Oct. 1, 1957 W. T. BRENNAN 2,808,481

REVERSE POLARITY SWITCH

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Fig. 1

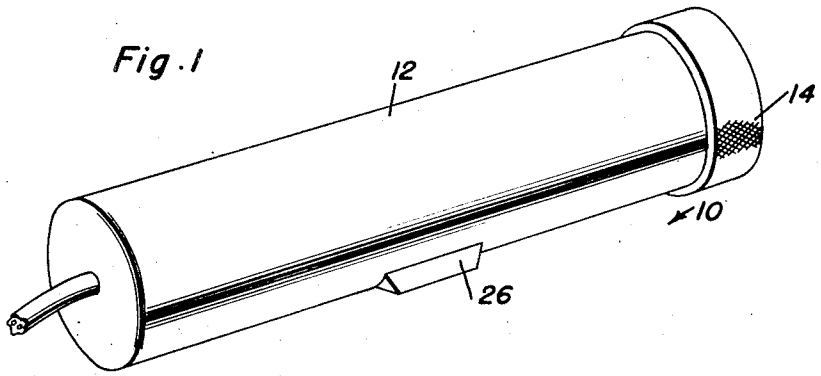


Fig. 5

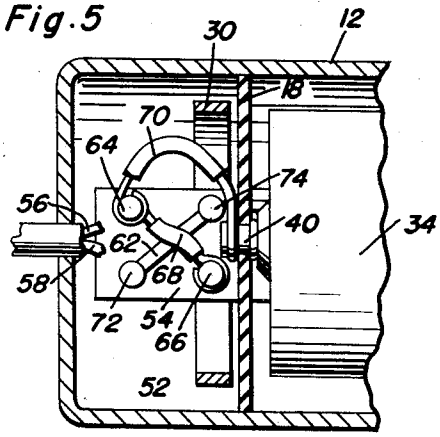


Fig. 6

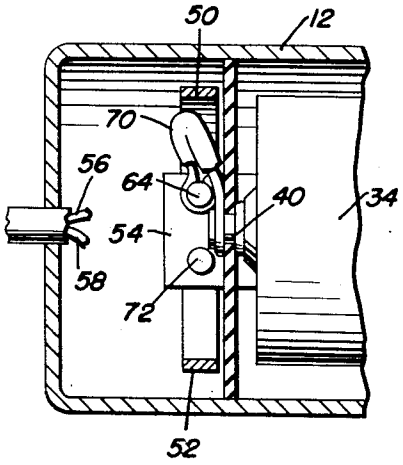
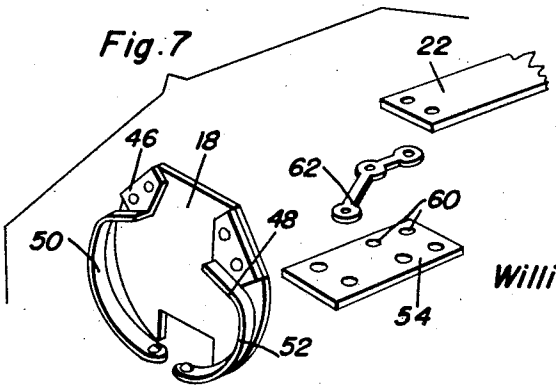


Fig. 7



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REVERSE POLARITY SWITCH

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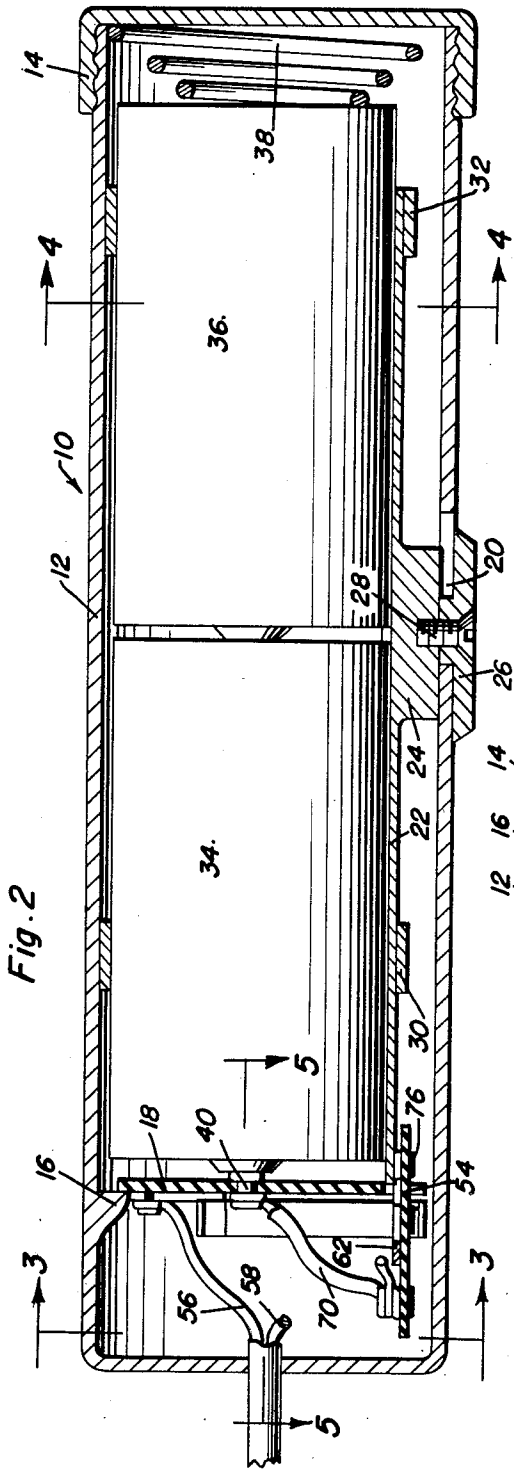


Fig. 2

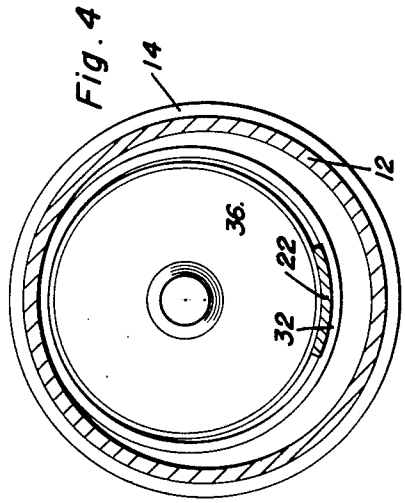


Fig. 4

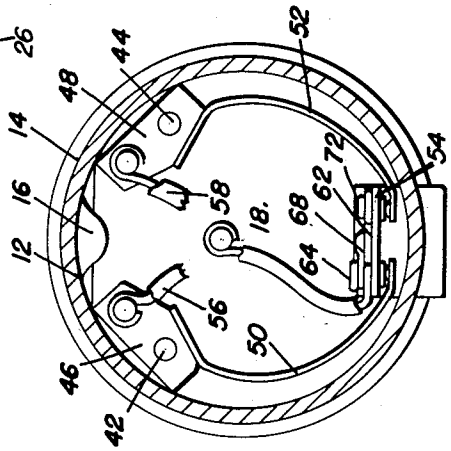


Fig. 3

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REVERSE POLARITY SWITCH

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5 Claims. (Cl. 200—61.58)

This invention relates to a switching mechanism and has for its primary object the provision of means for reversing the polarity of a direct current supply to an electric motor or the like in a convenient and simple manner.

The construction of this invention features a flashlight-like casing containing batteries forming the source of direct current therein. Switch means are mounted in the casing and include a terminal side having criss-crossed sets of contacts which are engaged by resilient contacts mounted on a terminal plate in a manner whereby the polarity of the current supplied to the motor or other load device can be reversed, utilizing sliding action of the slide with respect to the resilient contacts.

Still further objects and features of this invention reside in the provision of a reverse polarity switch that is strong and durable, simple in construction and manufacture, having relatively few moving parts so as to be substantially fool-proof in operation, and which is inexpensive to manufacture, thereby enabling wide distribution and utilization.

These, together with the various ancillary objects and features of the invention which will become apparent as the following description proceeds, are attained by this reverse polarity switch, a preferred embodiment of which has been illustrated in the accompanying drawings, by way of example only, wherein:

Figure 1 is a perspective view of the invention;

Figure 2 is an enlarged longitudinal sectional view of the reverse polarity switch;

Figure 3 is a vertical sectional view as taken along the plane of line 3—3 in Figure 2, illustrating the construction of the terminal plate and resilient contacts;

Figure 4 is a vertical sectional view as taken along the plane of line 4—4 in Figure 2, illustrating the construction of the slide;

Figure 5 is a horizontal sectional view as taken along the plane of line 5—5 in Figure 2, illustrating the terminal slide in an extended position;

Figure 6 is a sectional view, similar to that of Figure 5, but showing the terminal slide in a different position for reversing the polarity of the current from that as supplied by the arrangement shown in Figure 5; and

Figure 7 is an exploded perspective view of various elements of this reverse polarity switch.

With continuing reference to the accompanying drawings wherein like reference numerals designate similar parts throughout the various views, reference numeral **10** generally designates the reverse polarity switch comprising the present invention. This device includes an outer casing **12** generally of the configuration similar to that of a conventional flashlight and has a threaded cap **14** at the rear end thereof.

Integrally cast with the casing **12** is a stop **16** against which a terminal plate **18** bears, the terminal plate **18** being formed of a suitable electrically insulative material.

The casing **12** has a slot **20** therein and also has slidably mounted therein a slide **22** having a projecting portion **24** to which a handle **26** is attached by means of a fastener **28**, the handle extending inwardly of the slot **20** and enabling

the slide **22** to be moved upon actuation thereof. The slide includes mounting rings, as at **30** and **32**, within which batteries **34** and **36** of the flashlight type are positioned. A coil spring **38** resiliently yieldingly engages the cap **14** and the battery **36** to urge the batteries into engagement with a fixed terminal **40** on the terminal plate **18**.

Mounted on the terminal plate **18** by means of rivets, as at **42** and **44**, are a pair of resilient contacts **46** and **48** which have arcuate spring sections **50** and **52** having their ends underlying a terminal slide **54** of electrically insulative material. The slide **54** extends through a recess **56** in the terminal plate **18** and is secured to the slide **22**.

Connected to the resilient contacts **46** and **48** are conductors **56** and **58** which are connected to the load device.

The slide **54** is provided with a series of apertures **60** therethrough for reception of rivets which hold an electrically conductive strip **62** to the terminal slide **54** and for reception of rivets **64** and **66** which hold a conductor **68** which is insulated from the strip **62** to the slide **64** while also holding a conductor **70** to the slide **54**, the conductor **70** being connected to the terminal **40**.

Other rivets **72**, **74** and **76** hold the contact strip **62** on the terminal slide **54** and further form contacts which are engaged by the resilient contacts **46** and **48**. It is noted that the conductor **68** criss-crosses over the strip **62** so that the contact **64** is engageable by the resilient contact **46** while the contact formed by the rivet **66** is engageable by the resilient contact **52**. Likewise, the resilient contacts **46** and **48** engage the rivets **74** and **72**, respectively. The rivet **76** grounds the contact strip **62** and hence the rivets **72** and **74** to the slide **22** and thus to the batteries **34** and **36**.

The operation of this device is quite simple. Utilizing the handle **26**, the slide **22** and hence the terminal slide **54** can be slid outwardly to the position as is shown in Figure 5. In this position, the resilient contact **46** will engage the rivet **74** which is the grounded side of the circuit while the contact **48** will engage the rivet **66** which is connected through conductor **70** to the positive side of the circuit. Thus, conductors **56** and **58** which are connected to the resilient contacts **46** and **48** will carry current of the polarity determined by the position of the slide **54**. However, should the terminal slide **54** be moved inwardly, the resilient contacts **46** and **48** will engage the rivets **64** and **72**, respectively, thus connecting the resilient contacts and hence the lead **56** to the positive side of the circuit while connecting the resilient contact **48** and the lead **58** to the negative side of the circuit, thus reversing polarity of the power supplied.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claims.

What is claimed as new is as follows:

1. A reverse polarity switch comprising a casing, a slide slidably mounted in said casing, said slide extending substantially the length of said casing and being adapted to slidably carry batteries, a terminal plate in said casing, a fixed terminal, a pair of resilient contacts carried by said terminal plate, a terminal slide of insulative material carried by said slide, said terminal slide having a first set of contacts grounded to said casing and adapted to be engaged by one of said resilient contacts, and a second set of contacts on said terminal slide electrically connected to said fixed terminal adapted to be engaged by the other of said resilient contacts.

2. A reverse polarity switch comprising a casing, a slide slidably mounted in said casing, a terminal plate in said

casing, a fixed terminal, a pair of resilient contacts carried by said terminal plate, a terminal slide of insulative material carried by said slide, said terminal slide having a first set of contacts grounded to said casing and adapted to be engaged by one of said resilient contacts, and a second set of contacts on said terminal slide electrically connected to said fixed terminal adapted to be engaged by the other of said resilient contacts, said sets of contacts being arranged in a criss-cross manner so that upon actuation of said slide, each of said resilient contacts will successively engage one of said first set of contacts and one of said second set of contacts.

3. A reverse polarity switch comprising a casing, a slide slidably mounted in said casing, a terminal plate in said casing, a fixed terminal, a pair of resilient contacts carried by said terminal plate, a terminal slide of insulative material carried by said slide, said terminal slide having a first set of contacts grounded to said casing and adapted to be engaged by one of said resilient contacts, and a second set of contacts on said terminal slide electrically connected to said fixed terminal adapted to be engaged by the other of said resilient contacts, a conductive strip, rivets securing said conductive strip to said terminal slide, said rivets forming said first set of contacts.

4. A reverse polarity switch comprising a casing, a slide a slide slidably mounted in said casing, said slide extending substantially the length of said casing and being adapted to slidably carry batteries, a terminal plate in said casing, a fixed terminal, a pair of resilient contacts carried by said terminal plate, a terminal slide of insulative material carried by said slide, said terminal slide having a first set of contacts grounded to said casing and adapted to be engaged by one of said resilient contacts, and a second set of contacts on said terminal slide electrically connected to said fixed terminal adapted to be engaged by the other of said resilient contacts, a conductive strip, rivets securing said conductive strip to said terminal slide, said rivets forming said first set of contacts, an insulative conductor overlying said conductive strip, other rivets fastening said conductor to said terminal slide, said other rivets forming said second set of contacts, said sets of contacts being arranged in a criss-cross manner so that upon actuation of said slide, each of said resilient contacts will successively engage one of said first set of contacts and one of said second set of contacts.

5. A reverse polarity switch comprising a casing, a slide slidably mounted in said casing, batteries grounded to said casing slidably mounted on said slide, a terminal plate in said casing, resilient means urging said batteries against said terminal plate to engage a fixed terminal, a pair of resilient contacts carried by said terminal plate, a terminal slide of insulative material carried by said slide, said terminal slide having a first set of contacts grounded to said casing and adapted to be engaged by one of said resilient contacts, and a second set of contacts on said terminal slide electrically connected to said fixed terminal adapted to be engaged by the other of said resilient contacts, a conductive strip, rivets securing said conductive strip to said terminal slide, said rivets forming said first set of contacts, an insulative conductor overlying said conductive strip, other rivets fastening said conductor to said terminal slide, said other rivets forming said second set of contacts, said resilient contacts being attached to said terminal plate above said terminal slide, said resilient contacts having end portions underlying said terminal slide to engage said first and second sets of contacts, said sets of contacts being arranged in a criss-cross manner so that upon actuation of said slide, each of said resilient contacts will successively engage one of said first set of contacts and one of said second set of contacts.

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