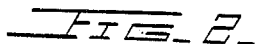


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HV TYPE KEY INTERLOCK

2 Sheets-Sheet 2



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HV TYPE KEY INTERLOCK

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My present invention relates to switchboards of, for instance, the type shown in application Serial No. 159,598, filed May 2, 1950; now Patent No. 2,617,862, and more specifically to the arrangement of a cubicle or compartment within the switchboard in such manner that unauthorized introduction of a circuit breaker, grounding device or other instrument into the cubicle may be positively prevented.

In the operation of switch gear in switchboards particularly the truck type switch gear which are wheeled into and out of cubicles having connection studs for connection to the switch gear, it frequently becomes necessary to remove an instrument such as a circuit breaker, switch, or grounding device from the cubicle and to ensure that no other instrument will be introduced into the cubicle until the particular reason for the withdrawal of an instrument therefrom is removed.

Thus, where for any reason it becomes necessary to work on the load or line circuits leading to a particular cubicle in a switchboard or where it becomes desirable to remove an instrument therefrom and make sure that no other instrument is placed therein, operators have in order to ensure their safety sought various means of locking the cubicle itself against unauthorized insertion of any instrument.

Since the reason for the locking of the cubicle may not be fully understood by other operators who are not aware of the fact that work is proceeding on the circuits which will become exceedingly hazardous if an instrument is introduced into the cubicle, operators have found it necessary actually to station a man at the compartment to prevent unauthorized insertion of an instrument in the compartment.

My invention is directed to a blocking bar in a cubicle so arranged that the blocking bar may be moved to a position where it blocks the insertion of an instrument into operative position in the cubicle and also so arranged that the blocking bar will be positively locked against movement to non-blocking position by an unauthorized person.

More specifically my invention contemplates the provision of a transverse rotatable shaft at the back wall of a cubicle, the said shaft being provided with plates keyed thereto. A crank arm is provided along the side of the cubicle connected either to the shaft or to one of the plates, the said crank arm or handle being so arranged that when it is pulled forward the plates are raised from a position parallel to the back wall of the cubicle to a position where they project horizontally into the cubicle.

When the crank arm or handle is locked in this pulled out position, the plates are, therefore, locked in the horizontally extending posi-

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tion. The plates are preferably dimensioned so that they are longer than the back connection studs of any instrument, such as a circuit breaker, switch, or grounding device, that may be inserted into the cubicle and thereby furnish a positive block to the insertion of such an instrument into operative position.

The primary object of my invention, therefore, is the provision of novel means for blocking the insertion of an instrument into a cubicle or compartment.

Another object of my invention is the provision of rotatably mounted plates so arranged that they may extend parallel and in virtual surface to surface relation with the back wall of a cubicle or compartment or so that they may alternatively be rotated to extend horizontally in the cubicle and block the entrance of a circuit breaker, grounding device, switch or other electrical instrument into operative position in the cubicle.

The foregoing and many other objects of my invention will become apparent in the following description and drawings in which:

Figure 1 is a view in perspective of my novel protective and blocking device in the inoperative or non-blocking position thereof.

Figure 2 is a view in perspective corresponding to Figure 1 showing my novel blocking device in the blocking or operative position thereof.

Figure 3 is a schematic side view showing the manner in which my novel device blocks the entry of an electrical instrument such as a circuit breaker, grounding device, or switch, into operative position in the compartment.

Referring to the figures, the cubicle or compartment of the switch is provided with a back wall 10, side walls 11, 12 and a front opening 13 which may be closed in any suitable manner.

The back wall 10 is provided with openings 20, 20 in which appropriate connecting elements 21 are mounted connected to appropriate buses in the switchboard in a manner which is well-known in the art.

The back wall 10 has support brackets 23, 24 in which is mounted the rotatable shaft 25. Legs 26, 27 are keyed to the shaft 25. Shaft 25 is mounted adjacent the back wall 10 in such manner that in the normal position of Figure 1 the plates 26 and 27 extend virtually in surface to surface relation with the back wall 10.

A pull bar or handle 30 is connected at 31 to the outer side of one of the plates 27 adjacent the shaft 25 so that a relatively small horizontal movement toward the right with respect to Figure 1 of the pull bar or handle 30 will result in a relatively large rotation of plate 27 and hence of shaft 25 and plate 26.

When the handle 30 is pulled from the position of Figure 1 to the position of Figures 2 and 3,

the plates 26 and 27 are extended horizontally as shown in Figures 2 and 3. The plates 26 and 27 are longer than the back connection studs 35, 36 of the instrument 37 which may be inserted into the cubicle so as positively to prevent interengagement of the studs 35, 36 with the connectors 21 in the back wall 10 of the cubicle.

The handle 30 is provided with a downwardly depending bracket 40 having the horizontal section 41 resting over the bolt 42 of the lock 43 having the key 44. Appropriate straps or other bracket means 50 may be provided with the side wall 11 to support the handle 30, although this is not essential since the bracket plate 41 rests on the top of the lock 43 while the other end of the handle 30 is supported at the pivot 31.

The key 44 cannot be turned to extend the bolt 42 upwardly while the elements are in the operative position of Figure 1 owing to the fact that plate 41 blocks the opening for bolt 42.

When the operator desires to place the cubicle in inoperative position so that an instrument cannot be inserted therein into operative relation with the circuit leading to the compartment, he pulls on the knob 60 of handle 30, pulling the handle 30 outwardly from the position of Figure 1 to the position of Figures 2 and 3.

This uncovers the bolt opening of lock 43 and rotation of key 44 will now raise the bolt 42 to a position where it blocks inward movement of plate 41, and hence plate 41, bracket 40, handle 30 and blocking plates 26 and 27 cannot now move inwardly or downwardly from the blocking position of Figures 2 and 3 to the non-blocking position of Figure 1.

The lock 43 and key 44 cannot accidentally be operated while the plates are in the non-blocking position owing to the fact that plate 41 prevents the rise of bolt 42 while blocking plates 26 and 27 are in the non-blocking position.

But after the handle 30 and knob 60 have been pulled to a position where plates 26 and 27 are in the blocking position, then and only then can the bolt 42 be raised by rotation of key 44 in lock 43 to maintain handle 30 and plates 26 and 27 in the blocking position.

Thus, the operator in order to protect himself against the insertion of an instrument into the cubicle or compartment need only pull on knob 60 of handle 30 to pull it out, then rotate the key 44 in lock 43 to raise the bolt 42 to the blocking position of Figures 2 and 3.

Then the operator removes the key 44 and takes it with him knowing that the plates 26 and 27 cannot be lowered once more except by a person who possesses the key 44 or one identical therewith.

For complete safety, therefore, only one key 44 should be provided for any particular lock 43 or extreme precaution must be taken with a master key or duplicate key.

By this means, therefore, it will be seen that the instrument 37 which may be a circuit breaker, a switch, grounding device or other electrical instrument cannot be inserted into the cubicle as seen in Figure 3 while the plates 26 and 27 are in the raised position and that only after the lock has been operated to permit the plates 26 and 27 to move to the lowered position can an instrument 37 be inserted in the cubicle.

In the foregoing I have described my invention solely in connection with specific illustrative embodiments thereof. Since many modifications

and variations of my invention will now be obvious to those skilled in the art, I prefer to be bound not by the specific disclosures herein contained but only by the appended claims.

I claim:

1. In a compartment for switch gear, said compartment having a front opening and a back wall; connectors in said back wall; guide means in said compartment for receiving switch gear introduced therein and blocking means rotatably mounted on said back wall and movable selectively between two limiting positions, the first limiting position being one in which the blocking means extends parallel to the back wall and the second limiting position being one in which the blocking means extends normal to the back wall for a substantial distance into said compartment; said blocking means comprising a rotatable shaft parallel to the said back wall and adjacent thereto, a plate secured to said rotatable shaft substantially at one end of said plate and a linkage for moving said plate and said shaft between the two aforementioned limiting positions, said linkage comprising a pull bar rotatably secured to said plate adjacent said shaft, said pull bar extending normal to said back wall at one side of said compartment and an operating handle on said pull bar.

2. In a compartment for switch gear, said compartment having a front opening and a back wall; connectors in said back wall; guide means in said compartment for receiving switch gear introduced therein and blocking means rotatably mounted on said back wall and movable selectively between two limiting positions, the first limiting position being one in which the blocking means extends parallel to the back wall and the second limiting position being one in which the blocking means extends normal to the back wall for a substantial distance into said compartment; said blocking means comprising a rotatable shaft parallel to said back wall and adjacent thereto, a plate secured to said rotatable shaft substantially at one end of said plate and a linkage for moving said plate and said shaft between the two aforementioned limiting positions, said linkage comprising a pull bar rotatably secured to said plate adjacent said shaft, said pull bar extending normal to said back wall at one side of said compartment and an operating handle on said pull bar, and a lock located at the front of said compartment, said lock having a casing and a bolt movable into and out of said casing, said pull bar having a bracket, said bolt being positioned in the path of movement of said bracket, said bolt being located between the bracket and the back wall of the compartment when the blocking member is moved to the blocking position, said bracket extending above said bolt and blocking the exit of the bolt from the casing when the blocking member is in non-blocking position.

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