

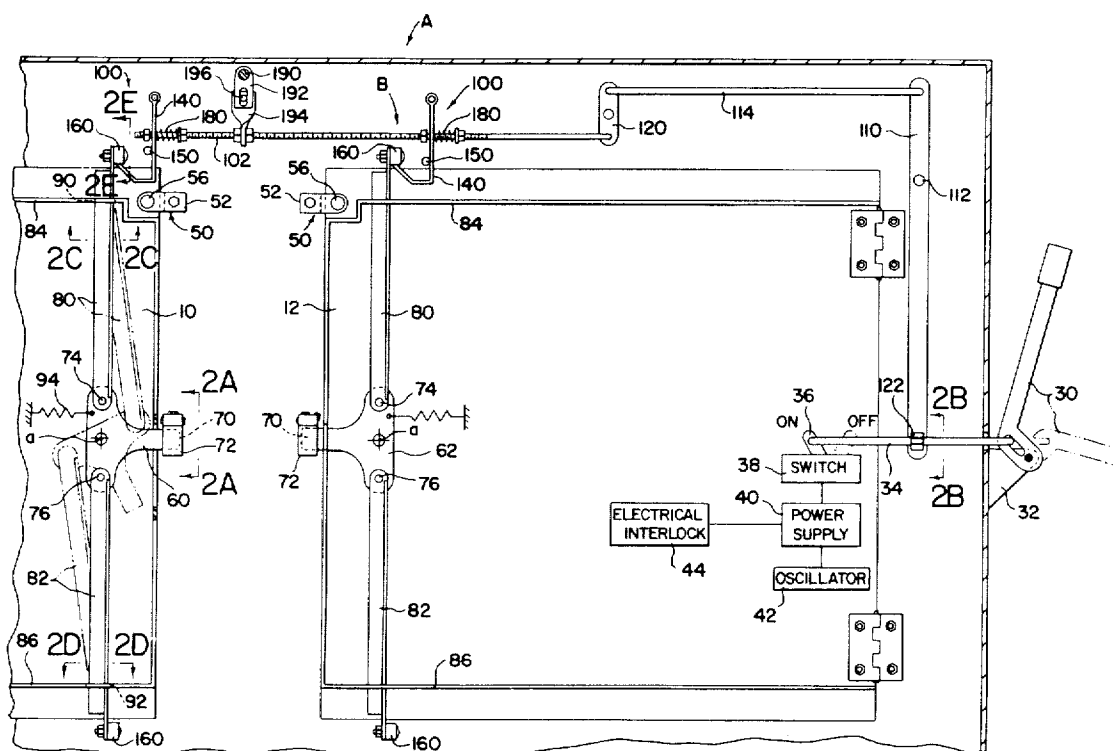
[54] **MECHANICAL INTERLOCK MECHANISM FOR AN ELECTRICAL CABINET**[75] Inventor: **Joseph W. Chiboroski**, Brooklyn Heights, Ohio[73] Assignee: **Park-Ohio Industries, Inc.**, Cleveland, Ohio[22] Filed: **Feb. 14, 1974**[21] Appl. No.: **442,688**[52] U.S. Cl. **200/50 A; 312/216; 312/218; 312/223**[51] Int. Cl. **H01h 9/20; E05b 65/46**[58] Field of Search **200/50 A, 61.62-61.69, 200/61.76-61.81; 292/210; 312/215, 216, 218, DIG. 20, DIG. 24, 220, 223**[56] **References Cited****UNITED STATES PATENTS**

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Primary Examiner—James R. Scott*Attorney, Agent, or Firm*—Meyer, Tilberry & Body[57] **ABSTRACT**

There is provided a mechanical interlock mechanism

for a cabinet surrounding an electrical component and having a switch control member movable between a first position allowing energization of the internal component and a second position preventing energization of the component. The cabinet has at least one door movable between a closed position and an opened position and a door latch element movable between a position latching the door to the cabinet when the door is closed and a position unlatching the door from the cabinet, thus, allowing movement of the door with respect to the cabinet. The mechanical interlock comprises an actuation element, means for connecting the actuation element to the switch control member for movement between a first position when the switch control is in its first position and a second position when the switch control member is in its second position. The interlock includes a latch means for securing the latch element in its latching position when the actuation element is in its first position simultaneously with the latch element being in its latching position. This latch means includes means for allowing the latch element to shift from the unlatching position to the latching position while the actuation element is in the first position. In this way, the door may be closed and held in the closed, latched position after the switch control member has been moved to the position allowing energization of the component within the cabinet.

16 Claims, 10 Drawing Figures

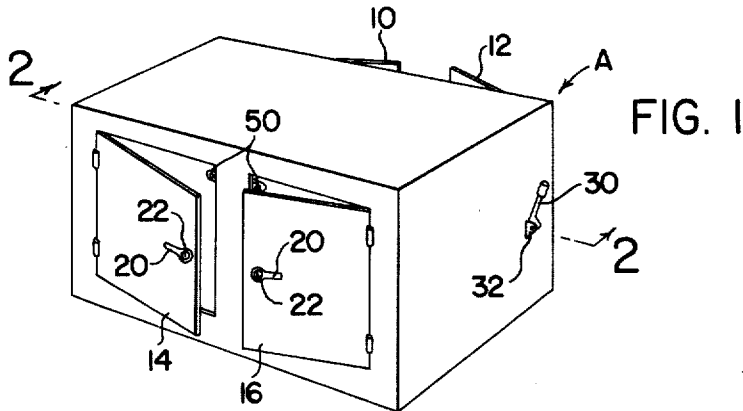


FIG. 1

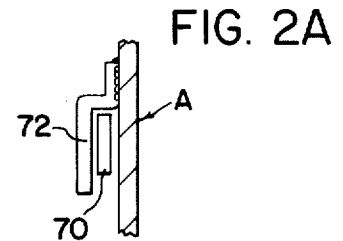


FIG. 2A

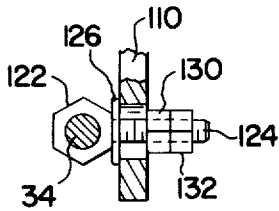


FIG. 2B

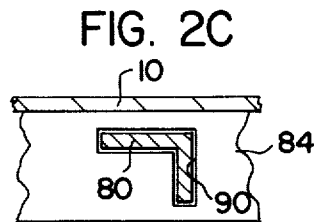


FIG. 2C

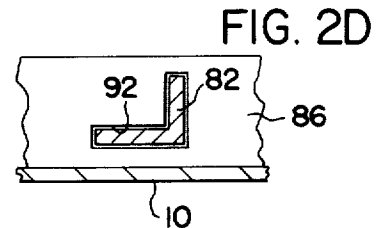


FIG. 2D

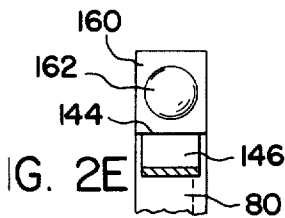


FIG. 2E

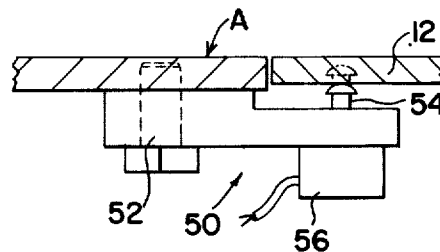


FIG. 3

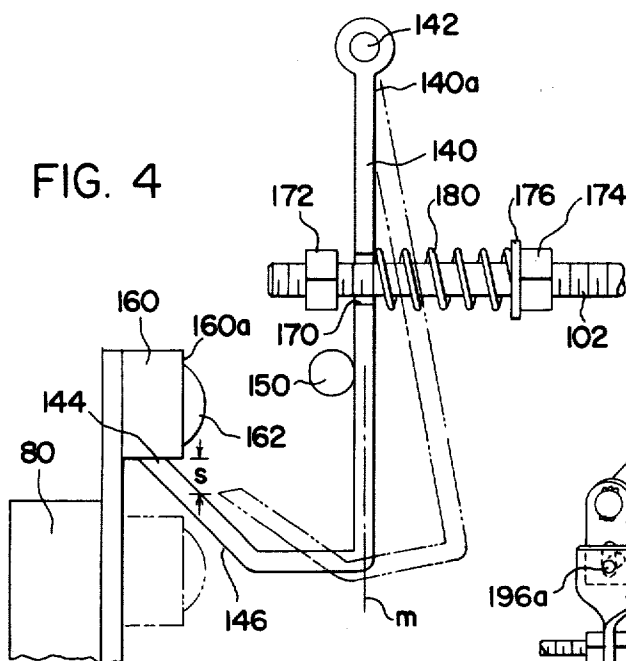


FIG. 4

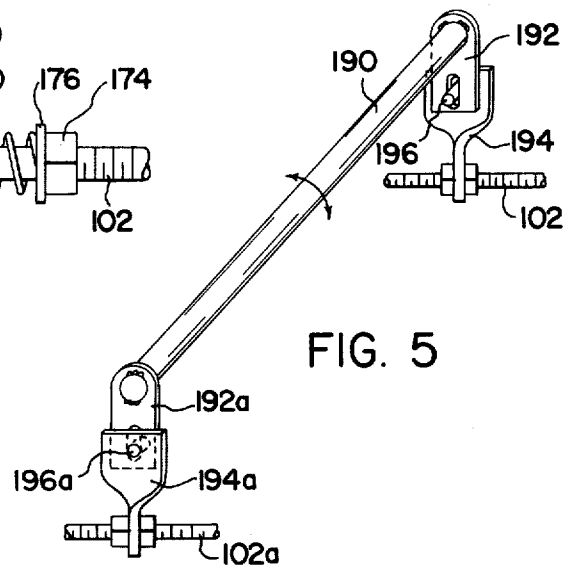
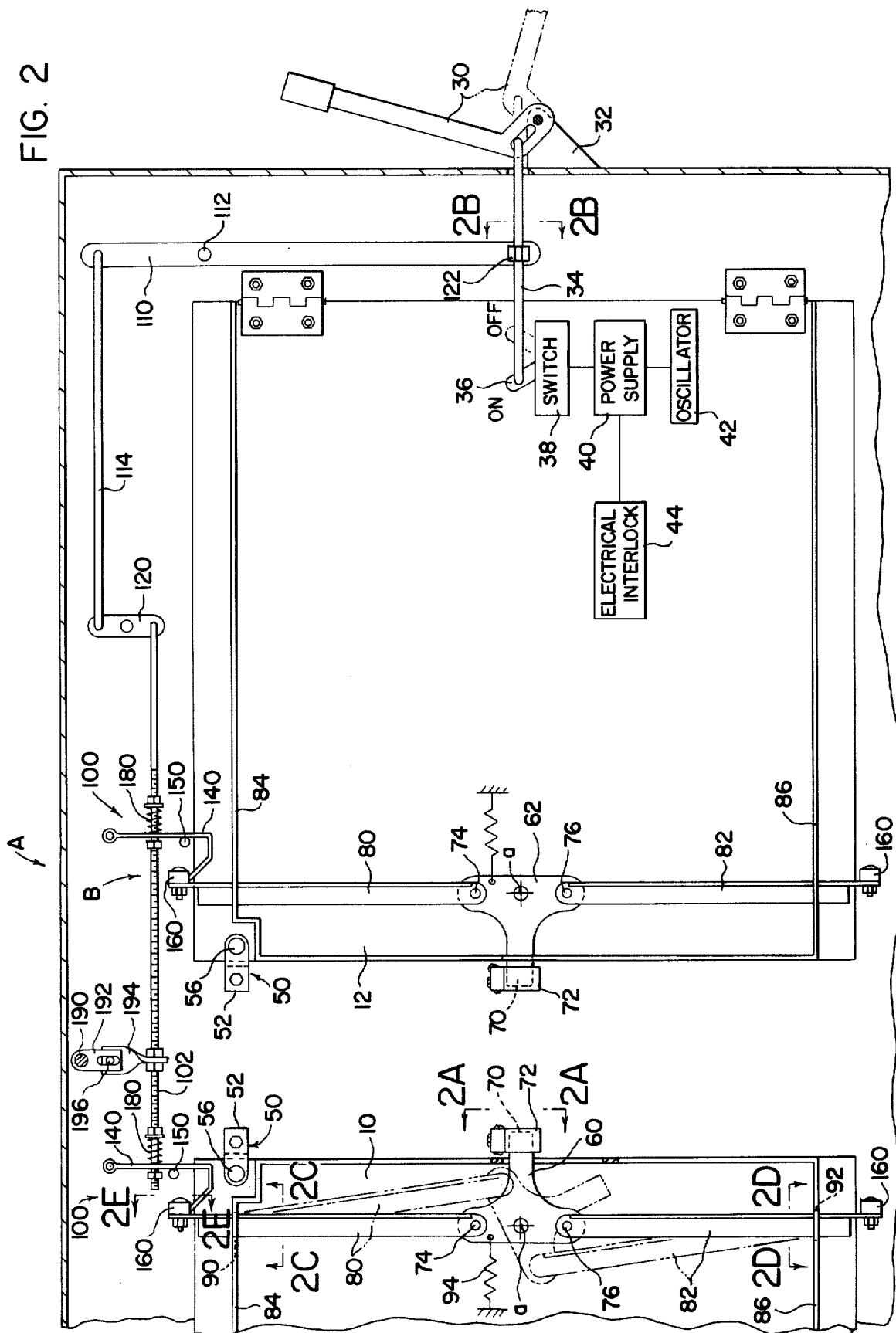


FIG. 5

FIG. 2



MECHANICAL INTERLOCK MECHANISM FOR AN ELECTRICAL CABINET

The invention relates to the art of protective devices for cabinets used in housing electrical components, such as induction heating oscillators and rectifiers, and more particularly to a mechanical interlock mechanism for such a cabinet.

The invention is particularly applicable for use on a cabinet of the type employed around a high frequency oscillator for induction heating, and it will be described with particular reference thereto; however, it is appreciated that the invention has broader applications and may be used in other cabinets for housing electrical equipment.

In induction heating installations, often the alternating power source includes a high frequency oscillator driven by high voltage rectifier. The voltage in these components is extremely high and can cause serious harm if inadvertently contacted. Consequently, oscillators and rectifiers are provided with surrounding cabinets which have access doors or panels that must be closed before the main switch is closed to cause operation of the oscillator. Generally these panels are locked in place and are provided with an electrical interlock system which assures that all panels or doors are closed before the main power switch is closed. When one of the doors or panels is opened, without turning off the power supply, the power supply is automatically turned off and, in some instances, an appropriate warning light or alarm is energized. Such an electrical interlock system and the use of keys to gain access to the cabinet has proved quite successful in protecting personnel from the high voltages existing in the interior of the oscillator and rectifier cabinet. However, in view of more strict federal regulations involving safety procedures for protection of high voltage equipment, substantial work has been devoted to arrangements for preventing access to the interior of a high voltage cabinet when power is being applied. Generally, this effort has been directed toward improving the locking system and the electrical interlock system. However, such improvements have not substantially increased the protection while adding substantially to the cost of the equipment. The present invention relates to a mechanical interlock which provides an additional safety system to prevent inadvertent and unwanted access to the interior of a high voltage cabinet when power is being applied.

In accordance with the present invention, there is provided a mechanical interlock for a high voltage cabinet of the type described above, which cabinet includes a switch control member movable between a position energizing the electrical component within the cabinet and a position preventing energization of the component. The cabinet includes at least one movable door having an open and closed position and a door latch element movable between a latching position and unlatching position. In accordance with the invention, there is provided an actuation element, means for connecting the actuation element to the switch control member for movement between two positions in accordance with movement of the switch control member between its energized and deenergized positions. The actuation element is connected to a latch means for securing the latch element of the door in its latching position when the actuation element is in the position corresponding to the energized position of the switch con-

trol member and the door latch element is in its latched position. In this manner, the door is held latched until the switch control member is actually moved to its deenergized position. In accordance with the invention, the latch means for holding the door latch in its locked or latched position includes a further means for allowing the door latch element to shift from the unlatched position to the latched position when the actuator element is in the position corresponding to the energized position of the control member. Consequently, if the switch control member is in the energized position while the door is open, the door can be closed and the door latch element can be moved into its latching position where it is held by the latch means.

The present invention, as defined above, is adapted for use on a cabinet having more than one door with the mechanical interlock mechanism operating simultaneously and in the same fashion on all the doors. In this manner, a single latch means for each of the doors can be centrally controlled by the actuation element connected with the switch control member. Movement of the switch control member simultaneously latches each of the latch means at the separate doors. Thus, the addition of several doors to a cabinet does not change the basic mechanical features of the mechanical interlock of the present invention.

The primary object of the present invention is the provision of a mechanical interlock mechanism for access doors or panels of a cabinet surrounding an electrical component, which mechanical interlock mechanism prevents inadvertent opening of said doors or panels after they are closed.

Yet another object of the present invention is the provision of a mechanical interlock mechanism for access doors or panels of a cabinet surrounding an electrical component, which mechanical interlock mechanism is economical to install and requires a minimum of structural modification to the cabinet itself.

Another object of the present invention is the provision of a mechanical interlock mechanism for access doors or panels of a cabinet surrounding an electrical component, which mechanical interlock mechanism can be used in combination with existing interlock systems, such as key controlled and electrical systems.

Still a further object of the present invention is the provision of a mechanical interlock mechanism as defined above, which mechanism can be employed for any number of doors or panels in the cabinet with simultaneous operation of the interlock at each of the doors or panels.

Still a further object of the present invention is the provision of a mechanical interlock mechanism of the type defined above, which interlock mechanism allows a door or panel to be closed after the interlock mechanism has been set and prevents subsequent opening of the doors or panels until power is removed from the internal component.

These and other objects and advantages will become apparent from the following description taken together with the accompanying drawings in which:

FIG. 1 is a pictorial view showing a cabinet of the type in which the present invention can be used;

FIG. 2 is an enlarged somewhat schematic view taken generally along line 2—2 of FIG. 1;

FIG. 2A is an enlarged cross-sectional view taken generally along line 2A—2A of FIG. 2;

FIG. 2B is an enlarged cross-sectional view taken generally along line 2B—2B of FIG. 2;

FIG. 2C is an enlarged cross-sectional view taken generally along line 2C—2C of FIG. 2;

FIG. 2D is an enlarged cross-sectional view taken generally along line 2D—2D of FIG. 2;

FIG. 2E is a cross-sectional view taken generally along line 2E—2E of FIG. 2;

FIG. 3 is an enlarged cross-sectional view taken generally along line 3—3 of FIG. 2;

FIG. 4 is an enlarged view illustrating the latch mechanism used for each of the doors or panels in the preferred embodiment of the present invention; and,

FIG. 5 is a partial view illustrating the interconnect between adjacent actuator arms or rods contemplated by the preferred embodiment of the present invention.

Referring now to the drawings wherein the showings are for the purpose of illustrating a preferred embodiment of the invention only and not for the purpose of limiting same, FIG. 1 shows a cabinet or housing A for protecting a high voltage electrical component such as an oscillator and rectifier used in high frequency induction heating. The cabinet has a number of doors, four of which are shown as doors 10, 12, 14 and 16. Each door includes a handle 20 with a key slot 22 for locking the handles and doors in the closed position. To energize the electrical components within cabinet A, there is provided a somewhat conventional switch control member in the form of a lever 30 which is movable between two positions, one of which allows operation of the oscillator and the other of which inhibits operation of the oscillator. Handle or lever 30 is pivotally mounted on bracket 32 to control an inwardly extending switch rod 34 shown in FIG. 2. Rod 34 is reciprocated by lever 30 to control the position of a switch actuator arm 36 used to control the main power disconnect switch 38 for energizing power supply 40 and oscillator 42. The power supply, in the illustrated embodiment includes a rectifier. Of course, switch arm 34, switch power supply 40 and oscillator 42 are schematically represented to indicate that rod 34 shifts the main switch between the off and on position according to the position of lever 30. Other arrangements could be used for energizing and de-energizing the internal electrical components of cabinet A by movement of switch control members, such as lever 30. With switch 38 in the ON position, power supply 40 can be energized if released by a somewhat standard electrical interlock 44.

Referring now more particularly to FIG. 2, when lever 30 shifts arm 36 into the energized or On position, power supply 40 should not, under normal circumstances, be actuated until all doors or panels 10-16 are closed. In the past various types of electrical interlocks 44 have been used to prevent operation of the internal electrical components within cabinet A until the panels or doors are closed. An illustrated embodiment of electrical interlock 44 includes a standard interlock sensor head 50 supported adjacent each of the doors 10-16. Each of these heads includes a mounting block 52, a sensor probe 54 for controlling a switch cartridge 56 and means for mounting the sensing head adjacent one of the doors, as shown in FIGS. 1 and 2. With the door closed, as shown in FIG. 3, sensor probe or feeler 54 is pushed into cartridge 56 to establish continuity through the cartridge. By connecting a similar cartridge for each door in electrical series, an electrical circuit is created only when all doors are closed and all sensor

probes or feelers 54 are moved inwardly. When this happens, electrical interlock 44 allows the power supply 40 to be energized in accordance with the position of arm 36 of switch 38. When one of the doors is opened, corresponding sensor probe 54 moves outwardly with respect to cartridge 56. This creates a discontinuity in the electrical interlock circuit and shuts down the power supply. This is a schematic representation of an electrical interlock system which can be used on cabinet A.

The present invention relates to a mechanical interlock mechanism which can be used in combination with a standard electrical interlock or separately.

The doors 10-12 include a latch element 60, 62, respectively, each of which is identical. Of course, doors 14, 16 also include a similar latch element. Latch element 60 will be described in detail, and this description will apply equally to the latch elements on the other doors of cabinet A. Latch element 60 is a flat sheet metal element having an outwardly extending tongue 70 adapted to be received within a latch bracket 72 secured onto cabinet A adjacent latch element 60, as best shown in FIG. 2A. Handle 20 is secured onto the latch element which is pivotally mounted about an axis a. Radially spaced pins 74, 76 coact with latch bars 80, 82 extending vertically in opposite directions from latch element 60. These bars are supported with respect to door 10 by horizontally extending, generally parallel door braces 84, 86 having contoured openings 90, 92 for receiving the latch bars 80, 82, respectively, as best shown in FIGS. 2C, 2D, respectively. Element 60 is pivotally mounted to move between the solid line and the phantom line positions shown in FIG. 2. In the phantom line position, latch element 60 is in the unlatched position which will allow movement of the door with respect to cabinet A. In the solid line position, tongue 30 of element 60 coacts with bracket 72 to latch door 10 closed with respect to cabinet A. A spring 94 biases element 60 into the solid line block position. To close door 10, a key unlocks handle 20 for movement downwardly. This shifts latch element 60 into the phantom line position. The door is then closed and handle 20 is released. Spring 94 then returns latch element 60 to its solid line latch position. The door is then locked by a key to prevent unauthorized opening of door 10 with respect to cabinet A. Of course, spring 94 is optional and the position of latch element 60 can be controlled solely by movement of handle 20.

When door 10 is locked, as described above, latch bars 80, 82 are in the solid line positions shown in FIG. 2. These bars extend radially outwardly to cooperate with a mechanical interlock B, constructed in accordance with the preferred embodiment of the present invention.

Referring now more particularly to interlock mechanism B, this mechanism includes four latch mechanisms 100, each of which is associated with one of the doors or panels 10-16. These latch mechanisms will be described later in more detail. A common actuation element or rod 102 controls the latch mechanisms 100 of doors 10, 12. The actuation element is connected to switch control lever 30 by an appropriate lever system including a lever 110 pivotally mounted about pin 112 and connected at its upper end with connecting rod 114. The connecting rod controls bellcrank 120 having a first leg secured and driven by connecting rod 114 and a second leg for reciprocating actuation element or

rod 102 which extends between doors 10, 12, as shown in FIG. 2. Bellcrank 120 provides a support for one end of rod 102. The remainder of the rod is supported by the latching mechanisms 100, in a manner to be described later.

A variety of structures could be used for connecting the switch rod 34 with the lower end of lever 110. An illustrated embodiment of such a connection is shown in FIG. 2B wherein a nut 122 is secured onto rod 34 which may have a threaded portion for longitudinal adjustment of the nut 122 with respect to rod 34. A pin 124 extends from nut 122 through an opening in lever 110. A bearing washer 126 journals nut 122 with respect to lever 110. Lock nuts 130, 132 are threadably received on the opposite end of pin 124 for finalizing the attachment of rod 34 to the lower end of lever 110. Nuts 130, 132 are removed from pin 124 and lever 110 is disconnected when adjustment is to be made between the lever and rod 34. After disconnecting the lever, nut 122 with pin 124 attached therewith is rotated about rod 34. The threads on rod 34 and on nut 122 shifts nut 122 longitudinally on rod 34. After the proper longitudinal adjustment has been made, pin 124 is again passed through lever 110 and assembled as shown in FIG. 2B. The opening in lever 110 is sufficiently large to allow oscillation of lever 110 with respect to rod 34. Of course, other mechanisms could be used for connecting rod 34 onto the lower end of the oscillating lever 110.

As lever 30 is moved forward toward cabinet A, switch arm 36 is shifted to the On position. This draws connecting rod 114 to the right in FIG. 2 and shifts actuation element 102 to the left, which is the latched position. Reverse movement of lever 30 causes rod 102 to shift to the right to unlatch latch mechanisms 100 at doors 10, 12.

Referring now more particularly to the latch mechanisms 100, one of these mechanisms is shown in FIG. 4. This showing applies equally to the other latch mechanisms. A latch member 130 is pivotally mounted on cabinet A by pin 142. This member includes an upwardly directed nose 144 forming an upwardly facing abutment for a latching function to be described later. Below nose 144 is a downwardly facing cam surface 146 which allows closing of the door with the latch mechanism 100 in its latched position. Latch member 140 is movable between a first latching position shown in solid lines in FIG. 4 and defined by a fixed stop 150 and a second unlatched position shown in phantom lines in FIG. 4. Nose 144 of latch member 140 coacts with a keeper element 130 on the upper end of latch bar 80. This keeper element is best shown in FIG. 2E and includes a lower abutment which coacts with the nose 144 to prevent downward movement of latch bar 80 when latch member 140 is in the solid line position of FIG. 4. Keeper element 160 includes an outwardly extending cam member 162 which is adapted to coact with the downwardly facing cam surface 146 of latch member 140 during movement of latch bar 80 into the closed or locked position after latch mechanism 100 is in its latched position. To allow camming of member 140 away from keeper element 160 during upward movement of bar 80 when the latch mechanism 100 is in its latched position, an opening 170 is provided in member 140. Nuts 172, 174 on rod 102 limit axial movement of rod 102 with respect to member 140. A washer 176 forms a rear abutment for a coil compres-

sion spring 180 which is compressively held between this washer and the right hand face of a latch member 140, as shown in FIG. 5. As latch arm 80 is forced upwardly when the latch member 100 is in its solid line position of FIG. 4, cam member 162 coacts with cam surface 146 to force element 140 to the right against the biasing action of spring 180. As soon as the lower portion of keeper 160 passes nose 144, spring 180 forces element 140 to the left into the position shown in FIG. 4. This then locks latch bar 80 in an up position holding nose 70 in locking engagement with latch bracket 72.

Referring now to the operation of the structure as so far described, with the switch 38 in the OFF position, latch members 140 are in the phantom line positions shown in FIG. 4. The doors 10, 12 can then be closed and locked as previously described. This shifts both latch bars 80 of the two doors into their upper positions. By shifting lever 30 into the ON position, elements 140 are pivoted to the solid line position shown in FIG. 4. This causes movement of nose 144 in an arc from below keeper 160 so that the nose is positioned under the lower abutment surface of keeper 160. This prevents downward movement of latch bar 80. Element 140 includes a generally flat, generally vertically extending portion 140a which, in the latched position shown in FIG. 4, is generally vertical and in a plane *m*. This plane is a generally vertical plane so that any downward forces exerted on nose 144 by keeper 160, in an attempt to open doors 10, 12, are resisted by pin 142. The downward force on the nose does not tend to pivot member 140 with respect to spring 180 since the force is absorbed by pin 142. Spring 180 holds element 140 against stop 150 to rigidify the holding force of nose 144 during the latched condition as shown in FIG. 4. If by chance, one of the elements 140 is shifted to the solid line position shown in FIG. 4 before one of the doors is closed and latched, the open door can still be closed and latched without affecting the set condition of the mechanical interlock mechanism B. Before the door is closed, keeper element 160 is in the phantom line position shown in FIG. 4. When the door is closed with latch member 140 in the solid line position handle 20 or spring 94 shifts latch element 60 into the latched position. Keeper 160 at the top of latch bar 180 is thus moved upwardly as shown in FIG. 4. When this happens, cam member 162 contacts cam surface 146 and pivots latch member 140 to the right. At a position designated by the distance of *s* in FIG. 4, nose 144 clears the outer surface 160a of keeper 160. This is substantially below the final upward position of nose 144. When now 144 clears the lower abutment of keeper 160, nose 144 snaps under keeper 160 and moves with the keeper into the final upward position of keeper during the latching operation. At the lower position of distance *s*, the angle of plane *m* is still substantially vertical although portion 140a may be somewhat away from stop 150. In any position in space *s*, vertically downward force by keeper 140 will be rigidly opposed by nose 144. In accordance with the preferred embodiment of the invention, upward movement of keeper 160 is above the solid line position shown in FIG. 4. Consequently, during normal operation, portion 140a is forced against pin 150 when a gap is present between nose 144 and keeper 160. Since a substantial amount of downward movement is required to un-

latch tongue 70 from bracket 72, upward over travel of keeper 160 is quite practical.

The discussion above related primarily to the mechanisms of doors 10, 12 of cabinet A; however, the same mechanisms are included at doors 14, 16. The corresponding mechanisms may be driven by lever 110 or by another lever system. However, in accordance with the preferred embodiment of the invention, as shown in FIG. 5, the opposite latch mechanisms 100 are driven by a rotatably mounted cross rod 190. The journals of the rod 190 have been omitted for simplicity. Rod 190 is oscillated by an arm 192 connected to rod 102 by bracket 194 secured onto rod 102 by spaced nuts 194a, 194b, as shown in FIG. 2. A slidable connection between arm 192 and bracket 194 is provided. Various types of slidable connections are possible; however, in accordance with the illustrated embodiment of the invention, a pin and slot connection barring pin 196 and slot 197 is used. As can be seen, reciprocation of rod 102 rotates rod 190 which extends across cabinet A to the opposite side adjacent doors 14, 16. At that side, oscillating rod 190 drives an arm 192a which reciprocates bracket 194a connected onto actuation element or rod 102a. Again, an appropriate sliding, such as a pin and slot therefor 197a, is used between bracket 194a and arm 192a. In this manner, rod 102a operates in unison with rod 102. Latch mechanisms 100 adjacent doors 14, 16 are thus simultaneously operated in the same fashion as latch mechanisms 100 adjacent doors 10 and 12.

Having thus defined my invention, I claim:

1. A mechanical interlock for a cabinet surrounding an electrical component and having a switch control member movable between a first position allowing energization of said component and a second position preventing energization of said component, at least one door movable between a first closed position and a second opened position, and a door latch element movable between a first position latching said door to said cabinet when said door is in said closed first position and a second position unlatching said door from said cabinet and, thus, allowing movement of said door with respect to said cabinet, said mechanical interlock comprising: an actuation element; means for connecting said actuation element to said switch control member for movement between a first position when said switch control member is in its first position and a second position when said switch control member is in its second position; a latch member on said cabinet, said latch member being mounted on said cabinet for movement between a first position and a second position and having a first locking abutment facing one direction; means connecting said latch member with said actuation element for urging said latch member toward its first position when said actuation element is in its first position and for moving said latch member into its second position when said actuation element is in its second position; spring means between said actuation element and said latch member for biasing said latch member toward its first position and allowing forced movement of said latch member toward its second position while said actuation element is in its first position; a keeper element with a second locking abutment mounted onto said door and movable into a first position by movement of said door latch element into its first latching position and movable into a second position by movement of said door latch element into its unlatching posi-

tion; means for aligning said keeper element with said latch member so that said locking abutments coact to lock said door latch member in said first position when said door is in said first closed position, said latch member is in its said first position and said keeper element is in its first position.

2. A mechanical interlock as defined in claim 1 wherein said latch member includes a cam means for camming said latch member toward its second position upon movement of said keeper element into said first position when said door is in said first closed position and said latch member is in said first position and means for allowing return of said latch member by said spring means when said abutments are aligned to lock said latch element into its first position.

3. A mechanical interlock as defined in claim 2 wherein said cam means includes a cam element on said keeper element can a cam surface on said latch member whereby said cam member engages said cam surface and forces said latch member from its first position as said keeper is moved from its second to its first position.

4. A mechanical interlock as defined in claim 3 including a stop means mounted on said cabinet for defining said first position of said latch member.

5. A mechanical interlock as defined in claim 1 including a stop means mounted on said cabinet for defining said first position of said latch member.

6. A mechanical interlock as defined in claim 5 wherein said switch control member is movable lever supported on said cabinet and said means for connecting said actuator element to said switch control member includes a lever system.

7. A mechanical interlock as defined in claim 1 wherein said switch control member is a movable lever supported on said cabinet and said means for connecting said actuator element to said switch control member includes a lever system.

8. A mechanical interlock as defined in claim 1 wherein said latch member includes means for pivotally mounting said latch member on said cabinet for oscillation between said first and second positions of said latch member.

9. A mechanical interlock as defined in claim 8 including a stop means mounted on said cabinet for defining said first position of said latch member.

10. A mechanical interlock as defined in claim 9 wherein said actuation element is a movable rod, and said means connecting said latch member with said actuation element includes an opening in said latch member and means for securing said rod through said opening.

11. A mechanical interlock as defined in claim 10 wherein said spring means includes a coil spring surrounding said rod, first means for securing said coil spring with respect to said rod and second means on said latch member for compressing said spring and creating said biasing force.

12. A mechanical interlock as defined in claim 1 wherein said actuation element is a movable rod, and said means connecting said latch member with said actuation element includes an opening in said latch member and means for securing said rod through said opening.

13. A mechanical interlock as defined in claim 12 wherein said spring means includes a coil spring surrounding said rod, first means for securing said coil

spring with respect to said rod and second means on said latch member for compressing said spring and creating said biasing force.

14. A mechanical interlock for a cabinet surrounding an electrical component and having a switch control member movable between a first position allowing energization of said component and a second position preventing energization of said component, at least one door movable between a first closed position and a second opened position, and a door latch element movable between a first position latching said door to said cabinet when said door is in said closed first position and a second position unlatching said door from said cabinet and, thus, allowing movement of said door with respect to said cabinet, said mechanical interlock comprising: an actuation element; means for connecting said actuation element to said switch control member for movement between a first position when said switch control member is in its first position and a second position when said switch control member is in its second position; latch means for securing said latch element in said first latching position when said actuation element is in said first position simultaneously with said latch element being in said first latching position; and said latch means including means for allowing said latch element to shift from said second unlatching position to said first latching position while said actuation element is in said first position.

15. A mechanical interlock for a cabinet surrounding an electrical component and having a switch control member movable between a first position allowing energization of said component and a second position preventing energization of said component, at least two doors each movable between a first closed position and a second opened position, and a door latch element for each of said doors, said latch elements each being movable between a first position latching its door to said cabinet when its door is in said closed first position and a second position unlatching its door from said cabinet and, thus, allowing movement of its door with respect to said cabinet, said mechanical interlock comprising: an actuation element; means for connecting said actuation element to said switch control member for movement between a first position when said switch control

member is in its first position and a second position when said switch control member is in its second position; a separate latch means for securing each of said latch elements in the first latching position when said actuation element is in said first position simultaneously with said latch elements of said doors being in the first latching position; and said separate latch means each including means for allowing said latch elements to shift from their second unlatching positions to their first latching positions while said actuation element is in said first position.

16. A mechanical interlock for a cabinet surrounding an electrical component and having a switch control member movable between a first position allowing energization of said component and a second position preventing energization of said component, at least two doors each movable between a first closed position and a second opened position, and a door latch element for each of said doors, said latch elements each being movable between a first position latching its door to said cabinet when its door is in said closed first position and a second position unlatching its door from said cabinet and, thus, allowing movement of its door with respect to said cabinet, said mechanical interlock comprising: an actuation element; means for connecting said actuation element to said switch control member for movement between a first position when said switch control member is in its first position and a second position when said switch control member is in its second position; a separate latch means for securing each of said latch elements in the first latching position when said actuation element is in the first position simultaneously with said latch element of said doors being in the first latching position; each of said separate latch means including a latch element on said cabinet and movable between a first position for securing said latch elements when said actuation element is in said first position and a second position for releasing said latch elements when said actuation element is in said second position; and each of said latch means including means for allowing said latch elements to shift from said released position to said latched position while said actuation element is in said first position.

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