A. P. BALL.

CENTER STOP AND OUTSIDE LOCK OFF FOR ELECTRICAL SWITCHES.

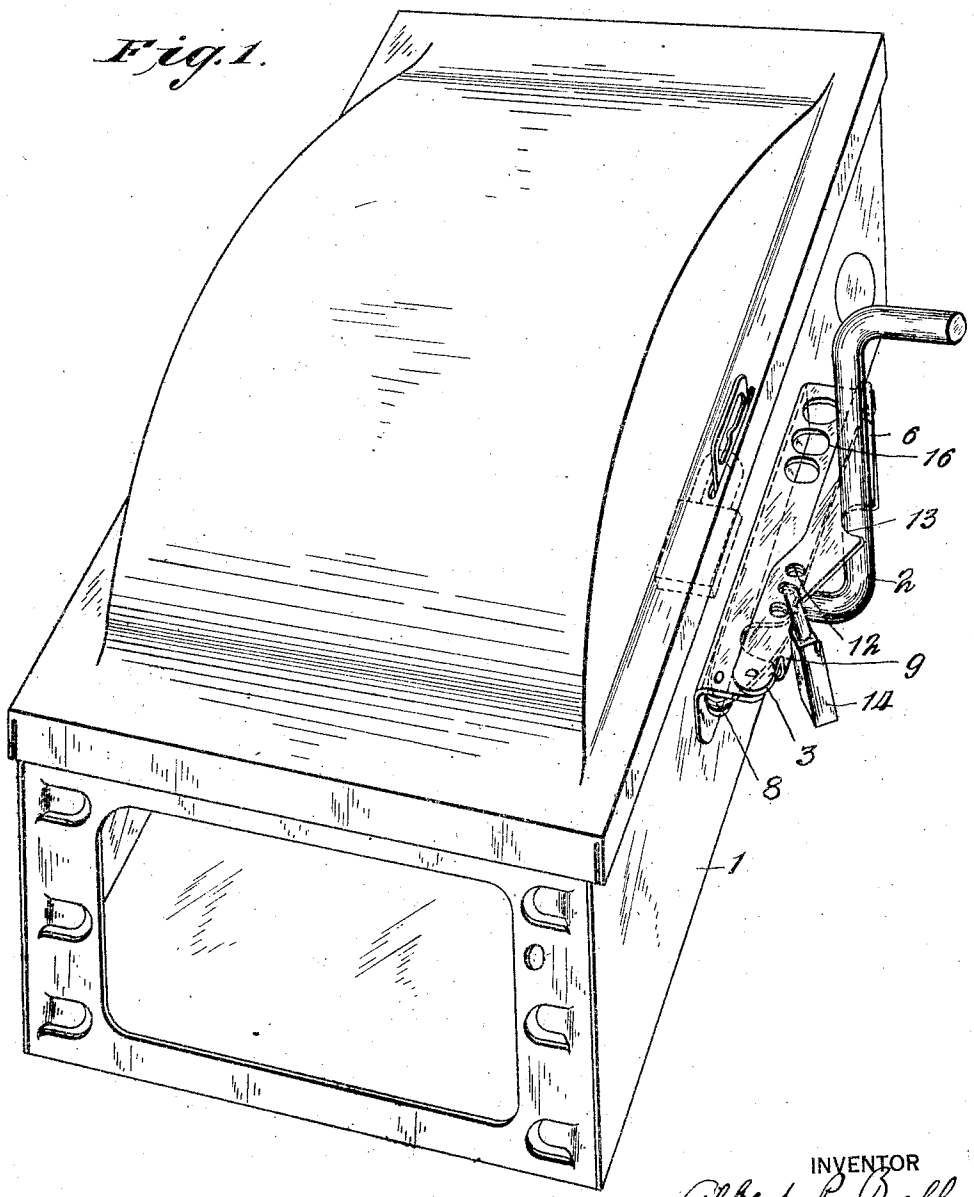
APPLICATION FILED JUNE 13, 1918.

1,383,781.

Patented July 5, 1921.

2 SHEETS—SHEET 1.

Fig. 1.



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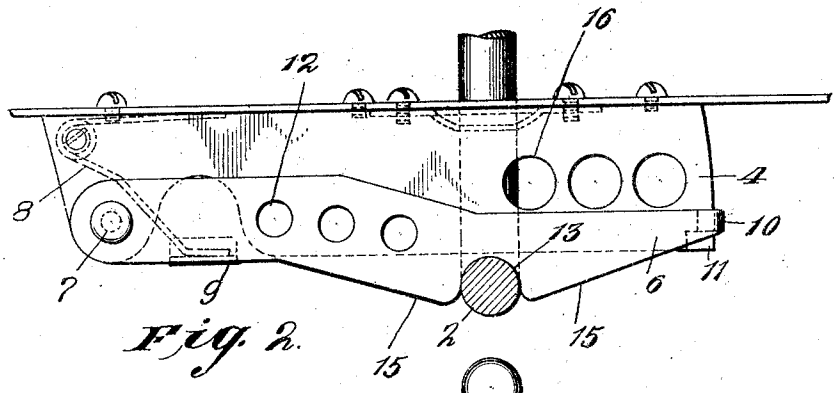


Fig. 2.

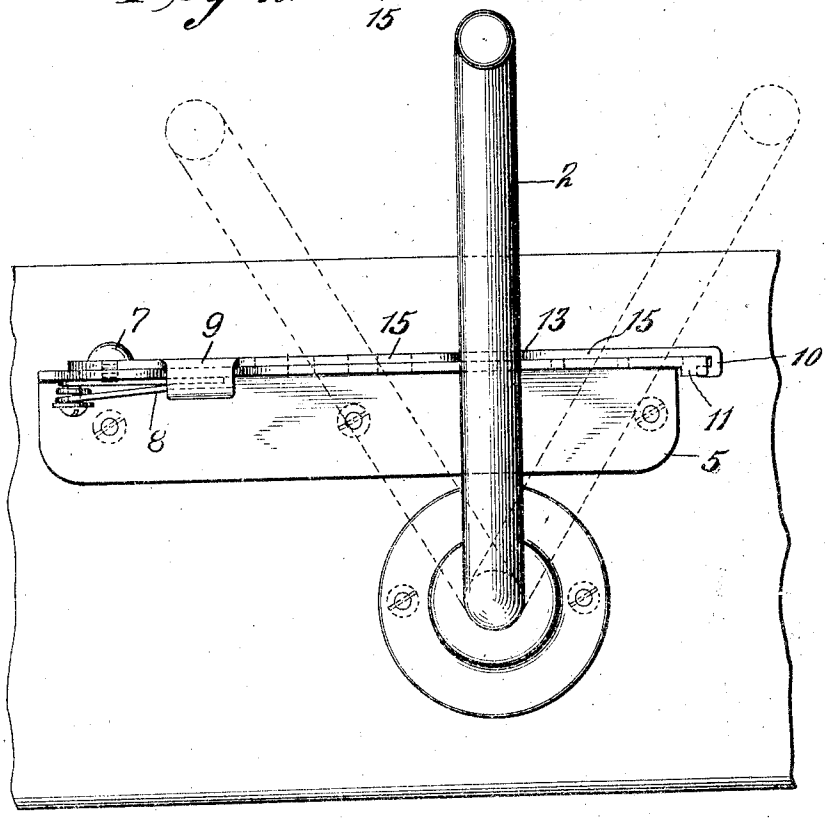


Fig. 3.

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CENTER STOP AND OUTSIDE LOCK OFF FOR ELECTRICAL SWITCHES.

1,383,781. Specification of Letters Patent. Patented July 5, 1921.

Application filed June 13, 1918. Serial No. 239,740.

To all whom it may concern:

Be it known that I, ALBERT P. BALL, a citizen of the United States, residing at Royal Oak, in the county of Oakland and State of Michigan, have invented certain new and useful Improvements in Center Stops and Outside Lock-Offs for Electrical Switches, of which the following is a full, clear, and concise description thereof.

This invention relates to center stop and outside lock off mechanism adapted to cooperate with an electrical switch particularly of the double throw type.

One of the objects of the invention is to design this center stop and outside lock off so that it may be readily attached to the outside of the casing of an inclosed electrical switch and coöperate with one of the moving parts of said switch.

A further object of this invention is to so design the apparatus that the switch may be temporarily held in neutral position and may thereafter be readily released.

A further object of this invention is to provide a device on the exterior of the casing whereby the switch may be locked in "off" position.

A further object of this invention is to so design the device that various sizes of locks may be employed in connection therewith.

A further object of this invention is to so design this device that it is equally effective in its operation when the switch is moved from either limit of its stroke.

A further object of this invention is to produce a device which permits only a rapid continuous motion from one extreme limit to the other extreme limit of the switch.

A further object of this device is to incorporate in one structure coöperating elements which perform all of the functions noted above.

One of the many possible forms that this invention may take is shown in the accompanying drawings, in which—

Figure 1 is a perspective view of the double throw inclosed switch with the device applied to the exterior thereof and showing the switch locked in "off" position.

Fig. 2 is a fragmentary plan view of the center stop and outside lock off; and

Fig. 3 is a detailed side elevation of the device.

Referring to Fig. 1 of the drawing, it will be seen that the double throw switch is inclosed in a housing 1 of the usual type for armor clad switches. The switch mechanisms is not shown in detail, but is of the double throw quick break type and may be similar to that shown in my application Serial Number 240,376, filed June 17, 1918.

This switch mechanism is adapted to be operated by an external element 2 which comprises a horizontal portion passing through the casing, an upright portion and terminates in the operating handle.

The outside lock off and center stop is indicated generally in Fig. 1 by the reference numeral 3, and upon reference to Figs. 2 and 3 it will be seen that it consists of a fixed plate 4 having a flange 5 by means of which it may be securely fastened to the casing 1. Upon this fixed plate is pivotally mounted a movable plate 6 which is pivoted at 7 and is spring-pressed outwardly by means of the spring 8. This spring 8 bears at one end against the flange 5 and at the other end against a lug 9 formed from the movable member 6. At the other end of the movable member a guiding or retaining lug 10 is formed which passes over the curved end of the plate and loosely holds the fixed and movable plates together. The fixed plate has a lug 11 formed thereon against which the lug 10 is adapted to contact when at the extreme outward limit of its stroke.

It will be seen upon reference to Fig. 2 that the movable plate has two inclined faces 15 and a centrally arranged notch or recess 13. This notch 13 is adapted to receive and retain the operating member 2 of the switch. It will also be noted that the inclined edges or faces 15 are symmetrically arranged with respect to the notch 13.

The operation of this device when used as a center stop is as follows:

Assuming that the switch is at one extreme limit of its motion and the operating member is moved toward the other extreme limit of motion, the operating member 2 will then ride upon the inclined edges 15 and force the movable member 6 rear-

wardly, and when the operating member 2 arrives at the notch 13 the movable plate 6 snaps outwardly into the position shown in Fig. 2 and securely locks the switch in neutral position. This movable plate 6 now retains the switch temporarily in neutral position against any tendency for the switch to drop back into operative position. It may, however, be manually released and the switch thereafter moved to either extreme limit of its stroke.

In certain classes of electrical work, as in motor starting, for instance, it is desirable that the switch be thrown from one extreme limit of its stroke to the other extreme limit of its stroke with a very rapid motion. This device is adapted to prevent any but such rapid change from one position to the other. When the operating member 2 is rapidly passed along the inclined edge 15 in either direction, the movable plate 6 is shot rearwardly by this rapid motion and the momentum acquired carries the notch 13 clear of the operating member 2 for the brief interval of its passage by said notch 13 and allows the switch to be freely thrown from one extreme limit to the other extreme limit when moved with a very rapid motion. If by any chance the operator fails to make this rapid motion, the device automatically engages the operating member in neutral position and stops further movement of the switch.

It will be further noted upon reference to Figs. 2 and 3 that the movable plate 6 and fixed plate 4 are provided with alining openings 12 adapted to receive the bail or hook portion of a padlock or other locking means. A second series of openings 16 are provided in the fixed plate 4 which are also adapted to receive a bail portion of a similar lock or similar means. By having these openings of different sizes, as shown, any of a plurality of sizes of locks may be employed.

In Fig. 1 the device is shown operating as a lock off with a padlock 14 interlocking the plates 4 and 6, and retaining the switch in a locked off position.

It will be seen from the above detailed description that applicant has provided a very simple and rugged device which accomplishes a great number of objects. For example, it is adapted to operate as a center stop to catch a double throw switch in neutral position and stop it in such position and temporarily retain it. It is also adapted to operate as a lock off to lock a switch in "off" position. It is further capable and designed to operate as a device for allowing none but a quick change of position from one extreme limit to the other extreme limit in any continuous motion.

The above detailed description and drawings are intended to be interpreted as illustrative of the inventive idea and not in a limiting sense, as the invention is intended to be limited only as defined by the following claims:—

I claim:

1. A center stop for double throw switches comprising a fixed plate and an outwardly projected movable plate pivotally mounted on said fixed plate and provided with means for engaging a portion of said double throw switch.

2. An attachment for double throw switches comprising a fixed plate, a movable plate mounted thereon provided with a notch, and an inclined edge, and a spring for pressing said movable plate outwardly.

3. An attachment for double throw switches comprising a fixed plate, a movable plate mounted thereon provided with a central notch, and inclined edges on each side of said notch, and a spring for pressing said movable plate outwardly.

4. A center stop for double throw switches comprising a fixed member and a spring-pressed movable member pivoted to said fixed member and provided with a notch and inclined edges on each side of the notch.

5. An outside lock off for double throw switches comprising a fixed member, a movable member provided with means for engaging a portion of said double throw switch, and one or more of said members comprising means for interlocking said fixed and movable members.

6. An outside lock off for double throw switches comprising a fixed member and a movable notched member, said members being provided with means whereby they may be locked together.

7. An outside lock off for double throw switches comprising a fixed member and a movable notched member, said members being pivotally related and provided with means whereby they may be locked together.

8. A center stop and outside lock off for double throw switches comprising a fixed member and a notched outwardly projected movable member, and one or more of said members comprising means for interlocking said members.

9. A center stop and outside lock off for double throw switches comprising a fixed member and a notched spring pressed movable member, said members being pivotally related and provided with means whereby the movable member may be locked to such stationary member.

10. A center stop and outside lock off for double throw switches comprising a stationary plate and a notched movable plate pivotally carried thereby, a spring for pressing said movable plate outwardly, and one or more of said plates comprising means for interlocking said plates.

11. A center stop and outside lock off for double throw switches comprising a fixed flanged plate, a movable notched plate pivoted thereon and provided with a depending lug, a spring interposed between said flange and lug, and one or more of said plates comprising means for interlocking said plates.

12. A center stop and outside lock off for double throw switches comprising a fixed plate and a movable spring pressed notched plate, said plates being provided with alining openings whereby they may be locked together.

13. A center stop and outside lock off for double throw switches comprising a fixed plate and a movable spring pressed notched plate, said plates being provided with alining openings, and said fixed plate being further provided with relatively larger openings whereby the plates may be interlocked by either of two sizes of locks.

14. A center stop and outside lock off for double throw switches comprising a fixed flanged plate, a movable plate pivoted thereon and provided with a depending lug, a spring interposed between said flange and lug, said plates being provided with alining openings and said movable plate being provided with a notch, said fixed plate being further provided with openings of a relatively larger size than the first-mentioned openings.

15. A center stop and outside lock off for double throw switches comprising a fixed flanged plate, a movable notched plate pivoted thereon and provided with a depending lug, a spring interposed between said flange and lug, said movable and flanged plates being provided respectively with guiding and stopping lugs, and one or more of said plates comprising means for interlocking said plates.

16. A center stop and outside lock off for double throw switches comprising a fixed flanged plate, a movable plate pivoted thereon and provided with a depending lug, a spring interposed between said flange and lug, said movable plate being provided with a central notch and inclined edges on each side of said notch, said movable and fixed plates being provided respectively with guiding and stopping lugs, and one or more of said plates comprising means for interlocking said plates.

17. The combination with a double throw switch of a center stop and outside lock off, comprising fixed and movable members, said movable member being provided with means for engaging said switch, and one or more of said members comprising means for interlocking said fixed and movable members.

18. The combination with a double throw switch of a center stop and outside lock off, comprising fixed and movable members, said movable member being provided with a central notch and inclined edges, and one or more of said members comprising means for interlocking said fixed and movable members.

19. A lock off and center stop for double throw switches comprising a fixed member, and an attached movable notched member provided with inclined edges, said members having alining openings.

20. A lock off and center stop for double throw switches, comprising a fixed member and an attached movable notched member, said members having alining openings.

21. A lock off for electric switches, comprising a fixed member, a movable notched member attached thereto, said members being provided with alining openings.

22. An outside lock off for double throw inclosed switches, comprising a fixed member, a movable notched member attached thereto, and a spring between said members, said members having alining openings adapted to receive the bail of a lock.

23. A lock off for electrical switches comprising a movable member, a second member adapted to be locked to said first mentioned member, said members arranged to retain a portion of the electrical switch, to thereby lock said switch against movement.

24. A lock off for electrical switches comprising a member adapted to receive a portion of said electrical switch, and said member comprising means whereby said member may be locked in its engaged position.

25. An outside lock off for incased electrical switches comprising an external member adapted to receive a portion of said electrical switch, and said member comprising means whereby said member may be locked in engaged position.

26. An outside lock off for inclosed electrical switches having stationary and moving parts, comprising an external member adapted to receive a portion of the moving part of said switch, and auxiliary means whereby the said moving portion may be locked to said external member.

27. A center stop for double throw switches having stationary and moving parts, comprising a movable notched member adapted to arrest the motion, in both directions, of a portion of the movable part of said switch in said notch, when in neutral position.

28. A center stop for incased double throw switches having stationary and movable parts, comprising a fixed plate adapted to be attached to the casing of said switch, a member movably connected to said fixed plate to move in a plane intersecting the plane of movement of said movable switch

parts and having means to arrest the motion, in both directions, of a portion of the movable part of said switch when in neutral position, and means for operating said movable member.

29. The combination with an inclosed electrical switch of an outside lock off therefor comprising a fixed member, and a movable member, said movable member being adapted to engage a portion of said switch, and means whereby said movable member may be locked in engagement with said switch.

30. The combination of an incased electrical switch having movable and stationary parts of an outside lock off comprising a member fixed to said casing, a spring pressed member movably mounted thereon, and means whereby said spring pressed member may be locked in engagement with a portion of the movable part of said switch.

31. The combination with a double throw quick break incased electrical switch of an outside lock off and center stop therefor, comprising a fixed member, a movable member mounted thereon and provided with means adapted to temporarily retain said switch in neutral position, means for actuating said movable member, and one or more of said members comprising means whereby said movable member may be permanently locked said switch in neutral position.

32. The combination with a quick break double throw switch having stationary and movable parts, of a spring pressed member provided with a notch adapted to engage a portion of the movable part of said switch when slowly moved and to become ineffective when said switch is quickly moved from one extreme position to the other, and one or more of said members comprising means whereby said notched member may be locked in engaged position.

33. The combination with a double throw switch, of means for permitting only a rapid throw of said switch from one position to the other, comprising a stationary member, a spring pressed movable notched member slidably mounted thereon, and an oscillatory member operating with said switch and cooperating with said movable notched member.

34. The combination with an inclosed switch, of an outside lock off, comprising a stationary member and a movable notched member slidably mounted thereon, said members having alining openings.

35. The combination with an inclosed switch, of an outside lockoff, comprising a stationary member and a movable spring pressed notched member slidably mounted thereon, said movable member having inclined edges.

36. The combination with a double throw switch, of means permitting only a rapid continuous motion from either extreme position to the other, comprising a fixed member, a movable notched member adapted to engage a portion of said switch when slowly operated, and means for actuating said movable member.

37. A center stop for incased double throw switches having stationary and movable parts, comprising a fixed plate adapted to be attached to the casing of said switch, a member movably connected to said fixed plate to move in a plane intersecting the plane of movement of said movable switch parts and having means to arrest the motion, in both directions, of a portion of the movable part of said switch when in neutral position, and a spring for operating said movable members.

38. A center stop for incased double throw switches having stationary and movable parts, comprising a fixed plate adapted to be attached to the casing of said switch, a notched plate hingedly connected to said fixed plate to move in a plane intersecting the plane of movement of said movable switch parts, a spring attached to said notched plate at one end and fixed at the other, said notch being engageable with a portion of the movable part of said switch to arrest the motion, in both directions, of the movable part when in neutral position.

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