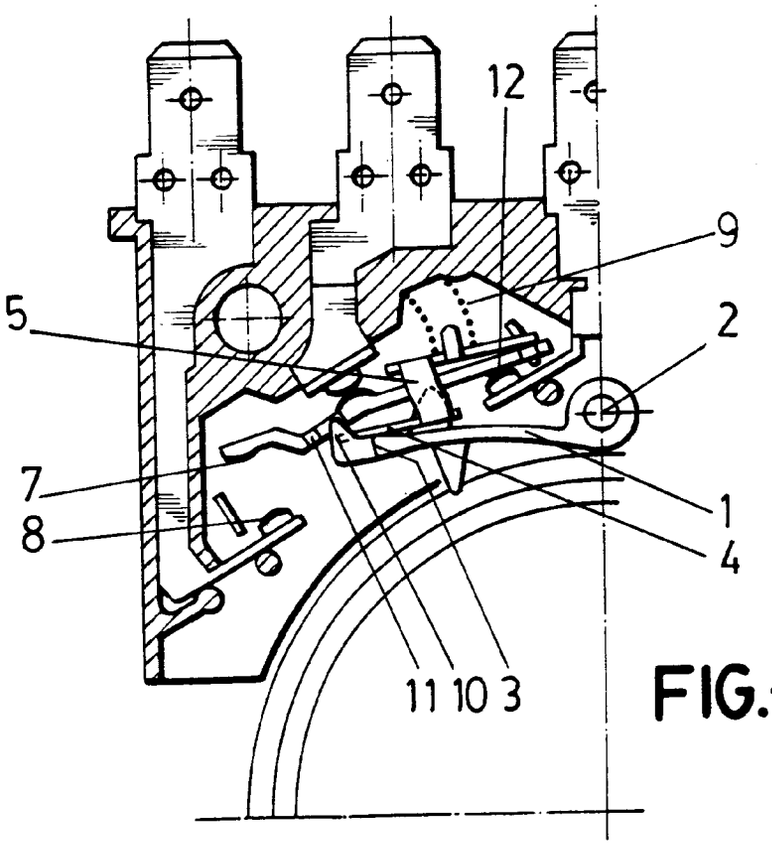

FIG.-2

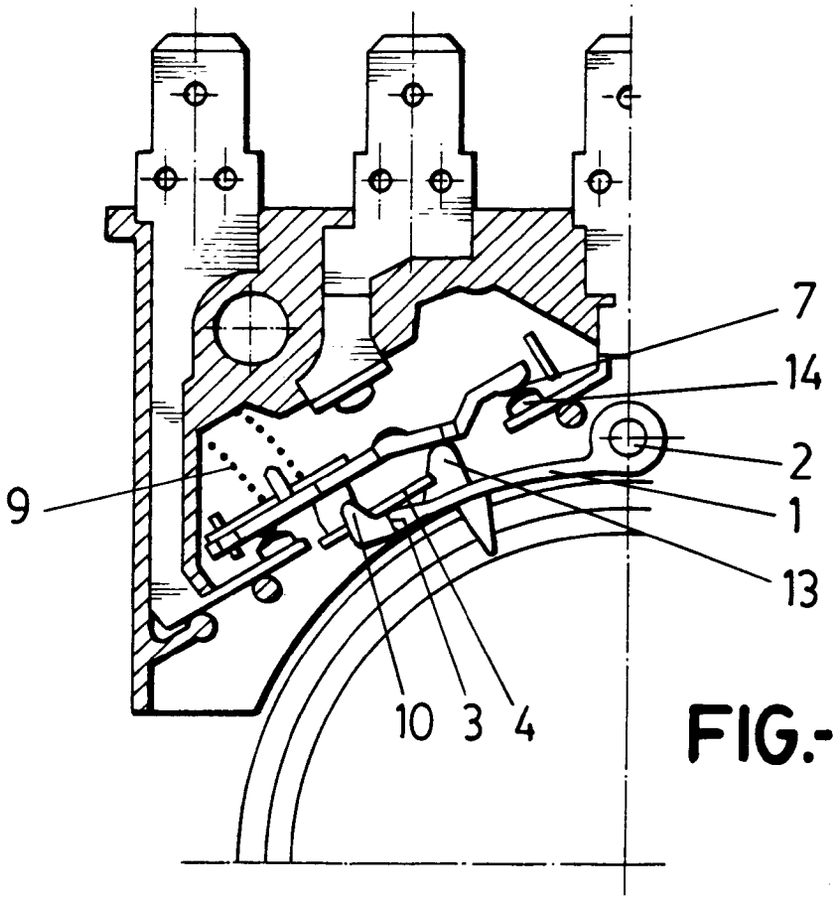

FIG.-3

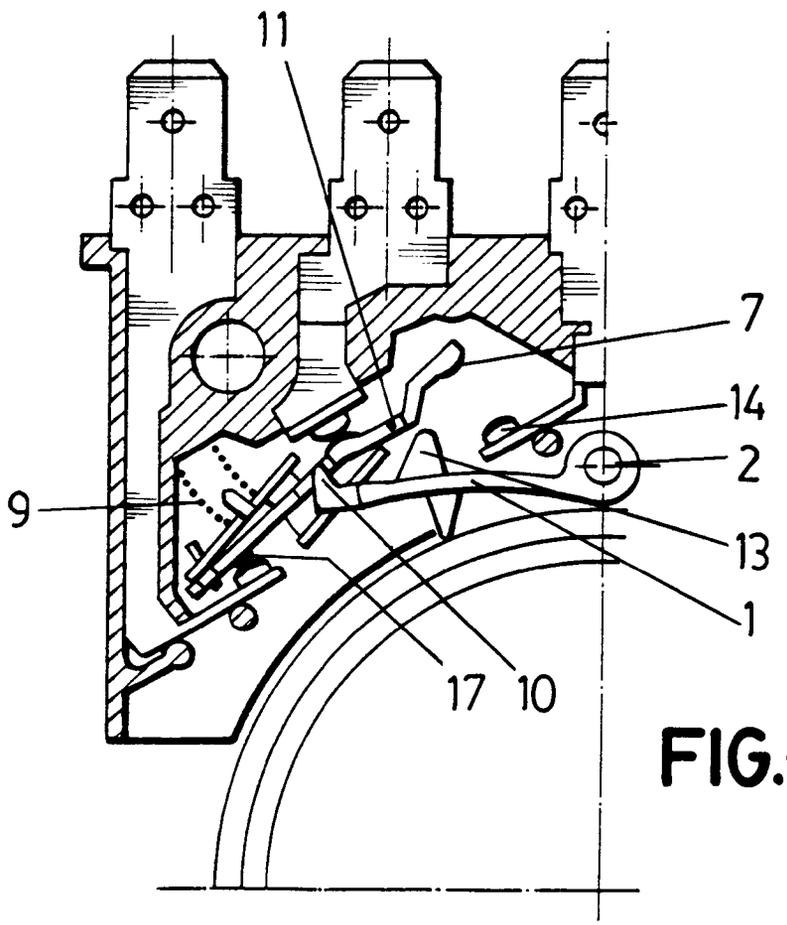

FIG.-4

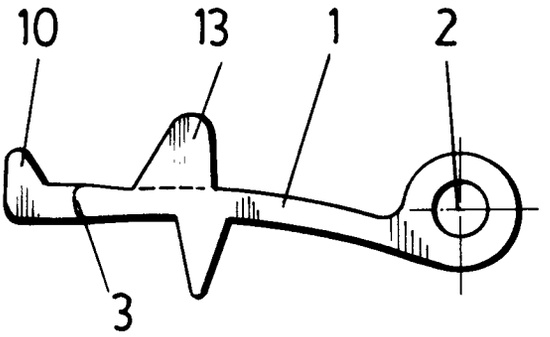

FIG.-5

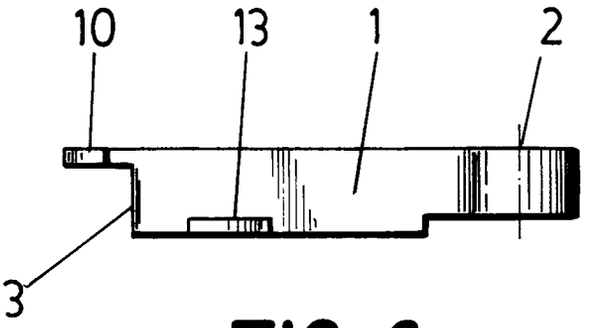

FIG.-6

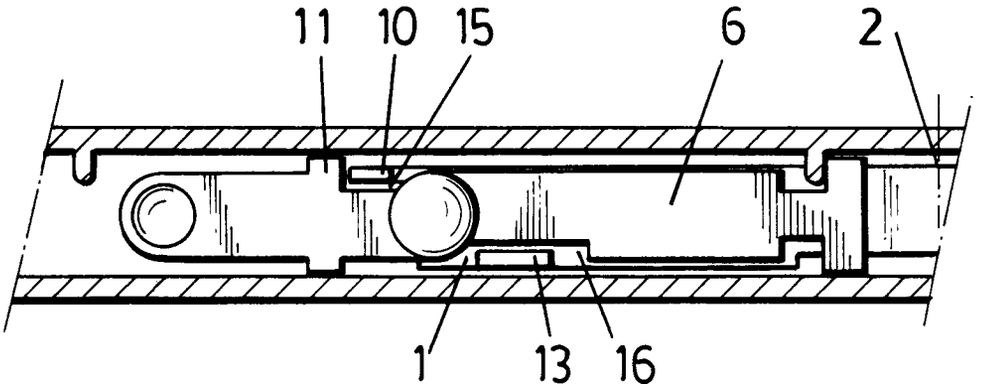

FIG.-7

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EUROPEAN SEARCH REPORT

Application Number
EP 92 50 0097

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
D,A	EP-A-0 430 845 (FAGOR) * the whole document *	1	H01H43/02
A	DE-U-7 201 452 (SIEMENS) * page 1, paragraph 1; figures *	1	
A	FR-A-2 105 130 (CROUZET) * page 1, line 33 - page 2, line 24 *	1	
A	GB-A-2 091 042 (CARPANO & PONS) * page 2, line 9 - line 25; figure 1 *	1	
A	DE-A-2 025 980 (HOLZER PATENT) * page 7, last paragraph - page 8, paragraph 2; figure 1 *	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			H01H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	05 NOVEMBER 1992	NIELSEN K.G.

CATEGORY OF CITED DOCUMENTS

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