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ROTARY MULTIPLE CAM CIRCUIT DISCONNECT AND RECONNECT SWITCH

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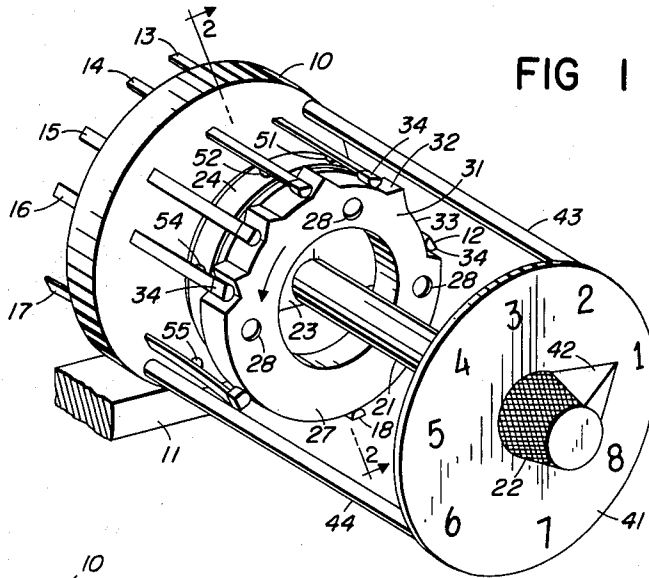


FIG 1

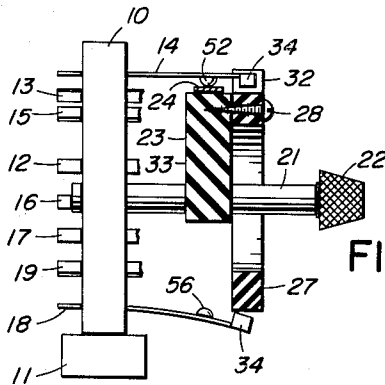


FIG 2

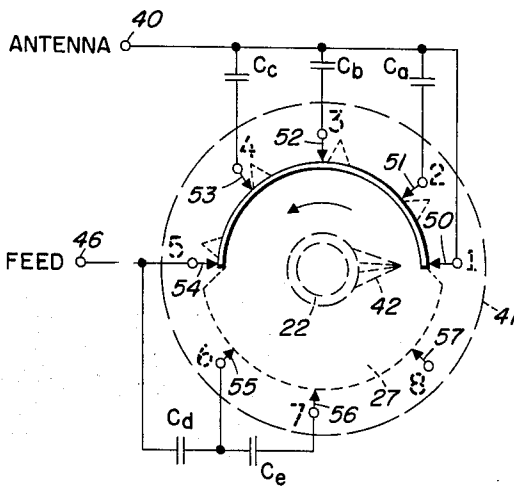


FIG 3

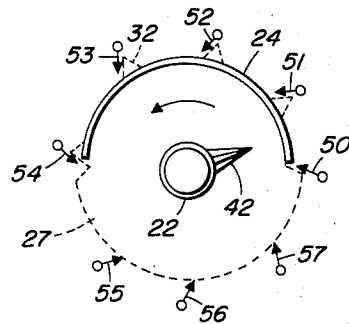


FIG 4

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ROTARY MULTIPLE CAM CIRCUIT DISCONNECT AND RECONNECT SWITCH

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6 Claims. (Cl. 200—4)

This invention relates in general to rotary switches and in particular, to a multiple contact rotary switch which lifts the contacts from a switch element during change of positions.

An object of the present invention is to provide a rotary switch which disconnects the switch contacts during initiation of the switching cycle.

Another object is to provide an improved rotary switch.

A feature of the invention is found in the provision for a rotary switch which lifts switch contacts from a shorting surface as the switch is changed to prevent one contact from opening across a near resonant circuit.

Further objects, features, and advantages of this invention will become apparent from the following description and claims when read in view of the accompanying drawings, in which:

FIGURE 1 is a perspective view of the switch of this invention;

FIGURE 2 is a sectional view taken on line 2—2 of FIGURE 1;

FIGURE 3 is a schematic view of the switch in a first position; and,

FIGURE 4 is a schematic view of the switch in a second position.

Referring to FIGURE 1, a supporting member 10 is formed of insulating material and is suitably supported on a base 11 which holds it in a fixed position. A plurality of flexible conductors 12, 13, 14, 15, 16, 17, 18 and 19 are embedded in the material 10 and extend outwardly from both sides thereof. A shaft 21 is rotatably supported by the member 10 and carries a knob 22. A semicircular segment of insulating material 23 is mounted on rotatable shaft 21 and has attached to its outer periphery a strip of conducting material 24. The members 12 through 19 are formed with contacts 50—57 in alignment with the segment 23 such that the shorting segment 24 engages contacts 50—57 when the segment is aligned with members 12 through 19. An annular cam ring 27 is attached to the segment 23 by holding means as, for example, screws 28 and as best shown in FIGURE 1, is formed with a first portion 29 of larger diameter and a second portion 31 which is formed with cams 32 and portions 33 of smaller diameter. Each of the contact members 12 through 19 have cam engaging portions 34 attached to their ends which ride upon the surface of the member 27.

A dial 41 has indicia printed on its face against which knob 22 moves. A pointer 42 on knob 22 can be read against the indicia on dial 41. Standoffs 43 and 44 support dial 41 from support member 10. The shaft 21 may be rotated by knob 22 and as this occurs, the cam portions 32 lift the cam followers 34 to move the switch members that are engaging the segment 24 up from segment 24 as the switch is moved to the new position. The segment 24 only engages the contacts 50—57 which are mounted on spring elements that ride on a low portion 33 of the cam wheel 27 and these are the only members that are cammed upwardly as the switch is changed.

As a new position is reached, those switch elements which ride in a low portion 33 of the cam wheel 27 are allowed to engage the shorting segment 24.

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FIGURE 3 illustrates the switch in a first position and in use as a switch between an antenna and a feed which might, for example, be a transmitter or receiver. Feed point 46 is connected to switch element 54 and to a condenser C_d . The other side of condenser C_d is connected to switch element 55. Another condenser C_e is connected between switch elements 55 and 56. An antenna output terminal 40 is connected to switch element 50 and also to first sides of condensers C_a , C_b and C_c . The other side of condenser C_a is connected to contact 51. The other side of condenser C_b is connected to contact 52 and the other side of condenser C_c is connected to contact 53.

With pointer 42 of knob 22 in position 1 (FIGURE 3), the antenna feed point 40 is directly connected to feed point 46 through shorting segment 24. As knob 22 is rotated counterclockwise, relative to FIGURE 3, the following connections are made between points 40 and 46:

	Position
Bypass	1
C_a in parallel C_b in parallel C_c	2
C_b in parallel C_c	3
C_c	4
Bypass	5
C_d	6
C_d in series C_e	7
Disconnected	8

FIGURE 4 illustrates how cam portions 33 move switch contacts 51—55 out of contact with segment 24 as knob 22 is rotated. This opens the contacts as changes in position are made.

It is seen that this invention provides a novel switch. Although it has been described with respect to a preferred embodiment, it is not to be so limited as changes and modifications may be made which are within the full intended scope as defined by the appended claims.

I claim:

1. A rotary multiple contact switch comprising a base member, a plurality of flexible switch contact elements mounted in the base member, a shaft rotatably supported in the base member, a crescent-shaped conducting member mounted on said shaft and engageable with said switch contacts, a cam member of insulating material attached to the shaft and in engagement with the switch contact elements and formed with high and low portions such that the switch contacts in alignment with said low portion of said cam engages the crescent-shaped member and the switch contacts in alignment with the high portion of said cam are held out of engagement with the crescent-shaped member.

2. A rotary multiple contact switch comprising a base member, a plurality of flexible switch contact elements mounted in the base member, a shaft rotatably supported in the base member, a crescent-shaped conducting member mounted on said shaft and engageable with said switch contacts, a cam member of insulating material attached to the shaft and in engagement with the switch contact elements and formed with high and low portions such that the switch contacts in alignment with said low portion of said cam engages the crescent-shaped member and the switch contacts in alignment with the high portion of said cam are held out of engagement with the crescent-shaped member, and a plurality of contact lifting elements mounted on said cam member adjacent said low portions so as to lift the switch contacts out of engagement with the crescent-shaped conducting member as the cam and crescent-shaped member are rotated.

3. A multiple contact switch comprising a base member, a plurality of switch contacts mounted in the base member and extending out therefrom in a generally cir-

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cular arrangement, a shaft rotatably supported by said base member, a semicircular crescent-shaped conducting member attached to said shaft, a cam member connected to said shaft and having low and high portions which engage the switch contacts to allow those switch contacts to engage the semicircular conducting member which are aligned with it.

4. A multiple contact switch comprising a base member, a plurality of switch contacts mounted in the base member and extending out therefrom in a generally circular arrangement, a shaft rotatably supported by said base member, a semicircular crescent-shaped conducting member attached to said shaft, a cam member connected to said shaft and having low and high portions which engage the switch contacts and the low portions aligned with the semicircular conducting member, and cam lifting projections attached to the low portion of said cam so as to lift the switch contacts out of engagement with the conducting member as the position of the conducting member is changed.

5. A multiple contact switch comprising a base member, a plurality of switch contacts mounted in the base member and extending out therefrom in a generally circular arrangement, a shaft rotatably supported by said base member, a semicircular crescent-shaped conducting member attached to said shaft, a cam member connected to said shaft and engaging said switch contacts and having low and high portions so that the switch contacts aligned with the low portions engage the semicircular

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conducting member, cam lifting projections attached to the low portion of said cam so as to lift the switch contacts out of engagement with the crescent-shaped member as the position of the crescent-shaped member is changed, and a knob attached to said shaft to allow rotation of the shaft.

6. A multiple contact switch comprising a base member, a plurality of switch contacts mounted in the base member and extending out therefrom in a generally circular arrangement, a shaft rotatably supported by said base member, a semicircular crescent-shaped conducting member attached to said shaft, a cam member connected to said shaft and engaging said switch contacts and having low and high portions so that the switch contacts aligned with the low portions engage the semicircular conducting member, cam lifting projections attached to the low portion of said cam so as to lift the switch contacts out of engagement with the crescent-shaped member as the position of the crescent-shaped member is changed, a first feed point attached to one of the switch contacts and a plurality of condensers connected between the first feed point and others of the contacts, a second feed point connected to another switch contact and a second plurality of condensers connected between the second feed point and other ones of said switch contacts.

No references cited.

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