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L. C. STRINGER

2,163,069

HIGH VOLTAGE NONARCING SELECTOR SWITCH

Filed April 29, 1937

Fig. 1.

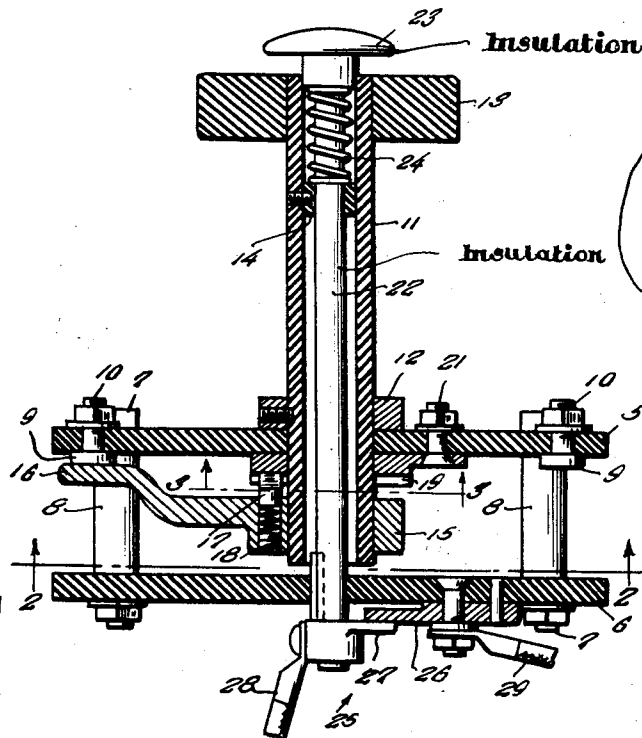


Fig. 3.

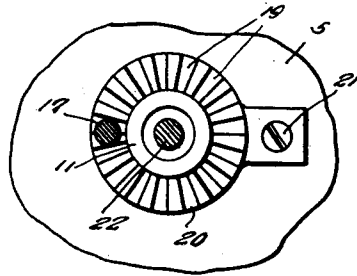


Fig. 4.

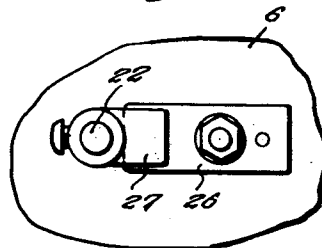
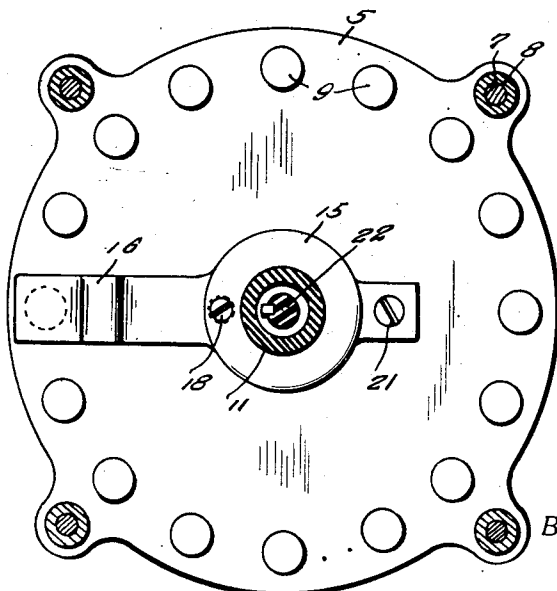


Fig. 2.



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HIGH VOLTAGE NONARCING SELECTOR SWITCH

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1 Claim. (Cl. 200—4)

The invention herein shown, described and claimed, pertains to a structurally novel and improved rotary, manually controlled, high voltage selector switch expressly designed to abolish with certainty the ever objectionable dragging of an arc not now satisfactorily overcome by present prevailing selector switches.

Needless to say, I am generally conversant with the prior state of the art to which the invention relates, as well as the industrial conditions prevailing. As a matter of fact, it is common knowledge among those skilled in the line of endeavor with which we are here concerned that where electrical energy is stepped up to a potential or frequency susceptible of developing an arc, as in step-up transformation where an appreciable intensive current is involved, the user of the ordinary selector switch is confronted with the problem known as dragging an arc, with the attendant result of burning and damaging not only the selector arm, but the contact point as well.

Although efforts have been made by my predecessors striving to cope with this undesirable state of affairs, in so far as I have been able to ascertain structures provided therefor are incapable of satisfactorily accomplishing results in keeping with the demands of the trade. It follows, therefore, that my objective, in the main, is to generally improve upon prior patented and marketed switch constructions through the adoption and use of a switch or equivalent structure which may be successfully used off a connection of the high side of a transformer without the attendant disadvantages and damages present in available constructions.

In reducing to practice the principles of the broad inventive concept with which we are herein concerned, I have evolved and produced a simple, fool-proof, and aptly fitted structural assemblage calculated to correct existing conditions, this being attained through the instrumentality of means incorporated in the switch whereby before the selector arm can be conveniently released and set into motion, the source of current may be temporarily cut off rendering the switch "dead" until the selector arm has been completely adjusted from a given contact to a predetermined selected contact.

Features and advantages supplementary to those so far exposed will become more readily apparent from the following detailing description and accompanying drawing.

In the drawing, wherein corresponding nu-

merals are employed to designate like parts throughout the views:

Figure 1 is a view, partly in section, and partly in elevation, illustrating the preferred embodiment of the invention possessing the merits hereinafter defined and claimed.

Figure 2 is a horizontal section on the plane of the line 2—2 of Figure 1.

Figure 3 is a horizontal section of a fragmentary character on the line 3—3 of Figure 1, looking in the direction of the arrows.

Figure 4 is a fragmentary elevational view of the make and break device in the source of electrical supply.

Reference being had now to the drawing by distinguishing reference numerals, it will be observed that the numerals 5 and 6 designate spaced parallel plates of appropriate insulation material. These are joined in parallelism by connecting bolts 7 surrounded by spacing sleeves 8 interposed between the parts as portrayed to advantage in Figure 1. On the disc 5, preferably the margin thereof, and at circumferentially spaced equi-distant points, are the contact buttons 9 with the power take-off binding posts 10.

The numeral 11 designates a rotary tubular actuating handle mounted for rotation in the upper plate or disc 5 and held partially in place by the retention ring 12. On the upper end of the handle is an appropriate control knob 13 suitably knurled. On the interior and adjacent the upper end is a fitting or insert 14 constituting an abutment or shoulder. On that portion of the handle forming the lower end and located between the discs 5 and 6 is a collar fixedly attached to the handle. This collar 15 carries the integral lateral selector finger or arm 16. An eccentric socket is formed in the collar parallel to the handle to accommodate a spring-pressed detent 17 accessible by way of the plug nut 18. The pointed end of the detent is cooperable with keeper notches or seats 19 formed in the under side of the companion keeper ring 20. Electrically connected with the lateral extension on the margin of the ring 20 is a binding post 21 delivering the transformed or controlled current to the selector switch. In actual practice the keeper seats 19 for the latch or detent 17 are precisely milled to be in coincidental radial alignment with the peripheral stationary contact buttons or elements 9. Consequently, each keeper notch registers with its associated contact, making it possible to mechanically lock the contact

finger or arm 16 against accidental displacement when once it is adjusted to place.

I next call attention to a reciprocatory or slidably mounted rod 22 slidably mounted in the tubular handle 11 and operable through the collar 14. It is provided on its upper end with a concentric secondary knob 23 coordinated with the main control knob 13. A coil spring 24 is interposed between the collar 14 and the knob 23 to maintain the latter projected to the position illustrated in the drawing. The rod or member 22 is the control means for the circuit make and break device denoted by the numeral 25. This comprises relatively stationary contact 26 and movable contact 27, with which the current supply wires 28 and 29 connect. The wires 28 and 29 are maintained normally in electrical circuit by the contacts 26 and 27, these being maintained in circuit making condition by the spring 24.

In practice it is obvious that the discs 5 and 6, the handle 11, the knob 13, the rod 22, and knob 23, the collar 14 are of insulation material. The keeper ring 20, the collar 15, the finger 16, and contacts, are of course of electricity conducting material.

The operation of the switch is as follows: Upon placing the hand of the operator on the previously described wheel or knob 13, a movement of the contact finger 16 cannot take place until sufficient pressure from the palm of the hand is exerted to acquire the desired oscillatory or rotary motion. The pressure is simultaneously brought to bear on the auxiliary knob 23, driving the rod 22 downwardly, disengaging the contact 27, and opening the power circuit at the breaking point 25. Thus, by cutting off the supply of current momentarily, the whole selector switch is rendered dead for corresponding periods, allowing the arm 16 to be shifted from one contact to another at the discretion of the user. It follows, therefore, that during this shift, the aforementioned objectionable dragging of an arc is positively eliminated.

It is thought that the description taken in connection with the drawing will enable a clear understanding of the invention to be had.

Therefore, a more lengthy description is thought unnecessary.

While the preferred embodiment of the invention has been shown and described, it is to be understood that minor changes coming within the field of invention claimed may be resorted to if desired.

I claim:

A selector switch of the class described comprising a pair of spaced parallel plates of insulation material, a plurality of circumferentially spaced contact buttons mounted on the under side of the top plate, said contact buttons including individual binding posts to accommodate power take-off wires, a metallic ring secured to the central portion of the under side of said top plate, said top plate having an opening in alignment with the opening of said ring, said ring being provided on its under side with radial keeper notches, a tubular handle mounted for rotation in the apertured portion of said top plate and extending through and beyond said ring and terminating short of the bottom plate, a collar secured to the lower end of said handle, said collar being provided with a radial contact finger selectively engageable with said buttons and said finger being confined between said plates, a spring pressed detent carried by said collar and engageable with said keeper notches, the keeper notches being in radial matching alignment with the contact buttons, a circuit make and break device comprising a stationary contact member secured to the bottom plate, a conductor wire electrically connected therewith, a movable contact member cooperable with said first named member, a second conductor wire connected with said movable contact member, a rod slidably mounted in said bottom plate, said movable contact member being mounted on said rod, said rod extending upwardly through the tubular handle, said handle and said rod being provided with closely allied operating knobs, a stop shoulder mounted in said handle, a coiled spring on said rod engageable with said stop shoulder and the adjacent knob whereby to maintain the movable contact member in normal electrical connection with the stationary member.

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