May 28, 1929. J. A. WIDMER 1,715,339

ELECTRIC SWITCHING DEVICE

Original Filed Oct. 7, 1921 2 Sheets-Sheet 1

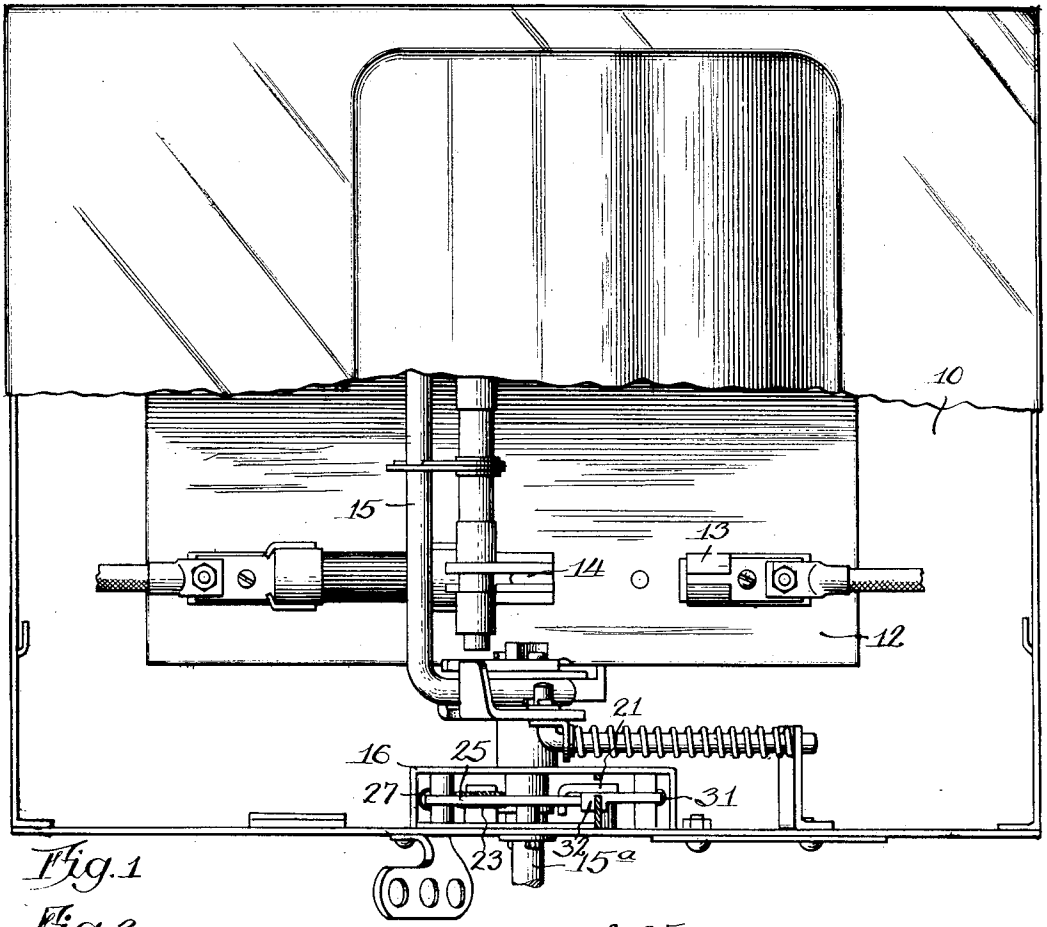
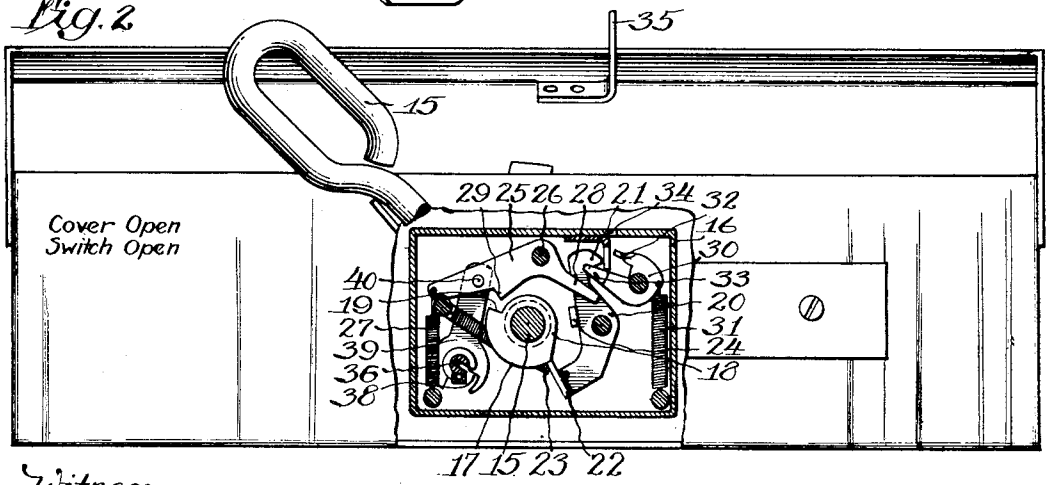


Fig. 1

Fig. 2



Witness:
A. Arnold Brand

Inventor,
Jules A. Widmer,
By Jones, Addington, Ames & Seibold
Attys

May 28, 1929. J. A. WIDMER 1,715,339

ELECTRIC SWITCHING DEVICE

Original Filed Oct. 7, 1921 2 Sheets-Sheet 2

Fig. 3

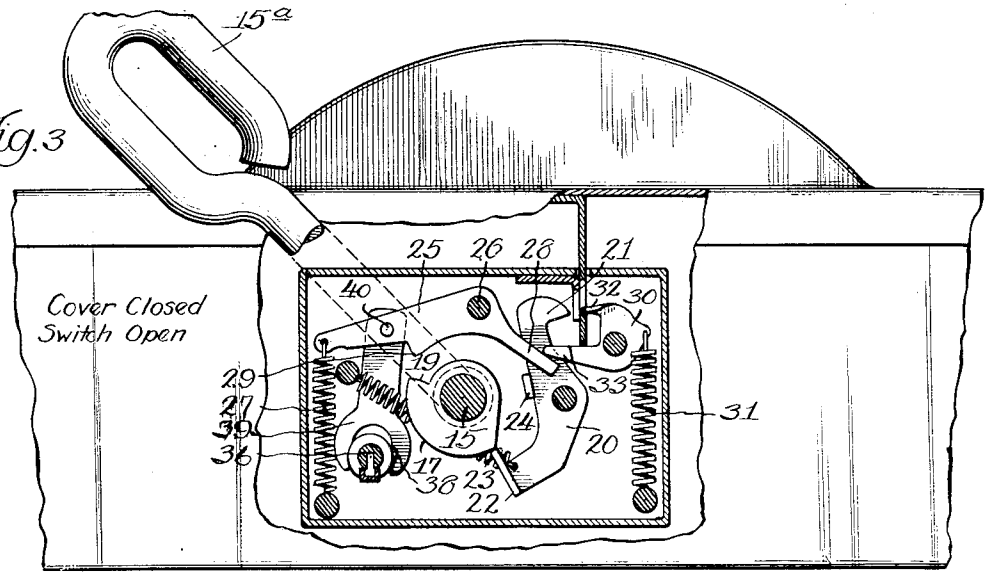


Fig. 4

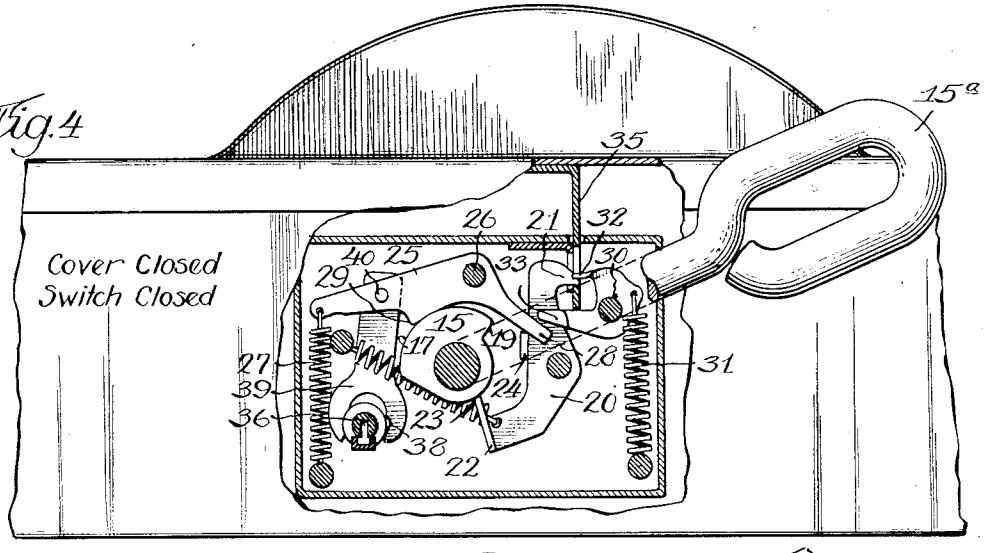
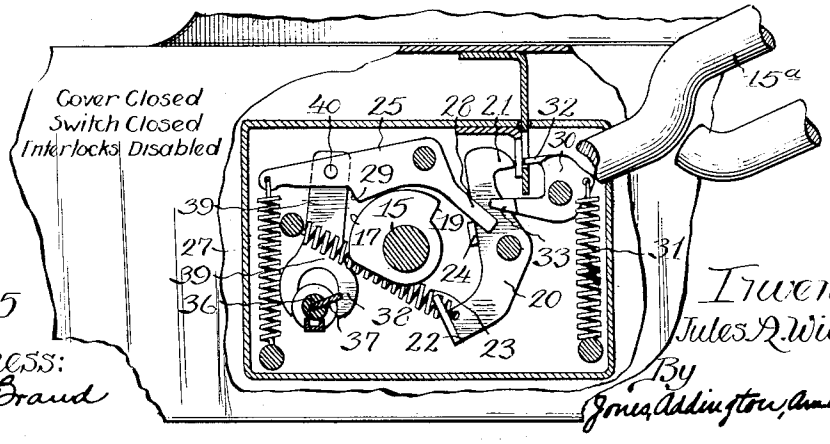


Fig. 5



Witness:
a. a. Braud

Inventor:
Jules A. Widmer
By
Jones, Addington, Ames & Seyfred
Attys.

Patented May 28, 1929. 1,715,339

UNITED STATES PATENT OFFICE.

JULES A. WIDMER, OF DETROIT, MICHIGAN, ASSIGNOR TO SQUARE D. COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

ELECTRIC SWITCHING DEVICE.

Application filed October 7, 1921, Serial No. 505,990. Renewed December 24, 1925.

My invention relates to electric switching devices and it has particular relation to the provision of devices of the character designated having means incorporated therewith, whereby a cover of the switch cannot be opened while the switch is closed nor the switch closed while the cover is open.

More particularly, my invention contemplates the provision of means whereby the above described interlocking mechanism may be rendered temporarily ineffective when it is desired to close and open the switch with the cover open or open the cover while the switch remains closed. Such means are of particular advantage in that they permit various persons, an inspector for instance, to examine the interior of the switch without first going through the operation of opening the switch in order to permit the opening of the cover.

So far as I am aware there has heretofore been considerable opposition to the use of safety switches, since it was necessary for all persons, including inspectors, to first break the circuit before they could open the switch cover. The use of interlocked safety switches was opposed therefore by those who are interested in the continuity of operation of those machines which derive power through such switches. By embodying in the switch a disabling device which is operative through the medium of a key in the hands of an authorized person, I have eliminated the heretofore existing disadvantage which has been inherent in interlocked switches.

On the other hand, there has been considerable objection to those switches which are so interlocked that the switch could not be closed as long as the cover remains open. After once opening the cover, inspectors and other authorized persons frequently desire to open and close the switch in order to observe the manner in which it is functioning. This has been impossible in an interlocked switch as above described. In order to overcome this disadvantage, I contemplate providing an interlocked switch of this character with means whereby the interlock can be temporarily disabled. In the hereinafter disclosed embodiment of my invention, such means take the form of a key which is of particular design thereby insuring that only authorized persons shall be enabled to disable the interlocking mechanism.

I embody my interlocking mechanism and associated disabling means in a housing which is attached to, or detached from, a new or an old switch whereby those advantages which are realized by utilizing my invention may be obtained by the present, as well as future, users of switches.

For a better understanding of my invention reference may be made to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a fragmentary plan view of a switch embodying my invention, the cover of said switch being in open position;

Fig. 2 is a side elevational view of the switch box, the near wall of said switch box and of the interlocking-mechanism housing being broken away to disclose the operating elements, and

Figs. 3 to 5 illustrate the interlocking elements in various operating positions.

Referring now more particularly to the drawings, an enclosed switch comprises a box 10 provided with a cover 11 and having mounted upon a base 12 therein a plurality of contacts 13. Movable contacts 14 are adapted to be closed upon said contacts 13 by an operating member 15 which has a bail shaped portion and handle 15^a extending exteriorly of the box, it being observed that the entire operating member is integrally formed of one piece.

The interlocking mechanism is embodied in a casing 16 which may be attached to the inner side of the side wall. In applying this housing to an old switch the same is secured to the interior of the box wall so that the operating member passes through said housing, a cam member 17 being mounted on said operating member. The cam member 17 surrounds, and is rigidly secured to, the operating member, as shown in the elevational view. This cam comprises a member actuating edeg 18 and an engaging notch 19. On the wall of the housing is pivoted a cover locking member 20 provided at one end with a hasp engaging hook 21 and at its other end with a right-angled portion 22, the latter being held in engagement with the cam edge 18 by a spring 23. The lug 24 is also formed on the member 20, for purposes to be hereinafter described.

A switch locking member 25 is likewise pivotally mounted on the wall of the housing 16 as at 26, and has its left-hand end normally urged downwardly by a spring 27. This locking member 25 comprises an arm 28 which is adapted to press against the lug 24, and turn the hook portion 21 of the member 20 to the left around its pivotal mounting. The member 25 also embodies a projecting lug 29 which is adapted to engage in the notch 19.

A member 30 is pivoted as shown, and is normally urged by a spring 31 into such a position, that two arms 32 and 33, extending to the left of the pivot point, are held in their uppermost position under an aperture 34 in the top of the housing 16. A hasp 35 is attached to the cover and when the latter is closed, passes through the aperture 34 and presses the arm 33 downwardly against the action of the spring 31.

A key cylinder 36 is mounted on the wall of the housing and is adapted to receive a key 37 to be turned thereby in such direction that the latter, at its inner end engages and moves the lower end 38 of a slidable member 39.

This slidable member 39 is attached to the locking member 25 by a pin 40 whereby, when said key is turned to the left, the member 25 is moved clockwise around its pivot, whereupon the lug 29 may be elevated from engagement with the notch 19. Further movement of the key and consequent rotation of the member 25 causes the arm 28 to engage with the lug 24 and turn the latter in a counter-clockwise direction around its pivotal mounting, whereupon the hook 21 is withdrawn from engagement with the hasp 35.

Having described one embodiment of my invention, the action thereof is as follows:

Fig. 2 illustrates the position of the various interlocking elements when the cover is open. In this position of the cover the elements are so arranged that it is normally impossible to close the switch without first closing the cover. The lug 29 on the member 25 engages the notch 19, in the open position of the cover, and prevents the turning of the handle to the right in a switch closing direction.

Referring now to Fig. 3, the position of the various elements is shown after the cover has been closed and the hasp 35 has entered the aperture 34 and pressed the arm 33 downwardly. As the latter is moved downwardly, the end thereof engages the arm 28 and moves the pivotal member 25 in such direction that the lug 29 is withdrawn from the notch 19. Therefore, after the cover has been closed the handle may be operated in a switch closing direction, as desired.

If, with the elements in this position of Fig. 2, an unauthorized person attempt to disable the interlock by inserting a screw driver or analogous tool through the aperture for the purpose of pressing arm 33 downwardly, such a tool will be immediately engaged by the arm 32 as it too swings to the left whereupon it will be impossible to move said tool further into the housing. This member 30 therefore prevents the insertion of an unauthorized tool through the aperture 34. Of course, when the hasp itself pushes the arm 33 downwardly, the arm 32 swings into the eye of the hasp and does not prevent the further downward movement of said hasp to ultimately release the switch locking member from engagement with the operating member.

The position of the elements after the handle has been thrown to the right to close the switch is shown in Fig. 4. It will be observed that the edge 18 of the cam 17 is moved in such direction that the spring 23 is allowed to move the hook 21 into engagement with the eye of the hasp, whereby the cover is locked closed. Thereafter the cover cannot be opened until the switch is again opened and the movement of the cam 18 throws the hook 21 out of engagement with the hasp.

Assuming that it is desired to disable the normal interlocking mechanism of the device, the key 37 is inserted through the outer wall of the box and into the key cylinder 36 which is mounted within the housing. When the key is turned to the left, the member 25 is moved in a clockwise direction, whereupon the lug 29 is withdrawn from the notch 19, and, moreover, whereupon the arm 28 contacts with the lug 24 on the member 20 and moves the latter so that the hook 21 is withdrawn from engagement with the hasp. If the key is then held in this position, the cover may be open although the switch remains closed, and, moreover, the switch may be closed while the cover remains open. Immediately, however, upon the release of the key, the spring 27 pulls the member 25 downwardly in a counter-clockwise direction and restores the slidable member 39 to its initial position. When the latter condition obtains the normal interlocking functions are again effected by the various elements.

It will be observed from the above description that I have provided an interlocking mechanism whereby all normal safety considerations are taken into account, but which is so provided with disabling means that the continuity of production is not hampered because the opening of the switch is necessitated every time it is desired to examine the interior of the same by opening the cover thereon. Of course, I contemplate providing a device of this character with keys which are not readily duplicated whereby only authorized persons may disable the interlock. Although I have described but

one embodiment of my invention, I believe that the provision of a key operated and exteriorly accessible disabling means for a completely interlocked switch is entirely novel, and I desire, therefore, that my invention be interpreted in its broadest sense and not narrowed by the specific exemplification illustrated. It is obvious that many modifications therein may occur to those skilled in the art, and desire, therefore, that the invention be limited only by a showing of the prior art and by the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. In a switch comprising a box provided with a cover and having a switch operating member operable from the exterior of said box, interlocking mechanism whereby said cover cannot be opened while said switch is closed nor said switch closed while said cover is open, comprising a switch locking member, a cover locking member, and key-like means for engaging one of said members and disabling both of said locks by movement of one of them.

2. In a switch comprising a box provided with a cover and having a switch operating member operable from the exterior of said box, interlocking mechanism whereby said cover cannot be opened while said switch is closed nor said switch closed while said cover is open, comprising a switch locking member, a cover locking member key-like, means for engaging one of said members and temporarily disabling both of said locks by movement of one of them, and means for thereafter automatically restoring said elements to locking condition.

3. In a switch comprising a box provided with a cover and having a switch operating member operable from the exterior of said box, interlocking mechanism applicable to said switch whereby said cover cannot be opened while said switch is closed nor said switch closed while said cover is open, comprising an engageable member applicable to said operating member, a switch locking element for engaging said member to lock said switch open while the cover is open, a cover locking element which is constantly urged into locking relation, means on said engageable member to unlock said cover when said switch is open, and means for disabling the interlocking mechanism.

4. In a switch comprising a box provided with a cover and having a switch operating member operable from the exterior of said box, interlocking mechanism applicable to said switch whereby said cover cannot be opened while said switch is closed nor said switch closed while said cover is open, comprising an engageable member applicable to said operating member and embodying a notch and a cam-like portion, a switch locking element having a lug engaging said notch to lock said switch open while the cover is open, a cover locking element which is constantly urged into locking relation but which is moved to unlocked position by said cam portion when said switch is open, and means for disabling the interlocking mechanism.

5. In a switch comprising a box provided with a cover and having a switch operating member operable from the exterior of said box, interlocking mechanism applicable to said switch whereby said cover cannot be opened while said switch is closed nor said switch closed while said cover is open, comprising an engageable member applicable to said operating member and embodying a notch and a cam-like portion, a switch locking element having a lug engaging said notch to lock said switch open while the cover is open, a cover locking element which is constantly urged into locking relation but which is moved to unlocked position by said cam portion when said switch is open, said switch locking element being adapted to engage said cover locking element, and means for disabling said switch lock and through its movement to disable said cover lock.

6. In a switch comprising a box provided with a cover and having a switch operating member operable from the exterior of said box, interlocking mechanism, whereby said cover cannot be opened while said switch is closed nor said switch closed while said cover is open, comprising an engageable member adapted to surround, and be attached to, said operating member and embodying a notched engaging portion and a cam portion, a pivoted member which has an engageable portion and which is normally urged into locking relation with said notch, a pivoted cover locking element, and means for withdrawing said engaging portion from said notch when said cover is closed, said cam portion positively engaging said cover locking element when said switch is open to release said cover.

7. In a switch comprising a box provided with a cover and having a switch operating member operable from the exterior of said box, interlocking mechanism, whereby said cover cannot be opened while said switch is closed nor said switch closed while said cover is open, comprising an engageable member adapted to surround, and be attached to, said operating member and embodying a notched engaging portion and a cam portion, a pivoted member which has an engageable portion and which is normally urged into locking relation with said notch, a pivoted cover locking element normally urged to locking position, means for withdrawing said engageable portion from said notch when said cover is closed, said

cam portion positively engaging said cover locking element when said switch is open to release said cover but disengaging the same when said switch is closed whereby the cover is locked closed, and key-controlled means for disabling said interlocks.

8. In a switch comprising a box provided with a cover and having a switch operating member operable from the exterior of said box, interlocking mechanism, whereby said cover cannot be opened while said switch is closed nor said switch closed while said cover is open, comprising an engageable member adapted to surround, and be attached to, said operating member and embodying a notched engaging portion and a cam portion, a pivoted member which has an engaging portion and which is normally urged into locking relation with said notch, a pivoted cover locking element, means for withdrawing said engaging portion from said notch when said cover is closed, said cam portion positively engaging said cover locking element when said switch is open to release said cover, additional means for moving said switch locking member about its pivot while said cover is open, and a key for operating said means.

9. In a switch comprising a box provided with a cover and having a switch operating member operable from the exterior of said box, interlocking mechanism, whereby said cover cannot be opened while said switch is closed nor said switch closed while said cover is open, comprising an engageable member adapted to surround, and be attached to, said operating member embodying a notched engaging portion and a cam portion, a pivoted member which has an engaging portion and which is normally urged into locking relation with said notch, a pivoted cover locking element, means for withdrawing said engaging portion from said notch when said cover is closed, said cam portion positively engaging said cover locking element when said switch is open to release said cover, additional means for moving said switch locking member about its pivot while said cover is open, and a key insertible from the exterior of said box for operating said last-named means.

10. In a switch comprising a box provided with a cover and having a switch operating member operable from the exterior of said box, interlocking mechanism, whereby said cover cannot be opened while said switch is closed or said switch closed while said cover is open, comprising an engageable member adapted to surround, and be attached to, said operating member embodying a notched engaging portion and a cam portion, a pivoted member which has an engageable portion and which is normally urged into locking relation with said notch, a pivoted cover locking element, means for withdrawing said engaging portion from said notch when said cover is closed, said cam portion positively engaging said cover locking element when said switch is open to release said cover, additional means for moving said switch locking member about its pivot while said cover is open, a key for operating said last-named means, and means whereby said key moves said cover locking element to unlock said cover while said switch is closed.

11. In a switch comprising a box provided with a cover and having a switch operating member operable from the exterior of said box, interlocking mechanism, whereby said cover cannot be opened while said switch is closed or said switch closed while said cover is open, comprising an engageable member adapted to surround, and be attached to, said operating member embodying a notched engaging portion and a cam portion, a pivoted member which has an engaging portion and which is normally urged into locking relation with said notch, a pivoted cover locking element, means for withdrawing said engaging portion from said notch when said cover is closed, said cam portion positively engaging said cover locking element when said switch is open to release said cover, additional means for moving said switch locking member about its pivot while said cover is open, a key for operating said last-named means, and means comprising a portion on said switch locking means for engaging said cover locking element and moving the same to unlock said cover whereby said key also functions to disable the cover interlock while the switch is closed.

12. In a switch comprising a box provided with a cover and having a switch operating member operable from the exterior of said box, interlocking mechanism whereby said cover cannot be opened while said switch is closed nor said switch closed while said cover is open, comprising a switch locking member, a cover locking member, and key-like means for disabling both of said locks by the movement of one of them from the exterior of the box.

13. In a switch comprising a box provided with a cover and having a switch operating member operable from the exterior of said box, interlocking mechanism whereby said cover cannot be opened while said switch is closed nor said switch closed while said cover is open, comprising a switch locking member, and key-like means for disabling both of said locks from the exterior of the box.

14. In a switch comprising a box provided with a cover and having a switch operating member operable from the exterior of said box, interlocking mechanism whereby said cover cannot be opened while said switch is closed nor said switch closed while said cover is open, a switch locking member, a cover

locking member, and means for disabling both of said locks comprising a key insertible from the exterior of said box to engage one of said members.

15. In a switch comprising a box provided with a cover having a switch operating member operable from the exterior of said box, interlocking mechanism whereby said cover cannot be opened while said switch is closed nor said switch closed while said cover is open, comprising a pivoted switch locking member, a pivoted cover locking member, a pivoted member adapted to be engaged by a portion of said cover and move said switch locking member when said cover is closed, a member secured to said switch operating means which is engaged by said switch locking member when the cover is open and which engages the cover locking member when the switch is open, and means to disable said interlocks.

16. In a switch comprising a box provided with a cover and having a switch operating member operable from the exterior of said box, interlocking mechanism whereby said cover cannot be opened while said switch is closed nor said switch closed while said cover is open, comprising a pivoted switch locking member, a pivoted cover locking member, a pivoted member adapted to be engaged by a portion of said cover and move said switch locking member when said cover is closed, a member secured to said switch operating means which is engaged by said switch locking member when the cover is open and which engages the cover locking member when the switch is open to release said cover, and means to initially disable one of said interlocks and thereafter disable the other of said interlocks.

17. In a switch comprising a box provided with a cover and having a switch operating member operable from the exterior of said box, interlocking mechanism whereby said cover cannot be opened while said switch is closed nor said switch closed while said cover is open, comprising a pivoted switch locking member, a pivoted cover locking member, a pivoted member adapted to be engaged by a portion of said cover and move said switch locking member when said cover is closed, a member secured to said switch operating means which is engaged by said switch locking member when the cover is open and which engages the cover locking member when the switch is open to release said cover, and means to initially disable one of said interlocks and through it to thereafter disable the other of said interlocks.

18. In a switch comprising a box provided with a cover and having a switch operating member operable from the exterior of said box, interlocking mechanism whereby said cover cannot be opened while said switch is closed nor said switch closed while said cover is open, comprising a pivoted switch locking member, a pivoted cover locking member, a pivoted member adapted to be engaged by a portion of said cover and move said switch locking member when said cover is closed, a member secured to said switch operating means which is engaged by said switch locking member when the cover is open and which engages the cover locking member when the switch is open to release said cover, and means comprising a key operable from the exterior of said box to disable said interlocks.

19. In a switch comprising a box provided with a cover and having a switch operating member operable from the exterior of said box, interlocking mechanism whereby said cover cannot be opened while said switch is closed nor said switch closed while said cover is open, comprising a pivoted switch locking member, a pivoted cover locking member, a pivoted member adapted to be engaged by a portion of said cover and move said switch locking member when the cover is closed, a member secured to said switch operating means which is engaged by said switch locking member when the cover is open and which engages the cover locking member when the switch is open to release said cover, and means comprising a key operable from the exterior of said box to initially disable one of said interlocks and thereafter disable the other of said interlocks.

20. In combination with a switch box having a cover thereon and switch operating mechanism therein, an interlocking mechanism whereby the cover cannot be opened while the switch is closed nor the switch closed while the cover is open, said mechanism embodying cover locking means, a hasp on said cover which is engaged by said cover locking means when the cover is closed to lock said cover in the latter position, said cover locking means being moved to unlocking position by the opening of said switch, switch locking means which prevents the switch closing movement of said switch operating mechanism when the cover is open, and a pivoted member adapted to be engaged by the cover hasp and moved to unlock said switch locking means when the cover is closed.

21. In combination with a switch box having a cover thereon and switch operating mechanism therein, and interlocking mechanism whereby the cover cannot be opened while the switch is closed nor the switch closed while the cover is open, said mechanism embodying cover locking means, a hasp on said cover which is engaged by said cover locking means when the cover is closed to lock said cover in the latter position, said cover locking means being moved to unlocking position by the opening of said switch,

switch locking means which prevents the switch closing movement of said switch operating mechanism when the cover is open, and a protective member for preventing the entrance of unauthorized articles tending to disable said interlock.

22. In combination with a switch box having a cover thereon and switch operating mechanism therein, an interlocking mechanism whereby the cover cannot be opened while the switch is closed nor the switch closed while the cover is open, said mechanism embodying cover locking means, a hasp on said cover which is engaged by said cover locking means when the cover is closed to lock said cover in the latter position, said cover locking means being moved to unlocking position by the opening of said switch, switch locking means which prevents the switch closing movement of said switch operating mechanism when the cover is open, and a pivoted member adapted to swing into such position, when the cover is open, that the use of unauthorized disabling articles is prevented.

23. In combination with a switch box having a cover thereon and switch operating mechanism therein, an interlocking mechanism whereby the cover cannot be opened while the switch is closed nor the switch closed while the cover is open, said mechanism embodying cover locking means, a hasp on said cover which is engaged by said cover locking means when the cover is closed to lock said cover in the latter position, said cover locking means being moved to unlocking position by the opening of said switch, switch locking means which prevents the switch closing movement of said switch operating mechanism when the cover is open, and a pivoted member adapted to swing into such position when the cover is open that the use of unauthorized disabling articles is prevented, said latter member being moved when the cover is closed to engage the switch locking means and release the switch operating mechanism.

24. In combination with a switch box having a cover thereon and a switch operating mechanism therein, an engageable member on said cover, an interlocking mechanism comprising a cover locking member, a switch locking member, means for normally urging said members into locking position, each of said members being provided with a hooked portion to engage selected elements, and means for moving said switch locking member into unlocking position as the cover is closed and for preventing tampering with said interlock when the cover is open, said last member being moved by the cover member to engage and move said switch locking means to effect said unlocking.

25. In combination with a switch box having a cover thereon and a switch operating mechanism therein, an engageable member on said cover, an interlocking mechanism comprising a cover locking member, a switch locking member, means for normally urging said members into locking position, each of said members being provided with a hooked portion to engage selected elements, means comprising a member having a portion thereof co-planar with said switch locking member and an entrance preventing portion for moving said switch locking member into unlocking position as the cover is closed and for preventing tampering with said interlock when the cover is open, said last member being moved by the cover member to engage and move said switch locking means to effect said unlocking.

26. In combination with a switch box having a cover thereon and a switch operating mechanism therein, an engageable hasp on said cover, an interlocking mechanism comprising a cover locking member, a switch locking member, means for normally urging said members into locking position, each of said members being provided with a hooked portion to engage selected elements, means for moving said switch locking member into unlocking position as the cover is closed, and means for moving said cover locking member from engagement with said hasp although the switch is closed comprising a key member insertable into operative association with the interlock from the exterior of said box.

27. In combination with a switch box having a cover thereon and a switch operating mechanism therein, an engageable member on said cover, an interlocking mechanism comprising a cover locking member, a switch locking member, means for normally urging said members into locking position, each of said members being provided with a hooked portion to engage selected elements, means for moving said switch locking member into unlocking position as the cover is closed, and means for moving said switch locking member out of engagement with said switch operating means although said cover is open comprising a key member insertable into operative association with the interlock from the exterior of said box.

28. In combination with a switch box having a cover thereon and a switch operating mechanism therein, an engageable hasp on said cover, an interlocking mechanism comprising a cover locking member, a switch locking member, means for normally urging said members into locking position, each of said members being provided with a hooked portion to engage selected elements, means for moving said switch locking member into unlocking position as the cover is closed, and means for moving said cover locking member from engagement with said hasp although the switch is closed and for moving

said switch locking member out of engagement with said switch operating means although said cover is open comprising a key member insertable into operative association with the interlock from the exterior of said box.

29. In combination with a switch box having a cover thereon and a switch operating mechanism therein, an engageable member hasp on said cover, an interlocking mechanism comprising a cover locking member, a switch locking member, means for normally urging said members into locking position, each of said members being provided with a hooked portion to engage selected elements, means for moving said switch locking member into unlocking position as the cover is closed, means comprising a key member insertable into operative association with the interlock from the exterior of said box for moving said cover locking member from engagement with said hasp although the switch is closed and for moving said switch locking member out of engagement with said switch operating means although said cover is open, and means to prevent all keys but the proper one from effecting said interlock.

30. In a switch comprising a box having walls and provided with a cover, said switch having an operating member operable from the exterior of the box, interlocking mechanism whereby said cover cannot be opened while the switch is closed nor the switch closed while the cover is open, said mechanism embodying a latch actuated upon the closing of the switch for locking the cover closed, a member for moving said latch to unlock the cover while the switch remains closed, and means for moving said latch-disabling member comprising a key, a portion in the wall of the box for receiving the key, and means whereby said key moves said disabling member as the key is turned to cause said member to contact with and move said latch to unlocked position.

31. In a switch comprising a box having walls and provided with a cover, said switch having an operating member operable from the exterior of the box, interlocking mechanism whereby said cover cannot be opened while the switch is closed nor the switch closed while the cover is open, said mechanism embodying a latch actuated upon the closing of the switch for locking the cover closed, a member for moving said latch to unlock the cover while the switch remains closed, and means for moving said latch-disabling member comprising a key, a portion in the wall of the box for receiving the key, and means whereby said key moves said disabling member as the key is turned to cause said member to contact with and move said latch to unlocked position, the key and the disabling member being so associable that the circular motion of the key is converted into a reciprocating rectilinear motion of the part with which said key contacts.

32. In a switch comprising a box having walls and provided with a cover, said switch having an operating member operable from the exterior of the box, interlocking mechanism whereby said cover cannot be opened while the switch is closed nor the switch closed while the cover is open, said mechanism embodying a latch actuated upon the closing of the switch for locking the cover closed, a member for moving said latch to unlock the cover while the switch remains closed, and means for moving said latch-disabling member comprising a key, a portion in the wall of the box for receiving the key, and means whereby said key moves said disabling member as the key is turned to cause said member to contact with and move said latch to unlocked position, said latter means being so associated between said key and said disabling member that the circular motion of said key is converted into reciprocating motion of said member.

33. In a switch comprising a box having walls and provided with a cover, said switch having an operating member operable from the exterior of the box, interlocking mechanism whereby said cover cannot be opened while the switch is closed nor the switch closed while the cover is open, said mechanism embodying a latch actuated upon the closing of the switch for locking the cover closed, a member for moving said latch to unlock the cover while the switch remains closed, and means for moving said latch-disabling member comprising a key, a hub for said key mounted on one of the walls of said box to permit the insertion of the key thereinto from the exterior of the box, and a connection between said hub and said latch-unlocking member, for converting the circular movement of the key in the hub into a reciprocating movement of a portion of said latch-unlocking member to move the latter into contact with said latch and withdraw the latter from cover locking position.

In witness whereof, I have hereunto subscribed my name.

JULES A. WIDMER.

CERTIFICATE OF CORRECTION.

Patent No. 1,715,339. Granted May 28, 1929, to

JULES A. WIDMER.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, line 100, for the misspelled word "edeg" read "edge"; page 3, line 35, claim 2, strike out the comma after the compound word "key-like" and insert the same to follow "member" in same line and claim; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 30th day of July, A. D. 1929.

M. J. Moore,
Acting Commissioner of Patents.

(Seal)

CERTIFICATE OF CORRECTION.

Patent No. 1,715,339. Granted May 28, 1929, to

JULES A. WIDMER.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, line 100, for the misspelled word "edeg" read "edge"; page 3, line 35, claim 2, strike out the comma after the compound word "key-like" and insert the same to follow "member" in same line and claim; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 30th day of July, A. D. 1929.

M. J. Moore,
Acting Commissioner of Patents.

(Seal)