United States Patent

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[72] Inventors **Leon R. Britton**
Chicago;
Kurt T. Johnson, Palatine; Edward K. Kusch, Chicago; Bernhard O. Williams, Elmhurst, Ill.

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[73] Assignee **The Seeburg Corporation of Delaware**
Chicago, Ill.
a corporation of Delaware. by mesne assignments

[54] **ELECTRICAL SWITCH AND METHOD OF ADJUSTING THE SAME**
12 Claims, 3 Drawing Figs.

[52] **U.S. Cl.** **200/166,** 194/9
[51] **Int. Cl.** **H01h 1/34**
[50] **Field of Search** 200/166M, 35CC; 194/9; 337/349, 360, 363

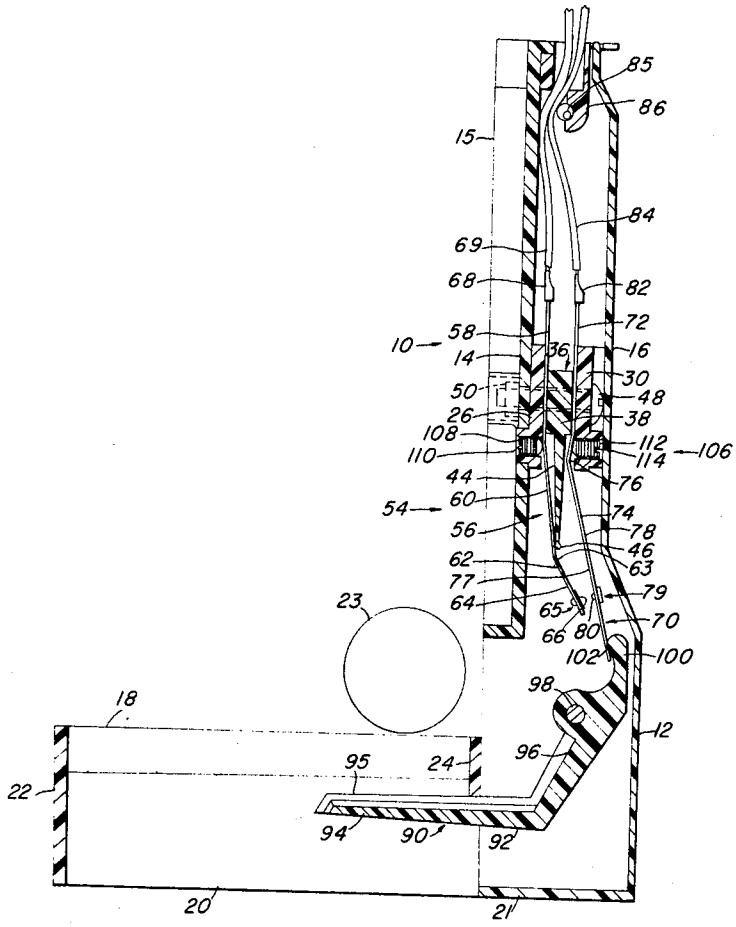
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Primary Examiner—H. O. Jones
Attorneys—Ronald L. Engel, Daniel W. Vittum, Jr., Gomer W. Walters and Ronald E. Larson

ABSTRACT: A readily adjustable electrical switch, such as a coin-actuated switch, is provided by placing a divider element between, but for the major portion of its length separated from, two resilient switch blades, each of which is independently adjustable by an associated adjusting member, such as a setscrew. An electrical indicating circuit and a weight and lever arrangement are utilized to adjust the setscrews so that one switchblade bears against a free end of the divider element with a predetermined force, while the other switchblade is precisely spaced from the first switchblade so that contact elements on the switchblades will not engage until a force of the desired magnitude is applied to the second switchblade.

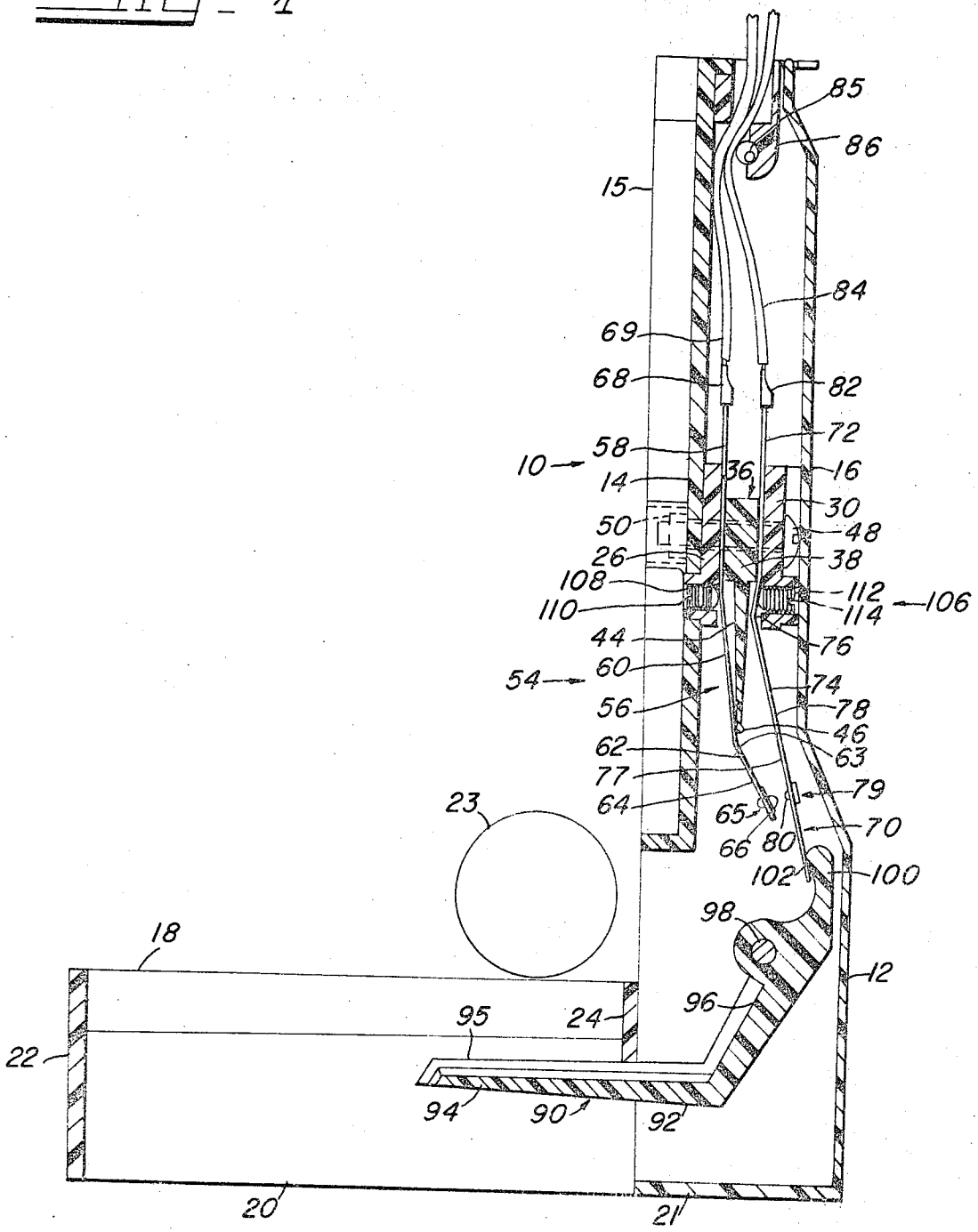


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SHEET 1 OF 2

FIG. 1



INVENTORS.
LEON R. BRITTON
KURT T. JOHNSON
EDWARD K. KUSCH
BERNHARD O. WILLIAMS

BY Gomer H. Walters
ATTY.

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SHEET 2 OF 2

FIG - 3

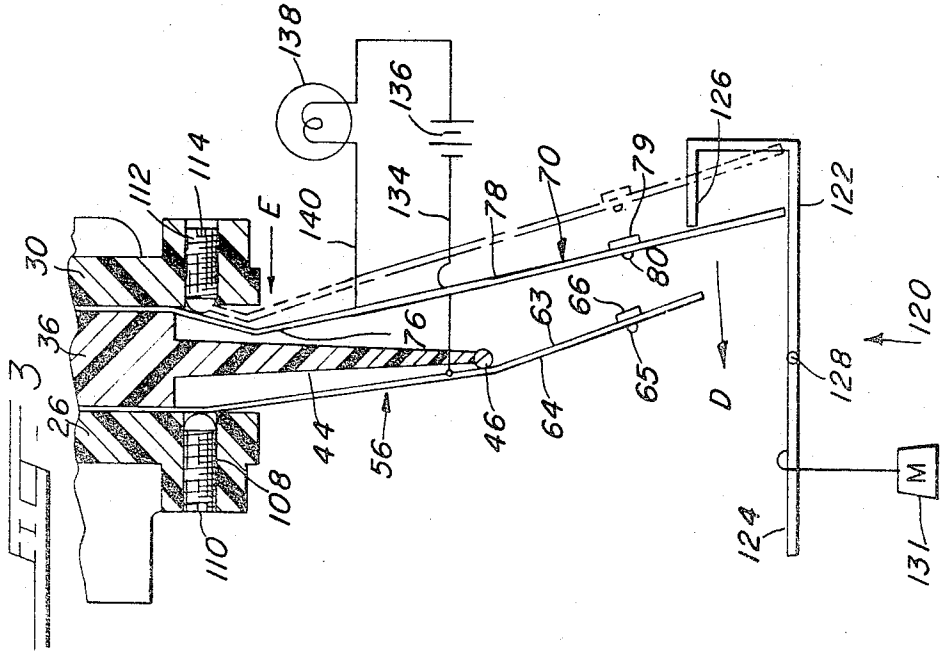
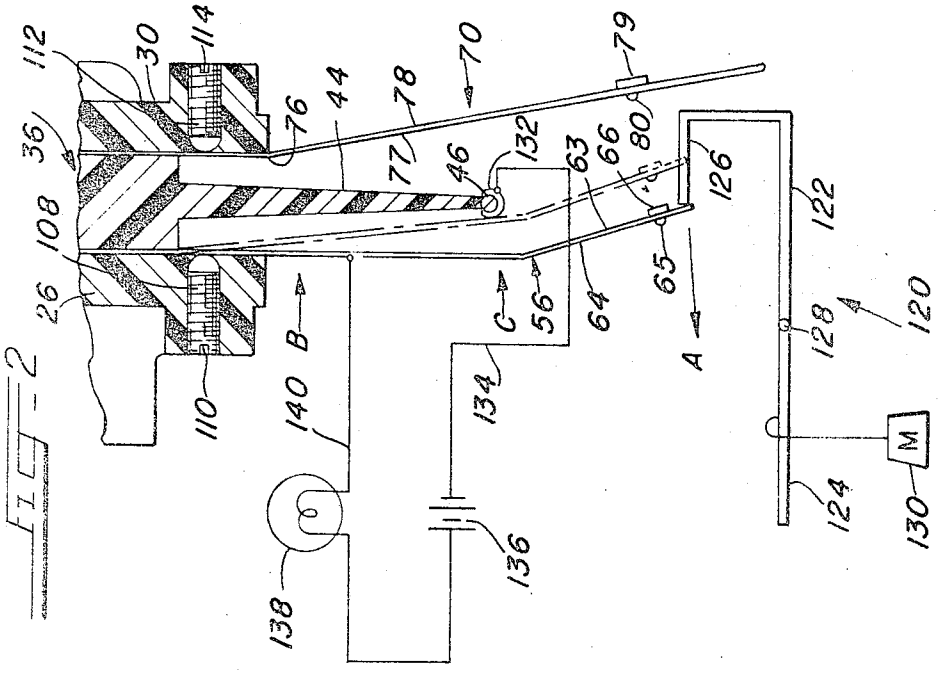


FIG - 2



INVENTORS.
LEON R. BRITTON
KURT T. JOHNSON
EDWARD K. KUSCH
BERNHARD O. WILLIAMS
BY Lowen H. Walters
ATTY

ELECTRICAL SWITCH AND METHOD OF ADJUSTING THE SAME

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention generally relates to adjustable electrical switches, and this invention is more particularly directed to precisely adjustable coin-actuated switches and an improved method of adjusting the same.

2. Description of the Prior Art

Switches capable of closing an electrical contact in response to the passage of a coin are well-known in the vending machine industry and are generally used to provide a single electrical output pulse in response to the passage of a single coin. The output of the switch is normally connected to a coin-counting device or analogous apparatus used to determine when an operator of a machine connected with the switch has deposited sufficient coins to entitle him to the requisite credit.

Coin switches of the foregoing type generally comprise first and second switchblades, with the first switchblade separated from the second switchblade by a divider element. The first switchblade is bent to bias it toward the second switchblade with a predetermined force or tension. The second switchblade is displaced a given distance from the first switchblade so that a predetermined amount of force is required in order to move the second blade into contact with the first. A pivotable lever having a first end positioned in the path of a coin and a second end positioned in contact with the second switchblade is mounted in the switch, so that movement of a coin into contact with the first end of the lever causes the second end thereof to move the second blade into contact with the first blade. An electrical circuit is thereby closed, and an output pulse is then sent to a coin-counting device connected to the switch.

In coin switches of this type, the tension of the first blade is often critical. If the tension of the first switchblade is too small, the blade tends to oscillate when it is struck by the second switchblade during the passage of a coin. Such oscillations result in a plurality of switch closures that give a false indication of the number of coins moving past the switch. On the other hand, if the tension of the first switchblade is excessively large, the second switchblade may rebound from contact with the first switchblade so quickly that the coin will not have had an opportunity to pass the end of the lever. Thus, the coin will "bounce" against the lever and create a plurality of switch closures that give a false indication of the number of coins actually moving past the switch.

Even more critical than the tension of the first switchblade is the force required to move the second switchblade into contact with the first switchblade. Thus, if the blade is adjusted so that the force required is too small, an operator could "cheat" the machine by jarring or shaking the cabinet to initiate closure of the coin switch and an unwarranted registry of credit. On the other hand, if the blade is adjusted so that the force required is too great, coin "bounce" will result as in the case when the tension of the first switchblade is too large.

The tension (or position) of a switchblade in prior art coin switches is not susceptible to precise adjustment, and such adjustment as is possible is accomplished only through difficult and time-consuming procedures. Prior art switches of the type under consideration are adjusted by manually bending the switchblades and measuring the resultant tension thereof with a set of weights or spring-biased gauges. Such adjusting methods generally have proceeded on a trial-and-error basis and separate bending and weighing operations have generally been required during each step of the procedure. Moreover, prior art adjustment procedures have achieved only limited accuracy. For example, coin switches in which a two to five gram force is presented by a switchblade have been difficult to adjust to within a range of plus or minus two grams.

SUMMARY OF THE INVENTION

In order to overcome the disadvantages of the prior art, applicants have invented a coin switch assembly in which the tension of a pair of flexible switchblades may be accurately adjusted quickly and easily. (As utilized herein, the term "tension" shall mean either the force exerted by a switchblade in its normal position or the force exerted by a switchblade after it has been flexed a given distance from its normal position, whichever may be appropriate.) Applicants' switch assembly includes a pair of flexible switchblades separated by an insulating divider element. Each switchblade carries an electrical contact adjacent the free end thereof, the electrical contacts being adapted for engagement upon actuation of the switch. The insulating divider element, which does not extend as far as the contacts, has the free end thereof formed in a cylindrical shape. When the switch is not actuated, a first switchblade bears against the cylindrical end of the divider element with a predetermined tension. The second switchblade is precisely spaced from the divider element and the first switchblade so that a predetermined force must be applied to the second switchblade to drive the contact thereon into engagement with the contact on the first switchblade. The requisite force is supplied by an appropriate driving means, such as a pivoted lever energized by a coin striking the end of the lever away from the switchblades.

The tension of the switchblades, the most important setting of the switch and the one that has posed the greatest difficulty in the past, is adjusted by a pair of adjusting members, such as setscrews, one bearing against each of the switchblades adjacent the fixed end thereof. By appropriate movement of the setscrews, the tension of each of the switchblades may be independently and accurately adjusted. Since movement of the setscrews results in a continuous variation in switchblade tension, the problems associated with the discontinuous setting of tension by bending the switchblades are eliminated. Further, the continuous variation in switchblade tension achieved by this invention permits simultaneous adjustment and measurement of the tension. Therefore, the tension of the switchblades may be accurately set with a minimum expenditure of time and effort. Accurate setting of switchblade tension greatly decreases the coin "bounce" and operator "cheating" problems inherent in prior art devices.

Although the switchblade tension in applicants' improved coin switch may be accurately set to a predetermined level by any number of procedures, a preferred method invented by applicants involves use of the continuously variable tension setting feature of applicants' switch assembly. In this method, a pivoted test lever is arranged to selectively engage either of the switchblades.

To set the tension of the first switchblade, the appropriate setscrew is positioned for minimum tension of the blade and the test lever is arranged to apply a predetermined force in a direction away from the divider element. The setscrew is then moved to increase the tension and cause the first switchblade to be driven into engagement with the center divider against the applied force. A conducting sleeve is placed over the cylindrical end of the divider element, and an electrical source and indicator are connected in series between the sleeve and the blade to accurately determine when the blade contacts the divider element. The test force is then removed to permit the switchblade to abut against the divider element with the predetermined tension.

After the tension of the first switchblade has been set, the electrical source and electrical indicator circuit is connected between the switchblades. The second switchblade is normally displaced a distance from the first switchblade that is sufficiently large to prevent engagement of the switch contacts due to the presence of any of the conventional coins on the test lever. The lest lever is arranged to apply a predetermined force against the second switchblade in the direction of the divider element. The setscrew is then moved to position the second switchblade so that the test force can drive the contact

on the second switchblade into engagement with the contact on the first switchbalde. When the contacts engage as determined from the electrical indicator, the test lever is removed and the indicator is disconnected. The second switchblade tenses to the desired spacing from the first switchblade and the switch is prepared for operation.

The advantages of applicatns' method to the trial-and-error process previously utilized are evident. In addition to faster, easier, and more accurate setting of blade tension, applicants' method permits the use of assembly line techniques to set blade tension at any level required by a user.

Accordingly, it is a primary object of the present invention to provide a switch assembly in which switchblades may be easily and quickly adjusted to produce an exact, predetermined bias force or tension.

It is a further object of this invention to provide a coin-actuated switch assembly in which coin "bounce" and the giving of multiple credits upon deposit of a single coin are greatly reduced.

It is still a further object of this invention to provide a coin-actuated switch assembly in which the possibility of "cheating" by jarring or shaking the cabinet to obtain unwarranted credits is greatly reduced.

It is yet a further object of this invention to provide a coin switch assembly in which switchblade tension may be continuously adjusted, thereby permitting simultaneous adjustment and measurement of the tension.

It is another object FIG. this invention to provide a simple and rapid method of adjusting the tension of flexible switchblades.

The foregoing and other objects, advantages, and features of the subject invention will hereinafter appear and, for purposes of illustration, but not of limitation, an exemplary embodiment of the subject invention is shown in the appended drawings.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a cross-sectional view of a switch made in accordance with the present invention.

FIG. 2 is an enlarged, schematic cross-sectional view of a portion of the switch illustrated in FIG. 1, together with schematically depicted apparatus used to adjust a first blade of the switch.

FIG. 3 is an enlarged, schematic cross-sectional view of a portion of the switch illustrated in FIG. 1, together with schematically depicted apparatus used to adjust a second blade of the switch.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings, a preferred embodiment of a coin switch made in accordance with the present invention would comprise a switch body 10, a blade assembly 54, a lever assembly 90, and an adjustment assembly 106.

As best seen in FIG. 1, switch body 10 comprises a case 12 that includes vertical members 14, 15, and 16, a horizontal member 18, a side member 20, a bottom member 21, an end member 22, and a stop member 24 against which lever assembly 90 rests. An additional vertical member (not shown) is arranged opposite member 15 and perpendicular to members 14, 16 in order to enclose the blade assembly within case 12. Additional side and end members (not shown) are disposed opposite members 18 and 20 in order to provide a passageway through which a coin 23 may pass in a vertical direction. The space beneath member 18 is open to allow the coin in fall therethrough after it has struck lever assembly 90.

Switch body 10 also comprises a left-hand spacer element 26 and a right-hand spacer element 30. A divider element 36 is located between the pairs of spacer elements and basically comprises an upper member 38 and a depending center stem 44 that has a cylindrical bead 46 positioned at the lower end thereof. A screw 48 and nut 50 are used to hold the various parts of the switch together.

Blade assembly 54 basically comprises a switchblade 56 having an upper section 58 disposed between left-hand spacer element 26 and divider element 36, and a lower section 60 disposed adjacent stem 44. Blade 56 also includes a bent portion 62, an inside surface 63 arranged adjacent divider element 36, and an outside surface 64 arranged adjacent spacer element 26. Blade 56 is fitted with an electrical contact 65 having a contact surface 66 located adjacent inside surface 63. In addition, a removable slide 68 is attached to the upper section of blade 56 and is, in turn, connected to an output conductor 69 that extends to the outside of the case.

Blade assembly 54 also comprises a switchblade 70 having an upper section 72 located between right-hand spacer element 30 and divider element 36, and a lower section 74 arranged adjacent stem 44. Blade 70 also includes a bent portion 76, an inside surface 77 arranged adjacent stem 44, and an outside surface 78 arranged adjacent spacer element 30. Blade 70 supports an electrical contact 79 having a surface 80 that is arranged opposite the contact surface of contact 65. A removable slide 82 is connected to the upper section of blade 70, and is, in turn, attached to an output conductor 84 that extends outside the case.

It should be noted that removable slides 68 and 82 are arranged in a manner allowing convenient removal of the blades. In addition, conductors 69, 84 are held in position by a roller 85 that is removably secured at one end by a hinge 86 and is likewise secured at an opposite end by a similar hinge (not shown). The roller prevents strain on the wire connections inside the case and allows the wires to be easily removed for repair or replacement.

Switchblades 56 and 70 may be fabricated from a variety of resilient materials. However, .004 inch thick phosphor bronze has proved to be an especially suitable substance.

As best shown in FIG. 1, lever assembly 90 comprises a lever 92 that includes a first section 94 having an upper surface 95 adapted to receive coin 23 as it falls past the lever. Lever 92 also comprises a second section 96 that is pivotally attached to the case by a pivot rod 98. In addition, lever 92 includes a cam member 100 that has a surface 102 adapted to engage the lower section of blade 70.

As best seen in FIG. 1, blades 56 and 70 can be conveniently subjected to adjusting forces by the novel position and structure of the elements included in adjustment assembly 106. The adjustment assembly basically comprises a setscrew 108 threaded into left-hand spacer element 26 and a setscrew 112 threaded into right-hand spacer element 30. Screws 108 and 112 are fitted with slots 110 and 114, respectively, that are adapted to receive a screwdriver. When used according to the methods described hereafter, assembly 106 provides apparatus capable of adjusting blades 56 and 70 with a degree of convenience and accuracy heretofore unattained by prior art switch apparatus.

The described coin switch, when properly adjusted, operates in the following manner. The positions of the various elements of the switch at rest are illustrated in FIG. 1. That is, the inside surface 63 of blade 56 is normally biased against bead 46 of divider element 36, and blade 70 is normally biased in a position displaced from element 36. In addition, cam member 100 of lever 92 normally rests against the outside surface of blade 70, and upper surface 95 of lever 92 is held in the position shown by stop member 24. When a coin (e.g., coin 23) is deposited in a machine connected with the switch (e.g., a vending machine), the coin is guided by member 18 so that it strikes the first section 94 of lever 92. The force of the coin striking the lever causes it to pivot about rod 98 in a counterclockwise direction (as viewed in FIG. 1), thereby causing cam member 100 to move electrical contact 79 on blade 70 into contact with electrical contact 65 on blade 56. If the forces required to move blades 56 and 70 are adjusted properly, lever 92 pushes blade 70 with sufficient force to move both blade 70 and blade 56 to their fully closed position (whereat blade 56 is displaced to the left of divider element 36). When both blades are moved in the manner described,

contact surfaces 66 and 80 slide across each other in a manner that insures positive electrical contact and self-cleaning thereof. When coin 23 passes through the slot in horizontal member 20, the resilient nature of blades 56 and 70 causes blades 56 and 70 and lever 92 to return to their respective positions shown in FIG. 1, whereat surface 95 of lever 92 rests against stop member 24.

When contact surfaces 66 and 80 meet, due to the passage of a coin, an electrical circuit is completed and an electrical current flows in output conductors 69 and 84. In a vending machine, conductors 69 and 84 are generally connected to coin-counting apparatus that is designed to count one coin for each closure of contacts 65 and 79. Accordingly, it is essential to have blades 56 and 70 adjusted so that contact 65 and 79 meet only once during the passage of each coin through the switch apparatus. As previously explained, the proper closure of contacts 65 and 79 largely depends on the existence of proper tension settings for blades 56 and 70. If blade 56 bears against divider element 36 with an insufficient force, blade 56 tends to oscillate when it is struck by blade 70. On the other hand, if the biasing force exerted by blade 56 on divider element 36 is too large, it prevents movement of lever 92 and the blades to their fully closed positions with sufficient speed to allow free passage of the coin past members 18 and 20. A similar effect is exhibited when the force required to move blade 70 into contact with blade 56 is too large. Under such conditions, the coin may "bounce" several times on section 94 of lever 92 before it moves past the lever. Either of the two foregoing conditions (i.e., oscillation of blade 56 or bouncing of lever 92), tends to create a plurality of closures of the contacts on blades 56 and 70 as a single coin passes through the switch. Multiple closure of the switch contacts, of course, creates a plurality of signals tending to indicate that more than a single coin has passed through the switch. Further, if blade 70 is adjusted so that the force required to move it into contact with blade 56 is too small, an operator can "cheat" the machine by rocking or jarring the cabinet to cause blade 70 to move into engagement with blade 56. Accordingly, it is desirable to provide means by which the biasing force exerted by blade 56 on divider element 36 may be quickly and accurately adjusted. In addition, it is also desirable to have an analogous means by which the position of blade 70 in relationship to blade 56 may be adjusted, so that a predetermined amount of force is required in order to move blade 70 into contact with blade 56.

In accordance with the present invention, the foregoing adjustments may be quickly and accurately made by the use of setscrews 108 and 112 mounted adjacent blades 56 and 70, respectively. The adjustment of the blades is carried out according to the method aspect of the invention as described hereafter.

The method aspect of the present invention is preferably carried out by the use of an adjustment apparatus 120 schematically illustrated in FIGS. 2 and 3. Adjustment apparatus 120 basically comprises a lever 122 having end sections 124 and 126. The lever is pivotally mounted on a pivot rod 128 and is adapted to receive calibrated masses 130 and 131 that are used to adjust blades 56 and 70, respectively.

Adjustment apparatus 120 also comprises a conducting sleeve 132 that can be removably mounted on bead 46 of divider element 36. As shown in FIG. 2, sleeve 132 is connected through a conductor 134 to a battery 136. The battery, in turn, is connected through an indicator bulb 138 and a conductor 140 to blade 56. Additional methods of interconnecting the foregoing apparatus will be described hereafter in connection with FIG. 3.

In order to adjust blade 56, adjustment apparatus 120 is arranged as shown in FIG. 2. That is, section 126 of lever 122 is placed in contact with the inside surface of blade 56, and section 124 is fitted with a suitable mass 130.

When the apparatus is arranged as shown in FIG. 2, section 126 of lever 122 exerts a test force against blade 56 in the direction indicated by arrow A. The test force moves blade 56 to a position slightly displaced from bead 46 (i.e., to the position shown by the solid line representation of blade 56 in FIG. 2). The magnitude of the test force can, of course, be varied by altering the weight of mass 130 and the relative dimensions of sections 124 and 126 of lever 122. The proper magnitude of the test force varies depending upon the proper amount of bias force that blade 56 should ultimately exert on divider element 36. The proper amount of bias force, in turn, depends upon the weight of the coin that the switch is adapted to receive. For example, when the switch is adapted to receive a dime (U.S. coinage), and incorporates blades of the type described, blade 56 should be biased so that a force of about 2 grams at contact 65 is required in order to move the blade to its fully closed position. Under such conditions, the weight of mass 130 and the dimensions of lever 122 should be arranged so that a test force of approximately 2 grams is applied against blade 56.

Based on the foregoing information, the proper magnitude of a test force applied to blade 56 in switches adapted to receive other coin denominations will be apparent to those skilled in the art.

To simplify the adjustment method, sleeve 132 is slipped onto bead 46 of divider element 36 and is connected through conductor 134, battery 136, indicator bulb 138, and conductor 140 to blade 56.

In order to adjust blade 56, a screwdriver is entered in slot 110 by an operator, and setscrew 108 is advanced against blade 56. AS the setscrew is advanced, it applies an adjusting force in the direction indicated by arrow B to the outside surface of blade 56, thereby forcing the blade toward sleeve 132 (which forms an extension of bead 46 as shown in FIG. 2). When the inside surface of blade 56 makes contact with sleeve 132, a circuit between battery 136 and indicator bulb 138 is completed, and the bulb is lighted, thereby indicating to the operator that screw 108 has been advanced to its proper position. Thereafter, adjusting apparatus 120 is removed, and the resilient nature of blade 56 causes it to assume the position shown in phantom in FIG. 2. Blade 56 then exerts against divider element 36 a biasing force of predetermined magnitude in the direction indicated by arrow C.

In the preferred adjusting method described herein, blade 56 should always be adjusted before blade 70. After blade 56 has been adjusted, it assumes the position shown in solid lines in FIG. 3, and thereafter may be used to advantage in the method of adjusting blade 70 described as follows.

In order to adjust blade 70, adjustment apparatus 120 is arranged as shown in FIG. 3. That is, section 126 of lever 122 is positioned against the outside surface 78 of blade 70, and section 124 is fitted with an appropriate mass 131.

When the adjustment apparatus is arranged as shown, the weight of mass 131 acting through lever 122 applies a test force to blade 70 to a position somewhat displaced from blade 56 and divider element 36 (i.e., to the position shown in solid lines in FIG. 3). The proper magnitude of the test force varies depending on the proper amount of force required in order to move the contact of blade 70 into engagement with the contact of blade 56 due to the passage of a coin through the switch. The proper amount of force required to move blade 70, in turn, depends on the weight of the coin that the switch is adapted to receive. For example, if the switch is adapted to receive a dime (U.S. coinage) and incorporates blades of the type described, the proper amount of force required at contact 79 is approximately 8 grams, and the test force applied to blade 70 should be approximately 8 grams. The weight of mass 131, and the relative dimensions of lever 122, of course, may be easily arranged to provide a test force of the proper magnitude.

Based on the foregoing information, the proper magnitude of a test force applied to blade 70 in switches adapted to receive other coin denominations will be apparent to those skilled in the art.

As also shown in fig. 3, blade 56 is connected to blade 70 through conductor 134, battery 136, indicator bulb 138, and conductor 140.

Blade 70 is adjusted by removing member 16, inserting a screwdriver in slot 114, and advancing setscrew 12. As setscrew 112 is advanced, it exerts an adjusting force in the direction indicated by arrow E so that blade 70 is moved toward blade 56. When blade 70 has been moved so that contact 79 touches contact 65, an electrical circuit between battery 136 and indicator bulb 138 is completed, and the bulb lights, thus indicating to the operator that setscrew 112 and blade 70 have been advanced to their proper positions. Thereafter, adjustment apparatus 120 is removed, and the resilient nature of blade 70 causes it to move to its normal rest position (i.e., the position shown in phantom in FIG. 3). Blade 70 is then positioned so that a predetermined amount of force is required in order to move the contact of blade 70 into engagement with the contact of blade 56 as a coin passes through the switch.

Those skilled in the art will appreciate that the apparatus and methods taught herein are suitable for use in connection with mass production, assembly line techniques of manufacturing switches. Whereas analogous prior art coin switches generally required adjustment by a laborious blade-bending and tension-measuring process, the switches made in accordance with the present invention may be adjusted by simply slipping a lever into position and advancing a setscrew until an indicator identifies the exact position at which a switch blade is properly adjusted.

Those skilled in the art will also recognize the existence of a variety of alternative elements that can be used in place of the coin switch and adjustment apparatus shown herein. For example, the indicator bulb described herein may be replaced by an electrical meter or any other suitable apparatus capable of indicating the existence of an electrical current. In addition, masses 130, 131 and lever 122 may be combined into a single fixture.

It should also be understood that the apparatus and methods described herein are merely exemplary of the preferred practices of the present invention and that additional changes, modification, and variations may be made in the arrangements, methods of operation, and details of construction disclosed herein, without departing from the spirit and scope of the present invention.

We claim:

1. A switch assembly comprising:
- a first switchblade having a contact adapted thereon;
- a second switchblade having thereon a contact adapted to engage said contact on said first switchblade;
- driving means engaging said second switchblade upon actuation thereof for causing relative motion between said switchblades to produce engagement of said contacts;
- a divider element located between said switchblades; and
- adjustment means engaging said switchblades and adapted to independently vary the tension of said switchblades in a continuous fashion to determine the force that must be supplied to said second switchblade by said driving means to cause engagement of said contacts and to determine the opposing force provided by said first switchblade upon engagement of said contacts.

2. A switch assembly as claimed in claim 1, wherein said adjustment means comprises:
- a first adjusting member engaging said first switchblade and adapted to tense said first switchblade so that it bears against the free end of said divider element with a predetermined amount of force; and
- a second adjusting member engaging said second switchblade and adapted to position said second switchblade a given distance from said first switchblade so that a predetermined amount of force must be supplied by said driving means in order to move said contact on said second switchblade into engagement with said contact on said first switchblade.

3. A switch assembly as claimed in claim 2 wherein said driving means comprises a pivoted lever adapted upon actuation to engage the free end of said second switchblade.

4. A switch assembly as claimed in claim 3 wherein said first and second adjusting members each comprises a setscrew abutting a respective one of said first and second switchblades adjacent a fixed end thereof.

5. A switch assembly as claimed in claim 4 wherein:
- said second switch blade has a contact-carrying portion bent at an angle to a fixed end portion; and
- said second adjusting setscrew abuts said fixed end portion to adjust the position of said contact-carrying portion without flexing said contact-carrying portion.

6. A switch assembly as claimed in claim 1 wherein said divider element extends parallel to said switchblades and has a free end thereof formed in a cylindrical shape against which said first switchblade normally bears without engaging the rest of said divider element.

7. A switch assembly for use in a coin-actuated mechanism comprising:
- a first flexible conductive switchblade rigidly secured at one end and having a contact thereon adjacent the free end thereof;
- a second flexible conductive switchblade rigidly secured at one end and having a contact thereon adjacent the free end thereof, said contact adapted to engage said contact on said first switchblade;
- an insulating divider element located between said switchblades and spaced apart from both of said switchblades throughout the major portion of its length, said divider element extending parallel to said switchblades and terminating in a cylindrically shaped free end prior to reaching said contacts;
- a first adjusting screw abutting said first switchblade adjacent the secured end thereof in order to position said first switchblade so that it bears against said cylindrically shaped free end of said divider element with a predetermined force;
- a second adjusting screw abutting said second switchblade adjacent the secured end thereof in order to position said contact on said second switchblade a given distance from said contact on said first switchblade; and
- a pivoted lever with one end thereof engaging the free end of said second switchblade beyond said contact thereon, the other end of said pivoted lever adapted to receive a coin having a weight such that said pivoted lever will exert a force against said second switchblade sufficient to cause engagement of said contacts.

8. A method of adjusting a switch having a divider element positioned between first and second switchblades comprising:
- applying to said first switchblade a first test force of predetermined magnitude to urge said first switchblade away from said divider element;
- applying to said first switchblade a first adjustable force to cause said first switchblade to exert a tension force and drive said first switchblade against said first test force blade until it contacts a free end of said divider element;
- removing said first test force from said first switchblade;
- applying to said second switchblade a second test force of predetermined magnitude to urge said second switchblade toward said first switchblade;
- applying to said second switchblade a second adjustable force to position said second switchblade so that said second test force is able to drive said second switchblade against said first switchblade; and
- removing said second test force from said second switchblade.

9. A method as claimed in claim 8 wherein said first and second test forces are provided by respective weights mounted on a pivoted lever.

10. A method as claimed in claim 8 wherein said first and second adjustable forces are provided by setscrews mounted adjacent and adapted to adjust the tension of said first and second switchblades, respectively.

11. A method as claimed in claim 8 and further comprising:
- attaching a conductor to said divider element; and

connecting an electrical source and an electrical indicator between said conductor and said first switchblade prior to applying said first test force to said first switchblade, whereby said indicator is energized when said second force moves said first switchblade into contact with said conductor.

12. A method as claimed in claim 8 and further comprising electrically connecting an electrical source and an electrical indicator between said first switchblade and said second switchblade prior to applying said second test force to said second switchblade, whereby said electrical indicator is energized when said fourth force is of sufficient magnitude to move said second switchblade into contact with said first switchblade.