

Oct. 19, 1965

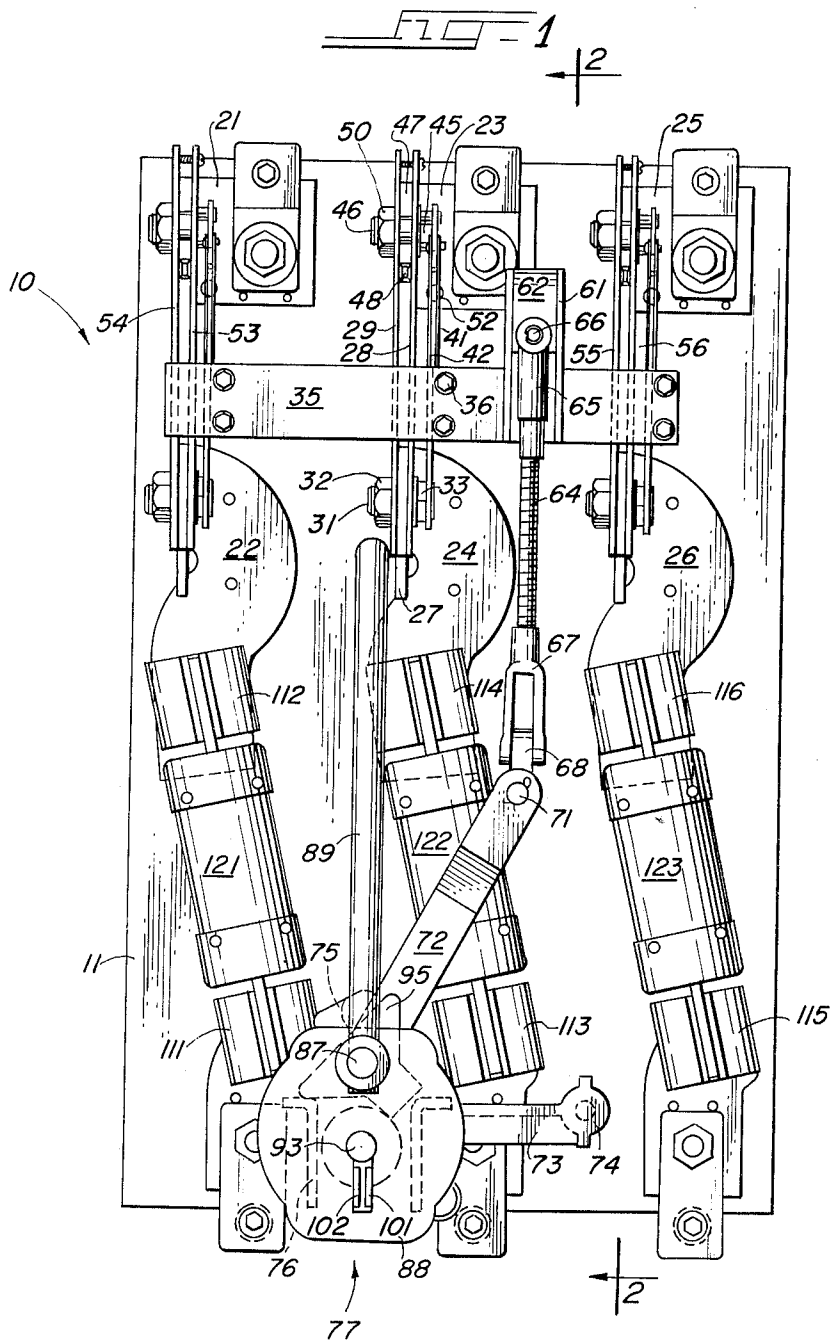
M. STENE

3,213,247

SWITCH AND FUSE COMBINATION HAVING A DRIVE ROD FOR OPERATING
SWITCHES WHICH IS PARALLEL TO THE SWITCHES IN ONE
POSITION AND TO THE FUSES IN ANOTHER POSITION

Filed Feb. 24, 1964

3 Sheets-Sheet 1



INVENTOR.

MANFRED STENE

BY

Wallace, King & Ford
ATTYS.

Oct. 19, 1965

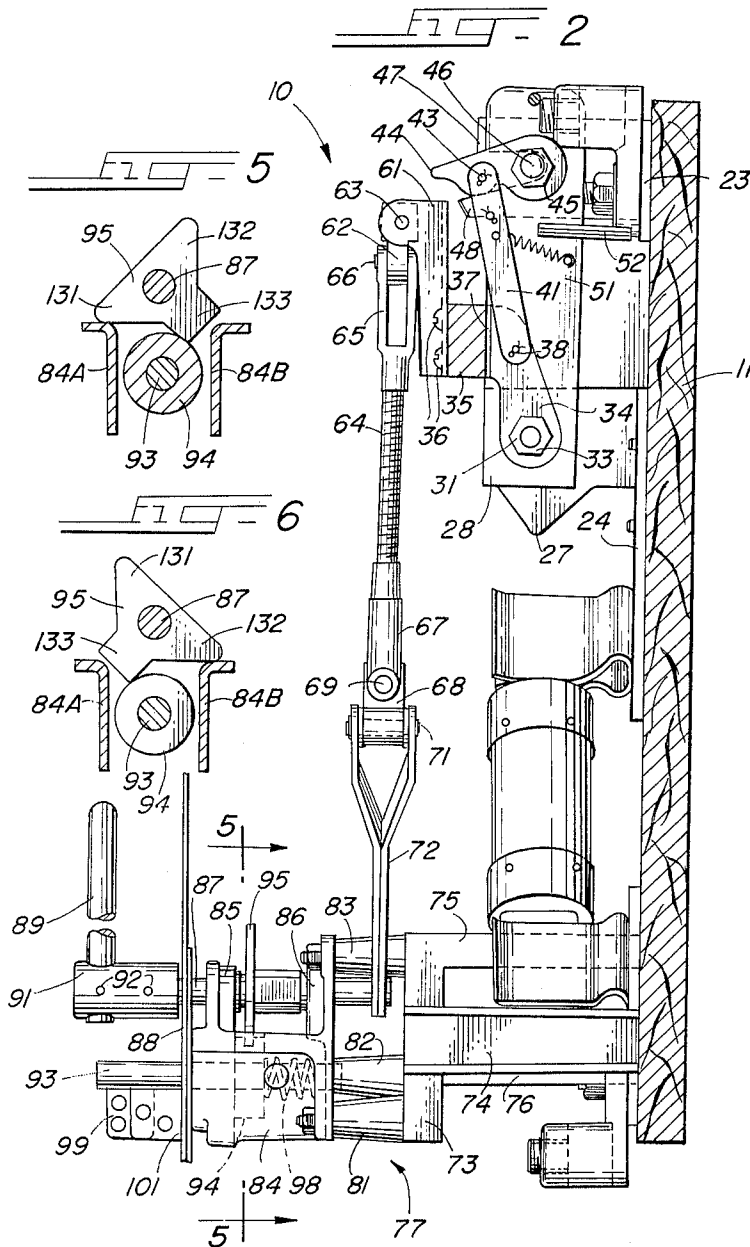
M. STENE

3,213,247

SWITCH AND FUSE COMBINATION HAVING A DRIVE ROD FOR OPERATING
SWITCHES WHICH IS PARALLEL TO THE SWITCHES IN ONE
POSITION AND TO THE FUSES IN ANOTHER POSITION

Filed Feb. 24, 1964

3 Sheets-Sheet 2



INVENTOR.

MANFRED STENE

BY

Wallace, King & Ford
ATTYS.

Oct. 19, 1965

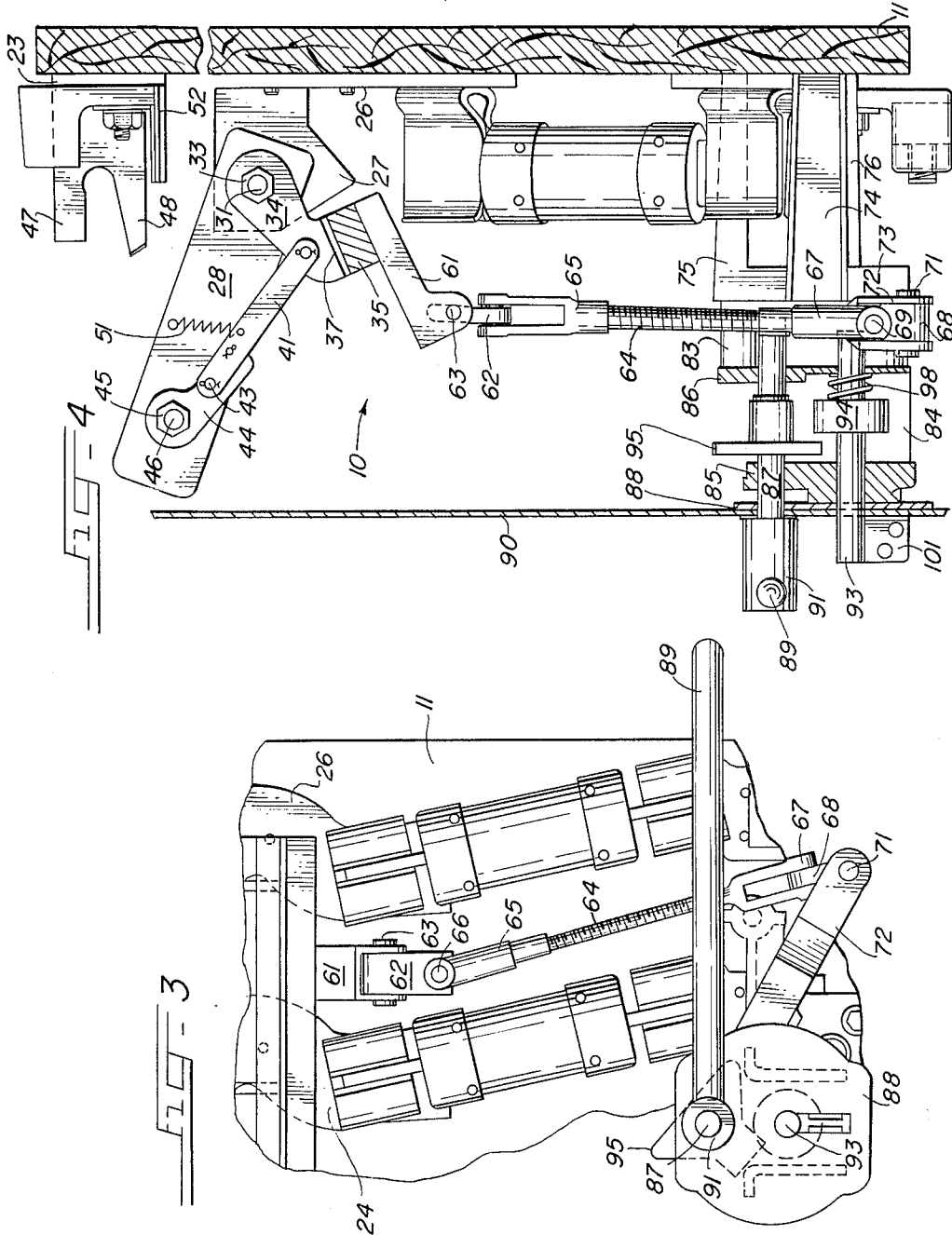
M. STENE

3,213,247

SWITCH AND FUSE COMBINATION HAVING A DRIVE ROD FOR OPERATING
SWITCHES WHICH IS PARALLEL TO THE SWITCHES IN ONE
POSITION AND TO THE FUSES IN ANOTHER POSITION

Filed Feb. 24, 1964

3 Sheets-Sheet 3



INVENTOR.

MANFRED STENE

BY

Wallace, King & Form

Attorneys

1

2

3,213,247 SWITCH AND FUSE COMBINATION HAVING A DRIVE ROD FOR OPERATING SWITCHES WHICH IS PARALLEL TO THE SWITCHES IN ONE POSITION AND TO THE FUSES IN ANOTHER POSITION

Manfred Stene, Chicago, Ill., assignor to Erickson Electrical Equipment Co., Chicago, Ill., a corporation of Illinois

Filed Feb. 24, 1964, Ser. No. 346,925
5 Claims. (Cl. 200—114)

This invention relates to a new and improved load break pressure contact switch and more particularly to an improved operating mechanism for such a switch.

One form of switching device finding increasing acceptance with respect to service entrance equipment and other relatively high current applications is the fused pressure contact switch. The operating mechanisms for switches of this kind must be of rugged construction; they utilize positive pressure-applying mechanisms for assuring good contact between the switch terminals. Because space is frequently at a premium, the switches should be made as compact as possible consonant with the current and voltages being controlled. At the same time, cost is an important factor with respect to this type of equipment, since it must be competitive with circuit breakers.

In previously known fused pressure contact switches, two problems are virtually always present. The overall switch size is difficult to reduce to a desirable point without creating interferences between adjacently mounted switch mechanisms. When the switch size is reduced, the conventional operating mechanisms for the switch frequently interfere with removal and replacement of fuses.

Indeed, with many otherwise highly satisfactory switch mechanisms, fuse replacement presents a substantial problem and frequently leads to injury to the workmen attempting fuse replacement.

The principal object of the present invention, therefore, is to provide a new and improved multiple pole fused switch mechanism of the pressure contact type that effectively and inherently overcomes or minimizes the aforementioned problems present in prior art devices.

A related object of the invention is to afford a multiple pole fuse switch in which the operating mechanism for opening and closing the switch is so aligned with the remainder of the switch as to permit convenient access to the fuses for replacement purposes.

Another object of the invention is to provide a new and improved multi-pole fused switch of the pressure contact type in which the operating mechanism for the switch is located entirely within the outline of the switching apparatus, thereby keeping the total space requirement of the switch to a minimum.

A corollary object of the invention is to afford a new and improved load break pressure contact switch of the fused type, suitable for use as a heavy-duty service entrance switch, that is simple and effective in operation and economical in construction.

A multiple pole fused switch mechanism constructed in accordance with the present invention comprises a base member with a plurality of spaced pairs of fixed contacts mounted on the base; each contact pair includes a first contact and a second contact with the contacts of all pairs disposed in fixed parallel alignment. A corresponding plurality of movable contacts are incorporated in the switch mechanism, each movable contact being displaceable between an open position in which it is spaced from one of the fixed contacts and a closed position in which the movable contact bridges a respective one of the fixed contact pairs. The operating mechanism of the switch, which is also mounted on the base member, includes a

main drive rod that is movable axially and angularly between a first position parallel to the fixed contact pairs and a second position angularly displaced with respect to the fixed contact member pairs. The operating mechanism simultaneously moves all of the movable contacts to their closed positions when the drive rod is moved to its first position; movement of the drive rod to its second position displaces all of the movable contacts to their open positions. The drive rod is aligned with the space between the fixed contact members of two adjacent pairs. The switch mechanism further includes a corresponding plurality of fuse receptacles, each connected to one fixed contact member in each pair. These fuse receptacles are mounted on the base member in parallel alignment with the second position of the drive rod to allow free access to the receptacles for removal and replacement of fuses when the switch is open. In the preferred construction described hereinafter, the operation of the drive rod is controlled by a drive mechanism mounted upon an auxiliary base member located between the fuse receptacles and thus disposed within the outline of the remainder of the switch mechanism.

Other and further objects of the present invention will be apparent from the following description and claims and are illustrated in the accompanying drawings which, by way of illustration, show preferred embodiments of the present invention and the principles thereof and what is now considered to be the best mode contemplated for applying these principles. Other embodiments of the invention embodying the same or equivalent principles may be made as desired by those skilled in the art without departing from the present invention.

In the drawings:

FIG. 1 is a front elevation view of a multi-pole fused switch mechanism constructed in accordance with a preferred embodiment of the present invention, showing the switch in closed condition;

FIG. 2 is a sectional elevation view of the switch taken approximately along line 2—2 in FIG. 1;

FIG. 3 is a detail front elevation view of a part of the switch mechanism of FIG. 1 showing the switch in open condition;

FIG. 4 is a detail sectional view, similar to FIG. 2, showing the switch in open condition;

FIG. 5 is a detail view, illustrating a latching detent of the switch in one operating condition, and is taken approximately along line 5—5 in FIG. 2; and

FIG. 6 is a detail view similar to FIG. 5 showing the detent in a second operating condition.

With reference to FIGS. 1 and 2, in which the preferred form of the present invention is illustrated, the switch 10 shown therein is illustrated in its closed condition. Switch 10 comprises a three pole load break pressure contact switch, with overload fuses, suitable for use in heavy duty service entrance and similar applications.

Switch 10 includes a base member 11 fabricated from a suitable insulating material. Across the top of base 11 there are mounted three spaced fixed contact members 21, 23 and 25. Each of these fixed contact members is provided with an upwardly projecting bifurcated contact blade. The fixed contact members 21, 23 and 25 are provided with individual terminal lugs that constitute the output terminals for switch 10.

Each of the fixed contacts 21, 23 and 25 is one element of a contact pair. Thus, fixed contact 21 is paired with a second fixed contact 22, switch contact 23 is aligned with a fixed contact 24, and contact 25 is aligned with a fixed contact 26. The individual contact pairs are disposed in parallel alignment with each other. In the construction shown in FIG. 1, the contact pairs are vertically aligned on the base 11. Each of fixed contact members 22, 24

and 26 includes an upwardly projecting bracket-like contact element that is vertically aligned with the upwardly projecting bifurcated blade of the corresponding fixed contact that completes the pair.

As shown in FIGS. 1 and 2, the upwardly projecting blade element 27 of the second contact member 24 in contact pair 23, 24 constitutes a hinge bracket for a movable contact member comprising two contact blades 28 and 29. Contact blades 28 and 29 are pivotally mounted upon the bracket element 27 of contact member 24 by means of a bolt 31 that extends through both of the blades 28 and 29 and through the bracket contact 27, the bracket being located between the two blades. Firm pressure contact is maintained between the blades 28 and 29 and the contact bracket 27 by the compression force between a clamp nut 32 and the head 33 of bolt 31.

A hinge lever 34 is affixed to the head 33 of hinge bolt 31. Thus, hinge lever 34 may be provided with a hexagonal opening or other opening conforming to the configuration of the bolt head 33. Preferably, the hinge lever is welded or otherwise permanently secured to the bolt head. The free end of hinge lever 34 is secured to a bar 35 that extends transversely of the switch mechanism (see FIG. 1) by suitable means such as a pair of bolts 36. Bolts 36 extend through bar 34 and through an ear or lug 37 on the hinge lever.

A toggle link is pivotally connected to hinge lever 37 by means of a pivot pin 38. The toggle link comprises two parallel link elements 41 and 42. The end of the toggle link 41, 42 opposite pivot pin 38 is pivotally connected, by a second pin 43, to a contact lever 44. Contact lever 44, in turn, is affixed to the head 45 of a second clamping bolt 46 that extends through contact blades 28 and 29 as shown in FIG. 1, and into threaded engagement in a clamping nut 50 affixed to blade 29. When the switch is in closed position, as shown in FIGS. 1 and 2, the central portion of bolt 46 extends through the gap between the two projecting portions 47 and 48 of the bifurcated contact element of contact member 25. The toggle mechanism for operating the movable contact comprising blades 28, 29 also includes a tension spring 51 connected from the toggle link 41, 42 to blade 28. There is also a blade stop member 52 mounted upon this portion of contact member 25 and projecting upwardly into alignment with the toggle link (see FIG. 1).

The movable contact mechanisms for contact pairs 21, 22 and 25, 26 are essentially similar to that for contact pair 23, 24. Thus, contact pair 21, 22 is bridged by a movable contact comprising two contact blades 53 and 54. Contact members 25 and 26 are electrically interconnected by two movable contact blades 55 and 56 when the switch is in closed condition (FIG. 1). For each pole of the switch, the hinge lever that actuates the movable contact is bolted or otherwise secured to the transverse bar 35. It will be understood that two-pole, four-pole, or other multi-pole arrangements can be constructed without basic change in the switch. A three-pole switch is shown because three-phase distribution is most commonly used.

A bracket 61 is affixed to the transverse bar 35; a link 62 is pivotally mounted on the upper end of bracket 61 by means of a suitable pin 63. A main drive rod 64 is pivotally connected to the link 62 by means of a yoke 65 and a pivot pin 66, yoke 65 being threaded onto the drive rod. The other end of drive rod 64 is threaded into a second similar yoke 67 that is pivotally connected to a short link 68 by means of a suitable shaft or pin 69. Link 68, in turn, is pivotally connected by a pivot pin 71 to an operating lever 72.

The mechanism 77 for actuating operating lever 72 is mounted on the lower central portion of the base 11 for switch 10. The mounting for the switch operating mechanism 77 comprises a tripod auxiliary base member 73 having its three legs 74, 75 and 76 securely mounted upon the base 11 of the switch. The tripod legs are all disposed between poles of the switch, as discussed more

fully hereinafter. The outer portion of auxiliary base member 73 comprises three outwardly projecting bosses 81, 82 and 83, each of which encompasses an outwardly projecting bolt, the three bolts being used to mount a bearing support member 84 on the auxiliary base.

Bearing support member 84 includes two main bearings 85 and 86 that support a main operating shaft 87. The right-hand end of shaft 87, as seen in FIG. 2, projects through bearing 86. Operating lever 72 is affixed to this cantilever end of shaft 87. The other end of shaft 87 projects outwardly of bearing 85 and through a face plate 88 and cover 90, the face plate 88 being mounted on the outer face of bearing support member 84. On the outer end of shaft 87, a manual operating lever 89 is mounted on the shaft by suitable means such as a collar 91 secured to the shaft by means of a pair of set screws 92.

There is a second shaft 93 that is journaled in suitable bearings in bearing support member 84; shaft 93 is located below and in parallel alignment with shaft 87. Shaft 93 carries a latch collar 94. Latch collar 94 is normally engaged by a detent stop 95 that is affixed to the main shaft 87. Shaft 93 is axially movable, however, so that the latch collar 94 can be displaced to the right, as seen in FIG. 2, from its normal position of engagement with detent stop 95 to a position in which it is clear of the detent stop. A spring 98 biases the latch collar 94 and the shaft 93 outwardly of the switch mechanism and thus normally maintains the latch collar in alignment with the detent stop.

The free end of shaft 93, projecting outwardly of face plate 88, is provided with a hasp member 99. Hasp member 99 projects downwardly of the shaft between two guide members 101 and 102 that are affixed to face plate 88. The hasp member and the two guide members are provided with suitable openings that provide means for locking the switch, using an ordinary padlock, in either open or closed position, as described more fully hereinafter.

The three lower fixed contact members 22, 24 and 26 are each provided with a fuse receptacle for electrically connecting a fuse to the contact member. Thus, three resilient fuse receptacle members 112, 114 and 116 are mounted upon and constitute a part of fixed contact members 22, 24 and 26 respectively. The present invention is not limited to the use of resilient fuse mounts; conventional bolt mounting arrangements and other fuse receptacle constructions may be employed as desired.

The switch further includes additional fuse receptacle members 111, 113 and 115 that are mounted below receptacles 112, 114 and 116, respectively, and in alignment with the upper fuse receptacles to afford an effective means for mounting three fuses 121, 122 and 123 in the switch (see FIG. 1). Fuse receptacle members 111, 113 and 115 are provided with suitable connecting lugs and constitute the input terminals for the switch. It should be noted that the individual fuse receptacle pairs are not aligned in parallel with the related pairs of switch contacts, as in conventional switch structures. Instead, the fuse receptacles are mounted on base 11 in positions in which they are parallel to each other but angularly displaced from the vertical alignment of the switch contacts in order to afford improved access to the fuse receptacles for removal and replacement of fuses as explained more fully hereinafter.

The detent mechanism for the switch, shown particularly in FIGS. 2, 4, 5 and 6, comprises detent stop 95 and latch collar 94. As best shown in FIGS. 5 and 6, the detent stop is provided with three projecting lugs or dogs 131, 132 and 133. FIG. 5 shows the position of the detent mechanism when the switch is closed, with lug 131 engaging a first element 84A of bearing member 84 and with dog 133 engaging latch collar 94. In the position shown in FIG. 5, detent stop 95 cannot be rotated in either a clockwise direction or a counterclockwise direction, due to engagement of the detent stop with the

5

bearing support member 84A and latch collar 94. FIG. 6 shows the detent mechanism in the operating condition assumed thereby when the switch is open. In this instance, lug 132 engages element 84B of the bearing support member and lug 133 is again in engagement with the latch collar.

To open switch 10, it is first necessary to release the detent mechanism. This is accomplished by pushing shaft 93 inwardly from the position illustrated in FIG. 2 to that shown in FIG. 4. Shaft 93, as it moves inwardly against the biasing force exerted by spring 98, shifts latch collar 94 out of engagement with detent stop 95 and thus releases the detent stop. The detent stop, which has previously been in the switch-closed position shown in FIG. 5, cannot rotate in a counterclockwise direction but is now free for clockwise rotation. The switch operator is now able to start opening movement of the switch by turning the manual operating lever 89 in a clockwise direction from the closed position shown in FIG. 1 toward the open position shown in FIG. 3.

The clockwise movement of operating lever 89 causes a corresponding movement of operating lever 72, since both of these elements are fixedly mounted on the main operating shaft 87. As operating lever 72 starts its clockwise movement, it begins to pull drive rod 64 downwardly from the position shown in FIG. 1. The initial movement of the drive rod is virtually straight down, giving maximum leverage at the initial part of the opening movement. As drive rod 64 moves downwardly, link 62 pulls on bracket 61 (see FIG. 2) and starts to pivot transverse bar 35 about the pivotal mounting afforded by the hinge levers of the individual movable contacts, such as hinge lever 34. The hinge lever, through toggle link 41, pulls on contact lever 44 and turns the contact lever in a counterclockwise direction. A corresponding rotational movement is imparted to bolt 46, to which lever 44 is affixed, releasing the bolt and thereby relieving the pressure between movable contact blades 28 and 29 and the fixed contact blades 47 and 48. The rotation of hinge lever 34 also tightens bolt 31, affording a pressure contact between blades 28, 29 and fixed contact bracket 27.

Continued rotational movement of operating lever 72 pulls drive rod 64 downwardly and pivots the drive rod to the position illustrated in FIG. 3. It should be noted that the full movement of operating handle 89 necessary to open the switch is preferably limited to about ninety degrees for convenience in switch operation and to keep the arcuate sweep of operating handle 89 to a minimum, thereby reducing the total space requirement for the switch. The switch is fully opened when the operating mechanism reaches the position shown in FIGS. 3 and 4.

During the opening movement, once there has been some rotation of the main operating shaft 87, it is no longer necessary for the operator to maintain pressure on detent shaft 93, since detent stop 95 is now interposed in face-to-face relationship with latch collar 94 and prevents the latch collar from moving back outwardly to a position where it could block further rotation of the detent stop. When the switch reaches its full open condition, the detent stop is in the position shown in FIG. 6 and latch collar 94 is again clear to move outwardly, under the bias afforded by spring 98, to latch the operating mechanism in open condition. The outward movement of the detent shaft 93 makes it possible to lock the switch in open condition as well as in closed condition.

As will be apparent from FIG. 3, the alignment of the fuse receptacles in the switch is such that the individual fuses 121, 122 and 123 are parallel to the second or switch-open position for drive rod 64 (see FIG. 3). Consequently, convenient access is provided to the fuses and they can be readily removed and replaced with little or no interference from the operating mechanism. Of course, this condition is achieved only if the drive rod is

6

disposed between individual poles of the switch; otherwise, the drive rod would extend over one of the fuses and would interfere with fuse replacement.

When it is desired to close the switch, detent shaft 93 is again pushed inwardly of the switch mechanism, releasing latch collar 94 from its engaged position (FIG. 6) and permitting rotation of main operating shaft 87. Operating lever 89 is now turned in a counterclockwise direction from the position in FIG. 3 back toward the position of FIG. 1. The necessary movement of the operating handle drives rod 64 upwardly, pivoting bracket 61 and transverse bar 35 about the axis established by the hinge bolts such as hinge bolt 31. As can be seen in FIG. 4, the starting alignment of the toggle mechanism for each movable contact is such that the toggle linkage is in latched condition. Consequently, each pair of movable contact blades pivots about its hinge bolt and moves toward engagement with the upper fixed contact with which it is associated.

The toggle linkage for each contact remains in latched alignment, illustrated in FIG. 4, while the movable contact blades are driven from the position shown in FIG. 4 toward that illustrated in FIG. 2. As the movable contact blades are seated, the toggle link 41, 42 is engaged by blade stop 52. Consequently, the toggle is unlatched and the continued pivotal movement of hinge lever 34 is translated through link 41, 42 into clockwise rotation of contact lever 44. The clockwise rotation of the contact lever tightens bolt 46 in clamp nut 50 (FIG. 1) and establishes a firm pressure contact between the two movable contact blades 28 and 29 of the fixed bifurcated contact blade 47, 48.

As can be seen from FIG. 1, the entire switch mechanism is located within the outline of the minimum base 11 required for the switch terminals, fuses, and contacts. An important feature, with respect to minimization of the overall size of switch 10, is the mounting employed for the mechanism 77 that actuates the switch. Unlike previously known devices, this entire mechanism is located within the outline of the switch base and between individual poles of the switch. To achieve a suitable construction in minimum space, it is important that all legs of the tripod auxiliary base 73 be disposed intermediate the switch poles rather than externally thereof. The auxiliary base member 73 is preferably formed from a molded plastic material of high strength; one suitable material is glass-filled polyester resin. In addition to saving space, the construction described above is quite economical as compared with previously known arrangements. At the same time, the switch is well adapted to heavy duty applications and can be employed for relatively high currents and voltages without substantial service difficulty.

Hence, while preferred embodiments of the invention have been described and illustrated, it is to be understood that they are capable of variation and modification.

I claim:

1. A multiple-pole fused switch mechanism comprising:

a base member;

a plurality of spaced pairs of fixed contact members, mounted on said base member, each pair including a first contact member and a second contact member disposed in fixed parallel alignment;

a corresponding plurality of movable contact members, each movable between an open position and a closed position bridging the first and second contact members of a respective one of said fixed contact pairs; an operating mechanism, mounted on said base member, including a main drive rod movable axially and angularly between a first position parallel to said fixed contact member pairs and a second position angularly disposed with respect to said fixed contact member pairs, for simultaneously moving all of said movable contact members to their closed posi-

7

- tions when said main drive rod is moved to its first position and for moving all of said movable contact members to their open positions when said main drive rod is moved to its second position, said main drive rod being aligned with the space between the fixed contact members of two adjacent pairs;
- and a corresponding plurality of sets of fuse receptacles, each connected to a respective second contact member of one of said fixed contact pairs, mounted on said base member in parallel alignment with the second position of said main drive rod to allow free access thereto for removal and replacement of fuses when the switch is open.
2. A multiple-pole fused switch mechanism comprising:
- a base member;
 - a plurality of spaced parallel aligned pairs of fixed contacts, mounted on said base member;
 - a corresponding plurality of movable contacts, each pivotally mounted on a first fixed contact of a respective one of said pairs and movable between an open position displaced from the second contact of the pair and a closed position bridging the associated contact pair;
 - a corresponding plurality of toggle linkages for actuating said movable contacts between open and closed positions, each linkage including bolt means applying substantial pressure at the contact points of said movable and fixed contacts when said movable contacts are in closed position;
 - an operating mechanism, mounted on said base member, including a main drive rod connected to all of said linkages and movable axially and angularly between a first position parallel to said fixed contact pairs and a second position angularly disposed with respect to said fixed contact pairs, for simultaneously actuating said linkages to move all of said movable contacts to their closed positions when said main drive rod is moved to its first position and for moving all of said movable contacts to their open positions when said main drive rod is moved to its second position, said main drive rod being aligned with the space between the two adjacent contact pairs;
 - and a corresponding plurality of sets of fuse receptacles, each connected to a fixed contact of a respective one of said pairs, mounted on said base member in parallel alignment with said second position of said main drive rod to allow free access thereto for removal and replacement of fuses when the switch is open.
3. A multiple-pole fused switch mechanism comprising:
- a main base member;
 - a plurality of spaced parallel aligned pairs of fixed contacts, mounted on said main base member;
 - a corresponding plurality of movable contacts each movable between an open position and a closed position bridging the first and second contacts of a respective one of said fixed contact pairs;
 - an auxiliary base member, mounted on said base member;
 - an operating mechanism, mounted on said auxiliary base member, including a main drive rod movable axially and angularly between a first position parallel to said fixed contact pairs and a second position angularly disposed with respect to said fixed contact pairs, for simultaneously moving all of said movable contacts to their closed positions when said main drive rod is moved to its first position and for moving all of said movable contacts to their open positions when said main drive rod is moved to its second position, said main drive rod being aligned with the space between two adjacent contact pairs;
 - and a corresponding plurality of sets of fuse recep-

8

- tacles, each connected to one contact of a respective one of said fixed contact pairs, mounted on said main base member in parallel alignment with the second position of said main drive rod to allow free access thereto for removal and replacement of fuses when the switch is open;
- said auxiliary base member being mounted on said main base member on a plurality of legs projecting between said fuse receptacles and being located entirely within the confines of said fuse receptacles on said main base member.
4. A multiple-pole fused switch mechanism comprising:
- a rectangular main base member of given dimensions;
 - a plurality of output terminals mounted across the top edge of said main base member in equally spaced alignment;
 - a corresponding plurality of input terminals mounted in equally spaced alignment across the bottom edge of said main base member;
 - a corresponding plurality of spaced parallel vertically aligned pairs of fixed contacts, mounted on said main base member, each pair including a first contact member connected to one of said output terminals;
 - a corresponding plurality of movable contacts, each pivotally mounted on a respective second contact of one of said contact pairs and each movable between an open position and a closed position bridging the first and second contacts of the associated fixed contact pair;
 - an auxiliary base member mounted on spaced legs affixed to said main base member at points intermediate said input terminals;
 - an operating mechanism, mounted on said auxiliary base member, including a main drive rod connected to all of said movable contacts and movable axially and angularly between a first position parallel to said fixed contact pairs and a second position angularly disposed with respect to said fixed contact pairs, for simultaneously moving all of said movable contacts to their closed positions when said main drive rod is moved to its first position and for moving all of said movable contacts to their open positions when said main drive rod is moved to its second position, said main drive rod being aligned with the space between the fixed contacts of two adjacent pairs;
 - and a corresponding plurality of sets of fuse receptacles, each connected to a respective input terminal and a respective second contact of one of said fixed contact pairs, mounted on said base member in parallel alignment with the second position of said main drive rod to allow free access thereto for removal and replacement of fuses when the switch is open.
5. A multiple-pole fused switch mechanism comprising:
- a base member;
 - a plurality of spaced pairs of fixed contact members, mounted on said base member, each pair including a first contact member and a second contact member disposed in fixed parallel alignment;
 - a corresponding plurality of movable contact members, each movable between an open position and a closed position bridging the first and second contact members of a respective one of said fixed contact pairs;
 - an operating mechanism, mounted on said base member, including a main drive rod movable axially and angularly between a first position parallel to said fixed contact member pairs and a second position angularly disposed with respect to said fixed contact member pairs, for simultaneously moving all of said movable contact members to their closed positions when said main drive rod is moved to its first position and for moving all of said movable contact members to their open positions when said main drive rod is moved to its second position, said main drive

9

rod being aligned with the space between the fixed
contact members of two adjacent pairs;
a corresponding plurality of sets of fuse receptacles,
each connected to a respective second contact mem-
ber of one of said fixed contact pairs, mounted on 5
said base member in parallel alignment with the sec-
ond position of said main drive rod to allow free
access thereto for removal and replacement of fuses
when the switch is open;

10

and a releasable detent mechanism for latching said
operating mechanism with said main drive rod in
either of said first and second positions.

No references cited.

BERNARD A. GILHEANY, *Primary Examiner*.