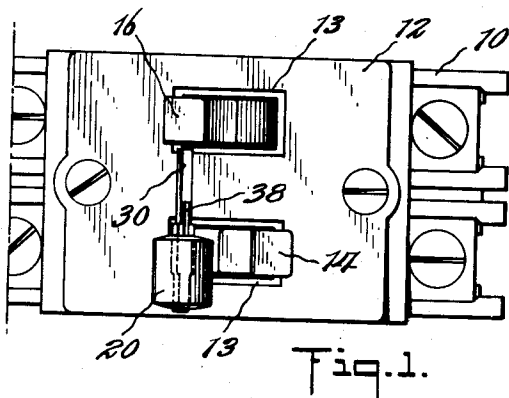
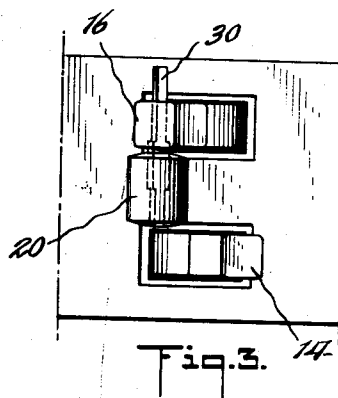
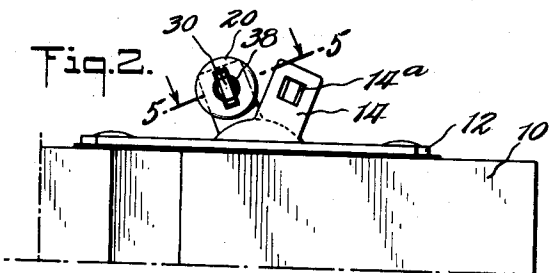
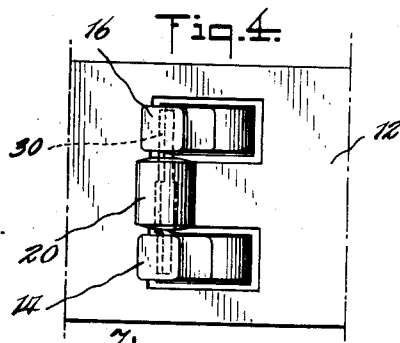
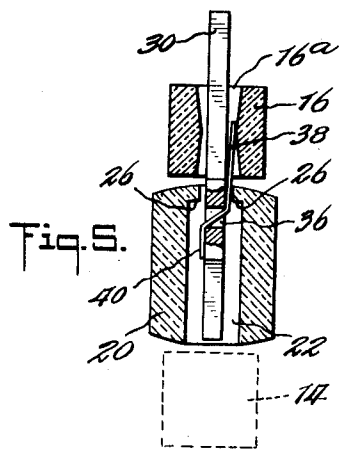
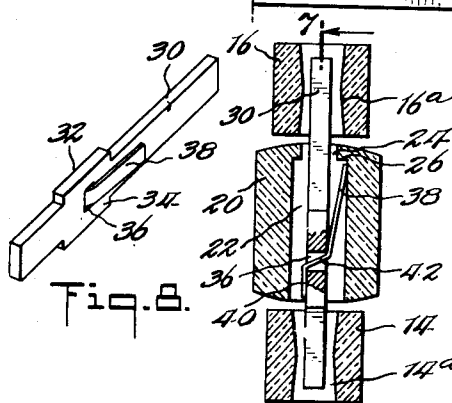
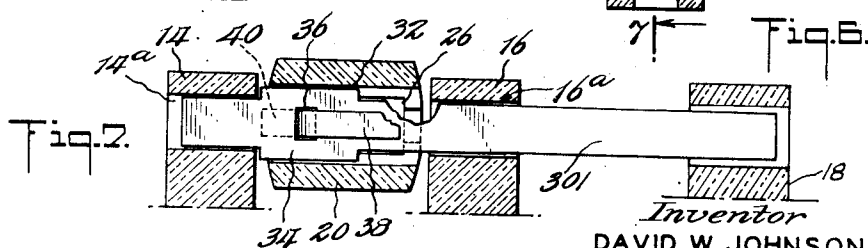


March 24, 1942.

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COUPLING FOR ELECTRIC SWITCH HANDLES

2,277,645

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COUPLING FOR ELECTRIC SWITCH
HANDLES

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16 Claims. (Cl. 200—172)

This invention relates to a coupling for electric switch handles. More particularly, it relates to a coupling which may be applied on the job, or after fabrication of a switch, to a plurality of neighboring, similar switch handles in order that the handles may be operated simultaneously.

The invention has for an object the provision of an improved coupling which may be applied at any time to two or more neighboring switch handles moving in parallel planes in such manner that the handles may be operated jointly as a unit.

Another object of the invention is to provide a coupling of the above type which shall be permanent when once made.

Another object is to provide a coupling of the above type which will lock itself in position and will be non-removable.

Other objects and advantages of the invention will become apparent as it is described in connection with the accompanying drawing.

This application is a continuation-in-part of my application Serial No. 375,341, filed January 21, 1941.

In the drawing—

Fig. 1 is a plan view of a double electric switch having a pair of parallelly-movable operating levers with my improved coupling in position to be connected thereto.

Fig. 2 is a side elevation view of the construction shown in Fig. 1.

Fig. 3 is a plan view of the construction shown in Fig. 1, but with the parts in a further advanced stage of assembly.

Fig. 4 is a plan view of the construction of Fig. 1 in fully-assembled position.

Fig. 5 is a section view through one handle and the coupling taken along line 5—5 of Fig. 2.

Fig. 6 is a section view similar to Fig. 5, but with the handles and coupling fully assembled.

Fig. 7 is a section view taken along a line such as 7—7 of Fig. 6, but showing the invention applied to three switch handles.

Fig. 8 is a detail view showing in perspective the connecting bar and locking spring of my improved handle coupling.

In the different forms of the invention as illustrated in the drawing, like parts bear like reference numerals.

Referring to the drawing, the invention is shown in Figs. 1-6 as applied to a double electric switch having a base 10 of insulating material and a flat plate cover 12 thereon provided with apertures 13 through which extend parallelly-movable operating handles or levers 14 and 16. 55

Ordinarily the levers will be mounted upon pivots within the switch casing and will be formed of molded insulating material with transverse apertures 14a and 16a formed in the upper end portions thereof. These apertures may be rectangular in section and may have their side walls tapered toward the center of the lever.

The coupling comprises a cylindrical insulating body 20 having a central passage 22 formed therein with a reduced end portion 24 forming shoulders 26 adjacent one end thereof. Through the central passage there is insertable a connector bar 30 stamped from sheet metal, having lateral extensions 32 and 34 directly opposite one another and nearer one end than the other of the bar. In the center of the enlarged rectangular portion formed by the extensions 32 and 34 is an aperture 36 for the reception of a locking leaf spring having one end 38 longer than—and offset from—a shorter end 40 by a portion 42 oblique to said end portion. The left edges or shoulders (as seen in Fig. 7) of the extensions 32 and 34, by abutting the inside face of handle 14, prevent the connector 30 from being moved through the handle aperture 14a.

When the locking spring is inserted through the aperture 36 of the connector bar, with the long end 38 lying along the longer end of the bar, the short end of the bar can be inserted through the reduced end of the cylinder 20 until the short end of the bar is just ready to come out of the other side of the cylindrical body 20. (This position of the connector bar and cylinder 20 is shown in Fig. 1). Then the long end of the connector bar can be inserted in the transverse passage of one of the handles, for example 16a. (This position is shown in Figs. 3 and 5 of the drawing.) Then, the other handle 14 can be moved to the same relative position as the handle 16 and the connector bar 30 can be pushed through the cylinder 20 so as to insert the shorter end of the bar into the transverse passage 14a of the handle. In so doing, the long end of the spring 38 will pass entirely through the reduced portion 24 of the cylinder 20 and will snap behind the shoulder 26. (This final position of the parts is shown in Figs. 4 and 6.) In this final position, the coupling is locked permanently to the handles since it is impossible to move the connector bar 30 through the passageway 14a of the handle 14 because of the shoulders of the extensions 32 and 34 abutting the inside face of the handle 14, and, at the same time, it is impossible to move the connector bar in the opposite direction, i. e., back to the position of Fig. 5, because

the longer end 28 of the locking spring abuts the shoulder 26 of the cylinder 20, causing that body to abut the handle 16. Therefore, the coupling has locked itself in position and the connection is permanently made.

In Fig. 7, I have shown the invention as applied for connecting three switch handles. It may also be applied to connect a larger number of handles, but description of yoking three will suffice to explain the principles and construction for any number.

The form of invention in Fig. 7 is the same in all respects as that in Figs. 1-6 and 8 except that the long end of the connector bar 30 is longer than in Figs. 1-6 and 8 wherein only two handles were joined. It will be as long as need be to join the requisite number of handles whether that number be two, three or more.

In assembling the form of Fig. 7, instead of threading the long end of the connector bar through only one handle 16, it will be threaded through all but the first one, i. e., through 16 and 18 but not through 14. During this threading through, all of the handles but 14 will be in the same relative position. After the threading through, handle 14 will be moved into the same relative position as the handles 16 and 18, and the connector bar 30 can be pushed through the cylinder 20 so as to insert the shorter end of the bar into the transverse passage 14a of the handle, thus locking the parts in the same manner as in the previously-described form Figs. 1-6.

From the foregoing, it will be apparent that when a switch having two or more adjacent independent mechanisms is sold, my coupling can be added thereto at any time the purchaser desires, to convert the switch into a double pole switch, a multi-pole switch, or into a pair or more of yoked single pole switches. Obviously the invention is applicable to adjacent handles of switch mechanisms, whether the mechanisms are in the same base or not.

Many modifications within the scope of my invention will occur to those skilled in the art. Therefore, I do not limit the invention to the specific embodiments illustrated and described.

I claim:

1. In combination, a plurality of neighboring switch operating levers movable in parallel planes, each lever having a transverse aperture, a coupling for said levers comprising a hollow body between adjacent levers and having a passageway with a shoulder therein, a connecting member extending loosely through said body with its ends in two of said hand lever apertures, means preventing said connecting member from moving entirely through the apertures of said two levers, means preventing withdrawal of said connecting member from one end of said body after being inserted in said body.

2. In combination, a plurality of neighboring switch operating levers movable in parallel planes, each lever having a transverse aperture, a coupling for said levers comprising a hollow body between adjacent levers and having a passageway with a shoulder therein, a bar with a lateral shoulder engageable with one of said levers to prevent withdrawal of the bar from the remainder of said levers, and a locking spring associated with said bar and engaging with said passageway shoulder to prevent withdrawal of said bar from said one of said levers.

3. In combination, a plurality of neighboring switch operating levers movable in parallel

planes, each lever having a transverse aperture, a coupling for said levers comprising a hollow body between adjacent levers and having a passageway, a connecting bar in said passageway, means on said bar engageable with one of said levers to prevent withdrawal of the bar from the remainder of said levers, and means associated with said bar and body to prevent withdrawal of said bar from said one of said levers.

4. In combination, a plurality of neighboring switch operating levers movable in parallel planes, each lever having a transverse aperture, a coupling for said levers comprising a hollow body between adjacent levers having a passageway, a connecting bar in said passageway, means on said bar engageable with one of said levers to prevent withdrawal of the bar from the remainder of said levers, and a locking spring associated with said bar and body to prevent passing of said bar through said body in the direction of the remainder of said levers sufficiently to disassociate said coupling from said levers.

5. A coupling for yoking together of a plurality of switch operating levers of completely fabricated switches in which the operating lever of each has a transverse opening therethrough, comprising a hollow body positionable between adjacent levers and having a passageway alignable with said lever openings, a bar insertable into said passageway, locking means preventing removal of said bar from one end of said body, means on said bar preventing passage of the bar through the opening in that one of said adjacent switch levers which is farther from said one end of said body.

6. A coupling for yoking together of adjacent switch operating levers of completely fabricated switches in which the operating lever of each has a transverse opening therethrough, comprising a hollow body positionable between said levers and having a passageway alignable with said lever openings, a bar insertable into said passageway from either end, automatically operable locking means preventing removal of said bar from one end of said body after insertion of the bar through said end to a predetermined position, and means on said bar preventing passage of the bar through the opening in that one of said adjacent switch levers which is farther from said one end of said body.

7. A coupling for yoking together of switch operating levers of completely fabricated switches in which the operating lever of each has a transverse opening therethrough, comprising a hollow body positionable between adjacent levers and having a passageway alignable with said lever openings, a bar insertable into said passageway, one end of said bar being insertable through one lever while the other end of the bar is within said body whereby an adjacent lever may be moved into position corresponding to said one lever in order that said other end of said bar may be moved into the opening of said adjacent lever, means on said bar preventing passage of said bar through the opening in said adjacent lever sufficiently to permit passage of said one end of the bar out of the opening of any other lever and locking means operating when said coupling is assembled to prevent movement of said bar sufficiently into the opening in said one lever to permit passage of said other end of the bar out of the opening of said adjacent lever.

8. A coupling for yoking together of adjacent switch operating levers of completely fabricated switches in which the operating lever of each has

a transverse opening therethrough, comprising a hollow body positionable between adjacent levers and having a passageway alignable with said lever openings, a bar insertable into said passageway, one end of said bar being insertable through one lever while the other end of the bar is within said body whereby an adjacent lever may be moved into position corresponding to said one lever in order that said levers may be coupled, and means automatically operating as said levers become coupled to prevent uncoupling.

9. A coupling for yoking together of adjacent switch operating levers of completely fabricated switches in which the operating lever of each has a transverse opening therethrough, comprising a hollow body positionable between adjacent levers and having a passageway alignable with said lever openings, a bar insertable into said passageway, one end of said bar being insertable through one lever while the other end of the bar is within said body whereby an adjacent lever may be moved into position corresponding to said one lever in order that said levers may be coupled, spring means associated with said body and bar to lock the coupling as said levers become coupled.

10. A coupling for yoking together of adjacent switch operating levers of completely fabricated switches in which the operating lever of each has a transverse opening therethrough, comprising a hollow body positioned between said levers and having a passageway with a shoulder therein, a bar insertable into said passageway from either end, one end of said bar being insertable through one lever while the other end of the bar is within said body whereby an adjacent lever may be moved into position corresponding to said one lever in order that said other end of said bar may be moved into the opening of said adjacent lever, means on said bar preventing passage of said bar through the opening in said adjacent lever sufficiently to permit passage of said one end of the bar out of the opening of any other lever, and a leaf spring having one end snapping in back of said shoulder as the levers become coupled, to lock the coupling permanently in place.

11. A coupling for yoking together of switch operating levers of completely fabricated switches in which the operating lever of each has a transverse opening therethrough, comprising a hollow body positionable between adjacent levers and having a passageway alignable with said lever openings, a bar insertable into said passageway, one end of said bar being insertable through a plurality of said levers and thereafter the other end of said bar being insertable into the opening in another lever, means on said bar preventing passage of said bar through the opening in said other lever sufficiently to permit passage of said one end of the bar out of the opening in any other lever, and locking means operating when said coupling is assembled to prevent movement of said bar sufficiently to permit passage of said other end of the bar out of said other lever.

12. A coupling for yoking together of adjacent switch operating levers of completely fabricated switches in which the operating lever of each has a transverse opening therethrough, comprising a hollow body positionable between adjacent levers and having a passageway alignable with said

lever openings, a bar insertable into said passageway, one end of said bar being insertable through a plurality of levers while the other end of the bar is within said body, whereby an adjacent lever may be moved into position corresponding to said plurality of levers in order that said levers may be coupled, and means automatically operating as said levers become coupled to prevent uncoupling.

13. A coupling for yoking together of a plurality of switch operating levers of completely fabricated switches in which the operating lever of each has a transverse opening therethrough, comprising a hollow body positionable between adjacent levers and having a passageway alignable with said lever openings, a bar insertable into said passageway and having an extending end insertable through a plurality of levers, locking means preventing removal of said bar from one end of said body, means on said bar preventing passage of the bar through the opening in that one of said adjacent switch levers which is farther from said one end of said body.

14. A coupling for yoking together of adjacent switch operating levers of completely fabricated switches in which the operating lever of each has a transverse opening therethrough, comprising a hollow body positionable between adjacent levers and having a passageway alignable with said lever openings, a bar insertable into said passageway, one end of said bar being insertable through a plurality of levers while the other end of the bar is within said body, whereby an adjacent lever may be moved into position corresponding to said plurality of levers in order that said levers may be coupled, and spring means associated with said body and bar to lock the coupling as said levers become coupled.

15. In combination, a plurality of neighboring switch operating levers movable in parallel planes, each lever having a transverse aperture, a coupling for said levers comprising a hollow body between adjacent levers and having a passageway with a shoulder therein, a connecting member extending loosely through the body with one end extending through a plurality of levers and the other end extending into a lever adjacent said plurality of levers, means preventing said connecting member from moving entirely through the aperture of any of said levers, and means preventing withdrawal of said connecting member from one end of said body after being inserted in said body.

16. In combination, a plurality of neighboring switch operating levers movable in parallel planes, each lever having a transverse aperture, a coupling for said levers comprising a hollow body between adjacent levers and having a passageway, a connecting bar in said passageway having an end extending through a plurality of levers, means on said bar engageable with one of said levers to prevent withdrawal of the bar from the remainder of said levers, and means associated with said bar and body to prevent withdrawal of said bar from said one of said levers.

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