Aug. 4, 1931. C. A. FOX 1,817,244

ELECTRIC SWITCH

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Fig. 1.

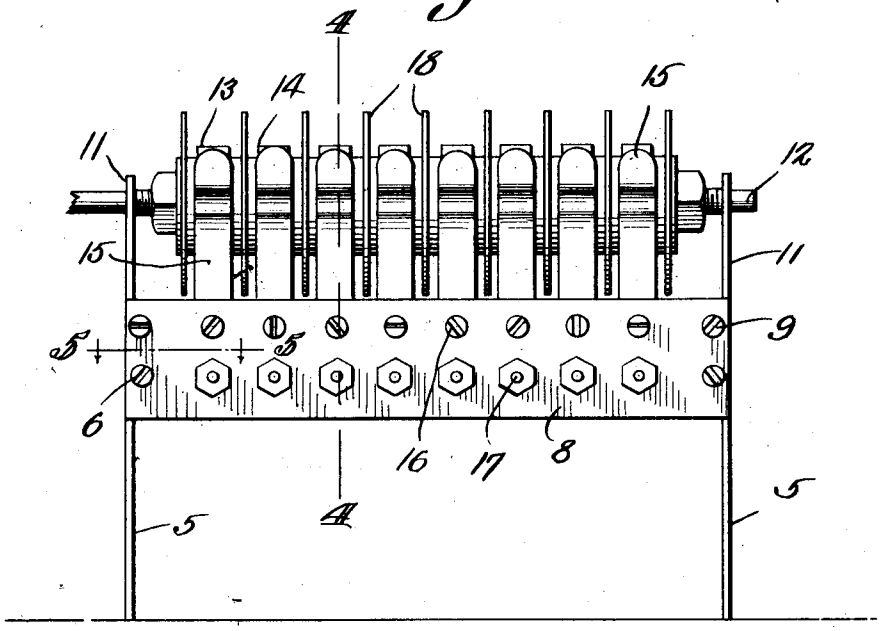
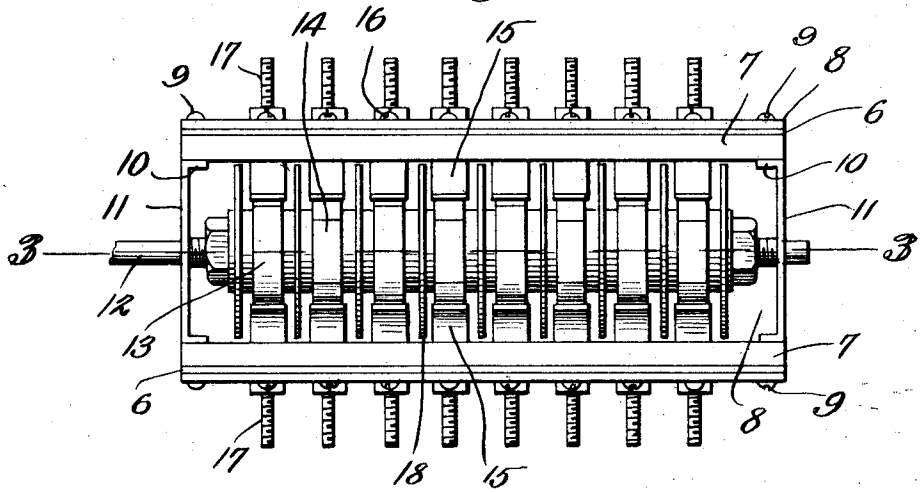


Fig. 2.



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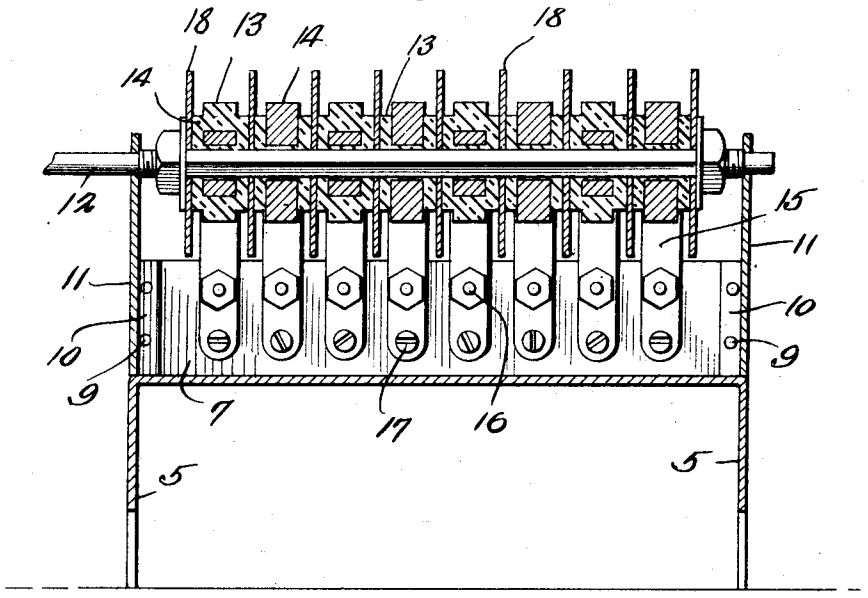
Attorneys.

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ELECTRIC SWITCH

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Fig. 3.



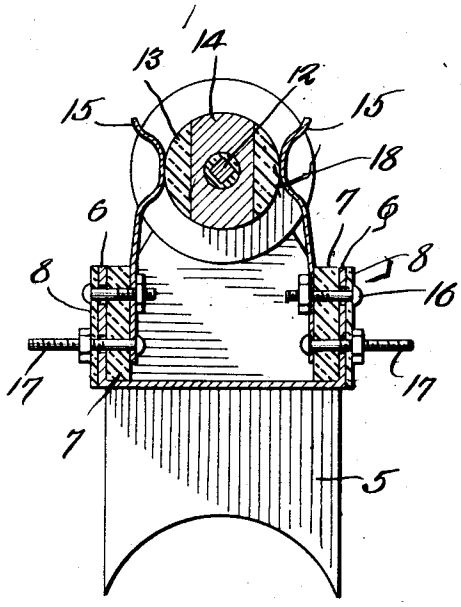


Fig. 4.

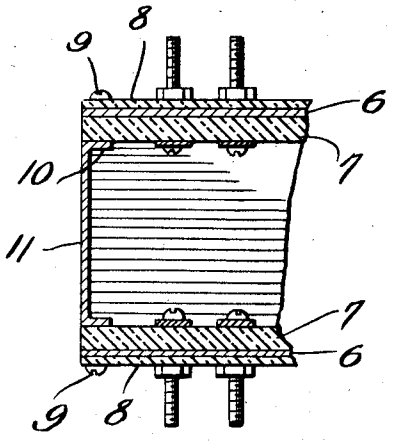


Fig. 5.

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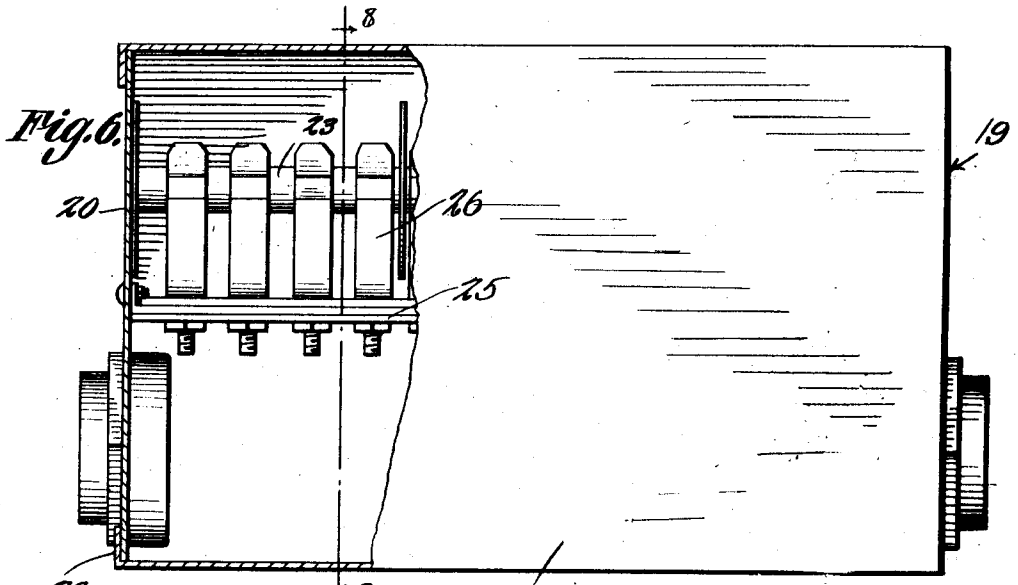


Fig. 6.

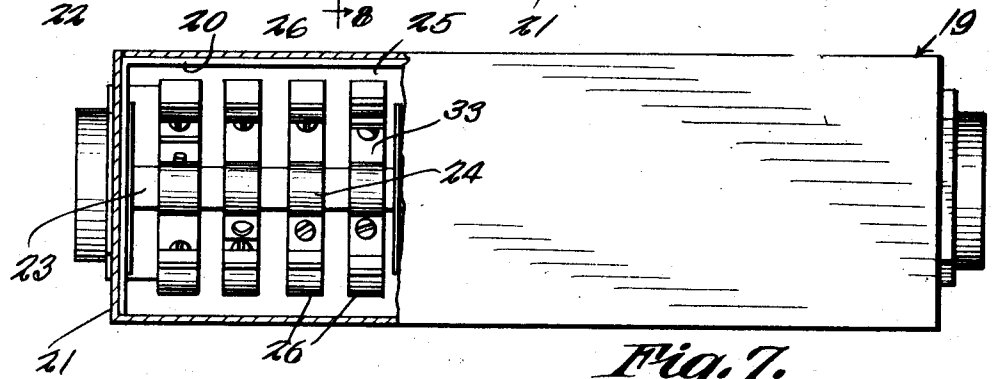


Fig. 7.

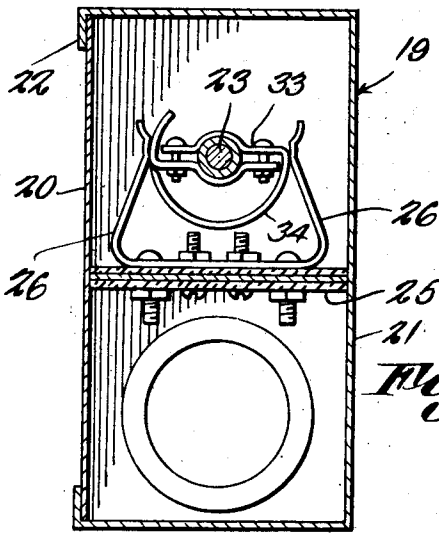


Fig. 8.



Fig. 10. Fig. 9.

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Patented Aug. 4, 1931 1,817,244

UNITED STATES PATENT OFFICE

CHARLES ADIN FOX, OF DEER LODGE, MONTANA

ELECTRIC SWITCH

Application filed June 15, 1926. Serial No. 116,183.

The present invention has reference to electric switches and more particularly to electric switches of the gang type, the primary object of the invention being to provide a switch of this character constructed of a plurality of standardized elements, the construction being such that the number of contact members or switch elements may be removed or added at the will of the operator thereby adapting the device for various usages.

An important object of the invention is to provide a switch wherein the units may be spaced on the shaft, one, two, three or any desired unit distances apart, thereby adapting the device for use in connection with various voltages.

Another important object of the invention is to provide a switch of this character including a shaft and a plurality of adjustable switch elements supported thereon, to the end that the switch element may be moved to various positions with respect to each other so that all the switches may be operated simultaneously to close and open circuits or to cause the circuits to be closed in sequence.

A still further object of the invention is to provide a switch wherein the contacts may be moved with respect to the shaft on which they are supported, adapting the device for various special circuit control requirements.

Another object of the invention is to provide a switch which may operate with its casing open or closed, the casing being constructed so that the rotor may operate immersed in oil for protecting the switch against the collection of gas or to increase operating voltage as well as eliminate arcing.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, may be made within the scope of what is claimed, without departing from the spirit of the invention.

Referring to the drawings:

Figure 1 is a side elevational view of a switch constructed in accordance with the invention.

Figure 2 is a plan view thereof.

Figure 3 is a sectional view on line 3—3, Figure 2.

Figure 4 is a sectional view on line 4—4, Figure 1.

Figure 5 is a sectional view on line 5—5, Figure 1.

Figure 6 is a view partly broken away showing a modified form of the invention.

Figure 7 is an end elevational view thereof, partly broken away.

Figure 8 is a sectional view taken on line 8—8 of Figure 6.

Figure 9 is a sectional view through the shaft of the rotor, and illustrating one form of contact member.

Figure 10 is a sectional view through a shaft and illustrating a further modified form of contact member.

Referring to the drawings in detail, the switch includes a body portion formed of a length of sheet metal having its ends bent downwardly to provide legs 5, the side edges thereof being bent upwardly providing the sides of the body portion indicated at 6.

Secured to the inner surfaces of the sides 6 are insulating members 7 which are of widths equal to the widths of the side members as shown by Figure 2 of the drawings.

Insulating members 8 are secured to the outer surfaces of the sides 6 as by means of the screws 9 that pass through the members 6, 7 and 8, the inner ends thereof being secured in threaded openings formed in the inwardly extended flanges 10 of the end members 11.

Suitable openings are formed in the end members 11 and define bearings for the shaft 12 which is squared so that the switch elements to be hereinafter more fully described, may be securely held on the shaft, against rotation. Each of these switch elements includes a circular member formed of suitable insulating material, the same being

provided with a squared opening to permit the same to be positioned over the squared shaft as shown by Figure 4.

Moulded or otherwise secured within the insulating members, which are indicated by the reference character 13, are contact members 14, which have curved extremities conforming to the curvature of the members 13, so that when the members 13 are rotated with the shaft 12, the contact members will be brought into engagement with the contact arms 15 which are arranged in pairs and disposed on opposite sides of the members 13.

Screws indicated at 16 secure the contact arms to the body portion of the switch, bolts 17 being also provided and connected with the arms 15 so that circuit wires may be connected thereto. The members 13 are separated by means of the disks 18 that are formed of suitable insulating material, as clearly shown by Figure 1.

While the operating means for operating the shaft 12 has not been shown, it is to be understood that this shaft may be operated in any suitable manner and any suitable mechanism not shown, however it might be stated that the switch is especially designed for use in connection with feeders and machine breakers in power stations and performs a two-fold purpose, that of dropping a field shunt contact which inserts a resistance in the generator field circuit when the machine breaker opens, and simultaneously rings a bell to notify the operator that a breaker has kicked out, the bell continuing to ring until the disconnected switch is opened.

It might be further stated that the members 13 are so arranged on the shaft 12 with respect to each other, that when the contact members 14 of certain switch members are in circuit with the arm 15 associated therewith, alternate switch members are free or out of contact with their arms.

In the form of the invention as illustrated by Figure 6, the switch is shown as housed in the casing indicated generally by the reference character 19 which includes a base section 20 and a cover section 21, the cover section adapted to fit over the base section 20, there being provided flanges 22 on the cover section for engaging the base section to secure the cover section to the base section, it being understood that suitable screws not shown may be passed through the flanges to secure the sections together.

The reference character 23 indicates the supporting shaft of the rotor, which carries the contact members 24, the contact members being suitably insulated from the shaft and from each other so that circuits may be completed thereby.

Extending through the casing is a partitioning member 25 to which the contact fingers 26 are secured, which contact fingers are adapted to be engaged by the contact members 24. Cord terminals are shown as forming a part of the contact fingers 26 so that electric wires may be passed into the lower portion of the switch casing and placed in circuit with the contact fingers 26.

The contact members 24 are formed by bending a length of metal to provide a loop portion 27, spaced arms 28 and a curved section 29, but when it is desired to complete a circuit between two opposite contact members, contact members such as shown by Figure 9 are provided, which contact members include arms 30 having curved portions 31 to be positioned over a supporting shaft, and a curved wiping element 32 formed integral with the arms 30.

Bolts pass through the arms 30 to connect the arms and set up a binding action between the arms and shaft supporting them.

From the foregoing it will be obvious that due to this construction, the contact members may be adjusted on the shafts and arranged in predetermined spaced relation with each other for accomplishing various results.

In the use of the device for closing circuits at intervals, the shaft is provided with a plurality of contact members such as shown by Figure 10 of the drawings, which contact members are arranged at various angles with respect to each other and are in circuit with the shaft in which they are supported. At one end of the shaft is a contact member indicated at 33, which contact member is provided with a substantially long arm 34 curved so that the arm will be in circuit with one of the contact fingers at all times during the rotation of the shaft to complete circuits through the arm 34, shaft, and any finger which may be touched by the remaining contact members of the shaft.

I claim:

In an electric switch, a body portion, said body portion including end members and side members, the end members extending above the side members, a horizontal shaft extended through the end members, said shaft having threads formed at its ends, insulating members mounted on the shaft, contact members extending through the insulating members, disks mounted on the shaft and separating the insulating members, contact arms secured to the body portion and adapted to engage the contact members of the shaft, and nuts on the threaded portions of the shaft for securing the insulating members and disks together.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

CHARLES ADIN FOX.