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Pierzchala

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[54] **HIGH VOLTAGE ARC EXTINGUISHING CIRCUIT INTERRUPTER**

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[52] **U.S. Cl.** ..... **200/146 R,** 200/144 R

[51] **Int. Cl.** **H01h 33/12**

[58] **Field of Search** ..... 200/146 R, 144 R, 200/149 R

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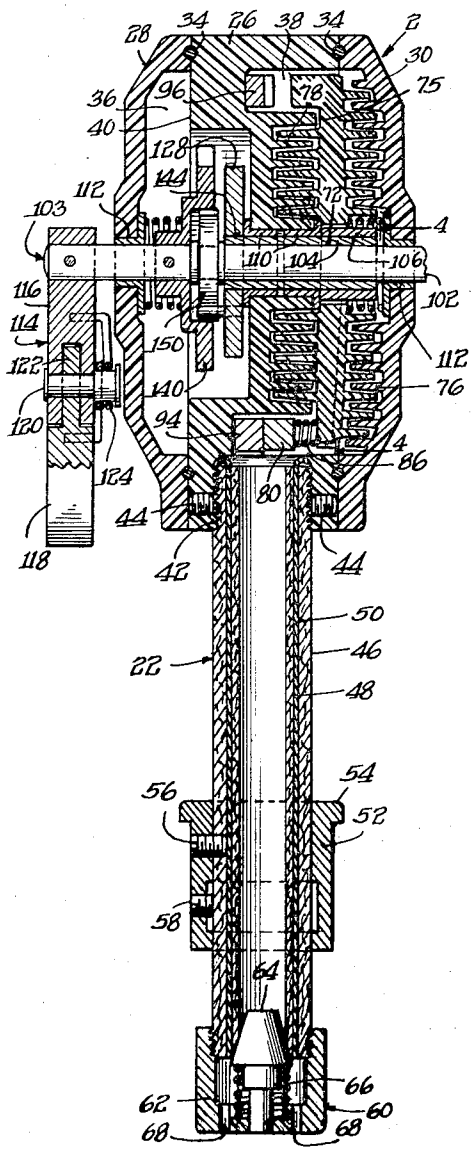
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[57] **ABSTRACT**

A load interrupter unit of the arc expulsion type has a dielectric body with a fixed contact on the body and a dielectric rotor rotatable in the body and carrying a movable contact. A snap-acting or timing mechanism is used to rotate the rotor in one direction for effecting a quick-break of the contacts, and the same mechanism is used to rotate the rotor in the same direction to effect a quick-make of the contacts. The circular contact path renders the unit relatively compact. The gases produced by the arc pass between the separating contacts and quench the arc, and the gases pass to the outside of the unit through an expulsion vent. A dielectric wall of the body isolates and protects parts of the mechanism from the chamber in which the arc is formed.

13 Claims, 16 Drawing Figures



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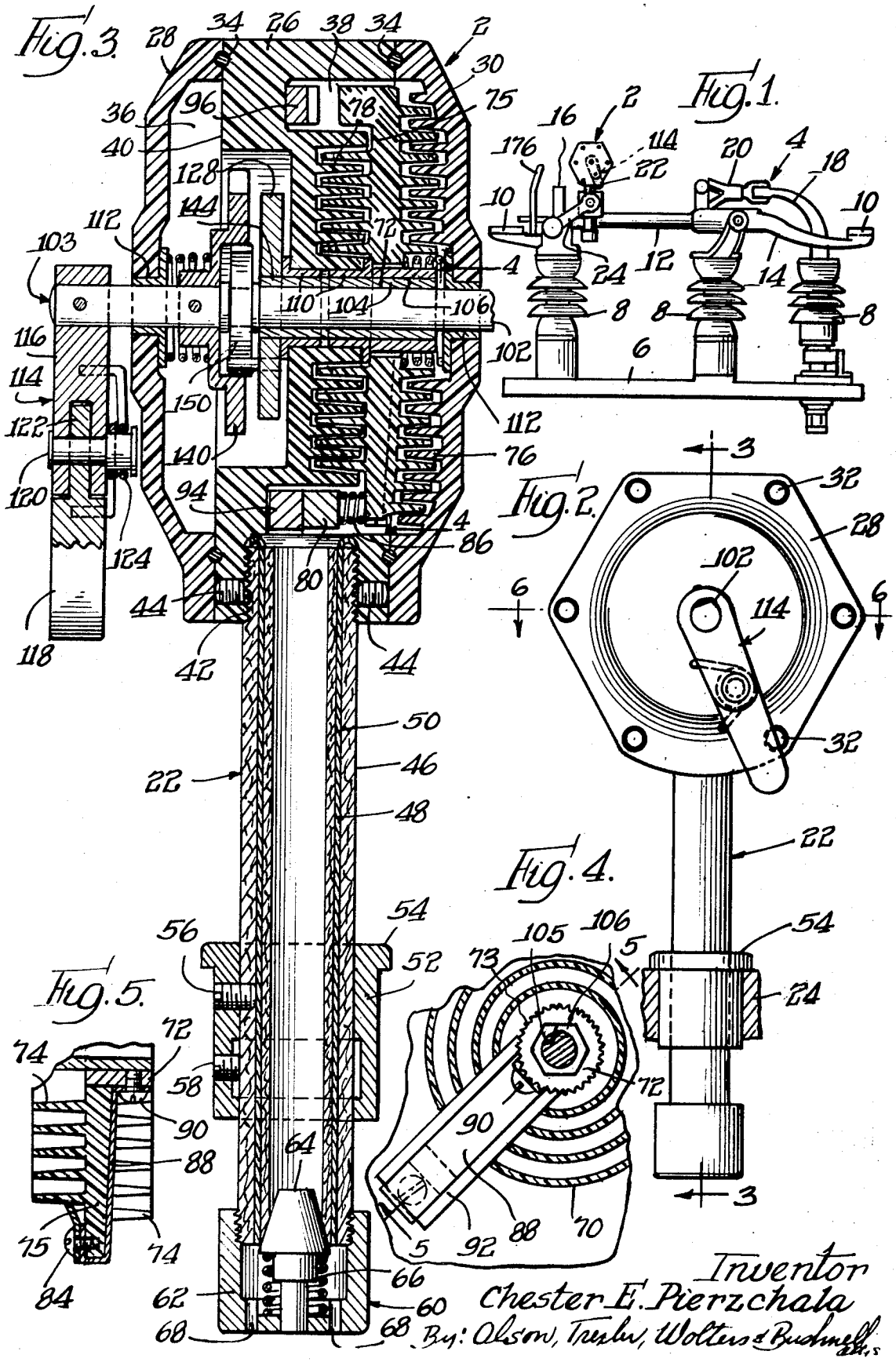


Fig. 6.

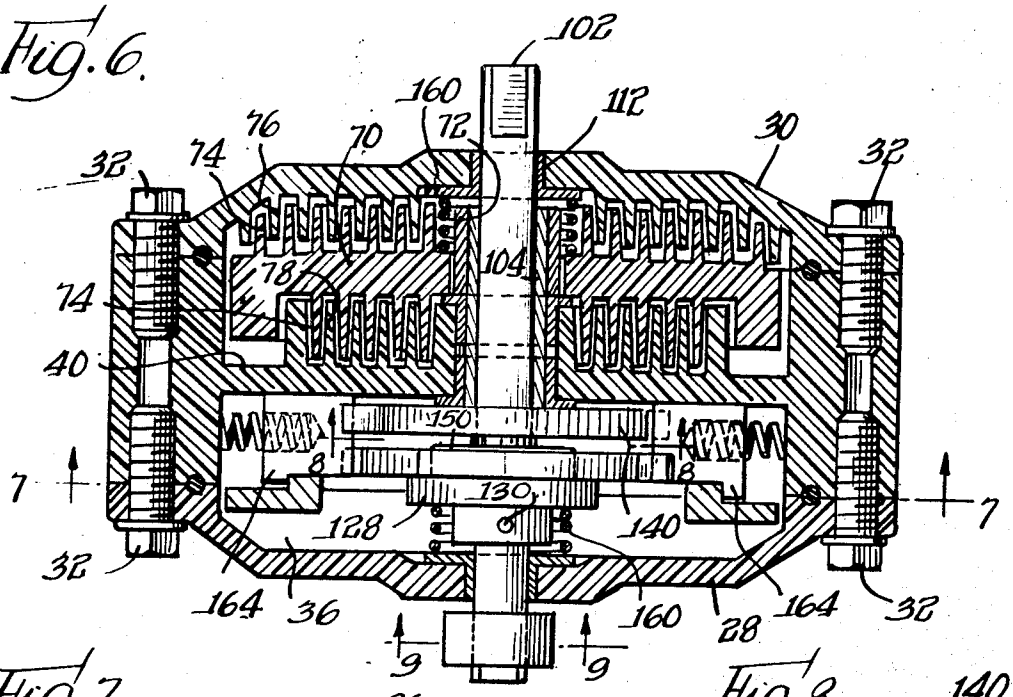


Fig. 7.

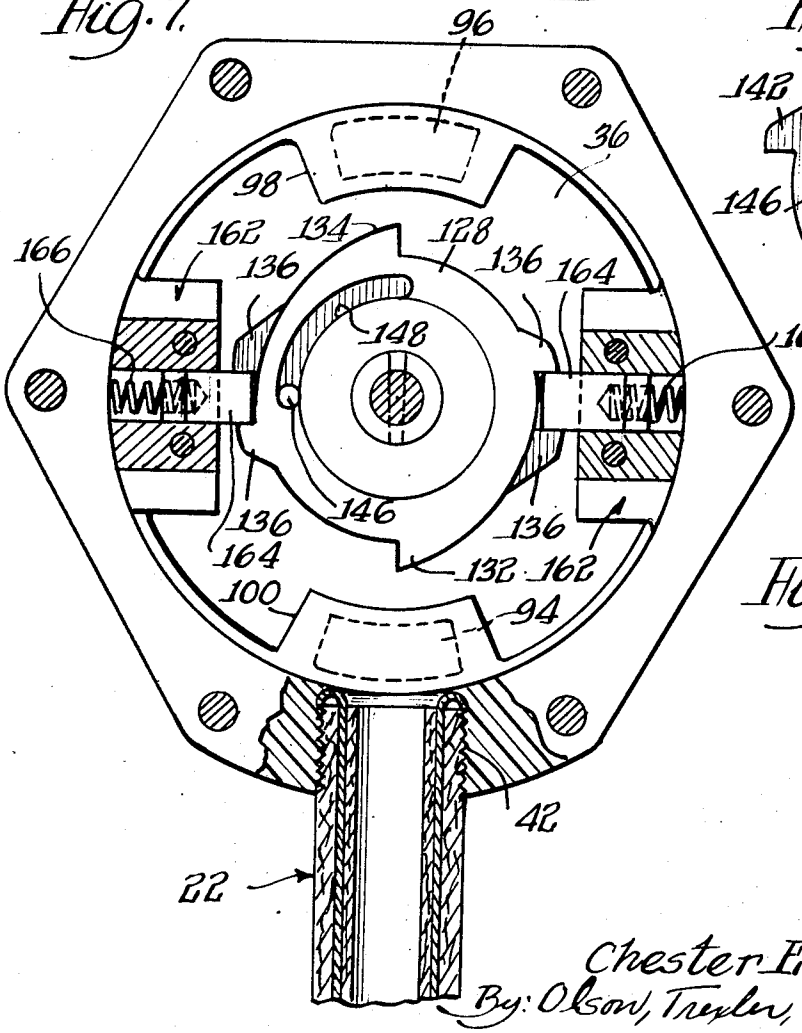


Fig. 8.

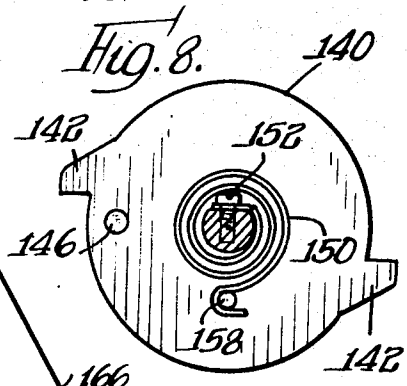
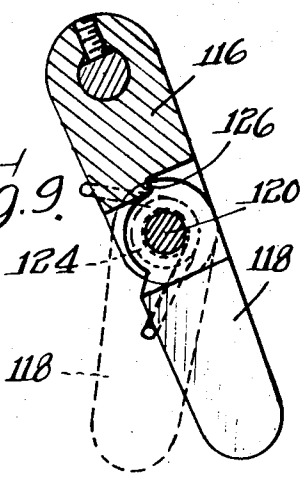


Fig. 9.



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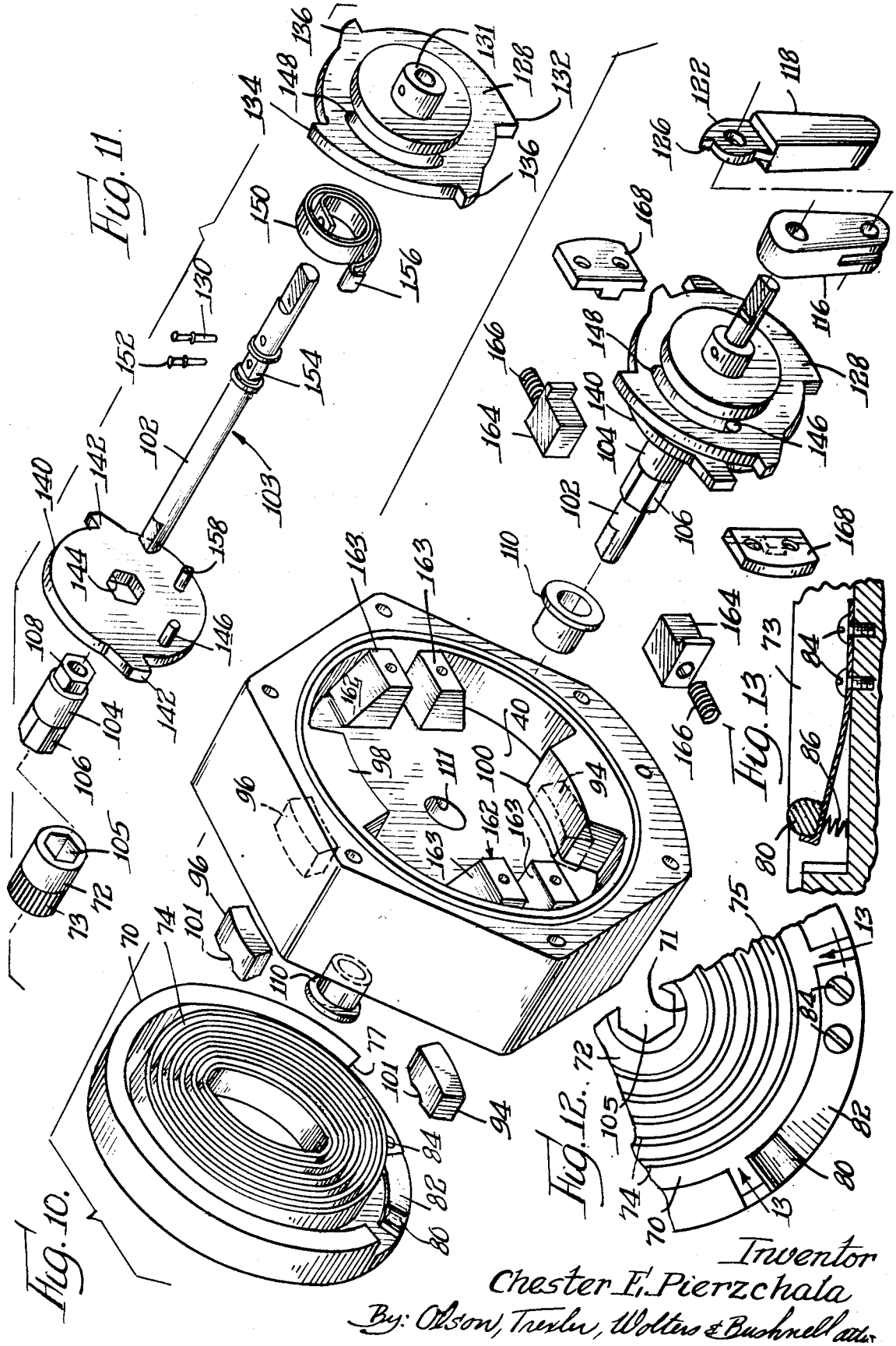


Fig. 14.

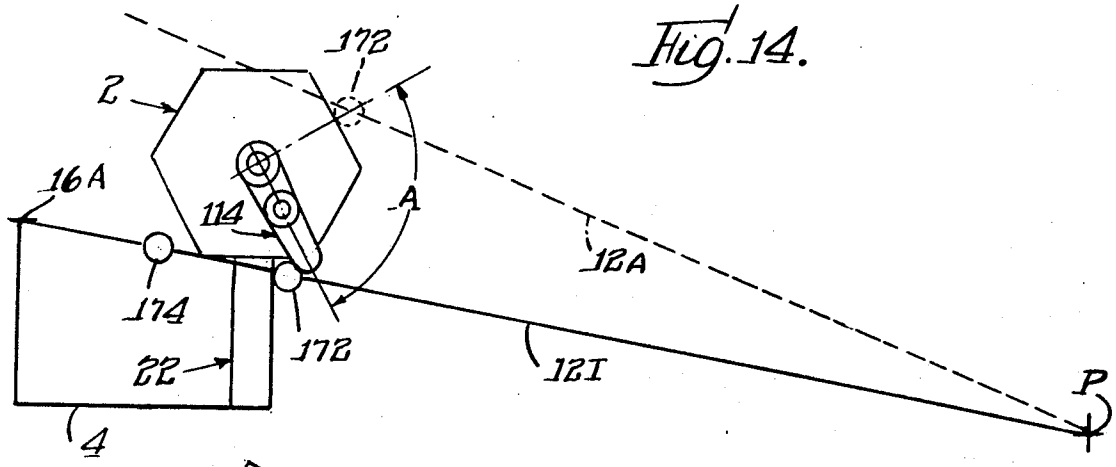


Fig. 15.

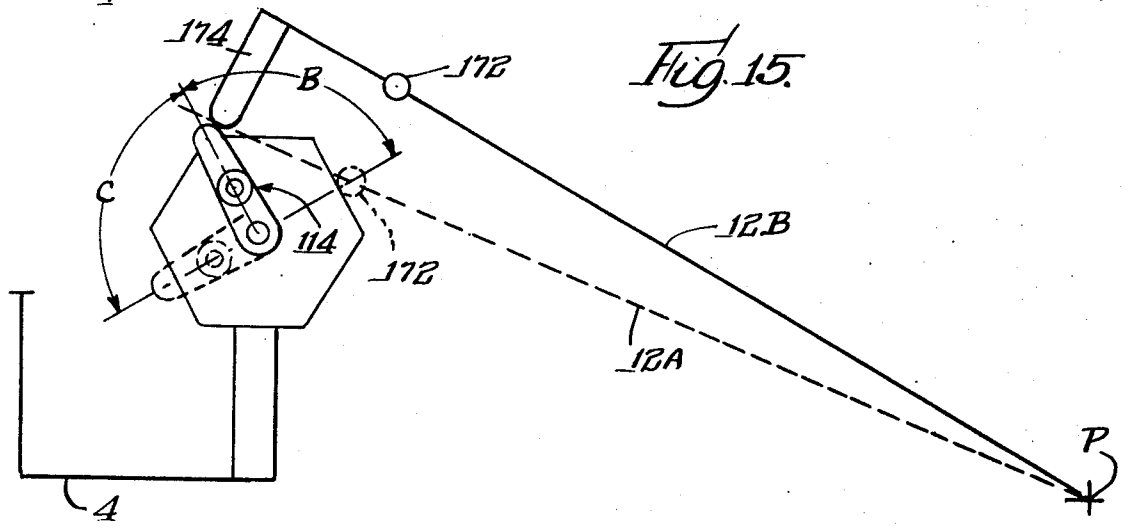
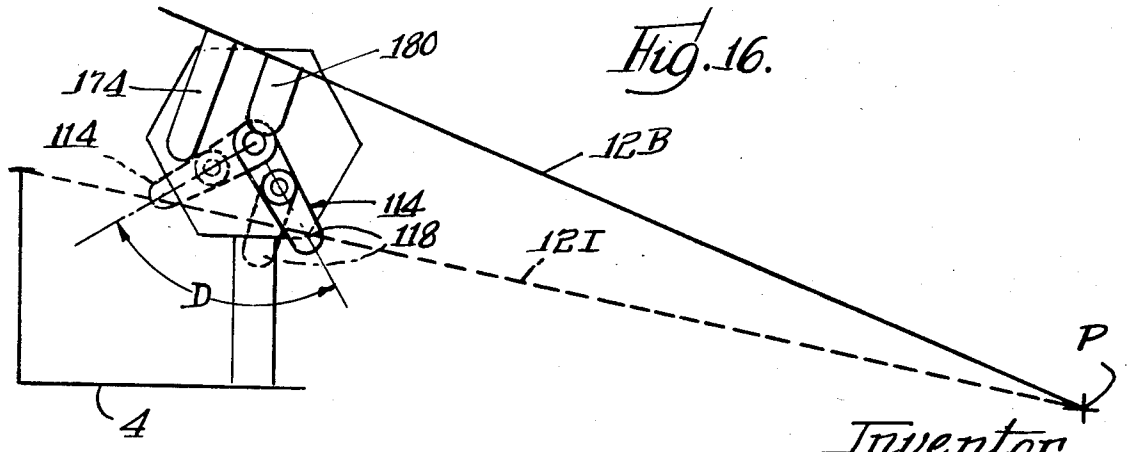


Fig. 16.



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HIGH VOLTAGE ARC EXTINGUISHING CIRCUIT INTERRUPTER

BACKGROUND OF THE INVENTION

This invention relates to improvements in devices for interrupting high voltage-high current circuits under load.

The circuit interrupters of the type with which the present invention is concerned provide for arc-expulsion when the unit is operated. Generally such interrupters have one or more movable contacts and one or more fixed contacts. Upon operation to make or break the circuit, the movable contact is shifted linearly. However, as current and/or voltage is increased, the length of the operating member that carries the movable contact or contacts must be increased in order that adequate contact separation may be achieved.

Such interrupters are used in various types of circuits. In particular, these interrupters are often used in conjunction with high voltage disconnect switches in order to protect the switch from damage when the latter is opened with the line loaded. Usually these interrupters are intended for "hot stick" mounting for actuation by the disconnect switch. Thus, where an interrupter with a linearly movable contact is used, the length of the unit may become excessive resulting in increase in cost and difficulty in handling incident to "hot stick" mounting.

OBJECTS AND SUMMARY OF THE INVENTION

An object of the present invention is to provide a load break circuit interrupter of the quick make-quick break arc-expulsion type that is of relatively compact size and yet is capable of interrupting relatively high load currents, for example up to about 600 amperes.

A further object of the present invention is to provide an interrupter of the type stated which, because of its compactness, is capable of installation in relatively confined spaces, such as in cubicles for underground installations.

A further object of the present invention is to provide an interrupter of the type stated which may be used with "hot stick" operated disconnect switches, group operated switches, in switch gear cubicles, for disconnecting transformers, for switching capacitors, and the like.

A further object of this invention is to provide a circuit interrupter of the type stated that utilizes a circular path for contact movement rather than a linear path, which results in a relatively compact unit.

In accordance with the foregoing objects the interrupter comprises a plastic, dielectric body with a fixed contact and an index member, each being mounted on the body. A dielectric rotor has a contact movable therewith, the rotor being rotatable in the body and having a first position in which the rotor contact engages the fixed contact and a second position that is rotatably displaced from the first position and in which the rotor contact engages the index member. The index member acts as a heat sink to cool the movable contact and prevent damage to the plastic body. The interrupter unit also includes a timing mechanism for effecting snap-action rotatable movement of the rotor in one direction from the first position to the second position to separate the rotor contact from the fixed contact and thereby interrupt the current and form an arc which is discharged between the separating contacts to an expulsion vent. The mechanism is also operable for snap-action rotation of the rotor in the same direction for moving the rotor from its aforesaid second position to its first position to reengage the rotor contact with the fixed contact. The essential parts of the snap-action mechanism are located in a compartment that is separated from the contact chamber in order to prevent such mechanism from being injured by the gases created by the arc. As a result, the life of the unit is substantially increased.

BRIEF DESCRIPTION OF THE FIGURES

In the drawing:

FIG. 1 is an elevational view of a disconnect switch having mounted for use therewith an interrupter constructed in accordance with and embodying the present invention;

FIG. 2 is a front elevational view of the interrupter;

FIG. 3 is a sectional view, on an enlarged scale, taken along line 3—3 of FIG. 2;

FIG. 4 is a fragmentary sectional view taken approximately along line 4—4 of FIG. 3;

FIG. 5 is a fragmentary sectional view taken along line 5—5 of FIG. 4;

FIG. 6 is a sectional view, on an enlarged scale, taken along line 6—6 of FIG. 2;

FIGS. 7 and 8 are fragmentary sectional views taken along lines 7—7 and 8—8 respectively of FIG. 6;

FIG. 9 is a fragmentary sectional view taken along line 9—9 of FIG. 6 and showing an actuating arm assembly that may be used with the interrupter;

FIG. 10 is an exploded perspective view of a portion of the interrupter unit, the housing covers being omitted for the sake of clarity;

FIG. 11 is an exploded perspective view of the timing or snap-action mechanism that forms part of the present invention;

FIG. 12 is a fragmentary elevational view as seen from the inside of the rotor;

FIG. 13 is a fragmentary sectional view taken approximately along line 13—13 of FIG. 12; and

FIGS. 14, 15 and 16 are diagrammatic views showing the operation of the interrupter unit when used in conjunction with the high voltage disconnect switch.

DETAILED DESCRIPTION

Referring now in more detail to the drawing, FIG. 1 shows an interrupter 2 that is mounted for use in conjunction with a high-voltage disconnect switch 4. The disconnect switch 4 is shown by way of example only and not by way of limitation as it merely constitutes one environment in which the interrupter 2 may be used. In a typical arrangement the disconnect switch 4 includes a base 6 for supporting insulators 8, 8, 8. The switch 4 includes contact pads 10, 10 for connection to the power line. In addition the switch 4 conventionally includes an arm 12 and bracket 14 that provide a current flow path between the contact pads 10, 10 when the switch arm is closed, in which position the arm engages conventional fixed or jaw contacts 16. The switch arm 12 is operated by a mechanism 18 that includes a universal joint 20 and by which the arm 12 is first rotated to break contact with the contacts 16 and is then elevated upwardly, all in a manner known in the art. The interrupter 2 includes an expulsion tube assembly 22 that is supported in a tubular mounting bracket 24 associated with the insulator 8 that is in current-carrying

connection with the contacts **16.** The manner in which the interrupter unit **2** is operated by the switch arm **12** will be hereinafter described.

The interrupter unit **2** comprises a housing or body **26** that is preferably formed of a self-extinguishing acrylic plastic. Included in the body **26** are covers **28, 30** of the same plastic material as that of the remainder of the body. Both the main or center part of the body **26** and its associated covers **28, 30** are of generally hexagonal shape, and the covers are held to the main or central part of the body by a series of screws **32.** Furthermore, the covers **28, 30** are facewise sealed to the adjacent part of the body by plastic O-rings **34, 34.** As will be seen, for example, in FIGS. **3, 6** and **10,** the covers **28, 30** and adjacent or center part of the body are grooved for receiving the O-rings **34, 34.** It will also be seen that the assembled body provides adjacent chambers **36, 38** that are separated or isolated by a dielectric body wall **40.**

The center part of the body **26** has a downward opening **42** for threadedly receiving the expulsion tube assembly **22** whereby the interior of the expulsion tube assembly **22** is in communication with the chamber **38** which, as will be hereinafter seen, is the arcing chamber of the interrupter unit. To assist in retaining the expulsion tube assembly **22** in place set screws **44** may be threaded into the center part of the body **26** prior to mounting the covers **28, 30** in place.

Included in the expulsion tube assembly **22** is an outer fiberglass tube **46,** a central thin wall metallic tube **48,** for instance of copper or aluminum, and an inner fiber tube **50.** Spaced downwardly from the body **26** is a metallic mounting collar **52** that has an upper enlarged flange **54** for seating against a suitable mounting sleeve upon which the interrupter **2** is mounted. In the example herein shown, the mounting sleeve constitutes part of the bracket **24** on the interrupter switch shown in FIG. **1.** Electrical contact between the conductive mounting collar **52** and the metallic tube **48** is made through a set screw **56** that passes through a radial hole in the outer fiberglass tube **46** as best seen in FIG. **3.** Additionally, a set screw **58** may be threaded into the collar **52** for engagement with the outer surface of the tube **46.**

At its lower end, the tube assembly **22** has a check valve structure **60** that constitutes an expulsion vent for gases within the interior of the tube assembly **22.** The check valve structure **60** comprises a cap **62** that is threaded onto the lower end of the outer tube **46.** Slidably supported on the end wall of the cap **62** is a check valve **64** that is normally biased by valve spring **66** into closed position across the inner fiber tube **50.** This keeps moisture and other contaminants from the interior of the unit. However, gas under sufficient pressure, as would be caused by an arc within the chambers **38,** will briefly unseat the valve **64** and vent the gases to atmosphere through ports **68** in the cap **62.**

Disposed within the chamber **38** is a rotor **70** which is also formed of a plastic similar to that of the body. Formed centrally of the rotor **70** is a bore **71** (See FIG. **12**) for receiving a metallic rotor bushing **72,** and the bushing **72** has peripheral serrations **73** to provide a rigid gripping engagement with the rotor **70.** It will be noted that the rotor **70** is integrally formed with a series of concentric, axially extending ribs **74.** These ribs **74** extend from the central or web portion **75** of the rotor and axially overlap concentric annular ribs **76, 78,** the ribs **76** being on the cover **32** and the ribs **78** being on the main or central portion of the body. The overlapping ribs do not engage but have air gaps therebetween and are thus effective to increase the dielectric path across the cover **30** and across the wall **40.**

A movable or rotor contact **80** is carried at the periphery of the rotor **70.** The rotor contact **80** may be of any suitable material, for instance sintered tungsten silver alloy. As best seen in FIG. **10,** the peripheral part of the rotor **70** is cut away over a portion **77** of its arcuate length for receiving an arcuate conductive spring segment **82** to which the rotor contact **80** is suitably secured as by a screw or the like. The spring segment **82** is, in turn, secured to the rotor **70** by screws **84,** as best seen in FIGS. **12** and **13.** Furthermore, a small coil spring **86** is employed to assist in axially biasing the end of the spring segment **82** and hence the rotor contact **80.** As best seen in FIGS. **4** and **5,** a conductive strip **88** is secured as by screw **90** to the rotor bushing **72.** The strip **88** extends radially outwardly from the rotor bushing **72** and lies in a radial slot **92** in the rotor **70.** At its radially outer periphery, the strip **88** is turned over the periphery of the rotor and is clamped by the screws **84, 84.** Thus, the foregoing arrangement provides an electrically conductive path running from the rotor bushing **72** to the movable or rotor contact **80.**

Also provided within the chamber **38** is a stationary contact **94** and an index member **96** that is 180° remote from the stationary contact **94.** For purposes of supporting the contact **94** and index member **96** the body wall **40** includes upper and lower enlarged portions **98, 100,** as best shown in FIGS. **7** and **10.** These enlarged portions have recesses opening to the chamber **38** and are sized for respectively receiving the contact **94** and index member **96,** each of which may be retained in place by frictional engagement with the portions **98, 100** or by other suitable means. Thus, the enlarged portions **98, 100** not only provide seats for the contacts **94** and index member **96** but also provide thickened regions for electrical and thermal insulation. It will be noted, also, that the contact **94** and member **96** have arcuate surfaces (See FIG. **10**) that are contoured for engagement with the arcuate edge (See FIG. **13**) of the rotor contact **80.** Like the rotor contact **80,** the stationary contact **94** and the index member **96** may be formed of a sintered tungsten silver alloy. The stationary contact **94** is in current carrying connection with the metallic tube **48** of the expulsion tube assembly **22.** Thus, the tube **48** provides a current flow path from the stationary contact **94** to the mounting collar **52** and hence to the stationary contact **16** of the disconnect switch.

Rotation of the rotor **70** to cause a quick make or quick break of the movable contact **80** between the stationary contact **94** is effected by a timing or snap-acting mechanism that is shown in exploded perspective in FIG. **11** and which will be presently more fully described. For the present, however, suffice it to say that the mechanism includes shafting **103** in driving connection with the rotor **70,** such shafting including a shaft **102** and a ferrule or sleeve **104,** both of which are current conductive. The shaft **102** is rotatable relative to the sleeve **104,** and the sleeve **104** has hexagonal shaped end portions **106, 108** (FIG. **11**), the end **108** being for purposes presently more fully described. As best seen in FIG. **4,** the hexagonal end **106** fits into a companion shaped hexagonal bore **105** in the rotor

bushing 72 so that rotation of the sleeve 104 causes the rotor 70 to rotate. The sleeve 104 is journalled in body bushing 110, 110 which are press fitted into a hole 111 in the main or center portion of the body and thus provide journal surfaces across the body wall 40 centrally thereof.

The shaft 102 projects axially outwardly beyond the covers 28, 30 and is journalled in cover bushings 112, 112 which are press fitted into the respective covers 28, 30. The portions of the shaft 102 that extend beyond the interrupter body are utilized for securing an electrically conductive operating crank or other actuating member that operates in conjunction with the disconnect switch or other piece of equipment with which the interrupter is used. The actuator may be secured to either extended part of the shaft 102. Thus, the nature of the actuator will vary depending upon the mechanical linkage with the disconnect switch or other device with which the interrupter is used. In any event, the arrangement is such that when the contacts 80, 94 are closed, there is a current flow path through the housing or body 26 that runs from the crank 114 and shaft 102, through sleeve 104, bushing 72, strip 88, segment 82, contacts 80, 94, and tube 48 to the mounting collar 52. This current flow path is interrupted when the rotor 70 is rotated 180° to separate the rotor contact 80 from the fixed contact 94.

In the example of the invention herein illustrated, the crank or actuating arm 114 is articulated and includes a first portion 116 that is suitably secured to the shaft 102, and a second portion 118 that is rockably secured to the portion 116 by a pin 120. As may be seen from FIGS. 3 and 10, the portion 118 has a tongue 122 that lies between a lower bifurcated portion of the part 116. A torsion spring 124 that is wrapped around the pin 120 is connected to both portions 116, 118 and urges the part 118 counterclockwise (FIG. 9) about the pin 120. However, the portions 116, 118 are normally maintained aligned, as shown in full lines in FIGS. 3 and 9 by a stop 126 (FIGS. 9 and 10) on the portion 118 that engages the portion 116 radially inwardly of its bifurcation. However, the portion 118 can swing to the broken line position shown in FIG. 9 whereby the actuating arm 114 may have a limited degree of articulation.

Referring again to the timing or snap-acting mechanism shown in exploded perspective, FIG. 11, such mechanism further includes a timing cam 128 that is secured to the shaft 102 by a pin 130 that passes through a radial hole in the timing cam's collar 131. The timing cam 128 has opposed cam lobes 132, 134 that the 180° apart. In addition, the timing cam has opposed radial projections 136, 136 that serve to prevent reverse rotation of the cam 128. The mechanism further includes a retainer 140 that has 180° opposed retainer lugs 142, 142, and as best seen in FIG. 11 the central bore 144 of the retainer 140 is hexagonal for receiving the hexagonal end 108 of the sleeve 104. Mounted on the retainer 140 is a pin 146 that slidably fits in a 90° arcuate slot 148 in the cam 128. The slot 148 runs generally between a radial projection 136 and the peak of a cam lobe. A torsion spring 150 surrounds the shaft 102 and is telescoped within the cam collar 131. A pin 152 stakes one end of the torsion spring 150 to a flattened seat 154 on the shaft 102 while the other end 156 of the torsion spring 150 is outwardly curled for disposition over another pin 158 on the retainer 140. In the assembled mechanism, the torsion spring 150 is preloaded whereby the stop pin 146 abuts against one end of the arcuate slot 148, as seen in FIGS. 7 and 10.

As best seen in FIGS. 3, 6 and 7, the cam 128, the retainer 140 and torsion spring 150 are within the chamber 36 and therefore isolated from the chamber 38 that contains the contacts 80, 94. Also, it will be noted that coil springs 160, 160 that are confined by the covers 28, 30 bear respectively against the cam 128 and rotor 70 to take up axial free play of the assembly within the housing.

Within the chamber 38 is an arrangement for cooperating with the retainer lugs 142 to hold the rotor in either the contact-engaging position or the contact-disengaged position notwithstanding the continuous force applied by the torsion spring 150. For this purpose the main part of the housing or body includes diametrically opposed guide structures 162, 162 for slidably receiving diametrically opposed radially movable detents 164, 164. By reference to FIG. 10, it is seen that each structure 162 is integral with the body and includes two parallel guide blocks 163, 163. The detents 164, 164 are biased radially inwardly by springs 166, 166, and the detents 164, 164 are retained between the guide blocks by small retainer plates 168, 168 which are suitably secured as by screws into the guides 162, 162. These detents 164, 164 serve as stops that engage the lugs 142, 142 and restrain the rotor 70 against rotation unless the detents 164, 164 are urged radially outwardly by the cam lobes 132, 134.

In operation, the timing or snap-action mechanism is in the position best shown in FIGS. 3, 6, 7 and 8. In such position the detents 164, 164 engage the retainer lugs 142, 142 on the retainer 140 and restrain rotation of the retainer and the rotor 70. The rotor contact 80 is in engagement with the stationary contact 94. Except possibly for a small amount of play, the interrupter shaft 102 can be rotated only counterclockwise (FIG. 7) because clockwise movement is prevented by the projections 136 on the cam 128. Upon rotation of the shaft 102 counterclockwise by the operating crank arm 114 or other suitable member, the detents 164, 164 are urged radially outwardly by the camming edges of the cam 128 until the peaks of the cam lobes 132, 134 are reached. At this time the detents 164, 164 are pushed apart an amount sufficient to allow the projections 136, 136 to clear the detents 164, 164 causing the retainer 140 and the rotor 70, which is in driving connection with the retainer 140, to rotate, under force of the spring 150, rapidly 180° so that the rotor contact 80 now engages the index member 96. Meanwhile, as the peaks of the cam lobes 132, 134 are passed (such peaks being 180° apart) the detents 164, 164 snap radially inwardly to stop the projections 136, 136 after the half revolution of the retainer 140. Assuming that a large current was flowing from the shaft 102 through to the mounting collar 52, a separation of the contacts 80, 94 will result in an arc. The gases from the arc will pass between the separating contacts and flow outwardly through the expulsion tube assembly 22 and the check valve 60. The hot rotor contact 80 is cooled by engagement with the index member 96 which serves as a heat sink and thus protects the plastic of the housing from damage. To reclose the contacts 80, 94 the shaft 102 and cam 128 are again moved counterclockwise as be-

fore to spread apart the detents 164, 164, allowing the retainer 140 and rotor to rotate an additional 180°.

FIGS. 14–16 taken in conjunction with FIG. 1 show the operation of the interrupter with the disconnect switch 4. In general, the interrupter may be "hot stick" mounted in the bracket 24. Line current is first transferred to the interrupter so that current flows from crank 114 to collar 52 through the interrupter before the switch arm contacts separate from the switch jaw contacts 16. Thereafter, the switch arm separates from the contacts 16 following which the interrupter is operated to separate the rotor contact 80 from the fixed contact 90. The reverse operation takes place in releasing the switch.

In FIGS. 14–16, 16A indicates the approximate level of the fixed or jaw contacts 16 while 172 and 174 designate lugs on the switch arm 12 for engagement with the actuating crank 114. When the switch arm 12 moves upwardly from approximately horizontal to the full line position about the pivot P, the switch arm has reached the point of breaking contact with the jaw contacts 16 but having prior thereto made contact through lug 172 or otherwise with the crank 114. This transfers the line current through the interrupter. Some disconnect switches have arcing horns 176 (FIG. 1) as parts of the jaw contacts 16. In such case the line current may be transferred from the main contact portions of the jaw contacts 16 to the arcing horns 176 and subsequently from the arcing horns to the interrupter unit. In the present example 16A represents the upper tips of the arcing horns. Further movement of the arm 12 to its broken line position 12I will cause the crank 114 to rotate counterclockwise through an angle A. Lower portion 118 of the crank 114 will not rotate about pin 120. During such movement the rotating cam 128 is spreading apart the detents 164, 164. Upon completing its movement through angle A, which is about 90°, the retainer 140 is released and the timing mechanism snap-operates, as previously described, whereby the rotor 70 rotates to separate the contacts 80, 94. The power line is now interrupted. During the snap of the rotor 70, the crank 114 and shaft 102 rotate through an angle B (FIG. 15) of about 90°. The switch arm may then be elevated to its highest position.

In reclosing the disconnect switch, the switch arm is moved from position 12B to position 12I(FIG. 16). When the switch arm is lowered and reaches position 12B in FIG. 15 the closing lug 174 engages the crank 114. Further lowering of the switch arm moves the crank 114 and shaft 102 through angle C of about 90° causing the cam 128 again to spread apart the detents 164 for releasing the retainer 140. At the completion of rotation of crank 114 through angle C, the timing mechanism again snap operates, as described, to rotate the rotor 70 through angle D (also about 90°) and reclose the contacts 80, 94. A wiping member 180 (FIG. 16) on the switch arm 12 establishes a current carrying connection between the switch arm 12 and a part of crank 114 before the crank 114 has finished traversing angle C. This member 180 is omitted from FIGS. 14 and 15 for simplicity of illustration. In any event further downward movement of the switch arm 12 causes it to reengage the jaw contacts 16. In opening the disconnect switch it is possible that the wiping contact may engage the crank 114 before the blade lug 172; however, this does not affect the operation of the unit.

When the crank 114 approaches the end of its travel through angle D, there can be interference with the blade lug 172. However, the fact that the portion 118 is pivoted for clockwise movement on the portion 116, permits the portion 118 to rock to the broken line position shown in FIG. 16 allowing the lug 172 to pass thereby, after which the portion 118 springs back to its normal position.

The invention is claimed as follows:

1. A high voltage, arc-extinguishing, circuit interrupter comprising a body, a fixed contact and an index member, each being mounted on said body, a rotor having a contact movable therewith, said rotor being rotatable in said body and having a first position in which rotor contact engages said fixed contact and a second position that is rotatably displaced from said first position and in which said rotor contact engages said index member, means forming an electrically conductive path through said housing, said path including said rotor contact and said fixed contact when the two are engaged, mechanism for effecting snap-action rotatable movement of said rotor in one direction from said first position to said second position to separate said rotor contact from said fixed contact, thereby to interrupt said current path and form an arc when current is flowing through said path upon said interruption and provide through said index member a heat sink for cooling said rotor contact, an expulsion vent for gases produced by the arc, means for mounting said expulsion vent on said body, means defining a flow path for said gases between the separating contacts and through said expulsion vent, and said mechanism being operable for snap-action rotation of said rotor in said one direction for moving said rotor from said second position to said first position to engage said rotor contact and said fixed contact.

2. An interrupter according to claim 1 in which said body has a chamber, said rotor and said fixed and rotor contacts being in said chamber, said mechanism including shafting in driving connection with said rotor and means for actuating said shafting, and said body having means for isolating said actuating means from said chamber.

3. An interrupter according to claim 2 in which said shafting is included in the means forming the electrically conductive path through said housing.

4. An interrupter according to claim 1 in which said rotor contact is substantially at the periphery of the rotor, and said rotor has spring means for imposing localized pressure on the rotor contact to urge the latter against the fixed contact when the two are engaged.

5. An interrupter according to claim 2 in which the shafting includes a shaft and a sleeve mounted on the shaft and rotatable relative thereto, said rotor being mounted on said sleeve.

6. An interrupter according to claim 5 in which said shaft if rotatable through a predetermined angle prior to effecting snap-action rotation of said sleeve and rotor to disengage and engage said fixed and movable contacts.

7. A high voltage arc-extinguishing, circuit interrupter comprising a substantially dielectric hollow body having an annular cavity, a fixed contact in said body, a substantially dielectric rotor rotatable in said cavity and carrying a movable contact, said movable contact being engageable and disengageable with said fixed contact, actuating means in driving connection

with said rotor for effecting a snap-action rotation in one direction of said rotor to disengage quickly said rotor contact from said fixed contact and for effecting by movement in the same direction a snap-action rotation to engage quickly said rotor contact with said fixed contact, and means forming an expulsion vent from said body for gases produced by an arc resulting from the disengagement of said rotor contact from said fixed contact.

8. An interrupter according to claim **7** having a crank for actuation by a high voltage disconnect switch, said crank being connected to actuating means for initiation thereof.

9. An interrupter according to claim **7** in which said rotor and body have overlapping spaced ribs.

10. An interrupter according to claim **7** including a dielectric wall, means connected to said actuating means and projecting through said wall and forming the driving connection with said rotor, said dielectric wall separating said cavity from said actuating means.

11. An interrupter according to claim **7** having a fixed index member in said cavity that is substantially 180° displaced from said fixed contact, and said actuating means rotates the rotor to move the rotor contact into engagement with said index member in one snap-action and also rotates said rotor contact into engagement with said fixed contact in another snap-action.

12. An interrupter according to claim **7** in which said means forming the expulsion vent includes a tubular structure secured to said body for mounting the interrupter on a disconnect switch, the tubular structure containing a normally closed check valve.

13. An interrupter according to claim **11** in which the index member constitutes a heat sink for cooling the movable contact.

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