

June 14, 1960

M. T. LYBROOK ET AL

2,941,048

ELECTRIC SWITCH

Filed Feb. 18, 1959

6 Sheets-Sheet 1

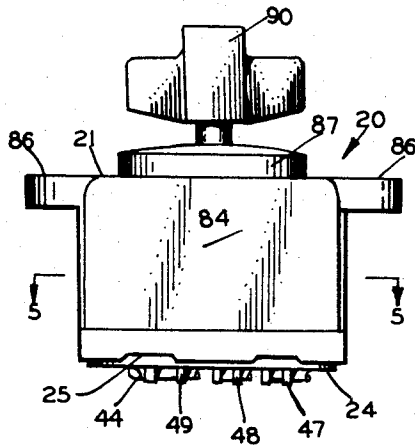


FIG. 1

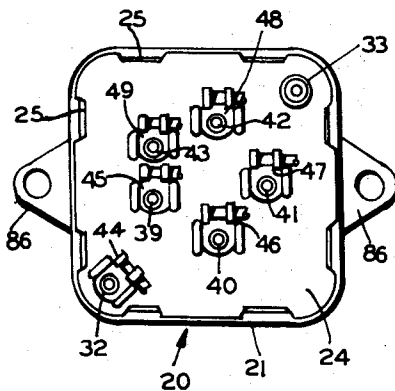


FIG. 3

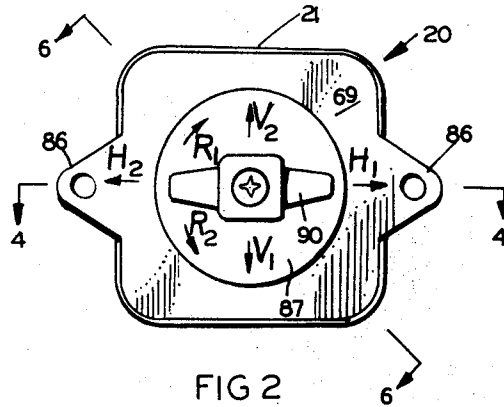


FIG. 2

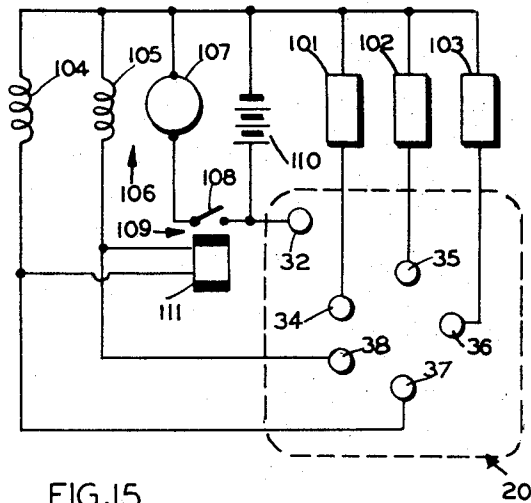


FIG. 15

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6 Sheets-Sheet 2

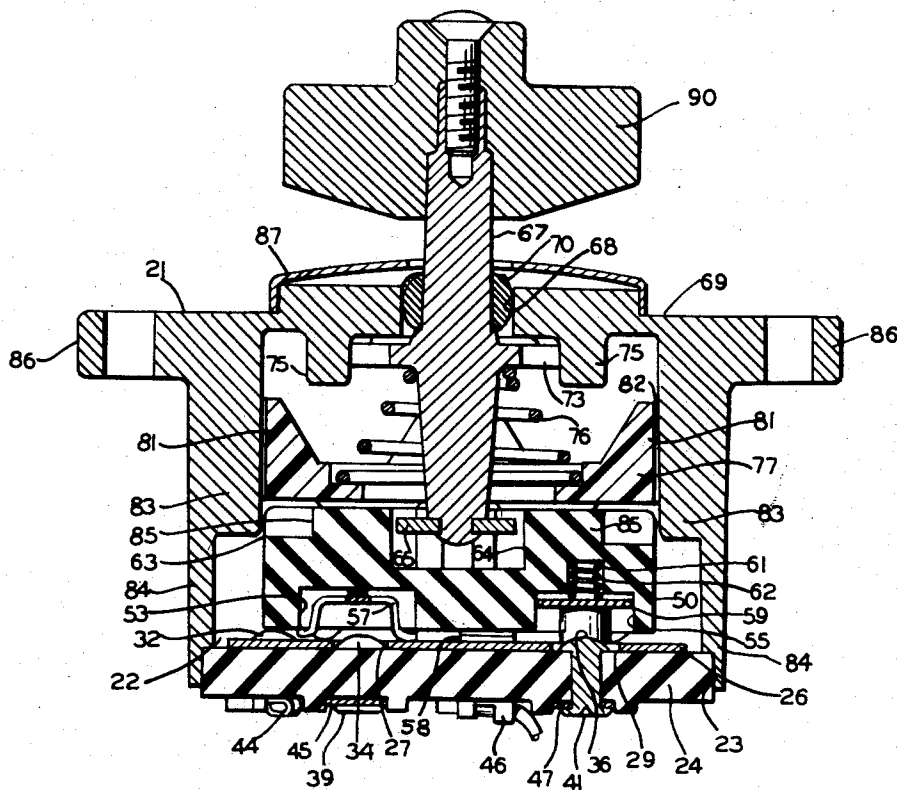


FIG. 4

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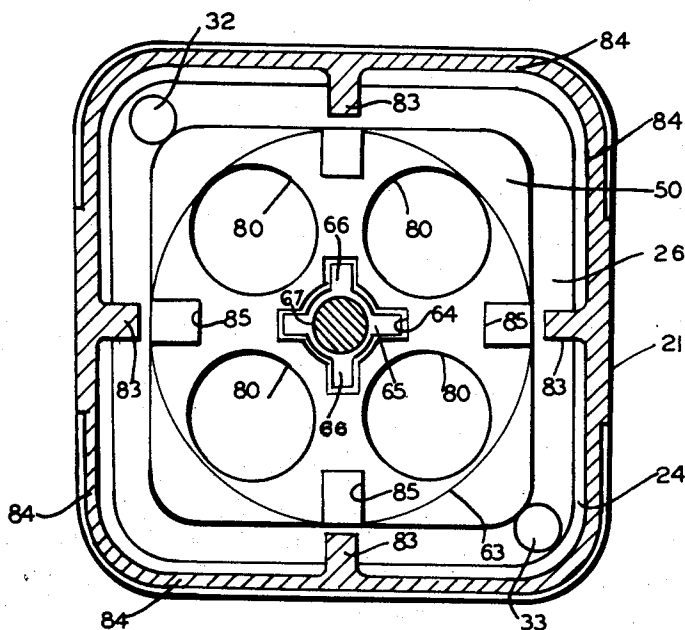


FIG. 5

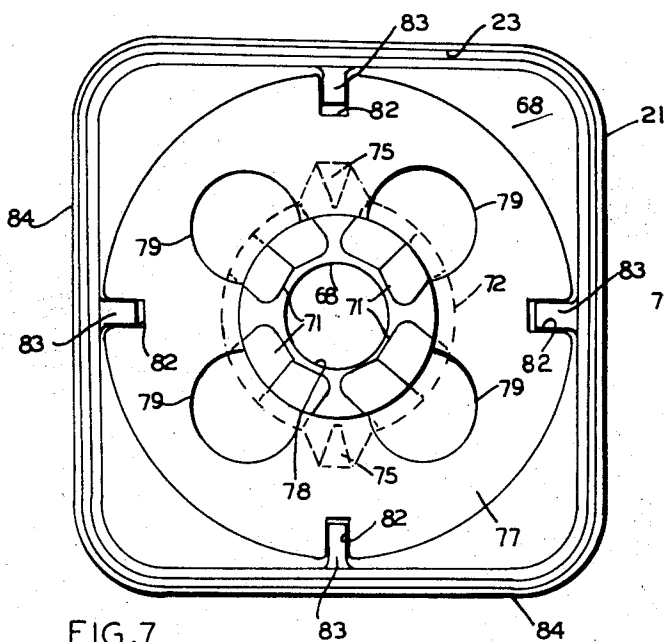


FIG. 7

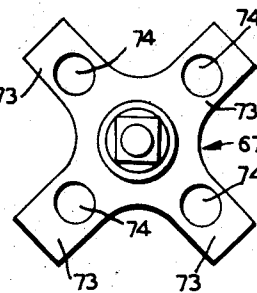


FIG. 8

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6 Sheets-Sheet 5

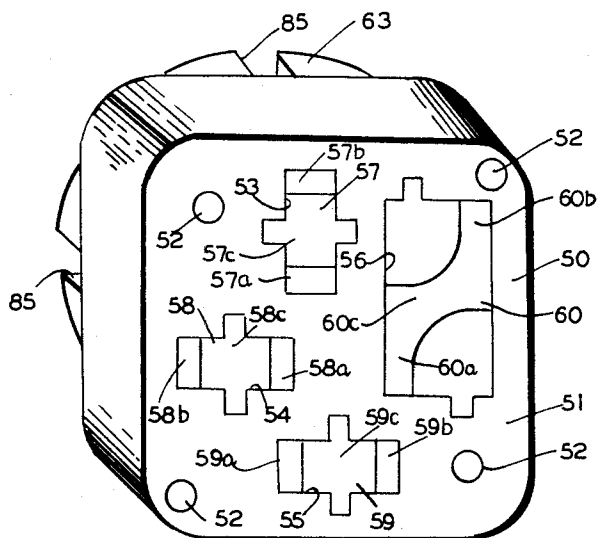


FIG. 9

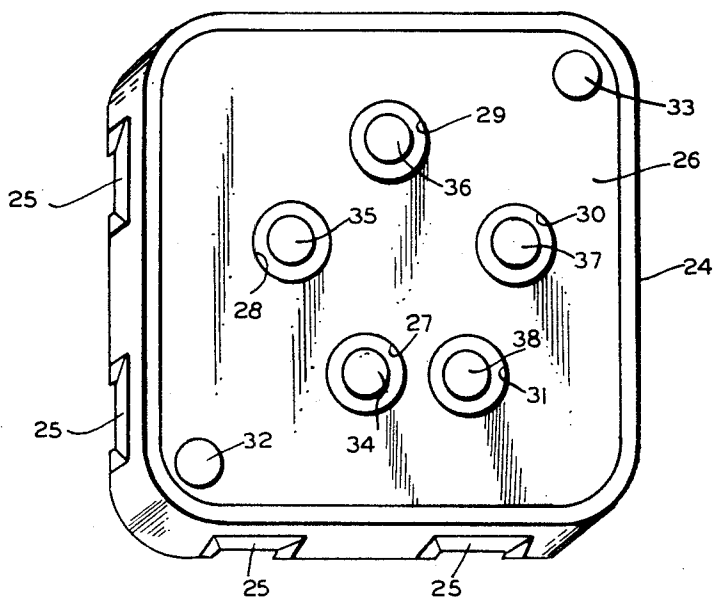


FIG. 10

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6 Sheets-Sheet 6

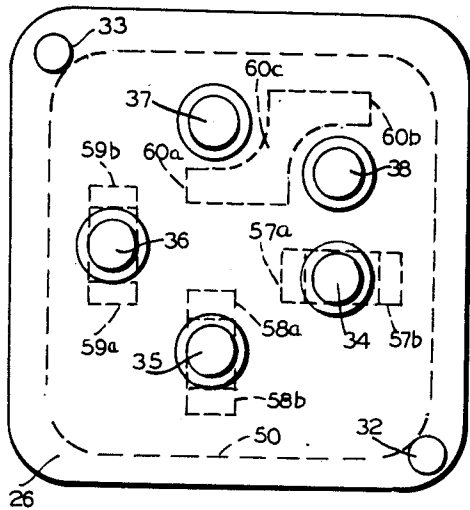


FIG. 11

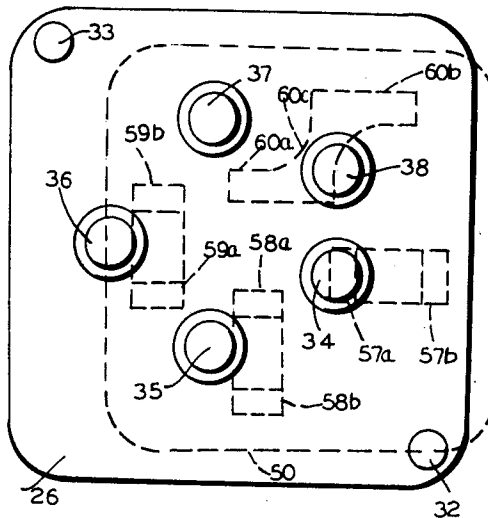


FIG. 12

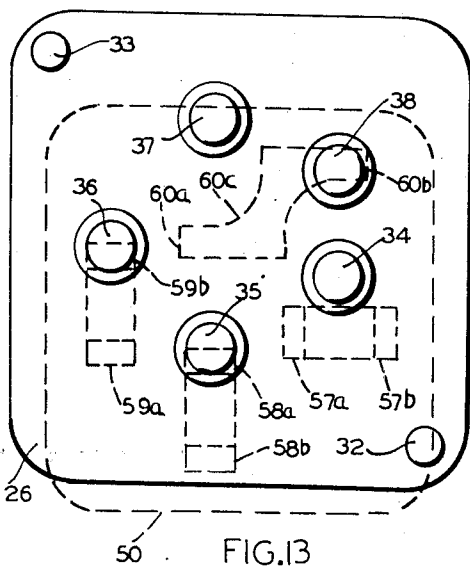


FIG. 13

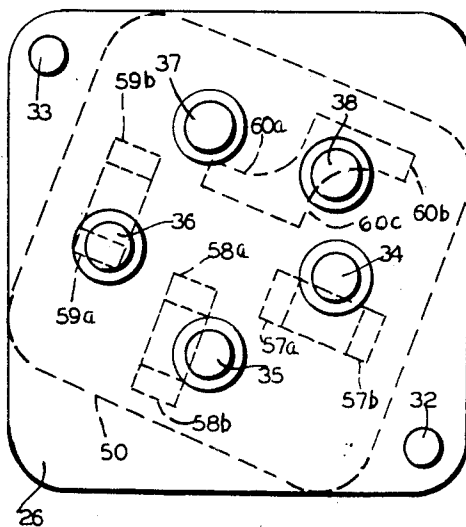


FIG. 14

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ELECTRIC SWITCH

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Filed Feb. 18, 1959, Ser. No. 794,068

11 Claims. (Cl. 200—6)

This invention relates to electric switches and more particularly to a multiposition selector switch operated by a single control member. This invention is particularly applicable to a selector switch in an electrical system for a device selectively movable in different directions where the direction in which the device moves is controlled by manipulation of the switch control member in the desired direction of movement.

This invention is an improvement in the selector switch of the type described in Patent No. 2,756,290 to Malcolm T. Lybrook, and is more particularly concerned with a selector switch adapted for the control of seat operating mechanisms of the type disclosed in Patent No. 2,827,105, to Alan D. Brundage. In the control system described in the Brundage Patent, the solenoids and motor of the seat operating mechanism are energized through six relays controlled by separate selector and energization switches. To simplify the operation of the seat, it is desirable to employ a single switch having a single control member for simultaneously selecting energizing the required motor and solenoid circuits to effect movement of the seat in the same direction that the switch control member is moved. Such a selector switch is preferably arranged to control a relatively large number of circuits and thereby reduce the number of relays needed in the seat control system.

Accordingly, it is an object of this invention to provide an improved multiposition selector switch having a single control member for selectively establishing a relatively large number of circuits.

Another object of the invention is to provide a multiposition selector switch having improved means for transmitting rocking or rotary movement of an actuator member to a slidable contact actuator and for returning the switch parts to a neutral position from a selected operating position.

A further object is to provide a multiposition selector switch having an improved arrangement of movable and fixed contacts resulting in a switch of small size.

Still another object of the invention is to provide a multiposition switch of the foregoing character which is of simple construction and that may be readily produced at a considerably lower cost than heretofore known switches for effecting like functions, yet which operates smoothly at all times and is dependable in operation.

These and other objects are carried out in accordance with the invention by the provision of a switch having a single contact operating block limited to translational and rotary movements by guide means upon which is slidably mounted a spring biased cam member yieldably positioning the contact block in a neutral position. In a preferred embodiment of the invention a manually operable member having a driving connection with the block for selectively moving the block to predetermined positions is mounted in the switch case for both rotary and rocking movement against the force of the spring acting upon the cam member. According to another feature of the invention, a plurality of fixed contacts are

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positioned in apertures of a stationary contact plate, which contacts and contact plate cooperate with bridging contact means carried by the block to selectively establish circuit dependent upon the direction of movement of the block.

Other objects, advantages and features of the invention will appear more clearly from the following description and from the drawings in which:

Figure 1 is side elevational view of a selector switch embodying the present invention.

Figure 2 is a top plan view of the switch.

Figure 3 is a bottom plan view of the switch.

Figure 4 is an enlarged sectional view taken along the line 4—4 of Figure 2.

Figure 5 is an enlarged sectional view taken substantially along the line 5—5 of Figure 1.

Figure 6 is an enlarged, exploded view, partly in section, of certain parts taken substantially along the line 6—6 of Figure 2.

Figure 7 is an enlarged end view of the switch case with the cam member in position.

Figure 8 is an enlarged end view of the actuator.

Figure 9 is an enlarged, oblique view of the contact carrier block with its contacts.

Figure 10 is an enlarged, oblique view of the terminal base with its contacts.

Figures 11—14 are diagrammatic views of the fixed and movable contacts in different operating positions.

Figure 15 is a schematic wiring diagram of an automotive seat control system.

Referring now to the drawings, numeral 20 designates a switch having a square-shaped case 21 which is preferably a zinc die casting. The case 21 has an open bottom 22 provided with a marginal recess 23 extending around the inner perimeter thereof for receiving a terminal base 24 which may be molded from a suitable phenolic resin material. The terminal base 24 is notched at eight different places 25 where portions of the lower edge of case 21 are crimped inwardly for retaining the base 24 and other parts in fixed position within the case 21. A flat contact plate 26 of metal such as brass and having five spaced openings 27, 28, 29, 30 and 31 is secured upon the inner face of base 24 by rivets 32 and 33. Centrally located in each of the openings 27—31 with substantial clearance is a fixed contact 34, 35, 36, 37 and 38, respectively, which protrudes slightly above plate 26. The contacts are merely rivet heads having a convex surface and constituting a part of the rivets 39—43, respectively, which extend through base 24. The outer ends of rivets 32, 39—43 are upset over wire terminal members 44—48 and 49.

A square-shaped contact block or carrier 50 of molded phenolic resin material or other suitable insulating material is provided on its rear face 51 with four rounded projections 52 for translational and rotary sliding movement of the carrier on the outer surface of plate 26. Face 51 of carrier 50 is also provided with four recesses 53, 54, 55 and 56 which respectively carry bridging contacts 57, 58, 59 and 60. Bridging contacts 57, 58, and 59 are identical in construction and are provided at their opposite ends with arms or contact elements 57a and 57b, 58a and 58b, and 59a and 59b bent or displaced from the plane of their respective connecting sections 57c, 58c and 59c. Bridging contact 60 is formed with a single displaced or raised portion comprising oppositely directed arms or contacting portions 60a and 60b extending at right angles from a central contacting portion 60c. The raised portions of contacts 57—60 are positioned to selectively bridge or connect the fixed contacts 34—38 to the contact plate 26 in a manner which will be subsequently explained. Each recess is provided with one or more pockets 61 (Figure 4) in each of which is

seated a spring 62 urging its respective bridging contact outwardly from the block 51 toward the fixed contacts and the contact plate.

The opposite side of the contact carrier comprises a generally cylindrical portion 63 provided with a centrally located cross-shaped cavity 64 in which is slidably disposed a similarly shaped driver 65 having four arms 66. The driver 65 is fixed on the inner end of an actuator or operating member 67 having a portion which extends through a bearing aperture 68 centrally located in the top 69 of case 21. A generally spherically shaped bearing 70 preferably of nylon is secured with a press fit on actuator 67 and disposed in bearing aperture 68 to provide for both rocking and rotary movement of the actuator.

Four generally V-shaped bearing grooves 71 are radially disposed about aperture 68 in a slightly raised boss 72 on the inner surface of the case top 69. The actuator 67 has four arms 73 arranged in a cross shape and each arm is provided with a substantially conically shaped projection 74 received in its respective groove 71. Two diametrically opposed stops 75 extend from boss 72 between arms 73 for limiting rotary movement of the actuator in opposite directions.

A conical compression spring 76 confined between actuator 67 at the base of the arms 73 and a cam member 77 yieldingly urges the actuator toward the top 69 of the case 21 and yieldingly urges the cam member against the contact block 50. Cam member 77 has a central opening 78 through which the inner end of actuator 67 extends and has four substantially conical lugs 79 radially arranged about the axis of opening 78. Lugs 79 are received in a corresponding set of four conically shaped recesses 80 formed in the raised portion 63 of block 50. Cam member 77 also is provided with four shoulders 81 circumferentially spaced about its outer periphery. Each of the shoulders 81 is provided with a rectangular guide slot 82 in which is received a longitudinally extending rectangular abutment 83 integrally projecting inwardly from its respective side wall 84 of case 21 to guide the cam plate for sliding movement. Each of the four abutments 83 extend from the inner surface of the case top 69 to a short distance below face 63 of block 50. Along the four sides of block 50 raised portion 63 is provided with shallow rectangular grooves 85 having a width and length slightly greater than the width and thickness of the abutments 83. Each of these grooves 85 is arranged to receive its adjacent abutment 83 upon translational movement of the block 50 toward its respective case side wall 84.

The case 21 may be provided with apertured ears 86 for mounting the switch 20 upon an adjustable seat to be controlled by the switch and if desired an ornamental cap 87 may be secured to the top 69 of case 21 by clenched lugs 88 which extend through suitable slots 89 in the case top 69. The outer end of actuator 67 may be provided with any suitable operating handle or knob 90 for selecting desired directions of seat adjustment.

It will now be observed that the force of spring 76 urges the actuator 67 to a neutral or medial position (Figure 4) with the actuator projections 74 seated in the bottom of grooves 71 of the case top 69. Similarly, the force of spring 76 bearing against cam member 77 causes cam member lugs 79 to seat in recesses 80 of block 50 to center the latter in respect to side walls 84 of case 21 as shown in Figure 5. When the knob 90 and the outer end of actuator 67 are rocked in any of the directions indicated by arrows H1, H2, V1 and V2 in Figure 2, bearing 70 carried by the actuator 67 will pivot in aperture 68 as two of the actuator projections 74 move out of engagement with their respective grooves 71 while the other two projections 74 rock in their respective grooves 71. Such movement of the outer end of actuator 67 will cause block 50 to slide upon the inner face of base 24 in the opposite direction by reason of the

engagement of the driver 65 in cavity 64. As cam member 77 is restrained by abutments 82 from any movement except along a line at right angles to the direction of translational movement of block 50, the sidewise sliding movement of block 50 forces the lugs 79 from the bottoms of their respective recesses 80. It will be seen that the tilting of the actuator 67 and the displacement of cam member 77 both compress spring 76 and that upon release of the actuator knob or outer end spring 76 will act to urge the actuator 67, cam member 77 and block 50 to their respective neutral positions shown in Figure 4. When the outer end of actuator 67 or its knob 90 is rotated in either of the directions indicated by arrows R1 and R2, block 50 will be rotated in the same direction as the former. All four projections 74 of actuator 67 are cammed outward from the bottom of grooves 71 and cam member 77 is cammed away from block 50 to compress spring 76 which is effective to return the actuator, cam member and block to their respective neutral positions upon release of the outer end of actuator 67 or its knob 90.

It will be apparent from reference to Figures 4 and 5 that the limits of translational movement of block 50 are prescribed by the side walls 84 of the case 21 which are engaged by block 50 at the limiting point of travel. Moreover, it will be further apparent that the limits of angular movement of block 50 are prescribed by the stops 75 which are engaged by the actuator arms 73 at the limiting point of travel. It is also to be noted that abutments 83 on the case side walls 84 cooperate with the carrier raised portion 63 and the grooves 85 therein to limit the movement of block 50 to rotary movement about the longitudinal axis of the actuator 67 and to translational reciprocation along two different lines extending at right angles to each other.

The translational and rotary movements of block 50 described above are such as to provide for movement of the block from a neutral or medial position to any of six contact operating positions. Referring to Figures 11-14, the neutral or medial position and three operating positions are illustrated diagrammatically. The other three operating positions are not shown as such are believed to be apparent from the following description.

In Figures 11-14, the contact plate 26 and fixed contacts 34-38 are shown in full lines while the position of block 50 and the contacting elements of bridging contacts 57-60 are illustrated by broken lines. When block 50 is in its medial position as shown in Figure 11, none of the fixed contacts 34-38 are engaged by any of the bridging contacts 57-60. The contacting elements of contacts 57-59 rest upon the contact plate 26 at opposite sides of their respective contacts 34-36 with their connecting portions 57c, 58c and 59c overlying but separated from the fixed contacts. The contacting portion of contact 60 is disposed upon contact plate 26 intermediate but out of engagement with fixed contact 37 and 38.

Upon movement of the outer end of actuator 67 in the direction indicated by the arrow H1 in Figure 2, block 50 is moved to the right as shown in Figure 12. Arm 57a will engage fixed contact 34 and contacting portion 60c will engage fixed contact 38 to bridge contacts 34 and 38 to contact plate 26. If, instead, the outer end of actuator 67 be moved in the direction indicated by the arrow H2 in Figure 2 to move block 50 to the left, contacts 34 and 37 will be engaged respectively by arm 57b and contacting portion 60c in a like manner.

Upon movement of the outer end of actuator 67 in the direction indicated by the arrow V1 in Figure 2, block 50 is moved downward as shown in Figure 13, causing arm 58a to engage fixed contact 35, arm 59b to engage fixed contact 36, and arm 60b to engage fixed contact 38, thus bridging contacts 35, 36 and 38 to contact plate 26. Likewise, upon movement of the actuator 67 in the reverse direction, arm 58b will engage contact 35, arm 59a will engage contact 36 and arm 60a will engage fixed

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contact 37, thus bridging contacts 35, 36 and 37 to the contact plate.

Upon movement of the outer end of actuator 67 in the direction indicated by the arrow R1 in Figure 2, block 50 is rotated clockwise, as shown in Figure 14, causing arm 59a to engage fixed contact 36 and contacting portion 60c to engage fixed contact 38, thus bridging contacts 36 and 38 to contact plate 26. Likewise, movement of the actuator 67 in the direction indicated by the arrow R2 would rotate block 50 in a counterclockwise direction, causing arm 59b to engage contact 36 and contacting portion 60c to engage contact 37.

It will be noted that the selective switch operations described are provided by the unique manner in which the bridging contacts are arranged relative to the fixed contacts.

In the neutral or medial position of block 50 arms 57a and 57b of bridging contact 57 are arranged on opposite sides of fixed contact 34 along a line substantially parallel with the directions block 50 is reciprocated when knob 90 is rocked in the directions indicated by the arrows H1 and H2. Arms 58a and 58b and arms 59a and 59b of contact 59 are similarly arranged on opposite sides of their respective fixed contacts 35 and 36 but along lines substantially parallel with the directions block 50 is reciprocated when knob 90 is rocked in the directions indicated by the arrows V1 and V2. Thus bridging engagement of bridging contact 57, 58 or 59 between its fixed contact and contact plate 26 will occur only upon movement of the block from its medial position along a line parallel with the normal arrangement of the bridging contact arms.

It will also be noted that the line along which the arms of contact 59 lie in the medial position of block 50 is tangent to the arc through which contact 59 moves when the actuator knob 90 is rotated. However, the lines along which the arms of contacts 57 and 58 are arranged are perpendicular, respectively, to the tangents of the arcs through which contacts 57 and 58 move when the actuator knob 90 is rotated. With this arrangement, fixed contacts 34 and 35 will not be engaged by their respective bridge contacts 57 and 58 upon rotation of block 50 in either direction from its medial position but contact 36 will be engaged by contact 59 which will be in bridging engagement with contact plate 26.

To provide selective bridging engagement between fixed contacts 37 and 38 and contact plate 26, contacting portion 60c of contact 60 is arranged between contacts 37 and 38 to extend in the medial position along a line substantially parallel to one line along which block 50 reciprocates while the arms 60a and 60b extend from portion 60c in opposite directions along lines substantially parallel to the other line along which block 50 reciprocates. Thus fixed contact 37 will be connected to contact plate 26 by bridging contact 60 whenever actuator knob 90 is rotated in the direction of arrow R2 or rocked in the directions of arrows H2 and V2; and fixed contact 38 will be connected to contact plate 26 by bridging contact 60 whenever actuator knob 90 is rotated in the direction of arrow R1 or rocked in the direction of arrows H1 and V1.

Referring to Figure 15, the switch 20 is shown connected in a control circuit for a seat adjusting mechanism of the type described in the aforementioned Brundage patent. Connected to contact 34 is a solenoid 101 which, when energized, permits forward and rearward movement of the seat. Connected to contact 35 is solenoid 102 which, when energized, permits upward and downward movement of the front end of the seat. Connected to contact 36 is solenoid 103 which, when energized, permits upward and downward movement of the rear end of the seat. Contacts 37 and 38 are connected, respectively, to the shunt windings 104 and 105 of a reversible D.C. motor 106. The armature 107 of motor 106 is connected through the normally open contacts 108

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of relay 109 to a battery 110. The battery 110 is also connected to the contact plate 26 at rivet 32. The operating winding 111 of relay 109 is connected across motor windings 104 and 105 closing contacts 108 to simultaneously energize the motor armature 107 when either motor winding is energized. Motor 106 is suitably coupled to the seat adjusting mechanism to move the seat downwardly and/or rearwardly when winding 104 is energized and to move the seat upwardly and/or forwardly when winding 105 is energized.

In the neutral position of actuator 67, all the bridging contacts are disengaged from the fixed contacts and no current can flow in the circuit. When actuator knob 90 is moved in the direction indicated by the arrow H1, in Figure 2, contacts 34 and 38 will be connected to contact plate 26 as shown in Figure 12 to energize solenoid 101 and motor winding 105 which will cause motor 106 to move the seat forward or in the same direction knob 90 is moved. Similarly, movement of the knob 90 in the direction indicated by arrow H2 in Figure 2 will energize solenoid 101 and motor winding 104 to move the seat rearwardly.

When knob 90 is moved in the direction indicated by the arrow V1 in Figure 2, contacts 35, 36 and 38 will be connected to contact plate 26, as shown in Figure 13, to energize solenoids 102 and 103 and the motor winding 105 which will cause the motor to simultaneously raise both the front and rear ends of the seat upwardly, thus moving the entire seat upwardly or in the same direction knob 90 is moved. Similarly, movement of knob 90 in the direction indicated by arrow V2 in Figure 2 will energize solenoids 102 and 103 and motor winding 104 to lower the entire seat.

When knob 90 is rotated in the direction indicated by arrow R1 in Figure 2, contacts 36 and 38 will be connected to contact plate 26, as shown in Figure 14, to energize solenoid 103 and motor winding 105 which will cause the motor to lower the rear end of the seat, thus tilting the seat in the same direction knob 90 is moved. Similarly, movement of knob 90 in the direction indicated by arrow R2 in Figure 2 will energize solenoid 102 and motor winding 104 to raise the rear end of the seat and thus tilt the seat in the same direction knob 90 is moved.

While the invention has been illustrated and described in its preferred embodiment and has included certain details, it should be understood that the invention is not to be limited to the precise details herein illustrated and described, since the same may be carried out in other ways falling within the scope of the invention as claimed.

What is claimed is:

1. A multiposition selector switch comprising a case, a block adapted for movement within the case, cooperating guide means on the case and block restraining movement of the block to translational motion and to rotary motion in the same plane, switching contacts selectively operable upon movement of the block to predetermined positions, an actuator member for moving the block to any one of said predetermined positions, a cam member slidably mounted in the case and limited to reciprocal motion along a line extending at substantially right angles to the plane of movement of the block, cooperating cam means on the block and the cam member effective to urge the cam member in a direction away from the block upon either rotary or translational movement of the block from a normal neutral position, and yieldable biasing means acting upon the cam member in a direction to urge the same toward the block for yieldably holding the block in its neutral position.

2. The multiposition selector switch according to claim 1 wherein said guide means comprise a cylindrical portion disposed on said block, a plurality of abutments disposed in the case about the periphery of the cylindrical portion, the cylindrical portion having a corresponding number of grooves radially disposed in its periphery for selectively receiving said abutments upon translational

movement of the block, said cam member having guide slots in which said abutments extend to guide the sliding movement of the cam member, and said cam means comprising at least one conically shaped recess and a conically shaped lug received therein.

3. The multiposition selector switch according to claim 1 wherein said actuator member extends through the end of the case opposite said block and is mounted in said case end for both rocking and rotary movement, said actuator having a driving connection with said block to effect translation of the block upon rocking movement of the actuator member and to effect rotation of the block upon rotary movement of the actuator member.

4. The multiposition switch according to claim 1 wherein said actuator member extends through the end of the case opposite said block and is mounted in said case end by ball and socket means for both rocking and rotary movement from a normal, neutral position, said yieldable biasing means comprising a spring confined under compression between said cam member and said actuator member to yieldably hold the actuator member in a neutral position corresponding to the neutral position of the block, and said actuator member having an end portion in driving connection with said block to selectively move the block to said predetermined positions depending upon the rocking or rotary movement selected for said actuator member.

5. A multiposition selector switch comprising a case; a block adapted for both translational and rotary movement in the same plane within the case, switching contacts selectively operable upon movement of the block to predetermined positions; an actuator member extending through the end wall of the case opposite said block and mounted in said case by ball and socket means for both rocking and rotary movement; the end of the actuator within the case having a driving connection with said block to effect translation of the block upon rocking movement of the actuator member and to effect rotation of the block upon rotary movement of the actuator member, said block having a cylindrical portion with a plurality of grooves radially disposed in its periphery, a corresponding number of abutments disposed in the case about the periphery of the cylindrical portion and adapted to selectively enter said grooves upon translative movement of the block; a cam member slidably disposed upon said abutments and constrained to reciprocal movement along a line extending at substantially right angles to the plane of movement of the block; cooperating cam means on the block and the cam member effective to urge the cam member in a direction away from the block upon displacement of the block from a normal neutral position; said case end wall having bearing parts engaged by corresponding parts of the actuator for rocking movement of the actuator; said bearing parts of the case and actuator being effective to urge the actuator in a direction toward the block upon rotary movement of the actuator; and a coil spring confined under compression between the cam member and the actuator to urge the cam member toward the block for yieldably holding the block and actuator in their neutral positions.

6. A multiposition selector switch comprising a case, a block rotatable within the case in either direction from a medial position and adapted for reciprocation along lines at right angles to each other, two fixed contacts disposed on one wall of the case, stationary contact means disposed on said one case wall adjacent the fixed contacts; bridging contact means carried by the block and arranged for bridging engagement with the stationary contact means and the fixed contacts, said bridging contact means being arranged for bridging contact between the stationary contact means and one of the fixed contacts only when the block is moved along one of said lines to either side of its medial position or when the block is rotated in either direction from its medial position, and said bridging con-

tact means being arranged for bridging contact with said stationary contact means and the other of the fixed contacts only when the block is moved along the other of said lines to either side of its medial position.

7. A multiposition selector switch according to claim 6 wherein said stationary contact means comprise a flat plate having apertures in which said fixed contacts are disposed, said bridging contact means including two electrically-connected contact elements each in engagement with the contact plate in the medial position of the block and arranged on opposite sides of said one fixed contact along a line parallel with said one line of reciprocation, the bridging contact means including two electrically-connected contact elements each in engagement with the contact plate in the medial position of the block and arranged on opposite sides of said other fixed contact along a line parallel with said other line of reciprocation, one of said lines along which two contact elements are arranged being substantially tangent to the arc through which its bridging contact rotates, and the other of said lines along which two contact elements are arranged being substantially perpendicular to the tangent to the arc through which its bridging contact rotates.

8. A multiposition selector switch comprising a case, a block rotatable within the case in either direction from a medial position and adapted for reciprocation along lines at right angles to each other, two fixed contacts disposed on one wall of the case, stationary contact means disposed on said one case wall adjacent the fixed contacts, bridging contact means carried by the block and arranged for engagement with the stationary contact means and the fixed contacts, said bridging contact means being arranged for bridging contact with the stationary contact means and one of the fixed contacts only when the block is moved along either of said lines to one side of its medial position or when the block is rotated to one side of its medial position, and said bridging contact means being arranged for bridging contact with the stationary contact means and the other of the fixed contacts only when the block is moved along either of said lines to the other side of its medial position or when the block is rotated to the other side of its medial position.

9. A multiposition selector switch according to claim 8 wherein said stationary contact means comprise a flat plate having apertures in which said fixed contacts are disposed, said bridging contact comprising a central portion disposed between said fixed contacts when the block is in its medial position and extending substantially parallel with the direction of one of said lines and an arm extending from each end of the central portion along a line substantially parallel with the direction of the other of said lines but in opposite directions.

10. A multiposition selector switch comprising a case, a contact plate having apertures therein secured to one wall of the case, five fixed contacts disposed on said case wall and projecting through said apertures, a contact carrier block rotatable within the case in either direction from a medial position and adapted for reciprocation in the same plane along lines at right angles to each other, bridging contact means carried by the block and arranged for engagement with the fixed contacts and the contact plate when the block is displaced from its medial position, said bridging contact means being arranged for bridging engagement with the contact plate and the first and second of said fixed contacts when the block is moved along one of said lines of reciprocation to one side of its medial position, said bridging contact means being arranged for bridging engagement with the contact plate and the first and third of said fixed contacts, when the block is moved along said one line of reciprocation to the other side of its medial position, said bridging contact means being arranged for bridging contact with the contact plate and the second, fourth and fifth of the stationary contacts, when the block is moved along the other of said lines of reciprocation to one side of its medial position,

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said bridging contact means being arranged for bridging contact with the contact plate and the third, fourth and fifth of the stationary contacts when the block is moved along said other line of reciprocation to the other side of its medial position, said bridging contact means being arranged for bridging contact with the contact plate and the second and fifth of said stationary contacts when the block is rotated to one side of its medial position and said bridging contact means being arranged for bridging contact with the contact plate and the third and fifth of the stationary contacts when the block is rotated to the other side of its medial position.

11. The multiposition selector switch according to claim 10 wherein said bridging contact means include a plurality of bridging contacts mounted in said block, the first of said bridging contacts comprising two electrically-connected contact elements each in engagement with the contact plate in the medial position of the carrier and arranged on opposite sides of said first contact along a line parallel with said one line of reciprocation, the second of said bridging contacts comprising a central portion disposed between said second and third fixed contacts when the block is in its medial position and extending substantially parallel with the direction of said other line of reciprocation, an arm extending from each end of the central portion along a line substantially parallel with the direction of said one line of reciprocation but in opposite directions, the third of said bridging contacts comprising

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two electrically-connected contact elements each in engagement with the contact plate in the medial position of the carrier and arranged on opposite sides of said fourth fixed contact and extending along a line substantially parallel with the direction of said other line of reciprocation, the fourth of said bridging contacts comprising two electrically-connected contact elements each in engagement with the contact plate in the medial position of the block and arranged on opposite sides of said fifth fixed contact along a line substantially parallel with said other line of reciprocation, said line along which the contact elements of said fourth bridging contact are arranged being substantially tangent to the arc through which said fourth bridging contact rotates, and said lines along which the contact elements of said first and third bridging contacts are arranged being substantially perpendicular to the tangents of the arcs respectively, through which said first and third bridging contacts rotate.

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